START

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of the
UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

April 1, 1997 Volume 1197 Number 1

CONTENTS

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1194 O.G. 618, on January 21, 1997.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on September 28, 1982.

For use of the European Patent Cffice as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective July 1, 1996, due to a change in the exchange rate of the U.S. dollar with regard to the German mark, and was announced in the *Official Gazette* at 1187 O.G. 73, on June 25, 1996.

International fees were changed, effective on February 1, 1997, due to a change in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1194 O.G. 617, on January 21, 1997.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective October 1, 1996, and were announced in the *Official Gazette* at 1189 O.G. 62, on August 20, 1996.

The schedule of PCT fees (in U.S. dollars), effective February 1, 1997, is as follows:

International Application (PCT Chapter I) fees:	
Transmittal fee	230.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
— No corresponding prior U.S. national application filed	680.00
— Corresponding prior U.S. national application filed	440.00
— Supplemental search fee, per additional invention (payable only upon invitation)	200.00
European Patent Office as ISA	1585.00
International fees	
Basic fee	590.00
Basic supplemental fee (for each page over 30)	12.00
Designation fee per country or region	
— For the first 11 national or regional offices designated	143.00
— For each designation in excess of 11 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
— Designation fee	143.00
— Confirmation fee	71.50
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:	
Handling fee	180.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
— USPTO was ISA in PCT Chapter I	480.00
— Additional examination fee, per additional invention (payable only upon invitation)	140.00
— USPTO was not ISA in PCT Chapter I	730.00
— Additional examination fee, per additional invention (payable only upon invitation)	260.00

U.S. National Stage Fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
— All claims presented satisfied provisions of PCT Article 33(2) to (4)	48.00	96.00
— All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	350.00	700.00
USPTO was ISA but not IPEA	385.00	770.00
USPTO was neither ISA nor IPEA		
— Search report has not been prepared by the European Patent Office or the Japanese Patent Office	520.00	1040.00
— Search report has been prepared by the European Patent Office or the Japanese Patent Office	455.00	910.00
Other National fees		
— For each independent claim in excess of 3	40.00	80.00
— For each claim in excess of 20.	11.00	22.00
— For each application containing a multiple dependent claim	130.00	260.00
— Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(l)	65.00	130.00
— Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(l)	130.00	130.00

Dec. 26, 1996

BRUCE A. LEHMAN
Assistant Secretary of Commerce and
Commissioner of Patents and Trademarks

Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on March 29, 1994 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,297,293 through 5,299,322
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on March 27, 1990 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,910,802 through 4,912,776
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on March 25, 1986 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,577,346 through 4,578,820
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1996, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $510.00
By other than a small entity $1,020.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,025.00
By other than a small entity $2,050.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,540.00
By other than a small entity $3,080.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:
(1) unavoidable $680.00
(2) unintentional $1,600.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED January 22, 1997 DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,494,252	06/525,306	01/22/85
4,494,253	06/567,806	01/22/85
4,494,256	06/432,775	01/22/85
4,494,267	06/440,002	01/22/85
4,494,270	06/478,887	01/22/85
4,494,271	06/326,053	01/22/85
4,494,274	06/447,740	01/22/85
4,494,287	06/466,166	01/22/85
4,494,296	06/510,770	01/22/85
4,494,298	06/380,997	01/22/85
4,494,300	06/280,148	01/22/85
4,494,302	06/494,610	01/22/85
4,494,304	06/585,584	01/22/85
4,494,305	06/444,644	01/22/85
4,494,306	06/452,718	01/22/85
4,494,307	06/455,630	01/22/85
4,494,308	06/386,698	01/22/85
4,494,318	06/499,369	01/22/85
4,494,335	06/471,165	01/22/85
4,494,338	06/536,514	01/22/85
4,494,339	06/442,204	01/22/85
4,494,341	06/412,018	01/22/85
4,494,346	06/438,532	01/22/85
4,494,350	06/420,354	01/22/85
4,494,356	06/404,017	01/22/85
4,494,359	06/338,568	01/22/85
4,494,364	06/550,717	01/22/85
4,494,366	06/466,725	01/22/85
4,494,379	06/487,350	01/22/85
4,494,382	06/540,270	01/22/85
4,494,383	06/468,992	01/22/85
4,494,386	06/358,056	01/22/85
4,494,389	06/568,436	01/22/85
4,494,390	06/514,241	01/22/85
4,494,391	06/524,850	01/22/85
4,494,392	06/442,985	01/22/85
4,494,406	06/452,790	01/22/85
4,494,408	06/402,450	01/22/85
4,494,413	06/414,084	01/22/85
4,494,415	06/361,601	01/22/85
4,494,417	06/426,964	01/22/85
4,494,419	06/397,442	01/22/85
4,494,425	06/477,436	01/22/85
4,494,428	06/352,641	01/22/85
4,494,435	06/535,297	01/22/85
4,494,438	06/459,295	01/22/85
4,494,443	06/459,216	01/22/85
4,494,445	06/554,679	01/22/85
4,494,446	06/496,942	01/22/85
4,494,453	06/553,369	01/22/85
4,494,460	06/395,430	01/22/85
4,494,461	06/337,560	01/22/85
4,494,466	06/343,547	01/22/85
4,494,468	06/565,090	01/22/85
4,494,479	06/459,045	01/22/85
4,494,486	06/535,506	01/22/85
4,494,488	06/613,219	01/22/85
4,494,489	06/521,371	01/22/85

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4,494,500	06/383,511	01/22/85
4,494,503	06/456,807	01/22/85
4,494,504	06/386,611	01/22/85
4,494,506	06/463,044	01/22/85
4,494,508	06/541,824	01/22/85
4,494,516	06/530,759	01/22/85
4,494,522	06/490,342	01/22/85
4,494,532	06/498,142	01/22/85
4,494,550	06/338,507	01/22/85
4,494,551	06/441,175	01/22/85
4,494,561	06/431,078	01/22/85
4,494,568	06/526,732	01/22/85
4,494,569	06/487,873	01/22/85
4,494,570	06/472,128	01/22/85
4,494,572	06/430,077	01/22/85
4,494,573	06/379,992	01/22/85
4,494,579	06/549,930	01/22/85
4,494,580	06/421,317	01/22/85
4,494,581	06/467,905	01/22/85
4,494,582	06/482,150	01/22/85
4,494,584	06/445,741	01/22/85
4,494,589	06/408,172	01/22/85
4,494,590	06/430,500	01/22/85
4,494,591	06/531,978	01/22/85
4,494,592	06/476,356	01/22/85
4,494,593	06/481,288	01/22/85
4,494,603	06/543,551	01/22/85
4,494,606	06/496,349	01/22/85
4,494,618	06/430,986	01/22/85
4,494,621	06/415,841	01/22/85
4,494,623	06/408,685	01/22/85
4,494,626	06/440,847	01/22/85
4,494,634	06/336,021	01/22/85
4,494,646	06/435,326	01/22/85
4,494,648	06/409,186	01/22/85
4,494,651	06/484,321	01/22/85
4,494,655	06/349,688	01/22/85
4,494,663	06/568,325	01/22/85
4,494,664	06/470,535	01/22/85
4,494,666	06/550,367	01/22/85
4,494,684	06/396,834	01/22/85
4,494,690	06/491,110	01/22/85
4,494,700	06/552,809	01/22/85
4,494,701	06/430,190	01/22/85
4,494,704	06/457,476	01/22/85
4,494,709	06/526,901	01/22/85
4,494,713	06/391,577	01/22/85
4,494,720	06/330,716	01/22/85
4,494,721	06/463,528	01/22/85
4,494,732	06/439,655	01/22/85
4,494,745	06/331,245	01/22/85
4,494,746	06/431,238	01/22/85
4,494,748	06/335,651	01/22/85
4,494,751	06/433,678	01/22/85
4,494,758	06/592,180	01/22/85
4,494,761	06/485,042	01/22/85
4,494,764	06/461,622	01/22/85
4,494,767	06/373,844	01/22/85
4,494,771	06/523,964	01/22/85
4,494,772	06/494,081	01/22/85
4,494,775	06/431,832	01/22/85
4,494,776	06/496,883	01/22/85
4,494,787	06/517,146	01/22/85
4,494,790	06/373,167	01/22/85
4,494,793	06/419,156	01/22/85
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4,494,812	06/444,425	01/22/85
4,494,814	06/408,147	01/22/85
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4,494,888	06/400,663	01/22/85
4,494,891	06/378,304	01/22/85
4,494,893	06/475,399	01/22/85
4,494,900	06/486,707	01/22/85
4,494,905	06/386,318	01/22/85
4,494,907	06/362,824	01/22/85
4,494,910	06/360,214	01/22/85
4,494,915	06/317,501	01/22/85
4,494,916	06/439,058	01/22/85
4,494,922	06/511,650	01/22/85
4,494,929	06/475,489	01/22/85
4,494,935	06/566,715	01/22/85
4,494,937	06/465,700	01/22/85
4,494,948	06/395,209	01/22/85
4,494,956	06/559,121	01/22/85
4,494,957	06/493,314	01/22/85
4,494,958	06/519,703	01/22/85
4,494,968	06/538,325	01/22/85
4,494,969	06/538,326	01/22/85
4,494,975	06/446,291	01/22/85
4,494,994	06/479,715	01/22/85
4,494,998	06/411,953	01/22/85
4,495,003	06/456,982	01/22/85
4,495,008	06/353,444	01/22/85
4,495,012	06/505,310	01/22/85
4,495,014	06/467,649	01/22/85
4,495,017	06/478,880	01/22/85
4,495,018	06/514,154	01/22/85
4,495,020	06/466,555	01/22/85
4,495,024	06/491,318	01/22/85
4,495,033	06/285,354	01/22/85
4,495,036	06/512,263	01/22/85
4,495,037	06/545,255	01/22/85
4,495,044	06/591,089	01/22/85
4,495,048	06/379,472	01/22/85
4,495,056	06/368,976	01/22/85
4,495,061	06/302,014	01/22/85
4,495,069	06/463,041	01/22/85
4,495,073	06/544,209	01/22/85
4,495,080	06/521,014	01/22/85
4,495,085	06/582,782	01/22/85
4,495,089	06/416,763	01/22/85
4,495,092	06/577,433	01/22/85
4,495,098	06/504,694	01/22/85
4,495,100	06/504,693	01/22/85
4,495,102	06/414,717	01/22/85
4,495,105	06/473,836	01/22/85
4,495,106	06/408,100	01/22/85
4,495,117	06/476,385	01/22/85
4,495,120	06/319,363	01/22/85
4,495,130	06/481,976	01/22/85
4,495,143	06/535,462	01/22/85
4,495,153	06/374,413	01/22/85
4,495,158	06/584,846	01/22/85
4,495,173	06/318,878	01/22/85
4,495,178	06/539,458	01/22/85
4,495,182	06/382,763	01/22/85
4,495,189	06/364,753	01/22/85
4,495,192	06/490,167	01/22/85
4,495,194	06/441,204	01/22/85
4,495,196	06/294,327	01/22/85
4,495,197	06/380,984	01/22/85
4,495,204	06/517,800	01/22/85
4,495,205	06/538,591	01/22/85
4,495,207	06/436,541	01/22/85
4,495,211	06/434,185	01/22/85
4,495,216	06/400,884	01/22/85
4,495,225	06/591,676	01/22/85
4,495,226	06/558,212	01/22/85

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			4,495,605	06/283,323	01/22/85
			4,495,607	06/535,143	01/22/85
4,495,234	06/428,612	01/22/85	4,495,610	06/416,715	01/22/85
4,495,240	06/600,781	01/22/85	4,495,618	06/365,693	01/22/85
4,495,249	06/464,018	01/22/85	4,495,626	06/391,813	01/22/85
4,495,253	06/499,748	01/22/85	4,495,635	06/533,626	01/22/85
4,495,259	06/465,735	01/22/85	4,495,640	06/392,538	01/22/85
4,495,262	06/489,317	01/22/85	4,495,646	06/370,084	01/22/85
4,495,266	06/376,057	01/22/85	4,495,649	06/454,411	01/22/85
4,495,268	06/393,802	01/22/85	4,495,653	06/488,293	01/22/85
4,495,277	06/519,150	01/22/85	4,495,656	06/417,506	01/22/85
4,495,281	06/435,633	01/22/85	4,797,954	07/104,650	01/17/89
4,495,283	06/482,892	01/22/85	4,797,956	07/108,925	01/17/89
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4,495,337	06/469,528	01/22/85	4,797,993	07/074,949	01/17/89
4,495,342	06/535,460	01/22/85	4,797,995	06/939,322	01/17/89
4,495,343	06/501,395	01/22/85	4,798,000	07/014,589	01/17/89
4,495,347	06/439,446	01/22/85	4,798,001	07/115,936	01/17/89
4,495,349	06/512,497	01/22/85	4,798,004	07/061,070	01/17/89
4,495,362	06/439,188	01/22/85	4,798,005	07/191,713	01/17/89
4,495,371	06/513,800	01/22/85	4,798,011	07/128,153	01/17/89
4,495,389	06/387,287	01/22/85	4,798,013	06/886,090	01/17/89
4,495,390	06/534,583	01/22/85	4,798,015	07/059,874	01/17/89
4,495,393	06/332,978	01/22/85	4,798,020	07/005,590	01/17/89
4,495,397	06/310,511	01/22/85	4,798,025	07/067,047	01/17/89
4,495,399	06/354,546	01/22/85	4,798,031	07/115,990	01/17/89
4,495,403	06/531,426	01/22/85	4,798,032	07/158,709	01/17/89
4,495,407	06/362,613	01/22/85	4,798,036	07/071,021	01/17/89
4,495,408	06/376,235	01/22/85	4,798,037	07/029,369	01/17/89
4,495,412	06/402,509	01/22/85	4,798,040	07/030,015	01/17/89
4,495,417	06/435,787	01/22/85	4,798,041	07/011,926	01/17/89
4,495,426	06/335,028	01/22/85	4,798,044	07/089,282	01/17/89
4,495,431	06/525,185	01/22/85	4,798,057	07/022,816	01/17/89
4,495,435	06/402,174	01/22/85	4,798,059	07/092,540	01/17/89
4,495,436	06/394,737	01/22/85	4,798,060	06/947,030	01/17/89
4,495,443	06/574,479	01/22/85	4,798,061	07/168,400	01/17/89
4,495,447	06/266,645	01/22/85	4,798,065	07/053,843	01/17/89
4,495,451	06/385,301	01/22/85	4,798,066	07/152,636	01/17/89
4,495,463	06/351,763	01/22/85	4,798,067	07/079,521	01/17/89
4,495,469	06/442,328	01/22/85	4,798,071	07/063,298	01/17/89
4,495,472	06/443,194	01/22/85	4,798,078	07/059,703	01/17/89
4,495,476	06/414,365	01/22/85	4,798,085	06/403,263	01/17/89
4,495,477	06/372,386	01/22/85	4,798,088	07/170,757	01/17/89
4,495,478	06/467,061	01/22/85	4,798,091	06/941,352	01/17/89
4,495,480	06/331,595	01/22/85	4,798,095	07/039,952	01/17/89
4,495,482	06/504,770	01/22/85	4,798,096	07/094,686	01/17/89
4,495,487	06/437,073	01/22/85	4,798,101	07/008,255	01/17/89
4,495,495	06/340,017	01/22/85	4,798,102	07/052,478	01/17/89
4,495,496	06/330,976	01/22/85	4,798,106	06/941,206	01/17/89
4,495,503	06/350,481	01/22/85	4,798,108	06/605,467	01/17/89
4,495,504	06/471,552	01/22/85	4,798,109	07/100,013	01/17/89
4,495,507	06/459,076	01/22/85	4,798,110	06/318,042	01/17/89
4,495,512	06/385,740	01/22/85	4,798,115	07/058,469	01/17/89
4,495,514	06/517,568	01/22/85	4,798,117	07/117,471	01/17/89
4,495,522	06/395,638	01/22/85	4,798,124	07/026,304	01/17/89
4,495,523	06/459,556	01/22/85	4,798,128	07/072,860	01/17/89
4,495,528	06/394,942	01/22/85	4,798,138	07/142,994	01/17/89
4,495,530	06/324,764	01/22/85	4,798,140	07/090,975	01/17/89
4,495,534	06/465,098	01/22/85	4,798,141	07/082,777	01/17/89
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4,495,560	06/281,176	01/22/85	4,798,162	07/075,105	01/17/89
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4,495,572	06/346,856	01/22/85	4,798,170	07/053,716	01/17/89
4,495,574	06/391,705	01/22/85	4,798,176	07/081,312	01/17/89
4,495,580	06/248,803	01/22/85	4,798,179	07/062,889	01/17/89
4,495,586	06/402,872	01/22/85	4,798,184	06/931,536	01/17/89
4,495,589	06/419,996	01/22/85	4,798,188	07/126,638	01/17/89

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4,798,207	06/858,736	01/17/89	4,798,474	07/111,509	01/17/89
4,798,209	07/001,980	01/17/89	4,798,475	06/935,436	01/17/89
4,798,210	06/913,065	01/17/89	4,798,482	07/065,788	01/17/89
4,798,212	06/930,918	01/17/89	4,798,487	07/045,413	01/17/89
4,798,219	06/801,575	01/17/89	4,798,489	06/899,593	01/17/89
4,798,220	06/870,181	01/17/89	4,798,491	07/057,587	01/17/89
4,798,226	07/154,725	01/17/89	4,798,494	07/114,668	01/17/89
4,798,235	07/058,281	01/17/89	4,798,495	07/030,880	01/17/89
4,798,239	06/568,961	01/17/89	4,798,505	06/885,950	01/17/89
4,798,241	06/482,018	01/17/89	4,798,507	06/756,850	01/17/89
4,798,242	06/868,530	01/17/89	4,798,508	07/172,929	01/17/89
4,798,244	07/074,223	01/17/89	4,798,517	07/102,671	01/17/89
4,798,246	07/041,230	01/17/89	4,798,521	07/045,492	01/17/89
4,798,247	07/073,762	01/17/89	4,798,525	07/081,748	01/17/89
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4,798,261	06/881,911	01/17/89	4,798,533	07/202,453	01/17/89
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4,798,271	06/893,123	01/17/89	4,798,547	07/068,995	01/17/89
4,798,274	06/907,093	01/17/89	4,798,548	07/142,006	01/17/89
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4,798,278	07/076,703	01/17/89	4,798,557	07/099,855	01/17/89
4,798,280	06/528,263	01/17/89	4,798,565	07/072,026	01/17/89
4,798,281	06/864,092	01/17/89	4,798,569	07/187,509	01/17/89
4,798,284	07/058,193	01/17/89	4,798,587	07/124,575	01/17/89
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4,798,290	07/130,900	01/17/89	4,798,593	07/023,992	01/17/89
4,798,293	07/188,198	01/17/89	4,798,595	07/051,958	01/17/89
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4,798,302	07/174,205	01/17/89	4,798,602	06/836,261	01/17/89
4,798,311	06/865,724	01/17/89	4,798,605	07/076,177	01/17/89
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4,798,317	07/103,388	01/17/89	4,798,616	07/091,178	01/17/89
4,798,326	07/146,424	01/17/89	4,798,620	07/187,713	01/17/89
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4,798,331	07/137,716	01/17/89	4,798,623	07/157,669	01/17/89
4,798,332	07/191,773	01/17/89	4,798,627	06/918,245	01/17/89
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4,798,349	07/104,951	01/17/89	4,798,640	07/133,097	01/17/89
4,798,351	07/094,229	01/17/89	4,798,652	07/110,179	01/17/89
4,798,352	07/118,654	01/17/89	4,798,657	07/004,901	01/17/89
4,798,353	07/010,912	01/17/89	4,798,658	07/037,352	01/17/89
4,798,361	07/112,881	01/17/89	4,798,662	07/031,086	01/17/89
4,798,363	07/111,634	01/17/89	4,798,664	06/946,089	01/17/89
4,798,364	07/006,013	01/17/89	4,798,666	07/109,641	01/17/89
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4,798,373	06/802,156	01/17/89	4,798,670	07/105,878	01/17/89
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4,798,379	07/082,742	01/17/89	4,798,677	07/077,613	01/17/89
4,798,381	07/069,882	01/17/89	4,798,679	07/048,155	01/17/89
4,798,385	07/020,563	01/17/89	4,798,681	07/105,922	01/17/89
4,798,388	07/060,685	01/17/89	4,798,689	07/147,449	01/17/89
4,798,390	06/905,063	01/17/89	4,798,692	06/857,741	01/17/89
4,798,395	06/897,383	01/17/89	4,798,700	07/005,656	01/17/89
4,798,397	07/053,745	01/17/89	4,798,701	07/072,486	01/17/89
4,798,398	07/084,681	01/17/89	4,798,705	07/013,223	01/17/89
4,798,403	07/100,605	01/17/89	4,798,708	07/157,756	01/17/89
4,798,404	06/598,327	01/17/89	4,798,709	07/059,363	01/17/89
4,798,410	07/108,647	01/17/89	4,798,710	07/096,526	01/17/89
4,798,411	07/071,219	01/17/89	4,798,712	06/707,989	01/17/89
4,798,413	07/048,514	01/17/89	4,798,713	07/138,620	01/17/89
4,798,416	07/072,169	01/17/89	4,798,714	06/915,403	01/17/89
4,798,417	07/096,678	01/17/89	4,798,720	06/932,089	01/17/89
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4,798,425	07/158,717	01/17/89	4,798,731	06/771,671	01/17/89
4,798,431	07/129,797	01/17/89	4,798,732	07/119,945	01/17/89
4,798,433	07/156,518	01/17/89	4,798,734	07/009,039	01/17/89
4,798,444	07/061,421	01/17/89	4,798,741	06/941,793	01/17/89
4,798,446	07/095,715	01/17/89	4,798,742	07/039,735	01/17/89
4,798,453	07/124,085	01/17/89	4,798,743	06/865,187	01/17/89
4,798,456	07/029,313	01/17/89	4,798,748	06/917,590	01/17/89
4,798,459	07/123,318	01/17/89	4,798,750	07/113,958	01/17/89
4,798,461	07/034,426	01/17/89	4,798,761	07/116,593	01/17/89

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4,798,762	07/004,722	01/17/89
4,798,763	06/884,785	01/17/89
4,798,768	07/105,921	01/17/89
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4,798,782	07/003,481	01/17/89
4,798,786	06/375,710	01/17/89
4,798,791	06/671,967	01/17/89
4,798,792	06/774,026	01/17/89
4,798,798	06/524,131	01/17/89
4,798,800	06/664,538	01/17/89
4,798,805	06/845,684	01/17/89
4,798,808	06/838,737	01/17/89
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4,798,828	06/694,607	01/17/89
4,798,830	06/909,135	01/17/89
4,798,831	07/190,183	01/17/89
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4,798,848	07/190,326	01/17/89
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4,798,864	07/105,233	01/17/89
4,798,867	07/139,303	01/17/89
4,798,869	06/927,985	01/17/89
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4,798,874	07/183,308	01/17/89
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4,798,881	07/150,852	01/17/89
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4,798,910	06/921,630	01/17/89
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4,799,188	06/840,662	01/17/89
4,799,191	06/840,660	01/17/89
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4,799,203	07/058,505	01/17/89
4,799,218	06/836,623	01/17/89
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5,179,737	07/801,008	01/19/93
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5,179,747	07/835,362	01/19/93
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5,179,755	07/816,575	01/19/93
5,179,756	07/776,218	01/19/93
5,179,768	07/930,355	01/19/93
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5,179,787	07/710,327	01/19/93
5,179,788	07/881,197	01/19/93
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5,179,797	07/797,997	01/19/93
5,179,798	07/625,748	01/19/93
5,179,802	07/659,373	01/19/93
5,179,807	07/793,173	01/19/93
5,179,808	07/900,416	01/19/93
5,179,811	07/620,769	01/19/93
5,179,814	07/885,741	01/19/93
5,179,819	07/729,936	01/19/93
5,179,821	07/645,747	01/19/93
5,179,822	07/753,600	01/19/93
5,179,823	07/882,756	01/19/93
5,179,824	07/736,423	01/19/93

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5,179,825	07/774,326	01/19/93
5,179,826	07/575,362	01/19/93
5,179,828	07/618,082	01/19/93
5,179,831	07/561,093	01/19/93
5,179,840	07/595,896	01/19/93
5,179,845	07/717,476	01/19/93
5,179,849	07/703,733	01/19/93
5,179,856	07/686,988	01/19/93
5,179,859	07/661,557	01/19/93
5,179,865	07/825,894	01/19/93
5,179,868	07/844,785	01/19/93
5,179,872	07/775,278	01/19/93
5,179,873	07/756,540	01/19/93
5,179,874	07/775,396	01/19/93
5,179,876	07/678,658	01/19/93
5,179,883	07/737,810	01/19/93
5,179,887	07/679,296	01/19/93
5,179,888	07/679,566	01/19/93
5,179,891	07/911,709	01/19/93
5,179,893	07/760,618	01/19/93
5,179,894	07/603,633	01/19/93
5,179,899	07/595,358	01/19/93
5,179,904	07/732,646	01/19/93
5,179,907	07/783,325	01/19/93
5,179,911	07/868,857	01/19/93
5,179,916	07/806,357	01/19/93
5,179,919	07/789,666	01/19/93
5,179,921	07/828,017	01/19/93
5,179,922	07/614,592	01/19/93
5,179,923	07/545,787	01/19/93
5,179,940	07/676,541	01/19/93
5,179,941	07/651,231	01/19/93
5,179,944	07/760,525	01/19/93
5,179,955	07/706,323	01/19/93
5,179,960	07/746,412	01/19/93
5,179,964	07/753,116	01/19/93
5,179,974	07/926,529	01/19/93
5,179,975	07/782,375	01/19/93
5,179,979	07/705,318	01/19/93
5,179,980	07/754,571	01/19/93
5,179,987	07/671,093	01/19/93
5,179,988	07/755,657	01/19/93
5,179,989	07/521,725	01/19/93
5,179,992	07/755,750	01/19/93
5,179,993	07/674,987	01/19/93
5,179,995	07/646,806	01/19/93
5,180,005	07/900,574	01/19/93
5,180,006	07/900,411	01/19/93
5,180,012	07/710,083	01/19/93
5,180,014	07/655,086	01/19/93
5,180,015	07/592,686	01/19/93
5,180,017	07/754,031	01/19/93
5,180,020	07/785,647	01/19/93
5,180,021	07/288,019	01/19/93
5,180,030	07/846,021	01/19/93
5,180,032	07/848,073	01/19/93
5,180,034	07/624,698	01/19/93
5,180,035	07/796,330	01/19/93
5,180,045	07/612,683	01/19/93
5,180,052	07/756,152	01/19/93
5,180,059	07/598,623	01/19/93
5,180,062	07/817,454	01/19/93
5,180,063	07/792,662	01/19/93
5,180,066	07/871,130	01/19/93
5,180,071	07/645,269	01/19/93
5,180,083	07/751,136	01/19/93
5,180,084	07/700,701	01/19/93
5,180,087	07/517,571	01/19/93
5,180,095	07/888,032	01/19/93
5,180,099	07/731,878	01/19/93
5,180,101	07/837,808	01/19/93
5,180,113	07/648,225	01/19/93
5,180,114	07/852,405	01/19/93
5,180,115	07/515,700	01/19/93
5,180,116	07/447,373	01/19/93
5,180,117	07/537,640	01/19/93
5,180,120	07/663,878	01/19/93
5,180,123	07/804,407	01/19/93
5,180,124	07/825,678	01/19/93
5,180,125	07/563,110	01/19/93
5,180,126	07/814,419	01/19/93
5,180,128	07/760,900	01/19/93
5,180,132	07/796,338	01/19/93
5,180,134	07/442,496	01/19/93
5,180,140	07/663,954	01/19/93
5,180,142	07/702,358	01/19/93
5,180,146	07/670,307	01/19/93
5,180,152	07/788,877	01/19/93
5,180,153	07/788,876	01/19/93
5,180,161	07/419,108	01/19/93
5,180,162	07/766,056	01/19/93
5,180,168	07/836,753	01/19/93
5,180,170	07/745,545	01/19/93
5,180,171	07/909,793	01/19/93
5,180,175	07/659,221	01/19/93
5,180,176	07/742,242	01/19/93
5,180,185	07/758,111	01/19/93
5,180,210	07/685,054	01/19/93
5,180,212	07/682,077	01/19/93
5,180,216	07/681,277	01/19/93
5,180,220	07/807,492	01/19/93
5,180,221	07/649,957	01/19/93
5,180,223	07/876,033	01/19/93
5,180,249	07/683,815	01/19/93
5,180,251	07/714,250	01/19/93
5,180,255	07/706,642	01/19/93
5,180,257	07/627,462	01/19/93
5,180,262	07/705,853	01/19/93
5,180,263	07/843,217	01/19/93
5,180,264	07/817,176	01/19/93
5,180,267	07/761,418	01/19/93
5,180,269	07/708,878	01/19/93
5,180,270	07/716,226	01/19/93
5,180,274	07/763,561	01/19/93
5,180,275	07/706,583	01/19/93
5,180,282	07/766,249	01/19/93
5,180,286	07/587,955	01/19/93
5,180,288	07/773,897	01/19/93
5,180,291	07/874,317	01/19/93
5,180,296	07/798,997	01/19/93
5,180,299	07/873,817	01/19/93
5,180,305	07/498,686	01/19/93
5,180,309	07/621,420	01/19/93
5,180,310	07/779,326	01/19/93
5,180,311	07/643,310	01/19/93
5,180,321	07/771,109	01/19/93
5,180,324	07/897,416	01/19/93
5,180,330	07/715,979	01/19/93
5,180,333	07/783,159	01/19/93
5,180,337	07/792,905	01/19/93
5,180,338	07/869,240	01/19/93
5,180,343	07/808,536	01/19/93
5,180,347	07/725,424	01/19/93
5,180,349	07/728,091	01/19/93
5,180,350	07/657,406	01/19/93
5,180,358	07/762,029	01/19/93
5,180,369	07/827,366	01/19/93
5,180,372	07/763,788	01/19/93
5,180,374	07/817,538	01/19/93
5,180,375	07/694,748	01/19/93
5,180,378	07/613,110	01/19/93
5,180,381	07/765,014	01/19/93
5,180,383	07/773,210	01/19/93
5,180,386	07/695,691	01/19/93
5,180,390	07/738,093	01/19/93
5,180,393	07/852,556	01/19/93
5,180,397	07/599,113	01/19/93
5,180,404	07/690,899	01/19/93
5,180,405	07/895,722	01/19/93
5,180,417	07/684,703	01/19/93
5,180,418	07/732,988	01/19/93
5,180,421	07/667,107	01/19/93
5,180,429	07/796,343	01/19/93
5,180,430	07/777,854	01/19/93
5,180,437	07/791,346	01/19/93
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5,180,455	07/741,555	01/19/93
5,180,457	07/660,819	01/19/93
5,180,460	07/791,020	01/19/93
5,180,463	07/454,343	01/19/93
5,180,466	07/681,473	01/19/93
5,180,469	07/756,574	01/19/93
5,180,483	07/766,254	01/19/93
5,180,485	07/757,375	01/19/93
5,180,488	07/654,728	01/19/93
5,180,489	07/754,564	01/19/93
5,180,490	07/828,555	01/19/93
5,180,491	07/711,330	01/19/93
5,180,492	07/716,287	01/19/93
5,180,493	07/760,590	01/19/93
5,180,494	07/593,158	01/19/93
5,180,497	07/757,893	01/19/93
5,180,499	07/599,024	01/19/93
5,180,505	07/712,547	01/19/93
5,180,506	07/760,135	01/19/93
5,180,516	07/727,022	01/19/93
5,180,537	07/751,831	01/19/93
5,180,538	07/720,780	01/19/93
5,180,541	07/683,188	01/19/93
5,180,546	07/777,465	01/19/93
5,180,547	07/776,727	01/19/93
5,180,560	07/887,376	01/19/93
5,180,582	07/836,861	01/19/93
5,180,603	07/788,300	01/19/93
5,180,615	07/450,646	01/19/93
5,180,633	07/628,430	01/19/93
5,180,639	07/744,043	01/19/93
5,180,655	07/534,296	01/19/93
5,180,661	07/167,542	01/19/93
5,180,677	07/215,396	01/19/93
5,180,681	07/781,096	01/19/93
5,180,693	07/556,078	01/19/93
5,180,698	07/687,897	01/19/93
5,180,700	07/698,872	01/19/93
5,180,702	07/805,233	01/19/93
5,180,717	07/697,301	01/19/93
5,180,718	07/718,894	01/19/93
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5,180,731	07/732,169	01/19/93
5,180,735	07/575,559	01/19/93
5,180,736	07/702,660	01/19/93
5,180,741	07/713,697	01/19/93
5,180,748	07/458,950	01/19/93
5,180,755	07/721,405	01/19/93
5,180,759	07/185,997	01/19/93
5,180,775	07/819,696	01/19/93
5,180,778	07/574,073	01/19/93
5,180,779	07/623,656	01/19/93
5,180,783	07/633,397	01/19/93
5,180,787	07/617,379	01/19/93
5,180,788	07/651,987	01/19/93
5,180,796	07/485,008	01/19/93
5,180,797	07/633,351	01/19/93
5,180,799	07/631,016	01/19/93
5,180,800	07/695,223	01/19/93
5,180,811	07/193,661	01/19/93
5,180,813	07/328,227	01/19/93
5,180,819	07/455,614	01/19/93
5,180,821	07/847,835	01/19/93
5,180,823	07/773,184	01/19/93
5,180,826	07/854,536	01/19/93
5,180,840	07/657,095	01/19/93
5,180,848	07/788,909	01/19/93
5,180,855	07/690,829	01/19/93
5,180,856	07/745,979	01/19/93
5,180,861	07/595,914	01/19/93
5,180,864	07/516,870	01/19/93
5,180,866	07/676,492	01/19/93
5,180,868	07/577,781	01/19/93
5,180,869	07/699,533	01/19/93
5,180,874	07/751,551	01/19/93
5,180,876	07/714,560	01/19/93
5,180,894	07/540,069	01/19/93
5,180,895	07/671,831	01/19/93
5,180,902	07/701,794	01/19/93
5,180,905	07/816,130	01/19/93
5,180,916	07/756,694	01/19/93
5,180,940	07/752,580	01/19/93
5,180,944	07/645,946	01/19/93
5,180,949	07/679,974	01/19/93
5,180,959	07/742,790	01/19/93
5,180,964	07/734,066	01/19/93
5,180,973	07/748,122	01/19/93
5,180,979	07/772,401	01/19/93
5,180,980	07/711,127	01/19/93
5,180,981	07/616,522	01/19/93
5,180,985	07/717,604	01/19/93
5,180,996	07/791,739	01/19/93
5,181,000	07/822,864	01/19/93
5,181,001	07/704,192	01/19/93
5,181,009	07/604,866	01/19/93
5,181,010	07/656,113	01/19/93
5,181,013	07/417,512	01/19/93
5,181,022	07/640,973	01/19/93
5,181,025	07/705,472	01/19/93
5,181,033	07/844,032	01/19/93
5,181,034	07/875,646	01/19/93
5,181,036	07/819,901	01/19/93
5,181,041	07/724,694	01/19/93
5,181,074	07/671,173	01/19/93
5,181,092	07/672,933	01/19/93
5,181,098	07/761,866	01/19/93
5,181,103	07/811,334	01/19/93
5,181,120	07/836,952	01/19/93
5,181,135	07/632,398	01/19/93
5,181,138	07/829,793	01/19/93
5,181,139	07/787,620	01/19/93
5,181,140	07/675,851	01/19/93
5,181,150	07/677,196	01/19/93
5,181,151	07/685,652	01/19/93
5,181,154	07/861,913	01/19/93
5,181,158	07/805,023	01/19/93
5,181,159	07/855,111	01/19/93
5,181,164	07/804,970	01/19/93
5,181,168	07/510,908	01/19/93
5,181,170	07/816,381	01/19/93
5,181,172	07/436,237	01/19/93
5,181,178	07/582,204	01/19/93
5,181,186	07/789,410	01/19/93
5,181,191	07/799,582	01/19/93
5,181,193	07/430,132	01/19/93
5,181,195	07/700,866	01/19/93
5,181,208	07/447,578	01/19/93
5,181,212	07/816,514	01/19/93
5,181,220	07/691,864	01/19/93
5,181,248	07/641,681	01/19/93
5,181,258	07/465,232	01/19/93
5,181,266	07/849,260	01/19/93
5,181,270	07/742,815	01/19/93

Patents Reinstated Due to the Acceptance of a Late Maintenance Fee From 1/17/97

Patent Number	Serial Number	Filing Date	Issue Date	Granted Date
4,492,299	06/398,135	07/14/82	01/08/85	01/22/97
4,662,786	06/783,679	10/03/85	05/05/87	01/21/97
4,667,920	06/787,074	10/15/85	05/26/87	01/22/97
4,775,936	06/846,225	03/31/86	10/04/88	01/23/97
4,826,246	07/081,193	08/04/87	05/02/89	01/21/97
4,964,188	07/376,415	07/06/89	10/23/90	01/23/97
4,978,133	07/428,959	10/30/89	12/18/90	01/21/97
5,047,928	07/292,927	01/03/89	09/10/91	01/23/97
5,128,100	07/746,159	08/14/91	07/07/92	01/21/97
5,145,549	07/747,791	08/19/91	09/08/92	01/21/97
5,145,807	07/545,794	06/29/90	09/08/92	01/21/97

Patents Reinstated Due to the Acceptance of a Late Maintenance Fee From 1/24/97

Patent Number	Serial Number	Filing Date	Issue Date	Granted Date
4,378,520	06/232,695	02/09/81	03/29/83	01/31/97
4,402,770	06/314,325	10/23/81	09/06/83	01/27/97
4,414,653	06/400,912	07/22/82	11/08/83	01/28/97
4,458,260	06/323,200	11/20/81	07/03/84	01/30/97
4,463,368	06/323,199	11/20/81	07/31/84	01/30/97
4,469,330	06/337,881	01/07/82	09/04/84	01/29/97
4,477,431	06/225,005	01/14/81	10/16/84	01/30/97
4,651,536	06/570,233	08/19/83	03/24/87	01/31/97
4,675,924	06/836,726	03/06/86	06/30/87	01/27/97
4,685,145	06/679,622	12/07/84	08/04/87	01/27/97
4,685,446	06/582,118	02/21/84	08/11/87	01/30/97
4,688,276	06/836,828	03/06/86	08/25/87	01/30/97
4,700,209	06/792,915	10/30/85	10/13/87	01/31/97
4,716,533	06/726,263	04/23/85	12/29/87	01/27/97
4,732,679	06/905,972	09/11/86	03/22/88	01/29/97
4,746,438	07/103,462	10/01/87	05/24/88	01/31/97
4,759,623	06/872,527	06/10/86	07/26/88	01/27/97
4,778,283	06/947,717	12/30/86	10/18/88	01/27/97
4,942,395	07/088,579	08/24/87	07/17/90	01/24/97
4,960,017	07/372,831	06/29/89	10/02/90	01/31/97
4,970,625	07/344,457	04/28/89	11/13/90	01/31/97
4,977,775	07/456,725	12/26/89	12/18/90	01/27/97
4,986,274	07/453,123	12/04/89	01/22/91	01/30/97
4,989,605	07/331,181	03/31/89	02/05/91	01/29/97
5,002,058	07/340,050	04/18/89	03/26/91	01/31/97
5,006,936	07/268,614	11/02/88	04/09/91	01/28/97
5,028,492	07/492,149	03/13/90	07/02/91	01/24/97
5,057,385	07/627,406	12/14/90	10/15/91	01/28/97
5,060,262	07/519,856	05/07/90	10/22/91	01/27/97
5,060,301	07/561,949	08/02/90	10/22/91	01/24/97
5,062,731	07/476,741	02/08/90	11/05/91	01/31/97
5,088,229	07/563,530	08/06/90	02/18/92	01/31/97
5,099,678	07/559,667	07/30/90	03/31/92	01/30/97
5,104,735	07/354,019	05/08/89	04/14/92	01/27/97
5,114,504	07/609,377	11/05/90	05/19/92	01/29/97
5,114,709	07/713,875	06/12/91	05/19/92	01/29/97
5,125,190	07/524,130	05/16/90	06/30/92	01/27/97
5,131,685	07/782,629	10/25/91	07/21/92	01/27/97
5,132,671	07/439,278	11/20/89	07/21/92	01/27/97
5,133,428	07/680,524	04/04/91	07/28/92	01/28/97
5,135,537	07/639,185	01/09/91	08/04/92	01/27/97
5,137,669	07/695,924	05/24/91	08/11/92	01/27/97
5,147,110	07/617,832	11/26/90	09/15/92	01/31/97
5,149,222	07/771,652	10/04/91	09/22/92	01/31/97
5,158,979	07/340,344	04/19/89	10/27/92	01/31/97
5,552,995	08/158,125	11/24/93	09/03/96	01/31/97

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

5,125,174, Re. S.N. 08/566,277, Dec. 1, 1995, Cl. 37/231, REMOVABLE SNOWPLOW ASSEMBLY WITH PIVOTABLE LIFT STAND, Gary E. Watson, Owner of Record: *DD Merger Corp., Milwaukee, Wis.*, Attorney or Agent: Joseph A. Gemignani, Ex. Gp.: 3501

5,349,384, Re. S.N. 08/715,084, Sept. 19, 1996, Cl. 348/405, APPARATUS AND METHODS FOR TRANSMITTING COMPRESSED DIGITAL IMAGE SIGNALS, Masaki Oquro, Owner of Record: *Sony Corp.*, Attorney or Agent: William S. Frommer, Ex. Gp.: 2615

5,376,376, Re. S.N. 08/777,360, Dec. 27, 1996, Cl. 424/443, RESORBABLE VASCULAR WOUND DRESSINGS, Shu-Tung Li, Owner of Record: *Inventor*, Attorney or Agent: Y. Rocky Tsao, Ex. Gp.: 1502

5,383,681, Re. S.N. 08/787,128, Jan. 24, 1997, Cl. 280/728, OCCUPANT RESTRAINT SYSTEM, Izumi Sato, Owner of Record: *Nihon Polast Co. Ltd., Fuji City, Japan*, Attorney or Agent: Richard L. Schwaab, Ex. Gp.: 3106

5,384,570, Re. S.N. 08/788,030, Jan. 23, 1997, Cl. 341/172, VOLTAGE STORAGE CIRCUITS, Ian J. Dedic, Owner of Record: *Fujitsu Ltd., Kawasaki-Shi, Japan*, Attorney or Agent: Ilene D. Altman, Ex. Gp.: 2104

5,390,509, Re. S.N. 08/796,295, Feb. 7, 1997, TRIPLE EFFECT ABSORPTION CYCLE APPARATUS, Uwe Rockenfeller, et. al., Owner of Record: *Rocky Research, Boulder City, Colo.*, Attorney or Agent: Jerry R. Seiler, Ex. Gp.:

5,392,376, Re. S.N. 08/775,706, Dec. 17, 1996, Cl. 385/144, GALLIUM SULFIDE GLASSES, Bruce G. Aitken, et. al., Owner of Record: *Corning Inc., Corning, N.Y.*, Attorney or Agent: Michael L. Goldman, Ex. Gp.: 1108

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,215,646, Reexam. No. 90/004,545, Feb. 10, 1997, Cl. 116/070, LOW PRESSURE DIFFERENTIAL DETECTING WHISTLE/DEVICE, Douglas J. Williams, Owner of Record: *Inventor*, Attorney or Agent: Merchant Gould Smith Edell Welter & Schmidt, Los Angeles, Calif., Ex. Gp.: 3108, Requester: Owner

4,401,418, Reexam. No. 90/004,548, Feb. 12, 1997, Cl. 417/312, MUFFLER SYSTEM FOR REFRIGERATION COMPRESSOR, Jack F. Fritchman, Owner of Record: *White Consolidated Industries, Inc., Cleveland, Ohio*, Attorney or Agent: Pearne Gordon McCoy & Granger, Cleveland, Ohio, Ex. Gp.: 3403, Requester: Owner

4,690,862, Reexam. No. 90/004,549, Feb. 13, 1997, Cl. 428/318.6, INTEGRAL COMPOSITE PROFILE OF CELLULAR AND NON-CELLULAR RESINS AND A DUAL EXTRUSION METHOD FOR ITS MANUFACTURE, Daniel J. Hoffman, Owner of Record: *Gossen Corp., Milwaukee, Wis.*, Attorney or Agent: Brett A. Hesterberg, Leydig, Voit & Mayer, Chicago, Ill., Ex. Gp.: 1314, Requester: Marley Mouldings, Inc., c/o Hugh A. Abrams, Sidley & Austin, Chicago, Ill.

4,994,291, Reexam. No. 90/004,546, Feb. 11, 1997, Cl. 426/399, METHOD FOR THE ULTRAPASTEURIZATION OF LIQUID WHOLE EGG, Kenneth R. Swartzel, et. al., Owner of Record: *North Carolina State University, Raleigh, N.C.*, Attorney or Agent: James Meyers, Bell Seltzer Park & Gibson, Raleigh, N.C., Ex. Gp.: 1302, Requester: Sunny Fresh Foods, Inc. c/o Morgan L. Fitch, Jr., Fitch, Even, Tabin & Flannery, Chicago, Ill.

5,074,437, Reexam. No. 90/004,551, Feb. 14, 1997, Cl. 222/079, PINCH TRIGGER PUMP WATER GUN, Bruce M. D'Andrade, et. al., Owner of Record: *Larami, Ltd., Mt. Laurel, N.J.*, Attorney or Agent: Panitch Schwarze Jacobs & Nadel, Phila., Pa., Ex. Gp.: 3104, Requester: Alan B. Amron, Syosset, N.Y.

5,117,160, Reexam. No. 90/004,547, Feb. 11, 1997, Cl. 315/326, RARE GAS DISCHARGE LAMP, Tsutomu Konda, et. al., Owner of Record: *Nec Corp., Tokyo, Japan & Nec Home Electronics Ltd., Osaka, Japan*, Attorney or Agent: J. Warren Whitesel, Laff, Whitesel, Conte & Suret, Chicago, Ill., Ex. Gp.: 2502, Requester: Oliff & Berridge, Alexandria, Va.

5,568,385, Reexam. No. 90/004,550, Feb. 14, 1997, Cl. 364/420, SOFTWARE SYSTEM FOR COLLECTING AND DISPLAYING WEATHER INFORMATION, William A. Shelton, Owner of Record: *The International Weather Network, Sparks, N.Y.*, Attorney or Agent: Townsend and Townsend and Crew, San Francisco, Calif., Ex. Gp.: 2411, Requester: Roland H. Shubert, Reston, Va. (Requester is: Automated Weather Source)

Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED December 23, 1996 DUE TO FAILURE TO RENEW

Reg. Number	Serial Number	Reg. Date
109,137	71/088,293	03/21/1916
109,170	71/090,151	03/21/1916
333,284	71/367,863	03/17/1936
333,293	71/367,131	03/17/1936
333,299	71/365,049	03/17/1936
333,312	71/371,334	03/17/1936
333,318	71/371,136	03/17/1936
333,327	71/363,517	03/17/1936
333,353	71/371,668	03/17/1936
333,355	71/371,688	03/17/1936
333,367	71/340,941	03/17/1936
333,391	71/371,955	03/17/1936
610,534	71/627,772	08/16/1955
610,632	71/671,898	08/16/1955
611,782	71/667,776	09/06/1955
613,557	71/656,244	10/04/1955
615,525	71/671,982	11/08/1955
616,335	71/630,409	11/15/1955
620,000	71/683,659	01/24/1956
620,112	71/667,507	01/24/1956
623,296	71/674,666	03/20/1956
623,298	71/684,730	03/20/1956
623,299	71/686,520	03/20/1956
623,300	71/687,203	03/20/1956
623,303	71/691,764	03/20/1956
623,309	71/690,922	03/20/1956
623,312	71/683,475	03/20/1956
623,315	71/682,735	03/20/1956
623,321	71/686,351	03/20/1956
623,325	71/670,416	03/20/1956
623,327	71/683,629	03/20/1956
623,328	71/683,630	03/20/1956
623,333	71/691,845	03/20/1956
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623,338	71/689,926	03/20/1956
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623,351	71/686,959	03/20/1956
623,355	71/691,574	03/20/1956
623,358	71/668,052	03/20/1956
623,377	71/650,227	03/20/1956
623,393	71/680,935	03/20/1956
623,396	71/681,495	03/20/1956
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623,410	71/684,855	03/20/1956
623,417	71/689,370	03/20/1956
623,424	71/689,927	03/20/1956
623,430	71/691,652	03/20/1956
623,433	71/642,744	03/20/1956
623,438	71/673,832	03/20/1956
623,439	71/675,180	03/20/1956
623,449	71/692,217	03/20/1956
623,450	71/692,387	03/20/1956

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623,462	71/672,305	03/20/1956
623,463	71/682,080	03/20/1956
623,472	71/664,327	03/20/1956
623,480	71/688,335	03/20/1956
623,494	71/678,409	03/20/1956
623,496	71/681,797	03/20/1956
623,497	71/691,994	03/20/1956
623,508	71/661,699	03/20/1956
623,513	71/688,336	03/20/1956
623,520	71/677,022	03/20/1956
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623,526	71/685,606	03/20/1956
623,529	71/686,392	03/20/1956
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623,555	71/688,535	03/20/1956
623,556	71/689,032	03/20/1956
623,575	71/686,804	03/20/1956
623,576	71/687,034	03/20/1956
623,578	71/687,449	03/20/1956
623,602	71/689,988	03/20/1956
623,603	71/689,989	03/20/1956
623,611	71/643,168	03/20/1956
623,612	71/670,912	03/20/1956
623,613	71/672,785	03/20/1956
623,614	71/673,309	03/20/1956
623,617	71/677,204	03/20/1956
623,619	71/680,343	03/20/1956
623,621	71/681,412	03/20/1956
623,625	71/685,529	03/20/1956
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623,627	71/687,537	03/20/1956
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623,686	71/654,990	03/20/1956
623,697	71/675,412	03/20/1956
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623,710	71/684,510	03/20/1956
623,713	71/695,654	03/20/1956
623,723	71/679,574	03/20/1956
623,731	71/684,424	03/20/1956
623,739	71/695,522	03/20/1956
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1,035,668	73/031,319	03/16/1976
1,035,672	73/034,939	03/16/1976
1,035,673	73/035,298	03/16/1976
1,035,681	73/041,240	03/16/1976
1,035,683	73/043,111	03/16/1976
1,035,689	73/050,357	03/16/1976
1,035,694	73/055,713	03/16/1976
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1,035,780	73/051,417	03/16/1976
1,035,784	73/050,964	03/16/1976
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1,035,806	73/052,291	03/16/1976
1,035,810	73/029,793	03/16/1976
1,035,811	73/044,325	03/16/1976
1,035,816	73/016,826	03/16/1976
1,035,821	73/038,955	03/16/1976
1,035,824	73/040,697	03/16/1976
1,035,825	73/041,622	03/16/1976
1,035,826	73/041,696	03/16/1976
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1,035,829	73/044,335	03/16/1976
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1,035,832	73/049,548	03/16/1976
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1,035,867	73/036,652	03/16/1976
1,035,869	73/038,261	03/16/1976
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1,035,872	73/042,351	03/16/1976
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1,035,875	73/044,200	03/16/1976
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1,035,902	73/038,063	03/16/1976
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1,035,906	73/044,499	03/16/1976
1,035,908	73/018,473	03/16/1976
1,035,913	73/041,265	03/16/1976
1,035,915	73/041,269	03/16/1976
1,035,917	73/039,619	03/16/1976
1,035,922	73/041,192	03/16/1976
1,035,925	73/018,476	03/16/1976
1,035,926	73/027,513	03/16/1976
1,035,927	73/029,239	03/16/1976
1,035,929	73/045,218	03/16/1976
1,035,930	73/057,297	03/16/1976
1,035,936	73/043,622	03/16/1976
1,035,938	73/047,500	03/16/1976
1,035,942	73/032,780	03/16/1976
1,035,943	73/033,252	03/16/1976
1,035,945	73/040,824	03/16/1976
1,035,946	73/041,435	03/16/1976
1,035,948	73/047,150	03/16/1976
1,035,950	73/047,687	03/16/1976
1,035,952	73/049,324	03/16/1976
1,035,954	72/465,637	03/16/1976
1,035,956	72/457,233	03/16/1976
1,035,960	72/445,776	03/16/1976
1,035,975	72/463,034	03/16/1976
1,035,978	72/449,916	03/16/1976
1,035,985	72/464,660	03/16/1976
1,035,986	72/438,121	03/16/1976
1,035,988	73/024,518	03/16/1976
1,035,993	72/461,596	03/16/1976
1,036,501	73/059,528	03/30/1976

Erratum

In the list of expired patents, appearing at 1194 O.G. 569-571 (January 7, 1997), patent numbers 5,518,020 through 5,519,711 should be 5,158,020 through 5,159,711.

Service by Publication

A petition to cancel the registrations identified below having been filed, and the notice of such proceeding sent by certified mail to registrants at their last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days of this publication, the cancellation will proceed as in the case of default.

Glamourtop Corp., Pinson, Ala., Reg. No. 1,067,217, for the mark "GLAMOURTOP AND DESIGN", Canc. No. 25,471.

Scheflin-Reich, Inc., New York, N.Y., Reg. No. 1,274,398, for the mark "BLACK ONYX", Canc. No. 25,145.

The Greenhouse Body Garden, Inc., Encino, Calif., Reg. No. 1,784,708, for the mark "GREENHOUSE BODY GARDEN", Canc. No. 25,584.

JEAN BROWN
Technical Support Manager,
Trademark Trial
and Appeal Board, for
ROBERT M. ANDERSON
Deputy Assistant Commissioner
for Trademarks

Certificates of Correction
For the Week of April 1, 1997

P. 09,784	D. 376,454	D. 376,675	4,849,471
D. 373,866	D. 376,667	4,788,082	5,046,903

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5,601,048

Summary of Final Decisions
Issued by the
Trademark Trial and Appeal Board
February 2-7, 1997

Date Issued	Type of Case(1)	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
2-2	EX	74/321,118	EBS Nominees Ltd.	2(d)	Refusal Affirmed (as to both cited registrations)		"EBS" [computer hardware, computer programs, etc., exclusively for electronic foreign exchange brokering and market trading, financial services, namely, brokerage services exclusively in the field of foreign currency exchange]	"EBS" [banking services] and "EBS" [electronic banking and interchange network services for financial institutions]	No
2-2	EX	74/287,593	Benj. Shir, Inc.	2(d)	Refusal Reversed		"RETREADS ECOLOGY FOOTGEAR" [shoes]	"I *[+ heart design]* ECOLOGY" [athletic footwear]	No
2-2	OPP OPP	77,875 77,892	Idea Courier Inc. and I.D.E. Corp. v. U.S. Robotics, Inc.	2(d); affirmative defenses (including laches, acquiescence, and estoppel)	Oppositions Sustained	"COURIER" (both trademark and trade name use) [video display terminals]	"COURIER" [modems]; "COURIER HST" [modems]		No
2-2	EX (R)	74/411,900	Hoechst AG	2(e)(4)	Request for Reconsideration Denied [Refusal Affirmed]		"HOECHST" [plastic fibers, film, and sheet and microporous film and hollow fibers, for general industrial use; synthetic fibers and filaments, such as acetate staple; acetate yarn]		No
2-2	EX	74/404,336	Edward Shaw	2(d)	Refusal Affirmed		"DINOSAUR HUNTERS" [board games]	"THE GREAT DINOSAUR HUNT" (and design) [board games]	No
2-2	EX	74/373,897	Angus Brands, Inc.	2(a) [deceptive]	Refusal Affirmed		"ANGUS BRAND" (and design) [processed meats, namely, roast beef, corned beef, and pastrami]		No

(1)EX = EX PARTE APPEAL; OPP = OPPOSITION; CANC = CANCELLATION; CU = CONCURRENT USE; (SJ) = SUMMARY JUDGMENT; (R) = REQ. FOR RECONSIDERATION

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
2-4	CANC	22,244	R.M.S. Ltd. N.Y.C. Inc. v. Titanic Ventures and RMS Titanic, Inc.	abandonment [note: case decided on issue of lack of proof of standing]	Petition to Cancel Denied		"WHITE STAR" (and design) [hats, caps, and tee shirts]		No
2-4	OPP	95,721	Steven Alan Lippert dba Jinx Clothing Co. v. Bernard Thomas Dlugokeski	2(d)	Opposition Sustained	"JINX" and "JINX CLOTHING CO." [clothing (including t-shirts)]	"JINX LTD." (and design) [clothing, namely, pre-assembled bandanna style headwear, jeans, t-shirts, and sweatshirts]		No
2-5	EX (R)	74/530,482	Outdoor Entertainment, Inc.	Section 6 disclaimer requirement (of term "OUTDOOR ENTERTAINMENT")	Request for Reconsideration Denied [Refusal Affirmed]		"OUTDOOR ENTERTAINMENT" (and design) [entertainment services, namely, television programming]		No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SJ)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION

SPECIAL BOXES FOR PATENT MAIL

Special box designations should be used to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Such mail is forwarded to the appropriate area without being opened. Only the specified type of document should be placed in an envelope addressed to one of these special boxes. If any documents other than the specified type identified for each special box are addressed to that box, they will be significantly delayed in reaching the appropriate area for which they are intended.

Please address mail as follows:

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Washington, D.C. 20231

Box Designations	Explanation
Box 7	Reissue applications for patents involved in litigation and subsequently filed related papers.
Box 12	Contributions to the Examiner Education Program.
Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box Comments Patents	Public comments regarding patent related regulations and procedures.
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD	Disclosure Documents or materials related to the Disclosure Document Program.
Box Design	The filing of all design patent applications and any communications relating thereto.
Box FWC	Requests for File Wrapper Continuation Applications (under 37 CFR 1.62).
Box Issue Fee	All communications following the receipt of a PTOL-85, "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments are the exception. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
Box Missing Parts	Response to the Notice to File Missing Parts of Application and associated papers and fees.
Box MPEP	Submissions concerning the Manual of Patent Examining Procedures.
Box Non-Fee Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box PATENT APPLICATION	New patent applications and associated papers and fees.
Box Patent Ext.	Applications for patent term extension and any communications relating thereto.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Provisional Patent Application	The filing of all provisional patent applications and any communications relating thereto.
Box Reconstruction	Correspondence pertaining to the reconstruction of lost patent files.
Box Reexam	Requests for Reexamination for *original* request papers *only*.
Box Sequence	Submission of diskette for biotechnical application.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return post card or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

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Assistant Commissioner for Trademarks
2900 Crystal Drive
Arlington, Virginia 22202-3513

Box Designations	Explanation
Box NEW APP FEE	New trademark applications and fees.
Box ITU FEE	Statements of Use (SOUs) and extension requests.
Box TTAB FEE	Oppositions, cancellation petitions, and ex parte appeals.
Box TTAB NO FEE	Interferences, motions, and extension requests.
Box STATUS NO FEE	Written status inquiries.
Box POST REG FEE	Affidavits, renewals, corrections and amendments.
Box RESPONSES NO FEE	Responses to Examining Attorneys' Office actions and Post Registration actions.

SPECIAL BOXES APPLICABLE TO *BOTH* PATENT AND TRADEMARK MAIL

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Washington, D.C. 20231

Box Designations	Explanation
Box 3	Mail for the Office of Personnel from NFC.
Box 4	Mail for the Deputy Assistant Secretary of Commerce and Deputy Commissioner of Patents and Trademarks; Office of Legislative and International Affairs.
Box 6	Mail for the Office of Procurement.
Box 8	All papers for the Office of the Solicitor *except* communications relating to *pending litigation and disciplinary proceedings*; papers relating to pending litigation in court cases shall be mailed only to Office of the Solicitor, P.O. Box 15667, Arlington, Virginia 22215 and papers relating to pending disciplinary proceedings before the Administrative Law Judge or the Commissioner shall be mailed only to the Office of the Solicitor, P.O. Box 16116, Arlington, Virginia 22215.
Box 9	Coupon orders for U.S. patent and trademark copies.
Box 10	Orders for certified copies of PTO documents.
Box 11	Electronic Ordering Service (EOS).
Box 13	Mail for the Employee and Labor Relations Division.
Box 14	Mail directed to the APS Contracts Office.
Box 16	Deposit Account Replenishment Checks.
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box Assignment	All assignment documents except those filed with new applications.
Box EEO	Mail for the Office of Civil Rights.
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box M Fee	Correspondence regarding patent maintenance fees and related matter.
Box OED	Mail for the Office of Enrollment and Discipline.

Reference Collections of U.S. Patents and Trademarks Available for Public Use in Patent and Trademark Depository Libraries

The following libraries, designated as Patent and Trademark Depository Libraries (PTDLs), receive patent and trademark information in various formats from the U.S. Patent and Trademark Office. Many PTDLs have on file all full-text patents issued since 1790, trademarks published since 1872, and select collections of foreign patents. All PTDLs have both the patent and trademark sections of the *Official Gazette of the U.S. Patent and Trademark Office*. The full-text utility and design patents are distributed numerically on 16 mm microfilm, and plant patents on color microfiche. Patent and trademark search systems on CD-ROM (Compact Disc-Read Only) format are available at all PTDLs to increase utilization of and enhance access to the information found in patents and trademarks. It is through the CD-ROM systems that preliminary patent and trademark searches can be conducted through the numerically arranged collections.

All information is available for use by the public free of charge.

In addition, each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials. Facilities for making paper copies of patent and trademark information are generally provided for a fee.

Since there are variations in the scope of patent and trademark collections among the PTDLs, and their hours of service to the public vary, anyone contemplating use of these collections at a particular library is urged to contact that library in advance about its collections, services, and hours in order to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(334) 844-1747
	Birmingham Public Library	(205) 226-3620
Alaska	Anchorage: Z.J. Loussac Public Library	(907) 562-7323
Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7010
Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 228-7220
	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
	San Francisco Public Library	(415) 557-4500
	Sunnyvale Center for Innovation, Invention and Ideas	(408) 730-7290
Colorado	Denver Public Library	(303) 640-6249
Connecticut	New Haven: Science Park Library	(203) 786-5447
Delaware	Newark: University of Delaware Library	(302) 831-2965
Dist. of Columbia	Washington: Howard University Libraries	(202) 806-7252
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami-Dade Public Library	(305) 375-2665
	Orlando: University of Central Florida Libraries	(407) 823-2562
	Tampa Campus Library, University of South Florida	(813) 974-2726
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Hawaii	Honolulu: Hawaii State Public Library System	(808) 586-3477
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 747-4450
	Springfield: Illinois State Library	(217) 782-5659
Indiana	Indianapolis-Marion County Public Library	(317) 269-1741
	West Lafayette Siegesmund Engineering Library, Purdue University	(317) 494-2872
Iowa	Des Moines: State Library of Iowa	(515) 281-4118
Kansas	Wichita: Ablah Library, Wichita State University	(316) 689-3155
Kentucky	Louisville Free Public Library	(502) 574-1611
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maine	Orono: Raymond H. Fogler Library, University of Maine	(207) 581-1678
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 405-9157
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Media Union Library, University of Michigan	(313) 647-5735
	Big Rapids: Abigail S. Timme Library, Ferris State University	(616) 592-3602
	Detroit: Great Lakes Patent and Trademark Center	(313) 833-3379
Minnesota	Minneapolis Public Library and Information Center	(612) 372-6570
Mississippi	Jackson: Mississippi Library Commission	(601) 359-1036
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4281
Nebraska	Lincoln: Engineering Library, University of Nebraska-Lincoln	(402) 472-3411
Nevada	Reno: University of Nevada, Reno Library	(702) 784-6500 Ext. 257
New Hampshire	Concord: New Hampshire State Library	(603) 271-2239
New Jersey	Newark Public Library	(201) 733-7782
	Piscataway: Library of Science and Medicine, Rutgers University	(908) 445-2895
New Mexico	Albuquerque: University of New Mexico General Library	(505) 277-4412
New York	Albany: New York State Library	(518) 474-5355
	Buffalo and Erie County Public Library	(716) 858-7101

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State	*Name of Library*	*Telephone Contact*
	New York Public Library (The Research Libraries)	(212) 592-7000
North Carolina	Raleigh: D.H. Hill Library, North Carolina State University	(919) 515-3280
North Dakota	Grand Forks: Chester Fritz Library, University of North Dakota	(701) 777-4888
Ohio	Akron - Summit County Public Library	(303) 643-9075
	Cincinnati and Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6175
	Toledo/Lucas County Public Library	(419) 259-5212
Oklahoma	Stillwater: Oklahoma State University Center for International Trade Development	(405) 744-7086
Oregon	Portland: Paul L. Boley Law Library, Lewis & Clark College	(503) 768-6786
Pennsylvania	Philadelphia, The Free Library of	(215) 686-5331
	Pittsburgh, Carnegie Library of	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Puerto Rico	Mayaquez General Library, University of Puerto Rico	(787) 832-4040 Ext. 3459
Rhode Island	Providence Public Library	(401) 455-8027
South Carolina	Clemson University Libraries	(803) 656-3024
South Dakota	Rapid City: Devereaux Library, South Dakota School of Mines and Technology	(605) 394-6822
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8877
	Nashville: Stevenson Science Library, Vanderbilt University	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 495-4500
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-3826
	Dallas Public Library	(214) 670-1468
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
	Lubbock: Texas Tech University	Not Yet Operational
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Vermont	Burlington: Bailey/Howe Library, University of Vermont	Not Yet Operational
Virginia	Richmond: James Branch Cabell Library, Virginia Commonwealth University	(804) 828-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
West Virginia	Morgantown: Evansdale Library, West Virginia University	(304) 293-2510
Wisconsin	Madison: Kurt F. Wendt Library, University of Wisconsin Madison	(608) 262-6845
	Milwaukee Public Library	(414) 286-3051
Wyoming	Casper: Natrona County Public Library	(307) 237-4935

PATENT EXAMINING CORPS

BRUCE A. LEHMAN, Commissioner
LAWRENCE J. GOFFNEY Jr., Assistant Commissioner for Patents
EDWARD R. KAZENSKE, Deputy Assistant Commissioner for Patents
STEPHEN G. KUNIN, Deputy Assistant Commissioner for Patent Policy

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, ENGINEERING AND DESIGNS, GROUP 1100—JOHN E. KITTLE, Director	308-0661	11/30/95
ORGANIC CHEMISTRY, DRUG, BIO-AFFECTING AND BODY TREATING COMPOSITION, GROUP 1200—RICHARD V. FISHER, Director	308-1235	09/12/95
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—JOHN F. TERAPANE, Director	308-0651	09/22/95
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—THEODORE MORRIS, Director	308-2351	10/19/95
BIOTECHNOLOGY, GROUP 1800—JOHN J. DOLL, Director	308-0196	03/07/95
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—STEWART LEVY, Director	308-1782	03/31/95
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	07/12/95
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—JOSEPH J. ROLLA, Director	305-9600	06/13/95
SPECIAL COMPUTER APPLICATIONS: COMPUTER GRAPHICS, BUSINESS PRACTICES, & DIAGNOSTIC TESTING, GROUP 2400—GERALD GOLDBERG, Director	305-3800	06/22/95
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	06/20/95
TELECOMMUNICATIONS, GROUP 2600—NICHOLAS P. GODICI, Director	305-4700	04/26/95
DESIGN, GROUP 2900—JOHN E. KITTLE, Director	308-0661	04/24/95
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—MARGARET FOCARINO, Director	308-1113	08/23/95
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—ETHEL CROSS, Director	308-1148	08/02/95
MEDICAL INSTRUMENTS, DIAGNOSTIC EQUIPMENT AND TREATMENT DEVICES; SURGERY AND SURGICAL SUPPLIES; AMUSEMENT AND EXERCISING DEVICES; ANIMAL HUSBANDRY; SPORTING GOODS; TOBACCO PRODUCTS AND MANUFACTURING EQUIPMENT; AND PRINTING, GROUP 3300—J.J. LOVE, Director	308-0858	10/03/95
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	08/07/95
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-1021	10/24/95

*A communication from the examiner should have been received in most applications filed prior to this date.

Patents will Expire as Follows:
(1) The term of any utility or plant patent that is in force on or results from an application filed before June 8, 1995 is the greater of the 20 year term provided in 35 U.S.C. 154(a)(2) or 17 years from grant subject to any terminal disclaimers. 35 U.S.C. 154(c)(1).
(2) All utility and plant patents granted on applications having an actual United States filing date on or after June 8, 1995 are granted for a term which begins on the date on which the patent is granted and ends 20 years from the date on which the application was filed in the United States. If the application contains a specific reference to an earlier application under 35 U.S.C. 120, 121 or 365(c), the patent term ends twenty years from that date on which the earliest application was filed. 35 U.S.C. 154(a)(2).
(3) All design patents are granted for a term of 14 years from the date of the grant.
However, the term of any patent may have been curtailed by disclaimer under the provisions of 35 U.S.C. 153, have lapsed due to failure to pay maintenance fees, or have been extended under the provisions of 35 U.S.C. 154, 155, or 156. Thus, if more reliable information is needed with respect to a particular patent, then the specific patent file should be reviewed to determine the actual date of patent expiration.

TRADEMARK OPERATION

Bruce A. Lehman, Commissioner
Philip G. Hampton, II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Office
Condition of Trademark Applications as of February 1, 1997

Law Office	Oldest Date: New*	Oldest Date: Amendment Filed
Law Office 101—Ron Williams, Managing Attorney, (703) 308–9101—4th Floor Foods, Beverages, Wines & Spirits—Int. Classes 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/09/96	11/21/96
Law Office 102—Myra Kurzbard, Managing Attorney, (703) 308–9102—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	06/24/96	09/06/96
Law Office 103—Kathryn Erskine, Managing Attorney, (703) 308–9103—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/08/96	12/26/96
Law Office 104—Sidney Moskowitz, Managing Attorney, (703) 308–9104—6th Floor Unwrought metals, Industrial Equipment, Tools, Installation, Vehicles, Firearms, Musical Instruments, Building Materials & Floor Coverings—Int. Classes 6, 7, 8, 11, 12, 13, 15, 19, 27 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/06/96	11/08/96
Law Office 105—Thomas Howell, Managing Attorney, (703) 308–9105—6th Floor Chemicals, Paints, Lubricants, Pharmaceuticals, Medical Apparatus & Tobacco—Int. Classes 1, 2, 4, 5, 10, 34 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/06/96	10/10/96
Law Office 106—Mary Sparrow, Managing Attorney, (703) 308–9106—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/07/96	09/27/96
Law Office 107—Thomas Lamone, Managing Attorney, (703) 308–9107—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/26/96	11/22/96
Law Office 108—David Shallant, Managing Attorney, (703) 308–9108—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/28/96	12/06/96
Law Office 109—Deborah Cohn, Managing Attorney, (703) 308–9109—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/31/96	11/15/96
**Collective Marks—Class 200		
**Certification Marks—Classes A & B		
Office of Trademark Services—Terron Simms, Director, (703) 308-9100		
Trademark Assistance Center—(703) 308-9000		
Pre-Examination—Alan Lambert, Supervisor, (703) 308-9401 ext. 188		
Intent-To-Use—(ITU)—(703) 308-9500		
Post Registration Section—Mary Bowman, Supervisor, (703) 308-9500 ext. 126		
Affidavits Under Sections 8 & 15 (All Classes)	12/13/96	—0—
Renewals (All Classes)	11/14/96	—0—
Section 12(c) Publications (All Classes)	07/26/96	—0—

1. ** Assigned to all Law Office

2. Applicants with inquiries concerning the status of their applications and a touch telephone should call (703) 305–8747 from 6:30 a.m. to Midnight EST, Monday through Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquiries concerning the status of their applications. See SECTION 411 of the TRADEMARK MANUAL OF EXAMINING PROCEDURE.

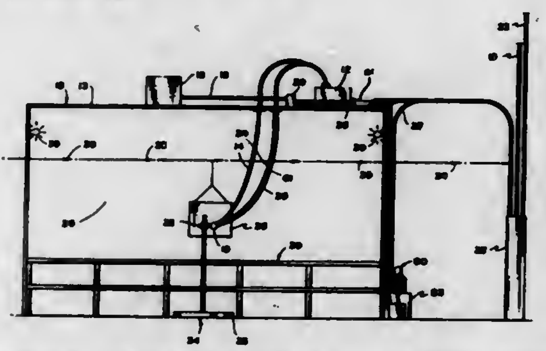
3. * These dates identify the oldest unassigned new case in each Law Office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examining attorney.

REEXAMINATIONS

APRIL 1, 1997

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,761,299 (3164th)
METHOD AND APPARATUS FOR ELECTROSTATIC SPRAY COATING
Patrick A. Hufstetler, Mt. Clemens, and James E. Hynds, W. Bloomfield, both of Mich., assignors to Ransburg Corporation, Indianapolis, Ind.
Reexamination Request No. 90/002,914, Dec. 31, 1992.
Reexamination Certificate for Patent 4,761,299, issued Aug. 2, 1988, Ser. No. 33,028, Mar. 31, 1987.
Int. Cl.⁶ B05D *1/04*
U.S. Cl. 427—483



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **9** and **10** is confirmed.

Claims **1–8** and **11–21** are cancelled.

1. A method for electrostatically spray-coating an article in a coating zone with a liquid coating material, the method comprising the steps of:
supplying air to an atomizing device having a spray head;
supplying the liquid coating material to the atomizing device;
utilizing the air entering the atomizing device to atomize the liquid coating material with the air at the spray head, the air having a flow rate in excess of 5 CFM at the spray head and a delivery pressure of less than 15 psi over atmospheric pressure at the spray head; and
creating an electrical charge differential between the atomized liquid coating material and the article in the coating zone for causing the atomized liquid coating material to be directed to the article.

B1 4,912,056 (3165th)
TREATMENT OF DENIM WITH CELLULASE TO PRODUCE A STONE WASHED APPEARANCE
Lynne A. Olson, Mendota Heights, Minn., assignor to IVAX Industries, Inc., Horsham, Pa.
Reexamination Request No. 90/003,775, Apr. 3, 1995.
Reexamination Certificate for Patent 4,912,056, issued Mar. 27, 1990, Ser. No. 283,563, Dec. 8, 1988.
Division of Ser. No. 96,953, Sep. 15, 1987, Pat. No. 4,832,864.
The portion of the term of this patent subsequent to May 23, 2006, has been disclaimed.
Int. Cl.⁶ D06M *16/00;* **C12N** *9/96;9/42*
U.S. Cl. 435—263

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–18** is confirmed.

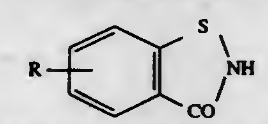
1. A method of forming, in unsewn dyed denim fabric or in a newly manufactured garment made of a dyed denim fabric, localized areas of variation in color density through the removal of dye that provide a stone washed appearance, which method consists essentially of:
(1) contacting the unsewn fabric or garment with an aqueous composition consisting essentially of:
(a) a major proportion of water;
(b) at least about 2500 CMC units of a cellulase enzyme composition per liter of aqueous composition; and
(2) subjecting the unsewn fabric or garment to mechanical action for a sufficient time for said cellulase enzyme to produce variations in color substantially the same as the stone washed appearance produced by pumice stone processing.

B1 4,915,943 (3166th)
COMPOSITIONS CONTAINING BIOSYNTHETIC PESTICIDE PRODUCTS, PROCESSES FOR THEIR PRODUCTION AND USE
Ignace Gago, Braine-l'Alleud; Lucien Charmoille, Brussels, and Rene Detroz, Ohain, all of Belgium, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark
Reexamination Request No. 90/004,091, Jan. 5, 1996.
Reexamination Certificate for Patent 4,915,943, issued Apr. 10, 1990, Ser. No. 244,384, Sep. 14, 1988.
Claims priority, application France, Sep. 14, 1987, 87 12738
Int. Cl.⁶ A61K *35/74;31/025*
U.S. Cl. 424—93.46

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–12** is confirmed.

1. A composition containing a biosynthetic pesticide product non-toxic to warm-blooded and cold-blooded animals derived from a microorganism of the family Bacillaceae microorganism not to include vegetative cells of said microorganism itself as said pesticide in the form of solid particles in suspension in a liquid, comprising at least one substance of general formula (I):


(I)

in which R represents a hydrogen atom, a halogen atom, or a salt deriving from this substance.

B1 5,116,969 (3167th)
ULTRAREFINED ARABINOGALACTAN PRODUCT
Mark F. Adams, and Melvin R. Knudson, both of Tacoma, Wash., assignors to Larex International, Inc., Duluth, Minn.
Reexamination Request No. 90/003,859, Jun. 5, 1995.
Reexamination Certificate for Patent 5,116,969, issued May 26, 1992, Ser. No. 514,961, Apr. 26, 1990.
Int. Cl.⁶ C07H *1/00;* **C08B** *37/00*
U.S. Cl. 536—128

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **7–10** and **11** is confirmed.

Claims **1–6** are determined to be patentable as amended.

New claim **12** is added and determined to be patentable.

1. A highly refined arabinogalactan [polymer] *derived from a*

tree of the Larix genus, the arabinogalactan having a molecular weight *distribution* within the range of *between* about 6,000 to 2,500,000 and a tannic acid equivalent no greater than about 0.5 mg/g, said [polymer] *arabinogalactan* further having the property of making negligible contribution to solution osmolality in solutions as high as 50% concentration by weight.

STATUTORY INVENTION REGISTRATIONS

PUBLISHED APRIL 1, 1997

A statutory invention registration is not a patent. It has the defensive attributes of a patent but does not have the enforceable attributes of a patent. No article or advertisement or the like may use the term patent, or any term suggestive of a patent, when referring to a statutory invention registration. For more specific information on the rights associated with a statutory invention registration see 35 U.S.C. 157.

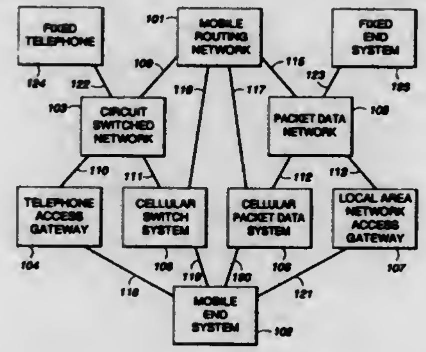
H1641
CONNECTION OF MOBILE DEVICES TO HETEROGENOUS NETWORKS

Duane R. Sharman, Calgary, Canada, assignor to GTE Mobile Communications Service Corporation, Atlanta, Ga.

Filed Nov. 30, 1993, Ser. No. 159,283

Int. Cl.⁶ H04Q *7/22*

U.S. Cl. 379—60 23 Claims



1. An apparatus for connecting a mobile end system to a communications network comprising:

a mobile end system incorporating storage means and having assigned thereto a first unique identity code;

an interface device including a first transmission means and having assigned thereto a second unique identity code, said interface device being linked to said mobile end system via a first communications channel; and

data switch means including a second transmission means and having assigned thereto a third unique identity code, said data switch means being linked to said interface device via a second communications channel and being additionally linked to a communications network via a third communications channel;

wherein said mobile end system communicates with said interface device by transmitting at least said first unique identity code thereto and wherein said interface device communicates with said data switch by transmitting at least said first and second unique identity codes thereto and said data switch means communicates said third unique identity code as well as said first and second unique identity codes to said communications network.

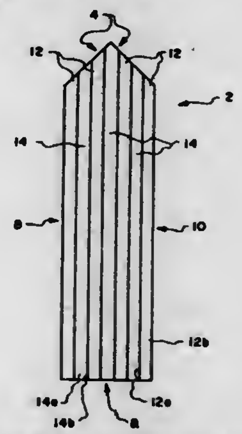
H1642
WEAR AND IMPACT TOLERANT PLOW BLADE

James F. Jenkins, Ventura, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 20, 1995, Ser. No. 405,750

Int. Cl.⁶ F16L *1/12*

U.S. Cl. 405—159 4 Claims



1. A marine plow blade for cutting a trench in the ocean of floors and having a leading edge comprising:

a) a plurality of first homogenous layers extending from the leading edge of the plow blade rearwardly, the first homogenous layers having abrasion resistant characteristics;

b) a plurality of second homogenous layers extending from said leading edge of said plow blade rearwardly, the second homogenous layers having impact resistant characteristics, said first homogenous layers and said second homogenous layers alternatingly positioned across said leading edge of said plow blade.

H1643
DUCTILE METAL LIGAMENT FIBER COATINGS FOR CERAMIC COMPOSITES

Randall S. Hay, Beavercreek, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 10, 1996, Ser. No. 637,338

Int. Cl.⁶ C04B *35/03*

U.S. Cl. 501—95 5 Claims

1. An improved method for fabricating ceramic composites of ceramic reinforcing fiber and ceramic matrix, which comprises the steps of (a) coating the fiber with a metal which is stable under oxidizing conditions from about room temperature to about 1800° C., (b) coating the metal-coated fiber with a fugitive phase, (c) incorporating the coated fiber into a matrix material, (d) densifying the fiber-matrix into a composite and (e) heat treating the composite under oxidizing conditions to remove the fugitive phase.

REISSUES

APRIL 1, 1997

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

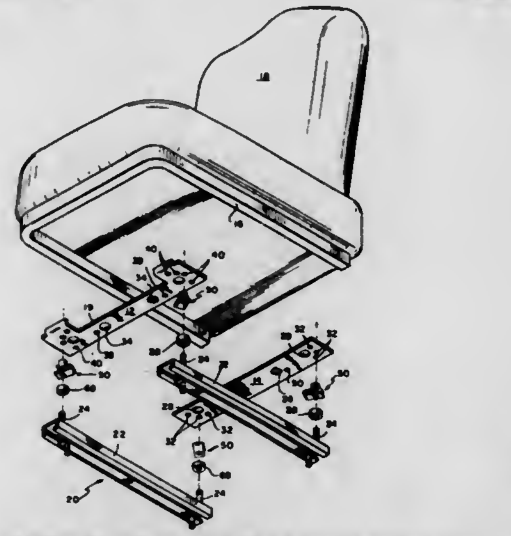
Re. 35,485
UNI–BRACE

David A. Stewart, Elkhart, Ind., assignor to Atwood Industries, Inc., Rockford, Ill.

Original No. 5,244,178, dated Sep. 14, 1993, Ser. No. 896,814, Jun. 11, 1992. Application for reissue Sep. 8, 1994, Ser. No. 302,623

Int. Cl.^{6} F16M *13/00*

U.S. Cl. 248—429 **11 Claims**



7. A mechanism for attaching a vehicle seat frame to a pair of vehicle seat slide adjusters, the slide adjusters being attachable to the seat frame, wherein the mechanism comprises:

at least one bracket assembly attached to the vehicle seat frame; wherein the bracket assembly includes at least two engagement hole patterns therein, each engagement hole pattern comprising four engagement holes defining a generally rectangular pattern, and wherein at least two of the engagement hole patterns have different length and width dimensions;

each of the slide adjusters having two mounting bolts secured to the slide adjusters; and

a clip which is engageable with an engagement hole and at least one of the mounting bolts to facilitate the attachment of the vehicle slide adjuster to the vehicle seat frame.

Re. 35,486
CIRCUITAL ARRANGEMENT FOR PREVENTING LATCHUP IN TRANSISTORS WITH INSULATED COLLECTORS

Franco Bertotti, Milan, and Paolo Ferrari, Gallarate, both of Italy, assignors to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, Italy

Original No. 5,185,649, dated Feb. 9, 1993, Ser. No. 675,558, Mar. 26, 1991. Application for reissue Feb. 9, 1995, Ser. No. 390,883

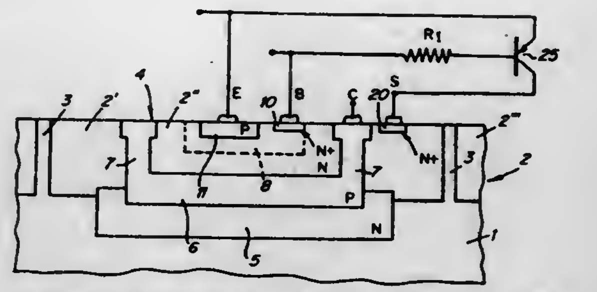
Claims priority, application Italy, Mar. 29, 1990, 19862 A/90

Int. Cl.^{6} H01L *29/00*

U.S. Cl. 257—555 **53 Claims**

21. A circuit for preventing latch-up in a first PNP transistor having an emitter, a base, and a collector formed within an N-type region, the circuit comprising:

a second PNP transistor having an emitter and a base respectively coupled to the emitter and the base of the first PNP transistor and having a collector coupled to the N-type region.



Re. 35,487

Patent Not Issued For This Number

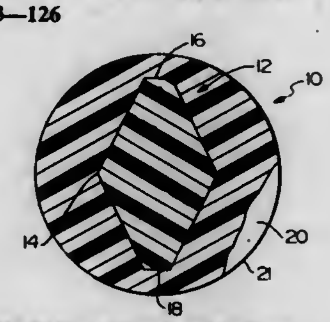
Re. 35,488
BOWLING BALL

Richard Sposato, Syracuse, N.Y., assignor to Lane No. 1, Inc., E. Syracuse, N.Y.

Original No. 5,238,245, dated Aug. 24, 1993, Ser. No. 923,606, Aug. 3, 1992. Application for reissue Aug. 24, 1995, Ser. No. 518,655

Int. Cl.^{6} A63B *37/14*

U.S. Cl. 473—126 **9 Claims**



1. A bowling ball consisting essentially of:

a) a solid body having a substantially spherical outer surface and a first homogenous density;

b) said body including one or more concentric layers, the inner most of said layers being a solid sphere and any other layers being of substantially constant thickness, surrounding and contacting the next inner layer, each of said layers being of predetermined homogenous density; and

c) a single, elongated weight member integrally positioned within and entirely surrounded by said body, said weight member being substantially symmetrical about a central, linear axis and having first and second terminal ends, a maximum cross-section at an intermediate axial position between said first and second ends, a [second homogeneous] density substantially greater than said first homogenous density and said predetermined homogenous density, an inward taper extending over at least a portion of its length from said intermediate axial position to each of said first and second ends, and a non-circular cross-section in all planes parallel to said linear axis.

Re. 35,489

Patent Not Issued For This Number

PLANT PATENTS

GRANTED APRIL 1, 1997

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

9,841
PEACH TREE NAMED 'EDWARDS AMBROSIA'
Mack H. Edwards, P.O. Box 469, Springville, Calif. 93265
Filed Sep. 15, 1995, Ser. No. 529,034
Int. Cl.^{6} A01H *5/00*
U.S. Cl. Plt.—42.1 **1 Claim**

1. This is a new, and distinct variety of white fleshed peach tree, as described and illustrated, as grown under the ecological conditions prevailing near Springville, Tulare County, Calif., this peach is characterized by its late ripening time of approximately August 23, its tendency to bear on young trees, its ability to produce large sweet fruit every year, its high soluble solids and its nearly pubescence free skin; and, the tree has vigorous upright growth that is tolerant of peach leaf curl and produces large yellow and red attractive fruit.

9,842
PEACH TREE 'EARLITREAT'
Chris F. Zaiger, 929 Grimes Ave.; Leith M. Gardner, 1207 Grimes Ave.; Gary N. Zaiger, 1907 Elm Ave., and Grant G. Zaiger, 4005 California Ave., all of Modesta, Calif. 95358
Filed Sep. 5, 1995, Ser. No. 523,532
Int. Cl.^{6} A01H *5/00*
U.S. Cl. Plt.—43.1 **1 Claim**

1. A new and distinct variety of peach tree, substantially as illustrated and described, which is of large size, vigorous, upright in growth and a productive and regular bearer of early maturing, yellow flesh, clingstone fruit with good flavor and eating quality, the fruit is further characterized by having an attractive red blush, having firm flesh with good handling and shipping quality and in comparison to may Crest Peach (U.S. Plant Pat. No. 4,064) the new variety requires less winter chilling and the fruit is approximately 14 days earlier in maturity.

9,843
CHRYSANTHEMUM PLANT NAMED 'SPRING DELANO'
John A. Van Koeveringe, 5th St., R.R. #3, St. Catherines, Ontario, Canada
Filed Aug. 7, 1995, Ser. No. 512,012
Int. Cl.^{6} A01H *5/00*
U.S. Cl. Plt.—76 **1 Claim**

1. A new and distinct Chrysanthemum plant named Spring Delano as described and illustrated.

9,844
CHRYSANTHEMUM PLANT NAMED 'WHITE CINDERELLA'
Cornelis P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio
Filed Sep. 7, 1995, Ser. No. 525,317
Int. Cl.^{6} A01H *5/00*
U.S. Cl. Plt.—77 **1 Claim**

1. A new and distinct Chrysanthemum plant named White Cinderella, as described and illustrated.

9,845
CHRYSANTHEMUM PLANT NAMED 'WHITE CHERIE'
Susan M. Polys, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio
Filed Sep. 5, 1995, Ser. No. 523,289
Int. Cl.^{6} A01H *5/00*
U.S. Cl. Plt.—82.1 **1 Claim**

1. A new and distinct Chrysanthemum plant named White Cherie, as described and illustrated.

9,846
DAHLIA PLANT NAMED LIZZY
Henry C. J. Lommerse, P.O. Box 22, 1601 BM Enkhuizen, Netherlands
Filed Jun. 14, 1994, Ser. No. 260,451
Int. Cl.^{6} A01H *5/00*
U.S. Cl. Plt.—87.8 **1 Claim**

1. A new and distinct cultivar of Dahlia plant named Lizzy, as illustrated and described.

9,847
315 BUFFALOGRASS
Terrance P. Riordan; Susan A. de Shazer Steele, both of Lincoln, Nebr.; Milton C. Engelke, Parker, Tex.; Leonard A. Wit, Jr., Bennet; Frederick P. Baxendale, Lincoln, both of Nebr.; Jeana L. F. Svoboda, Altus, Okla.; Jennifer M. Johnson-Cicalese, and Edward J. Kinbacher, both of Lincoln, Nebr., assignors to Board of Regents, University of Nebraska Lincoln
Filed May 17, 1995, Ser. No. 442,845
Int. Cl.^{6} A01H *5/00*
U.S. Cl. Plt.—90 **1 Claim**

1. A new and distinct perennial female buffalograss plant substantially distinguished by its heat, drought and cold tolerance, excellent dark green color, high density, wear tolerance, low maintenance requirements and slow rate of establishment as herein shown and described.

9,848
'BA-74-114' KENTUCKY BLUEGRASS
Virgil D. Meier, and Eugene W. Mayer, both of Marysville, Ohio, assignors to OMS Investments, Inc., Wilmington, Del.
Filed Sep. 25, 1995, Ser. No. 532,995
Int. Cl.^{6} A01H *5/00*
U.S. Cl. Plt.—90.2 **1 Claim**

1. A variety of Kentucky Bluegrass plant, substantially as shown and described, characterized by a medium to high level of resistance to a broad spectrum of serious diseases, including leaf spot and melting out disease, dollar spot, rusts, stripe smut and powdery mildew; a dark green color throughout the growing season; medium to high quality turf formation under a wide variety of environmental conditions; a moderately wide blade; a low growth habit; and a medium level of seed yielding capacity.

PATENTS

GRANTED April 1, 1997

ERRATA

For CLASS	See PATENT NO.
108–055	5,615,608
160–370	5,615,729
166–084	5,615,736
166–085	5,615,737
227–071	5,615,816
473–424	5,615,879
473–471	5,615,880
473–238	5,615,884
473–469	5,615,890
473–492	5,615,891
473–590	5,615,892
415–209	5,616,003
438–693	5,616,212
438–718	5,616,213
510–220	5,616,277
442–060	5,616,405
442–019	5,616,406
442–118	5,616,407
442–346	5,616,408
473–378	5,616,640
510–221	5,616,781
534–795	5,616,797
396–055	5,617,159
396–060	5,617,160
396–319	5,617,161
396–318	5,617,162
396–176	5,617,163
396–401	5,617,164
396–418	5,617,165
396–055	5,617,166
396–448	5,617,167
396–413	5,617,168
396–284	5,617,169
396–378	5,617,170
396–512	5,617,171
396–539	5,617,172

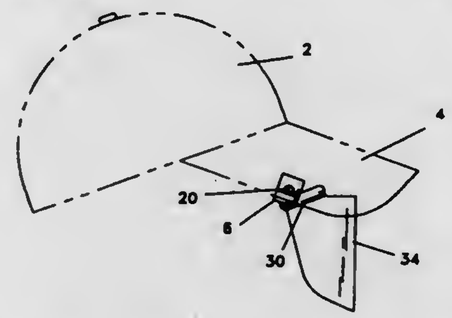
ERRATA–CONTINUED

PATENTS

GRANTED APRIL 1, 1997

GENERAL AND MECHANICAL

5,615,413
EYE SHIELD FOR VISOR OR CAP BILL
Kirk Bower, 2817 Rawhide Dr., Rapid City, S. Dak. 57702
Filed Mar. 19, 1996, Ser. No. 618,643
Int. Cl.[6] A42B *1/24;* **A61F** *9/00*
U.S. Cl. 2—10 **4 Claims**



1. A detachable eye shield for visor or cap, the visor or cap having a bill which protrudes forward from the head covering portion of said visor or cap, and the bill having an upper surface, a lower surface, a forward edge away from the head covering portion of said visor or cap, a right edge on the user's right, and a left edge on the user's left, comprising:

(1) two clips which may be removably attached to said bill, one of the clips being attached to the right edge of said bill and one of the clips being attached to the left edge of said bill; said clips each having a hole perpendicular to the upper surface of said bill, the hole in said clip on the right edge of said bill being to the right of the right edge of said bill and the hole in said clip on the left edge of said bill being to the left of the left edge of said bill;

(2) two hinge pins inserted from the top down through said holes in each of said clips; the hinge pins each having a head at the top to prevent said hinge pins from moving completely through said holes; the bottom portions of said hinge pins being bent at a right angle from the top portions of said hinge pins;

(3) two anchors having holes through the center of their longitudinal axes; the anchors being adapted so that the bottom portions of said hinge pins may be inserted into the holes in said anchors thereby removably attaching one of said anchors to each of said hinge pins; and

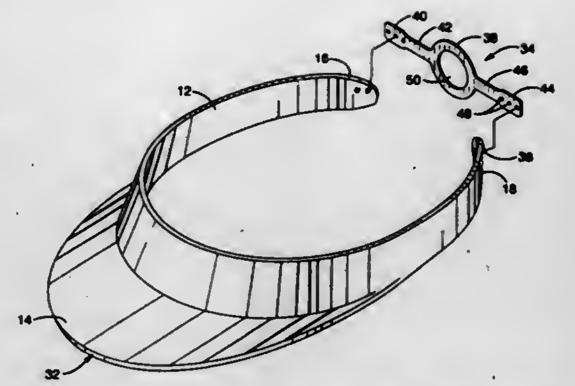
(4) an eye shield affixed to said anchors such that said anchor near the right edge of said bill is attached to the right side of the top of the eye shield and said anchor near the left edge of said bill is attached to the left side of the top of said eye shield;

whereby the eye shield for visor or cap bill may be removably attached to the bill of a visor or cap by pressing said clips onto the right edge and the left edge of said bill; said anchors and said eye shield may be removably attached to said clips by said hinge pins and said eye shield may be flipped down to serve as eye protection from various environmental irritants or flipped up inconspicuously out of the user's line of vision.

5,615,414
SELF-CONFORMING VISOR APPARATUS
Timothy J. Landis, Loomis, Calif., assignor to OP-D-OP, Inc., Roseville, Calif.
Filed Feb. 27, 1995, Ser. No. 396,411
Int. Cl.[6] A41D *20/00*
U.S. Cl. 2—12 **13 Claims**

1. A visor apparatus, comprising:

(a) a head band, said head band including a first tail and a second tail;

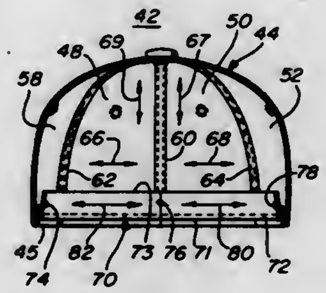


(b) said head band and said tails fabricated from a polymeric material having a softening temperature of between approximately 90° and 105° Fahrenheit;

(c) a visor, said visor depending from said head band; and

(d) adjusting means for circumferentially adjusting said head band about a wearer's head.

5,615,415
CUSTOM FIT CAP
David A. Beckerman, Woodbridge, Conn., assignor to Starter Corporation, New Haven, Conn.
Continuation of Ser. No. 88,883, Jul. 8, 1993, abandoned. This application Jan. 4, 1995, Ser. No. 368,753
Int. Cl.[6] A42B *1/22*
U.S. Cl. 2—195.3 **28 Claims**



1. A custom-fit cap comprising:

a substantially hemispherical crown portion having a base portion attached to a visor portion, the hemispherical crown portion adapted for covering a head of a user;

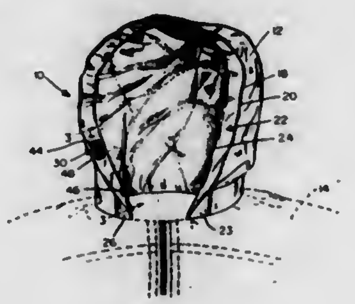
at least that portion of the crown portion opposite the visor portion adapted for covering the back of the head being formed of a material that stretches at least circumferentially about the crown portion for accommodating various head sizes; and

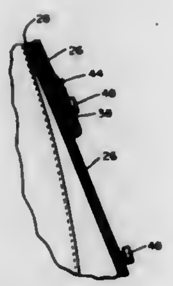
a single band stretchable only circumferentially and attached to the inside of the hemispherical crown portion adjacent the base thereof, the stretchable band forming a sweat band to engage a head of a user and allowing the cap to stretch circumferentially with at least that portion of the crown portion covering the back of the head opposite the visor portion so as to enable the cap to self-adjust automatically to a plurality of head sizes, wherein the band is (1) an elongated, circumferential band having one elongated edge attached to the inside of the crown portion substantially coextensive with the entire base portion thereof and an opposite elongated edge extending up into the interior of the crown portion and (2) attached to the crown portion at isolated attachment points

174–418 O.G.–97–2: QL3

between the elongated one edge and the opposite elongated edge of the stretchable band to substantially maintain the band in the interior of the crown portion while still allowing the cap to automatically self-adjust.

5,615,416
ADJUSTMENT STRAP FOR JACKET HOOD
Jack C. Haddad, Brooklyn, N.Y., assignor to The Haddad Apparel Group, Ltd., New York, N.Y.
Filed Oct. 2, 1995, Ser. No. 538,418
Int. Cl.⁶ A42B *1/04*
U.S. Cl. 2—202 **16 Claims**

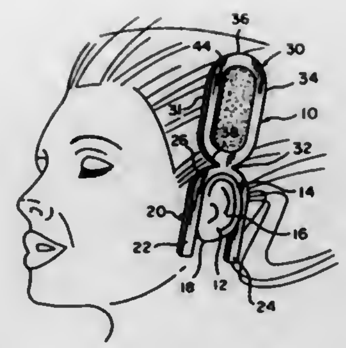




1. A jacket hood comprising:
a head covering portion having an opening for exposing the face of a wearer,
a sleeve located along an edge of said head covering portion, and
an adjustment strap having two ends, said adjustment strap being slidably mounted in said sleeve and extending, at one of said two ends, from said sleeve,
said one end being securable to said head covering portion in different positions to change a size of said opening so as to draw said head covering portion around the face of the wearer,
the other of said two ends of said adjustment strap being fixed within said sleeve.

5,615,417
EAR PROTECTOR
Claudia D. Jackson, 1446 St. Claude Ave., New Orleans, La. 70177
Filed Feb. 9, 1996, Ser. No. 599,156
Int. Cl.⁶ A41D *13/00*
U.S. Cl. 2—209 **10 Claims**

1. An ear protector for protecting outer ear structure including the pinna, helix and ear lobe, the ear protector comprising:
a U-shaped retainer having first and second legs joined by a bight wherein one leg extends in front of the ear and the bight and the other leg extends behind the helix portion of the pinna with the cartilage of the pinna providing support for stabilizing the retainer;
a shield having a length and width sufficient to cover the ear when laid thereover, and



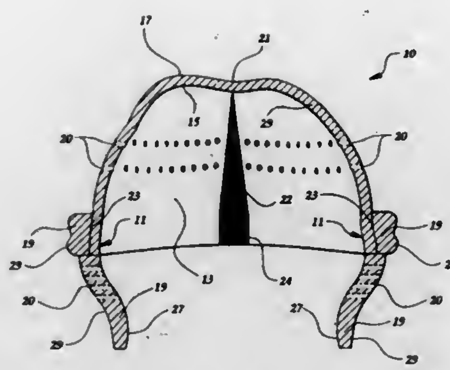
a hinge joining the shield to the bight of the U-shaped retainer, the hinge being constructed and arranged to facilitate overlapping of the U-shaped retainer by the shield.

5,615,418
LOW-FRICTION INSERT
John D. Pruit, 2929 Miracle La., Flower Mound, Tex. 75028
Filed May 22, 1995, Ser. No. 447,084
Int. Cl.⁶ A41B *11/00*
U.S. Cl. 2—239 **24 Claims**

1. An article of clothing comprising:
a first layer of fabric;
a second layer of fabric disposed within the first layer; the second layer having an inner surface for contact with the skin of the user of the clothing; the second layer having an outer surface surrounded by the first layer; and
a friction isolation layer disposed between the first layer and the second layer such that substantially all movement of the first layer is not translated to movement of the second layer relative to the skin of the user of the clothing.

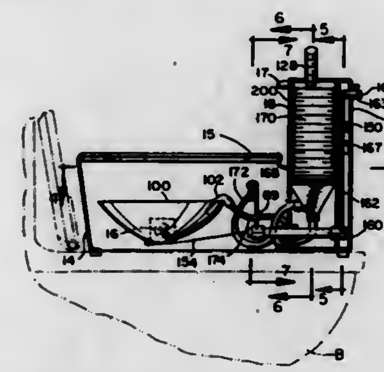
5,615,419
TODDLER HELMET
Jerry Williams, 113 College Extension Rd., Taylorsville, N.C. 28681
Filed Nov. 21, 1995, Ser. No. 561,373
Int. Cl.⁶ A42B *3/00*
U.S. Cl. 2—411 **11 Claims**

1. A protective helmet for use by children to be worn on the head, providing cranial protection to that portion of the head above the level of the ears and to the ears, said helmet comprising:
a padded top portion formed generally as a hollow dome and defining a rim portion, said top portion including an inner



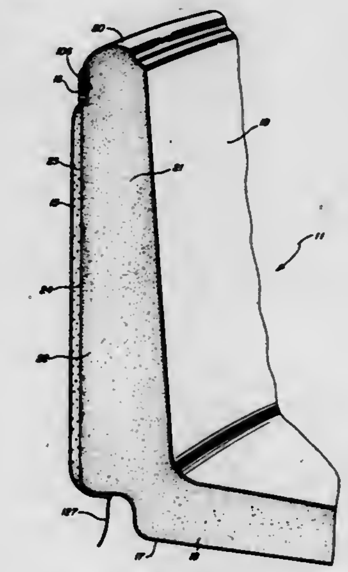
layer and an outer layer, with flexible, resilient padding material disposed therebetween,
a padded brim formed as a band mounted to and encircling an outer circumference of said top portion and including an inner layer and an outer layer, with flexible, resilient padding material disposed therebetween,
a first strap mounted to said padded brim and having a distal end, and a second strap mounted to said padded brim in a spaced relationship with said first strap and having a distal end selectively attachable to and detachable from said distal end of said first strap; and
a stretch panel located in said top portion, said stretch panel extending between an upper extent of said top portion and said rim portion and being elastically constructed such that the volumetric capacity of said top portion may be changed by the exertion of pressure from within said top portion.

5,615,420
FLUSHABLE PORTABLE TOILET
Dean L. Guyton, Glassboro, N.J., assignor to Dgic, llc, Glassboro, N.J.
Continuation-in-part of Ser. No. 38,924, Mar. 29, 1993, abandoned. This application Sep. 27, 1995, Ser. No. 534,390
Int. Cl.⁶ A61G *9/02*
U.S. Cl. 4—233 **10 Claims**



1. A portable toilet having a container with an interior adapted to receive body waste and an associated housing structure configured to be supported on a regular flush toilet having a waste-receiving bowl connected to a drain, a supply of toilet water, and means to introduce the toilet water into the bowl to be discharged from the bowl into the drain,
said portable toilet including a pump having a pump chamber, a pump operator, and an outlet, means operable upon displacement of said operator in one direction to introduce said toilet water into said pump chamber, said pump operator displaceable in the opposite direction to evacuate said toilet water from the chamber through said outlet,
means to support said container for movement between a rest condition in which said container interior receives body waste and a dumping condition in which said container is free to discharge the received body waste from its interior into said bowl, and means to operate said container from said rest condition to said dumping condition upon displacement of said operator in said one direction,
said pump outlet including a jet directed toward the interior of the container in its dumping condition so that upon actuation of said pump operator in said opposite direction, the toilet water in the pump chamber is ejected through said jet into the interior of the container to facilitate the discharge of the body waste from the container into the toilet bowl.

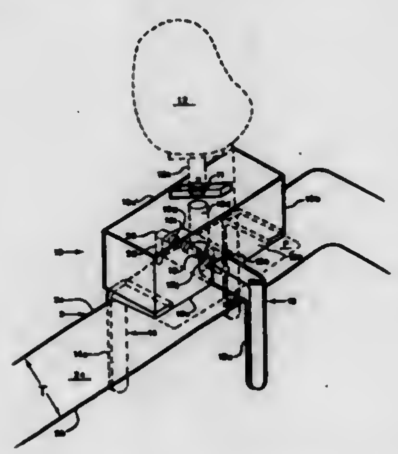
5,615,421
PORTABLE SPA WITH INTEGRAL BOTTOM PAN, INTERCHANGEABLE SIDE SKIRT, AND INTERLOCKING COVER
Jeffrey K. Watkins, Rancho Santa Fe; Walter R. Cumiskey, Vista, and Phillip D. Loizeaux, San Marcos, all of Calif., assignors to Watkins Manufacturing Corporation, Vista, Calif.
Continuation of Ser. No. 357,414, Dec. 16, 1994, Pat. No. 5,564,137, which is a division of Ser. No. 205,624, Mar. 3, 1994, Pat. No. 5,428,849. This application Nov. 3, 1995, Ser. No. 552,884
Int. Cl.⁶ A47K *3/02*
U.S. Cl. 4—506 **37 Claims**



1. The portable spa apparatus installable at a user site and comprising:
rigid foam insulation means for defining a circumferential side surface and a bottom surface of a circular spa structure having a circumference and for providing rigidity to said structure, said side surface exhibiting a vertical edge in side sectional profile;
a molded bottom pan positioned adjacent said bottom surface of said rigid foam insulation means, said bottom pan having a solid, horizontal planar, water impervious base surface;
a flexible plastic skirt means for conforming to the shape of said side surface for providing a decorative exterior surface and covering about said side surface, said plastic skirt means having a top horizontal edge and a bottom horizontal edge, said top and bottom horizontal edges being parallel to one another; and
attachment means for providing attachment of said top horizontal edge continuously about substantially the entire circumference of said spa structure, said attachment means further providing manual attachment, detachment, and reattachment of said top horizontal edge about said circumference; said flexible plastic skirt means being manually attachable about,

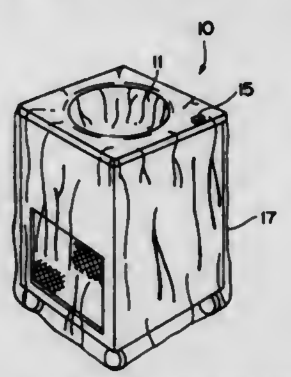
removable from about, and reattachable about said circumference a plurality of times by user manipulation, including user manipulation of said attachment means, after said apparatus has been installed at a user site.

5,615,422
COMPACT BATH-CHAIR SUPPORT
Pierre Gravel, 427 Montplaisir, Cap-de-la-Madeleine, Qc, G8T 3A8, Canada
Filed May 23, 1995, Ser. No. 449,902
Int. Cl.⁶ A47K *3/12*
U.S. Cl. 4—579 **20 Claims**



1. A compact bath-chair support comprising:
a block like frame having a top, a bottom, opposite lateral sides, two opposite longitudinal sides and a central portion between said two opposite longitudinal sides,
said bottom defining a flat bottom surface for resting on top of an upwardly extending side of a bath,
said side of a bath terminating at said top into an inverted U-shaped cross-section, said U-shaped cross-section defining opposite outer walls, said side of a bath having a thickness,
said block like frame having, along one of said two opposite longitudinal sides, at least one downwardly extending member having a flat surface acting as a jaw, mounted onto said block like frame, above said flat bottom surface of said block like frame,
and at least one downwardly extending member having a flat surface, and being slidably mounted along the side opposite said one of said two opposite longitudinal sides, above said flat bottom surface of said block like frame,
releasable clamping means for securely holding said at least one slidably mounted downwardly extending member,
for said at least one downwardly extending member on said opposite side of said block like frame to keep against, be in intimate contact with, and frictionally engage one of said outer walls of said side of a bath,
and for said at least one downwardly extending flat member acting as a jaw to keep against, be in intimate contact with, and frictionally engage the other of said outer walls of said side of a bath,
for said downwardly extending flat members to securely hold said side of a bath near said top, in order to maintain said flat bottom surface of said block like frame against said top of a bath,
and said block like frame defining above said bottom surface, but within said block up to said top, and along said central portion of said block like frame, at least one female receptacle for sliding therein so as to be quickly releaseably mounted, the shaft of a chair having a seat, in order for said shaft to be rotatably mounted within said block like frame into said female receptacle within said block like frame,
and to allow strictly rotational and axial displacements of said shaft,
and said shaft for snugly fitting within said female receptacle in order to prevent radial displacements of said chair from said shaft and thereby preventing side-displacements of said chair from said block,
and to allow the bottom of said seat to be in close proximity to the top of said block,
and said chair to be removed upon mere pulling of said shaft from said female receptacle,
whereby the weights of, and on said chair being transferred to said top of said block like frame, and from said block like frame the weights being spread, via said flat bottom surface of said block like frame, are transferred onto said top of an upwardly extending side of a bath, for the center of gravity of all the weights of and on said chair, and of said block, each taken individually, to be within said upwardly extending side of a bath,
and said downwardly extending flat members are adjustable to securely fit the side of a bath and cooperate as jaws to releasably hold the upwardly extending side of a bath near said top, in order to maintain said flat bottom surface against said top.

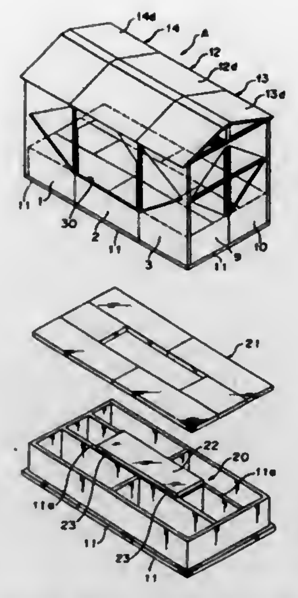
5,615,423
SURGICAL DRAPE WITH PLACEMENT INDICIA
Durward I. Faries, Jr., McLean, Va.; Bruce R. Heymann, Silver Spring, Md., and Mark Licata, Richmond, Va., assignors to O. R. Solutions, Inc., Chantilly, Va.
Continuation-in-part of Ser. No. 399,975, Mar. 6, 1995, Pat. No. 5,522,095, which is a continuation-in-part of Ser. No. 224,378, Apr. 7, 1994, Pat. No. 5,429,801, which is a division of Ser. No. 33,639, Mar. 16, 1993, Pat. No. 5,333,326. This application Feb. 7, 1996, Ser. No. 597,763
Int. Cl.⁶ F25C *1/00*
U.S. Cl. 4—639 **34 Claims**



1. A surgical drape for use in a thermal treatment system for thermally treating a sterile medium and including a basin recessed in a top surface of a system housing for collecting said sterile medium, said drape ensuring the sterility of said sterile medium and comprising:
a drape portion for covering and hanging down from said top surface of said system housing; and
indicia affixed to said drape symbolically directing placement of said drape portion over said top surface.

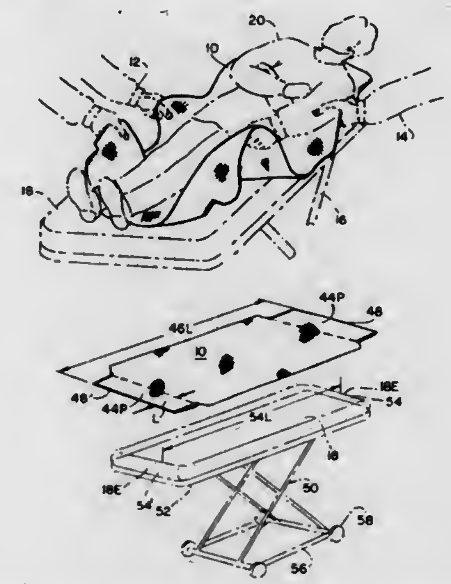
5,615,424
EARTHQUAKE-PROOF BED
Kenji Nakata, c/o Sanken General Commercial Co., Ltd., 3-24 Kyomachi, Toyooka, Hyogo, Japan
Filed Aug. 24, 1995, Ser. No. 518,933
Claims priority, application Japan, Jun. 28, 1995, 7-007530
Int. Cl.⁶ A47C *19/22;29/00*
U.S. Cl. 5—2.1 **13 Claims**

1. An earthquake-proof bed comprising:



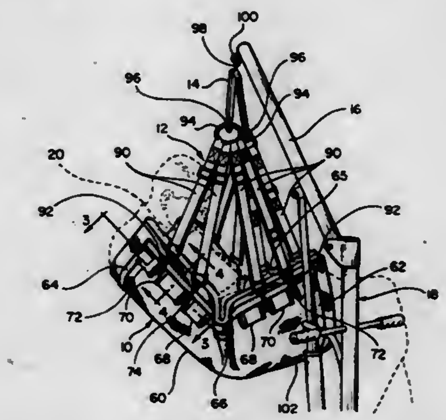
a plurality of metallic panels disposed in a particular shape and including a three piece bottom metallic panel, front metallic panels, rear metallic panels and side metallic panels;
a plurality of tool boxes fixed on the bottom metallic panel;
said plurality of tool boxes being divided by a plurality of dividing plates;
a plurality of openable lids covering said tool boxes;
at least one opening in each of said front, rear and side metallic panels; and
bedding installed on said plurality of lids and forming, together with said metallic panels, said tool boxes and said lids, the earthquake-proof bed.

5,615,425
FITTED SHEET FOR USE AS A DISPOSABLE STRETCHER/GURNEY LINEN
Joseph N. Corente, 2606 Whale Harbor La., Fort Lauderdale, Fla. 33312
Filed Oct. 6, 1995, Ser. No. 540,004
Int. Cl.⁶ A61G *1/01;* **A47G** *9/00*
U.S. Cl. 5—81.1 T **11 Claims**



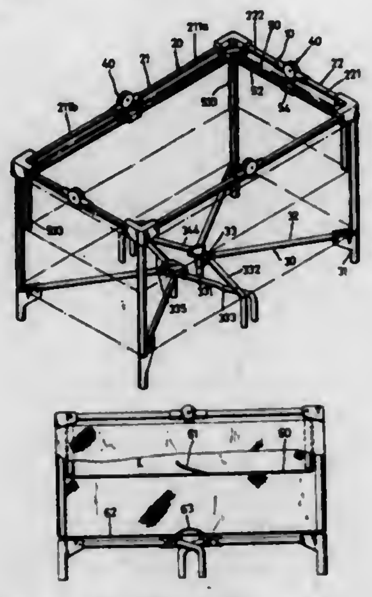
1. A fitted stretcher sheet for use as a disposable stretcher/gurney linen, comprising:
an elongated sheet having a length and a width adapted to accommodate and be placed onto a stretcher/gurney to cover a mattress carried by the stretcher/gurney and prevent the mattress from being soiled, said sheet having a length dimension and a width dimension with said length dimension being greater than said width dimension;
first retention means including a pocket with an opening at, at least one end of said length dimension for temporary connection with one end of the mattress and second retention means for retaining said sheet on said mattress when said sheet is placed onto said mattress;
a narrow flap positioned along only a center portion on each side of said sheet along its length dimension between said first and said second retention means with one end of each flap positioned proximate to said opening, and the other ends of each said flaps being positioned proximate to said second retention means, said flaps extending along said length dimension for use as carriers for said sheet to lift said sheet with the individual thereon and move it with the individual thereon from one place to another, and the width of said flaps being about two inches or more.

5,615,426
PATIENT LIFT SHEET
Margaret D. Hokett, 1823 A Jenkins Rd., Chattanooga, Tenn. 37421
Filed Jun. 13, 1995, Ser. No. 489,738
Int. Cl.⁶ A61G *1/00*
U.S. Cl. 5—89.1 **8 Claims**



1. A patient lift sheet assembly including a flexible lift sheet member having opposite side longitudinal margins and opposite end margins, each longitudinal margin including at least two elongated, longitudinally spaced and extending lifting bars substantially stationarily supported therefrom, each of said lifting bars including at least two lifting member anchor points spaced apart longitudinally therealong and at least two upstanding tension members for each lifting bar, each tension member having upper and lower ends, the lower end of each of said tension members being anchored relative to a corresponding anchor point of the associated lifting bar, the upper ends of said tension members being suitably anchored to a single anchor member for support from and lifting and lowering by a lift structure, each of said tension members including adjustment structure operative to adjust the effective length thereof.

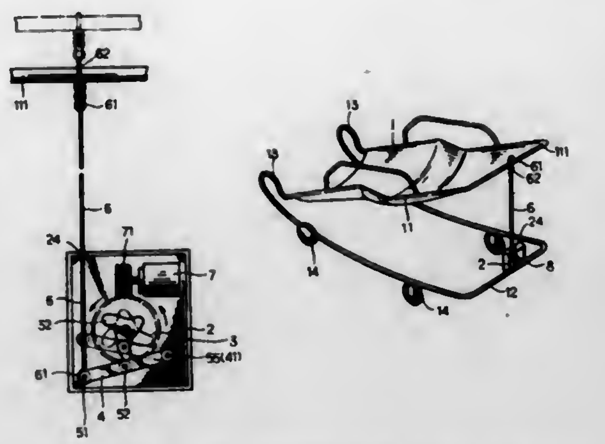
5,615,427
FOLDABLE PLAYYARD
Li-chu C. Huang, No. 9, Alley 2, Lane 606, Sec. 2, Po Ai Rd., Chia Yi City, Taiwan
Filed Nov. 28, 1995, Ser. No. 563,643
Int. Cl.[6] A47D *7/00; 13/06*
U.S. Cl. 5—99.1 **6 Claims**



1. A foldable playyard comprising:
an outer playyard frame assembly comprising:
a first essentially rectangular upper support composed of four pairs of rail sections each centrally coupled by a switch unit, each pair of rail sections being pivotably connected to a respective corner bracket provided at four corners of the upper support;
four vertical rails each fixedly connected to a corresponding corner bracket at an upper end; and
a lower support connected with the four vertical rails at a lower end of the vertical rails; and
an inner playyard comprising:
a second essentially rectangular upper support composed of four pairs of hingedly coupled rail sections with each pair further pivotably connected to a respective corner bearer provided at four corners of the second upper support, each of said corner bearers releasably receiving a corresponding corner bracket; and
four vertical short rails each integrally formed beneath a corresponding corner bearer.

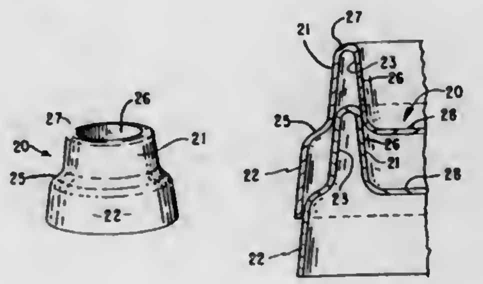
5,615,428
ELASTIC CRADLE
Hsing Li, 17, Yung Hsing Street, Taichung, Taiwan
Filed Jun. 24, 1996, Ser. No. 667,597
Int. Cl.[6] A47D *9/02*
U.S. Cl. 5—109 **6 Claims**

1. A cradle comprising:
a support frame for holding an infant, said support frame provided at one end thereof with two flexible devices and at another end thereof with a retaining hook; and
a base fastened at one end thereof with said flexible devices of said support frame and provided with a plurality of castors fastened pivotally therewith, said base further provided at another end thereof with an actuating box fastened thereto and provided therein with an actuating mechanism for causing said support frame to swing up and down in a reciprocating manner, said actuating box having an elastic cord provided at one end thereof with a plurality of engaging rings engageable with said retaining hook of said support frame;
wherein said actuating mechanism comprising:



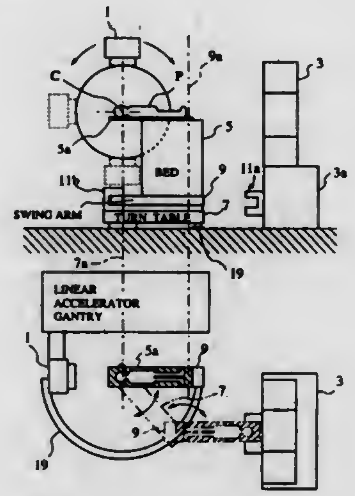
a motor mounted on a fastening mount secured to said actuating box, said motor having a worm rod;
a disk mounted on a spindle secured to said actuating box, said disk provided on a rim thereof with a toothed portion engageable with said worm rod of said motor, said disk further provided with a cam fastened therewith; and
a swing arm provided with an eccentric wheel fastened pivotally therewith and a rotor fastened pivotally therewith, said eccentric wheel having a groove engageable with an engaging ring of a lower end of said elastic cord, said swing arm being fastened with said actuating box such that said rotor is caused to move along an arcuate rim of said cam.

5,615,429
BED ELEVATING BLOCKS
Susan R. Williams, 28649 S. Western Ave. Suite 6757, Rancho Palos Verdes, Calif. 90734
Continuation-in-part of Ser. No. 287,629, Aug. 8, 1994, abandoned. This application Feb. 10, 1995, Ser. No. 386,438
Int. Cl.[6] A47C *21/00*
U.S. Cl. 5—509.1 **4 Claims**



1. A support for a bed leg comprising a plurality of stacked members formed of molded walls, said walls including a bass at the top of said member, said top being formed with a dimple having an annular dimple wall and a top wall joining said dimple walls, said top wall forming the bottom of a said dimple on which said bed leg may stand, said molded walls also including a boss wall extending adjacent to said dimple wall but spaced therefrom and extending downward beyond said top wall, said dimple wall and said boss wall forming an annular slot between said boss wall and said dimple wall whereby the corresponding walls of the next adjacent support are nested within said annular slot.

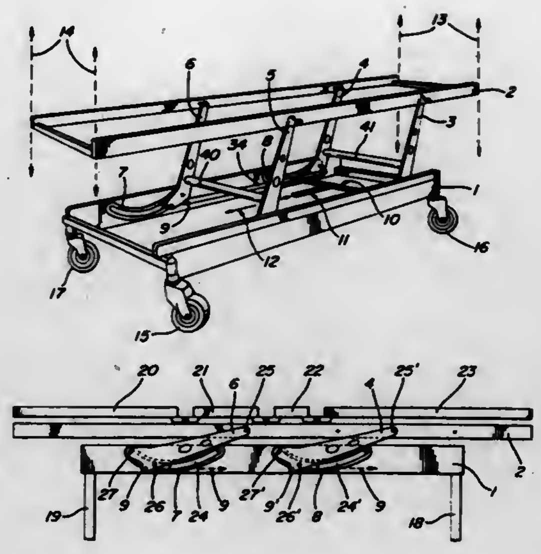
5,615,430
MEDICAL BED SYSTEM
Kyojiro Nambu; Masatoshi Tomura, and Takayuki Kuwahara, all of Tochigiken, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Aug. 22, 1995, Ser. No. 518,023
Claims priority, application Japan, Aug. 22, 1994, 6-197038; Aug. 22, 1994, 6-197041
Int. Cl.[6] A61B *6/04*
U.S. Cl. 5—600 **12 Claims**



1. A medical bed system comprising:
a bed on which a subject lies;
a plurality of medical apparatuses sharing said bed;
means for rotating said bed horizontally around a predetermined central axis so as to position said bed on a predetermined location of respective medical apparatuses; and
engaging means for engaging said bed with each of said plurality of medical apparatuses.
8. A medical bed system comprising:
a bed on which a subject lies;
a plurality of medical apparatuses sharing said bed; wherein each of said plurality of medical apparatuses generates a respective bed operation control signal or operating said bed to fit a respective medical apparatus, and supplies said respective bed operation control signal to said bed when it occupies said bed, and said bed controls its operation based on said respective bed operation control signal supplied from said plurality of medical apparatuses.

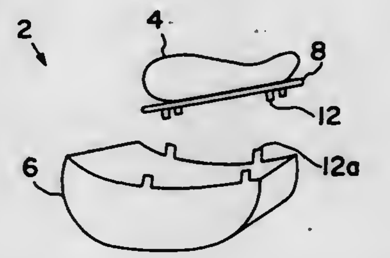
5,615,431
BED FRAMEWORK WHICH IS ADJUSTABLE IN ELEVATION
Berto Vassilli, Saonara, Italy, assignor to Givas Habitat s.r.l., Saonara, Italy
Filed Nov. 30, 1995, Ser. No. 565,174
Claims priority, application Italy, Apr. 6, 1995, PD95A0069
Int. Cl.[6] A61G *7/005*
U.S. Cl. 5—610 **10 Claims**

1. A bed framework comprising a base frame provided with casters and a supporting frame provided with at least one subframe movable and/or swingable with respect to said supporting frame, said two frames being connected to each other through means allowing a change of the elevation and inclination of said supporting frame with respect of said base frame, said means comprising at least two pairs of rods with associated arcuate guides, wherein said arcuate guides are secured to said base frame and one end of each rods is pivotally connected to said supporting frame and the other end is provided with pins engaging guide slots in said arcuate



guides whereby said supporting frame is vertically raised or lowered when said pins are moved along the guide slots of the associated arcuate guide.

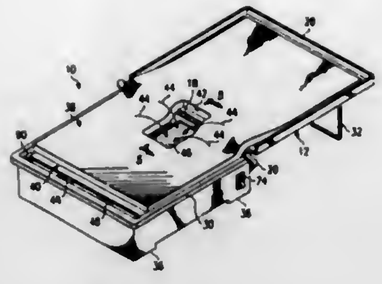
5,615,432
HEAD AND NECK SUPPORT DEVICE
Thomas F. Von Ohlen, III, 14 Cardinal Rd., Weston, Conn. 06883
Filed Jun. 7, 1995, Ser. No. 478,333
Int. Cl.[6] A47C *20/02*
U.S. Cl. 5—638 **2 Claims**

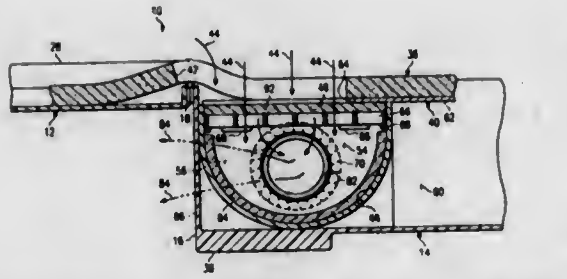


1. An apparatus for supporting an individual's head or neck, comprising: a base member and a cushion portion, said cushion portion being removably mounted on and spaced from said base member said cushion portion comprising a first section adapted to support an individual's head or neck, and additional recessed regions extending angularly from each end of said first section to form a substantially u-shaped cushion portion, said cushion portion being selectably engageable with an individual's head or neck, wherein an air channel is formed in said base member when said individual lies in a horizontal prone position.

5,615,433
COMBINATION DIAPER BAG AND PORTABLE CHANGING TABLE HAVING INLET AIR FLOW
David Martin, 5340 Beech St., Plano, Tex. 75093
Filed Nov. 7, 1995, Ser. No. 554,845
Int. Cl.[6] A47D *3/00;* **A47K** *13/06*
U.S. Cl. 5—655 **11 Claims**

1. Infant care device, comprising:
an enclosure having a plurality of generally vertical sides and an upwardly facing opening;



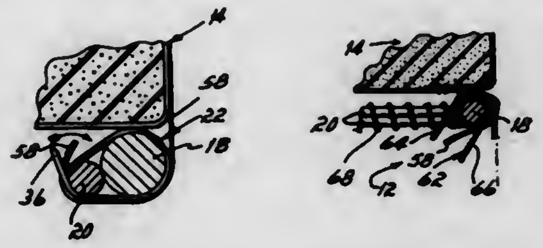


a lid having a bottom side surface, said lid being pivotably attached to one of said enclosure vertical sides and further being pivotable between a first closed configuration wherein said lid extends laterally across said enclosure opening, and a second open configuration wherein said lid is horizontally disposed and extends laterally and outwardly away from said one of said enclosure vertical sides;
a generally planar platform having top and bottom side surfaces and an opening formed therethrough, said platform further having a first closed position wherein said platform extends laterally across said enclosure opening;
a generally planar foldable pad having top and bottom side surfaces and a centrally disposed opening formed therethrough, said pad further having a first folded position wherein said pad is folded between said lid and said platform when said lid is in said closed configuration thereof, and a second unfolded position wherein said pad laterally extends overlying said lid bottom side and said platform top side surface when said lid is in said open configuration thereof; and
a fan disposed beneath said platform bottom side surface, said fan drawing air from above said pad top side surface, through said pad opening and said platform opening, and into said enclosure.

5,615,434
VIEWING STRUCTURE FOR INFANTS
James M. Cracchiolo, and Justina M. Cracchiolo, both of 5212 Golf Links Blvd., Zephyrhills, Fla. 33541
Filed Jun. 30, 1995, Ser. No. 497,110
Int. Cl.⁶ A47C *31/00*
U.S. Cl. 5—658 **4 Claims**

1. A structure for attachment to an infant crib to support objects to be viewed by and to stimulate an infant in the crib comprising
a rectangular sheet of transparent flexible material sized to fit over a portion of an infant crib to receive on its upper surface assorted infant stimulating objects,
the rectangular sheet having each of its four edges folded over and bonded to the sheet to form an elongated tube,
a member somewhat longer than the aforesaid elongated tube inserted through each one of the four tubular edges of the sheet of transparent material,
four generally cubical blocks, each having two holes sized to receive the ends of two of the aforesaid members and also having a third hole through a corner of the block, and
a length of flexible material passing through the third hole in each of the four blocks sized to secure the structure to the infant crib.

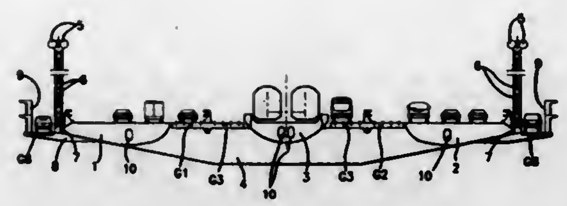
5,615,435
MATTRESS COVER SECUREMENT APPARATUS
Thomas J. Wells, Carthage, and Robert C. Starr, IV, Granby, both of Mo., assignors to L & P Property Management Company, Chicago, Ill.
Filed Dec. 6, 1995, Ser. No. 567,842
Int. Cl.⁶ A47C *27/045;31/02*
U.S. Cl. 5—716 **10 Claims**



1. A mattress comprising an innerspring core having a generally planar top surface and a generally planar bottom surface and a plurality of coil springs therebetween, said coil springs each having generally circular top and bottom turns of fixed diameters, a border wire surrounding said top surface, a mattress cover located atop said top surface, and a plurality of clips attached to said border wire, said clips having at least one barb, each of said clips having a width substantially less than the diameter of said coil springs, said mattress cover having an edge stretched over and wrapped around said border wire, each said barb at least partially piercing said edge of said mattress cover so that said edge is maintained in a taut position at least partially wrapped around said border wire.

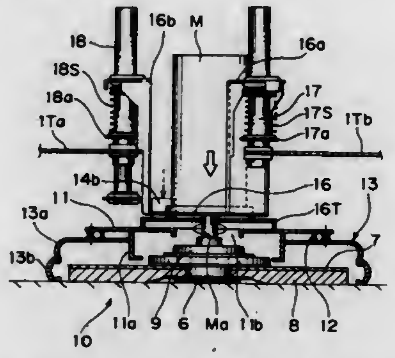
5,615,436
SUSPENSION BRIDGE FRAMEWORK
William Brown, London, Great Britain, assignor to Stretto Di Messina S.P.A., Rome, Italy
PCT No. PCT/EP93/02985, § 371 Date May 26, 1995, § 102(e) Date May 26, 1995, PCT Pub. No. WO94/10386, PCT Pub. Date May 11, 1994
PCT Filed Oct. 27, 1993, Ser. No. 428,135
Claims priority, application Italy, Oct. 28, 1992, MI92A2466
Int. Cl.⁶ E01D *11/00*
U.S. Cl. 14—18 **10 Claims**

1. A suspension bridge having a framework comprising a substantially flat main structure, said main structure having a top surface which forms a traffic flow lane, a suspension system formed by a plurality of vertical stays or hangers (6) fixed to catenary cables (5) anchored to end piers of the bridge, said framework being anchored to said suspension system, said framework comprising a plurality of parallel box bodies extending longitudinally of the bridge and corresponding to two runways of the bridge, said box bodies being spaced apart a distance equal to



their transverse dimension, and stiff supporting transverse ledgers (4) by which said box bodies are interconnected at regular intervals, said box bodies having a transverse cross section which is an aerodynamic profile.

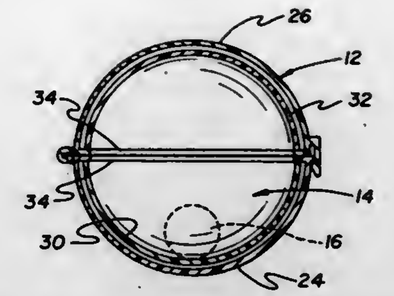
5,615,437
FLOOR-SURFACE POLISHER EQUIPPED WITH FUNCTION FOR ADJUSTING PAD PRESSURE
Shinichiro Takahashi, and Eiji Nagayama, both of Miyakoda, Japan, assignors to Amano Corporation, Kanagawa-ken, Japan
Filed Feb. 21, 1995, Ser. No. 391,036
Claims priority, application Japan, Feb. 28, 1994, 6-054678
Int. Cl.⁶ A47L *11/14*
U.S. Cl. 15—98 **4 Claims**



1. In a floor-surface polisher in which floor-surface is polished by a pad which is mounted within a pad cover and rotated at a high speed by a motor during the traveling operation of the polisher, a floor-surface polisher equipped with a function for adjusting pad pressure being characterized in that said pad is resiliently supported by a support force, said support force being biased in an upward direction to separate said pad away from the floor-surface, a plurality of very small spaces being formed within said pad so that a drawing force for lowering said pad toward the floor-surface against said biased upwardly-directing support force will be generated during a high speed rotation of said pad, means for adjusting an electric-current value of said motor to a pre-set value, said adjusting means being mounted on a control portion of said pad motor.

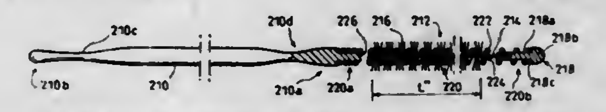
5,615,438
COMPUTER MOUSE BALL AND PAD CLEANING KIT
Todd G. Field, 81 Fox Run Crrs, Richmond Hill, Ontario, Canada
Filed Aug. 16, 1995, Ser. No. 515,652
Int. Cl.⁶ B08B *1/00*
U.S. Cl. 15—104.2 **6 Claims**

1. A computer mouse ball and pad cleaning kit comprising:
a container having an interior surface;
a tacky liner covering at least a portion of the interior surface of the container, said container comprising a lower container portion and an upper container portion movably mounted relative to the lower container portion so as to permit selective insertion and removal of a tracking ball therein, whereby the



tracking ball of a computer mouse can be positioned within the container and manually agitated within the container such that the tacky liner therewithin adhesively removes dirt and debris from an exterior surface of the tracking ball; and
an adhesive roller having a tacky exterior coating which can be manually reciprocated across an upper surface of a mouse pad so as to remove dirt and debris from the mouse pad.

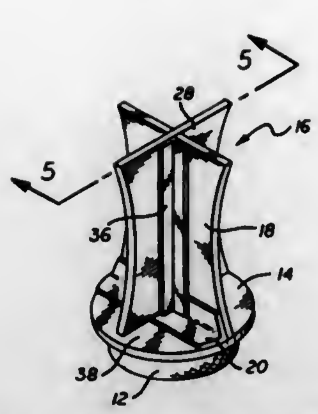
5,615,439
DEVICE FOR CLEANING DUCTS IN MEDICAL INSTRUMENTS
Julien Bourrelly, Choisy Le Roi, France, assignor to La Technologie Avancee Medicale, Montreuil, France
Filed Nov. 27, 1995, Ser. No. 562,980
Claims priority, application France, Nov. 30, 1994, 94 14363
Int. Cl.⁶ A46B *9/00;* B08B *9/02*
U.S. Cl. 15—104.2 **16 Claims**



1. A device for cleaning the ducts of medical instruments for internal investigation or sample-taking, the device comprising an elongate cylindrical rod having a smooth outside surface and a brush provided at a first end of said rod, the brush comprising substantially radial bristles mounted directly on a longitudinal spine, wherein the device further includes a brush support member mounted at the first end of the rod, the outside diameter of the support member being substantially equal to that of the rod, and the support member being suitable for supporting the brush substantially over the entire length thereof, said member being constituted by a belically wound wire whose turns define a channel wherein the spine extends substantially straight and logitudinally through the channel, the member having a length substantially equal to the length of the brush over which length the turns are spaced apart axially so as to allow the radial bristles of the brush to pass between them.

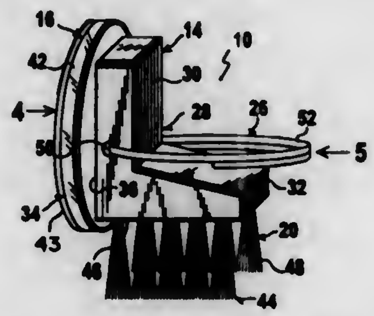
5,615,440
DISPOSABLE APPLICATOR
Michael I. Cowan; Jordan P. Weiss, and Lisa A. Ziff, all of Los Angeles, Calif., assignors to Radiant Products, Ltd.
Filed Jun. 2, 1995, Ser. No. 460,224
Int. Cl.⁶ A61M *35/00;* A47K *7/02;* A47L *13/16*
U.S. Cl. 15—104.94 **24 Claims**

1. A disposable, hand-held, single-use applicator for applying waxes, polishes, medicines, and chemical compounds comprising:
a base disc having an upper surface and a lower surface;
a disc-shaped, chemically-impregnated pad attached to said lower surface of said base disc; and
a handle comprising a first handle piece that is hingedly attached to said upper surface of said base disc, said first handle piece having an upper portion, said handle piece having a slot defined in the upper portion thereof, and a second handle piece having a lower portion, said second handle piece having a slot defined in the lower portion thereof;



wherein said first handle piece and said second handle piece are collapsibly interconnected with one another such that said slot in said second handle piece overlaps a portion of said first handle piece and said slot in said first handle piece overlaps a portion of said second handle piece, and wherein said handle pieces may be folded together onto said base piece.

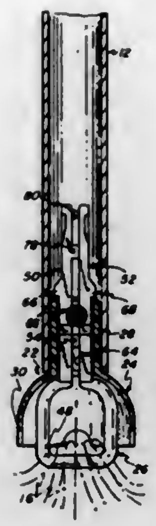
5,615,441
LOTTERY TICKET SCRAPER AND BRUSH DEVICE
Daniel J. Savini, 50L Glen Keith Rd., Glen Cove, N.Y. 11542
Filed Jun. 5, 1996, Ser. No. 655,211
Int. Cl.⁶ A47L *13/02;* G09F *7/00;3/20*
U.S. Cl. 15—111 **13 Claims**



1. A scraper and brush device for a lottery ticket comprising:
a) a body member;
b) means on said body member, for scraping off a coating on the lottery ticket; and
c) means on said body member, for cleaning the lottery ticket, so that the scraped coating will be removed to expose data printed on the lottery ticket, in which the data can now be read by a person
d) means on said body member, for carrying said device on the person; wherein said body member is generally L-shaped housing having a first leg and a second leg at a right angle to said first leg and further wherein said scraping means is a disk affixed to an outer surface of said first leg of said housing, so that said disk can be grasped by fingers on a hand of the person and an edge of said disk used to scrape off the coating on the lottery ticket.

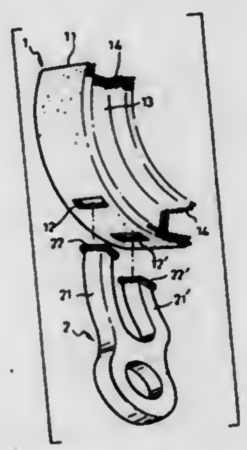
5,615,442
MOP INCLUDING MOP CONNECTOR
Harold J. Schroeck, West Chester, and Paul R. Burger, Lebanon, both of Ohio, assignors to Vining Industries, Inc., Springfield, Ohio
Filed Dec. 20, 1995, Ser. No. 575,228
Int. Cl.⁶ A47L *13/20*
U.S. Cl. 15—147.1 **12 Claims**

1. A mop including a hollow handle and a head portion having a plurality of mop strands, the improvement comprising:



a connector body including an elongated shank portion extending into said handle and defining an aperture extending through a central portion of said connector body, said shank portion including an upper end wall located within said handle;
a strand clip attached to said connector body, said strand clip including a loop portion for receiving a plurality of the mop strands therethrough, said strand clip further including a pair of legs extending from said loop portion and inserted into the aperture in said shank portion; and
wherein said legs include locking tabs extending outwardly from said legs, said legs biasing said locking tabs outwardly into a position engaging said upper end wall in response to insertion of said legs through said aperture in said shank portion.

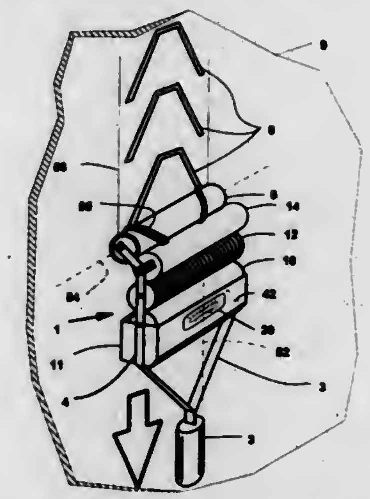
5,615,443
TOOTHBRUSH
Shyh-Jen Lai, 1F, No. 4, Lane 95, Kuling Street, Taipei, Taiwan
Filed Apr. 1, 1996, Ser. No. 625,296
Int. Cl.⁶ A46B *9/04*
U.S. Cl. 15—167.2 **2 Claims**



1. A tooth brush, comprising:
a half U-shaped brush head; and
a handle connected to said half U-shaped brush head,
wherein, said half U-shaped brush head includes an arched flexible base and a plurality of bristles,
wherein, said arched flexible base includes two longitudinal grooves provided in opposition for respectively fitting an upper dental arch and a lower dental arch and two transverse slots at a bottom side thereof,

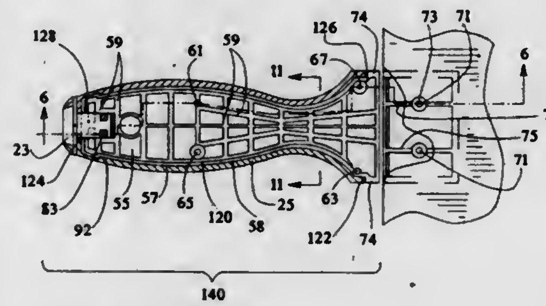
wherein, said plurality of bristles are installed in said two longitudinal grooves, and
wherein, said handle has two coupling rods, said two coupling rods being springy and each having a flange on a terminal end, said flange of each of said two coupling rods respectively being removably plugged into said two transverse slots of said arched flexible base.

5,615,444
ROLLER PRINTER FOR WALLS AND THE LIKE WITH LEVELING FEATURE
Barbara J. Reye, 4041 Edgewood Dr., Lorain, Ohio 44053
Filed Aug. 29, 1995, Ser. No. 520,752
Int. Cl.⁶ B05D *5/00;* B05C *17/02*
U.S. Cl. 15—230.11 **4 Claims**



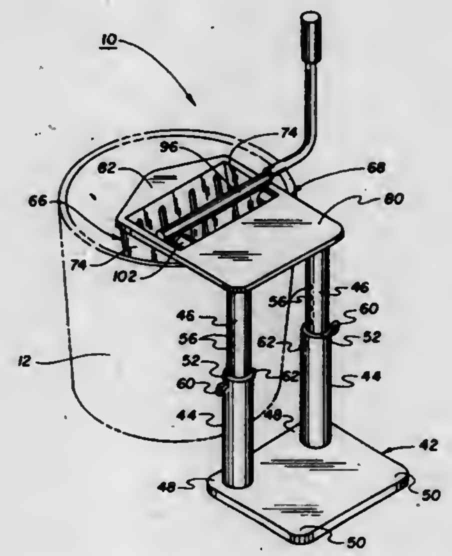
1. In a hand-held roller printer for transferring a design from a priming roller to a substantially vertical surface, which printing roller rotates on an axis central thereto and moves in a transverse direction perpendicular to said axis as it rolls upon a surface to transfer said design, the improvement comprising means for indicating to a user thereof whether the axis of said printing roller of said roller printer is being maintained at a constant angle to the horizontal, thereby to ensure straight tracking thereof along said vertical surface.

5,615,445
TAPING KNIFE HANDLE
Curtis D. Kelsay, Springdale, Ark., and Alan J. Ness, Edgerton, Kans., assignors to Marshalltown Trowel Company, Marshalltown, Iowa
Filed Dec. 27, 1994, Ser. No. 364,217
Int. Cl.⁶ B25G *3/00*
U.S. Cl. 15—245.1 **21 Claims**



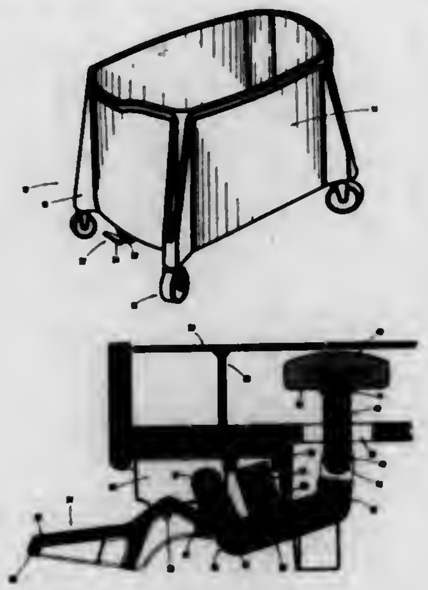
1. A tapping knife, comprising:
a blade member having a working blade region and a blade securement region;
an elongated handle secured to said blade member in said securement region and extending distally from said blade member along the line of gripping, said handle including,
(i) an inner member formed from a first plastic material, said inner member having distal and proximal ends; and
(ii) an outer grip member formed of a second plastic material which surrounds a portion of said inner member to form a grippable area,
said securement region including a backing plate secured to said blade and said handle being secured to said backing plate.

5,615,446
DECK MOP WRINGER WITH ADJUSTABLE SUPPORT STANDS
Charles E. Cetnarowski, 26 Hillcrest Ave., Ossining, N.Y. 10562
Filed Aug. 7, 1995, Ser. No. 511,782
Int. Cl.⁶ A47L *13/58*
U.S. Cl. 15—261 **7 Claims**



2. A deck mop wringer apparatus with adjustable support stands comprising:
a rear support stand including a base member and at least one vertically positioned shaft, each shaft being adjustably mounted to said base member such that said shaft can be moved to a plurality of different heights with respect to said base member;
a front support stand including a base member and at least one vertically positioned shaft, each shaft being adjustably mounted to said base member such that said shaft can be moved to a plurality of different heights with respect to said base member;
a wringer device comprising a basket and a rim, the basket having an open top, a floor and a plurality of side walls including apertures, the rim extending around and coupled to the open top of the basket, the shafts of the front and rear support stands being coupled to the rim to support the basket in a suspended orientation; and
a wringer plate assembly including a perforated front plate and a handle, the plate being rotatably coupled within and to the basket and positioned in an essentially vertical orientation, the handle adapted to be pulled by a user to ring a mop head positioned within the basket.

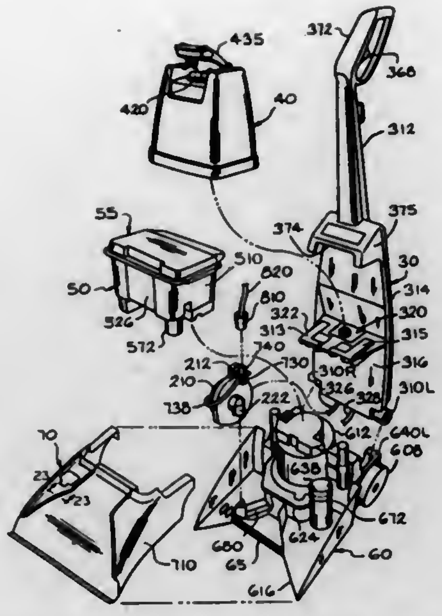
5,615,447
PORTABLE CLEANING CONTAINER HAVING FOOT ACTIVATED DRAIN
Doug Hardesty, Norton, Ohio, and William A. LaFollette, Jr., Stephens City, Va., assignors to Rubbermaid Commercial Products Inc., Winchester, Va.
Filed Apr. 24, 1995, Ser. No. 427,753
Int. Cl.[6] A47J *47/18;* **A47L** *13/50*
U.S. Cl. 15—264 **14 Claims**



12. A portable container assembly comprising:
a bucket including a drain opening oriented in a bucket bottom wall;
vertical foot activated valve means for selectively closing and opening said drain opening, said vertically foot activated valve means comprising at least a first member and a second member, said first member disposed in an interior portion of said bucket and a second member secured to an exterior portion of said bucket, wherein said first member will rise in a vertically upwardly direction in response to vertical depression of said second member by a user's foot.

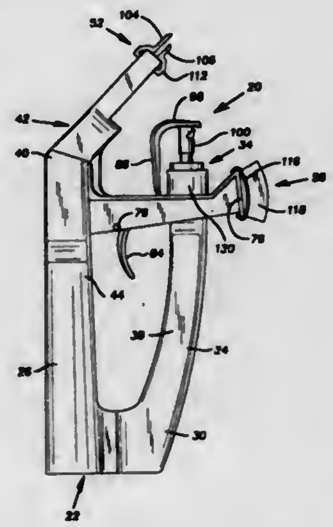
5,615,448
CONVERTIBLE UPRIGHT CARPET EXTRACTOR
Darwin S. Crouser, Canton; Gregg A. McAllise, North Canton; Jeffery A. Morgan, Cuyahoga Falls, and Fred S. Sludlinger, Akron, all of Ohio, assignors to The Hoover Company, North Canton, Ohio
Continuation of Ser. No. 182,723, Jan. 14, 1994, Pat. No. 5,493,752. This application Feb. 23, 1996, Ser. No. 606,055
Int. Cl.[6] A47L *7/00*
U.S. Cl. 15—321 **11 Claims**

1. In an upright carpet extractor, the carpet extractor including vacuum means for creating a vacuum, reservoir means for storing and providing a supply of cleaning solution, recovery means for separating and recovering liquid from vacuumed air, nozzle means for vacuuming the surface to be cleaned, the extractor having means for applying the cleaning solution to a floor surface and vacuuming said solution from said floor surface in a floor cleaning mode, the improvement comprising:
conversion means for converting said extractor from the floor cleaning mode to an upholstery cleaning mode;
said conversion means including a solution supply pump means for supplying cleaning solution to an associated upholstery cleaning accessory;
said pump means including means for activating said pump means when said extractor is converted to the upholstery cleaning mode; and



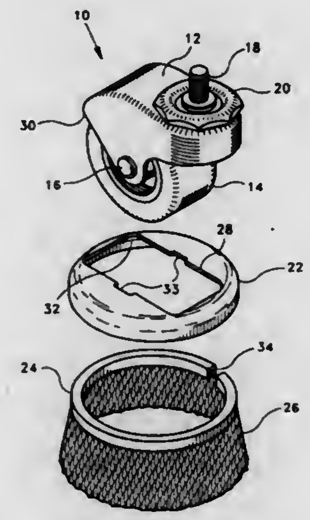
said cleaning accessory including a cleaning fluid supply hose and a suction hose.

5,615,449
GLASS CLEANING DEVICE
Arnold L. Sepke, Hudson, Ill., assignor to White Consolidated Industries, Inc., Cleveland, Ohio
Filed Jan. 4, 1996, Ser. No. 583,290
Int. Cl.[6] A47L *1/08;9/02*
U.S. Cl. 15—322 **21 Claims**



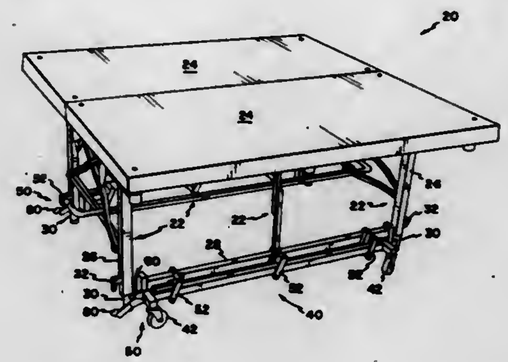
19. A cleaning attachment for a vacuum cleaner, comprising:
a cleaning solution reservoir having a closed proximal end and an open distal end;
a manually operable cleaning solution dispenser removably secured to the distal end of said reservoir;
a suction tube having a proximal end integral with the proximal end of said reservoir and a distal end separate from said reservoir, said suction tube and reservoir cooperating to define a generally U-shaped body;
a nozzle assembly secured to the distal end of said suction tube, said nozzle assembly including a nozzle body, a wiper secured to said nozzle body and defining an inlet for dirt and used cleaning solution, and a support arm extending outwardly from said nozzle body and beyond said reservoir, said support arm defining an opening through which a portion of said reservoir extends, said dispenser engaging the support arm adjacent said opening to secure and retain the support arm relative to the reservoir; and,
a trigger assembly pivotally mounted to said support arm and including a trigger portion which extends downwardly from said support and an actuating portion which extends upwardly from said support arm and engages said cleaning solution dispenser whereby lateral movement of said trigger portion causes vertical movement of said actuating portion, and pumps cleaning solution from said reservoir, through said dispenser, and onto a surface to be cleaned.

5,615,450
SKIRT FOR CASTER WHEELS
Robert Butler, 7968 Arjons Dr., No. 106, San Diego, Calif. 92126
Filed Dec. 18, 1995, Ser. No. 574,300
Int. Cl.[6] B60B *33/00*
U.S. Cl. 16—18 CG **10 Claims**



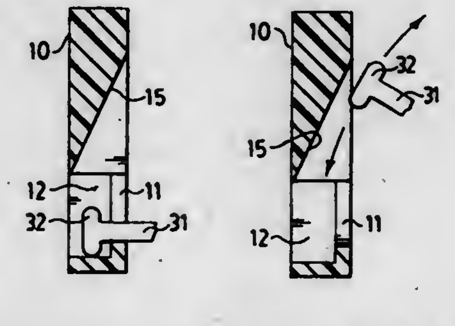
1. A caster wheel skirt system which comprises:
a caster housing;
an axle secured to said housing;
a wheel mounted for rotation on said axle, said wheel extending beyond a lower side of said caster housing to roll on a plane surface;
means for axially mounting said caster housing on a structure, with axes of said caster mounting means and axle offset;
swivel means between said caster mounting means axis and said caster mounting means for allowing said axle to swivel about a generally vertical axis;
a skirt housing secured to said lower side of said caster housing;
flexible skirt means extending from a skirt holder secured to said skirt housing to a plane approximately corresponding to said plane surface;
whereby said skirt is closely adjacent to said wheel and swivels with said wheel to clear debris from adjacent to said wheel as said wheel rolls.

5,615,451
ROLLER ASSEMBLY LIFT MECHANISM
Virgil D. Peterson, Bloomington; Gary W. Andert, Rosemount, and Rollin D. Botts, Bloomington, all of Minn., assignors to Sico Incorporated, Minneapolis, Minn.
Continuation of Ser. No. 179,112, Jan. 10, 1994. This application Oct. 16, 1995, Ser. No. 543,821
Int. Cl.[6] B60B *33/00*
U.S. Cl. 16—34 **15 Claims**



1. A lift apparatus having a first member elevationally adjustable relative to a second member, comprising:
(a) one or more pivoting links connecting the first and second members, each of the pivoting links including a lower cross member pivotally connecting the second member to the pivoting link, and an upper cross member pivotally connecting the first member to the pivoting link;
(b) a first actuating member directly attached to a first one of the pivoting links, the first actuating member including a portion pivoting about the lower cross member; and,
(c) a second actuating member connected to a stop device moveable between first and second positions, wherein in the first position the stop device engages the second member and the first pivoting link, and in the second position the stop device disengages one of the second member or the first pivoting link for selectively limiting relative motion between the first and second members.

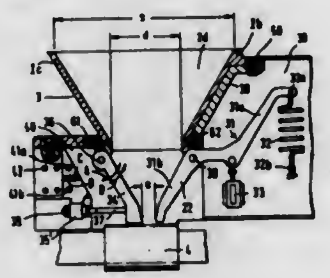
5,615,452
LIFT-OFF GUARD GUIDE FOR TILT SHOE
John L. Habbersett, Rochester, N.Y., assignor to Caldwell Manufacturing Company, Rochester, N.Y.
Filed May 5, 1995, Ser. No. 435,886
Int. Cl.[6] E05D *15/22*
U.S. Cl. 16—194 **17 Claims**

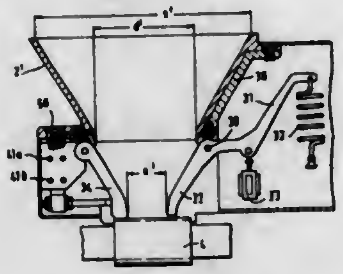


1. In a counterbalanced tilt sash shoe having a lift-off slot for a headed sash pin, an improvement comprising:
a. a guard disposed above the sash pin slot to intersect space vertically above the sash pin slot; and
b. the guard being configured and positioned to block vertical motion of a sash pin rising from the slot with an unslanted

sash and allow off-vertical motion of a sash pin rising from the slot with a slanted sash.

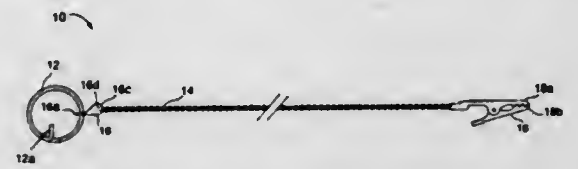
5,615,453
SLIVER GUIDING AND MEASURING ASSEMBLY HAVING AN EXCHANGEABLE COMPONENT
Ferdinand Leifeld, Kempen, Germany, assignor to Trützschler GmbH & Co. KG, Mönchengladbach, Germany
Filed Oct. 27, 1995, Ser. No. 549,312
Claims priority, application Germany, Oct. 31, 1994, 44 38 882.9
Int. Cl.[6] D01G *15/64*; D01H *5/72*
U.S. Cl. 19—288 **4 Claims**





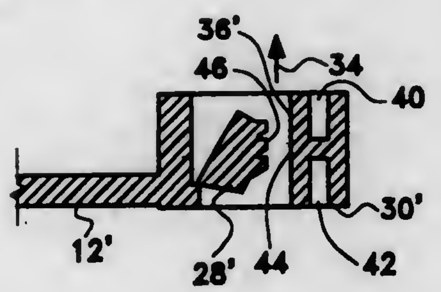
1. An apparatus kit for measuring sliver thickness in a drawing frame, comprising
(a) first and second sliver guiding devices, each including
(1) an inlet opening for simultaneously receiving a plurality of side-by-side running slivers having an advancing direction; said inlet opening having a cross-sectional sliver passage area;
(2) sliver combining means defining a plane extending parallel to said advancing direction for bringing the slivers together to form a sliver assembly constituted by a plurality of side-by-side positioned running slivers arranged in said plane and laterally contacting one another; the sliver assembly having oppositely located first and second outermost slivers; said sliver combining means comprising oppositely located, converging wall surfaces;
(3) an outlet opening for discharging the sliver assembly; said outlet opening having a cross-sectional sliver passage area; at least one of said cross-sectional sliver passage areas of said first sliver guiding device being different from a respective said cross-sectional sliver passage area of said second sliver guiding device;
(b) receiving means for receiving a selected one of said first and second sliver guiding devices;
(b) a sensor element contacting said first outermost sliver at said outlet;
(c) positioning means for movably supporting said sensor element;
(d) a counterelement contacting said second outermost sliver at said outlet opening of said selected sliver guiding device;
(g) biasing means for urging said sensor element into a resilient contact with said first outermost sliver in a direction towards said second outermost sliver, whereby said sensor element undergoes excursions upon variation of thickness of said sliver assembly in said plane; said sensor element and said counterelement together defining a restriction through which said sliver assembly passes; said sensor element and said counterelement forming part of said combining means of said selected sliver guiding device;
(h) transducer means for converting excursions of said sensor member into electric pulses;
(i) a withdrawing roller pair supported downstream of said selected sliver guiding device as viewed in said advancing direction; said withdrawing roller pair defining a nip through which the sliver assembly passes; and
(j) means for driving said withdrawing roller pair for pulling said sliver assembly through said selected sliver guiding device.

5,615,454
CARD RETENTION AND SECURITY DEVICE
Alfred F. Contarino, 35 Bonny La., North Andover, Mass. 01845
Filed Oct. 5, 1995, Ser. No. 539,607
Int. Cl.[6] A44B *21/00*; F16G *15/00*
U.S. Cl. 24—3.13 **7 Claims**



1. An apparatus for preventing loss of a card comprising;
a split ring upon which a card can be detachably coupled by threading a hole in said card onto said ring,
a ball chain having first and second ends detachably coupled to said split ring at said first end,
a coupling member coupled between said ring and said ball chain having a hole so as to be capable of being detachably coupled to said ring by threading said hole onto said ring and further having a snap in end coupler for detachably coupling to said chain, and
an alligator clip for clipping onto a person's clothing, said clip being detachably coupled to said second end of said chain.

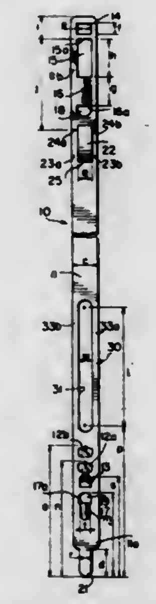
5,615,455
CABLE TIE HAVING ENHANCED ABUTMENT WALL IN LOCKING HEAD
Soren C. Sorensen, and Jens O. Sorensen, both of Cayman KAL, Cayman Islands, assignors to GB Electrical, Inc., Milwaukee, Wis.
Filed Dec. 28, 1995, Ser. No. 579,235
Int. Cl.[6] B65D *63/00*
U.S. Cl. 24—16 PB **10 Claims**



1. A tie comprising an elongated tongue with two ends and two broad sides, a locking head at one end of the tongue, a tip at the other end of the tongue, and a set of ratchet teeth extending along one broad side of the tongue,

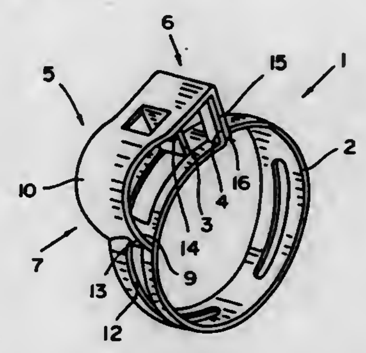
wherein the locking head has sides defining an opening for receiving the tip of the tongue, the sides including a movable pawl that is hinged at one side of said opening and an abutment wall that is across the opening from the pawl;
wherein the pawl has at least one pawl tooth disposed for locking engagement with the set of ratchet teeth when the tip of the tongue has been inserted through said opening with the set of ratchet teeth facing the pawl;
wherein the pawl, when the at least one pawl tooth is so engaged, is movable toward the abutment wall in response to a pulling force applied to the tongue in a direction opposite to the direction of said insertion in order to force the tongue against an abutment surface of the abutment wall; and
wherein the abutment wall includes one or more apertures extending within the abutment wall approximately parallel to the direction of said insertion, with the one or more apertures not being exposed to the abutment surface and not being as wide as the pawl for enhancing the abutment wall to withstand a force that will tend to bow the abutment wall.

5,615,456
TOLERANCE-COMPENSATING REUSABLE CLAMP STRUCTURE
Hans Oetiker, Horgen, Switzerland, assignor to Hans Oetiker AG Maschinen- und Apparate-fabrik, Horgen, Switzerland
Filed Aug. 19, 1994, Ser. No. 293,464
Int. Cl.[6] F16L *33/04*
U.S. Cl. 24—20 R **24 Claims**



1. An open clamp structure, comprising clamping band means made from a clamping band material having low elastic stretchability in its longitudinal direction and of predetermined width having end portions operable to be mutually overlapped radially in the installed condition as inner and outer band end portions, respectively, means in the clamp structure to enable installing the same over one part to be fastened on another part including means for mechanically connecting the radially overlapping end portions and for tightening the clamp structure about the one part, and tolerance-compensating means in said clamping band means operable to compensate for tolerances in the part and in said another part including at least one opening means extending in the longitudinal direction of said clamping band means and leaving substantially rectilinear lateral band portions on both sides thereof, said lateral band portions having outer edges in continuation of the width of said clamping band means, the width of said opening means being at least substantially as wide as any other aperture in said clamping band means and the length of said opening means being a function of the yield strength and ultimate strength of said lateral band portions as modified by work hardening by removal of the material forming the opening means.

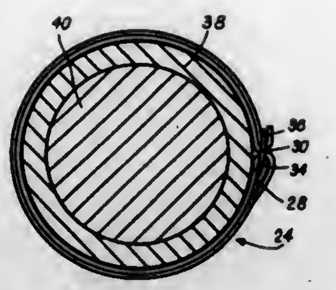
5,615,457
SPRING BAND CLAMP
Uwe Steinkönig, Augustiner Strasse 31, 55116 Mainz, Germany
Filed Jul. 11, 1995, Ser. No. 500,737
Claims priority, application Germany, Jul. 11, 1994, 44 24 046.5
Int. Cl.[6] B65D *63/00*
U.S. Cl. 24—20 R **15 Claims**



1. A spring band clamp with a spring band having a pair of tensioning endpieces projecting therefrom, and a holding element which holds the tensioning endpieces in a position placing the spring band clamp in a spread, installation state in which the spring band is subjected to a pretensioning force; wherein the holding element has a holding section and a disengagement section; wherein the disengagement section of the holding element has a finger grip portion serving as a means for enabling the holding element to be disengaged from said at least one of the tensioning endpieces of the spring band by direct engagement of the finger grip portion with at least one finger and for thereby enabling the spring band clamp to spring into an essentially released, clamping state; wherein the finger grip portion comprises a finger loop which runs from adjacent the tensioning endpieces toward the spring band; ...wherein the finger grip portion has lateral fixing means for interacting with the spring band in a manner holding the finger .grip against movement in an axial direction of the spring band clamp; and wherein said lateral fixing means comprises a projection provided on the finger grip portion; and wherein the spring band has at least one opening into which said projection fits in the installation state.

5,615,458
DEVICE FOR CONNECTING AT LEAST ONE BRAID OF ELECTRIC CABLES TO A CONNECTOR
Gilles Rouchaud, Axon'Cable B.P1, 51210 Montmirail, France
PCT No. PCT/FR92/00004, § 371 Date Nov. 2, 1993, § 102(e) Date Nov. 2, 1993, PCT Pub. No. WO92/12552, PCT Pub. Date Jul. 23, 1992
PCT Filed Jan. 3, 1992, Ser. No. 84,279
Claims priority, application France, Jan. 4, 1991, 91 00091
Int. Cl.[6] B65D *63/08*
U.S. Cl. 24—23 R **5 Claims**

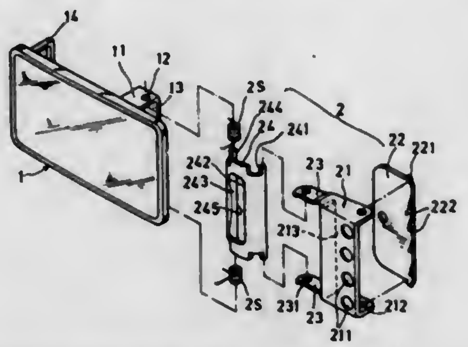
1. An assembly including at least one braid of electrical cable, a substantially cylindrical connector and a connecting device comprising
a metal band having a first and second end, said band being of a substantially constant thickness and a substantially constant width; and
a metal fastening plate of substantially rectangular shape, said plate having an inner surface and an outer surface, said plate being provided with a slot having at least two straight parallel sides respectively defining a first edge and a second edge of



said plate, the slot having a length greater than the width of said band and a width that is between 6–10 times the thickness of said band;

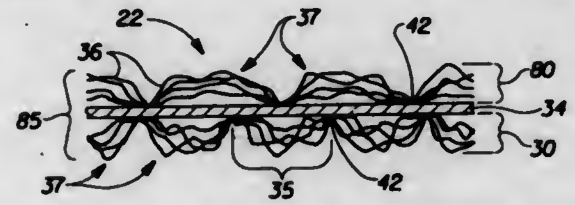
wherein the first end of said band is applied against the outer surface of the first edge of said fastening plate, said band further comprising a first portion passing through the slot, a second portion applied around the inner surface of the first edge of said fastening plate, a first loop portion applied against the cable braid, a third portion passing through the slot, a fourth portion applied against the first end of said band, a second loop portion applied against the first loop portion, a fifth portion applied against the inner surface of the second edge of said fastening plate and a sixth portion passing through the slot, the second end of said band being applied against the outer surface of the second edge of said fastening plate.

5,615,459
SLIM BUCKLE MEANS FOR FIRMLY FASTENING A BELT
Teng-Sheng Wu, c/o Hung Hsing Patent Service Center P.O. Box 55-1670, Taipei, Taiwan
Filed Aug. 12, 1996, Ser. No. 695,645
Int. Cl.⁶ A44B *11/00*
U.S. Cl. 24—309 **2 Claims**



1. A buckle means comprising:
a main plate having a bracket formed on said main plate for passing a free end portion of a belt through a belt hole formed in said bracket; and
a fastening member including a base portion having a plurality of tooth openings formed in an outer edge of the base portion, a locking element pivotally coupled with said base portion for securing a fixed end portion of said belt between said base portion and said locking element, a clamping arm portion having an outer portion of said arm portion pivotally secured on said base portion and having an inner portion of said arm portion pivotally secured to said bracket of said main plate, and a restoring spring normally restoring said clamping arm portion towards said main plate for fastening the free end portion of said belt in between said main plate and said clamping arm portion;
the improvement which comprises:
said clamping arm portion having a secant notch recessed in said arm portion for engaging the free end portion of said belt for firmly clamping the belt between the clamping arm portion and said main plate for reducing a thickness of said main plate, said clamping arm portion and said belt as sandwiched between said main plate and said clamping arm portion when said clamping arm portion is restored inwardly towards said main plate; and
said locking element having a plurality of detent teeth formed on an outer edge portion of said locking element, and said base portion having a plurality of tooth openings formed in an outer portion of said base portion, whereby upon depression of the fixed end portion of the belt into the tooth openings in the base portion as urged by said plurality of detent teeth on said locking element, said fixed end portion of said belt is firmly secured in between said base portion and said locking element of said fastening member.

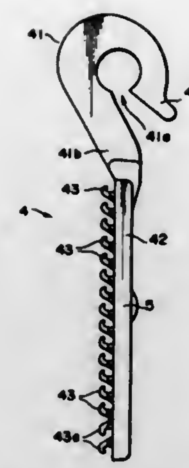
5,615,460
FEMALE COMPONENT FOR REFASTENABLE FASTENING DEVICE HAVING REGIONS OF DIFFERENTIAL EXTENSIBILITY
David M. Weirich, West Chester, and Patrick J. Allen, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Continuation-in-part of Ser. No. 547,847, Oct. 25, 1995, which is a continuation of Ser. No. 254,814, Jun. 6, 1994, abandoned, and a continuation-in-part of Ser. No. 419,314, Apr. 10, 1995, Pat. No. 5,547,531. This application Jan. 18, 1996, Ser. No. 588,481
Int. Cl.⁶ A44B *21/00*
U.S. Cl. 24—446 **23 Claims**



1. A female fastening component of a refastenable fastening device capable of engaging a complementary hook fastening component, said female component comprising:
an elastomeric adhesive backing having an elongated orientation, a relaxed orientation and a path of response along which said elastomeric adhesive backing contracts from said elongated orientation to said relaxed orientation wherein said elastomeric adhesive backing has two or more regions subjected to differing amounts of elongation prior to being joined with a nonwoven web;
said nonwoven web being secured to said elastomeric adhesive backing while said backing is in said elongated orientation, said nonwoven web comprising a multiplicity of fibrous elements comprising filaments that are joined together with inter-fiber bonds at spaced, fixed regions along each of said filaments to define between each pair of fixed regions an unsecured catching region, wherein said fibrous elements comprise those filaments that are shirred when said backing contracts to said relaxed orientation.

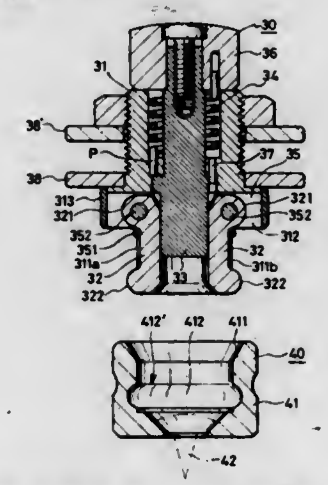
5,615,461
FASTENING DEVICE
Yutaka Tominaga; Toshiaki Takizawa, and Ryuichi Murasaki, all of Toyama, Japan, assignors to YKK Corporation, Tokyo, Japan
Filed Dec. 2, 1994, Ser. No. 352,725
Claims priority, application Japan, Dec. 8, 1993, 5-308340
Int. Cl.⁶ A44B *18/00*
U.S. Cl. 24—452 **15 Claims**

1. A fastening device molded of synthetic resin and adapted to be engaged with a fastener part of a mating member, said fastening



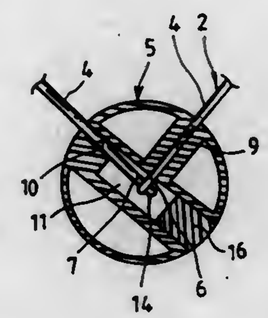
device comprising a base member having on its one surface a number of hooks integrally molded with said base member and arranged in a plurality of parallel hook rows perpendicular to a first peripheral edge of said base member, the hooks in each hook row of said plurality of parallel hook rows having a hook direction aligned with an axis of the respective hook row, the hooks in one hook row of said plurality of parallel hook rows and the hooks in an adjacent hook row of said plurality of parallel hook rows having a different pattern of hook directions along their respective axes, wherein in each hook row of said plurality of parallel hook rows, at least one hook closest to said first peripheral edge has a hook direction facing outwardly toward said peripheral edge.

5,615,462
CONNECTOR FOR COUPLING A HARNESS AND A STRINGED INSTRUMENT
Takao Goto, Gunma-ken, Japan, assignor to Gotoh Gut Yugen Kaisha, Gunma-ken, Japan
Filed Jun. 11, 1996, Ser. No. 661,727
Claims priority, application Japan, Jun. 21, 1995, 7-189687
Int. Cl.⁶ G10G *5/00*
U.S. Cl. 24—608 **21 Claims**



1. A connector including an engaging member and a receiving member,
said engaging member comprising:
a hollow base cylinder;
a hollow insertion cylinder positioned at one end of said base cylinder and having an interior peripheral surface, an open end, and at least one through opening;
a shaft, rotatably mounted in said base cylinder, having a first end and a second end, said second end extending into said open end of said insertion cylinder, wherein said second end has a cross-sectional configuration having a large diameter portion which is complementary to an interior peripheral surface of said insertion cylinder and a small diameter portion which is spaced from said interior peripheral surface of said insertion cylinder;
a knob mounted on said first end of said rotatable shaft;
at least one engaging element having a first end and a second end, said at least one engaging element being pivotally mounted in said at least one opening through said insertion member at said first end, and said second end of said at least one engaging element having an outwardly extending arc shaped contour, and
said receiving member comprising:
a hollow receiving cylinder having an open end and an annular fitting groove formed in an inner peripheral wall of said hollow receiving cylinder.

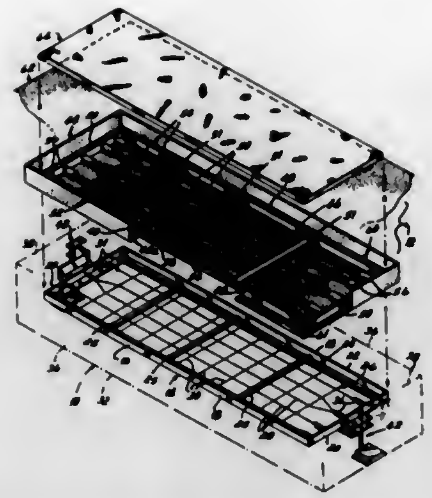
5,615,463
SEALED BUTTON
Ke-Hsiao Wu, No. 26, Lane 6, Kao Yang South Rd. Lung Tan Village 325, Tao Yuan Hsien, Taiwan
Filed Sep. 13, 1995, Ser. No. 527,442
Int. Cl.⁶ F16B *21/00*
U.S. Cl. 24—704.1 **1 Claim**



1. A sealed button comprising:
(a) a housing body defining an internal housing chamber and a sidewall having a pair of arcuately displaced spring openings formed through said sidewall;
(b) an arcuately contoured elastic spring having substantially linearly directed end portions, each of said linearly directed end portions having a respective hook member;
(c) a T-shaped closed conduit defining a horizontal arm member and a vertical arm member forming a pair of intersecting spring passages respectively aligned with said displaced spring openings for inserting therein respective end portions of said elastic spring, each said hook members of said respective end portions of said elastic spring being inserted through said spring openings and connecting to each other at a location defined as an intersection portion of said intersecting passages;
(d) a stopper member insertable at least partially into an end of said horizontally arm member through said passage opposite one of said spring openings for limiting the displacement of one of said hook members; and,
(e) a cover member mounted on said housing body and secured to said sidewall.

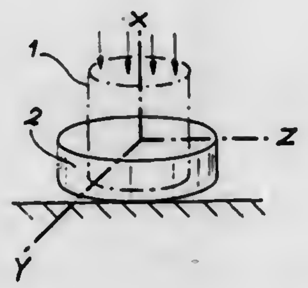
5,615,464
LIQUID RETAINING SYSTEM FOR CASKET
Ilija Rojdev, Fairfield, Ohio, assignor to Batesville Casket Company, Inc., Batesville, Ind.
Filed Mar. 23, 1995, Ser. No. 409,342
Int. Cl.⁶ A61G *17/04*
U.S. Cl. 27—19 **25 Claims**

1. A combination of a casket and a liquid retaining system for said casket, said combination comprising:



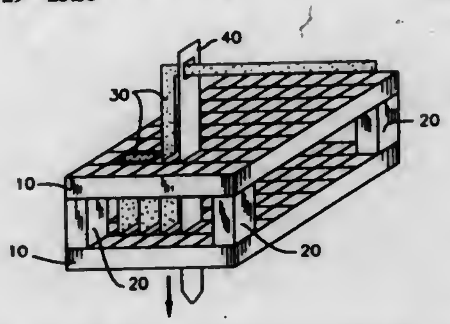
a casket shell having side and end walls and a bottom wall secured to said side and end walls;
a body support structure mounted in said casket shell and spaced above said bottom wall and adapted to support a deceased thereon; and
a tray positioned atop said body support structure and adapted to be positioned beneath the deceased supported on said body support structure, said tray for retaining liquids of decomposition of the deceased.

5,615,465
PROCESS FOR MANUFACTURING METAL PARTS BY FREE FORGING AND DROP FORGING IN A PRESS
Dominique Broussoux, Linas; Jean Collard, Gif Aur Yvette, and Marie-Thérèse Daumas, Orsay, all of France, assignors to Commissariat a l'Energie Atomique, Paris, and Thomson-Brandt Armements, Saint-Aubin, both of France
Filed May 7, 1993, Ser. No. 98,201
Claims priority, application France, May 7, 1992, 92 05627
Int. Cl.⁶ B21K *23/00*
U.S. Cl. 29—1.21 **11 Claims**



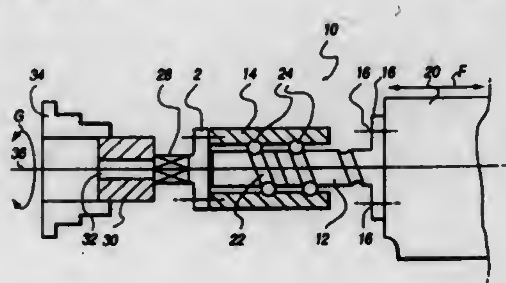
1. Process for manufacturing metal parts by free forging and drop forging in a press, starting from billets, each of which is associated with an orthogonal mark having three dimensions (X, Y, Z), the process comprising the following steps:
a first upsetting along the first axis (X) (FIG. 1);
a first drawing out (FIGS. 2A to 2F);
a second upsetting (FIG. 3);
a second drawing out (FIGS. 4A to 4G);
a die forging (FIGS. 6A and 6B); and
a recrystallization heat treatment,
the process being characterized in that:
the first drawing out is performed along the second axis (Y);
the second upsetting is performed along the second axis (Y);
the second drawing out is performed along the third axis (Z).

5,615,466
MEHTOD FOR MAKING PIEZOELECTRIC COMPOSITES
Ahmad Safari, Princeton Junction; Victor F. Janas, Monroe Township, and Thomas F. McNulty, Howell, all of N.J., assignors to Rutgers University, Piscataway, N.J.
Continuation-in-part of Ser. No. 263,564, Jun. 22, 1994, Pat. No. 5,539,965. This application Feb. 17, 1995, Ser. No. 390,094
Int. Cl.⁶ H01L *41/22*
U.S. Cl. 29—25.35 **14 Claims**



1. A process for making a piezoelectric composite, comprising the following steps:
a) providing a plurality of reticulated structures, using spacers to provide said reticulated structures in a spaced relationship;
b) weaving one or more green ceramic fibers through said reticulated structures, said green ceramic fiber or fibers containing one or more piezoelectric phases;
c) heating said reticulated structures having the woven green ceramic fiber or fibers to a temperature sufficient to remove any unwanted organic material and sinter said green ceramic fiber or fibers; and
d) filling the space between said reticulated structures with a filler material, said filler material having an acoustic impedance which is substantially different from the acoustic impedance of the material of the sintered fibers to encapsulate the sintered fibers and form a composite therewith.

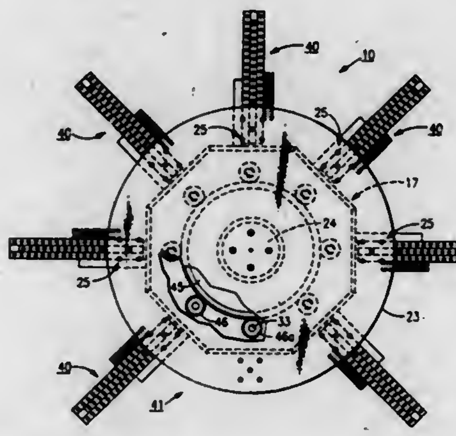
5,615,467
BROACHING DEVICE AND METHOD
Mark J. Simmons, Barnstaple, and Steven G. Parsons, Braunton, both of England, assignors to Thomson Saginaw Ball Screw, Inc., Saginaw, Mich.
Filed Sep. 5, 1995, Ser. No. 523,763
Claims priority, application United Kingdom, Sep. 15, 1994, 9418602
Int. Cl.⁶ B23D *37/00*
U.S. Cl. 29—27 C **20 Claims**



1. A broaching device for enlarging an opening, hollow or cavity in a workpiece, the device comprising:
a lathe having a tail stock and a workpiece mounting rotary chuck;
a ballscrew shaft mounted on said tailstock having a helical raceway groove formed externally on the shaft;
a ballscrew nut mounted on said ballscrew shaft, the nut being provided with an internally-formed helical raceway groove;

load bearing balls accommodated in said raceway grooves to transfer motion between the shaft and nut;
said shaft being axially stationary and said nut being axially movable with respect to the shaft;
and a broaching tool mounted on the nut so as to be axially movable therewith.

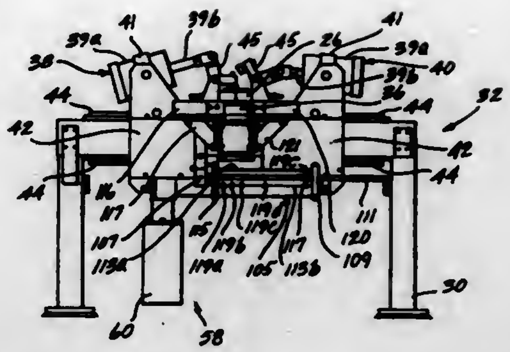
5,615,468
MODULAR MECHANICAL SYSTEM
Joseph Chubbuck, 5999 Lower Lawrence St., Rome, N.Y. 13440
Filed May 3, 1996, Ser. No. 642,441
Int. Cl.⁶ B23Q *7/02*
U.S. Cl. 29—38 C **11 Claims**



1. Apparatus for carrying out a series of operations upon a workpiece that includes
a first modular unit that further contains,
a frame,
a worktable mounted for rotations above said frame, said worktable having at least one hold-down station thereon for supporting a workpiece,
a Geneva wheel mounted in said frame for rotation with said worktable to intermittently move the worktable and periodically indexing the hold-down station into a series of work stations positioned about the worktable whereby the hold-down means is held in each work station for a predetermined dwell period,
a primary gear mounted for rotation in said frame and being in meshing engagement with a series of smaller secondary gears,
a prime mover for turning the primary gear at a desired rate,
a Geneva driver connected to one of said secondary gears for engaging said Geneva wheel and indexing the Geneva in timed relation with movement of the primary gear, and
coupling means for operatively connecting one of said secondary gears to a movable tool support located in each of the work stations for reciprocating the tool support toward and away from a hold-down means positioned in the work station whereby an operation can be performed on a workpiece support in the hold down during each dwell period.

5,615,469
COMPOSITE STRINGER DISASSEMBLY MACHINE
Donald A. Jensen, Kent, Wash., and Maxine E. Duncan, Salmon, Id., assignors to The Boeing Company, Seattle, Wash.
Division of Ser. No. 300,107, Sep. 2, 1994, Pat. No. 5,502,886. This application Sep. 6, 1995, Ser. No. 524,064
Int. Cl.⁶ B23P *19/00*
U.S. Cl. 29—426.5 **2 Claims**

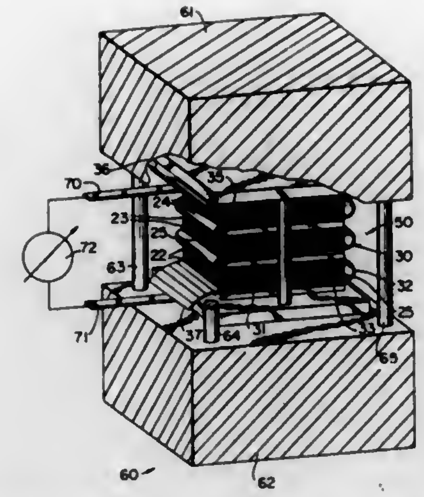
1. A method of removing first and second mandrels from the channels of a composite I-beam comprising the steps of:



(a) supporting a stringer assembly on a longitudinal platform, said stringer assembly comprising a composite I-beam and a pair of mandrels, one mandrel located in each channel of the composite I-beam;
(b) clamping one side of the stringer assembly to said longitudinal platform; then
(c) partially removing the mandrel from the side of stringer assembly remote from the side clamped to said longitudinal platform thereby loosening said mandrel; then
(d) clamping the side of the stringer assembly with the loosened mandrel to said longitudinal platform; then
(e) unclamping said one clamped side of the stringer assembly from said platform; then
(f) fully removing the mandrel from said one side of the stringer assembly; then
(g) clamping the side of the stringer assembly from which the mandrel has been fully removed to the longitudinal platform; then
(h) unclamping the side of the stringer assembly with the loosened mandrel from said platform; and
(i) fully removing the loosened mandrel from the stringer assembly.

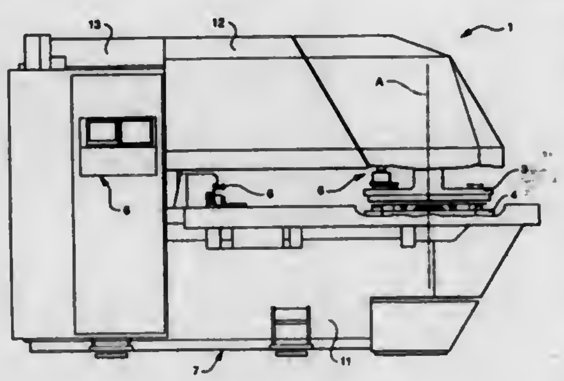
5,615,470
PROCESS FOR PRODUCING PLASTIC LAMINATES WITH METAL LAMINAE
Bruno Ceraso, Milan, Italy, assignor to Cedal S.r.L., Milan, Italy
PCT No. PCT/IT92/00101, § 371 Date Nov. 7, 1994, § 102(e) Date Nov. 7, 1994, PCT Pub. No. WO93/22139, PCT Pub. Date Nov. 11, 1993
PCT Filed Aug. 7, 1992, Ser. No. 331,661
Claims priority, application Italy, May 5, 1992, MI92A1060; Jul. 9, 1992, MIV003006
Int. Cl.⁶ B21D *35/00*
U.S. Cl. 29—469.5 **10 Claims**

1. A process for making plastic laminates, each of said plastic laminates having an upper face and a lower face and comprising a plurality of prepreg sheets and a metal lamina on each of said upper and lower faces, said process comprising the steps of:
a) providing a stack comprising a plurality of prepreg sheets, one above the other, a plurality of flattening sheets and a metal band passing in a serpentine manner back and forth through said stack, said metal band having two end portions and extending continuously between said end portions, said stack being arranged such that a substack is formed between adjacent flattening sheets in said stack, each substack including a plurality of prepreg sheets captured between portions of said metal band;
b) connecting the end portions of the metal band to a source of electric current of sufficient power and passing the electric current through the metal band to heat the metal band and thus the prepreg sheets; and



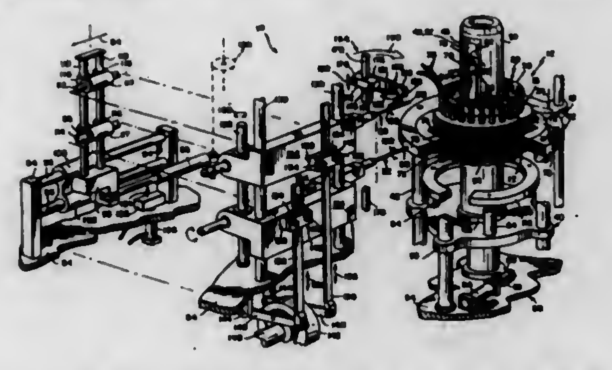
c) applying pressure to the stack to bond said prepreg sheets in each substack to its corresponding portions of said metal band, thereby forming each of said substacks into a plastic laminate.

5,615,471
MACHINE FOR MACHINING SHEET METAL
Eugenio Perazzolo, Rovigo, Italy, assignor to Rainer S.r.l., Calderara Di Reno, Italy
Filed Dec. 23, 1994, Ser. No. 362,410
Claims priority, application Italy, Dec. 24, 1993, BO93A0527
Int. Cl.[6] B23P *23/04*
U.S. Cl. 29—560 **13 Claims**



1. A machine for machining a metal sheet said machine comprising:
a top and bottom cylindrical turret rotating about and coaxial with each other along a first vertical axis;
plurality of multiple-tool assemblies arranged in a ring about the periphery of said top turret, each multiple-tool assembly rotatable about a second vertical axis;
a plurality of multiple-die assemblies arranged in a ring about the periphery of said bottom turret, each multiple-die assembly rotatable about the second vertical axis;
a work station including a hammer movable along the second axis; and
an electronic control unit for controlling a carriage for gripping and moving said metal sheet, a means for driving said turrets, a means for driving said multiple-tool and multiple-die assemblies, and a means for driving said work station;
wherein at least one of said tools of said multiple-tool assemblies is a punch tool and at least one of said tools of said multiple-tool assemblies is a threading tool for internally threading a hole formed in said sheet;
wherein said work station comprises a striker for transmitting to a work tool the pressure exerted by said hammer and wherein a plurality of devices for rotating said at least one punch tool and at least one threading tool about a third vertical axis is provided.

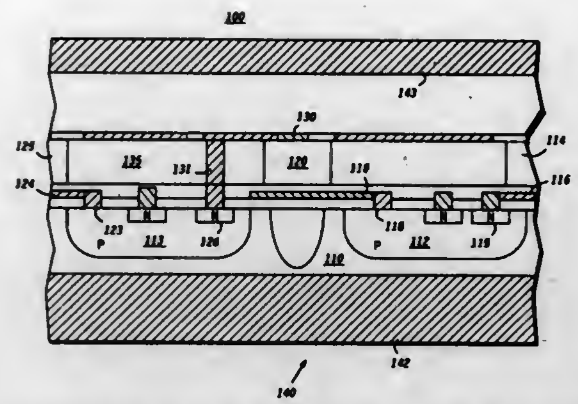
5,615,472
METHOD OF ADJUSTING A STATOR COIL LACING MACHINE
David G. Bouman, Ossian, Ind.; Larry D. Moser, Ohio City, Ohio, and Keith W. Moser, Fort Wayne, Ind., assignors to Alliance Winding Equipment, Inc., Fort Wayne, Ind.
Division of Ser. No. 114,216, Aug. 30, 1993, Pat. No. 5,485,670. This application Jun. 7, 1995, Ser. No. 473,256
Int. Cl.[6] H02K *15/02*
U.S. Cl. 29—596 **6 Claims**



1. A method of adjusting a stator coil lacing machine without disassembly of the machine to accommodate a range of stator stack heights, the machine including an arbor, stitching means for stitching lacing cord around coils of the stator, delivering means positioned within the arbor for delivering lacing cord to the stitching means, and securing means positioned within the arbor for securing the lacing cord, the method comprising the steps of:
orienting a stator on the arbor of the stator coil lacing machine so that coils thereof can be laced, the stator having a particular stack height;
adjusting the delivering means to accommodate the particular stack height of the stator;
adjusting the stitching means to accommodate the particular stack height of the stator and position the stitching means relative to the delivering means; and
adjusting the securing means to accommodate the particular stack height of the stator and position the securing means relative to the delivering means and stitching means,
wherein the delivering means, stitching means, and securing means are adjusted without disassembly of the stator coil lacing machine.

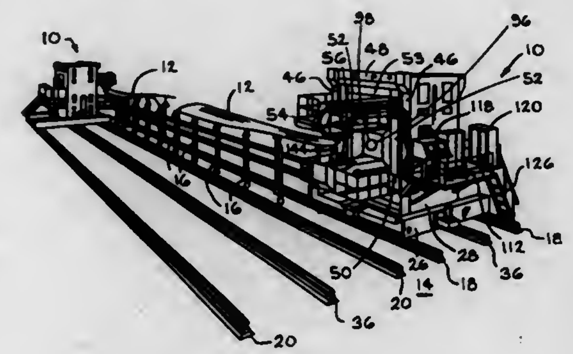
5,615,473
METHOD OF MAKING A FERRITE/SEMICONDUCTOR RESONATOR/FILTER
Michael Dydyk, Scottsdale; John M. Gollo, Chandler, both of Ariz.; Robert J. Higgins, Jr., Plantation, Fla., and Aristotelis Arvanitis, Addison, Ill., assignors to Motorola, Schaumburg, Ill.
Division of Ser. No. 161,909, Dec. 6, 1993, Pat. No. 5,424,698. This application May 30, 1995, Ser. No. 453,856
Int. Cl.[6] H01F *41/14*
U.S. Cl. 29—602.1 **7 Claims**

1. A method of fabricating a ferrite/semiconductor resonator/filter comprising the steps of:
providing a semiconductor substrate;
forming electronic circuitry on the semiconductor substrate and forming interconnects for the electronic circuitry;



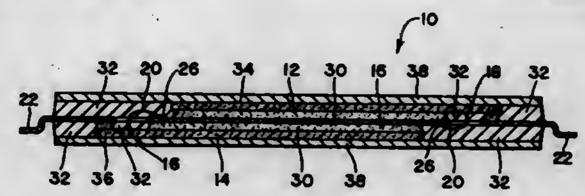
bonding a layer of ferrite material to the substrate in overlying relationship to the electronic circuitry and interconnects;
etching the layer of ferrite material to produce a desired number and shape of ferrite disks, and the etching step being further performed to position the ferrite disks relative to the electronic circuitry and interconnects so as to interact with the electronic circuitry to provide frequency selectivity within the electronic circuitry; and
positioning a permanent magnet adjacent to the desired number of ferrite disks to provide a substantially constant magnetic field, the magnetic field producing resonance in the desired number of ferrite disks.

5,615,474
AUTOMATIC FASTENING MACHINE WITH STATISTICAL PROCESS CONTROL
Robert J. Kellner, and Mark F. Cassidy, Jr., both of Orchard Park, N.Y., assignors to Gemcor Engineering Corp., Buffalo, N.Y.
Filed Sep. 9, 1994, Ser. No. 303,535
Int. Cl.[6] B23Q *15/007;15/22;* **B23P** *21/00*
U.S. Cl. 29—703 **5 Claims**



1. An automatic fastening machine including a plurality of automatically operated tools for performing operations during installation of a fastener in a workpiece, said machine comprising:
a) a plurality of automatically operated tools and a corresponding plurality of motion controllers, one for each of said tools, for controlling operations of said tools and for receiving measurements and data related to said tools as they perform the operations;
b) a machine controller connected in controlling relation to said motion controllers for providing programmed control of said automatic fastening machine through said motion controllers and for receiving from said motion controllers said measurements and data related to said tools; and
c) a processor means operatively connected to said machine controller for receiving from said machine controller said measurements and data related to said tools and for processing said measurements and data for monitoring and analyzing both real-time and historical data related to the operations performed by said tools;
d) wherein the automatic fastening functions including downloading said measurements and data from said machine controller to said processor means to provide both real time data for substantially immediate use in controlling said machine and historical data for subsequent use in analyzing operation of said machine.

5,615,475
METHOD OF MANUFACTURING AN INTEGRATED PACKAGE HAVING A PAIR OF DIE ON A COMMON LEAD FRAME
Carmen D. Burns, Austin, Tex., assignor to Staktek Corporation, Austin, Tex.
Division of Ser. No. 380,542, Jan. 30, 1995, abandoned. This application Aug. 21, 1995, Ser. No. 517,485
Int. Cl.[6] H01R *43/00*
U.S. Cl. 29—827 **23 Claims**



1. A method of manufacturing a high density integrated circuit package, which includes two integrated circuit die disposed within said package, comprising the steps of:
providing a first and a second integrated circuit die, wherein each said die includes bonding pads on a major surface of each said die;
mounting a substantially planar lead frame, said lead frame including a first and a second major surface, to said first and said second die, wherein said lead frame substantially overlays each of said integrated circuit die; and
electrically connecting said lead frame to said bonding pads on said first and said second die.

5,615,476
METHOD FOR PRODUCING IDENTITY CARDS HAVING ELECTRONIC MODULES
Horst Böttge, Geretsried; Wolfgang Gauch, Otterfing; Joachim Hoppe, and Yahya Haghiri, both of München, all of Germany, assignors to Giesecke & Devrient GmbH, Munich, Germany
Filed Oct. 25, 1994, Ser. No. 328,652
Claims priority, application Germany, Oct. 26, 1993, 43 36 501.9
Int. Cl.[6] H05K *3/30*
U.S. Cl. 29—832 **9 Claims**

1. A method for producing data carriers having electronic modules, the electronic modules being produced separately and having an integrated circuit and contact surfaces that are electrically connected with the integrated circuit, comprising the steps of:
preparing a band containing individual electronic modules connected with said band independent of the technique by which said electronic modules are connected with said data carriers, said step of preparing said band including the steps of
stamping contact surfaces for each of said individual electronic modules out of a metal band with said contact surfaces initially connected with said metal band by bars, and
positioning an integrated circuit on said contact surfaces required for an individual electronic module and electrically connecting said contact surfaces with said integrated circuit;
removing an electronic module from said band in a manner adapted to the technique by which said electronic module is connected with a data carrier; and

connecting said electronic module with said data carrier, said connecting step including stamping said modules out of said band along said contact surfaces by severing said bars connecting said modules with said band.

5,615,477

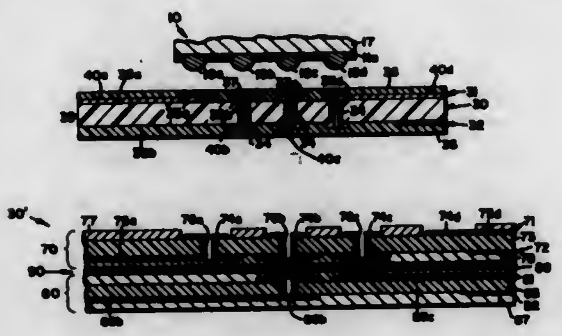
METHOD FOR INTERCONNECTING A FLIP CHIP TO A PRINTED CIRCUIT SUBSTRATE

Brent N. Sweitzer, Nerstrand, Minn., assignor to Sheldahl, Inc., Northfield, Minn.

Continuation of Ser. No. 301,873, Sep. 6, 1994, abandoned. This application May 10, 1996, Ser. No. 644,585

Int. Cl.[6] H05K *3/34*

U.S. Cl. 29—840 31 Claims



1. A method for mechanically and electrically interconnecting a flip chip to a printed circuit substrate, the flip chip being of the type including a plurality of bonding pads defined on an active side thereof, at least a portion of the bonding pads having solder bumps formed thereon, and the printed circuit substrate including an adhesiveless metallized laminate having first and second circuit patterns defined on first and second sides of the adhesiveless metallized laminate, respectively, wherein the first side of the adhesiveless metallized laminate includes a plurality of active contact pads defined thereon in a footprint such that each active contact pad is arranged and configured to oppose a corresponding solder bump on the flip chip, and wherein at least one active contact pad includes an electrically conductive through hole for electrically interconnecting the first and second circuit patterns, the method comprising the steps of:

(a) providing solder paste on each active contact pad on the adhesiveless metallized laminate, and including the steps of:

(1) controlling the volume of the solder paste such that the volume of solder paste located on each active contact pad is optimized as a function of the area of the active contact pad, the connected distance between the adhesiveless metallized laminate and the flip chip, and the volume of the corresponding solder bump; and

(2) stenciling the solder paste onto the active contact pads through a stencil having etched openings corresponding to each active contact pad;

(b) placing the flip chip on the adhesiveless metallized laminate such that the solder paste on each active contact pad is in registration with the corresponding solder bump on the flip chip to form an unsoldered chip-substrate assembly; and

(c) heating the chip-substrate assembly such that the solder paste on each active contact pad reflows to form an electrical connection with the corresponding solder bump on the flip chip.

5,615,478

WIRE HANDLING GRIPPERS; PROCESS AND APPARATUS FOR MANUFACTURING OF ELECTRICAL CABLE BUNDLES USING THESE GRIPPERS

Jean P. Celoudoux, La Barque, and Michel Verhille, Peynier, both of France, assignors to L'Entreprise Industrielle, Paris, France

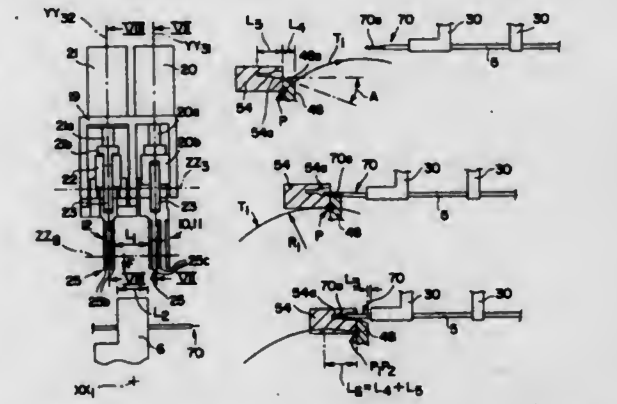
PCT No. PCT/FR92/00558, § 371 Date Mar. 6, 1995, § 102(e) Date Mar. 6, 1995, PCT Pub. No. WO93/00730, PCT Pub. Date Jan. 7, 1993

PCT Filed Jun. 19, 1992, Ser. No. 167,834

Claims priority, application France, Jun. 21, 1991, 91 08132

Int. Cl.[6] H01R *43/04*

U.S. Cl. 29—845 8 Claims



1. A wire gathering gripper device for handling and inserting a first and a second end of a section of wire into at least one opening of at least one electrical component, said component placed near a horizontal linear carrier strip having a horizontal axis comprising:

at least one rigid sweep arm,

an internal articulated arm that cooperates with said sweep arm to gather said wire and after said ends have been inserted into said openings of one of the components; and

two articulated external arms which coact with said internal arms to gather the wire section after the ends are inserted into the component, said external arms being at a predetermined distance from the component, wherein said wire end gathering gripper moves along a guide rail having an axis parallel to said horizontal axis.

5,615,479

METHOD OF MANUFACTURING A SPHERICAL ANNULAR SEAL

Takashi Maeda, Fujisawa; Takeshi Furukido, Yamato; Kousaku Hoshino, Fujisawa; Satoru Udo, Nakatsu, and Masayoshi Izumi, Chikujo, all of Japan, assignors to Olles Corporation, Japan

Division of Ser. No. 130,898, Oct. 4, 1993. This application Jun. 1, 1995, Ser. No. 457,318

Claims priority, application Japan, Oct. 12, 1992, 4-300550

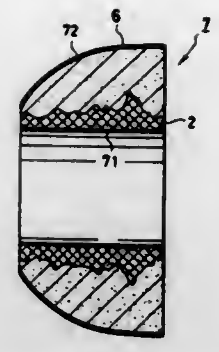
Int. Cl.[6] B23P *15/00*

U.S. Cl. 29—888.3 8 Claims

1. A method of manufacturing a spherical annular seal, comprising the steps of:

(1) fitting a tubular reinforcing member formed of a metal mesh over an outer peripheral surface of a core of a die having a generally cylindrical hollow portion in its interior;

(2) forming a preform having said reinforcing member integral in and on its inner surface by filling a mixture of a solid lubricant, metal short fibers, and a synthetic resin binder in the hollow portion in such a manner as to fill in mesh openings of said reinforcing member and cover said reinforcing member, and by compression forming said mixture and said reinforcing member in a direction of a core axis;



(3) forming a coating layer constituted by a lubricating composition by coating an outer peripheral surface of said preform with an aqueous dispersion containing as a solid content 20 to 50 wt. % of said lubricating composition containing 70 to 90 wt. % of boron nitride and 10 to 30 wt. % of alumina and/or silica, and by drying said aqueous dispersion;

(4) preparing a die having a partially concave spherical surface portion on its inner surface, and fitting said preform with said coating layer of said lubricating composition formed thereon over an outer peripheral surface of said core of said die;

(5) compressing said preform in a direction of a core axis for obtaining a spherical annular member which has in its center a through hole with its inner peripheral surface reinforced by the compressed reinforcing member, as well as a partially convex spherical surface portion on its outer surface, a uniform lubricating sliding layer of said lubricating composition containing 70 to 90 wt. % of boron nitride and 10 to 30 wt. % of alumina and/or silica being formed on a surface of said partially convex spherical surface portion; and

(6) placing said spherical annular member in a heating furnace to beat and cure said synthetic resin binder in said mixture and heating curing said synthetic resin binder.

5,615,480

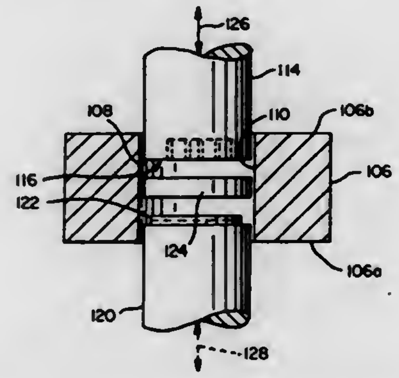
METHODS FOR MAKING SCROLL COMPRESSOR ELEMENT

John P. Waggoner, Decatur, Ind., assignor to Amcast Industrial Corporation, Dayton, Ohio

Filed Aug. 16, 1995, Ser. No. 515,683

Int. Cl.[6] B23P *15/00*

U.S. Cl. 29—888.022 12 Claims



1. A method of forming a scroll compressor element composed of a metal disc with an integral scroll extending from one side of said metal disc, said method comprising the steps of:

forming a closed end die defining a cavity having sidewalls substantially corresponding to the maximum dimension of said disc of said scroll compressor element and an endwall correspooding to a defined shape of a side of said metal disc opposite to said one side;

forming a punch sized to be received within said closed end die and including an endface having a cavity therein which is shaped to define said scroll;

inserting a blank comprised of a predetermined amount of metal substantially corresponding to said scroll compressor element into said closed end die;

inserting said punch into said die;

extending said punch completely into said die to form said scroll compressor element in a single stroke of said punch;

retracting said punch from said die; and

removing said scroll compressor element from said die.

5,615,481

METHOD AND APPARATUS FOR THE PRODUCTION OF CIRCUMFERENTIALLY COMPRESSIBLE PIPE FITTINGS

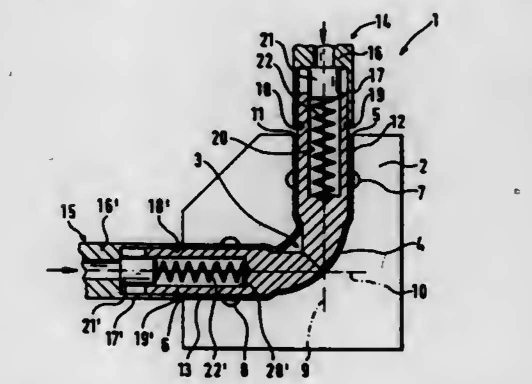
Walter Viegener, Attendorn-Biekhofen; Heinz Walter, Renningen, and Wolfgang Grau, Böblingen, all of Germany, assignors to Witzig & Frank Turmatic GmbH, Offenburg, Germany

Filed Oct. 20, 1994, Ser. No. 326,770

Claims priority, application Germany, Oct. 23, 1993, 43 36 261.3; Mar. 24, 1994, 44 10 146.5

Int. Cl.[6] B21D *39/00;* B23P *11/00*

U.S. Cl. 29—890.149 19 Claims



1. A method for producing, from a tubular blank, a circumferentially compressible pipe fitting of deformable material, optionally copper or steel, having an outwardly bulging bulge (93) defining an inner circumferential recess (93*a*), the blank (11) having at least one connecting portion (12, 13) of circular cross section,

said method comprising the steps of

receiving the blank (11) in a die (2) which surrounds the outer surface of at least one connecting portion of the blank;

said die being formed with an annular groove (7, 8) at the location of the desired bulge (93);

placing a support mandrel (19, 619) into the at least one connecting portion, which support mandrel abuts the blank at least on the inside of the at least one connecting portion (12, 13);

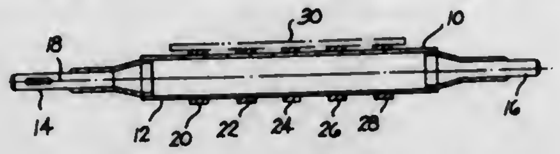
upsetting the blank (11) received in the die (2) in axial direction and flowing the material of the blank into the annular groove to form said outer circumferential bulge and said inner circumferential recess, while supporting the blank (11) within the die while upsetting the blank,

said supporting step comprising supporting the pipe fitting at an annular region of the connecting portion (12, 13) at a location of the desired bulge (93), at least during said step of upsetting the blank (11);

removing the support mandrel (19, 619) from the upset blank (11); and

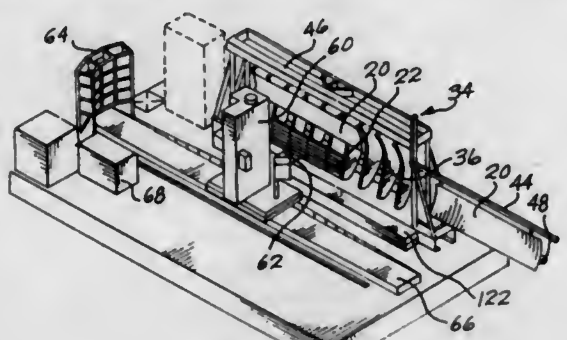
shaping the inner circumferential recess (93*a*) from the inside of the blank in the region of the bulge (93).

5,615,482
METHOD FOR MAKING COMPOSITE CENTRIFUGALLY CAST FURNACE ROLL RINGS FOR FURNACE ROLLS
Jorge A. Morando, Grosse Ile, Mich., assignor to Alphatech, Inc., Trenton, Mich.
Continuation-in-part of Ser. No. 287,647, Aug. 9, 1994, abandoned. This application Feb. 3, 1995, Ser. No. 383,578
Int. Cl.⁶ B23P *15/00*
U.S. Cl. 29—895.21 **9 Claims**



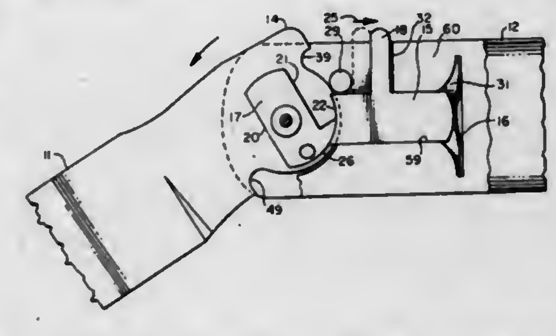
1. A method for making a roll for transferring a flat, heated strip of a first steel alloy from a furnace, said roll comprising an elongated tubular body having a longitudinal axis, the body being formed of a second steel alloy, a support layer carried on said tubular body forming a surface for contacting and supporting the flat heated strip on the tubular body as the tubular body is being rotated, said support layer having an outer strip-contacting surface of a third steel alloy that is relatively insoluble with respect to the first steel alloy of the heated strip; said method comprising the steps of:
centrifugally casting the support layer of said third steel alloy, and then centrifugally casting the tubular body to the support layer while the support layer is sufficiently heated to form a fused connection therebetween.

5,615,483
METHOD OF ASSEMBLING PARTS ON AN AIRCRAFT SKIN TO FORM A PANEL
Antonio C. Micale, Seattle, and David E. Strand, Renton, both of Wash., assignors to The Boeing Company, Seattle, Wash.
Division of Ser. No. 964,533, Oct. 13, 1992, Pat. No. 5,560,102. This application Jun. 6, 1995, Ser. No. 465,053
Int. Cl.⁶ B23Q *17/00*
U.S. Cl. 29—897.2 **7 Claims**



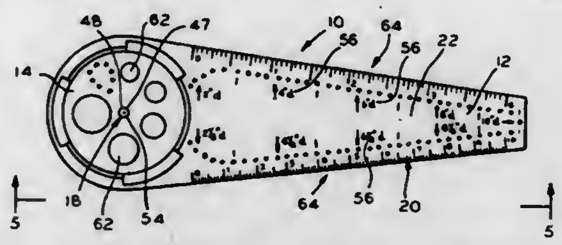
1. A method of accurately assembling a part on a sheet to make a panel, comprising:
positioning said sheet on a fixture and holding said sheet immobile on said fixture;
locating reference points on said sheet comprising at least two points from which dimensions to holes and other machined surfaces on said sheet are referenced;
downloading digital product definition data which includes sheet data and part data from a central product engineering authority to a post processor;
converting said digital product definition data in said post processor into machine instructions for instructing a numerically controlled machine tool where to drill coordination holes in said sheet relative to said reference points said numerically controlled machine tool comprising a precision computer controlled robot including an end effector having a drill;
drilling coordination holes in said sheet using said end effector of said precision computer controlled robot that is directed to the drilling locations using said machine instructions;
drilling corresponding coordination holes in said part;
removing said sheet from said fixture;
aligning said corresponding coordination holes in said part with said coordination holes in said sheet to accurately position said part with respect to said sheet; and
assembling said accurately positioned part on said sheet.

5,615,484
CAM LOCK FOR FOLDING KNIFE BLADE
Leon Pittman, Pendergrass, Ga., assignor to Spyderco, Inc., Golden, Colo.
Filed May 31, 1995, Ser. No. 455,501
Int. Cl.⁶ B26B *1/04*
U.S. Cl. 30—161 **5 Claims**



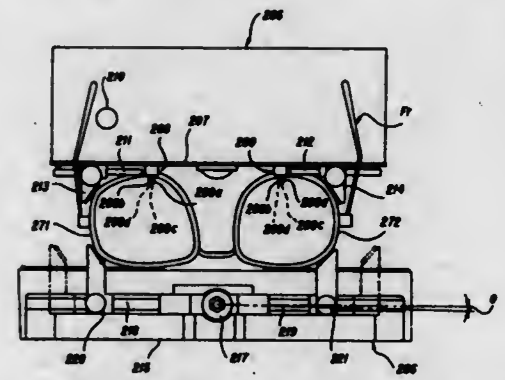
1. A knife having a positive action lock assembly comprising:
a handle;
a knife blade having a rounded end pivottally carried on said handle and said knife blade movable between an open extended position coextensive with said handle and a closed position within said handle;
a movable latch member carried on said handle having opposite ends, one end of which being to one side with respect to said knife blade rounded end;
a cam member secured on said knife blade rounded end and having a pair of spaced-apart parallel engagement surfaces joined by and separated by a curved portion;
spring means disposed on said handle normally biasing said latch member towards said cam member;
said latch member in engagement with a selected one of said engagement surfaces to releasably lock said blade in said open extended position and in engagement with the other engagement position and in engagement with the other engagement surface of said pair to releasably lock said blade in said closed position;
said latch member includes a concave semicircular portion provided at said selected end of said latch member;
said concave semicircular portion in slidable relationship with said cam member curved portion when said blade is in transit between said open extended position and said closed position; and
said latch member includes a pair of engagement points separated by said concave semicircular portion selectively and alternatively engageable with said cam member engagement surfaces to yieldably hold said blade in either one of said open or closed positions.

5,615,485
INSTRUMENTS FOR DRAWING CIRCLES
Bruce Stoneberg, LaGrange, Ill., assignor to Safe-T Products, Inc., Franklin Park, Ill.
Filed Mar. 7, 1995, Ser. No. 399,439
Int. Cl.⁶ B43B *9/04*
U.S. Cl. 33—27.03 **12 Claims**



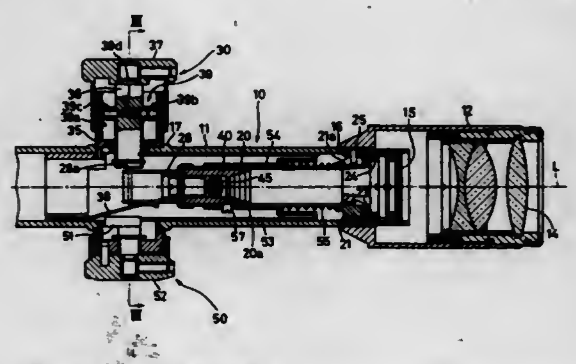
1. A device for forming circles with a marking instrument on a drawing surface comprising:
a first rotatable member having an opening formed therein, said first rotatable member being substantially flat, said first rotatable member having a plurality of holes disposed therein, said holes accommodating the marking instrument used for forming the circles;
a second rotatable member resiliently disposed within and coplanar with said opening, said second rotatable member having a plurality of holes disposed therein, said holes accommodating the marking instrument used for forming the circles;
combination means for elevating said second rotatable member above the drawing surface to prevent smearing of lines on the surface and for engaging the drawing surface to stabilize said second rotatable member over the surface,
said combination means including an aperture for locating said second rotatable means over a center point of a circle; and
elevation means for spacing said first rotatable member above the drawing surface to prevent smearing of lines on the surface, said first rotatable member being elevated by said elevation means to approximately the same level as said second rotatable member.

5,615,486
APPARATUS FOR MEASURING THE SHAPE OF A FRAME OF SPECTACLES
Takashi Igarashi, Akishima, and Shuichi Sato, Ome, both of Japan, assignors to Hoya Corporation, and Hoya Information System Corporation, both of Tokyo, Japan
Continuation of Ser. No. 179,033, Jan. 6, 1994, Pat. No. 5,515,612. This application Nov. 3, 1995, Ser. No. 552,378
Claims priority, application Japan, Aug. 1, 1993, 5-230 U; Aug. 1, 1993, 5-231 U
Int. Cl.⁶ G01B *7/28*
U.S. Cl. 33—200 **4 Claims**



1. An apparatus for holding a frame of spectacles including a pair of mutually adjacent rims for retaining lenses in a substantially horizontal position, comprising:
two oppositely disposed holding members capable of contacting upper and lower portions, respectively, of the frame to thereby hold the frame, at least one of the two holding members having a contact surface extending along and engaging both of said rims for pressing the frame against the other holding member;
a turning mechanism for turning said at least one holding member substantially parallel to a plane of the frame, to thereby adjust a contact angle between said contact surface of said at least one holding member and the frame; and
a stopper mechanism for stopping the turning motion of said at least one holding member after the contact angle is adjusted by the turning mechanism.

5,615,487
SIGHT SCOPE
Saburo Tomita, Fujimi, Japan, assignor to Asia Optical Co., Ltd., Japan
Filed Aug. 23, 1995, Ser. No. 518,331
Claims priority, application Japan, Aug. 24, 1994, 6-222515
Int. Cl.⁶ F41G *1/38*
U.S. Cl. 33—245 **14 Claims**

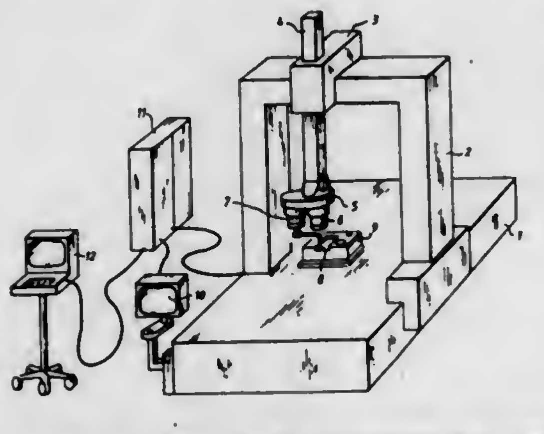


1. A sight scope comprising:
(a) a sleeve-like scope body having an objective lens system on a front end portion thereof and an eyepiece lens system on a rear end portion thereof;
(b) an erect sleeve received in said scope body, an erect lens system being supported within said erect sleeve, one end portion of said erect sleeve being pivotably supported by said scope body; and
(c) inclination adjusting means for inclining said erect sleeve with respect to an axis of said scope body by moving the other end portion of said erect sleeve in a direction perpendicular to the axis of said scope body, said inclination adjusting means including an adjusting member and a spring, said adjusting member extending through said scope body in such a manner as to be perpendicular to the axis of said scope body and being threadedly engaged with said scope body, said spring being adapted to bias the other end portion of said erect sleeve so as to be brought into abutment with an inner end face of said adjusting member, thereby the inclination of said erect sleeve being determined by said adjusting member;
(d) one of the inner end face of said adjusting member and an outer peripheral surface of the other end portion of said erect sleeve being provided as a first surface and the other, as a second surface, a projection being formed on said first surface, said projection being tapered when viewed in a direction perpendicular to the axis of said scope body, a distal portion of said projection being in contact with said second surface.

5,615,488
NON-SLIP SEWING RULER
John R. Brady, 20041 Osterman #R4, Lake Forest, Calif. 92630
Continuation of Ser. No. 333,428, Nov. 1, 1994, Pat. No. 5,471,749. This application Nov. 14, 1995, Ser. No. 557,468
Int. Cl.[6] B43L *7/00*
U.S. Cl. 33—484 **10 Claims**

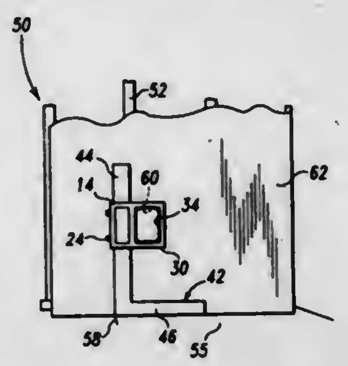
1. A non-slip guide member, comprising:
an elongate guide member defining top and bottom surfaces and at least one side edge, said guide member including a pair of apertures disposed therein; and
a handle member releasably attached to the top surface of the guide member and having a pair of pin members extending therefrom, each of said pin members defining a pin point which is aligned with a respective one of the apertures when the handle member is attached to the guide member;
said handle member being selectively movable between a first position wherein said pin points reside above the bottom surface of the guide member and a second position wherein said pin points protrude below the bottom surface of the guide member.

5,615,489
METHOD OF MAKING COORDINATE MEASUREMENTS ON WORKPIECES
Karl-Hermann Breyer, Heidenheim; Klaus-Peter Koch, Aalen; Helmut Heier, Aalen, and Hans-Gerd Pressel, Aalen, all of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim, Germany
PCT No. PCT/EP93/02523, § 371 Date May 25, 1994, § 102(e) Date May 25, 1994, PCT Pub. No. WO94/08205, PCT Pub. Date Apr. 14, 1994
PCT Filed Sep. 17, 1993, Ser. No. 244,497
Claims priority, application Germany, Sep. 25, 1992, 42 32 118.2
Int. Cl.[6] G01B *7/008; 11/24*
U.S. Cl. 33—503 **15 Claims**



1. A method of making coordinate measurements on a workpiece with a coordinate measuring apparatus carrying a video camera and a mechanical probe element for contact measuring the workpiece surface, the method comprising the steps of:
mounting said probe element on a probe head of the coordinate measuring apparatus;
changing the position of an articulated joint so as to align the mechanical probe element and the video camera to each other so that the probe element is located in the viewing field of the video camera; and,
driving to the locations on the workpiece to be mechanically contacted with the probe element under visual control with the aid of a monitor connected to the video camera.

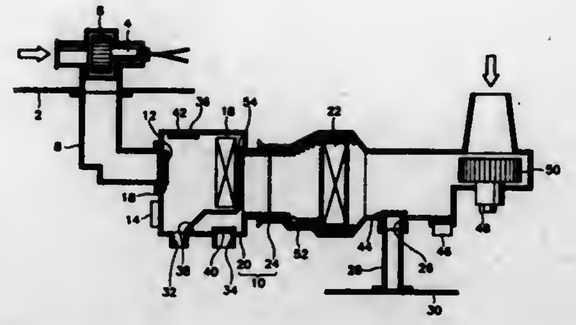
5,615,490
RECEPTACLE LOCATOR
Richard A. Burchell, 13575 Rio Grande Rd., Brazil, Ind. 47834
Filed Apr. 20, 1995, Ser. No. 425,839
Int. Cl.[6] G01B *1/00*
U.S. Cl. 33—528 **14 Claims**

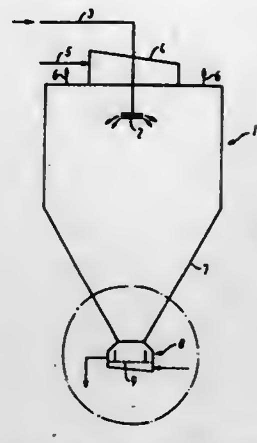


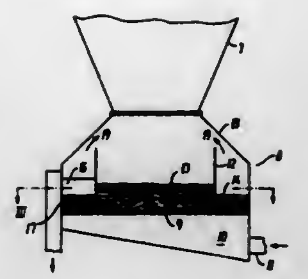
1. A receptacle locating device for use with a squaring tool to locate a receptacle in a first wall, wherein a plane of the first wall is intersected by a plane of a second wall, and wherein a first leg of the squaring tool extends over a part of the first wall when a second leg of the squaring tool engages the second wall, the receptacle locating device comprising:
a guide module for indicating a receptacle, wherein said guide module comprises a body with an opening therethrough sized and configured to approximately correspond to the size and shape of a receptacle; and
an attachment module for adjustably connecting said guide module to the squaring tool first leg, wherein said attachment module comprises a body with a slot generally having a rectangularly shaped transverse cross-section configured to receive a slat-shaped squaring tool leg, and at least one screw adjustably extending into said slot to secure said attachment module to the slat-shaped squaring tool leg.

5,615,491
APPARATUS FOR DRYING THE AIR DUCT OF A VEHICLE AIR CONDITIONER
Jongsik Bae, Kyungsangnam-do, Rep. of Korea, assignor to Hyundai Motor Company, Rep. of Korea
Filed Oct. 10, 1995, Ser. No. 541,557
Claims priority, application Rep. of Korea, Oct. 12, 1994, 94-26608
Int. Cl.[6] F26B *19/00*
U.S. Cl. 34—61 **5 Claims**

1. An apparatus for drying the inside of the air duct of a vehicle air conditioner with heating, cooling and drying mode, comprising:
a first duck part containing a heater unit;
a second duct part containing an evaporation unit, said first and second duct parts forming said air duct;
an auxiliary blowing means for introducing in the cooling and drying mode air firstly into said first duct part to heat the air and supply the heated air to the inside of the second duct part; and







a main blowing means for introducing air firstly into said second duct part then to flow towards said heater unit.

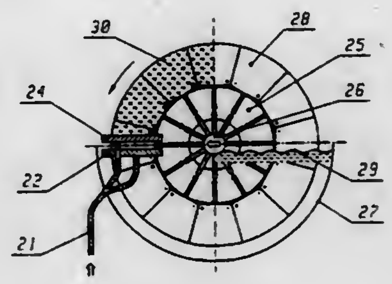
5,615,492
DRYING OF WATER-CONTAINING USEFUL MATERIALS OR MIXTURES THEREOF WITH SUPERHEATED STEAM
Wilfried Raehse, Duesseldorf; Gunter Effey, Monheim, and Wilhelm Beck, Duesseldorf, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany
PCT No. PCT/EP94/01987, § 371 Date Feb. 23, 1996, § 102(e) Date Feb. 23, 1996, PCT Pub. No. WO95/00222, PCT Pub. Date Jan. 5, 1995
PCT Filed Jun. 18, 1994, Ser. No. 569,176
Claims priority, application Germany, Jun. 26, 1993, 43 21 361.8
Int. Cl.[6] F26B *21/06*
U.S. Cl. 34—73 **20 Claims**

1. In a process for drying water-containing materials in a closed-circuit system using a vertical drying tower having inlets located at a lower portion of said tower, said inlets circulating superheated steam in countercurrent to said water-containing materials descending through said vertical drying tower thereby drying said water-containing materials, the improvement comprising:
(a) providing an auxiliary fluid having a temperature below that of said superheated steam entering into said vertical drying tower;
(b) providing a double jacket having a permeable inner wall, said double jacket surrounding said lower portion of said vertical drying tower below said inlets; and
(c) introducing said auxiliary fluid through said permeable inner wall of said double jacket and into said vertical drying tower in a tangential or radial direction relative to said inner wall.

5,615,493
SPRAY DRYING DEVICE
Christian R. Funder, Fredensborg, Denmark, assignor to Niro Holding A/S/, Soborg, Denmark
PCT No. PCT/DK94/00106, § 371 Date Mar. 29, 1996, § 102(e) Date Mar. 29, 1996, PCT Pub. No. WO95/24599, PCT Pub. Date Sep. 14, 1995
PCT Filed Mar. 11, 1994, Ser. No. 619,567
Int. Cl.[6] F26B *17/00*
U.S. Cl. 34—583 **20 Claims**

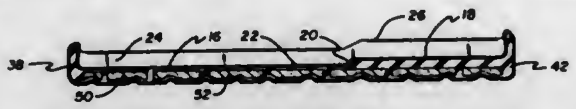
1. A spray drying device comprising a drying chamber (1) with at least one fluid spraying means (2) and means (5) for introducing drying air into the chamber as a flow around the spraying means, said drying chamber having a conically downwards tapering section and at the bottom a perforated plate (9,21) and means for producing an upwardly directed air flow through the perforations of the plate for maintaining a fluidized particle layer on top of the plate, characterized in that the fluidized particle layer is divided by separation means (12,24) into at least two zones comprising a first zone (13,22), in which moist particles created in the drying chamber (1) are absorbed, said first zone being adapted to full and permanent particle mixing, and a second zone (14,23) which is shielded from the drying chamber (1) such that it is not supplied directly therefrom and which is connected with means (15) for introducing particles therein from said first zone (13,22) and with means (17) for removal of particles from said second zone, said means for introducing particles (15) and said means (17) for removal of particles being mutually arranged in such a way that the particles pass the second zone (14,23) without substantial back-mixing.

5,615,494
APPARATUS FOR TREATING A FILTER CAKE
Bjarne Ekberg, Turku, Finland, assignor to Outokumpu Mintec Oy, Espoo, Finland
Filed Apr. 17, 1995, Ser. No. 422,455
Claims priority, application Finland, Apr. 19, 1994, 941795
Int. Cl.[6] F26B *17/00*
U.S. Cl. 34—585 **9 Claims**



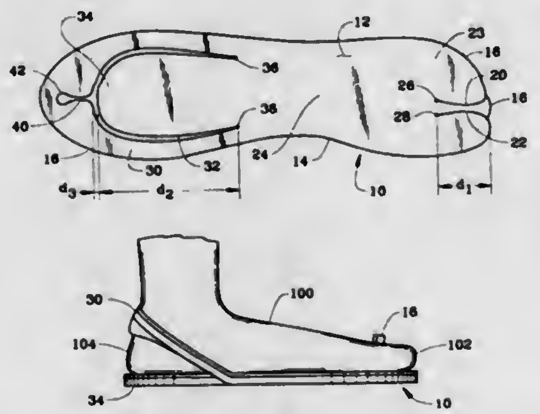
1. An apparatus comprising a detachment means for detaching a filter cake produced in a suction dryer from off the filter surface of the filter medium and for an essentially simultaneous processing of the cake to a form advantageous for further processing, further comprising a suction dryer, a connected filter surface and a basin for the material to be filtered, wherein in the vicinity of the filter surface of the filter medium, there is installed a blowing member with at least one part, the blowing effect whereof can be extended essentially along the whole width of the filter surface of the filter medium, on which surface the filter cake created in the filtering can be formed.

5,615,495
INSULATING SOLE COVER
Todd L. Mashrocola, 221 Stocker Ave., King of Prussia, Pa. 19406
Filed Oct. 23, 1995, Ser. No. 546,697
Int. Cl.^{6} A43B *13/38*
U.S. Cl. 36—7.1 R **7 Claims**



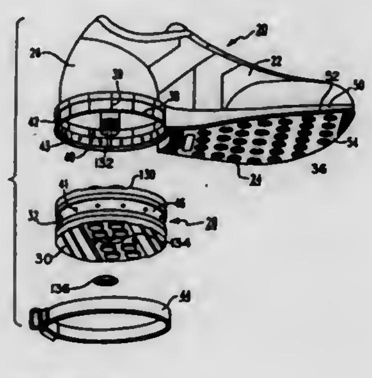
1. The insulating sole cover comprising:
an upper portion having a top panel with a flat portion and a heel portion having an arch portion therebetween, the top panel having an outer rim with a top side wall extending upward therefrom;
a bottom portion having a bottom panel being ridged along a bottom surface, the bottom panel having a bottom rim with a bottom side wall extending upward therefrom, with the bottom side wall being attached to the top rim of the top side wall to form an interior area therebetween;
a plurality of cells formed within the bottom portion and being proportionately dispersed within the interior area of the top panel and the bottom panel, each cell having contained therein a filler; and
a plurality of openings being positioned within the interior area of the filler and between each cell, the plurality of openings capable of decreasing the compaction coefficient of the filler within the interior area.

5,615,496
FLAT THONG
Sid Sharpstein, 19389 Waters Reach Trail #1102, Boca Raton, Fla. 33434
Continuation of Ser. No. 251,480, May 31, 1994, abandoned. This application Nov. 20, 1995, Ser. No. 560,936
Int. Cl.^{6} A43B *3/12*
U.S. Cl. 36—11.5 **4 Claims**



1. An improved thong characterized by a base having an outer perimeter edge shaped to accommodate the heel and toes of a human foot, said base having a toe tab for insertion between the first and second toe and a heel strap being of such configuration as to cooperatively secure to said toe tab, the improvement comprising:
a base constructed from a first sheet of low density foam rubber material bonded to a second sheet constructed from high density foam rubber material forming an upper surface and a lower surface, said first sheet providing a cushioned walking surface and said second sheet providing abrasion resistance and traction on slippery ground surfaces,
a toe tab shaped like a human toe and formed integral to said base, said toe tab defined by a space apart first and second cut line connecting said upper and lower surface, each cut line extending inwardly approximately 40 mm from said outer perimeter edge toward a middle section a first distance terminating in a circular hole along a distal end forming a flexible hinge allowing said toe tab to lay flat or bend upwardly,
said heel strap formed integral to said base defined by a U-shaped opening connecting said upper and lower surface placed inboard said perimeter edge along a heel portion of said base and extending toward said middle section approximately 95 mm, said opening separating said heel portion from said heel strap a fixed distance with a first and second end of said opening terminating in a circular hole and
a heel cutout placed in said heel strap along an edge of said U-shaped opening, said heel cutout having a shape and width to accommodate the tendon of a human foot with said cutout extending outwardly from said U-shaped opening leading to a centrally disposed tear drop shaped coupling hole;
whereby said heel cutout allows for securing said heel strap to said toe tab or securing said heel strap to the heel of a wearer with said cutout having a shape accommodating the tendon of a human's foot.

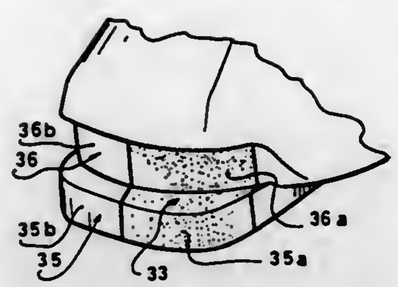
5,615,497
ATHLETIC SHOE WITH IMPROVED SOLE
David F. Meschan, 502 Waycross Dr., Greensboro, N.C. 27410
Filed Aug. 17, 1993, Ser. No. 108,065
Int. Cl.^{6} A43B *21/36; 3/24;* **A43C** *13/00*
U.S. Cl. 36—36 R **15 Claims**



1. A shoe comprising:
an upper;
a forward sole attached to the upper;
a heel support attached to the upper and having at least one wall extending downwardly from the upper that at least partially defines a recess, the wall including a notched section oriented generally horizontally and extending along the periphery of the wall;
a rear sole receivable in the recess of the heel support; and
a securing band receivable in the notched section and sized to fit around the wall to compress the wall against the rear sole to retain the rear sole in the recess.

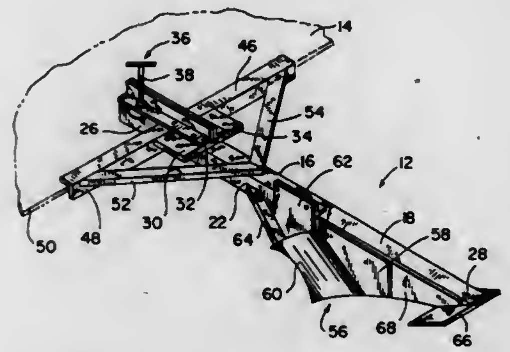
5,615,498
SPORT BOOT, PARTICULARLY ALPINE SKI BOOT
Christian Challande, Cruseilles; Pierre Desarmaux, Evires, and Pascal Thomas, Chambery, all of France, assignors to Salomon S.A., Metz-Tessy, France
Filed Jul. 13, 1995, Ser. No. 501,861
Claims priority, application France, Jul. 13, 1994, 94 08941
Int. Cl.^{6} A43B *5/04*
U.S. Cl. 36—117.3 **21 Claims**

1. A ski boot adapted to be retained in support upon a ski and to be released from a front binding element and a rear binding element affixed to the ski, said ski boot comprising:



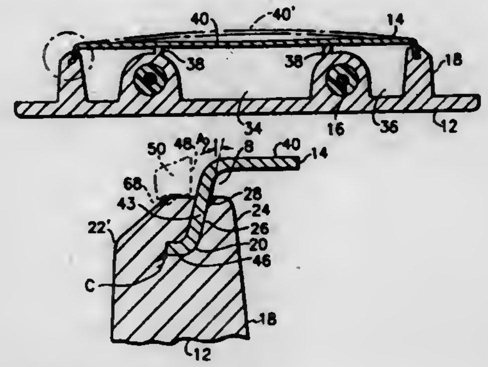
a front tip adapted to be engaged with the front binding element, said front tip extending on each side of a median vertical plane of said ski boot; and
said front tip having means for retaining said ski boot in support upon the ski by engagement with said front binding element with asymmetrical mechanical characteristics with respect to said median vertical plane of said ski boot for facilitating release of said ski boot resulting from a torsional bias of said ski boot beyond a bias threshold, said bias threshold being different in a first direction of torsional bias compared to a second direction of the torsional bias.

5,615,499
METHOD OF AND APPARATUS FOR TRENCHING
Christopher J. McGuire, 4678 Chimney Rock Rd., Dodgeville, Wis. 53533; Matthew P. McGuire, 1059 Circle Dr., Highland, Wis. 53543, and Thomas W. Scholl, 2007 E. Windsor Pl., Milwaukee, Wis. 53202
Filed Apr. 17, 1995, Ser. No. 423,224
Int. Cl.^{6} E02D *17/06*
U.S. Cl. 37—367 **10 Claims**



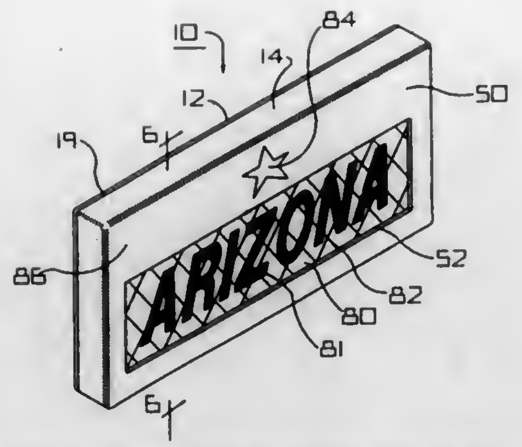
1. A trenching device for attachment to a lower portion of an earth working bucket provided on the front end of a vehicle, the device comprising:
a rigid beam extending forwardly of the bucket, said beam having a right side, a left side, a proximal end and a distal end;
a support assembly spaced above and lying substantially parallel to the proximal end of said rigid beam, said support assembly carrying a mounting device for clamping the bucket inserted between said rigid beam and said support assembly against said rigid beam;
a stabilizing member disposed substantially transverse to said rigid beam and said support assembly and engageable with a lower lip on the lower, forwardmost portion of the bucket;
a moldboard fixedly secured to a side of said rigid beam between said proximal end and said distal end for digging a furrow as the vehicle advances; and
a skid plate disposed on the distal end of said rigid beam at an acute angle with respect to the longitudinal centerline of said rigid beam and guidable along a plane of the earth to limit the digging depth of said moldboard,
wherein said mounting device comprises a T bolt assembly threadably positioned in said support assembly, said T bolt assembly having a flat pressure plate at the bottom thereof rotatably adjustable with respect to said lower portion of said bucket and clamping the bucket to and directly against said rigid beam such that the longitudinal axis of said T bolt assembly is substantially perpendicular to said support assembly said lower portion of said bucket and said beam.

5,615,500
IRON WITH IMPROVED CONNECTION OF SOLEPLATE AND STEAM CHAMBER COVER
Farhad Moalem, Bethesda, Md.; Benjamin H. Bain, Jr., Shelton, and Joseph J. Caselli, Stratford, both of Conn., assignors to Black & Decker Inc., Newark, Del.
Filed Nov. 3, 1995, Ser. No. 552,819
Int. Cl.^{6} D06F *75/06*
U.S. Cl. 38—77.83 **18 Claims**



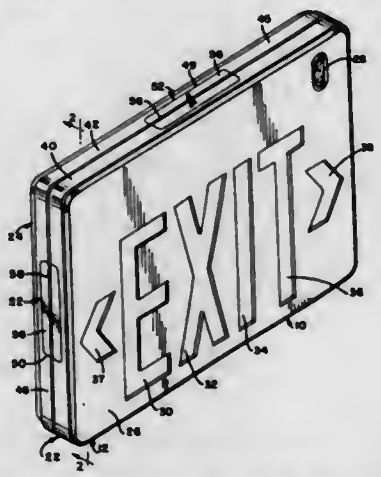
1. An iron comprising:
a steam chamber cover; and
a soleplate having a perimeter of the cover located in a channel of the soleplate, the channel extending into a portion of a top of the soleplate, the portion having a first section located on an outer side of the channel and a second section located on an inner side of the channel, the height of the first section being relatively greater than the height of said second section before said first section is deformed, said first section being deformed against the perimeter of the cover wherein the first and second sections have substantially the same height after the first section is deformed.

5,615,501
ILLUMINATED VEHICLE DISPLAY DEVICE
Samuel A. Rice, 400 N. Chalet Ave., Tucson, Ariz. 85748
Filed Sep. 29, 1995, Ser. No. 536,170
Int. Cl.^{6} G09F *13/08*
U.S. Cl. 40—205 **6 Claims**
1. An illuminated display device for attachment to a motor vehicle comprising:
a substantially rectangular, substantially flat back plate having a front side, a back side, a perimeter, and means for attaching said back plate to a motor vehicle; said back plate further having a protruding ridge defined on said front side and inset from the perimeter of said back plate, said protruding ridge having a plurality of slots defined therein; said back plate further having a light source affixed on said front side thereof and having an aperture defined therein for receiving electrical wires therethrough, said wires adapted to connect said light source to an exterior power source; and
a substantially rectangular, box-like front housing member having a front wall, a top wall, a bottom wall, first and second side walls, and a rearwardly disposed opening, said top wall and said bottom wall each having an interior side and an



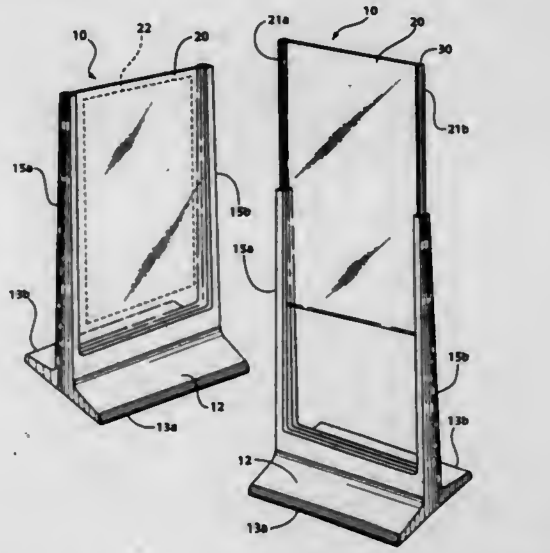
exterior side, said housing member being adapted to be detachably secured to said back plate with said rearwardly disposed opening being positioned adjacent to and abutting said protruding ridge in circumscription thereabout; said housing member having a first plurality of tab members disposed on the interior side of said top wall and a second plurality of tab members disposed on the interior side of said bottom wall, all of said tab members being adjacent said rearwardly disposed opening, and each tab member being disposed in a corresponding one of said slots defined in said protruding ridge defined on said back plate; said front wall having a window defined through a portion thereof, said window having a display panel disposed therein, said display panel having opaque and non-opaque portions defined therein and arranged to define a preselected pattern when said device is illuminated; said front wall having an intact opaque portion not interrupted by said window, said intact opaque portion of said front wall being disposed to block the direct transmission of light from said light source; and said bottom wall having a flange disposed on the exterior side of said bottom wall adjacent said rearwardly disposed opening.

5,615,502
PLATE CLOSURE FOR USE IN INTERNALLY ILLUMINATED SIGN
Algimantas J. Gabrius, Carol Stream, Ill., assignor to Juno Lighting, Inc., Des Plaines, Ill.
Filed Nov. 15, 1995, Ser. No. 558,146.
Int. Cl.[6] G09F *13/04*
U.S. Cl. 40—570 **11 Claims**



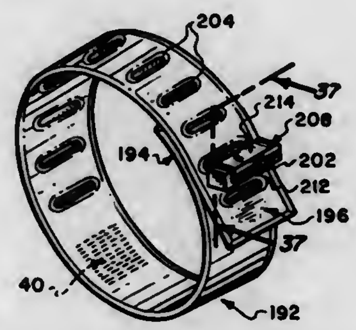
1. An internally illuminated sign including; a housing, said housing having a pair of opposed housing halves, each of said housing halves having a rectangular outline, one of said housing halves having a stencil with four edges defining a rectangle, said stencil having a plurality of openings forming a message, a light source mounted in the housing, a diffuser positioned between the light source and the stencil, each housing half having a peripheral sealing lip engagable with one another to form a peripheral housing wall, said housing wall having a pair of substantially parallel opposed end walls, a top housing wall substantially perpendicular to the opposed end walls, and a bottom wall substantially parallel to the top wall; a top wiring port in the top wall, a left wiring port in one of the end walls, and a right wiring port in the other of the end walls, each of said wiring ports providing selective access to the interior of the housing for a conduit to a source of electrical energy to the light source, each of said wiring ports having a mounting groove in a portion of the wall defining the respective wiring port, each mounting groove extending into the respective wall and opening into the respective wiring port, and a closure plate removably mounted in each of selected wiring ports, each closure plate having a flat plate body, each plate body having a mounting tongue formed integral with the plate body, each mounting tongue removably positioned in a respective mounting groove, each mounting tongue having a first protuberance on one surface thereof and on one side edge of the plate body providing an interference fit in a portion of the respective mounting groove to hold releasably the closure plate in the respective wiring port in the wall of one of the housing halves and the remainder of the tongue in the mounting groove in the other housing half is relatively free allowing free disengagement of the closure plate from the other housing half.

5,615,503
HEIGHT ADJUSTABLE SIGN HOLDER
Wayne A. Current, Homdel, N.J., assignor to International Visual Corp., Port Washington, N.Y.
Filed Jun. 7, 1995, Ser. No. 483,725
Int. Cl.[6] G09F *15/00*
U.S. Cl. 40—601 **9 Claims**



1. A device for displaying a sign at various heights comprising:
a base having a pair of parallel, spaced-apart uprights extending upwardly from said base; and
a cardholder slidably disposed between said uprights and comprising two panels adapted to removably sandwich the sign therebetween, said cardholder including two spaced-apart lateral sides, each side including a rail with a T-shaped cross section, each of said two panels extending to said two lateral sides to form part of each of said T-shaped rails having a means for exerting a frictional retaining force against said uprights so that said cardholder and the sign are selectively maintained at various heights with respect to the base.

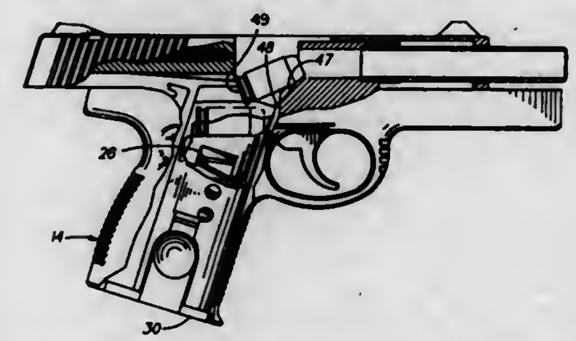
5,615,504
IDENTIFICATION BAND FOR MACHINE IMPRINTING
Dean D. Peterson, Sylmar, and Walter W. Mosher, Jr., Northridge, both of Calif., assignors to Precision Dynamics Corporation, San Fernando, Calif.
Division of Ser. No. 172,855, Dec. 23, 1993, Pat. No. 5,448,846, which is a continuation of Ser. No. 866,325, Apr. 9, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 471,581
Int. Cl.[6] A44C *5/00*
U.S. Cl. 40—633 **5 Claims**



1. In an identification device: an elongated band securable about an object to be identified, said band having first and second extremities and an intermediate imprintable portion between said extremities, said first and second extremities being positioned in overlapping relationship about an object to be identified, said first extremity including a tab portion formed by a slit in an narrower than said first extremity and said second extremity including one or more transversely oriented, elongated openings, said tab portion being inserted through a selected one of said openings, to adjust said band to the size of said object; and an external separate fastener means engagable with said tab portion and extending completely around said tab portion to operably retain said band on said object.

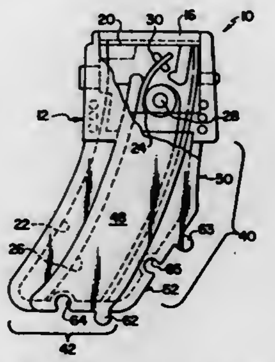
5,615,505
MAGAZINE CARTRIDGE GUIDE
Pardip K. Vaid, Northampton, Mass., assignor to Smith & Wesson Corp., Springfield, Mass.
Filed Jul. 20, 1995, Ser. No. 504,505
Int. Cl.[6] F41A *9/61*
U.S. Cl. 42—50 **7 Claims**

1. An improved cartridge magazine for housing therein a plural-



ity of vertically stacked cartridges for successively dispensing and guiding the uppermost cartridge of a plurality of vertically stacked cartridges from the magazine toward an inclined ramp leading to a chamber of a barrel of a semi-automatic pistol and in which the magazine spring is disposed in the lower end portion of the magazine for urging the cartridges upwardly toward the upper edge portion of the magazine, said improved magazine comprising:
front, rear and generally parallel and resiliently flexible side walls,
a pair of cartridge retaining lips with each of said cartridge retaining lips disposed along a respective upper edge portion of each of the side walls, and
a pair of cartridge retaining, elongated ridges disposed in spaced opposed relation to one another, each of said ridges being disposed on and extending a substantial distance along a respective side wall between said front and rear walls at a predetermined location below and generally parallel to each retaining lip, said ridges extending inwardly from opposed side walls of the magazine and spaced apart a distance less than the diameter of said cartridges, the side walls being laterally deflectable outwardly to enable successive upward movement of the cartridges between said ridges and the lateral deflection being determined by the relationship of the cartridge diameter to said distance between said ridges, to the flexibility of said side walls, the upward force exerted by the magazine spring on the cartridges and the configuration of the ridges in the direction of movement of said cartridges thereover, said lips and said ridges thereby engaging an uppermost cartridge positioned between said lips and said ridges and guiding the cartridge between said magazine and the inclined ramp.

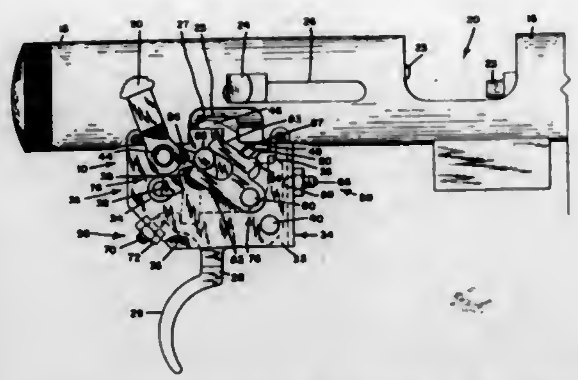
5,615,506
CARTRIDGE MAGAZINE FOR FIREARMS
Terry R. Jackson, Bozeman; Rory J. Erhard, Belgrade; Robert A. Kinzle, Bozeman, and Robert B. Cady, Belgrade, all of Mont., assignors to William L. Heckerman, Jackson, Wyo.
Filed Oct. 31, 1995, Ser. No. 550,705
Int. Cl.[6] F41A *9/68*
U.S. Cl. 42—50 **13 Claims**



1. A cartridge magazine for use with a firearm comprising:
a housing arranged to enclose a plurality of cartridges, said housing having an opened end defining a mouth for permitting cartridges to be loaded therein and dispensed therefrom;
a follower movably positioned within said housing and biased toward said mouth; and
said housing having a pair of adjacent outer walls each of which is provided with a magazine coupling assembly.

5,615,507
FIRE CONTROL MECHANISM FOR A FIREARM
Kendrick L. French, Lebanon, Me., assignor to Thompson Intellectual Properties, Ltd., Rochester, N.H.
Filed Jun. 7, 1995, Ser. No. 483,197
Int. Cl.[6] F41A *17/00*
U.S. Cl. 42—69.02 **8 Claims**

1. In a firearm having a barrel which a muzzle end and a breech end and a bore, the firearm also including a striker which has a downwardly facing notch and a forwardly facing lower edge surface which defines the rear edge of the notch, the striker being slidably mounted in the breech end of the barrel for movement between a rearward cocked position and a forward firing position, a striker spring for biasing the striker toward the firing position,



and a striker actuator for moving the actuator to the rearward cocked position against the bias of the striker spring, a fire control mechanism comprising:

(a) a trigger housing which is fixed to the breech end of the barrel;

(b) a trigger which is mounted on the housing for pivoting movement about a first horizontal axis between a cocked position and a firing position, said trigger having an upwardly facing edge surface;

(c) a sear which is mounted on the housing for pivoting movement about a second horizontal axis between a striker holding position and a striker release position, said sear having an upper projection for entering said notch and engaging said forwardly facing edge surface when said striker is in its rearward cocked position and said sear is in its striker holding position, said sear having a forward projection for engaging the upwardly facing edge surface of said trigger when said sear is in its striker holding position and said trigger is in its cocked position to prevent said striker from being moved to its firing position by said striker spring, said forward projection being out of engagement with said upwardly facing edge surface when said trigger is its firing position to enable said striker to be moved to its firing position by said striker spring;

(d) biasing means for biasing said trigger to its cocked position and said sear to its striker holding position, said biasing means being substantially weaker than said striker spring so that when said trigger is moved to its firing position, said sear is moved to its striker release position by said striker under the biasing influence of said striker spring to release the striker to its firing position under the biasing influence of said striker spring; and

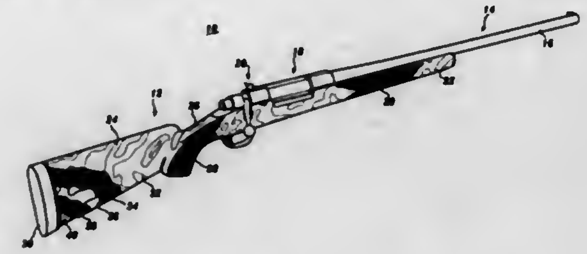
(e) a locking mechanism which is mounted on said trigger housing for selective actuation between an active state and an inactive state, said locking mechanism being effective in its active state to engage said sear and prevent said sear from being moved to its striker release position by said striker when said trigger is moved to its firing position and to allow said sear to be moved to its striker release position when said trigger is moved to its firing position and said locking mechanism is in its inactive state, said locking mechanism comprising:

(1) a laterally extending projection which is fixed to said sear;

(2) a lock which is mounted on said trigger housing for movement between a locking position in which a portion of said lock obstructs said laterally extending projection to prevent said sear from moving to its firing position and a release position in which said sear is free to move to its firing position; and

(3) an actuator for selectively moving said lock to said locking position and to said release position.

5,615,508
CAMOUFLAGE GUNSTOCK
Forrest A. Miller, Seattle, and Robert A. Wheeler, Vashon, both of Wash., assignors to Pacific Research Laboratories, Inc., Vashon, Wash.
Filed Dec. 30, 1994, Ser. No. 367,045
Int. Cl.^{6} F41C *23/00*
U.S. Cl. 42—71.01 **35 Claims**



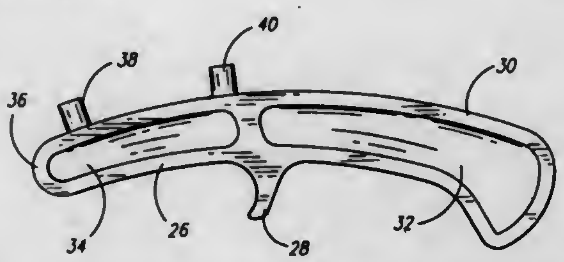
1. An apparatus comprising:

(a) a core in the shape of a gunstock having a butt, grip, and a forearm;

(b) a composite crossbolt extending transversely through a portion of said core and having arms extending toward the butt of said stock adjacent the sides of said core; and

(c) a resin impregnated fiber material disposed over said core and said crossbolt.

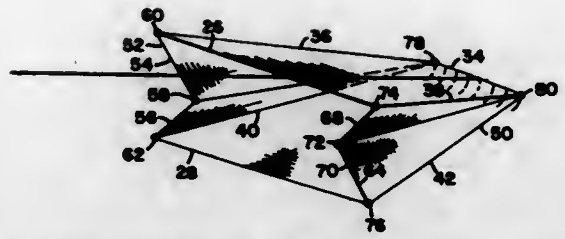
5,615,509
LINE BREAKER
Wayne Washington, 207 W. 8th, Claremore, Okla. 74017
Filed Jul. 21, 1995, Ser. No. 505,127
Int. Cl.^{6} A01K *97/00;97/24*
U.S. Cl. 43—4 **2 Claims**



1. A line breaker for pulling a fishing line away from a point of entanglement comprising a horizontally extending tool having a pair of horizontally spaced ends, an upper surface, a lower surface, one of said ends constituting a handle for grasping by a fisherman, a pair of horizontally spaced pegs projecting upwardly only from the other of said ends and from the upper surface of the tool, the pegs extending upwardly from the upper surface of the tool and divergently relative to one another, whereby the fisherman can wrap a slack portion of the line around the pegs individually and collectively and thereafter pull on the tool in a direction away from the point of entanglement for the purpose of breaking the line away from its entanglement.

5,615,510
SEINE
Eric C. Anderson, 3610 E. Baxter La., Bozeman, Mont. 59715
Filed Jan. 4, 1995, Ser. No. 368,554
Int. Cl.^{6} A01K *73/12*
U.S. Cl. 43—14 **9 Claims**

5. A seine for collecting aquatic wildlife from a body of water, the body of water having a bed, the seine comprising:

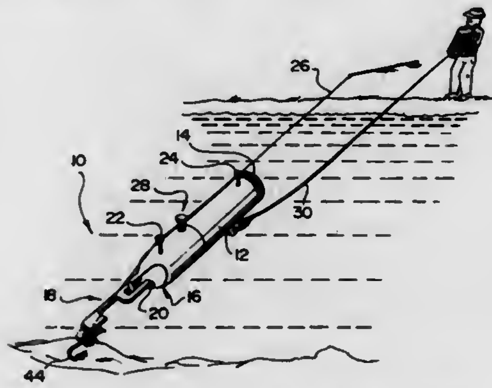


(a) a mesh receptacle having an intake portion and a collection portion;

(b) a frame operably connected to the mesh receptacle, the frame having a first portion for holding the intake portion of the mesh receptacle in a receiving state, and a second portion for holding the collection portion of the mesh receptacle in a receiving state, wherein the first portion of the frame has upper and lower horizontal bars and first and second vertical bars, and the first and second vertical bars are substantially vertical when the intake portion of the mesh receptacle is oriented to receive wildlife; and

(c) an anchor operably connected to the frame, the anchor having prongs configured to penetrate into the bed of the body of water, the prongs oriented such that the intake portion of the mesh receptacle is oriented to receive aquatic wildlife when the prongs penetrate into the bed of the body of water.

5,615,511
FISHING LURE RETRIEVING APPARATUS
Gordon Crane, and Paul Crane, both of 125 Turnbull Court, Unit 10, Cambridge, Ontario N1T 1H8, Canada
Filed Sep. 29, 1995, Ser. No. 536,455
Int. Cl.^{6} A01K *97/24*
U.S. Cl. 43—17.2 **18 Claims**



1. A lure retriever for retrieving a lure on a fishing line, comprising:

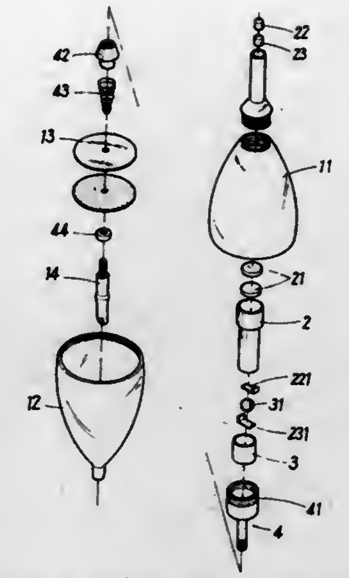
a body;

a lure releasing member mounted to said body and for releasing a snagged lure; and

line engaging friction drive means connected to said body for direct engagement with said fishing line and to advance said lure release member to a snagged lure.

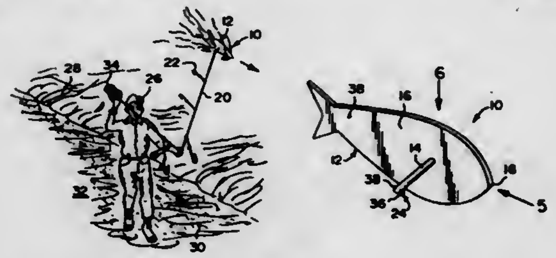
5,615,512
FLOAT WITH LIGHT INDICATORS
Yi-Chang Wang, No. 43, Chung Cheng Rd., Lin Kou Tsun, Lin Kou Hsiang, Taipei Hsien, Taiwan
Filed Dec. 18, 1995, Ser. No. 574,285
Int. Cl.^{6} A01K *85/01;93/00*
U.S. Cl. 43—17.5 **1 Claim**

1. A float with light indicators comprising a float body in which a green light indicator, a red light indicator, a battery holder, a



contact switch, and a loadstone holder are provided; said battery holder holding two batteries therein and being connected at a top end to said red and said green light indicators and at a lower end to said contact switch; said float being characterized in that said contact switch has an upper L-shaped contact plate and a lower L-shaped contact plate disposed near an upper and a lower end of the contact switch, respectively, and a magnetic ball disposed between said upper and said lower L-shaped contact plates, and that said loadstone holder is distantly connected at a lower end to a fishhook holder via a coil spring; whereby when said float is floating stably on a water surface, said fishhook and accordingly said loadstone holder are in a higher position in said float body due to a buoyancy of water and causes said magnetic ball in said contact switch to ascend and touch said upper L-shaped contact plate to electrically connect a positive and a negative electrodes of said green light indicator, causing said green light indicator to lighten; and when said float sinks because said fishhook holder and said loadstone are pulled downward by a biting fish, said magnetic ball is caused to descend in said contact switch to touch said lower L-shaped contact plate and thereby electrically connect a positive and a negative electrodes of said red light indicator, causing said red light indicator to lighten.

5,615,513
BEACH TROLLING DEVICE
Armando H. Luna, 35 W. 110th St., Apt. 6H, New York, N.Y. 10026
Filed Jun. 9, 1995, Ser. No. 488,902
Int. Cl.^{6} A01K *93/00*
U.S. Cl. 43—43.13 **6 Claims**



1. A beach trolling device comprising:

a) a flat elongated buoyant rudder; said rudder being in a fish-shaped configuration to minimize water turbulence when said rudder is slicing through the water beyond the surf;

b) a post secured to one side and near a forward end of said rudder, so that said post will extend at a right angle outwardly from said one side of said rudder;

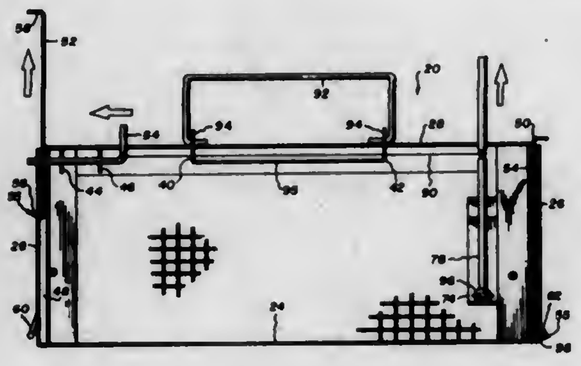
c) a fishing line;

d) a plurality of fishing hooks attached in spaced apart relationships onto said fishing line near a forward end thereof;

e) means for attaching said forward end of said fishing line to a free end of said post, so that a person can troll for fish beyond the surf from the shoreline of the beach; said attaching means including an eyelet head screw having a threaded shank threading transversely into said free end of said post, so that said forward end of said fishing line can be tied onto said eyelet head screw; and

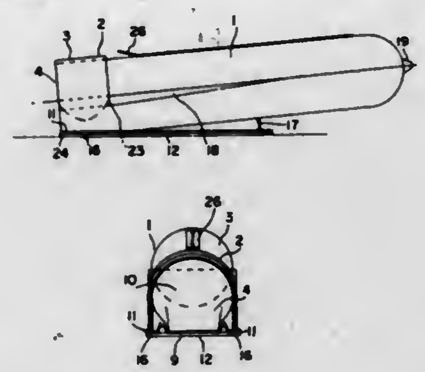
f) a spool to wrap said fishing line thereabout, so that the person can let some of said fishing line out while walking along the shoreline of the beach, pulling the fishing line taut with said rudder slicing through the water and said post pointed toward the person.

5,615,514
ANIMAL TRAP
Joseph F. Meade, Jr., Hammondsport, N.Y., assignor to Mercury Aircraft, Inc., Hammondsport, N.Y.
Filed Sep. 29, 1995, Ser. No. 536,093
Int. Cl.⁶ A01M *23/20*
U.S. Cl. 43—61 **13 Claims**



1. An animal trap comprising:
a housing with a horizontal base and two vertical sides;
a cover mounted between the vertical sides of the housing, said cover and said housing forming a box-shaped cage having at least one open end;
a door slideably mounted at an open end of the cage and capable of vertical travel between an open and a closed positions;
a means for locking the door in the closed position to prevent the escape of an animal after activating the trap; and
a triggering mechanism comprising:
a bait tray within the housing and above the base of the housing, such tray containing a hole;
a bait pin capable of vertical travel between a set and a triggered positions and having two ends, the lower end of the bait pin having a diameter allowing it to pass through the hole and disposed above the hole in the bait tray and resting on a bait in the set position, the bait disposed between the lower end of the bait pin and the bait tray hole, and the lower end of the bait pin protruding through the hole in the bait tray in the triggered position;
a latch moveable between a set and triggered positions such that in the set position the latch holds the door covering that end of the cage in the open position; and
a connecting means disposed between the latch and the bait pin and connected to the bait pin for releasing the latch when the bait pin moves from the set position to the triggered position.

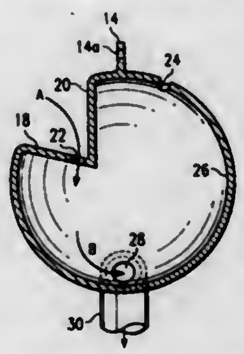
5,615,515
DEVICE FOR THE CONTROL OF MICE AND OTHER RODENTS
Marie A. Woodruff, 1331 Summit La., Mountainside, N.J. 07092
Filed Jun. 6, 1995, Ser. No. 467,078
Int. Cl.⁶ A01M *23/06;23/02*
U.S. Cl. 43—63 **20 Claims**



1. A device for entrapping animals, said device comprising:
a housing defining a first openable end for permitting an animal to enter said housing;
said housing comprising means for selectively closing said first end of said housing;
a supporting element for movably mounting said housing thereon, said housing including means cooperating with said supporting element for mounting said housing at a preselected, inclined angular orientation relative to said supporting element such that said supporting element engages said means for closing said first end of said housing; said housing and said supporting element being separable from each other;
said means for selectively closing said first end of said housing being actuated by predetermined movement of said housing relative to said supporting element for disengaging said supporting element from said means for closing said first end of said housing;
said housing, said supporting element, and said means for selectively closing said first end of said housing being operatively associated such that the weight of an animal entering said housing through said first end thereof causes said predetermined movement of said housing relative to said supporting element to disengage said supporting element from said means for closing said first end of said housing to actuate said means for closing said first end of said housing.

5,615,516
WATERING DEVICE
William V. Brown, 6410 Forestshire, Dallas, Tex. 75230
Filed Jun. 23, 1995, Ser. No. 494,593
Int. Cl.⁶ A47G *7/02*
U.S. Cl. 47—40.5 **12 Claims**

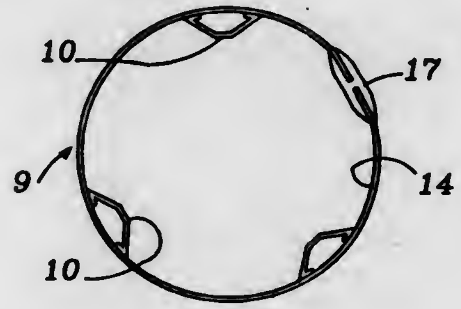
1. A watering device for use on a tree comprising:



a hollow container shaped as a spherical ornament;

a funnel shaped fluid channeling surface in the upper portion of said hollow container extending downwardly to an inlet into the interior of said hollow container;
an outlet orifice in the lower portion of said hollow container, said outlet container being in fluid communication with a tube means attached to said outlet said tubular means extending to the base of a tree; and
a vent hole extending through the wall of said hollow container at a point above the inlet into the interior of said hollow container.

5,615,517
APPARATUS AND METHOD FOR IRRIGATING PLANTS
Floyd T. Smith, 5112 Richfield Ave., Yorba Linda, Calif. 92686
Division of Ser. No. 228,228, Apr. 15, 1994, Pat. No. 5,477,639. This application Dec. 22, 1995, Ser. No. 577,266
Int. Cl.⁶ A01G *29/00*
U.S. Cl. 47—48.5 **6 Claims**

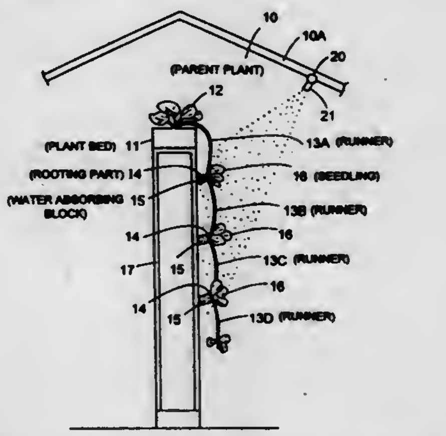


1. A root barrier envelope and perforated root deflector ribs for watering a root portion of a plant in a ground planting location, comprising:
a.) an open-ended root barrier formed of impervious material and having at least one flat or gently curving plane surface defining an inner wall adjacent the root portion, and an outer wall remote from the root portion, the root barrier defining a plurality of perforations through the inner and outer walls, the root barrier being anchored in the ground planting location by means of the perforations;
b.) at least one root deflecting rib which projects inwardly from the inner side of said plane surface, each rib having open, upper and lower ends and defining a plurality of perforations for delivering water applied from an open, upper end of a rib and downwardly through the perforations and lower end of the rib for discharge of water to the root portion of the plant, each rib and perforations being sized and constructed to deliver sufficient water to medial and downward portions of the root portion for retaining water in the vicinity of the root portion, to cause the root portion to grow downwardly and outwardly from the root barrier and to deflect the root portion away from the plant and toward spaced locations on the plane surface of the root barrier, the perforations being sized to drain water from the ribs through the root barrier and feed the root at its periphery.

5,615,518
SPROUTED VEGETABLE SEEDS STERILIZING METHOD, AND SPROUTED VEGETABLES CULTIVATING METHOD
Tomosaburo Suzuki, Kanagawa-ken, and Tsuneo Takizawa, Hachioji, both of Japan, assignors to Daisey Kikai Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 202,452, Feb. 28, 1994, abandoned. This application Nov. 20, 1995, Ser. No. 561,115
Claims priority, application Japan, Mar. 13, 1993, 5-091790
Int. Cl.⁶ A01G *1/00;7/00*
U.S. Cl. 47—58 **18 Claims**

10. A method of cultivating sprouting seeds, which comprises:
a) subjecting said seeds to a sterilizing treatment comprising exposing said seeds to a temperature in the range of about 70° C. to about 90° C. for a time of about 10 to about 30 seconds, wherein shorter duration is used with higher temperatures;
b) quenching said seeds to ambient temperature; and
c) cultivating said sterilized seeds.

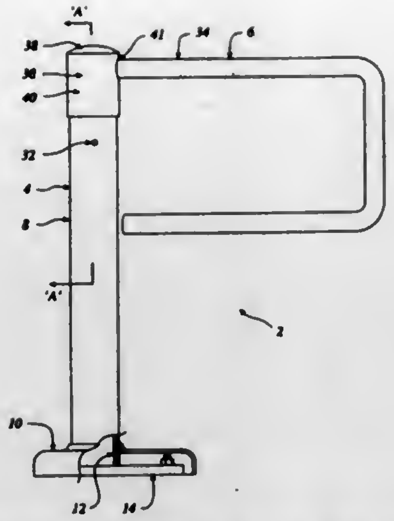
5,615,519
METHOD FOR RAISING SEEDLING
Yoshimi Abe, and Shinji Murai, both of Jushiyama-mura, Japan, assignors to M-Hydroponics Research Co., Ltd., Aichi, Japan
PCT No. PCT/JP94/01490, § 371 Date Jul. 6, 1995, § 102(e) Date Jul. 6, 1995, PCT Pub. No. WO95/07017, PCT Pub. Date Mar. 16, 1995
PCT Filed Sep. 8, 1994, Ser. No. 436,313
Claims priority, application Japan, Sep. 9, 1993, 5-250213
Int. Cl.⁶ A01G *31/00*
U.S. Cl. 47—59 **2 Claims**



1. A method for raising seedlings comprising; planting a parent plant in a plant bed disposed in a high position, growing plural runners linked mutually to hang from said parent plant in said plant bed, attaching water absorbing block to each rooting part between runners hanging in midair, supplying water to each water block to grow root and seedling from said rooting part, and clipping and collecting the resulting seedlings from runners.

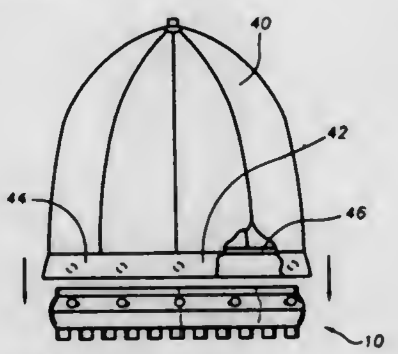
5,615,520
DAMPED ONE-WAY SELF-CLOSING GATE
John D. McGuire, Brampton, Canada, assignor to Brascon Architectural Products Inc., Brampton, Canada
Filed May 8, 1995, Ser. No. 436,813
Int. Cl.⁶ E05F *1/04*
U.S. Cl. 49—237 **20 Claims**

1. A one-way self-closing gate movable from a first, closed position to a second, open position and back again said gate comprising:
a stator assembly having an axis of rotation;



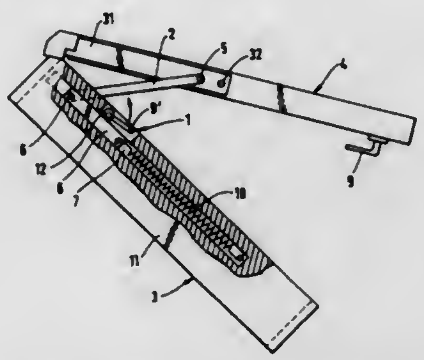
a rotor assembly for engagement with said stator assembly and pivotal rotation about said axis of rotation biasing means associated with said stator assembly and said rotor assembly to urge said gate to return to said first position from said second position;
augmenting means to assist said biasing means said augmenting means disposed between said stator assembly and said rotor assembly;
a damper associated with said stator assembly to dampen the movement of said gate from said second position to said first position; said rotor assembly is axially displaced relative to said stator assembly, when said rotor assembly is released from said second open position, to said first position.

5,615,521
TENT FLOORING SYSTEM
Richard A. Simerka, 3908 Sycamore La., Parker, Tex. 75002-5900
Filed Feb. 6, 1996, Ser. No. 597,611
Int. Cl.[6] E04G *11/04*
U.S. Cl. 52—2.22 **20 Claims**



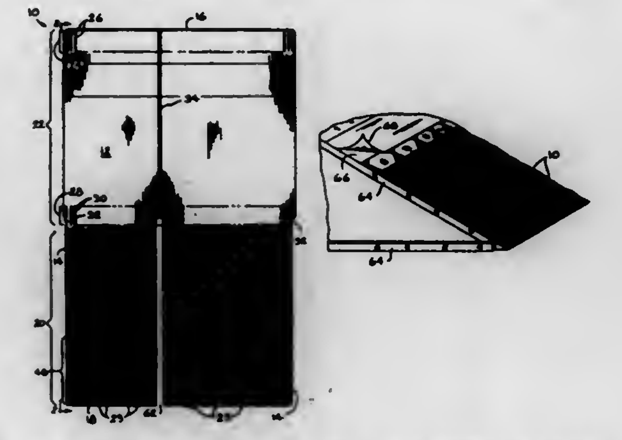
1. A tent flooring system comprising:
a support structure including:
a first inflatable bladder member having a first inflatable chamber formed therein constructed from a resilient air impermeable material and including a first inflation valve assembly in gaseous communication between said first inflatable chamber and said exterior of said first bladder member in a manner to allow a user to selectively introduce and capture air within said first inflatable chamber, and a first gripping surface coating deposited on at lease a section of said exterior surface portion of said first bladder member; and
a second inflatable bladder member having a second inflatable chamber formed therein constructed from a resilient, air impermeable material and including a second inflation valve assembly in gaseous communication between said second inflatable chamber and said exterior of said second bladder member in a manner to allow a user to selectively introduce and capture air within said second inflatable chamber, said second bladder member having at least twenty inflatable multi-directional channeling structure protrusions extending a substantially equal distance of at least one inch from a second outwardly directed surface thereof; said first and second bladder members being permanently secured together in a manner such that said section of said exterior surface portion of said first bladder member having said first gripping surface coating deposited thereon is positioned on an opposite side of said support structure from said at least twenty inflatable multi-directional channeling structure protrusions extending from said second outwardly directed surface of said second bladder member; and
a plurality of tent attachment mechanisms in connection with said support structure and securable to a tent in a manner such that a floor member provided in said tent is positioned over said section of said exterior surface portion of said first bladder member having said first gripping surface coating deposited thereon.

5,615,522
ROOF WINDOW WITH POSITIONING ASSEMBLY
Harald Tomanek, Leinfelden-Echterdingen, Germany, assignor to Roto Frank AG, Leinfelden-Echterdingen, Germany
Filed Jul. 13, 1995, Ser. No. 502,274
Claims priority, application Germany, Jul. 13, 1994, 9411278 U
Int. Cl.[6] E04B *7/16*
U.S. Cl. 52—72 **26 Claims**



1. A roof window comprising a window casing (3) providing an opening and having side frame members (11); a window sash (4) extending over said opening having a frame with side members (15) and upper and lower cross members; a locking device (1) on a side member of said frame of said sash for locking said sash (4) in open positions relative to said casing (3); a device for opening said sash including at least one spring arm (2) supporting said window sash (4) on said casing (3) in the open position thereof; pivot bearings (5, 6) operatively connecting said spring arm (2) to said casing (3) and to said window sash (4), one of said pivot bearings (6) being disposed on a spring-operated slide (8) movable in a guide (7), said slide 7 being lockable by said locking device (1); and a handle (9) on said lower cross member of said sash for operating said locking device (1) said handle (9) being operatively connected to said locking device (1) by corner guides (59) and connecting rods (19, 44, 45) on said frame of said sash (4).

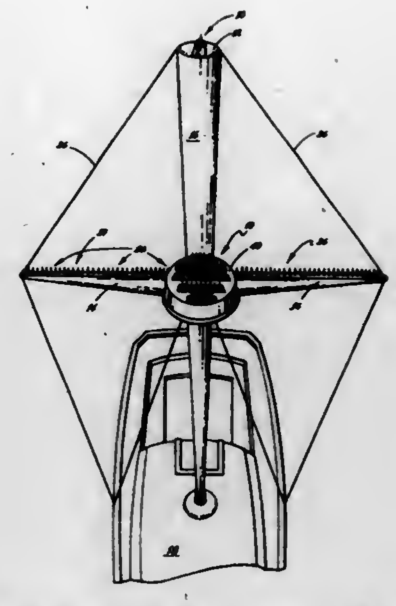
5,615,523
ROOF HAVING RESINOUS SHINGLES
James R. Wells, Heath; Denise A. McLaine, Centerburg; James C. Wintgens; Roger A. McFarland, both of Newark, and Arthur Blinkhorn, Westerville, all of Ohio, assignors to Owens-Corning Fiberglas Technology, Inc., Summit, Ill.
Filed Apr. 24, 1995, Ser. No. 427,515
Int. Cl.[6] E04D *1/20;1/24*
U.S. Cl. 52—98 **38 Claims**



1. A roof comprising (i) a roof deck, (ii) a plurality of parallel, successively applied, overlapping courses of roofing shingles each having an upper, headlap portion and a lower, tab portion, with the tab portions of the shingles in an upper course at least partially covering the headlap portions of the shingles in an adjacent lower course, and (iii) fasteners affixing said plurality of shingles to said roof deck, wherein:
said roofing shingles are made from a composition comprising an organic, resinous material and an inorganic filler material; and
said roofing shingles have a shingle structure comprising: (a) a top surface forming said headlap portion and said tab portion; (b) means defining a cavity under said top surface, said means defining a cavity comprising a first side surface extending downward from said top surface and having a bottom edge, a second side surface extending downward from said top surface and having a bottom edge, an upper end surface extending downward from said top surface and having a bottom edge, and a butt end surface extending downward from said top surface and having a bottom edge, said bottom edges of the first side surface, the second side surface, the upper end surface and the butt end surface generally lying in a common plane; (c) a plurality of ribs within said cavity and extending downward from said top surface, said plurality of ribs including supporting ribs extending from said top surface to said common plane and recessed ribs under said tab portion extending from said top surface to a point above said common plane; and (d) at least one strip in the headlap portion for receiving fasteners.

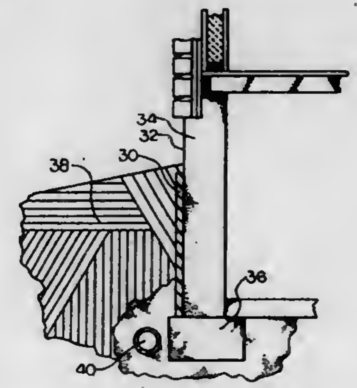
5,615,524
MASTHEAD AND SPREADER BIRD ROOSTING GUARD
Edward A. Costa, Sr., 58 Columbia Ave., Marstons Mills, Mass. 02648
Continuation-in-part of Ser. No. 10,499, Jul. 12, 1993, abandoned. This application Oct. 6, 1995, Ser. No. 540,319
Int. Cl.[6] E04B *1/72*
U.S. Cl. 52—101 **7 Claims**

1. A bird roosting guard adapted for deterring roosting of sea birds on perch areas of sea vessels comprising:
a. a mast member having a masthead defining a first lateral perch area and including a laterally extending spreader means for separating stays defining a second lateral perch area;
b. guard means in combination with said first and second perch areas comprising;



i. an adjustable base member comprising a flat longitudinal strip of metallic material configured to be mounted on said first and second perch areas;
ii. self adhesive means for mounting said guard means on said first and second perch areas consisting essentially of a strip of double-faced adhesive attached to said base member arranged in coplanar relationship therewith;
iii. a plurality of elongated tack members attached to said base arranged in spaced-apart orthogonal relationship therewith, each tack member having a head at one end and a sharp point at an other end, wherein said tack members are arranged in spaced apart relationship in at least two rows extending the entire length of the base member arranged to project through said base such that each head is securely anchored between the base and said self adhesive means and wherein said guard means is attached to said perch areas and extends over the entirety of each perch area for deterring birds from roosting thereon.

5,615,525
THERMOPLASTIC FOAM INSULATION AND DRAINAGE BOARD IN BELOW-GRADE APPLICATIONS
Linda L. Kenworthy, Gahanna, Ohio, assignor to The Dow Chemical Company, Midland, Mich.
Continuation of Ser. No. 295,368, Aug. 24, 1994, Pat. No. 5,511,346. This application Jan. 30, 1996, Ser. No. 594,066
Int. Cl.[6] E02D *31/02*
U.S. Cl. 52—169.5 **8 Claims**

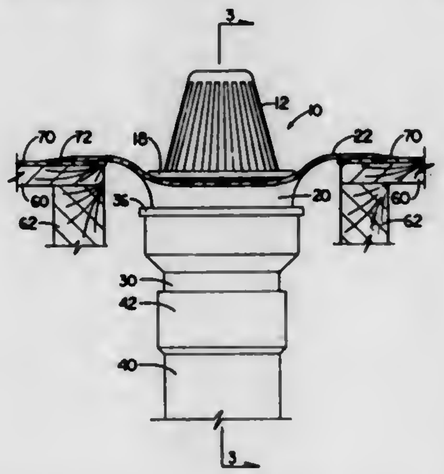


1. A below-grade insulating structure, comprising:
a) a below-grade building wall having an exterior surface;

b) a rigid, thermoplastic foam board in abutment with the exterior surface of the building wall, the board defining a plurality of channels extending therein from a face of the board, the channels being generally unidirectionally oriented along the board, channel extending into the board through a relatively narrow first opening at the face into a relatively wide first zone, each channel further extending into the board from the first zone through a relatively narrow second opening into a second zone, the first and second zones being adapted to convey water from one end of each channel to the other end, the channels being directed outward away from the building wall; and

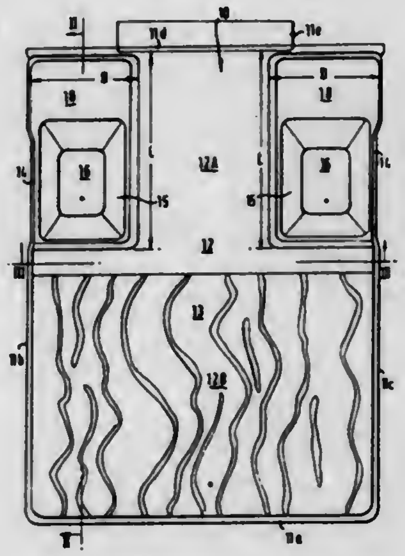
c) backfill adjacent the building wall and the channels of the foam board.

5,615,526
DRAINS FOR SINGLE LAYER SYNTHETIC ROOFING AND WATERPROOFING MEMBRANES
Dale W. Palmer, 22806 66th Ave. W., Mountlake Terrace, Wash. 98043, and John F. Pittman, 10721 Meridian Ave., Ste. 1413, Seattle, Wash. 98133-9020
Filed May 8, 1995, Ser. No. 436,139
Int. Cl.^{6} E04D *13/14*
U.S. Cl. 52—302.1 **18 Claims**



1. A drain assembly for use with a synthetic roofing or waterproofing membrane covering a flat or low sloping surface, comprising:
a grate having a strainer and a connecting collar;
a flanged tubular boot contoured to fit snugly around the grate's connecting collar comprising a tubular piece of an elastomer with an outlet port at one end and a flange around the circumference of the other end for sealably attaching the boot to the synthetic membrane, wherein the elastomer is identical to or compatible with and sealably attachable to the synthetic membrane and the elastomer and the synthetic membrane are made of materials selected from a group consisting of synthetic rubber, rubber-like materials, plastic, and plastic-like materials;
a pipe connector defining a longitudinal passageway and connecting the grate collar nested in the boot with the receiving end of a standard drain pipe.

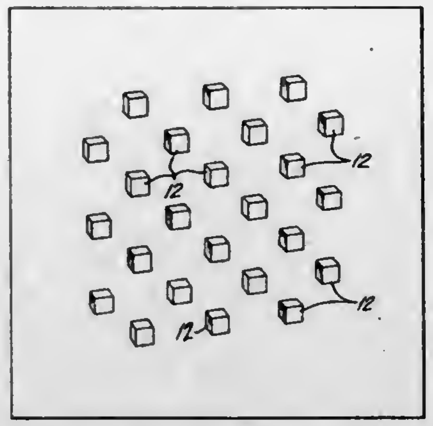
5,615,527
FABRICATED ROOF TILE
Begonia Attley, The Green, Horton-cum-Studley, Oxfordshire, England, 0X9 1AY, United Kingdom
PCT No. PCT/GB93/00862, § 371 Date Jan. 3, 1995, § 102(e) Date Jan. 3, 1995, PCT Pub. No. WO93/22523, PCT Pub. Date Nov. 11, 1993
PCT Filed Apr. 26, 1993, Ser. No. 325,328
Claims priority, application United Kingdom, Apr. 30, 1992, 9209397
Int. Cl.^{6} E04D *1/18;3/30*
U.S. Cl. 52—535 **10 Claims**



1. A sheet metal roof tile having an upper portion and a substantially flat lower portion and which in use, co-operates with other such roof tiles for laying in rows upon a roof such that the substantially flat lower portions of the tiles in one row substantially overlap the upper portions of tiles in a lower row, and are off-set relative thereto, and the upper portions of said tiles are themselves substantially overlapped by the substantially flat lower portions of tiles in an upper row, the tile having an upper surface with a major area portion of the surface defining a substantially flat primary plane of the tile, the sheet metal tile being formed with at least one off-set strengthening portion raised above the primary plane of the tile, characterised in that each off-set portion is formed in the upper portion of the tile and has an upper surface raised above the primary plane of the tile to a height greater than the overall thickness of the lower portion of the tile, and positioned on the upper portion of the tile such that said upper surface of each offset portion in use, supports the underside of the substantially flat lower portion of an overlapping portion of another tile.

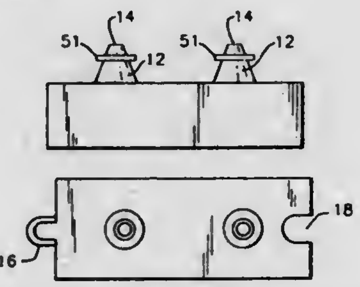
5,615,528
STRESS STEERING STRUCTURE
Charles R. Owens, 125 S. Reynolds St., Alexandria, Va. 22304
Filed Nov. 14, 1994, Ser. No. 338,408
Int. Cl.^{6} E04C *1/00*
U.S. Cl. 52—576 **24 Claims**

1. A stress steering structure comprising:
a substance having a first set of voids, each member of said first set of voids encompassing one of a first set of predetermined points within said substance,
said first set of predetermined points defining a first matrix wherein each of said points in said first matrix is spaced an equal distance from twelve and only twelve adjacent ones of said points in said first matrix,



the volume of said first set of voids is substantially between approximately one percent and approximately five percent of the volume of said substance.

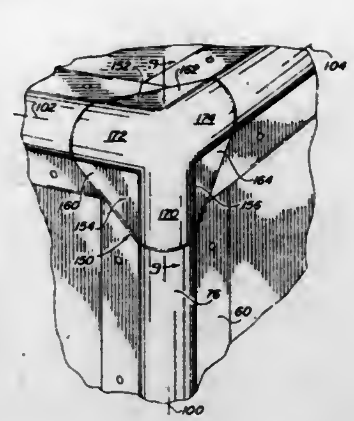
5,615,529
BORDER BLOCKS FOR TREE AND SHRUB DECORATION
Jan C. Johnson, and Joel S. Johnson, both of 1311 W. Magnolia Ave., Sea Girt, N.J. 08750
Filed Mar. 12, 1996, Ser. No. 614,065
Int. Cl.^{6} E04C *1/10*
U.S. Cl. 52—604 **10 Claims**



1. Border blocks for tree and shrub decoration comprising a plurality of hollow plastic blocks having openable holes formed in a series of projections at their top for filing said blocks with sand, tongue-and-groove interlocks extending from their left and right sides to join with like adjacent blocks in forming a first course thereof, and with said blocks being provided with apertures at their bottom to mate with said projections of other blocks for stacking one atop the other in forming several courses of block.

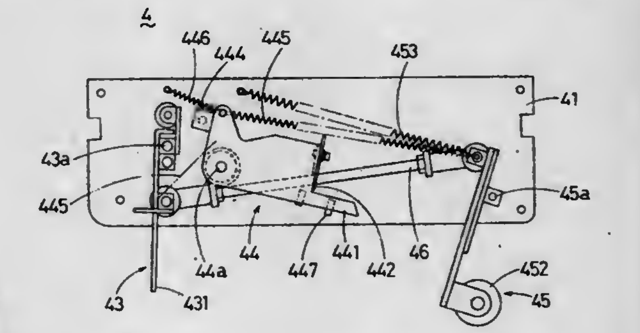
5,615,530
CORNER FINISHING SYSTEM METHOD
Michael J. Kartler, 2850 E. Sierra, Phoenix, Ariz. 85028
Division of Ser. No. 199,520, Feb. 22, 1994, Pat. No. 5,440,776. This application Aug. 8, 1995, Ser. No. 512,475
Int. Cl.^{6} E04B *2/00*
U.S. Cl. 52—745.09 **1 Claim**

1. A method of constructing an outside common corner at the convergence of three edges of three panels disposed at right angles with respect to one another, said method comprising:
(a) providing a corner cap having a body in a general, integral trihedral shape defining three axes having first, second and third generally triangular faces, and having ribs extending in said faces along the three axes of said trihedral shape;
(b) securing bead strips along the three edges with the strips converging at the common corner;
(c) placing said corner cap over said strips at said corner; and



(d) applying cementitious material to said panels, corner strips and corner cap to achieve a uniformly finished appearance.

5,615,531
PACKING TAPE STICKING APPARATUS IN A SEALING MACHINE AND THE LIKE
Kiyooki Nakai, and Shigeru Kita, both of Amagasaki, Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan
Filed Nov. 27, 1995, Ser. No. 563,088
Claims priority, application Japan, Nov. 25, 1994, 6-291111; Jul. 26, 1995, 7-190219
Int. Cl.^{6} B65B *61/00*
U.S. Cl. 53—136.4 **16 Claims**



12. A packing tape sticking apparatus wherein, in order to seal butt portions of a pair of closed flaps of a carried box body, an adhesive tape for packing which is drawn from a roll according to a progress of the box body, is stuck to the butt portions thereof so as to cut the tape after the tape is stuck in a fixed length, comprising
a pair of side plates,
a tape sticking plate which is rotatably arranged between the side plates and located at one end of the plates so as to stick an end portion of the tape to a front face of the carried box body,
a tape pressing member which is rotatably arranged between the side plates and located at the other end of the plates so as to press the tape stuck to the box body according to the progress of the box body,
a cutter which is arranged between the tape sticking plate and the tape pressing member so as to rotate between a storing position between the side plates and a cutting position protruded from the side plates, thereby cutting the tape in a state of having a length left backward in the butt portions when it is rotating to the cutting position,
a connection member which is arranged between the tape sticking plate and the tape pressing member, wherein it makes the tape sticking plate rotate to be pushed by the box body, thereby making the tape pressing member and tape sticking

plate work with each other so as to rotate to the position wherein the tape pressing member can press the tape to the box body,

an operation lever arranged at the side plate to rotate by means of contacting the progressing box body,

a first elastic member in which one end thereof is arranged at the cutter and the other end thereof is arranged at the operation lever, so as to make the cutter rotate to a direction of the cutting position when the operation lever rotates,

a second elastic member in which one end thereof is arranged at the cutter and the other end thereof is arranged at the side plate, so as to urge the cutter in a direction of the storing position by means of an elastic force which is stronger than the force of the first elastic member when the pressing member and the tape sticking plate do not work with each other,

a third elastic member in which one end thereof is arranged at the tape pressing member or the tape sticking plate and the other end thereof is arranged at the side plate, so as to urge the tape sticking plate to a position wherein an edge portion of the tape is stuck to a front face of the carried box body,

a guard which is arranged at the side plate so as to hold the rotating locus of an edge of the cutter blade and face to the forward direction of the rotation of the edge of the cutter blade which is located in the storing position,

a cutter cam arranged at the cutter which prevents the blade edge thereof from interfering with the box body by protruding forward over the blade edge,

wherein, when the operation lever rotates according to the progress of the box body, the elastic force of the first elastic member is stronger than the force of the second elastic member, thereby making the cutter rotate to the cutting position.

5,615,532

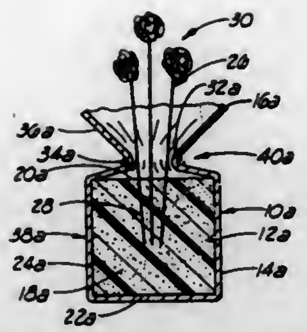
METHOD OF MAKING A DECORATIVE ASSEMBLY FOR A FLORAL GROUPING

Donald E. Weder, Highland, and William F. Straeter, Breese, both of Ill., assignors to Southpac Trust International, Inc., Oklahoma City, Okla.

Continuation of Ser. No. 427,014, Apr. 24, 1995, Pat. No. 5,501,059, which is a continuation of Ser. No. 941,992, Sep. 8, 1992, Pat. No. 5,410,856, which is a continuation-in-part of Ser. No. 893,586, Jun. 2, 1992, Pat. No. 5,181,364, which is a continuation of Ser. No. 707,417, May 28, 1991, abandoned, which is a continuation of Ser. No. 502,358, Mar. 29, 1990, abandoned, which is a continuation-in-part of Ser. No. 249,761, Sep. 26, 1988, abandoned, said Ser. No. 941,992is a continuation-in-part of Ser. No. 734,832, Aug. 24, 1992, Pat. No. 5,426,914, which is a continuation-in-part of Ser. No. 819,311, Jan. 9, 1991, abandoned, which is a continuation of Ser. No. 765,416, Sep. 26, 1991, Pat. No. 5,105,599, which is a continuation of Ser. No. 530,491, May 29, 1990, abandoned, said Ser. No. 941,992is a continuation-in-part of Ser. No. 940,930, Sep. 4, 1992, Pat. No. 5,361,482, which is a continuation-in-part of Ser. No. 926,098, Sep. 5, 1992, which is a continuation-in-part of Ser. No. 803,318, Dec. 4, 1991, Pat. No. 5,344,016, which is a continuation-in-part of Ser. No. 707,417. This application Jun. 5, 1995, Ser. No. 463,641

Int. Cl.⁶ B65B *11/02;25/02*

U.S. Cl. 53—399 **22 Claims**



1. A method for providing a decorative covering comprising:

providing a floral grouping having a bloom end and a stem end;

providing a floral holding material having an upper end, a lower end and an outer peripheral surface, the floral holding material being constructed of a material capable of receiving a portion of the floral grouping and supporting the floral grouping without any pot means;

providing a sheet of material having an upper surface, a lower surface and an outer periphery;

disposing the stem end of the floral grouping in the floral holding material;

disposing the upper surface of the sheet of material near the outer peripheral surface of the floral holding material and extending the sheet of material about at least a portion of the outer peripheral surface of the floral holding material while leaving at least a portion of the upper end of the floral holding material uncovered, the upper surface of the sheet of material being disposed adjacent the outer peripheral surface of the floral holding material; and

forming a crimped portion in a portion of the sheet of material by disposing a banding means about the sheet of material at a position above the upper end of the floral holding material with the crimped portion cooperating to hold the sheet of material in the position extended about the floral holding material to provide a decorative covering and wherein the banding means pulls the sheet of material inwardly toward a central portion of the floral holding material, and wherein the banding means forms at least one overlapping fold in the crimped portion of the sheet of material.

5,615,533

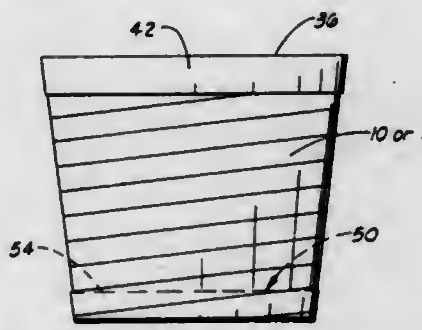
WRAPPING MATERIAL FOR PROVIDING A DECORATIVE COVERING

Donald E. Weder, 621 W. Main St., Highland, Ill. 62249

Continuation of Ser. No. 305,246, Sep. 13, 1994, Pat. No. 5,473,856, which is a continuation of Ser. No. 991,737, Dec. 17, 1992, Pat. No. 5,345,745, which is a continuation of Ser. No. 876,947, May 1, 1992, Pat. No. 5,396,992, which is a continuation of Ser. No. 708,521, May 31, 1991, Pat. No. 5,161,348, which is a division of Ser. No. 360,367, Jun. 2, 1989, Pat. No. 5,038,933. This application May 31, 1995, Ser. No. 455,452

Int. Cl.⁶ B65B *11/02;51/00.*

U.S. Cl. 53—410 **2 Claims**



1. A method for providing a decorative covering for a pot having an upper end, a lower end, a bottom, a height extending generally between the upper and the lower ends, and an outer peripheral surface extending generally between the upper and the lower ends of the pot, the method consisting of the steps of:

providing a cover bottom having a base and a rim extending upwardly from the base;

disposing the lower end of the flower pot in the cover bottom whereby the rim of the cover bottom extends a distance above the lower end of the pot and is spaced a distance from the upper end of the pot; and

securing the cover bottom solely to the outer peripheral surface of the pot.

5,615,534

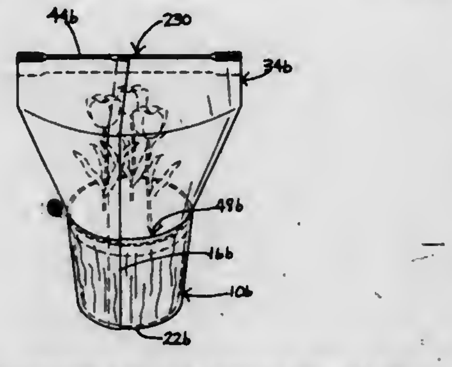
METHODS FOR WRAPPING A SHEET OF MATERIAL ABOUT A FLOWER POT OR BASKET TO FORM A COVERING OF THE FLOWER POT OR BASKET

Donald E. Weder, Highland, Ill., assignor to Southpac Trust International, Inc., Oklahoma City, Okla.

Continuation-in-part of Ser. No. 385,604, Feb. 9, 1995, Pat. No. 5,560,181, which is a continuation of Ser. No. 313,675, Sep. 27, 1994, abandoned, which is a continuation of Ser. No. 188,183, Jan. 28, 1994, Pat. No. 5,388,386, which is a continuation of Ser. No. 968,798, Oct. 30, 1992, Pat. No. 5,369,934, which is a continuation of Ser. No. 865,563, Apr. 9, 1992, Pat. No. 5,245,814, which is a continuation of Ser. No. 649,379, Jan. 31, 1991, Pat. No. 5,111,638, which is a continuation of Ser. No. 249,761, Sep. 26, 1988, abandoned, which is a continuation-in-part of Ser. No. 219,083, Jul. 13, 1988, Pat. No. 4,897,031, which is a continuation of Ser. No. 4,275, Jan. 5, 1987, Pat. No. 4,773,182, which is a continuation of Ser. No. 613,080, May 22, 1984, abandoned. This application Jun. 7, 1995, Ser. No. 482,683

Int. Cl.⁶ B65B *25/02;49/00*

U.S. Cl. 53—410 **16 Claims**



1. A method for wrapping a sheet of material about a flower pot, the steps of the method comprising:

providing a sheet of material having an adhesive disposed thereon, the sheet of material being adapted for manual disposition about a flower pot;

disposing the sheet of material, by hand, about the flower pot; and

manipulating the sheet of material, by hand, to bring the adhesive of the sheet of material into contact with the flower pot such that the adhesive secures the sheet of material to the flower pot.

5,615,535

METHOD FOR FORMING A DECORATIVE COVER ABOUT A FLOWER POT

Donald E. Weder, Highland, Ill., assignor to Southpac Trust International, Inc., Oklahoma City, Okla.

Continuation of Ser. No. 237,078, May 3, 1994, which is a continuation-in-part of Ser. No. 220,852, Mar. 31, 1994, Pat. No. 5,572,851, and Ser. No. 940,930, Sep. 4, 1992, Pat. No. 5,361,482. This application Jun. 2, 1995, Ser. No. 459,923

Int. Cl.⁶ A01G *9/02;* **B65B** *25/02;* **B65D** *85/52*

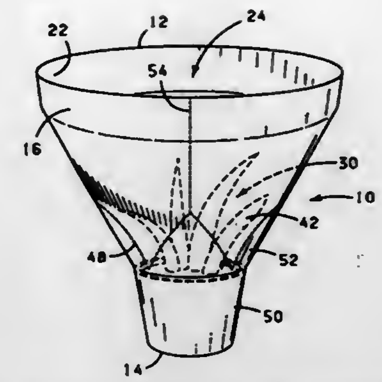
U.S. Cl. 53—412 **31 Claims**

1. A method of wrapping a potted plant in a decorative cover, comprising:

providing a potted plant comprising a floral grouping disposed in a pot means, the pot means having a lower end, an upper rim and an outer peripheral surface;

providing a sleeve comprising:

a base having an upper end, a lower end, an inner peripheral surface and an outer peripheral surface, the base having a flattened state wherein the base is tapered from the upper end to the lower end in the flattened state of the base and is openable from the flattened state to an opened position wherein the inner surface of the base defines and encompasses an inner retaining space, an opening being formed through the upper end of the base in communication with the inner retaining space, the base sized and tapered to fit the outer peripheral surface of the pot means and having a portion in the lower end inwardly folded to form a gusset which is unfoldable for forming a closed bottom of the base in the opened position of the base, and



an upper portion connected to the upper end of the base along a non-linear line of perforations and having means in the upper portion for supporting the sleeve from wicket means;

separating the base of the sleeve from the upper portion by tearing along the line of perforations forming a non-linear edge along the upper end of the base;

opening the base into the opened position thereby exposing the inner retaining space of the base thereby providing a base tapered for fitting the pot means and wherein substantially no folds are formed in the base when in the opened position; and

disposing the potted plant in the inner retaining space of the base of the sleeve with the lower end of the pot means positioned upon the closed bottom of the base and with the base covering at least a portion of the outer peripheral surface of the pot means to provide the decorative cover for the potted plant.

5,615,536

METHOD AND APPARATUS FOR ACCOMMODATING GOODS IN CONTAINER

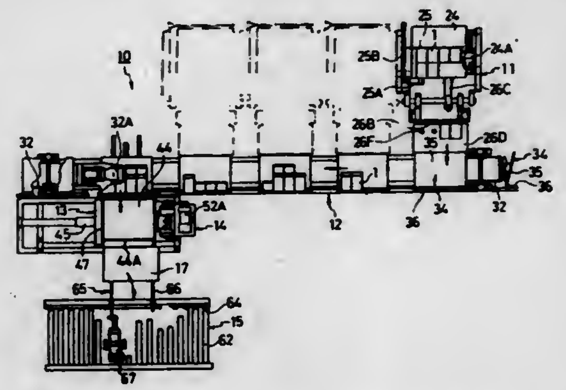
Nobuhiro Tanaka, Miyashiro-machi, Japan, assignor to Kao Corporation, Tokyo, Japan

Division of Ser. No. 266,515, Jun. 27, 1994, Pat. No. 5,515,664. This application Feb. 9, 1996, Ser. No. 599,154

Claims priority, application Japan, Jun. 30, 1993, 5-183171

Int. Cl.⁶ B65B *35/50*

U.S. Cl. 53—447 **2 Claims**



1. A goods accommodation method comprising the steps of:

collecting goods received on goods receptacles by causing the goods to gather on a goods reception surface of the goods receptacles such that the goods are adjacent to a movable side wall of the goods reception surface using:

at least one goods receptacle having a goods reception surface inclined downwardly from a goods reception side, the goods receptacle including a movable side wall for opening and closing a side zone on a downward side of the goods reception surface;

a shutter disposed along a side of the goods receptacle and including a shutter member capable of position change between a tilted position, at which goods delivered from the goods receptacle are received on the shutter, and a horizontal position, at which goods are delivered from the shutter, the shutter member being opened at the horizontal position thereof to permit delivery of goods from the shutter; and

a table unit disposed beneath the shutter and including a stacking table with a slide thereon, the stacking table being for supporting goods delivered from the shutter and also being capable of being raised and lowered to stack goods delivered from the shutter on goods previously delivered on the slide on the stacking table:

transferring goods by opening the movable side wall of the goods receptacle to cause sliding of the goods on the goods reception surface so as to effect transfer of goods onto the shutter member, the shutter member having substantially a same slope of inclination as a slope of inclination of the goods reception surface; and

stacking the goods on the slide in a state with side surfaces of the goods facing a container aligned on the slide by bringing the shutter member of the shutter to the horizontal position and then opening the shutter member;

the collecting, transferring and stacking steps being carried out repeatedly to collect goods in a vertical stack of a plurality of stages on the slide on the stacking table;

the container being set such that an opening thereof is directed horizontally;

the stacked goods being transferred into the container by inserting the slide together with the goods stacked thereon into the container and then pulling the slide out of the container at a speed higher than the speed of insertion such that the stacked goods remain in the container;

the container being subsequently turned up such that the opening thereof is directed upward.

5,615,537

METHOD AND MEANS FOR PACKING PRINTED PRODUCTS

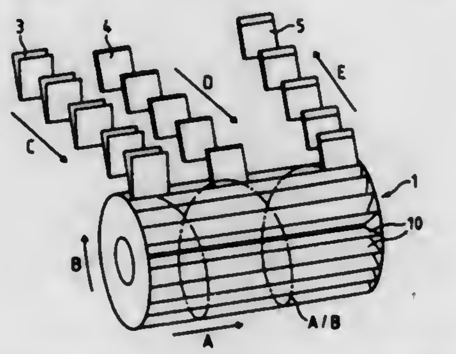
Jürg Vollenweider, Fehraltdorf, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

Filed Mar. 30, 1995, Ser. No. 415,134

Claims priority, application Switzerland, Apr. 8, 1994, 01041/94

Int. Cl.⁶ B65B *11/30*

U.S. Cl. 53—466 **24 Claims**



1. A method for packing continuously conveyed printed products being conveyed one of individually and in groups by enveloping a product insert with a packing element, the product insert including one of a single product, a plurality of products supplied in succession and a group of products, the method comprising the steps of:

providing a plurality of substantially V-shaped insertion compartments being continuously conveyed in a compartment conveying direction along a closed conveying path;

providing a plurality of prefolded packing elements each having a fold in a substantially continuously conveyed stream of packing elements;

successively introducing into each insertion compartment a respective packing element such that the fold of the respective packing element is introduced into a corresponding insertion compartment first;

ensuring that each respective packing element is in an open position after the step of introducing thereby providing open packing elements;

inserting a product insert into each open packing element after the step of ensuring;

closing each open packing element at least partially over its corresponding product insert after the step of inserting thereby providing enveloped products; and

removing each enveloped product from its corresponding insertion compartment after the step of closing.

5,615,538

STRAPPING MACHINE

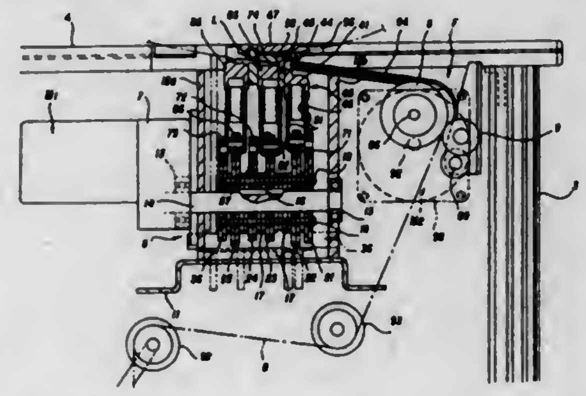
Susumu Miyashita, Kodaira; Akira Nagashima, Yokohama; Tadashige Kondo, and Keisuke Ishii, both of Tokyo, all of Japan, assignors to Kioritz Corporation, Tokyo, Japan

Filed Jul. 18, 1994, Ser. No. 276,403

Claims priority, application Japan, Jul. 21, 1993, 5-180136

Int. Cl.⁶ B65B *13/04*

U.S. Cl. 53—589 **3 Claims**



1. A strapping machine comprising:

a band feeding/tightening means (F) adapted to conduct feeding, primary tightening, secondary tightening of a band (B) to be looped around a periphery of an object to be strapped;

wherein said band feeding/tightening means (F) is so constructed as to carry out feeding, primary tightening and secondary tightening of the band (B) by driving a roller (8) by means of a driving means including a stepping motor (M2) which is capable of being controlled among an extent of rotation, a direction of rotation and a stopped state; and

said roller is normally caused to be pressed against another roller (9) by biasing means.

5,615,539

EQUINE HALTER

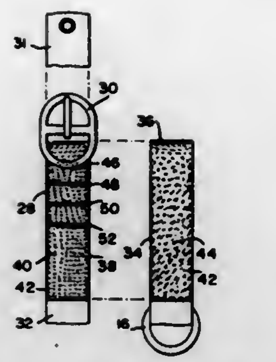
Lewis V. Graham, 5 Thor Ave., Succasunna, N.J. 07876

Continuation-in-part of Ser. No. 563,075, Nov. 27, 1995, abandoned. This application Apr. 19, 1996, Ser. No. 635,278

Int. Cl.⁶ B68B *1/02*

U.S. Cl. 54—24 **14 Claims**

1. An improved, equine halter, having a first element comprising a crownpiece, second elements comprising cheekpieces connected



to said crownpiece, a third element comprising a chin strap connected to said cheekpieces, a fourth element comprising a throat latch connected to said chin strap and intermediate said cheekpieces and said crownpiece, and a fifth element comprising a noseband connected to said chin strap, wherein the improvement comprises:

a separation of one of said elements into first and second, discontinuous terminations;

means, affixed to said terminations (a) for attaching said terminations together, and (b) responsive to opposing tensile forces applied to said terminations for effecting separation of said terminations; and wherein

one of said terminations has means for visually indicating whereat attachment together of said terminations will enable the aforesaid separation to occur at selected increments of said opposing tensile forces.

5,615,540

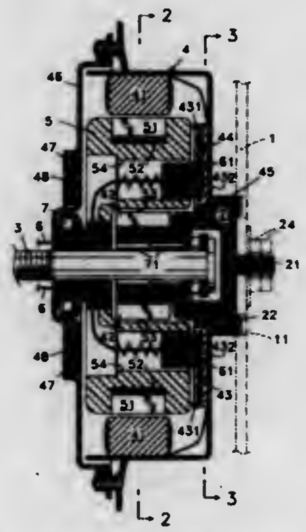
ELECTRICITY DRIVEN DEVICE AND METHOD FOR INCREASING THE ROTATIONAL INERTIA OF A ROTARY OBJECT OR THE BLADE OF A LAWN MOWER

Chen-Chi Yang, P.O. Box 10780, Taipei, Taiwan

Filed Jun. 1, 1995, Ser. No. 457,534

Int. Cl.⁶ A01D *34/78*

U.S. Cl. 56—11.9 **25 Claims**



1. An electricity driven device for rotating a rotary object to increase the rotational inertia of the rotary object, said device comprising:

a fixed and non-rotating main shaft;

a fixed element secured with said main shaft;

a rotary element arranged so as to rotate about said fixed element at a periphery of said fixed element;

a coupler for securing with said rotary object;

an electromagnetic field generating device comprising a first part and a second part, a plurality of coils and a plurality of permanent magnets being provided between said first part and said second part such that an electromagnetic field is generated therebetween when said coils are supplied with electric current, so that said first part and said second part perform relative rotation;

said first part of said electromagnetic field generating device being secured on said fixed element, and said second part thereof being secured on said rotary element;

said coupler being coupled to said rotary object and pivotally disposed on said main shaft, such that when said rotary element rotates, said coupler and said rotary object coupled thereto rotate therewith to increase the rotational inertia; and

a power supply for transmitting power to said coils.

5,615,541

WEEDER

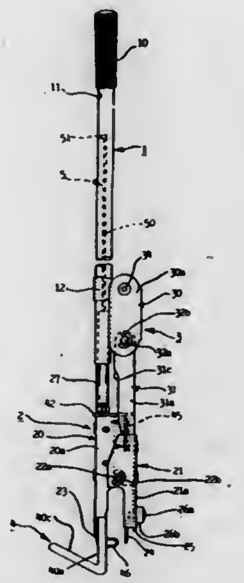
Kinjiro Ota, Tokyo, Japan, assignor to Ota Kosan Corporation, Japan

Filed Sep. 11, 1995, Ser. No. 526,843

Claims priority, application Japan, Sep. 14, 1994, 6-247062; Jun. 29, 1995, 7-186414

Int. Cl.⁶ A01D *11/00*

U.S. Cl. 56—239 **12 Claims**



1. A weeder, which a user can use in a standing posture, comprising:

an operating shaft having a longitudinal bore and a grip provided at an upper end thereof,

said operating shaft having a length long enough to allow the user to operate said operating shaft in the standing posture while grasping said grip;

support rod means telescoped in said longitudinal bore of said operating shaft;

chuck means arranged at a lower end of said operating shaft;

said chuck means including a pair of first and second frames, and a pair of first and second chuck pawls for pinching roots of weeds;

said first frame supported to a lower end portion of said support rod means;

said second frame pivotally supported to said first frame;

said first chuck pawl provided at a lower end of said first frame;

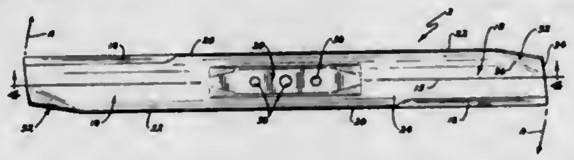
said second chuck pawl provided at a lower end of said second frame;

each of said first and second chuck pawls having a lower sharp end and adapted to be stuck into the ground when said operating shaft is pushed down against the ground by the user;

linkage means provided between said operating shaft and said second frame for causing said second frame to be pivoted while causing a lower sharp end of said second chuck pawl to

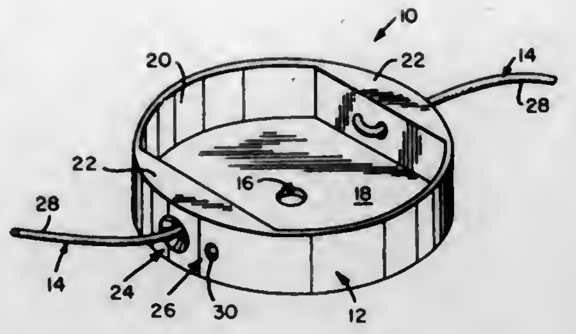
be closed toward a lower sharp end of said first chuck pawl, to thereby allow said lower sharp ends of said first and second chuck pawls to pinch the roots of the weeds therebetween;
first spring means for urging said linkage means in such a direction as to cause said linkage means to be stretched;
grounding means for facilitating standing of said chuck means over the ground;
said grounding means arranged between said first and second frames of said chuck means and supported to said chuck means in a manner to be vertically movable relative to said chuck means, so that when said operating shaft is pushed down against the ground by the user, said chuck means is moved downwardly along said grounding means; and
locking means for releasably locking said linkage means and maintaining said second chuck pawl in a closed condition relative to said first chuck pawl.

5,615,542
MULCHING BLADE FOR LAWN MOWER
Richard A. Thorud, and Nathan J. Friberg, both of Bloomington, Minn., assignors to The Toro Company, Minneapolis, Minn.
Filed May 30, 1995, Ser. No. 451,837
Int. Cl.⁶ A01D *34/73*
U.S. Cl. 56—255 **21 Claims**



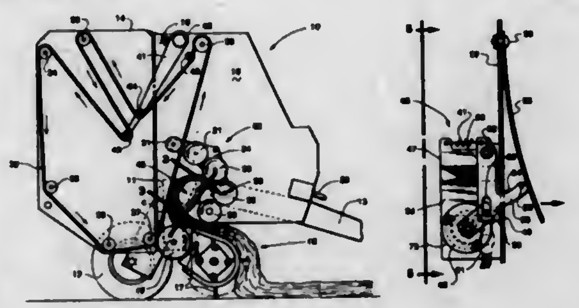
13. A lawn mower cutting blade which is suited to be attached to a rotatable drive means for rotating the blade about a generally vertical rotational axis which comprises:
a generally rectangular blade with a leading edge and a trailing edge and having a length that substantially exceeds its width such that the blade is elongated along a longitudinal centerline, wherein the blade includes a central portion having means for attaching the blade to the rotatable drive means and radially outermost portions on either side of the central portion, and wherein the central portion of the blade is symmetrical about the longitudinal centerline and each radially outermost portion of the blade is concavely curved between the leading and trailing edges and is twisted from the leading edge towards the trailing edge relative to the longitudinal centerline in a manner causing a leading edge of each radially outermost portion on which a sharpened cutting edge is carried to slant substantially uniformly downwardly relative to the longitudinal centerline over substantially the entire length of the cutting edge.

5,615,543
ROTARY CUTTING HEAD
Hyram J. Caffey, P.O. Box 953, Abilene, Tex. 79604, and Craig A. Caffey, 301 Westview Dr., Abilene, Tex. 79603
Continuation-in-part of Ser. No. 17,260, Jan. 10, 1994, abandoned, which is a continuation-in-part of Ser. No. 769,670, Oct. 1, 1991, abandoned. This application Apr. 17, 1995, Ser. No. 422,785
Int. Cl.⁶ A01D *34/73*
U.S. Cl. 56—295 **8 Claims**
4. A cutting disk, comprising:
a circular plate having a central bore; and,
a peripheral side wall integral with said circular plate, said peripheral side wall having a pair of integral gussets positioned opposite one another, each of said gussets having a pair of radial bores passing therethrough, and each said pair of radial bores including a first radial bore having:



a first outer section; and,
a first inner section in axial alignment with said first outer section, said first inner section having a diameter smaller than that of said first outer section.

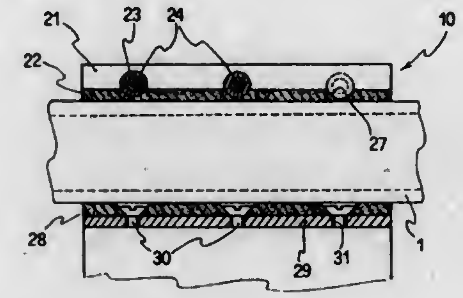
5,615,544
SYSTEM FOR MONITORING THE SHAPE OF ROUND BALES
John G. Berger, Landisville; Mark K. Chow, Paoli, and James T. Clevenger, Jr., Lancaster, all of Pa., assignors to New Holland North America, Inc., New Holland, Pa.
Filed Feb. 13, 1996, Ser. No. 600,575
Int. Cl.⁶ A01F *15/07*
U.S. Cl. 56—341 **5 Claims**



1. In a round baler having
a pickup for picking up crop material and feeding it rearwardly,
an expandable bale forming chamber into which said pickup feeds said crop material along a generally spiraling path,
said chamber includes opposing sidewalls between which a generally cylindrical shaped package of crop material is formed,
left and right crop compaction sensors each of which is mounted on one of said opposing sidewalls,
said sensors including means for continuously sensing the degree of compaction of crop material in the vicinity of said opposing sidewall under conditions where said crop material is fed along said generally spiralling path during formation of a cylindrical package of crop material in said chamber,
a system for displaying information corresponding to the relative degree of compaction sensed by said left and right crop compaction sensors, the improvement comprising
display means comprising left and right bar graph indicators for providing independent readouts corresponding to the degree of compaction sensed by said left and right crop compaction sensors,
said bar graph indicators each comprise a like plurality of vertically grouped visual designators, said left and right indicators arranged in side-by-side fashion enabling direct comparison to right and left degree of compaction being sensed, and
means for electronically coupling said display means to said sensors comprising means for continuously producing analog output signals which vary as the degree of compaction being continuously sensed varies, and analog to digital converter means responsive to said analog signals to produce digital

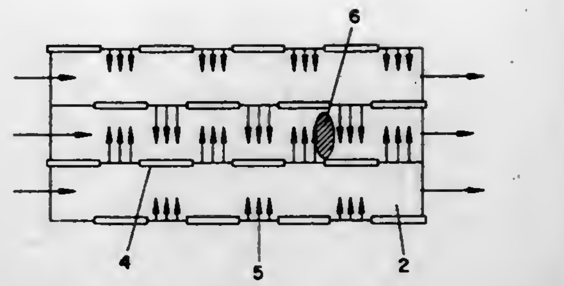
values representative of the actual degree of compaction being continuously sensed by said left and right crop compaction sensors.

5,615,545
TOWABLE "V" RAKE AGRICULTURAL MACHINE
Silvano Menichetti, Umbertide, Italy, assignor to Sitrex S.r.l., Testina, Italy
Filed Nov. 13, 1995, Ser. No. 555,859
Int. Cl.⁶ A01D *78/00*
U.S. Cl. 56—365 **9 Claims**



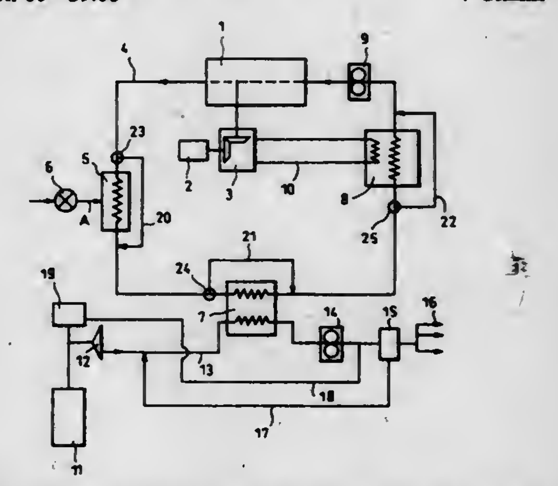
1. A "V" rake comprising:
a first rigid support frame;
a second articulated frame sliding on the first frame, including a plurality of mobile arms hinged to each other and to the first frame;
at least one joint including means to slide the second frame on the first frame for opening and closing of said mobile arms;
a plurality of fingered wheels arranged on the plurality of mobile arms; and
a plurality of bearing wheels for transporting the rake; wherein said joint comprises:
support elements including means for sliding the second frame on the first frame, said support elements including
anti-friction supporting means including a material with a low friction coefficient; and
means to position and contain said anti-friction support means on said support elements wherein the positioning and containing means comprise a sleeve formed by two structural elements, the two structural elements comprise:
a flat plate, and a plate with a "U" shaped cross section, the two structural elements held together by fixing means.

5,615,546
METHOD AND APPLIANCE FOR COOLING A GAS TURBINE COMBUSTION CHAMBER
Rolf Althaus, Kobe, Japan; Jakob J. Keller, Redmond, Wash., and Burkhard Schulte-Werning, Basel, Switzerland, assignors to ABB Management AG, Baden, Switzerland
Filed Oct. 17, 1994, Ser. No. 323,688
Claims priority, application Germany, Oct. 18, 1993, 43 35 413.0
Int. Cl.⁶ F23R *3/02*
U.S. Cl. 60—39.02 **3 Claims**
1. A method for cooling a gas turbine combustion chamber having local damage in a wall enclosing the combustion chamber causing a loss of cooling air, the combustion chamber having a plurality of cooling ducts, adjacent cooling ducts being separated by cooling ribs, wherein comprising the steps of:
guiding a main flow of cooling air in cooling air ducts for at least a convection cooling flow along a wall of the combustion chamber;
guiding a compensating flow of cooling air from adjacent cooling ducts to a duct having local damage in a wall of the combustion chamber causing a loss of cooling air from the duct, the compensating flow being provided in an amount



sufficient to maintain in the duct having local damage a flow velocity of the cooling air above a predetermined critical limiting value and a temperature of the cooling air below a predetermined critical limiting temperature, wherein an increase in the local damage to the wall is substantially avoided.

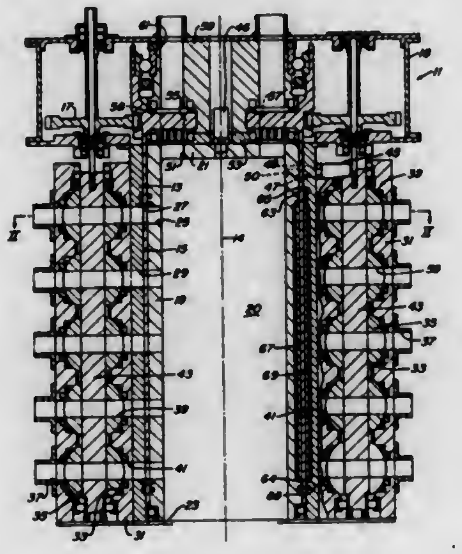
5,615,547
SYSTEM FOR REGULATING OIL AND FUEL TEMPERATURES OF A TURBOJET ENGINE
Bruno A. Beutin, Corbeil Essonnes; Joël Creti, Ussy/Marne; Jean-Pierre Donnadieu, Longueville; Francis G. A. Garnier, Bombon; Michel G. Hugues, Bois Le Roi; Jean-Loïc H. Lecordix, Vaux Le Penil; Claude P. H. Maignan, Savigny Le Temple; Gilles C. G. Massot, Voisenon; Jean-Marie N. Pincemin, Crosne; Christophe J. F. Thorel, Paris; Carole C. Touron, Bondoufle, and Gérard M. R. M. Vennin, Cesson, all of France, assignors to Societe Nationale D'Etude et de Construction de Moteurs D'Aviation S.N.E.C.M.A., Paris Cedex, France
Filed Jan. 3, 1996, Ser. No. 582,613
Claims priority, application France, Jan. 4, 1995, 95 00031
Int. Cl.⁶ F02C *7/06;7/224*
U.S. Cl. 60—39.08 **7 Claims**



1. A system for regulating oil and fuel temperatures in a turbojet engine having an engine accessory driven at constant speed by a power transmission driven by the turbojet engine, comprising:
a) a first closed oil circuit for circulating oil through the turbojet engine;
b) a second closed oil circuit for circulating oil through the power transmission;
c) a fuel circuit for supplying fuel to the turbojet engine;
d) an air/oil heat exchanger connected to the first closed oil circuit to pass oil therethrough in heat exchange relationship with air;
e) an oil/fuel heat exchanger connected to the fuel circuit and the first closed oil circuit, downstream of the air/oil heat exchanger in the direction of flow of oil in the first closed oil circuit, to pass oil and fuel therethrough in heat exchange relationship; and,

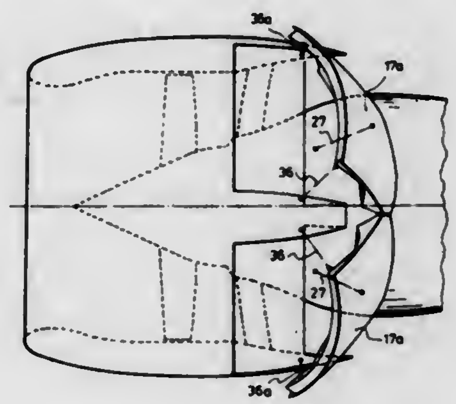
f) an oil/oil heat exchanger connected to the first and second closed oil circuits to pass oil in the first and second circuits therethrough in heat exchange relationship, the connection to the first closed oil circuit being downstream of the oil/fuel heat exchanger in the direction of oil flow in the first circuit.

5,615,548
DUAL ROTOR PULSE DETONATION APPARATUS
Don D. Winfree, Keller, and Louis G. Hunter, Jr., Fort Worth, both of Tex., assignors to Lockheed Martin Corporation, Fort Worth, Tex.
Filed Jul. 26, 1995, Ser. No. 507,114
Int. Cl.⁶ F02G *1/00*
U.S. Cl. 60—39.78 **15 Claims**



1. A pulse detonation apparatus, comprising in combination:
a tubular housing having an exterior, a cylindrical bore, and at least one housing port;
a valve sleeve rotatably and concentrically mounted within the cylindrical bore;
valve sleeve drive means for rotating the valve sleeve relative to the housing;
a detonation chamber located within the valve sleeve, having an upstream end wall and an open downstream end;
the valve sleeve having at least one valve sleeve port which registers with the housing port at least once per revolution to open the housing port;
a manifold mounted to the exterior of the housing, having a manifold port in communication with the housing port;
at least one outer valve located in the manifold, the outer valve being synchronized with the valve sleeve for opening the manifold port when the housing port is open, admitting fuel and oxygen through the manifold port, housing port, and valve sleeve port for providing a fuel mixture in the detonation chamber; and
igniter means for detonating the fuel mixture when the valve sleeve port and housing port are closed to create a detonation wave for passing out the open downstream end of the detonation chamber.

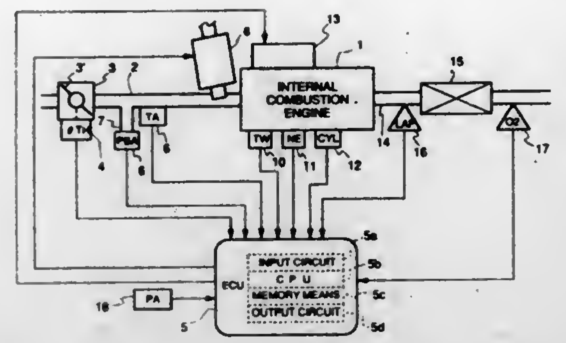
5,615,549
THRUST REVERSER FOR A FAN-TYPE TURBOJET ENGINE
Laurent G. Valleroy, Le Havre, France, assignor to Societe Hispano-Suiza, Saint Cloud Cedex, France
Filed Jul. 7, 1995, Ser. No. 499,295
Claims priority, application France, Jul. 13, 1994, 94 08704
Int. Cl.⁶ F02K *3/02*
U.S. Cl. 60—226.2 **11 Claims**



1. A thrust reverser for a fan-type turbojet engine having an engine housing having a primary gas flow duct with a first rearmost end, a fan housing generally coaxial with the engine housing and defining therebetween a generally annular secondary gas flow duct, the fan housing having an outer surface and a second rearmost end portion located forwardly of the first rearmost end, the thrust reverser comprising:
a) at least one thrust reverser door having a door outer surface, a front end and a rear end;
b) at least one fixed length forward linkrod pivotally attached to a forward portion of the at least one thrust reverser door and pivotally attached to the fan housing so as to pivot about a fixed axis; and,
c) at least one rear linkrod pivotally attached to a rear portion of the at least one thrust reverser door and pivotally attached to the engine housing whereby the at least one thrust reverser door is movable between a forward thrust position wherein the door outer surface is substantially flush with the outer surface of the fan housing and a reverse thrust position wherein the at least one thrust reverser door redirects gases flowing through the secondary gas flow duct to provide a reverse thrust.

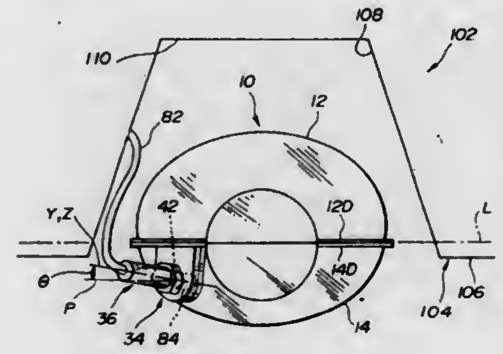
5,615,550
AIR-FUEL RATIO CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES
Ken Ogawa, and Yasunori Ehara, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 64,219, May 19, 1993, Pat. No. 5,426,935. This application Feb. 2, 1995, Ser. No. 382,605
Claims priority, application Japan, May 19, 1992, 4-151511; May 19, 1992, 4-151512
Int. Cl.⁶ F01N *3/28*
U.S. Cl. 60—276 **4 Claims**

1. An air-fuel ratio control system for an internal combustion engine having an exhaust passage and a catalytic converter arranged in said exhaust passage for purifying noxious components contained in exhaust gases, said air-fuel ratio control system including
a first exhaust gas ingredient concentration sensor arranged in said exhaust passage at a location upstream of said catalytic converter for detecting the concentration of an exhaust gas ingredient,



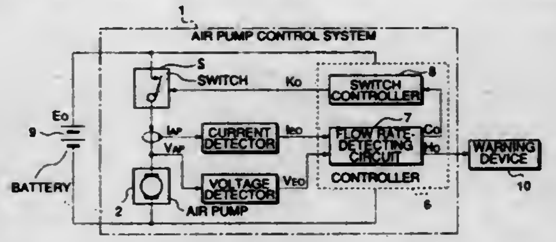
a second exhaust gas ingredient concentration sensor arranged in said exhaust passage at a location downstream of said catalytic converter for detecting the concentration of said exhaust gas ingredient,
desired air-fuel ratio coefficient-calculating means for calculating a desired air-fuel ratio of a mixture supplied to said engine,
correcting means for correcting said desired air-fuel ratio based on an output from said second exhaust gas ingredient concentration sensor, and
feedback-controlling means for feedback-controlling the air-fuel ratio of said mixture detected by said first exhaust gas ingredient concentration sensor to said desired air-fuel ratio corrected by said correcting means,
wherein said correcting means calculates a desired air-fuel ratio correction value based on said output from said second exhaust gas ingredient concentration sensor and corrects said desired air-fuel ratio by using a learned value calculated based on said desired air-fuel ratio correction value.

5,615,551
FUEL CONTROL SYSTEM
Hideyuki Matsushima, Isehara, Japan, assignor to Nissan Motor Co., Ltd., Kanagawa, Japan
Filed Sep. 14, 1995, Ser. No. 528,272
Claims priority, application Japan, Sep. 19, 1994, 6-223043
Int. Cl.⁶ F01N *3/28*
U.S. Cl. 60—276 **17 Claims**



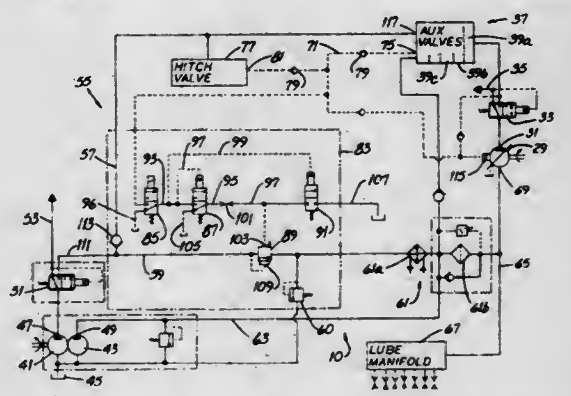
1. In a vehicle including:
a floor having a lower side face;
a tubular shell defining an exhaust path and receiving a catalyst module; and
an oxygen sensor including a space communicating with said exhaust path, and a sensing element disposed adjacent said space;
the improvement comprising:
said tubular shell being disposed beneath said lower side face of said floor; and
said oxygen sensor having a drain hole so disposed as to discharge water out of said space owing to gravity.

5,615,552
SECONDARY AIR PUMP CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES
Yuichi Shimasaki; Takashi Komatsuda, and Hiroaki Kato, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 2, 1995, Ser. No. 510,169
Claims priority, application Japan, Aug. 23, 1994, 6-198836
Int. Cl.⁶ F01N *3/32*
U.S. Cl. 60—277 **18 Claims**



1. A secondary air pump control system for an internal combustion engine having an exhaust passage, and an air pump for supplying secondary air to said exhaust passage, comprising:
voltage-detecting means for detecting voltage applied to said air pump;
current-detecting means for detecting current flowing through said air pump;
switch means for making a changeover between supply of electric power to said air pump and cutoff of same;
flow rate-detecting means for detecting a flow rate of secondary air supplied by said air pump, based on an output from said voltage-detecting means and an output from said current-detecting means; and
switch control means for controlling operation of said switch means, based on an output from said flow rate-detecting means.

5,615,553
HYDRAULIC CIRCUIT WITH LOAD SENSING FEATURE
Patrick M. Lourigan, Kenosha, Wis., assignor to Case Corporation, Racine, Wis.
Filed Jun. 28, 1995, Ser. No. 496,063
Int. Cl.⁶ F16D *31/02*
U.S. Cl. 60—422 **13 Claims**



1. In a hydraulic circuit having (a) a first pump connected to a valve group for powering a plurality of hydraulic mechanisms connected to the group, and (b) a second pump connected in the circuit, the improvement comprising:
a hydraulic line extending between the second pump and the valve group;
a conductor sensing a mechanism load pressure;
and wherein:
the valve group includes at least two control valves, each controlling a separate hydraulic mechanism; and

the conductor is at a load pressure when both control valves are actuated;

the circuit includes a valve network directing flow from the second pump to the valve group when the difference between the pressure in the hydraulic line and the load pressure declines below a predetermined value,

whereby the flow from the second pump supplements the flow from the first pump.

5,615,554

SUPERCHARGED INTERNAL COMBUSTION ENGINE

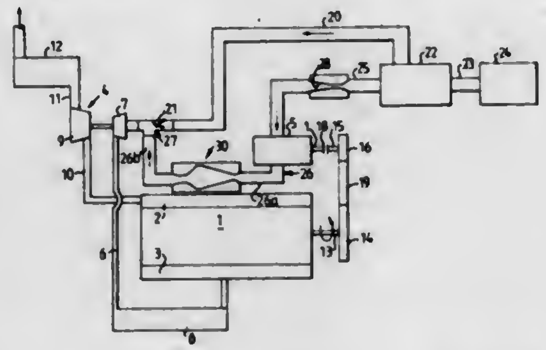
Ulrich Gobert, Hisings Kärra, Sweden, assignor to AB Volvo, Gothenburg, Sweden

Filed Feb. 26, 1996, Ser. No. 607,302

Claims priority, application Sweden, Feb. 24, 1995, 9500695

Int. Cl.⁶ F02B *37/04;* **F01N** *1/08*

U.S. Cl. 60—609 **8 Claims**



1. A supercharged internal combustion engine comprising an exhaust-driven turbocharger, a supercharger mechanically driven by the engine, the pressure side of the supercharger being connected to the suction side of the turbocharger, and a valve arrangement disposed in a conduit connected to the suction side of the turbocharger and connecting the suction side of the turbocharger only to the pressure side of the mechanical supercharger in a first valve position and permitting air supply to the turbocharger past the mechanical supercharger in a second valve position, characterized in that an intake conduit (**23**) from an air filter (**24**) leads into an expansion chamber (**22**) from which said conduit (**20**) containing the valve arrangement (**21**) leads to the suction side of the compressor (**7**) of the turbocharger (**4**) and from which a second conduit (**25**) leads to the suction side of the mechanical supercharger, and in that a conduit (**26**) containing a first nozzle (**31**) connects the pressure side of the mechanical supercharger to the suction side of the turbocharger.

5,615,555

DUAL FUEL INJECTOR WITH PURGE AND PREMIX

Theodors I. Mina, Lincoln, United Kingdom, assignor to European Gas Turbines Limited, United Kingdom

PCT No. PCT/GB94/02219, § 371 Date May 9, 1995, § 102(e) Date May 9, 1995, PCT Pub. No. WO95/11408, PCT Pub. Date Apr. 27, 1995

PCT Filed Oct. 12, 1994, Ser. No. 432,136

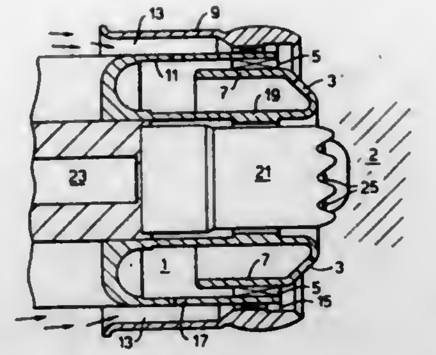
Claims priority, application United Kingdom, Oct. 19, 1993, 9321505

Int. Cl.⁶ F02C *1/00*

U.S. Cl. 60—742 **5 Claims**

1. A fuel injector for a turbine-engine combustor, the injector comprising, working radially outwards from an axis:

a) a secondary-fuel supply passage connected to a plurality of secondary-fuel outlet orifices, said secondary-fuel outlet orifices opening into a combustion region downstream of the injector;



b) an annular primary-fuel manifold connected to a ring of primary-fuel outlet orifices, said primary-fuel outlet orifices opening into said combustion region;

c) an annular air passage for providing combustion air for fuel injected by said primary- and secondary-fuel orifices, said air passage being formed between a wall of said primary-fuel manifold and an outer shroud member, said air passage having an inlet for combustion air between an inlet end of said shroud member and said primary-fuel manifold wall and an outlet opening into said combustion region;

d) purge and premix means, including:

i) a multiplicity of holes in said manifold wall between said air passage and said manifold, said holes allowing air to pass into said manifold for the purging of said primary-fuel outlet orifices during operation on secondary fuel and, during operation on primary fuel, allowing bleeding of a working fluid of either of said air passage and said manifold into the other of said air passage and said manifold in dependence on primary-fuel pressure, thereby in either case to provide a pre-mix of primary fuel and air, and

ii) means for determining a point during said operation on primary fuel at which bleeding of one of said working fluids gives way to a bleeding of the other of said working fluids.

5,615,556

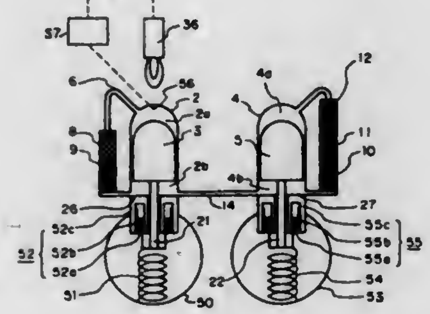
FREE-PISTON VUILLEUMIER HEAT PUMP

Tetsuya Honda, and Kazuhiko Kawajiri, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 5, 1995, Ser. No. 463,498

Int. Cl.⁶ F25B *9/00*

U.S. Cl. 62—6 **7 Claims**



1. A free-piston Vuilleumier heat pump having a hot displacer which constitutes a resonance system inclusive of a spring and reciprocates in a hot cylinder over a distance corresponding to a stroke displacement of the hot cylinder and a cold displacer which constitutes a resonance system inclusive of a spring and reciprocates in a cold cylinder over a distance corresponding to a stroke displacement of the cold cylinder, a hot working space and a moderate temperature working space on a hot cylinder side in said hot cylinder which are separated by said hot displacer being connected by way of a hot heat exchanger, a regenerator on a hot cylinder side, and a moderate temperature heat exchanger on the hot cylinder side, and a cold working space and a moderate temperature working space on a cold cylinder side in said cold cylinder which are separated by said cold displacer being connected by way of a cold heat exchanger, a regenerator on a cold cylinder side, and a moderate temperature heat exchanger on the cold cylinder side;

said moderate temperature working space on the hot cylinder side being connected with said moderate temperature working space on the cold cylinder side; and

energy for heating being obtained from said moderate temperature heat exchanger on the hot cylinder side and said moderate temperature heat exchanger on the cold cylinder side and energy for cooling being obtained from said cold heat exchanger, said free-piston Vuilleumier heat pump comprising:

a control means for controlling the stroke displacement of said hot displacer and for controlling the stroke displacement of said cold displacer for the purpose of controlling heating energy and cooling energy outputs.

5,615,557

APPARATUS FOR SELF-SUFFICIENTLY COOLING HIGH TEMPERATURE SUPERCONDUCTING COMPONENTS

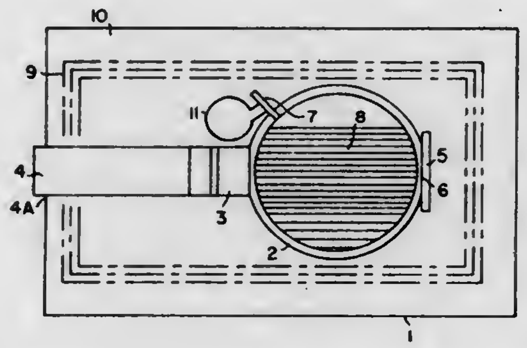
Armin Binneberg, Freital; Johannes Neubert; Gabriele Spoerl, both of Dresden, and Walter Wolf, Juelich, all of Germany, assignors to Institut fuer Luft-und Kaeltetechnik Gemeinnuetzige Gesellschaft mbH, Dresden, and Forschungszentrum Juelich GmbH, Juelich, both of Germany

Filed Sep. 22, 1994, Ser. No. 310,831

Claims priority, application Germany, Sep. 22, 1993, 43 32 156.9

Int. Cl.⁶ F25B *19/00*

U.S. Cl. 62—51.1 **20 Claims**



1. An apparatus for cooling an electronic component, said apparatus comprising a cold gas cooling machine having a cold head, a reservoir vessel that is permanently and continuously connected in a thermally conducting manner to said cold head and is connected in a thermally conducting manner to said electronic component, and a working medium contained in said reservoir vessel, wherein said working medium has a triple point within the temperature range from about 60K to about 90K and a critical temperature above a maximum operating room temperature of said apparatus.

5,615,558

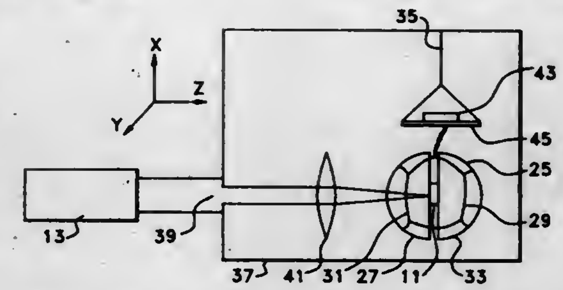
OPTICAL COOLING OF SOLIDS

Eric A. Cornell, 948 Marine St., Boulder, Colo. 80302, and Michael J. Renn, 615 E. 5th Ave., Longmont, Colo. 80501

Filed Sep. 25, 1995, Ser. No. 533,656

Int. Cl.⁶ F25B *21/00;* **F25D** *23/00*

U.S. Cl. 62—56 **34 Claims**



25. A method for cooling a solid comprising the step of directing a laser beam having a selected frequency into a solid structure including a high purity semitransparent semiconductor crystal having a defined band gap and band gap edge frequency, said selected frequency of said laser beam being no greater than said band gap edge frequency of said semiconductor crystal, so that light from said laser beam scattered at said semiconductor crystal and leaving said solid structure includes photons each having more energy than a photon of said laser beam entering said solid structure.

5,615,559

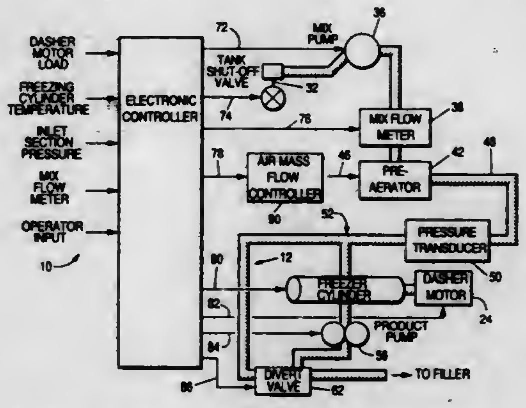
METHOD AND APPARATUS FOR RECIRCULATING PRODUCT IN A REFRIGERATION SYSTEM

John E. Kress, Waterloo, and James W. Griffin, Fort Atkinson, both of Wis., assignors to APV Crepaco Inc., Rosemont, Ill.

Filed Mar. 1, 1995, Ser. No. 396,553

Int. Cl.⁶ A23G *9/00*

U.S. Cl. 62—68 **16 Claims**



1. A system for processing frozen product comprising:

a freezing section disposed to receive unprocessed product at an inlet and to supply processed product at an outlet;

an inlet section connected with the freezing section inlet operable to supply a selected amount of unprocessed product to the freezing section inlet;

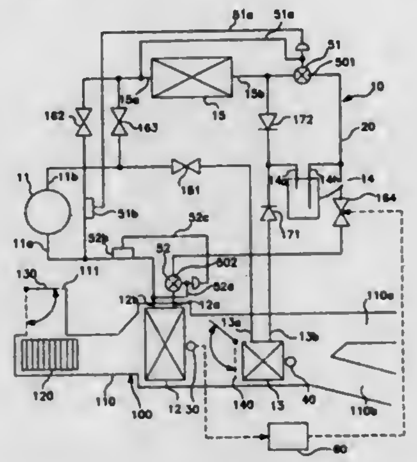
an outlet section coupled between the freezing section outlet and a downstream location, the outlet section including means for withdrawing processed product from the freezing section and passing the processed product to the downstream location;

a recirculation section coupled with the outlet section and the freezing section inlet, the recirculation section including a diverter valve operable, upon receipt of a first control signal, in a first position to permit processed product to exit the outlet section and operable, upon receipt of a second control signal, in a second position to supply processed product through at least a portion of the outlet section, through the recirculation

section and to the freezing section inlet in order to reduce the temperature of the portion of the outlet section; and

a control circuit including sensing means for sensing selected parameters of the product and providing a sensing signal for selectively providing the first and second control signals to the diverter valve in response to the sensing signal.

5,615,560
AUTOMOTIVE AIR CONDITIONER SYSTEM
Atsuo Inoue, Sawa-gun, Japan, assignor to Sanden Corporation, Gunma, Japan
Filed Apr. 16, 1996, Ser. No. 633,166
Claims priority, application Japan, Apr. 17, 1995, 7-91163
Int. Cl.⁶ F25B *41/00;* **G05D** *27/00*
U.S. Cl. 62—212 **15 Claims**



1. An automotive air conditioning system comprising;

a duct for conducting air therethrough, said duct member having a first end and a second end opposite to the first end;

a refrigerant circuit comprising a first and second internal heat exchangers located within said duct member, and an external heat exchanger located outside said duct member, said first internal heat exchanger being positioned upstream with respect to said second internal heat exchanger, said refrigerant circuit being charged with a refrigerant which flows through said first and second internal heat exchangers and said external heat exchanger so that a heat exchanging operation is carried out between said refrigerant and the air passing along an exterior surface of said first and second internal heat exchangers and said external heat exchanger;

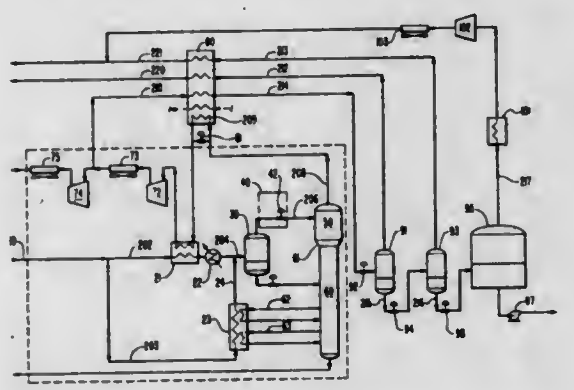
said refrigerant circuit further comprising changeover means for changing over a direction of flow of said refrigerant such that, in one operational state, said external heat exchanger performs as an evaporator and said second internal heat exchanger performs as a condenser, and such that in another operational state, said external heat exchanger and said first internal heat exchanger perform as an evaporator and said second internal heat exchanger performs as a condenser;

said refrigerant circuit further comprising a first pressure equalizing type expansion valve mechanism associated with said external heat exchanger, said first expansion valve mechanism regulating a flow amount of the refrigerant flowing into said external heat exchanger in response to the temperature of the refrigerant at a position upstream of said external heat exchanger, and a second pressure equalizing type expansion valve mechanism associated with said first internal heat exchanger, said second expansion valve mechanism regulating a flow amount of the refrigerant flowing into said first internal heat exchanger in response to the temperature of the refrigerant at a position upstream to said first internal heat exchanger;

said first pressure equalizing type expansion valve mechanism having a P–T characteristic curve such that a static superheat curve intersects a saturated first refrigerant vapor curve when the temperature of the refrigerant at the position upstream of said external heat exchanger is relatively low;

said second pressure equalizing type expansion valve mechanism having a P–T characteristic curve such that a static superheat curve generally extends parallel to a saturated first refrigerant vapor curve.

5,615,561
LNG PRODUCTION IN CRYOGENIC NATURAL GAS PROCESSING PLANTS
Mory Houshmand; Kimberly A. Kruger, both of Salt Lake City, Utah; Gerald W. Alves; Ricardo Ostaszewski, both of Sugar Land, Tex., and Noureddine Belhateche, Katy, Tex., assignors to Williams Field Services Company, Salt Lake City, Utah
Filed Nov. 8, 1994, Ser. No. 335,902
Int. Cl.⁶ F25J *1/00*
U.S. Cl. 62—611 **59 Claims**



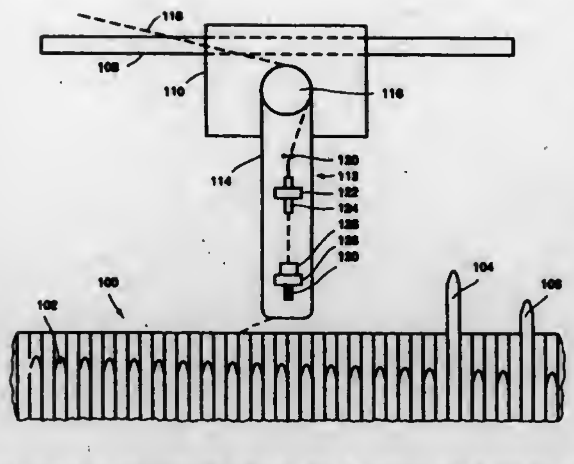
1. A method for liquifying a natural gas stream, comprising the step of

a) cooling and condensing the natural gas stream in a heat exchanger to produce a condensed natural gas stream;

wherein said natural gas stream is in gaseous form and comprises compressed residue gas from a cryogenic plant; wherein said cryogenic plant utilizes a separation means to separate methane gas from liquified heavier hydrocarbons; and wherein cooling is provided in said heat exchanger by a slipstream of said separated methane gas taken as overhead from said separation means.

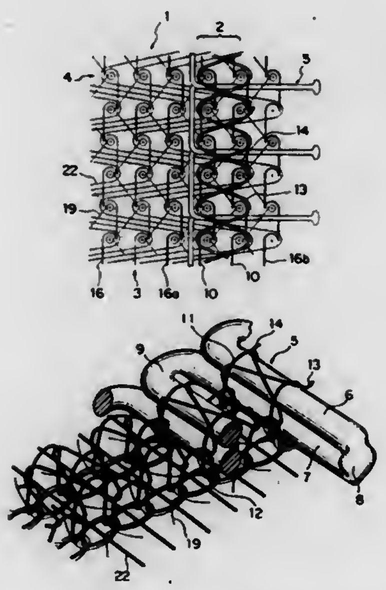
5,615,562
APPARATUS FOR PRODUCTION OF WEAVE-KNIT MATERIAL
Friedrich Roell, Biberach, Germany, assignor to Tecnit-Technische Textilien und Systeme GmbH, Germany
Continuation-in-part of Ser. No. 416,921, Apr. 4, 1995, abandoned, which is a continuation of Ser. No. 89,112, Jul. 8, 1993. This application Oct. 17, 1995, Ser. No. 544,141
Claims priority, application Switzerland, Jul. 8, 1992, 2149/92
Int. Cl.⁶ D04B *39/06;1/00*
U.S. Cl. 66—126 R **25 Claims**

1. An apparatus for the production of knitted goods having integrated weft, warp or weft and warp yarns, comprising a knitting machine having at least one needle bed, a guide extending along the needle bed in a vicinity of a knitting region of the knitting machine for controlled movement of a control-actuatable yarn carrier independently of a yarn guide of a knitting feed system of the knitting machine, a guide carriage of the yarn carrier which carriage is movable on the guide, a yarn feed member provided on the yarn carrier and having a feed region from which at least one



yarn is fed to the knitting region, and a control for actuating the guide carriage of the yarn carrier.

5,615,563
KNIT SLIDE FASTENER WITH ZIGZAG WEFT ANCHORING STITCHES
Yoshio Matsuda; Hidenobu Kato, and Yoshito Ikeguchi, all of Toyama-ken, Japan, assignors to YKK Corporation, Tokyo, Japan
Filed Feb. 15, 1996, Ser. No. 601,981
Claims priority, application Japan, Feb. 16, 1995, 7-067184
Int. Cl.⁶ D04B *21/20;21/14*
U.S. Cl. 66—193 **5 Claims**



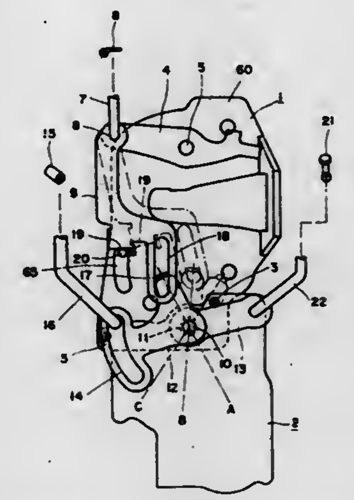
1. A knit slide fastener comprising:

(a) a warp-knit fastener tape having along one longitudinal edge a fastener-element-mounting marginal portion; and

(b) a row of continuous fastener elements knitted in said fastener-element-mounting marginal portion simultaneously with the knitting of said warp-knit fastener tape;

(c) said fastener-element-mounting marginal portion including anchoring chain stitches knitted of a plurality of parallel knitting yarns for pressing down successive legs of said continuous fastener elements, and a plurality of anchoring weft inlaid yarns laid in weftwise in a zigzag pattern and between said parallel knitting yarns of said anchoring chain stitches, said anchoring weft inlaid yarns being interlaced with said anchoring chain stitches.

5,615,564
DOOR LOCKING DEVICE WITH AN ANTITHEFT MECHANISM
Jiro Inoue, Yamanashi-ken, Japan, assignor to Mitsui Kinzoku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 21, 1994, Ser. No. 262,893
Claims priority, application Japan, Jun. 25, 1993, 5-180025
Int. Cl.⁶ E05B *47/00*
U.S. Cl. 70—279 **6 Claims**



1. A door locking device with an antitheft mechanism comprising:

a latch engageable with a striker fixed to a vehicle body;

a ratchet for preventing the latch from being reversely turned in engagement with the latch;

an opening lever for releasing the ratchet from the latch;

a main lock lever linked to a key cylinder of the door, said main lock lever being displaceable from an unlock position to an antitheft position through a lock position and precluding operation of the opening lever when the main lock lever is located at the lock or the antitheft position;

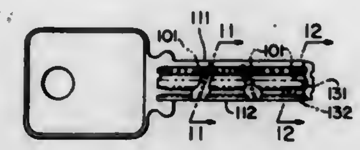
a sub lock lever linked to an inside lock button of the door, said sub lock lever being displaceable from an unlock position and a lock position;

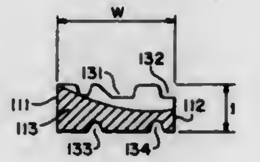
a linkage means integrally engaged to both the main lock lever and the sub lock lever to move the main lock lever and the sub lock lever together between the lock position and the unlock position;

wherein said linkage means is also elastically deformable to permit the sub lock lever to be left in the lock position when the main lock lever is displaced from the lock position to the antitheft position and preclude the sub lock lever from displacing the main lock lever from the antitheft position when the main lock lever is displaced to the antitheft position,

wherein the main lock lever and the sub lock lever have the same center of rotation, the linkage means has an arcuate hole on a first cooperative member integrally engaged to the main lock lever, said arcuate hole centering around the center of rotation, an elastic protrusion formed in the arcuate hole and protruding in the radial direction from the center of rotation, and an engaging member on a second cooperative member integrally engaged to the sub lock member, said engaging member being engaged in the arcuate hole, wherein the engaging member is composed so that when the main lock lever is displaced from the lock position to the antitheft position, the engaging member deforms, and moves past, the elastic protrusion.

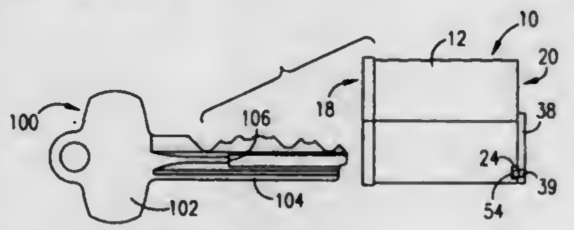
5,615,565
KEYS FOR CYLINDER LOCKS
Peter H. Field, Salem, Va., assignor to Medeco Security Locks, Inc., Salem, Va.
Filed Sep. 19, 1995, Ser. No. 530,515
Int. Cl.⁶ E05B *19/06*
U.S. Cl. 70—409 **13 Claims**





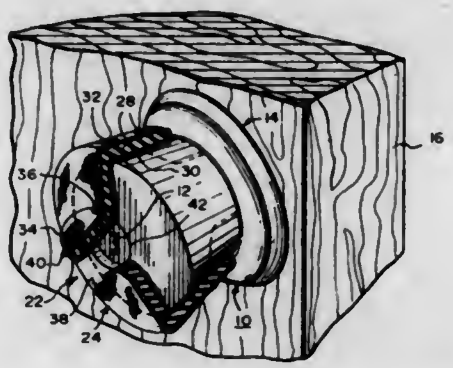
1. A key having improved cross-sectional strength, the key comprising:
a key bow configured to be handled by a user;
a key blade extending away from the key bow, the key blade having a generally rectangular shape in cross-section and including upper and lower surfaces defining a thickness of the key blade, and opposite side surfaces extending between the upper and lower surfaces and defining a width of the key blade, wherein the width of the key blade is greater than the thickness of the key blade; and
at least one bitting formed in the key blade, the bitting cutting through the upper surface of the key blade along a direction extending from one side surface to the other side surface of the key blade, wherein the bitting is an arcuate surface that passes through only one of the side surfaces of the key blade, the arcuate surface lying on an arc which extends transversely to a longitudinal axis of the key blade.

5,615,566
CYLINDER LOCK AND KEY
Greg N. Brandt, 7808 Pennsylvania, Kansas City, Mo. 64114
Filed Sep. 18, 1995, Ser. No. 529,903
Int. Cl.⁶ E05B *15/00*
U.S. Cl. 70—419 **8 Claims**



1. A cylinder lock comprising:
an elongated lock shell having opposed axial front and rear ends and a hollow plug-receiving chamber extending therebetween, said rear end including a notch formed therein;
an elongated cylinder plug rotatably received within said plug-receiving chamber, said plug including
opposed axial front and rear ends and a hollow keyway extending therebetween for receiving a key blade, and
a hollow slot radially spaced from and extending parallel to said keyway, said slot having an opening adjacent said plug rear end, said opening being in alignment with said lock shell notch when said cylinder plug has not been rotated within said plug-receiving chamber, said slot further having a side opening in communication with said keyway; and
an elongated locking bar reciprocally mounted in said hollow slot, said locking bar including
a first end extending from said slot opening and normally received within said lock shell notch for preventing rotation of said cylinder plug within said plug-receiving chamber, and
a second end axially opposed from said first end and including a protruding portion protruding into a portion of said keyway, wherein the insertion of a key having a protruding surface on one side thereof in said keyway enrages said protruding portion of said locking bar and shifts said locking bar towards said cylinder plug rear end so that said first end of said locking bar is shifted out of said notch for permitting rotation of said cylinder plug within said plug-receiving chamber.

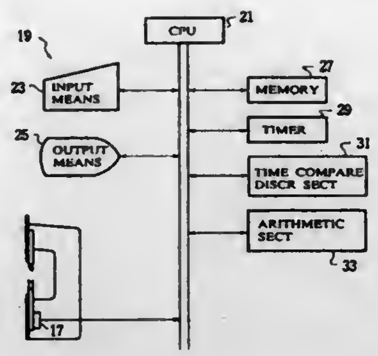
5,615,567
EXTERIOR DOOR LOCK COVER
Alan D. Kemp, 4203 Cedar Crest La., High Point, N.C. 27265
Filed Aug. 30, 1995, Ser. No. 520,993
Int. Cl.⁶ E05B *17/18*
U.S. Cl. 70—455 **8 Claims**



1. An exterior door lock cover comprising a flexible sleeve which fits over an exterior exposed lock member having a keyhole on an exterior door, whereby said flexible sleeve will stop any contaminants from entering the keyhole in the lock member which can accumulate and clog the lock member and prevent the proper insertion of a key into the keyhole for operating the lock member, wherein said sleeve includes:
a) a central layer of closed-cell neoprene;
b) a first layer of nylon jersey material laminated onto an inner surface of said central layer of closed-cell neoprene; and
c) a second layer of nylon jersey material laminated onto an outer surface of said central layer of closed-cell neoprene, so that said sleeve will have a great elastic four-way stretch.

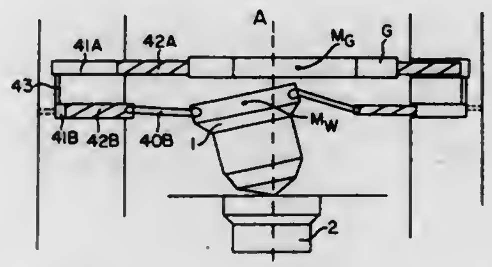
5,615,568
APPARATUS AND METHOD OF DETECTING BENDER OPERATING TIME
Shigeharu Matsumoto; Nobuo Sakurai, and Ichiro Kojima, all of Kanagawa, Japan, assignors to Amada Metrecs Company, Limited, Kanagawa, Japan
Filed Sep. 22, 1995, Ser. No. 532,142
Claims priority, application Japan, Oct. 3, 1994, 6-239307
Int. Cl.⁶ B21B *37/00*
U.S. Cl. 72—20.1 **7 Claims**

1. An apparatus for detecting operating time of a bender for bending plate work by use of a punch and die pair, comprising:
position detecting means for generating a limit point pulse whenever either the punch or the die reaches a limit position;
timer means for measuring a time interval between the two successive pulses generated by said position detecting means;



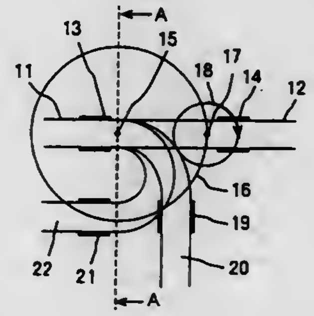
time comparing means for comparing the time interval measured by said timer means with a reference time interval; and
discriminating means for discriminating between a trial bending and an actual bending on the basis of a comparison result of said time comparing means, to obtain trial bending operating time and actual bending operating time, separately.

5,615,569
WOBBLE PRESS
Walter Schlatter, Schaan, Liechtenstein, assignor to COLCON Anstalt, Vaduz, Liechtenstein
Continuation-in-part of Ser. No. 30,039, Apr. 1, 1993, Pat. No. 5,398,536. This application Dec. 22, 1994, Ser. No. 361,385
Int. Cl.⁶ B21J *9/18*
U.S. Cl. 72—67 **13 Claims**



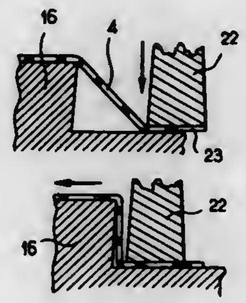
1. A wobble press comprising in combination: a first die half; a movable second die half axially parallel relative to the first die half; means for wobbly driving said first die half, having a mass and a center of gravity, with regard to a longitudinal central axis of said press, wobbly around a fulcrum point, said wobble drive means including hydraulic working pistons which are provided with a regular, defined, pulsating flow of hydraulic medium, said hydraulic working pistons being connected with said first die half for the generation of a wobble movement; a counterweight, having a mass and a center of gravity, connected to said first wobbly driven die half, said counterweight being so structured and arranged that the product of the mass of said counterweight and the eccentricity spacing, of the spacing of the center of gravity of said counterweight, relative to a longitudinal axis, at least approximately corresponds to the product of the mass of said first die half and the eccentricity spacing, of the spacing of the center of gravity of said first die half, relative to said longitudinal axis, so that the centrifugal forces of both said counterweight and said first die half at least approximately compensate each other; said counterweight lying on the same side of the fulcrum as said first die half and displaceable to the extent of eccentric movement of said first die half to an opposite side of said longitudinal axis.

5,615,570
METHOD FOR BENDING A PIPE AND APPARATUS FOR BENDING THE SAME
Masahiko Mitsubayashi, Nagoya; Masazumi Ohnishi, Toyota; Noritaka Miyamoto, Toyota; Keisuke Kadota, Toyota; Tohru Shimada, Toyota, and Katsuji Bando, Nagoya, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi-ken, Japan
Filed Dec. 27, 1994, Ser. No. 363,821
Claims priority, application Japan, Dec. 28, 1993, 5-336473; Mar. 25, 1994, 6-056245
Int. Cl.⁶ B21D *7/00*
U.S. Cl. 72—298 **15 Claims**



1. A method for bending a pipe, the pipe having a longitudinal axis, the method comprising:
holding a pipe on opposite sides of a bending portion; and
revolving one side of the pipe relative to the other side of the pipe around a revolving axis having a point on the longitudinal axis of the pipe, while simultaneously rotating the one side of the pipe around a rotation axis having a point on the longitudinal axis of the pipe, wherein the other side of the pipe is held stationary with respect to the one side of the pipe.

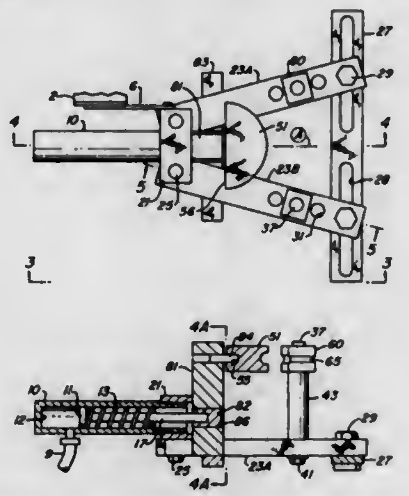
5,615,571
DEVICE FOR CAMBERING CONDUCTIVE FINGERS ON AN INTEGRATED CIRCUIT
Patrick Courant, Viroflay, France, assignor to Bull, S.A., Louveciennes, France
Filed Dec. 29, 1995, Ser. No. 581,421
Claims priority, application France, Dec. 29, 1994, 94 15885
Int. Cl.⁶ B21F *45/00;* **H01R** *43/00*
U.S. Cl. 72—322 **7 Claims**



1. A device for cambering at least one conductive finger (4) in an intermediate substrate of an integrated circuit, comprising a cambering plate (14) which includes a mold (16) which corresponds to a camber to be produced, means for positioning (8) the intermediate substrate relative to the cambering plate (14), a cambering tool (22) disposed opposite the mold (16) for acting on said at least one conductive finger (4), and means (24, 7) for controlling a relative displacement of the cambering plate and the cambering tool in a first direction perpendicular to a plane containing said at least one conductive finger (4) and in a second direction parallel to a longitudinal direction of said at least one conductive finger (4),

said device further including a movable table (5) to which said intermediate substrate is fastened, said cambering plate (14) being mounted on the movable table (5) in a manner which enables movement in a direction parallel to said longitudinal direction of the at least one conductive finger (4).

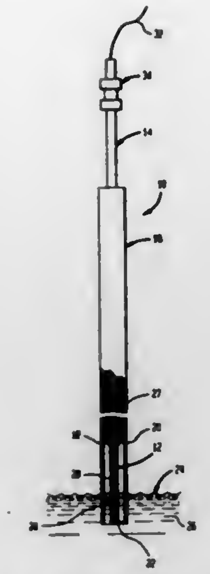
5,615,572
HYDRAULIC TUBE BENDER
Harry F. Johnson, and Sydney C. Hundley, both of Cleburne, Tex., assignors to Hunjohn, Inc., Cleburne, Tex.
Continuation-in-part of Ser. No. 371,838, Jan. 12, 1995, abandoned. This application Sep. 18, 1995, Ser. No. 529,521
Int. Cl.⁶ B21D *7/022*
U.S. Cl. 72—389.1 **15 Claims**



1. A hydraulic tube bender comprising
a hydraulic cylinder having a piston rod extending forward from one end thereof, the rod adapted to reciprocate along a longitudinal axis of the cylinder in response to changes in oil pressure within the cylinder;
a rigid offset bracket coupled to the rod and adapted to reciprocate therewith, the bracket having a stud vertically offset above the rod;
a mandrel coupled to the stud and defining a first plane parallel to the axis, the mandrel having a curved surface normal to the first plane, the curved surface further having a groove adapted to receive and bear against a tube;
a block coupled to the cylinder:
a pair of arms pivotally coupled to and extending forward from the block in a second plane offset below and parallel the first plane: and
forming die means coupled to the arms a select distance from the cylinder and having two forming surfaces coplanar with the groove, one each of the forming surfaces positioned on either side of the axis, for forming the tube in response to pressure exerted through the mandrel by the cylinder rod,
whereby the tube bender may cause the mandrel to push the tube between the forming surfaces, thereby bending the tube around the mandrel and into a selected angle in the first plane.

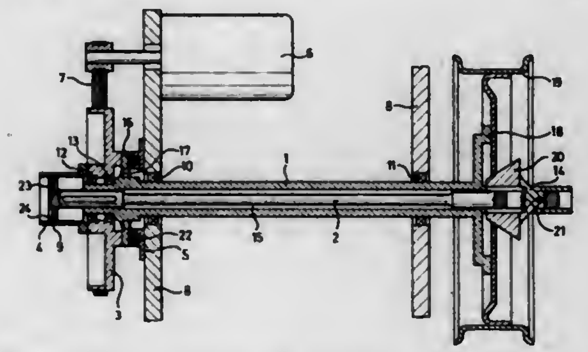
5,615,573
LEVEL DETECTOR
Ron C. Lee, Bloomsbury, N.J., assignor to The BOC Group, Inc., New Providence, N.J.
Filed Jul. 8, 1994, Ser. No. 273,034
Int. Cl.⁶ G01F *23/00*
U.S. Cl. 73—295 **5 Claims**

1. A level detector for detecting a level of a liquid, said level detector partially submerged in said liquid, said level detector comprising:



an elongated probe having opposed proximal and distal ends and an intermediate location located between the proximal and distal ends and below which the level of the liquid is to be detected;
said elongated probe partially submerged with its said distal end located beneath said level of said liquid and an unwetted length of said elongated probe located above said level of said liquid;
means for maintaining a temperature difference between said proximal end of said elongated probe and said liquid so that the intermediate location of said elongated probe will have a temperature dependent upon said unwetted length thereof; and
means situated at the intermediate location for generating a signal referable to said temperature of said intermediate location.

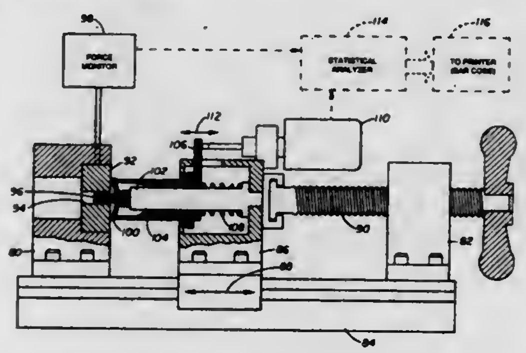
5,615,574
METHOD AND ASSEMBLY FOR CLAMPING AND RELEASING A ROTARY MEMBER ON A MOTOR-DRIVEN SHAFT OF AN UNBALANCE MEASURING ARRANGEMENT
Josef Drechsler; Eickhart Goebel, both of Pfungstadt; Gottfried Kühn, Weiterstadt; Karl Rothamel, Seeheim, and Jörg Wowes, Ober-Ramstadt, all of Germany, assignors to Hofmann Werkstatt-Technik GmbH, Pfungstadt, Germany
Continuation of Ser. No. 2,484, Jan. 8, 1993, abandoned. This application Sep. 8, 1994, Ser. No. 302,395
Claims priority, application Germany, Jan. 9, 1992, 42 00 380.6
Int. Cl.⁶ G01M *1/02;1/06*
U.S. Cl. 73—487 **17 Claims**



1. A method of clamping and releasing a rotary member on a motor-drivable shaft of an unbalance measuring machine using a

bar having first and second ends and guided movably in an axial direction of said shaft, with a clamp at the first end of the bar adapted to releasably clamp the rotary member to said shaft, said method comprising the steps of:
applying a pulling force to the second end of the bar to produce an axial clamping movement of the bar; and
applying a force in a direction opposite to the pulling force at the second end to produce an axial release movement which is directly opposite to the axial clamping movement of the bar;
wherein while said shaft is prevented from rotating, a motor torque of a drive motor for the shaft is transmitted to the bar by rotary motion to produce an axial clamping movement in one direction of rotation and an axial releasing movement in the opposite direction of rotation.

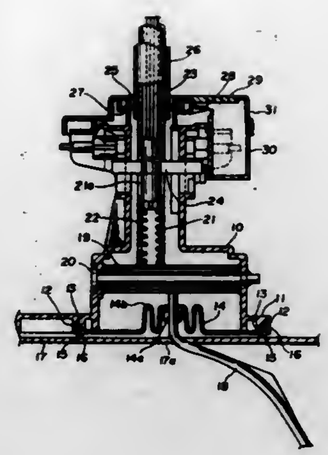
5,615,575
DRIVE TOOL WITH SENSOR FOR FASTENER DEFLECTION DURING TIGHTENING AND CLAMPING FORCE VALIDATOR
Jerry J. Goodwin, 5998 Runnymeade, Canton, Mich. 48187
PCT No. PCT/US93/04661, § 371 Date Jan. 13, 1995, § 102(e) Date Jan. 13, 1995, PCT Pub. No. WO94/27126, PCT Pub. Date Nov. 24, 1994
PCT Filed May 14, 1993, Ser. No. 373,256
Int. Cl.⁶ G01L *5/00*
U.S. Cl. 73—862.541 **7 Claims**



1. In a drive tool comprising means to engage an axially moveable first fastener component and supporting means for the engagement means, said engagement means moveable axially with the first fastener component relative to a fastening installation,
sensing means on the drive tool adapted to move axially relative to the engagement means and to simultaneously remain stationary relative to the fastening installation as the engagement means tightens the first fastener component into the fastening installation, said relative movement of the sensing means signifying the deflection of a second fastener component as the first fastener component is tightened,
means in the drive tool urging the sensing means axially in opposition to the relative movement of the sensing means,
and a sensor on the drive tool adapted to externally communicate the relative movement of the sensing means.

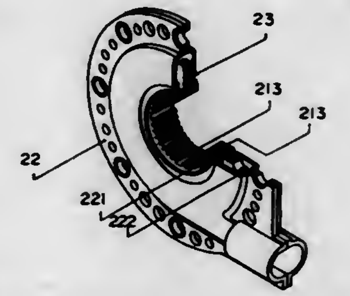
5,615,576
SEALING STRUCTURE FOR AUTOMATIC TRANSMISSION SHIFT CONTROL DEVICE
Yoshimasa Katsumi, and Yoshihiro Takikawa, both of Kosai, Japan, assignors to Fuji Kiko Co., Ltd., Tokyo, Japan
Filed Apr. 26, 1995, Ser. No. 429,090
Claims priority, application Japan, Apr. 28, 1994, 6-090823
Int. Cl.⁶ F16J *15/50*
U.S. Cl. 74—18.1 **6 Claims**

1. A sealing arrangement for a transmission shift control device for a vehicle having a support member adapted for mounting to a floor of the vehicle, comprising:



a base portion extending from the support member of the transmission shift control device;
a boot adapted to be interposed between said support member and the vehicle floor for providing a seal therebetween, the boot having a first looped seal projection adapted to sealingly contact said vehicle floor;
wherein said base portion has a looped groove of a trapezoidal cross section, and said boot has a second looped seal projection of a trapezoidal cross section and adapted to be sealingly engaged in said groove.

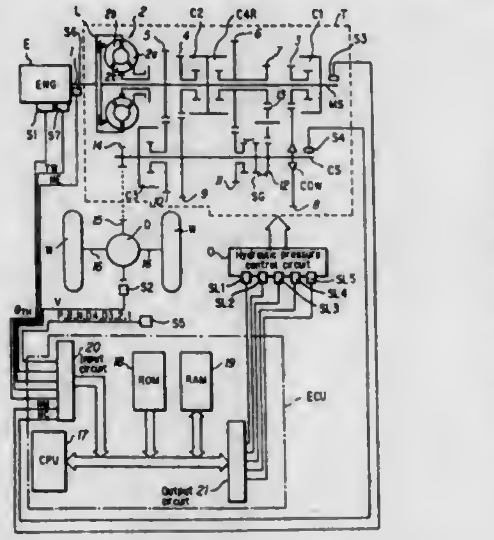
5,615,577
ULTRATHIN TRANSMISSION MECHANISM FOR ALL TYPES OF AUTOMOBILE POWER WINDOW
Tse-Hsing Chen, No. 22, Lane 351, Di Hwa Street, Taipei, Taiwan
Continuation of Ser. No. 289,251, Aug. 11, 1994, abandoned. This application Jun. 11, 1996, Ser. No. 661,693
Int. Cl.⁶ E05F *11/48;* **F16C** *1/20*
U.S. Cl. 74—89.21 **3 Claims**



1. An ultrathin transmission mechanism for automobile power windows comprising:
a power window mechanism adapted to be drivingly coupled to a rotary output member of a motor;
a driven mechanism adapted to be attached to an automobile window driving unit, each of said power window mechanism and said driven mechanism including a gear and two protective gear covers, said gear including a plurality of circumferentially spaced, peripheral teeth having inner radial sides that project laterally outwardly to form a gear guiding flange whereby said gear has a generally reverse T-shaped sectional profile, each of said protective gear covers including a central opening defined by an outwardly extending cover guiding flange, said gear being adapted to be rotatably mounted within said two protective gear covers with said gear guiding flanges contacting said cover guide flanges;
a transmission chain assembly including a cord and a plurality of spaced ball-type teeth extending about the gear of each of said power window mechanism and said driven mechanism; and

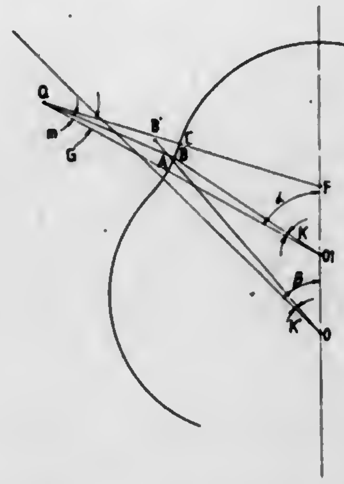
a sleeve assembly including a plurality of pipe members extending between and interconnecting said power window mechanism and said driven mechanism and housing said chain assembly for sliding movement therein.

5,615,578
HYDRAULIC PRESSURE CONTROL SYSTEM FOR HYDRAULICALLY OPERATED VEHICLE TRANSMISSION
Hideo Furukawa, and Tatsuyuki Ohashi, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 20, 1995, Ser. No. 575,326
Claims priority, application Japan, Dec. 28, 1994, 6-339953
Int. Cl.⁶ F16H *61/04*
U.S. Cl. 74—336 R **5 Claims**



1. A system for controlling hydraulic pressure for a hydraulically operated vehicle transmission, including:
a plurality of frictional engaging elements installed in the vehicle transmission;
a hydraulic pressure supplying circuit for discharging hydraulic pressure from one of said plurality of frictional engaging elements and for supplying hydraulic pressure to another of said plurality of frictional engaging elements to bring them into operation such that gear shifting is effected in the vehicle transmission in response to a gearshift command;
shaft rotational speed detecting means for detecting a rotational speed of a shaft input to said vehicle transmission which changes at a time of said gear shifting;
hydraulic pressure control means for controlling the hydraulic pressure such that the rotational speed of the shaft changes following a desired value;
wherein the improvement comprises:
engaging state discriminating means for discriminating an engaging state of said one of the plurality of frictional engaging elements when gear shifting is being effected from the one to the another; and
inhibiting means for inhibiting said hydraulic pressure control means from controlling the hydraulic pressure in response to a result of discrimination.

5,615,579
GEAR STRUCTURE FOR REDUCTION GEARS
Perng Shiow-Miin, No. 22, Shean Fen Lin, Dah Lin Tsuen, Beei Puu Country, Shin Jwu Hsien, Taiwan
Filed Jun. 2, 1995, Ser. No. 460,682
Int. Cl.⁶ F16H *55/06*
U.S. Cl. 74—462 **1 Claim**



1. A gear structure comprising an internal gear and an external gear meshed together and moved relative to each other through a rotary motion, the radius of the root arcs of the teeth of said external gear being M and being the line of arc in tangent with the crest arcs of each two adjacent teeth, the tooth form curve of said internal gear being obtained by connecting all lines of arcs that are in tangent with the crest arcs of each two adjacent teeth, said M being the ratio between the diameter of the crest and the number of teeth, the tooth form curve of said internal gear being the curve which connects the engaging points at the crest arcs and root arcs of the teeth of the external gear, the center of said external gear being at the radius of said internal gear and spaced from the center of said internal gear at a distance, the tooth form of said internal gear which meshes with the crests of the teeth of said external gear being defined by the equations of:

$$a=\tan^{-1}.\{(D/T\times\sin e)\dagger[(d/2-D/T)+D/T\times\cos e]\},$$

$$al=t/T\times a,$$

$$\overline{01\,C}=\sqrt{\{(D/T\times\sin e)2+[(d/2-D/T)+D/T\times\cos e]2\}}\quad .$$

$$\text{fheight}\underline{0\ C}=\text{fheight}\underline{01\ C}+D/2-d/2.$$

in which:
T: number of teeth of said internal gear,
t: number of teeth of said external gear,
D: diameter of the tooth crest of said internal gear,
d: diameter of the tooth crest of said external gear,
01: center of said external gear,
0: center of said internal gear,
F: center of the crest arc of said external gear,
C: tangent point between the crest arc and root arc of said external gear,
E: contained angle defined between line fheight<u>F C</u> and line fheight<u>01 F</u>,
e: contained angle of the engaging point at the crest arc relative to the center F of the crest arc of said external gear, being ≦E,
a: contained angle defined between fheight<u>01 C</u> and the center line fheight<u>01 F</u>,
C': engaging point at the crest arc of said internal gear with the tangent point C,
al: contained angle defined between the line between the tangent point C' and the center point **0** of said internal gear and the

line between the center point of said internal gear and the center point of said external gear;
the tooth form of said internal gear which meshes with the roots of the teeth of said external gear being subject to the equations of:

$$K=\tan^{-1}\{(D/T\times\sin m)+[(d/2-D/T)+D/T\times\cos a+\sqrt{((2D/T)2-[(d/2-D/T)\times\sin a]2)-(D/T\times\cos m)}\quad]\},$$

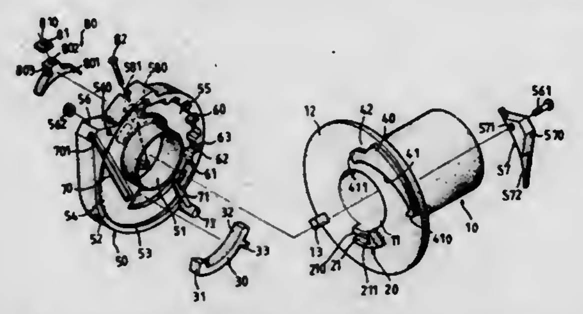
$$K'=t/T\times K,$$

$$\overline{01\,B}=\sqrt{\frac{\{[(d/z-D/T)\times\cos a+}{\sqrt{[(2D/T)2-((d/z-D/T)\times\sin a)2-D/T\cos m]}}+(D/T\times\sin m)2\}}\ .$$

$$\text{fheight0 }B'=\text{fheight0}\underline{1\ }B+D/z-d/z.$$

in which:
T: number of teeth of the internal gear,
t: number of teeth of the external gear,
D: diameter of the tooth crest of the internal gear,
d: diameter of the tooth crest of the external gear,
Q: center of the crest arc of each tooth of said external gear,
G: contained angle defined between the line between C and Q and the line fheight01 Q,
B: engaging point at the root arc of said external gear
m: contained angle of the engaging point B relative to the point Q, m≦G,
a: half tooth angle of said external gear, equal to 360°/2t,
01 B: distance between the contact point at said external gear and the center **01** of said external gear,
K: contained angle defined between fheight<u>01 B</u> and the line segment which defines the contained angle a with fheight01 B,
B': engaging point between B and thee root arc of said internal gear,
βB: half tooth angle of said internal gear, equal to 360°/2T,
K': contained angle defined the engaging point B' and the line segment which defines the contained angle β with fheight0 01,
0 B': distance between the engaging point at said internal gear and the center **0** of said internal gear.

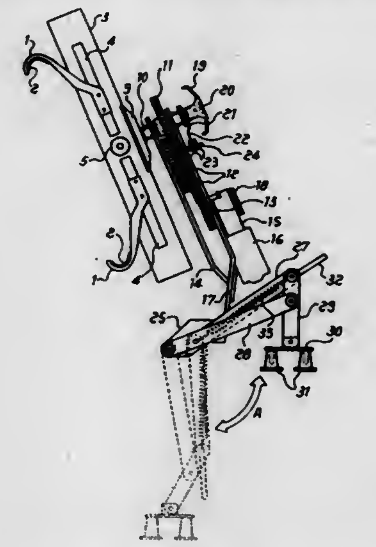
5,615,580
BICYCLE GEAR SELECTOR MECHANISM
Fu H. Chen, No. 23, 21th Rd., Taichung Industrial Park, Taichung City, and Jenny C. H. Wang, No. 90, Kuang Fu Rd., Sec 2, San Chung City, Taipei Hsien, both of Taiwan
Filed Dec. 20, 1995, Ser. No. 575,824
Int. Cl.⁶ G05G *5/06;* **B62K** *23/04*
U.S. Cl. 74—475 **6 Claims**



1. A gear selector mechanism for a bicycle which comprises a handlebar and at least one derailleur cable having a fixing stub formed on one distal end thereof, said gear selector mechanism comprising:
a positioning disk fixedly mounted around one distal end of said handlebar and including a first side wall having a depression defined therein and a second side wall, a platform formed on said first side wall located in said depression and having an arcuate recess defined therein, said first side wall having an inner periphery defining said arcuate recess and a plurality of teeth each formed on said inner periphery of the first side wall and extending radially and inwardly therefrom and each having a guiding face and a stop face located opposite to each other, a notch defined between each two of said plurality of teeth, an elongate groove defined in said platform for receiving said fixing stub together with the one distal end of said derailleur cable therein;
an actuating member rotatably mounted around the one distal end of said handlebar and including an actuating disk rotatably mounted to the first side wall of said positioning disk, an actuating block formed on said actuating disk to rotate therewith and received in said depression and having an arcuate pushing perimeter slidably rested on said fixing stub of said derailleur cable, a substantially C-shaped retaining block formed on said actuating disk and received in said recess and including an open end portion facing said plurality of teeth and a closed end portion, a space defined in said retaining block and communicating with said open end portion; and
a catch member fixedly attached to said retaining block to move therewith and including a flexible arcuate body slidably received in said recess, a lug formed on a first distal end of said arcuate body and securely retained in said space of said retaining block, a click formed on a second distal end of said arcuate body and detachably engaged with each of said plurality of teeth, said click being guided to slide over said guiding face of each of said plurality of teeth and a returning movement of said click being stopped by said stop face of associated said teeth.

5,615,581
REMOTELY CONTROLLED DEVICE FOR ROTATING THE STEERING-WHEEL OF A MOTOR VEHICLE AND THEN TAKING IT BACK TO THE STARTING POSITION
Sergio Cordioli, Via Salmeggia, 10, Milan, Italy
PCT No. PCT/IT94/00018, § 371 Date Sep. 1, 1995, § 102(e) Date Sep. 1, 1995, PCT Pub. No. WO94/20340, PCT Pub. Date Sep. 15, 1994
PCT Filed Mar. 3, 1994, Ser. No. 513,814
Claims priority, application Italy, Mar. 5, 1993, MI93A0428
Int. Cl.⁶ B60S *5/00;* **B62D** *1/22*
U.S. Cl. 74—494 **2 Claims**

1. A remotely controlled device for rotating the steering-wheel



of a motor vehicle and then taking it back to the starting position, comprising;

an upper portion for rotating the steering-wheel having a plurality of substantially hook-shaped jaws for securely gripping the steering-wheel ring the upper portion being integrally mounted at the output of means for transmitting a rotation motion transmitted by a motor, said transmitting means being connected through a central frame to a lower self-adjusting support portion suitable to provide a base required to react to the steering-wheel reaction torque, said lower support portion further comprising means for detecting the rotations of the steering-wheel means for remotely controlling the device, and means for memorizing the rotations of the steering-wheel, and wherein the hook-shaped jaws are slidably mounted on an arm wherein two guides are longitudinally formed, a closing and opening movement of the jaws being controlled by a knob to which a gear engaging two rack members is coaxially integral, the jaws being mounted on an end of the rack members, each of the rack members being connected, at an end opposite to that of the jaws, to an end of the arm through a spring which exerts a traction such as to keep the jaws tightly closed.

5,615,582

RACK-AND-PINION STEERING GEAR, IN PARTICULAR FOR MOTOR VEHICLES

Arthur Rupp, Huttlingen, Germany, assignor to ZF Friedrichshafen AG, Friedrichshafen, Germany

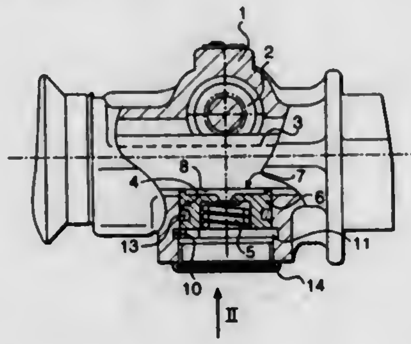
PCT No. PCT/EP94/00166, § 371 Date Jul. 27, 1995, § 102(e) Date Jul. 27, 1995, PCT Pub. No. WO94/16931, PCT Pub. Date Aug. 4, 1994

PCT Filed Jan. 22, 1994, Ser. No. 495,656

Claims priority, application Germany, Jan. 28, 1993, 43 02 309.6

Int. Cl.⁶ B62D *3/12;* **F16B** *21/18*

U.S. Cl. 74—498 **7 Claims**



1. A rack-and-pinion steering gear suitable for use in motor vehicles which comprises:

a steering housing having a borehole therein;

a steering shaft provided with a driving pinion that engages a rack having a back and which is arranged laterally with respect to the steering shaft and which rack is capable of axial movement;

a stop formed by a snap ring anchored in the housing borehole in combination with a supporting part retained by the snap ring;

said rack is guided in a bedding of a thrust piece located in the steering housing;

the thrust piece is pressed by a spring element against the back of the rack, is guided in the housing borehole in the steering housing and rests on the stop;

wherein the supporting part for the spring element or the thrust piece is formed by at least one inwardly directed bar which is firmly connected to the snap ring and which bar lies in the same plane as the snap ring.

5,615,583

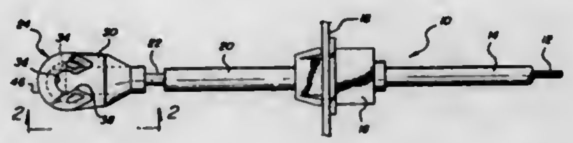
C-SHAPED PIN-CONNECTOR WITH FLEX HOLES

Jeffrey G. Cunningham, Dearborn, and Allen G. Irish, Flint, both of Mich., assignors to Teleflex Incorporated, Plymouth Meeting, Pa.

Filed Dec. 15, 1995, Ser. No. 573,445

Int. Cl.⁶ F16C *1/14*

U.S. Cl. 74—502.4 **1 Claim**



1. A motion-transmitting remote-control assembly (10) comprising:

a flexible motion-transmitting core element (12),

a conduit (14) slidably supporting said core element (12),

a terminal (24) for connecting said core element (12) to a disc-shaped head (26) supported on a post (28), said terminal (24) including a body (30) and a flange (32) spaced and parallel to said body (30) to define a pocket (34) between said flange (32) and said body (30) for receiving the disc-shaped head (26) with said flange (32) defining a circular opening (36) for surrounding the post (28) and an entrance (38) more narrow than said circular opening (36) for retaining the post (28) in said opening (36),

said flange (32) including a pair of holes (44) extending therethrough adjacent said entrance (38) for rendering said flange (32) more flexible at said entrance (38) than the remainder of said flange (32) to facilitate the enlargement of said entrance (38) by the forced movement of the post (28) therethrough and to snap back as the post (28) seats in said circular opening (36);

a wall (40) extending between said body (30) and said flange (32) to define said pocket (34), said wall (40) defining said pocket (34) as U-shaped with a bottom, said flange (32) extending inwardly a constant distance (x) from said wall (40) at said bottom of said U-shaped pocket (34) and inwardly a greater distance (y) from said wall (40) at said entrance (38), said flange (32) defining a V-shaped guideway (42) with opposite sides extending to said entrance (38), said pair of holes (44) being disposed in said flange (32) between said entrance (38) and said wall (40), one of said holes (44) being on one side of said entrance (38) and the other hole (44) being on the other side of said entrance (38);

each hole (44) having a first perimeter length (44*a*) co-planar with said wall (40), a second perimeter length (44*b*) extending parallel and spaced from one of said opposite sides of said V-shaped guideway (42), a third perimeter length (44*c*) extending concentrically to and spaced inwardly from said opening (36), a fourth perimeter length (44*d*) which is arcuate and interconnects said first (44*a*) and third (44*c*) perimeter lengths, a fifth perimeter length (44*e*) interconnecting said first (44*a*) and second (44*b*) perimeter lengths, a sixth perimeter length (44*f*) which is arcuate and interconnects said second (44*b*) and fifth (44*e*) perimeter lengths, said fourth perimeter length (44*d*) being on a larger radius than said sixth perimeter length (44*f*);

said body (30) and said wall (40) and said flange (32) being coextensive and circular to define a circular (46) extending about said bottom of said U-shaped pocket (34), said V-shaped guideway (42) being disposed on an axis (A), said circular exterior (46) extending 180° between a diameter (D) of said opening (36) which is perpendicular to said axis (A) of said V-shaped guideway (42);

said flange (32) having converging exterior surfaces (48) converging inwardly from said diameter (D) to define points (50) with said V-shaped guideway (42);

said fifth perimeter length (44*e*) of each hole (44) being parallel to and spaced from the adjacent converging exterior surface (48) of said flange (32) and said fourth perimeter length (44*d*) of each hole (44) being tangent to said diameter (D); and

including a fitting (16) for supporting said conduit (14) on support structure (18), a swivel tube (20) extending from said fitting (16), a rod (22) slidably supported in said swivel tube (20), said terminal body (30) being attached to a distal end of said rod (22).

5,615,584

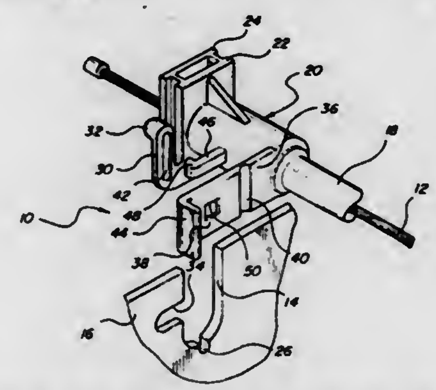
SLIDE N' SNAP WITH LIVING HINGE LOCK

Allen G. Irish, Flint, Mich., assignor to Teleflex Incorporated, Plymouth Meeting, Pa.

Filed Nov. 21, 1995, Ser. No. 560,800

Int. Cl.⁶ F16C *1/26*

U.S. Cl. 74—502.6 **10 Claims**



1. A motion transmitting remote control assembly (10) comprising:

guide means having first and second ends and a bore therethrough defining a first axis;

a core element (12) movably supported in said bore in said guide means for transmitting motion between said ends of said guide means;

abutment means for positioning said guide means in a U-shaped seat (14) in a bulkhead (16);

gripping means disposed laterally from said abutment means and from said guide means for gripping engagement with the bulkhead (16) to prevent said guide means from moving out of the U-shaped seat (14), said gripping means movable to a deflected position out of said gripping engagement; and

characterized by a lock hingedly supported on said guide means for movement between an unlocked position, to allow movement of said gripping means to said deflected position, and a locked position, to prevent said gripping means from moving out of said gripping engagement;

a hinge flange (36) extending latterly at a position axially spaced from said gripping means and a tab (38) connected to said hinge flange (36) by a living hinge integral with both of said hinge flange (36) and said tab (38) for swinging movement into engagement with said gripping means in said locked position; a post (46) extending radially from said fitting (20) at a position spaced between said gripping means and said hinge flange (36), said tab (38) including a hole (50) therethrough, a hook (48) at the distal end of said post (46) for extending through said hole (50) in said tab (38) and snapping into locked engagement therewith to retain said tab (38) in said locked position.

5,615,585

ANTI-TANGLE MECHANISM FOR A BICYCLE

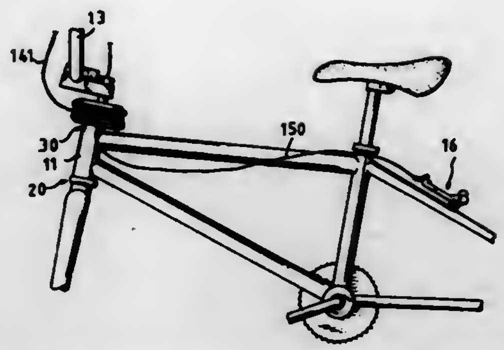
Yi Chen Chi, No. 139-5, An Mei Rd. Mei Shan Tsun, Hou Li Hsiang, Taichung Hsien, Taiwan

Filed Nov. 28, 1995, Ser. No. 563,308

Int. Cl.⁶ F16C *1/10;* **B62K** *21/18*

U.S. Cl. 74—551.1 **4 Claims**

1. An anti-tangle mechanism for a bicycle comprising a bicycle having a head tube which has a first end and a second end, said



first end of said head tube having an upper bearing set disposed thereto and said second end of said head tube having a lower bearing set disposed thereto, said upper bearing set including a bowl, a plurality of balls, a race and a compression element, said bowl having a neck portion and a skirt portion, said skirt portion extending from said neck portion and having a groove defined in an upper portion thereof, said neck portion being inserted into said first end of said head tube and said balls being rotatably received in said groove of said skirt portion, said race disposed on said balls and said compression element disposed to said race to position said balls, said mechanism comprising:

a first ring element, said first ring element having a plurality of rotatable elements rotatably disposed to a top thereof and a plurality of first tooth elements extending downwardly from an under side thereof, a first board extending laterally from one of said first tooth elements and having a first fixing element disposed to an under side of said first board, said first fixing element having first hole defined radially in said first fixing element for a rear brake cable extending through said first hole and a sheath of said rear brake cable engaged against said first fixing element;

a cap having a first tubular portion and a first flange, said first flange extending radially from a periphery of said first tubular portion, said first flange having a shoulder portion defined in an under side of said first flange and said shoulder portion near said first tubular portion, a first groove defined in said under side of said first flange and located next to said shoulder portion in a radial direction for receiving said first rotatable elements in said first groove, a first cable hole defined longitudinally in said shoulder portion;

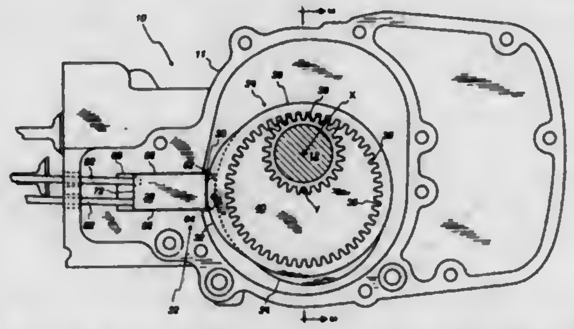
a second ring element, said second ring element having a plurality of second tooth elements extending upwardly from a top thereof for being engaged to said first tooth elements and a plurality of rotatable elements rotatably disposed to an under side of said second ring element, a second board extending laterally from one of said second tooth elements and having a second fixing element disposed to an upper side of said second board, said second fixing element having second hole defined radially in said second fixing element for a distal end of said rear brake cable inserted therein, said second fixing element having a fixing means disposed thereto for fixedly engaging said distal end of said rear brake cable in said second fixing element;

a base having a second tubular portion and a second flange, said second tubular portion having at least one recess defined in an inner periphery thereof, said second flange extending radially from a periphery of said second tubular portion, said second flange having a second groove defined in a top thereof for receiving said second rotatable elements therein, a second cable hole defined longitudinally in said second tubular portion and in alignment with said first cable hole of said cap for an active cable inserting through said second cable hole and said first cable hole, a distal end of said active cable extending from said first cable hole being engaged to a cable block which is fixedly received in said first cable hole and the other end of said active cable engaged to a rear wheel brake device of said bicycle;

said bowl of said upper bearing set having at least one protrusion extending radially from said skirt portion of said bowl;

said first ring element and said second ring element mounted to said second tubular portion of said base and said first tubular portion of said cap inserting into said inner periphery of said second tubular portion, a top of said second tubular portion contacting said shoulder portion of said cap and said first tooth elements engaging to said second tooth elements, said bowl being received in said second tubular portion so as to engage said protrusion with said recess to position said base.

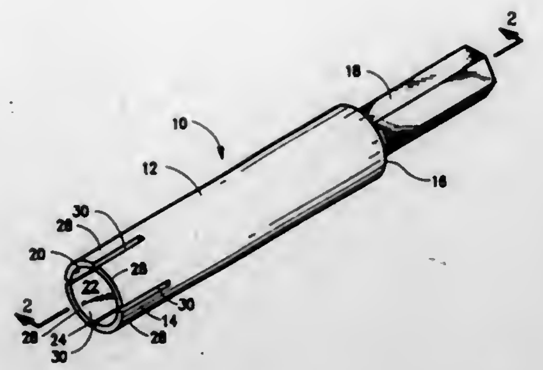
5,615,586
CAM DEVICE
George E. Phillips, Oshkosh, and Eric B. Hudson, Hilbert, both of Wis., assignors to Brunswick Corporation, Lake Forest, Ill.
Filed Jun. 7, 1995, Ser. No. 479,117
Int. Cl.⁶ F01L *1/04*
U.S. Cl. 74—567 **24 Claims**



20. In an internal combustion engine including an engine block, a combustion chamber, a valve arrangement for controlling intake to and exhaust from the combustion chamber, and a cam device for actuating the valve arrangement; the improvement wherein said cam device comprises:
- a cam for generating a cam motion,
- a first cam follower for translating the cam motion into linear motion;
- a second cam follower for translating the cam motion into linear motion;
- an elongated aperture having a non-circular cross-section formed in the engine for receiving the first and second cam followers and for guiding the first and second cam followers for sliding, linear motion relative to the engine block; and
- the first and second cam followers being received in the aperture, bearing against each other for sliding, linear motion relative to each other and to the engine block and having a combined cross-sectional shape that conforms to the non-circular cross-section of the aperture.

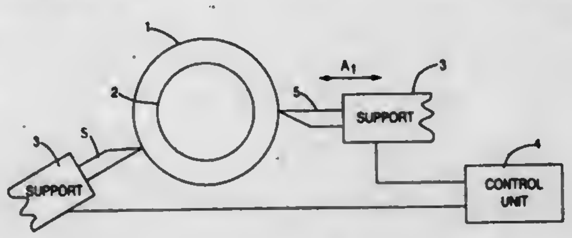
5,615,587
DEEP-SOCKET DRIVER APPARATUS
Erwin W. Foerster, Jr., 6001 S. Yosemite, A-104, Englewood, Colo. 80111
Filed Jul. 1, 1993, Ser. No. 87,595
Int. Cl.⁶ B25B *13/52*
U.S. Cl. 81—64 **7 Claims**

1. A deep-socket driver apparatus adapted to rotatably move a first one of a mated pair of threaded workpieces along a second one of the mated pair of threaded workpieces, comprising:
- an elongated tubular body having a gripping end portion sized to releasably grip the first one of the mated pair of threaded workpieces and operative to apply a frictional gripping force to the first one of the mated pair of threaded workpieces whereby the first one of the mated pair of threaded workpieces can rotatably move along the second one of the mated pair of threaded workpieces until a torque-resisting force overcomes said frictional gripping force causing slippage



between said elongated tubular body and the mated pair of threaded workpieces, said gripping end portion including a plurality of gripping segments with adjacent ones of said gripping segments being separated by a slot formed by opposing faces and wherein one of said opposing faces of said adjacent gripping segments is canted at an angle with respect to the other of said opposing faces.

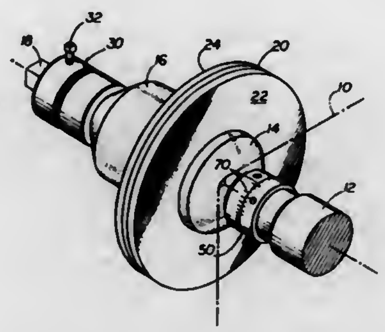
5,615,588
APPARATUS FOR PROCESSING THE EDGE OF OPHTHALMIC LENSES
Lutz Gottschald, Meerbusch, Germany, assignor to Wernicke & Co. GmbH, Dusseldorf, Germany
Filed Apr. 30, 1993, Ser. No. 54,282
Claims priority, application Germany, Apr. 30, 1992, 42 14 326.8
Int. Cl.⁶ B23B *5/00*
U.S. Cl. 82—11 **15 Claims**



1. An apparatus for processing edge areas of an ophthalmic lens, the apparatus comprising:
- a gripping device for gripping the ophthalmic lens in such a manner that the edge area of the ophthalmic lens to be processed is accessible,
- a turning device for turning said gripping device with the gripped ophthalmic lens about an axis of rotation,
- a support,
- a lathe tool supported by the support and adapted to be brought into contact with the edge area of said ophthalmic lens to be processed for effecting a processing operation, and
- a control unit for controlling the support and for conveying the lathe tool towards and away from the ophthalmic lens in a direction perpendicular to the axis of rotation during a rotation of said gripping device corresponding to an axially unsymmetrical circumferential contour of said ophthalmic lens, and

wherein said ophthalmic lens is processed by said lathe tool during a plurality of rotations of said gripping device.

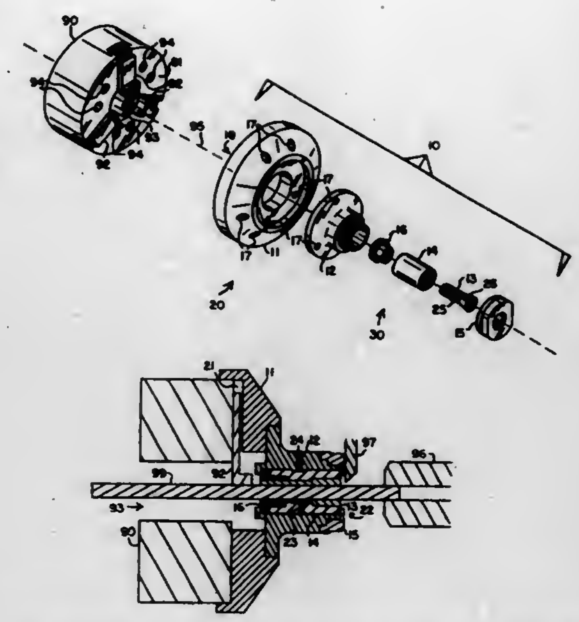
5,615,589
APPARATUS FOR RUNOUT COMPENSATION
James A. Roach, Richmond, Va., assignor to Accu Industries, Inc., Ashland, Va.
Filed Aug. 1, 1994, Ser. No. 283,775
Int. Cl.⁶ B23B *5/02*
U.S. Cl. 82—112 **8 Claims**



1. A lathe incorporating a runout compensator to hold firmly and to make fine adjustments in the angular orientation of a workpiece having an axis and at least one irregular surface slightly skew to the axis and to machine the workpiece, comprising:
- (a) an arbor for holding and turning the workpiece;
- (b) a bell clamp, attached to the arbor, for interfacing with the surface of the workpiece;
- (c) means for adjusting the angulation of the interfacing means to affect non-perpendicular angulation of the surface of the workpiece relative to the arbor, which adjusting means comprises:
  - (i) a first ring having a bore adapted to receive and be penetrated by the arbor of the lathe, at least one planar surface disposed in a plane skewed relative to the bore and indicia which correspond to the skew of the planar surface with respect to the bore, and
  - (ii) a second ring having a bore adapted to receive and be penetrated by the arbor of the lathe, at least one planar surface disposed in a plane skewed relative to the bore and indicia which correspond to the skew of the planar surface with respect to the bore,
  - (iii) a spring for holding the first and second rings in mating contact, which spring biases the second ring away from a clip and toward the first ring,
  - (iv) which second ring and first ring are adapted to be rotated relative to one another, their positions with respect to one another indicated by the indicia, in order to adjust and indicate the angulation of the interfacing means and thus the workpiece relative to the arbor, and
- (d) means for applying pressure to the workpiece to hold it firmly against the interfacing means so that the workpiece is capable of being adjusted angularly by the adjusting means relative to the arbor, wherein the pressure applying means comprises a first collar and a second collar and a spring for biasing the second collar away from the first collar.

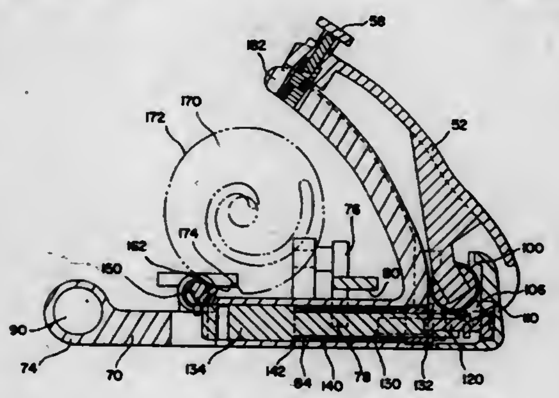
5,615,590
GUIDE COLLET ADAPTOR FOR RADIAL JAW CHUCK LATHES
Henry D. Speckhahn, 6864 Phillips Parkway Dr. South, Jacksonville, Fla. 32256
Filed Jul. 5, 1995, Ser. No. 498,172
Int. Cl.⁶ B23B *13/02*
U.S. Cl. 82—162 **14 Claims**

1. A collet guide adaptor device for guiding a cylindrical or tubular workpiece during a machining operation in combination with an automatic CNC turning lathe equipped with an opposing sub-spindle and having a face containing radial jaw chucks for holding the cylindrical or tubular workpiece within a central bore, the device comprising:



- (A) mounting means to affix said device to the face of the lathe whereby said adaptor does not interfere with radial movement of said radial jaw chucks;
- (B) collet retention means to retain a non-rotating guide collet in co-axial alignment with the central bore of said lathe; and
- (C) a non-rotating guide collet which prevents the workpiece from deviating from the longitudinal axis during rotation while allowing longitudinal movement of said workpiece during the machining operation.

5,615,591
FOOD PRODUCT SLICER HAVING AN INTERLOCK MECHANISM
Richard P. Scherch, Johnston, Iowa; Timothy A. Schrand, West Chester, Ohio; James A. Shirk, Union, Ohio, and Danny J. Mitchell, Frankling, Ohio, assignors to Premark FEG Corporation, Wilmington, Del.
Filed Aug. 12, 1994, Ser. No. 289,684
Int. Cl.⁶ B26D *7/22*
U.S. Cl. 83—399 **6 Claims**



1. A food product slicer comprising:
- a housing;
- a circular slicing blade rotatably mounted in the housing;
- a removable carriage arm, the carriage arm being mounted on the carriage and having a foot;
- a food product carriage mounted for reciprocation on the housing;
- a bracket on the carriage having a mounting head rotatably received therein, the mounting head and the bracket having slots therein which are alignable with one another such that

when the slots are aligned, the foot of the carriage arm can be inserted into or removed from the mounting head; and

an interlock engaged by the rotation of the mounting head in the bracket, the interlock comprising

a plunging element, linked to the carriage arm, which reciprocates between a first, retracted position, in which the carriage arm is in a food slicing position, and a second, extended position, in which the carriage arm is in a cleaning position, the plunging element being reciprocated by pivoting the carriage arm;

an interlock bar mounted in the housing and extending over the path of displacement of the carriage, the interlock bar having an irregular cross section and being rotatable between a first position in which it blocks reciprocation of the plunging element thereby preventing the carriage arm from being pivoted to an extended position and a second position in which it does not block reciprocation of the plunging element allowing the carriage arm to be pivoted to the cleaning position; and

a pin carried on the interlock bar, the pin cooperating with the adjustment mechanism such that when the gauge plate is in the open position, the interlock bar is in the first position and when the gauge plate is in the closed position, the interlock bar is in the second position.

5,615,592

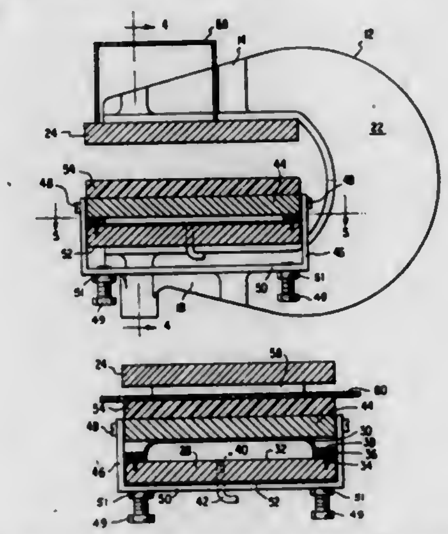
LEATHER CUTTING APPARATUS

Dennis J. Tippmann, 12708 Parent Rd., New Haven, Ind. 46774

Filed Feb. 1, 1995, Ser. No. 382,203

Int. Cl.^{6} B26D *5/12*; B26F *1/40*

U.S. Cl. 83—529 **1 Claim**



1. An apparatus for cutting a three-dimensionally shaped workpiece comprising:

a) a plurality of spaced-apart C-shaped frame members, each of said frame members having an upper and an oppositely disposed lower mounting surface,

b) a first plate means secured to said upper mounting surface of each frame member,

c) a second plate means secured to said lower mounting surface of each frame member,

d) inflatable bladder means comprising a single sheet of air impervious material secured in airtight engagement around the peripheral edge thereof to said second plate means,

e) platen means positioned on said bladder means for supporting said workpiece and movable relative to said second plate means upon inflation of said bladder means,

f) cutting means positioned between said first plate means and said platen means and above said workpiece to thereby cut said workpiece as said platen means is moved toward said first plate means upon inflation of said bladder means,

g) U-shaped bracket means secured to said platen means and extending beneath said second plate means, said bracket means having adjustable means to limit the vertical travel of said platen means upon inflation of said bladder means, and

h) first and second valve means connected between a source of pressurized air and said bladder means for controlling inflation of said bladder means upon actuation of both said first and second valve means.

5,615,593

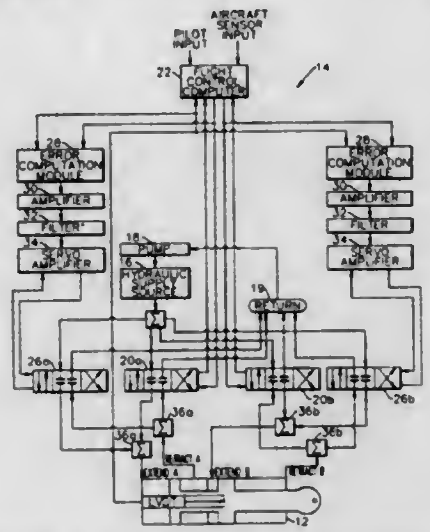
METHOD AND APPARATUS FOR CONTROLLABLY POSITIONING A HYDRAULIC ACTUATOR

Glenn A. Anderson, St. Charles County, Mo., and James D. Linerode, Will County, Ill., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

Continuation-in-part of Ser. No. 179,952, Jan. 11, 1994, abandoned. This application May 23, 1995, Ser. No. 447,406

Int. Cl.^{6} F15B *15/22*

U.S. Cl. 91—24 **8 Claims**



1. A system for controllably positioning a hydraulic actuator operatively connected to a control surface subjected to external forces up to a predetermined maximum force, the system comprising:

hydraulic supply means for supplying hydraulic pressure to the actuator to thereby position the actuator;

main control valve means, in fluid communication with said hydraulic supply means, for creating a fixed restriction to a flow of hydraulic fluid to the actuator to thereby control the position of the actuator in response to a control signal indicative of a predetermined actuator position, wherein said main control valve means comprises at least one main control valve having a predetermined size which is selected to controllably provide sufficient hydraulic pressure to the actuator to position the control surface while said control surface is subjected to said predetermined maximum force;

sensor means for monitoring the position of the actuator to generate actuator position signals indicative of the position of the actuator;

a controller, responsive to the actuator position signals generated by said sensor means, for generating an error signal in response to a difference between the position of the actuator and the predetermined actuator position; and

parallel control valve means, responsive to said controller and in fluid communication with said hydraulic supply means, and positioned in a parallel relationship to said main control valve means, for supplying additional hydraulic pressure to the actuator in response to the error signal to correct for differences between the position of the actuator as monitored by said sensor means and the predetermined actuator position specified by the control signal to thereby increase the stiffness of the hydraulic actuator, wherein said parallel control valve means comprises at least one parallel control valve for controllably providing sufficient hydraulic pressure to the actuator to provide the predetermined stiffness to the control surface while said control surface is subjected to the predetermined maximum force,

wherein said main control valve means is independent of said sensor means and the error signal generated by said controller such that the fixed restriction created by said main control valve means in response to a control signal indicative of a predetermined actuator position is independent of the error signal generated by said controller in response to the difference between the position of the actuator and the predetermined actuator position.

5,615,594

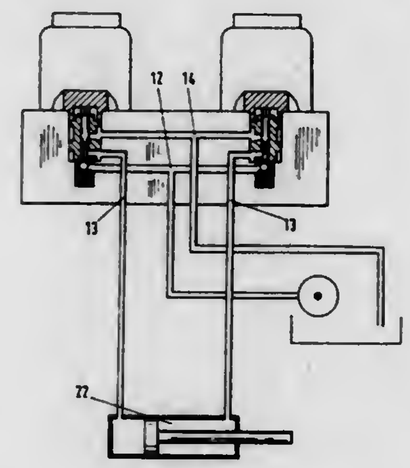
HYDRAULIC CONTROL VALVE

Heinrich Duckinghaus, Bielefeld, Germany, assignor to Claas CHG Beschrankt Haftende Offene Handelsgesellschaft, Harsewinkel, Germany

Filed Apr. 6, 1995, Ser. No. 417,796

Int. Cl.^{6} F15B *13/044*

U.S. Cl. 91—433 **10 Claims**



1. A hydraulic control valve formed as a magnet valve with several connections and switching positions, comprising a housing provided with several connections; a valve slider displaceable in said housing; an electromagnet provided with an extensible plunger for controlling said valve slider; a valve seat provided in said housing; a ball movable between a closing position and an opening position with respect to said valve seat; a closing spring which urges said ball to said closing position, said ball is bringable by said valve slider to said opening position under the action of a force of said electromagnet; a valve body firmly but exchangeably inserted in said valve housing and having an opening so that said valve slider is received in said opening and guided in said valve body, said valve body accommodating said valve slider, said ball and said closing spring which presses said ball against said valve seat; a plurality of conduits including a pressure conduit, a control conduit and a consumer conduit, said opening which receives said control slider being bringable in flow communication with said pressure conduit, said consumer conduit and said control conduit, said valve slider being provided with a ring surface associated with said control conduit, so that a required pressure in said consumer conduit is determined by a magnitude of at least one of said ring surface and a magnet force of said electromagnet, said electromagnet and said control slider being formed so that by changing a magnetic force of said electromagnet, said control slider is bringable to a regulating position in which said ring surface of said valve slider is adjustable to a control edge, so that the quantity oil discharging through said control conduit regulates a required pressure in said consumer conduits.

5,615,595

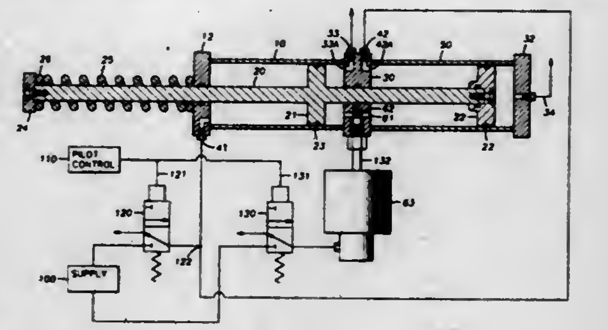
TANDEM CYLINDER CONTROL

Albert S. Davis, Richmond, Tex., assignor to Bettis Corporation, Waller, Tex.

Filed Jun. 30, 1995, Ser. No. 488,800

Int. Cl.^{6} F15B *11/024*

U.S. Cl. 91—440 **1 Claim**



1. A fluid operated control device comprising:

housing member, said housing including;

a pair of side by side, cavity-containing, cylinders, said cylinders' cavities each being terminated by a separate end cap and by a common wall, at least one of said end caps as well as said common wall each including a passageway therethrough for slidably and reciprocatingly receiving piston rod means, said piston rod means having secured thereto a separate piston sealingly and reciprocatingly engaged with the wall of each of said cylinders;

fluid passageway means through said common wall and being in fluid communication with each cavity adjacent to said common wall;

means for equalizing the fluid pressure in the portions of said cavities adjacent said common wall, said equalizing means comprising valve control means for opening and closing said common wall's passageway means;

spring return means for biasing said piston rod means toward a second position; and

fluid supply means for urging said piston rod means toward a first position.

5,615,596

INFLATED BALL CONTAINER REPRESSURIZER

Antoine Issa, Vancouver, Canada, assignor to Innovatec Products International, Inc., Vancouver, Canada

Filed Nov. 29, 1995, Ser. No. 564,906

Int. Cl.^{6} F01B *19/00*

U.S. Cl. 92—98 R **17 Claims**

1. A device for repressurizing a inflated ball container, comprising:

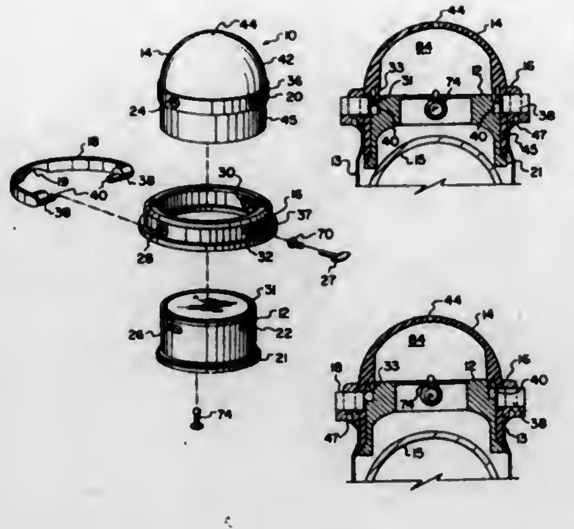
(a) a diaphragm dimensioned to fit snugly into an end of said container;

(b) a core slidably positioned inside said diaphragm; and

(c) an actuator movable so as to cause said core to engage an interior surface of said diaphragm and seal it against an interior surface of said container,

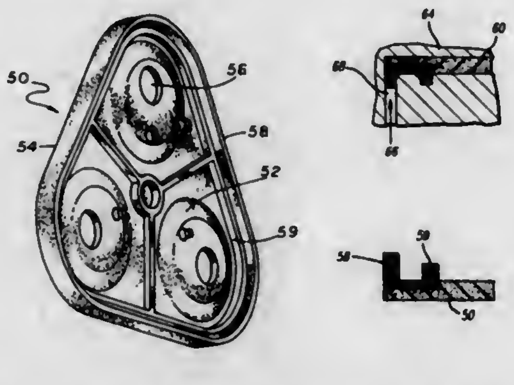
wherein upon pressing in on said diaphragm, air is forced into said container.

13. A repressurizing device for a tennis ball container having a rigid core dimensioned to fit through an open end of the tennis ball container, a resilient dome-shaped diaphragm having an air hole in a top thereof and a skirt dimensioned to slide over the core, a rigid ring which encloses a circumferential core contacting region of said diaphragm, and an actuator mounted in said ring and coupled to said core and operative to raise and lower said core relative to said diaphragm, and, upon said core being raised, seals a lower open end of the skirt of said diaphragm against the inside wall of the container relative to the core, a check valve slidably mounted in said core and operative to permit air to pass from within said



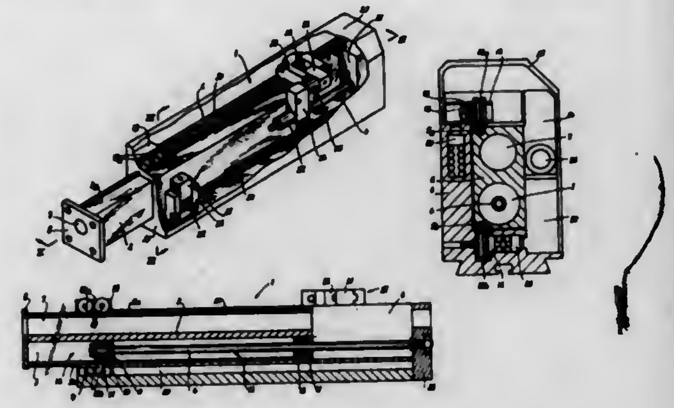
diaphragm to an interior of said container and means for releasing pressure from and interior of said container.

5,615,597
COMPOSITE DIAPHRAGM FOR DIAPHRAGM PUMPS HAVING TWO DIFFERENT SHORE-HARDNESS MATERIALS
Ivar Schoenmeyr, Mission Viejo, Calif., assignor to Aquatec Water Systems, Inc., Anaheim, Calif.
Filed Aug. 7, 1995, Ser. No. 511,909
Int. Cl.^{6} F01B *19/00*
U.S. Cl. 92—103 SD **11 Claims**



1. A diaphragm for a diaphragm pump which has a piston within a pump housing that includes a first outer shell coupled to a second outer shell, comprising:
a diaphragm which has a sealing portion that is located between the first and second shells to seal the pump housing and a flexing portion attached to the piston, wherein said sealing portion has a first shore number less than a second shore number of said flexing portion.
6. A diaphragm pump, comprising:
a first outer shell that has a first inner cavity;
a second outer shell that has a second inner cavity and is coupled to said first outer shell;
a diaphragm that separates said first inner cavity from said second inner cavity, said diaphragm having a flexing portion that has a first shore number and a sealing portion which is located between said first and second outer shells and has a second shore number, wherein said second shore number is less than said first shore number; and,
a piston attached to said flexing portion of said diaphragm.

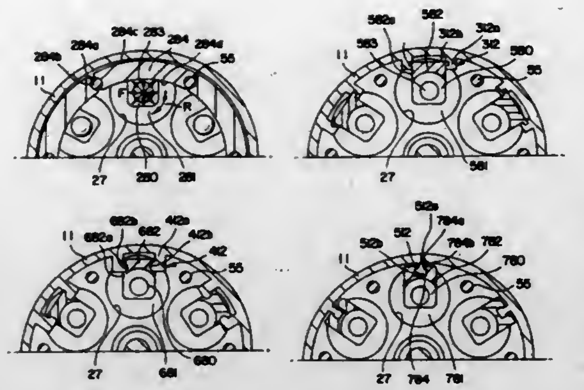
5,615,598
JACK WITH FIXED PISTON FOR HANDLING, MOVING AND MANIPULATING A WORKPIECE
Jean-Marie Noroy, Marchaux, and Franck Roussillon, Pontarlier, both of France, assignors to Parker Hannifin RAK SA, Annemasse, France
Filed Jun. 21, 1995, Ser. No. 493,028
Claims priority, application France, Jun. 21, 1994, 94 07851
Int. Cl.^{6} F01B *15/02*
U.S. Cl. 92—117 A **37 Claims**



1. An apparatus, comprising:
a jack body sliding on a fixed piston, said piston being mounted on a fixed support by means of a piston rod, the jack body having an extruded section containing at least one longitudinal bore used as a piston chamber for the piston of the jack, and having at least two guide elements mounted on the body in the longitudinal direction for guiding the body on the support, said jack further including bearings corresponding to a shape of the guide elements, at least one of said bearings being adjustable and being mounted on the fixed support.
19. A guided jack with fixed piston, comprising:
a fixed support,
a piston mounted to the support and fixed with respect thereto,
a jack body sliding on the fixed piston in the longitudinal direction of the piston in a outward direction of travel away from the fixed support, and a withdrawal direction of travel toward the fixed support, said jack body having an extruded section containing at least one longitudinal bore receiving the piston, and having two guide elements mounted on the body in the longitudinal direction, and further including bearings mounted on the fixed support and in contact with the guide elements to slidingly support the jack body and prevent rotation thereof, at least one of said bearings being adjustable to urge said at least one bearing against one of the guide elements.

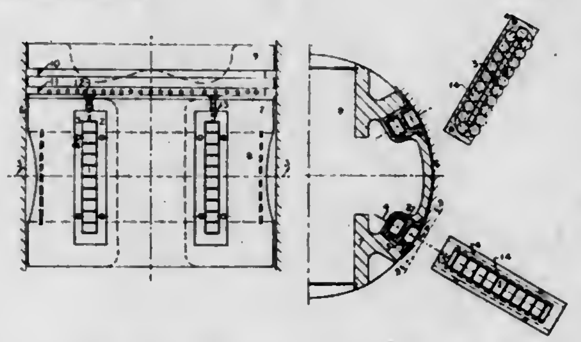
5,615,599
GUIDING MECHANISM FOR RECIPROCATING PISTON OF PISTON-TYPE COMPRESSOR
Kiyoshi Terauchi, Isesaki, Japan, assignor to Sanden Corporation, Gunma, Japan
Filed Aug. 18, 1995, Ser. No. 516,863
Claims priority, application Japan, Aug. 23, 1994, 6-222412
Int. Cl.^{6} F16J *15/18*
U.S. Cl. 92—165 R **15 Claims**

1. A compressor comprising:
a compressor housing including a crank chamber, a suction chamber, a discharge chamber, and a cylinder block;
a plurality of cylinders formed in said cylinder block, each of said cylinders having an inner surface;
a plurality of pistons, each of which is slidably disposed within one of said cylinders, each of said pistons having an end and an axis;
a drive shaft rotatably supported in said cylinder block;
a plate tiltably connected to said drive shaft;



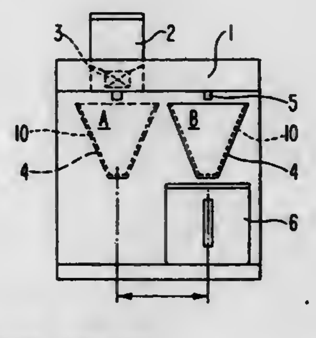
a bearing coupling said plate to said pistons, so that said pistons are driven in a reciprocating motion within said cylinders upon rotation of said plate;
at least one working chamber defined by the end of each of said pistons and the inner surface of each of said cylinders;
a support portion disposed coaxially with said drive shaft and tiltably supporting a central portion of said plate; and
a piston guiding mechanism including at least one first guide formed on a peripheral surface of said piston and at least one second guide disposed within said housing, said at least one second guide having a first portion for guiding said at least one first guide to slide smoothly along said at least one second guide so as to prevent said piston from rotating around axis thereof and a second portion radially extending from said first portion for guiding said at least one first guide to slide smoothly along said at least one second guide so as to prevent said piston from radially inclining as said piston reciprocates within said cylinders.

5,615,600
ROLLER BEARING PISTON
Chi Cheng, and Akimi C. Cheng, both of 391 Western Ave., Clarendon Hills, Ill. 60514
Filed Aug. 17, 1995, Ser. No. 516,236
Int. Cl.^{6} F16J *1/02*
U.S. Cl. 92—178 **10 Claims**



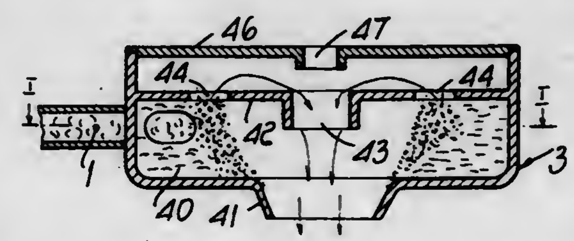
1. An anti-friction piston for use in an internal combustion engine or pump for reciprocating motion with a cylinder comprising:
a piston head of circular cross-section with either a bowl disposed therein or a flat head, two to four ring grooves disposed around an outer periphery thereof;
a piston skirt selected from the group consisting of a one-piece integral piston/skirt combination and two-piece articulated piston with detachable skirt portion;
four sets of bearing pads and four sets of plurality of roller bearings received in said pads, said pads and bearings being recessed in an outer periphery of said skirt with two sets of said pads and bearings on each side of a wrist pin, each of said bearing pads including two halves, inner and outer of near mirror images; and
a plurality of locating pins and screws securing each of said pad sets and said plurality of roller bearings to said skirt.

5,615,601
COFFEE MAKING MACHINE HAVING A BUILT-IN COFFEE GRINDER
Arthur Eugstar, Romanshorn, Switzerland, assignor to Eugster/Frismag AG, Romanshorn, Switzerland
Filed Feb. 15, 1996, Ser. No. 601,862
Claims priority, application Germany, Feb. 17, 1995, 295 02 596.4
Int. Cl.^{6} A47J *31/42*
U.S. Cl. 99—280 **8 Claims**



1. A coffee automat comprising
(a) a coffee maker including a brewing water outlet defining a brewing position thereunder;
(b) a coffee mill having a grinding device horizontally spaced from said brewing water outlet; said grinding device defining a grinding position thereunder; said grinding position being horizontally spaced from said brewing position;
(c) a filter carrier adapted to receive a filter basket; and
(d) displacing means for supporting said filter carrier and for moving said filter carrier for selectively assuming one of said positions.

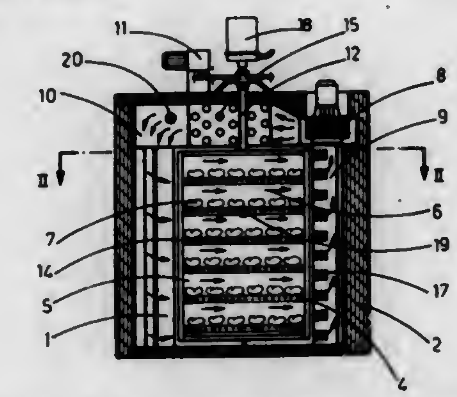
5,615,602
EMULSIFYING UNIT, PARTICULARLY FOR EMULSIFYING AIR AND MILK WITH STEAM TO PREPARE CAPPUCCINO AND THE LIKE
Arthur-Joachim Schmed, Oberdürnten, Switzerland, assignor to J. Lough Limited, Dublin, Ireland
Filed Dec. 19, 1995, Ser. No. 574,993
Claims priority, application Switzerland, Dec. 27, 1994, 03939/94
Int. Cl.^{6} A47J *31/40*
U.S. Cl. 99—323.1 **7 Claims**



1. An emulsifying unit, particularly for emulsifying and heating air and milk by means of steam to prepare cappuccino and the like, said unit comprising:
an emulsifying chamber;
an acceleration duct ending in said emulsifying chamber;
a steam injection nozzle venting in said acceleration duct;
a milk container;

a milk injection duct for drawing milk from said container, said milk injection duct being connected to said acceleration unit;
an air injection port provided at said milk injection duct in a region thereof which is spaced apart from said acceleration duct.

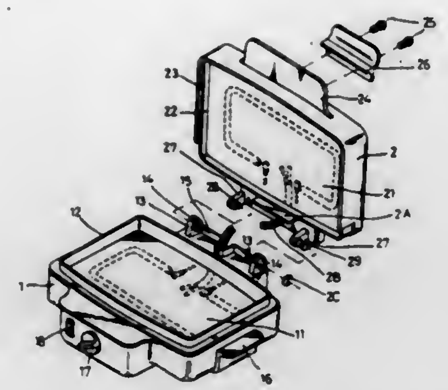
5,615,603
BAKING OVEN, PARTICULARLY FOR BREAD OR CONFECTIONERY
Antonio Polin, Verona, Italy, assignor to Ing. Polin & C. S.p.A., Verona, Italy
Filed Jun. 26, 1995, Ser. No. 494,717
Claims priority, application Italy, Jul. 29, 1994, VR94A0071
Int. Cl.[6] A23L *3/00;* A21B *1/00;1/08;* A47J *37/00*
U.S. Cl. 99—331 **11 Claims**



1. A baking oven, particularly for bread or confectionery, consisting of a closed compartment, said closed compartment delimited by insulated perimeter walls and fitted with at least one access door, said closed compartment having a plurality of cooking surfaces which create sub-compartments, each of said sub-compartments delimited below by a cooking surface of said cooking surfaces, and above by a forced convection air flow present above said cooking surface; a fan unit connected to an intake duct and a delivery duct both of which are connected to said compartment, wherein said cooking surfaces are fitted with first heating means and the air flow present above the cooking surfaces is heated by second heating means separated from the first heating means; first temperature measuring and adjustment means for the cooking surfaces being connected to the said cooking surfaces, and second means for measuring and adjusting the temperature of the said air flow.

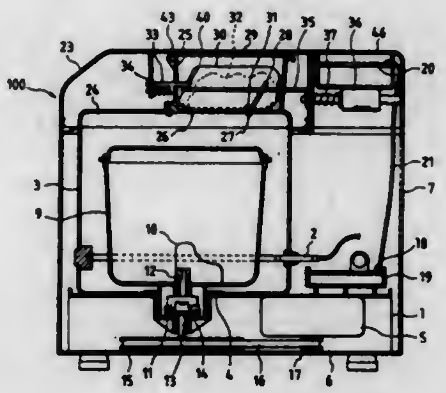
5,615,604
PERSONAL COOKING APPLIANCE
Yueh-Kung Chenglin, P.O. Box 82-144, Taipei, Taiwan
Filed Mar. 11, 1996, Ser. No. 613,525
Int. Cl.[6] A47J *37/00;37/06;* H05B *1/00;3/06*
U.S. Cl. 99—332 **1 Claim**

1. A personal cooking appliance comprising:
a container having a first recess, a first edge surrounding said recess, a timer mounted on a front side of said container, a switch installed on a front side of said container, a pair of lugs each having an elliptical opening, and two grips mounted on respective lateral sides of said container;
a first heater arranged within said container and electrically connected with said timer and said switch;
a rectangular lid having a second recess, said second recess being less than said first recess in depth, a second edge surrounding said first recess, a third edge surrounding a front and two lateral sides thereof, a pair of ears each having a pin adapted to fit into said elliptical opening, a protective plate provided on a front side of said lid, and a handle fixedly mounted on said protective plate; and



a second heater arranged within said container and electrically connected with said timer and said switch.

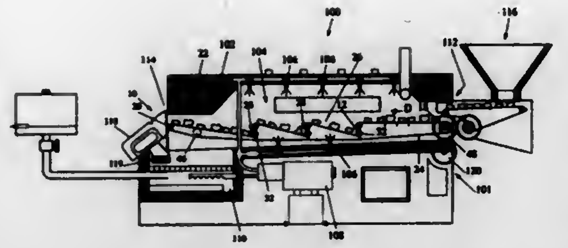
5,615,605
AUTOMATIC BREAD PRODUCING MACHINE
Yasuhiro Kakimoto, Nara, and Noriyuki Yamamoto, Sanda, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Jul. 26, 1996, Ser. No. 686,693
Claims priority, application Japan, Oct. 27, 1995, 7-280342
Int. Cl.[6] A47J *27/00*
U.S. Cl. 99—348 **13 Claims**



1. An automatic bread producing apparatus comprising:
a member defining a baking chamber having an opening;
a movable lid selectively blocking and unblocking the opening of the baking chamber;
a bread mold disposed in the baking chamber;
first means for generating a command signal;
second means disposed in the lid for feeding added food into the bread mold; and
third means for automatically activating the second means in response to the command signal generated by the first means.

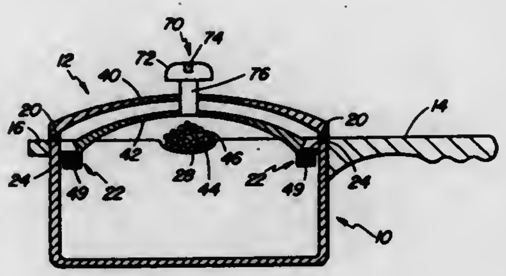
5,615,606
CONVEYOR
Peter M. Vos, Malaga, Australia, assignor to Vos Industries Pty. Ltd., Australia
Division of Ser. No. 244,990, Sep. 19, 1994, abandoned. This application Jun. 21, 1996, Ser. No. 667,361
Claims priority, application Australia, Dec. 20, 1991, PL 0132
Int. Cl.[6] A21B *5/08;* A23L *1/01;* A47J *27/14;37/12*
U.S. Cl. 99—352 **7 Claims**

1. A spray cooking apparatus comprising:
a housing;



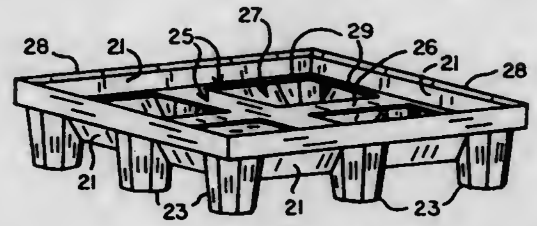
a cooking chamber located within said housing and having longitudinally spaced inlet and outlet ends;
a conveyor means to convey food to be cooked through said cooking chamber, said conveyor means having a substantially linear path of movement and longitudinally disposed between said inlet and outlet ends;
loading means to load food into said cooking chamber without entrainment of said food in a liquid;
spray means for delivering liquid cooking medium longitudinally disposed along the length of said cooking chamber, and for spraying said food with a cooking liquid as said food passes through said cooking chamber to cook said food; and
wherein said conveyor means comprises a conveyor belt means, having a portion of said conveyor belt means arranged to convey items, wherein said portion comprises at least one dip in said conveyor belt means such that in use, at said dip, food items fall from a first level of the conveyor belt means to a lower level of said conveyor belt means, said conveyor belt means returning substantially to said first level after each said at least one dip.

5,615,607
COOKWARE
Michel Delaquis, 134 Horton Avenue West, Winnipeg, Manitoba, Canada, and Fred Coakes, 543 Harbison Avenue West, Winnipeg, Manitoba, Canada
Filed Jul. 24, 1996, Ser. No. 685,633
Int. Cl.[6] A47J *27/00;27/21*
U.S. Cl. 99—409 **20 Claims**



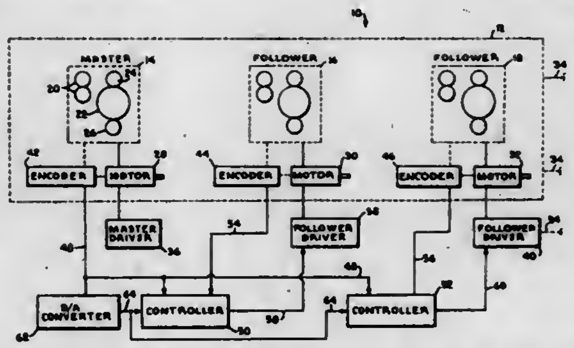
1. A cooking apparatus, comprising:
(a) a container for receiving items to be cooked, said container having a rim surrounding an open region;
(b) an outer cover adapted to cover said open region in the container, said outer cover having a region of perforations;
(c) a inner element rotatably connected to the outer cover for covering the region of perforations;
(d) means for securing the inner element to the container; and
(e) control means connected to the outer cover for rotating the inner element relative to the outer cover, said control means being operable between a first and second position; wherein in said first position the inner element is secured to the container by the means for securing and the region of perforations of the outer cover is exposed, whereby the items in the container can be strained; and in said second position the inner element is released from the means for securing and the region of perforations in the outer cover is covered by the inner element.

5,615,608
REINFORCED CONTAINMENT PALLET
Mark D. Shaw, 9820 Preston Trail, Ponte Vedra Beach, Fla. 32082; J. Tad Heyman, 11858 Olde Oaks Ct. N., Jacksonville, Fla. 32223; Laurence M. Bierce, 105 Sandra Rd., Jacksonville, Fla. 32211, and Jesse Ehredt, 1711 Duffton La., Painesville, Ohio 44077
Continuation of Ser. No. 391,144, Feb. 21, 1995, abandoned. This application Jun. 26, 1996, Ser. No. 669,833
Int. Cl.[6] B65D *19/44*
U.S. Cl. 108—55.3 **13 Claims**



1. A containment pallet comprising in combination four side walls and a bottom, deck means to support one or more drums, said deck means having an outer perimeter, peripheral deck support means extending inwardly from said side walls to support said outer perimeter of said deck means, a sump area defined by the interior area above said bottom, between said side walls and below the level of the peripheral deck support means, where said deck support means support said deck means above said sump area and do not extend into said sump area or from said bottom, and one or more cross members extending from said peripheral deck support means and connecting each of said side walls to another of said side walls, where said cross members are thin in cross-section and do not extend into said sump area.

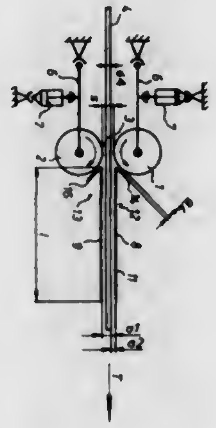
5,615,609
SYSTEM AND METHOD FOR CONTROLLING AC MOTOR DRIVEN MULTI-UNIT PRINTING PRESS
Alan M. Hill, Topeka; William R. Meeks, Lecompton, and Charles L. Van Ness, Lawrence, all of Kans., assignors to The Lawrence Paper Company, Lawrence, Kans.
Filed Aug. 21, 1995, Ser. No. 518,117
Int. Cl.[6] B41F *5/02*
U.S. Cl. 101—183 **12 Claims**



1. A system for controlling the registration of a multi-unit printing press for corrugated board material that permits the use of AC motors for driving the printing press, the multi-unit printing press having a master printing unit and at least one follower printing unit, the printing units each having a plurality of rotary members operably configured for conducting the printing operation, the system comprising:
a master AC motor for driving the master printing unit;
a master AC driving device electrically coupled to the master AC motor for controlling the speed of the master AC motor and permitting the master AC motor to be operated at any selected speed within a range of speeds;

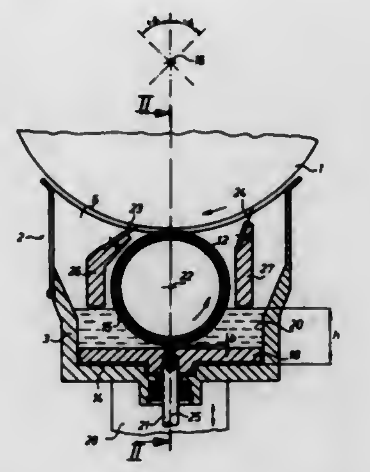
a master pulse generating device for producing output pulses relating to the rotary motion of the master printing unit;
a follower AC motor for driving the follower printing unit;
a follower AC driving device electrically coupled to the follower AC motor for controlling the speed of the follower AC motor relative to the master AC motor and permitting the follower AC motor to be operated at any selected speed within a range of speeds;
a follower pulse generating device for producing output pulses relating to the rotary motion of the follower printing unit; and
a controller configured to receive the output pulses from the master and follower pulse generating devices, process the master and follower output pulses to produce control commands based on said output pulses, and transmit the control commands to the follower AC driving device for adjusting the speed of the follower AC motor relative to the master AC motor as required to maintain synchronized operation between the master and follower AC motors so that precise registration of the multi-unit printing press is maintained over the entire range of speeds of the multi-unit printing press and when the multi-unit printing press is temporarily in a non-running state.

5,615,610
WEB CAPTURING DEVICE
Stefan Prohaska, Frankenthal, Germany, assignor to Koenig & Bauer-Albert Aktiengesellschaft, Wurzburg, Germany
Filed Mar. 4, 1996, Ser. No. 610,259
Claims priority, application Germany, Mar. 14, 1995, 195 09 167.1
Int. Cl.[6] B41F *3/44*
U.S. Cl. 101—253 **6 Claims**



1. A web capturing device usable in a printing press comprising:
first and second spaced web capture elements forming a capture gap for a web passing through said capture gap, said web having a web thickness;
means for moving said capture elements into cooperative engagement for the selective gripping of said web in said capture gap; and
a web stabilizing device having first and second stabilizer plates positioned adjacent said web capture elements said first and second stabilizer plates being disposed generally parallel to each other at a plate spacing distance which is greater than said web thickness.

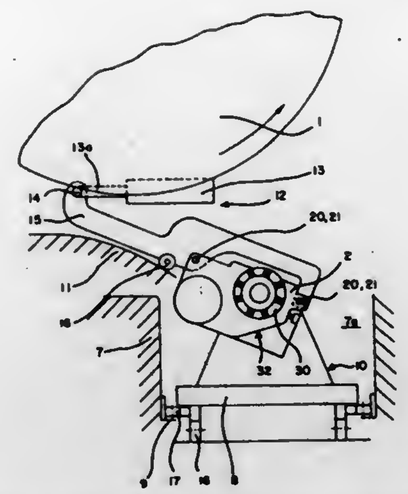
5,615,611
CHAMBER DOCTOR BLADE ASSEMBLY
Helmut Puschnerat, Wachenheim, Germany, assignor to Koenig & Bauer-Albert Aktiengesellschaft, Wurzburg, Germany
Filed Oct. 25, 1995, Ser. No. 548,188
Claims priority, application Germany, Oct. 26, 1994, 44 38 262.6
Int. Cl.[6] B41F *31/06;* **B41L** *27/08*
U.S. Cl. 101—363 **15 Claims**



1. A chamber doctor blade arrangement for a short inking unit of a rotary printing press comprising:
an ink trough having a bottom, side walls and end walls;
a rotatable cylinder supported in said ink trough and having an axis of rotation; and
a plurality of driven disks disposed in said ink trough generally adjacent said ink trough bottom and an a distance from said rotatable cylinder, said driven disks at least partially contacting ink in said ink trough.

5,615,612
APPARATUS FOR THE CLEANING OF CYLINDERS OF A PRINTING MACHINE
Reinhold Guba, Weiterstadt; Joachim Olek, Obertshausen, and Herbert Schoppe, Neusass, all of Germany, assignors to MAN Roland Druckmaschinen AG, Germany
Filed Feb. 23, 1996, Ser. No. 604,911
Claims priority, application Germany, Feb. 25, 1995, 195 06 640.5
Int. Cl.[6] B41F *35/00;* **B41L** *41/00*
U.S. Cl. 101—425 **12 Claims**

1. An apparatus for cleaning a cylinder in a printing unit of a printing machine, the printing unit including a frame defining a service orifice to provide access to the cylinder, the apparatus comprising:
a cleaning subassembly including at least one washing roller for washing the cylinder to be cleaned;
a conveying subassembly for transporting the cleaning subassembly into and out of the printing unit, the conveying subassembly being dimensioned to slide into the service orifice in the frame of the printing unit while supporting the cleaning subassembly; and,
an actuating subassembly mounted on the frame of the printing unit for removably receiving the cleaning subassembly and for selectively moving the cleaning subassembly between a first position wherein the cleaning subassembly is disposed on the conveying subassembly within the service orifice, a second position wherein the cleaning subassembly is separated from the conveying subassembly and displaced laterally from

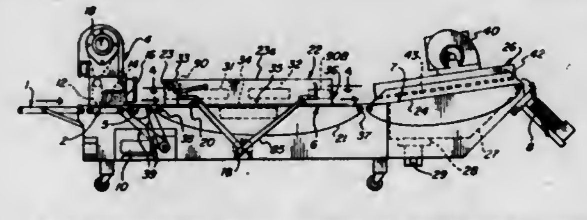


the service orifice, and a third position wherein the at least one washing roller of the cleaning subassembly engages the cylinder to be cleaned.

5,615,613
METHOD OF USING A HEMICELLULOSE PRINTING ASSISTANT FOR LITHOGRAPHIC PRINTING PLATES
Mitsuo Hattori, Tsukuba-gun; Hitoshi Furuta, Kitasohma-gun; Taro Takahashi, Kitasohma-gun, and Hirokazu Maeda, Kitasohma-gun, all of Japan, assignors to Fuji Oil Co., Ltd., Japan
Division of Ser. No. 256,311, Jun. 30, 1994, abandoned. This application May 8, 1995, Ser. No. 436,590
Claims priority, application Japan, Nov. 2, 1992, 4-317828; Nov. 2, 1992, 4-317829; May 17, 1993, 5-114318; WIPO, Oct. 22, 1993, PCT/JP93/01535
Int. Cl.[6] B41N *3/08*
U.S. Cl. 101—450.1 **11 Claims**

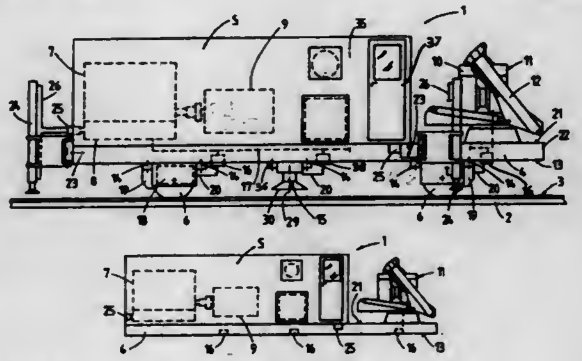
1. A method of using a printing assistant for a lithographic printing plate, which comprises using 0.1 to 35% by weight water-soluble hemicellulose derived from soybean as a water-soluble polymer, the water-soluble hemicellulose not later insolubilized, and applying the printing assistant to the lithographic printing plate to protect nonimage areas of the lithographic printing plate.

5,615,614
THERMOGRAPHY PROCESS AND APPARATUS
Christopher K. Van Pelt, Nokomis, Fla., assignor to Van Pelt Equipment Corporation, Nokomis, Fla.
Filed Apr. 3, 1995, Ser. No. 415,632
Int. Cl.[6] B41J *3/02*
U.S. Cl. 101—488 **25 Claims**



1. In a thermography process running on thermography equipment wherein sheets bearing image areas overlaid with thermoplastic powder particles are transported successively at a first rate of transport energy input through a heating chamber radiantly heated at a first rate of heater energy input to fuse together such particles on each sheet, and then through a station for cooling fused image portions on the sheets, in which process periods of non-use occur with the thermography equipment readied for processing such sheets but awaiting supply of them to be processed, the method which comprises during said non-use periods maintaining in the heating chamber a temperature sufficient for fusing said particles onto such sheets whenever passed through the heating chamber at said first transport energy input rate yet holding the energy input to said thermography equipment to a second heater energy input rate lower than the first heater energy input rate and holding the transport energy input rate to a second transport energy input rate lower than the first transport energy input rate.

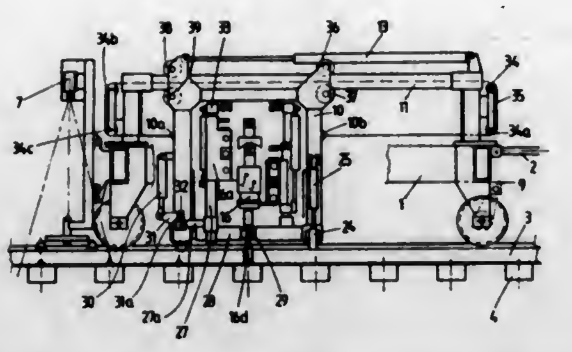
5,615,615
TRACK WORKING MACHINE
Josef Theurer, Vienna, and Friedrich Peitl, Linz, both of Austria, assignors to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria
Filed Sep. 12, 1995, Ser. No. 527,076
Claims priority, application Austria, Sep. 15, 1994, 1765/94
Int. Cl.[6] E01B *33/00*
U.S. Cl. 104—2 **10 Claims**



1. A track working machine; comprising:
a machine frame configured to be selectively supported directly on a generally flat surface or supported by undercarriages for movement along a track in operating direction, said machine frame having opposing axial ends in a longitudinal direction and exhibiting an underside forming a leveled surface between the axial ends when removing said undercarriages for allowing stable placement of said machine frame on said flat surface;
a body structure placed upon said machine frame and incorporating a motor;
a first set of fastener assemblies provided at said underside for permitting a detachable securement of said undercarriages to said underside of said machine frame, and configurated to allow placement of the machine frame directly on said generally flat surface when the undercarriages are removed; and
a first set of coupling arrangements received in said underside for permitting a connection of a power supply line to power supply lines of a drive and a brake unit of an undercarriage.

5,615,616
PROCESS FOR SCREWING AND UNSCREWING THE TIE SCREWS OF A RAILROAD AND MACHINE FOR IMPLEMENTING THE PROCESS
Antoine Scheuchzer, Epalinges; Gérard Schelling, La Conversion; Christian Wenger, Bussigny-Pres-Lausanne, and Gérard Sauterel, Fribourg, all of Switzerland, assignors to Scheuchzer S.A., Lausanne, Switzerland
Filed Mar. 22, 1996, Ser. No. 620,653
Claims priority, application European Pat. Off., Mar. 24, 1995, 95810200
Int. Cl.[6] E01B *9/02*
U.S. Cl. 104—2 **11 Claims**

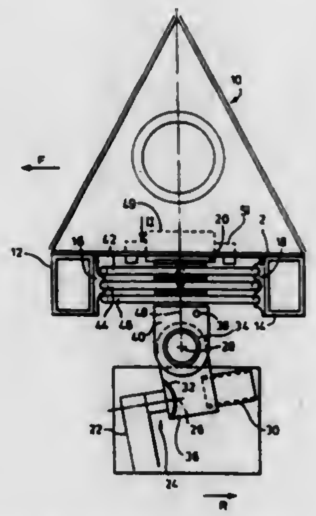
1. A process for automatically screwing and unscrewing, a tie screw of a railroad according to which a vehicle advances continu-



ously along a track and carries, a tie screw fastening head which can be moved with respect to said vehicle, as well as a tie screw detection device, wherein the relative position of the tie screw with respect to the tie screw fastening head is determined as follows:

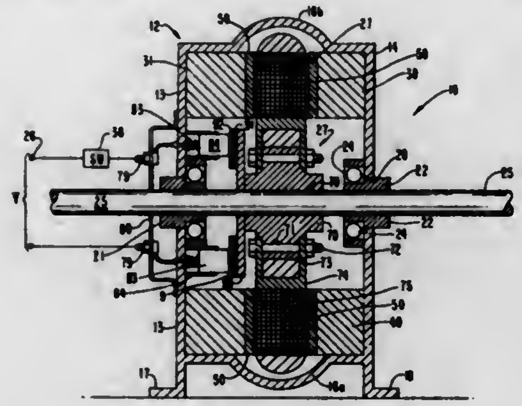
a. an orthogonal reference base XYZ is defined, X being parallel to a rail, Y parallel to a tie and Z perpendicular to the XY plane;
b. the position of the vehicle on the track is measured continually with respect to the orthoqonal reference base;
c. the relative position of the tie screw fastening head is measured continually with respect to the vehicle;
d. the position of the tie screw is detected, calculated with respect to the orthogonal reference base and stored in memory;
e. the deviation in position between the tie screw and the tie screw fastening head is calculated continually.

5,615,617
WHEEL HEAD AND RAIL ASSEMBLY
Roger S. Benest, Manor House Farm, Rue de Bas, St. Lawrence, Jersey, Channel Islands
PCT No. PCT/GB93/02316, § 371 Date Jul. 3, 1995, § 102(e) Date Jul. 3, 1995, PCT Pub. No. WO94/11228, PCT Pub. Date May 26, 1994
PCT Filed Nov. 10, 1993, Ser. No. 433,443
Claims priority, application Channel Islands, Nov. 10, 1992, 9223505.0; Nov. 17, 1992, 9224105.8
Int. Cl.⁶ B61B *3/02*
U.S. Cl. 104—94 **9 Claims**



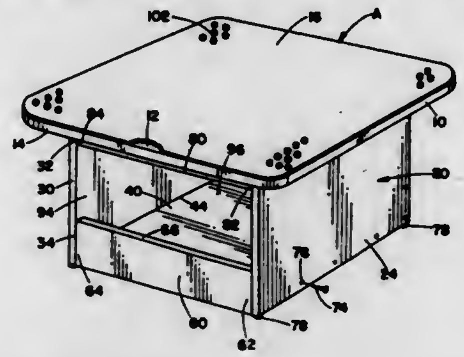
1. A wheel head (**20**) and rail (**16, 18**) assembly comprising:
a) an assembly (**20**) of at least three wheels (**42, 44, 46**) comprising two co-rotational outer wheels (**42, 46**) and a counter-rotational central wheel (**44**);
b) a pair of spaced rails (**16, 18**);
c) said assembly of wheels being mounted between said rails for contra-rotation of said wheels about respective axes (**48**) to co-operate with said rails;
d) said wheels of said assembly being axially offset with respect to each other lengthwise of their respective rotation axes so as to be capable of effecting said contra-rotation;
e) said wheels being also disposed in overlapping relationship as viewed in the lengthwise direction of their axes (**48**) and with the rotation axis of each wheel passing through each other wheel;
f) a drive for at least one of said wheels;
g) each of said wheels having a radially outwardly-facing driving periphery having a curved profile as viewed in radial cross-section for driving engagement with a complimentary surface on its respective one of said rails; and
h) each of said rails being adapted to co-operate with its respective wheel by being formed with a radially inwardly-facing formation having a curved profile as viewed in radial cross-section, complimentary to said curved profile of said wheel and with which said driving periphery of said wheel co-operates, whereby said wheel is located against radially outward movement by said driving co-operation of said driving periphery with said radially inwardly facing formation of said rail, and said wheel is located against movement in both axial directions by co-operation of said complimentary curved profiles of said wheel and said rail.

5,615,618
ORBITAL AND MODULAR MOTORS USING PERMANENT MAGNETS AND INTERLEAVED IRON OR STEEL MAGNETICALLY PERMEABLE MEMBERS
Elberto Berdut, Orquidea No. 98, Santa Maria, Guaynabo, Puerto Rico
Continuation-in-part of Ser. No. 184,440, Jan. 21, 1994, Pat. No. 5,452,663, which is a continuation-in-part of Ser. No. 45,863, Apr. 14, 1993, Pat. No. 5,431,109. This application Apr. 11, 1995, Ser. No. 419,946
Int. Cl.⁶ B60L *13/02*
U.S. Cl. 104—290 **13 Claims**



1. A rotating electrical device, comprising:
first and second coaxially arranged annular magnetic units, each magnetic unit comprising:
a plurality of permanent magnets comprising either ceramic magnets or ferrous magnets; and
a plurality of magnetically permeable members comprising malleable steel members, malleable iron members, or molded iron members, located between adjacent opposed surfaces of the plurality of permanent magnets, the plurality of magnetically permeable members being arranged to concentrate magnetic flux in a space between said first and second magnetic units;
a rotatable axle which is coaxial with said first and second annular magnetic units; and
an armature coil supported on said axle for rotation between opposed radially extending faces of said first and said second magnetic units, said armature coil being disposed in the space between said first and second magnetic units in which magnetic flux is concentrated by the plurality of magnetically permeable members so that sides of said armature coil are exposed to the magnetic flux from the plurality of magnetically permeable members of said first and second magnetic units.

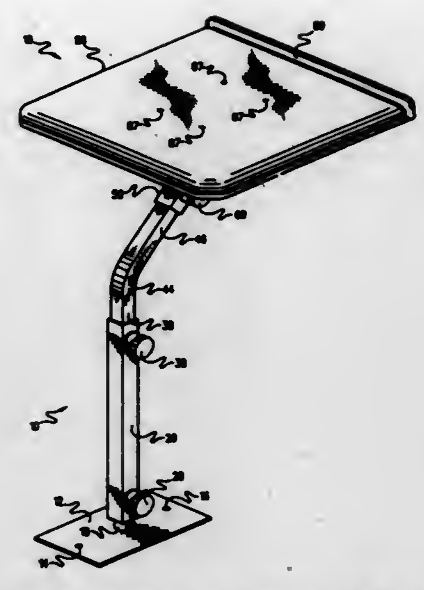
5,615,619
BLOCK PLAY TABLE
Christine L. King, 25455 Letchworth Rd., Beachwood, Ohio 44122
Filed Jan. 25, 1995, Ser. No. 377,700
Int. Cl.⁶ A47B *7/00*
U.S. Cl. 108—25 **21 Claims**



1. A play table comprising:
a top having first and second side edges;
a first planar leg secured at its upper end to said top adjacent said first side edge thereof and extending along substantially the entirety of said first side edge for supporting said top;
a second planar leg secured at its upper end to said top adjacent said second side edge thereof and extending along substantially the entirety of said second side edge for supporting said top wherein an upper edge of each of said first and second legs is located beneath said top;
a bottom wall positioned between said first and second legs and secured thereto;
a front wall positioned between said first and second legs and secured thereto, a lower edge of said front wall being located adjacent and secured to said bottom wall, wherein said front wall cooperates with said first and second legs and said bottom wall to define a bin housed under said top and wherein said front wall is of less height than said first and second legs to define a front opening for said bin; and,
a rear wall secured to said first and second legs, a lower edge of said front wall being located adjacent said bottom wall, wherein said rear wall is spaced from said front wall.

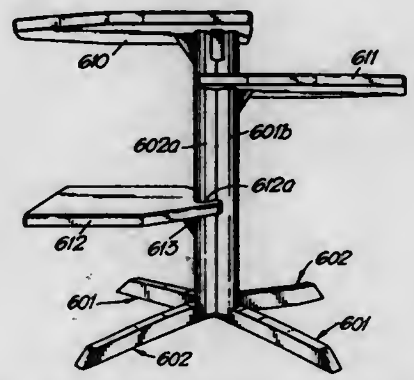
5,615,620
DESK ESPECIALLY ADAPTED FOR USE IN A VEHICLE
Noel S. Owen, Rogers, Ark., assignor to Assembled Products Corporation, Rogers, Ark.
Filed Jan. 5, 1995, Ser. No. 368,865
Int. Cl.⁶ A47B *23/04;37/00*
U.S. Cl. 108—45 **10 Claims**

1. A support device, comprising:
a base;
a support column; means mounting said support column for rotational and vertical adjustment relative to said base;
a mounting standard including a straight lower leg connected to an obliquely inclined upper leg;
means mounting said lower leg of said mounting standard for adjustment relative to said support column;
a support platform; and



means adjustably securing said support platform to said obliquely inclined upper leg of said mounting standard for linear adjustment along said obliquely inclined upper leg and for pivotal adjustment about an axis substantially transverse to said obliquely inclined upper leg.

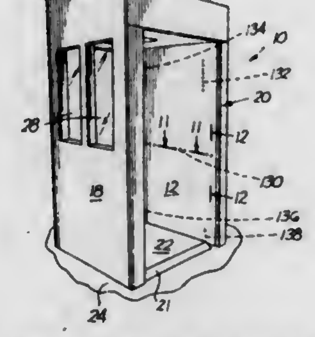
5,615,621
ARRANGEMENT IN A STRUCTURAL ELEMENT FOR EXAMPLE FOR USE IN A FURNITURE, MORE SPECIALLY A SITTING FURNITURE OR RELIEF FURNITURE
Hans C. Mengshoel, Prinsesseallèen 7, N-0275 Oslo, Norway, and Oddvin Rykken, Postboks 8778 Youngstorget, N-0028 Oslo, Norway
PCT No. PCT/NO93/00054, § 371 Date Sep. 16, 1994, § 102(e) Date Sep. 16, 1994, PCT Pub. No. WO93/19640, PCT Pub. Date Oct. 14, 1993
PCT Filed Apr. 2, 1993, Ser. No. 302,902
Claims priority, application Norway, Apr. 2, 1992, 92.1285
Int. Cl.⁶ A47B *3/06*
U.S. Cl. 108—193 **19 Claims**



1. A structural furniture arrangement, comprising:
a first support member having a pair of legs extending in opposite directions and including an upwardly facing recess;
a second support member having a pair of legs extending in opposite directions and including a downwardly facing recess;
wherein the first and second support members are engageable with each other such that a portion of the first support member is received in the second support member recess and a portion of the second support member is received in the first support member recess;

an upper use surface support structure located above the legs of each of the first and second support members for supporting a first use surface at a first elevation above the legs when the first and second support members are engaged with each other; and
a lower use surface support structure located above the legs of each of the first and second support members and below the upper use surface support structure for supporting a second use surface at a second elevation between the first use surface and the legs of the first and second support members when the first and second support members are engaged with each other;
wherein the first and second support members each define a pair of spaced vertical members; wherein the legs extend one from each of the vertical members, and wherein the vertical members are connected together via plug structure disposed between and interconnected with the vertical members.

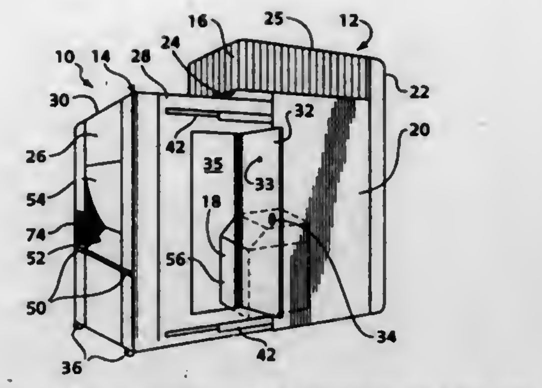
5,615,622
SECURITY MODULE
Leonard C. Moses, Tunnel Hill, Ga.; John H. W. Kendall, Chattanooga, and Bradley G. Hyde, Collegedale, both of Tenn., assignors to American Engineering Corporation, Collegedale, Tenn.
Division of Ser. No. 981,823, Nov. 25, 1992, Pat. No. 5,400,722. This application Dec. 27, 1994, Ser. No. 363,898
Int. Cl.^{6} E04H *9/00*
U.S. Cl. 109—2 **5 Claims**



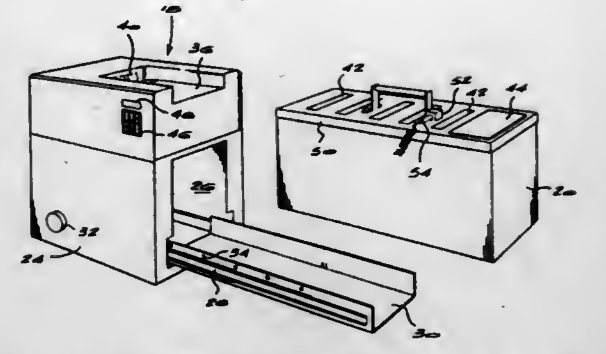
1. A security module through which personnel must pass when traveling between zones at opposite ends of said module, comprising a housing having a plurality of spaced apart interior facing side walls extending intermediate an entry end adjacent one of said zones and a exit end adjacent the other of said zones, personnel sensing means mounted within said walls for generating signals in response to the presence and absence of personnel within said module, said sensing means comprising infrared signal transmitters in one of said walls for directing infrared energy toward the other of said walls, and cooperating infrared signal receivers in the other of said walls for receiving said energy unless precluded by the presence of a person in the module, means defining grooves within said walls for receiving said sensing means and said walls comprising a composite structure having interior facing wall surfaces including opaque sheet material over said wall surfaces and covering said grooves for concealing said transmitters and receivers respectively but permitting said energy to pass therethrough.

5,615,623
FRONT ACCESS AUTOMATIC TELLER MACHINE SECURITY ENCLOSURE
Anthony Capraro, Jr., 178 Pierce St., Staten Island, N.Y. 10304
Filed Dec. 19, 1995, Ser. No. 574,637
Int. Cl.^{6} E06B *9/00*
U.S. Cl. 109—2 **18 Claims**

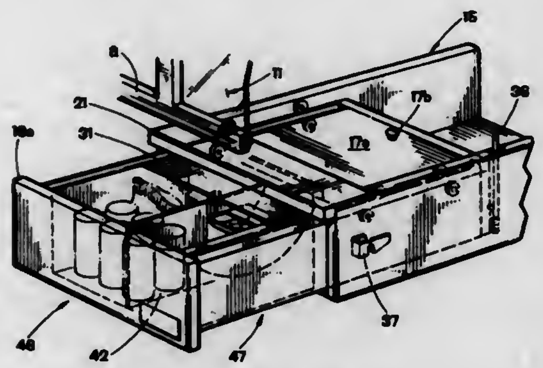
1. A front access automatic teller machine security enclosure, comprising:



a) a hollow parallelepiped-shaped rear portion having a top with an aperture, a pair of side walls, a back wall, a bottom, and a substantially open front wall;
b) a hollow parallelepiped-shaped front portion being smaller than said hollow parallelepiped-shaped rear portion and being in telescopic communication with said hollow parallelepiped-shaped rear portion through said substantially open front wall of said hollow parallelepiped-shaped rear portion, said hollow parallelepiped-shaped front portion having a top with an aperture, a pair of side walls one of which having an aperture, an open back wall, a bottom, and a front wall with an aperture, said hollow parallelepiped-shaped front portion having an extended position where said hollow parallelepiped-shaped front portion is fully extended from said hollow parallelepiped-shaped rear portion and a front access automatic teller machine, that is disposed in said hollow parallelepiped-shaped rear portion, does not enter said aperture of said front wall of said hollow parallelepiped-shaped front portion and a retracted position where said hollow parallelepiped-shaped front portion is fully retracted into said hollow parallelepiped-shaped rear portion and the front access automatic teller machine, that is disposed in said hollow parallelepiped-shaped rear portion, enters said aperture of said front wall of said hollow parallelepiped-shaped front portion;
c) a service door hingedly mounted flush to said one of said pair of side walls having said aperture of said hollow parallelepiped-shaped front portion, said service door of said one of said pair of side walls opening and closing said aperture of said one of said pair of side walls of said hollow parallelepiped-shaped front portion, so that when said hollow parallelepiped-shaped front portion is in said extended position said service door of said one of said pair of side walls of said hollow parallelepiped-shaped front portion can be opened and the front access automatic teller machine, that is disposed in said hollow parallelepiped-shaped rear portion, can be serviced and when said hollow parallelepiped-shaped front portion is in said retracted position said service door of said one of said pair of side walls of said hollow parallelepiped-shaped front portion can not be opened; and
d) a security shield movably mounted to said front wall of said hollow parallelepiped-shaped front portion and opening and closing said aperture of said front wall of said hollow parallelepiped-shaped front portion, so that when said hollow parallelepiped-shaped front portion is in said retracted position said security shield of said front wall of said hollow parallelepiped-shaped front portion is clear of said aperture of said front wall of said hollow parallelepiped-shaped front portion and the front access automatic teller machine, that is disposed in said hollow parallelepiped-shaped rear portion, enters said aperture of said front wall of said hollow parallelepiped-shaped front portion and is accessible by a customer and when said hollow parallelepiped-shaped front portion is in said extended position said security shield of said front wall of said hollow parallelepiped-shaped front portion can cover said aperture of said front wall of said hollow parallelepiped-shaped front portion and the front access automatic teller machine, that is disposed in said hollow parallelepiped-shaped rear portion, does not enter said aperture of said front wall of said hollow parallelepiped-shaped front portion and is not accessible by a customer, further comprising a wire mesh grille that is disposed in said aperture of said top of said hollow parallelepiped-shaped front portion immediately beneath said aperture of said top of said hollow parallelepiped-shaped rear portion, a pipe that extends completely through said aperture of said top of said hollow parallelepiped-shaped rear portion, and an exhaust fan that is disposed in said pipe, so that heat generated by the front access automatic teller machine can escape from said front access automatic teller machine security enclosure.



5,615,624
PASS THROUGH TRANSACTION DRAWER WITH A HINGED SECURITY FLAP
Dan L. Terry, Houston, and Jackson G. Weaver, Cypress, both of Tex., assignors to MCE Systems Corp., Houston, Tex.
Filed Jun. 10, 1993, Ser. No. 76,244
Int. Cl.^{6} E06B *7/32*
U.S. Cl. 109—19 **5 Claims**

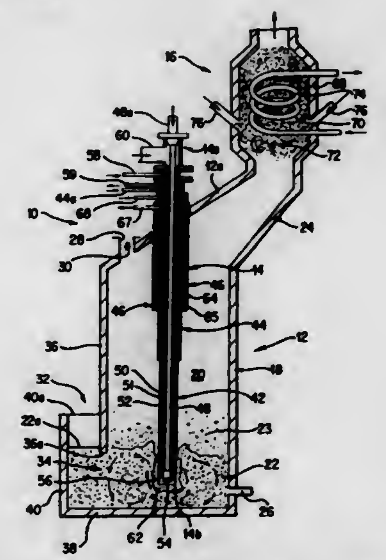


1. A transaction drawer assembly comprising:
a transaction drawer within the transaction drawer assembly;
a frame adapted to be installed in an opening in the wall of a structure, said frame further adapted to permit the transaction drawer to move from a first retracted position in which said transaction drawer is within the structure such that the opening is closed, and a second forward extended position in which said drawer projects out beyond the wall of the structure;
said transaction drawer movably attached to the frame and being selectively forwardly extendable by an attendant within said structure between said first retracted position, and said second extended position;
a rearwardly hinged, forwardly extendable security flap wherein said forwardly extendable security flap partially covers the transaction drawer when the drawer is in the second forwardly extended position; and
the security flap has a small contents tray.

5,615,625
SYSTEM FOR THE SECURE TRANSPORTATION OF ARTICLES
Gerald A. Cassidy; Khathutshelo S. Netshisaulu, and Aharon Lubashevsky, all of Transvaal, South Africa, assignors to First National Bank of Southern Africa Limited, South Africa
Filed Jul. 19, 1994, Ser. No. 276,913
Int. Cl.^{6} E05G *1/00*
U.S. Cl. 109—45 **14 Claims**

1. A system for the secure transportation of articles, comprising first and second docking stations at respective different locations, and a container for articles, each docking station comprising a housing defining a port for receiving the container; locating means for locating the container in a predetermined position in the port; feed means for receiving articles and feeding them into an opening in the container; control means for controlling and monitoring the operation of the docking station and for generating a record of articles fed into the container; and a communication apparatus for transmitting data between the first and second docking stations independent of the container, the data comprising an access code entered at the first docking station at the time of loading the container, the access code being required by the control means of the second docking station for unloading of the container at the second docking station, the container comprising a housing having at least one opening for receiving articles from the feed means of the docking station; closure means for closing the at least one opening lockably; first operating means for selectively locking and unlocking the closure means while the container is received by the port of the docking station; and monitoring means for monitoring the integrity of the container in use and for generating an alarm signal if the container is opened in an unauthorized manner.

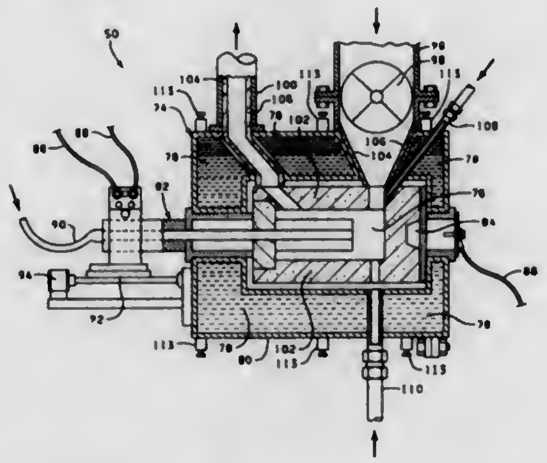
5,615,626
PROCESSING OF MUNICIPAL AND OTHER WASTES
John M. Floyd, Upper Beaconsfield, and Brian W. Lightfoot, Emerald, both of Australia, assignors to Ausmelt Limited, Victoria, Australia
Filed Oct. 5, 1994, Ser. No. 318,097
Int. Cl.^{6} F23G *5/00;* **A62D** *3/00*
U.S. Cl. 110—346 **25 Claims**



1. A process for disposal of waste materials, comprising charging waste to a reactor of a top-submerged lancing injector reactor system, said reactor containing a molten bath consisting essentially of slag; and maintaining the molten bath in a turbulent condition during charging of the waste by top-submerged injection therein of a free-oxygen containing gas, using at least one top-submerged lance of the system, such that the waste is taken into the molten bath and is caused to circulate therein to a combustion/oxidation

zone generated in the molten bath by the top-submerged injection, wherein constituents of the waste are subjected to the free-oxygen of the injected gas and to heat energy of the slag and are thereby destroyed substantially by at least one of combustion and oxidation.

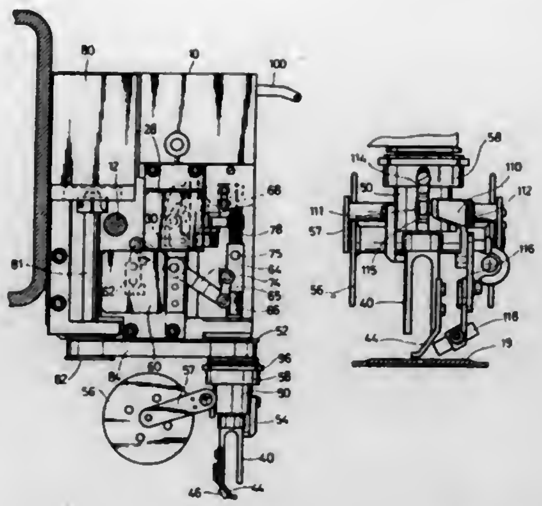
5,615,627
METHOD AND APPARATUS FOR DESTRUCTION OF WASTE BY THERMAL SCISSION AND CHEMICAL RECOMBINATION
Andrew W. Marr, Jr., Ardmore, Okla., assignor to BioCon, Incorporated, Oklahoma City, Okla.
Filed Feb. 23, 1995, Ser. No. 392,572
Int. Cl.⁶ F23G *5/00;5/10*
U.S. Cl. 110—346 **20 Claims**



15. A method for disposing of hazardous waste material, the steps of the method comprising:
providing a vessel having a chamber with an inner graphite liner and a plasma arc within the chamber;
impregnating the graphite liner with a substance for neutralizing the waste material; and
introducing waste material into the chamber of the vessel such that the plasma arc atomically decomposes the waste material into gases and ash;
wherein carbon from the graphite liner combines with the gases and ash to form non-hazardous materials.

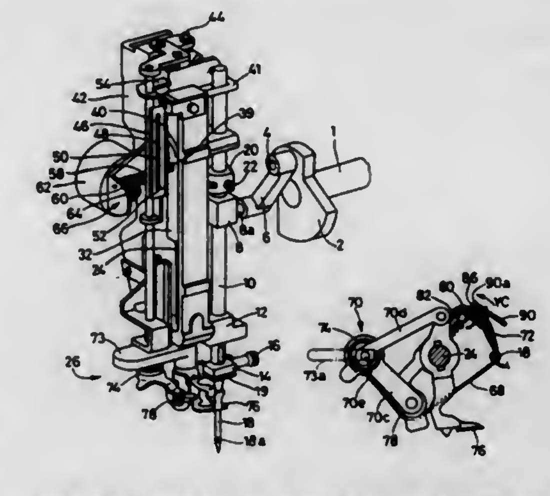
5,615,628
SEWING MACHINE WITH SEPARATE DRIVE SOURCES FOR COMPONENTS THEREOF
Ikuo Tajima, and Kenji Suzuki, both of Kasugai, Japan, assignors to Tokai Kogyo Mishin Kabushiki Kaisha, Japan
Filed Apr. 29, 1996, Ser. No. 639,826
Claims priority, application Japan, May 12, 1995, 7-114743
Int. Cl.⁶ D05B *35/06;69/12;* **D05C** *7/08*
U.S. Cl. 112—220 **12 Claims**

1. A sewing machine comprising a sewing head, said sewing head including:
a needle bar drive mechanism for vertically reciprocally moving a needle bar;
a presser foot drive mechanism operable to vertically move a presser foot in synchronism with the vertical movement of said needle bar;
a direction control mechanism operable to pivot said presser foot about said needle bar for controlling a direction of said presser foot to a predetermined direction; and
a guide member drive mechanism operable to reciprocally pivot a guide member adapted to guide a cord-like material to be sewn on a work; and



said presser foot drive mechanism, said direction control mechanism and said guide member drive mechanism having a first drive source, a second drive source and a third drive source, respectively, provided independently of each other.

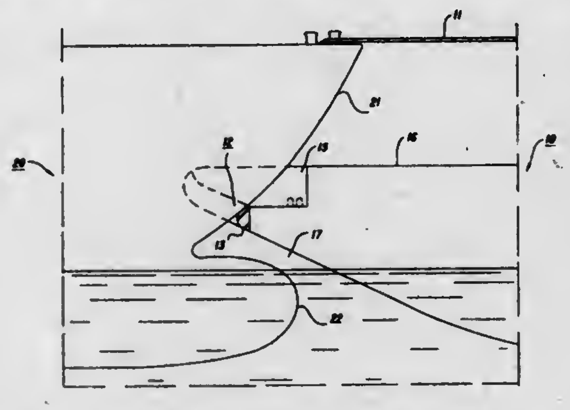
5,615,629
THREADING APPARATUS OF SEWING MACHINE
Takahiro Yamada, Toyoake; Masao Ogawa, and Eiji Shibata, both of Nagoya, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan
Filed Dec. 15, 1995, Ser. No. 573,005
Claims priority, application Japan, Dec. 26, 1994, 6-322865
Int. Cl.⁶ D05B *87/02*
U.S. Cl. 112—225 **14 Claims**



1. A threading apparatus for putting a sewing thread through an eye hole of a sewing needle of a sewing machine, comprising:
a threading hook including a hook portion which is movable through the eye hole of the sewing needle to catch the sewing thread positioned adjacent to the needle eye;
a holding member which is biased against the sewing thread caught by the hook portion of said threading hook;
a supporting member which supports said threading hook and said holding member such that the threading hook and the holding member are movable between a distant position thereof distant from the needle eye and a near position thereof near to the needle eye and are movable at said near position so that said hook portion of the threading hook advances and retracts through the needle eye to catch the sewing thread, draw the caught thread through the needle eye, and obtain a loop of the thread; and

a thread releasing member which releases the sewing thread from said threading hook by moving said holding member away from said hook portion of the threading hook when the threading hook and the holding member are moved from said near position to said distant position after the hook portion of the threading hook obtains said loop of the thread, at least one of said supporting member and said releasing member being movable relative to the other of the supporting member and the releasing member so that the holding member supported by the supporting member, and the releasing member are engaged with each other and the holding member is moved away from the hook portion of the threading hook.

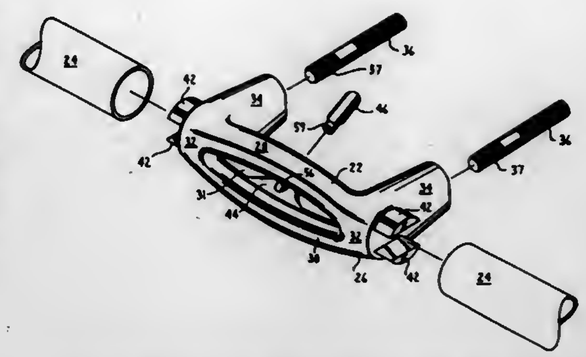
5,615,630
STERN ARRANGEMENT FOR A SHIP
Harri Eronen, Raisio, and Arjo Harjula, Espoo, both of Finland, assignors to Finnyards Oy, Rauma, Finland
PCT No. PCT/FI92/00341, § 371 Date Jul. 31, 1995, § 102(e) Date Jul. 31, 1995, PCT Pub. No. WO94/13528, PCT Pub. Date Jun. 23, 1994
PCT Filed Dec. 14, 1992, Ser. No. 454,229
Int. Cl.⁶ B63B *21/04*
U.S. Cl. 114—251 **12 Claims**



1. A convertible stern arrangement for a ship comprising:
a stern;
an inwardly curved towing notch formed in said stern for receiving a bow of a ship to be towed;
a removable section disposed in said towing notch; and
a stern roller for use in hoisting operations mounted on said removable section, whereby said stern is suitable for use in hoisting operations and can be converted for use in towing operations by removing said removable section.

5,615,631
SKI TOW ASSEMBLY
James H. Miller, Holland, and Steven R. Isenga, Zeeland, both of Mich., assignors to ITC Incorporated, Holland, Mich.
Filed Aug. 31, 1995, Ser. No. 522,192
Int. Cl.⁶ B63B *21/56*
U.S. Cl. 114—253 **19 Claims**

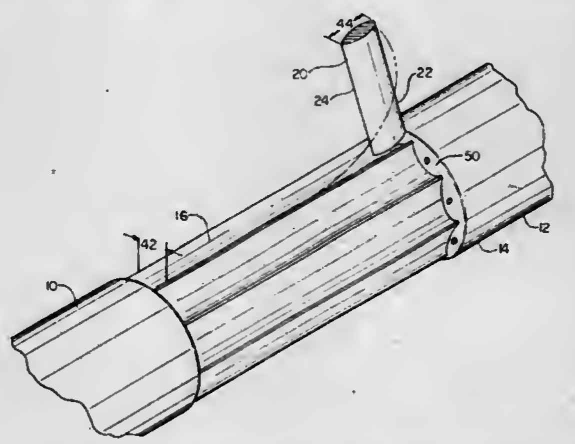
1. A ski tow assembly to facilitate the coupling of a tow line to transom of a boat, said assembly including:
at least one rail adapted to extend horizontally along transom of a boat; and
a ski tow fixture mechanically coupled to said rail, said ski tow fixture including: a horizontally oriented elongated body, said body being shaped so as to form a horizontally aligned elongated opening having a selected vertical width and having a pair of opposed ends; a finger attached to a lower section of said body, said finger adapted to be positioned so as to be directed upwardly and towards a transom of a boat and having a length so as to extend to a height at least equal to the



vertical width of said opening formed in said body; a fastening member attached to one said fixture body end for coupling said at least one rail thereto; and legs attached to said opposed ends of said body, each said leg adapted to extend from said body to a transom of a boat.

16. A ski tow fixture manufactured according to the steps of:
forming a wax casting of the tow fixture body, said wax casting being formed to define a body that has opposed ends and opposed upper and lower ribs that are integrally connected at said opposed ends of said body and that are spaced apart to define a body opening having a width, a tab that extends from said lower rib, a finger that extends from said tab toward said upper rib and that has a height at least equal to said body opening width and a coupling member at each said opposed end of said body, each said coupling member adapted to receive a rail;
forming a sand mold around said wax casting;
draining said wax from said sand mold to define a cavity in said mold; and
pouring molten metal into the mold cavity so as to form said tow fixture body, including said finger thereof as an integral unit.

5,615,632
UNDERWATER VEHICLE AND A FIN ASSEMBLY THEREFOR
William H. Nedderman, Jr., Middletown, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Feb. 7, 1996, Ser. No. 605,313
Int. Cl.⁶ B63G *8/00*
U.S. Cl. 114—330 **8 Claims**



1. Fin assembly for an underwater vehicle, said assembly comprising:
a portion of the hull of said vehicle being substantially cylindrical in configuration and having a recess therein;
a sleeve proximate a forward end of said recess and inclined from said hull portion at a first angle to said hull portion and

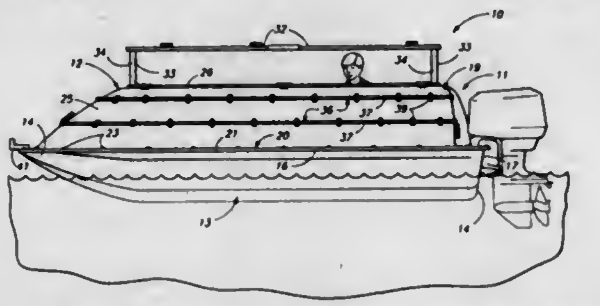
inclined transversely of the fore-and-aft axis of said vehicle at a second angle to said hull portion; and

a fin having a mounting post at a base end thereof, said post being at a third angle to a lengthwise axis of said fin, and at a fourth angle to a fore-and-aft axis of said fin;

said post being disposed in said sleeve and being turnable therein to move said fin from a first position in said hull recess wherein said fin is disposed with the fore-and-aft axis of said fin disposed generally normal to the fore-and-aft axis of said vehicle and is generally conformed to said

hull portion, to a second position in which said fin extends outwardly from said hull in a position radial to said vehicle axis and inclined rearwardly at a fifth angle from a line extending radially of said vehicle axis, with said fore-and-aft axis of said fin generally parallel to the fore-and-aft axis of said vehicle.

5,615,633
WATER CRAFT WITH REMOVABLE DUCK BLIND CABIN HOUSE ASSEMBLY
James A. Cripe, 102 E. 1st, Post Falls, Id. 83854
Filed Nov. 13, 1995, Ser. No. 556,279
Int. Cl.⁶ B63B *35/00*
U.S. Cl. 114—351 **21 Claims**



1. A water craft with a removable duck blind cabin house assembly, comprising:

a hull including bow and stern ends, and a gunwale extending between the bow and stern ends;

a rigid cabin house structure and deck at least partially covering the hull above the gunwale;

a duck blind camouflage receiver on the cabin house structure; and

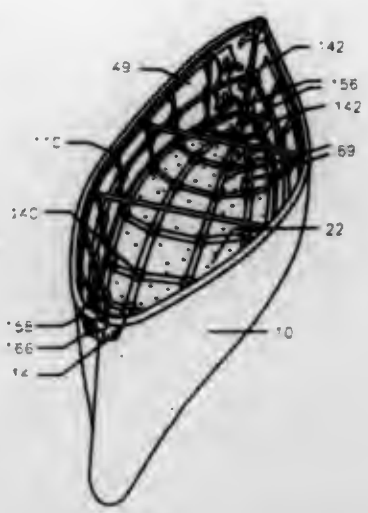
respective interfitting mounting members on the deck and the gunwale, said mounting members being releasably engageable to mount the cabin house structure to the hull such that the cabin house structure may be selectively removed from the hull.

5,615,634
COLLAPSIBLE BOAT WITH ENHANCED RIGIDITY
Raymond M. Gonda, 10 Cardinal Woods, South Burlington, Vt. 05403
Filed Jun. 6, 1995, Ser. No. 471,851
Int. Cl.⁶ B63B *7/06*
U.S. Cl. 114—354 **19 Claims**

1. A collapsible portable boat with enhanced longitudinal rigidity, comprising:

a skeleton frame and hull, including at least one end stem section and gunwales connected to each other by a gunwale connecting means, further characterized in that the hull is of flexible material and lengthwise support stringers disposed along the length of the boat along the bottom and sides of the boat and support formers arranged transverse to said lengthwise support stringers;

a floor section affixed to that portion of the hull section which defines the bottom of the boat and which is disposed as between the stringers and the flexible material of the hull,

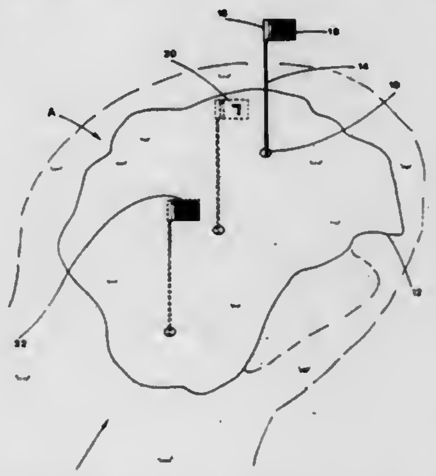


characterized in that the support stringers themselves comprise a plurality of short sectional support elements which are affixed to one another by a means for maintaining tension as between said short sections; and

means for developing tension as between said skeleton and the flexible hull positioned as between the flexible material of the hull and the skeleton, characterized in that the tension substantially prevents longitudinal hull flex,

wherein the end stem section contains a connector means for connecting the gunwale connection means to said end stem section, including means for securing the gunwale in said end stem section.

5,615,635
CUP PLACEMENT INDICATOR
Jerry P. Deviney, 1511 Casar Lawndale Rd., Casar, N.C. 28020
Filed Jul. 11, 1995, Ser. No. 522,981
Int. Cl.⁶ G09F *17/00*
U.S. Cl. 116—173 **16 Claims**



9. A system for indicating golf cup position on a putting green utilizing a golf flag stick having a top end and a plurality of individually identifiable golf flags, said system comprising:

a first golf flag having a first design for indicating a first golf cup location on a green, said first golf flag having a first vertical edge carrying a golf flag attachment member along its length;

a second golf flag having a second design for indicating a second golf cup location on a green, said second golf flag having a first vertical edge carrying a golf flag attachment member along its length;

a third golf flag having a third design for indicating a third golf cup location on a green, said third golf flag having a first vertical edge carrying a golf flag attachment member along its length;

a plastic tubular flag holder having a hollow interior for receiving said top end of said flag stick;

a flag holder mount for mounting and securing said tubular flag holder to said top end of said flag stick,

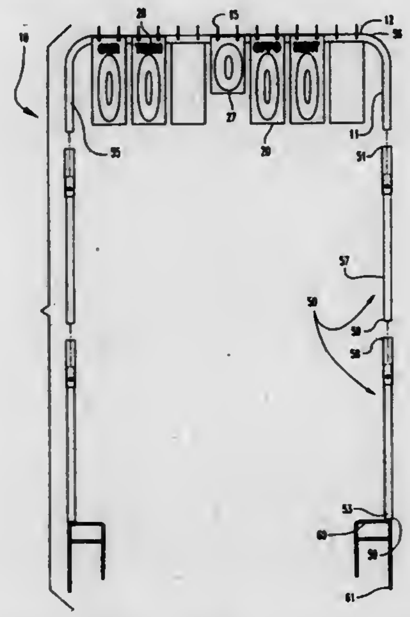
a flag holder extension comprising a solid plastic flange carried laterally of and extending vertically along one side of said tubular flag holder for generally its length, said flag holder extension forming a vertical flag mounting surface of generally the same length as said first vertical edge of said golf flags;

said tubular flag holder being retained axially stationary with respect to said flag stick when said tubular flag holder is secured to the top of said flag stick for displaying said flags at a predefined vertical height;

a flag holder attachment carried vertically along said flag mounting surface;

said flag holder attachment being releasably attachable with said golf flag attachment members of said golf flags for selectively attaching said golf flags to said flag holder extension as required for indicating the position of said golf cup on the green.

5,615,636
PORTABLE SCOREBOARD
Carl E. Gustafson, 2370 Crestview Ave., Alliance, Ohio 44601
Filed Aug. 31, 1994, Ser. No. 298,943
Int. Cl.⁶ A63B *71/06*
U.S. Cl. 116—223 **15 Claims**



1. A portable scoreboard for sporting events, comprising:

an inverted-U-shaped mounting frame having a horizontal member and a vertical portion extending downwardly from each of opposite ends of said horizontal member;

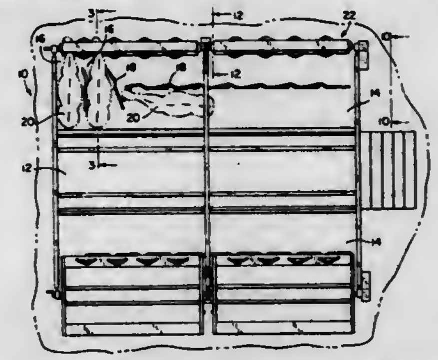
a pair of leg members, each of said leg members having a first end and a second end, the first end of each said leg member detachably attachable to one of said vertical portions of said mounting frame;

a plurality of cards having indicia and arranged in at least three stacks, said stacks aligned in spaced relation along the length of said mounting frame, each of said cards defining at least one fastening aperture there through, said aperture adjacent to a first end of each of said cards, each of said cards having a front face and a back face,

wherein said cards in a first stack have the numbers 0 (zero) through 9 (nine) sequentially on both faces, the numbers of the front face being one number lower in sequence than the number on the corresponding back face of each said card in said first stack, and said cards in a second stack have the numbers 0 (zero) through 9 (nine) sequentially on the front face only, and further said cards in a third stack have the numbers 0 (zero) through 9 (nine) sequentially on the back face only, said three stacks of cards being arranged to indicate a score so that the same score may be viewed from opposite sides of said three stacks; and

a ring member threaded through each of said fastening apertures in said cards, said ring members engaged to said mounting frame, whereby said cards hang from said rings so that said cards may be rotated around said mounting frame to permit alternate display of said indicia on said cards.

5,615,637
AUTOMATED MILKING PARLOR
William S. Nelson, Sun Prairie, Wis., assignor to DEC International, Inc., Madison, Wis.
Filed Mar. 27, 1995, Ser. No. 409,841
Int. Cl.⁶ A01K *1/12*
U.S. Cl. 119—14.03 **6 Claims**



1. An automated milking parlor of the type having an entry gate through which cows are introduced one each into a plurality of stalls in the milking parlor, an elongated rotating gate mounted on a framework for positioning cows in a milking stall and urging the cows to exit the stall after milking and milking units for conducting the milking operation, said automated milking parlor comprising:

means for detecting the completion of the milking operation, said means operably connected to the rotating gate to initiate the exiting process of the rotating gate upon detection of the completion of the milking operation,

means for detecting the rotation of the rotating gate,

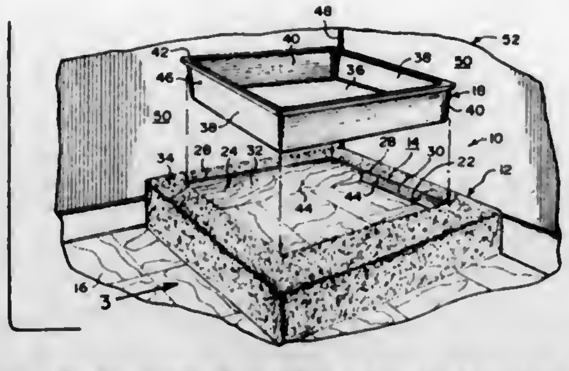
said means operably connected to the entry gate to open the entry gate upon detecting a predetermined amount of rotation of said rotating gate,

means for detecting the number of cows passing through the entry gate, said means operably connected to the entry gate to close said gate upon detecting a predetermined number of cows entering the milking parlor and

means for detecting the closing of the entry gate, said means operably connected to the rotating gate to initiate the positioning process of the rotating gate upon detection of the closing of the entry gate.

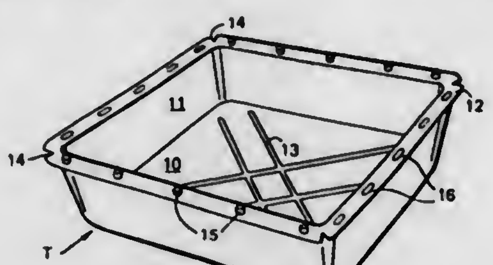
5,615,638
CAT LITTER COLLECTION DEVICE
Billy I. Thornton, R.R. 2, Box 106, Rushville, Ill. 62681
Filed Apr. 10, 1995, Ser. No. 419,197
Int. Cl.⁶ A01K *1/035*
U.S. Cl. 119—165 **1 Claim**

1. An improved cat litter collection device comprising:



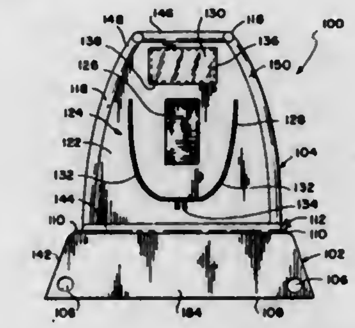
a) a base unit comprising a raised platform having an open top surrounded by said platform, said platform being supported along its periphery by vertical walls with said open top being off center on said platform so as to form two wide segments and two narrow segments of said platform about said litter pan for the cat to stand upon, said base unit being unenclosed to permit said cat to freely mount and leave said base unit;
b) a litter pan removable by lifting fitted into said open top of said base unit, so that a cat can stand upon said base unit and deposit urine and feces directly into said litter pan without having to step into said litter pan, thereby preventing the cat from tracking unwanted litter and feces residue to other areas that are remote from said base unit;
c) a removable carpet completely covering the wide and narrow segments and the outside surfaces of said vertical walls of said raised platform to remove pieces of litter that may be stuck on a paw of the cat, said pan having a peripheral lip sitting upon the edge of said open top; and
d) a plurality of fastener pads on the outside surfaces of said platform and vertical walls for holding said removable carpet in place.

5,615,639
FOLDABLE ASSEMBLY FOR CONTAINMENT AND DISPOSAL OF LITTER
John D. Knight, Sutton Coldfield, England, assignor to Arkimedes Limited, Cheshire, United Kingdom
PCT No. PCT/GB92/00788, § 371 Date Aug. 24, 1994, § 102(e) Date Aug. 24, 1994, PCT Pub. No. WO93/21757, PCT Pub. Date Nov. 11, 1993
PCT Filed Apr. 29, 1992, Ser. No. 295,651
Int. Cl.⁶ A01K *1/03*
U.S. Cl. 119—168 **6 Claims**



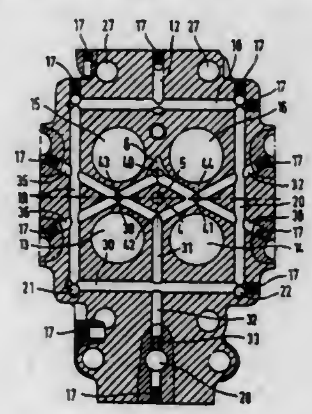
1. A tray to contain litter for use by an animal, the tray being formed of plastics and comprising:
a. a floor having at least one deformation constituting a fold line;
b. a plurality of upstanding sidewalls, each of said sidewalls being free of any fold lines and being connected to the floor to form an open compartment, each of said sidewalls having an upper edge; and
c. at least one complementary engaging means disposed on each of said sidewalls, said complementary engaging means being engageable with a complementary engaging means disposed on another sidewall when the tray is folded at said at least one deformation, each of said complementary engagement means being integral with a respective sidewall, said tray being unfolded in use and being foldable at said at least one deformation to a closed condition for disposal of the tray containing soiled litter, each of said sidewalls closely abutting another of said sidewalls with the complementary engaging means on each sidewall engaged with the complementary engaging means on the abutting sidewall when said tray is in said closed condition.

5,615,640
PET EMERGENCY DISASTER SHELTER AND METHOD
Kim M. Luiz, 1849 Mendocino St., Seaside, Calif. 93955
Filed Aug. 14, 1995, Ser. No. 514,584
Int. Cl.⁶ A01K *1/02*
U.S. Cl. 119—482 **20 Claims**



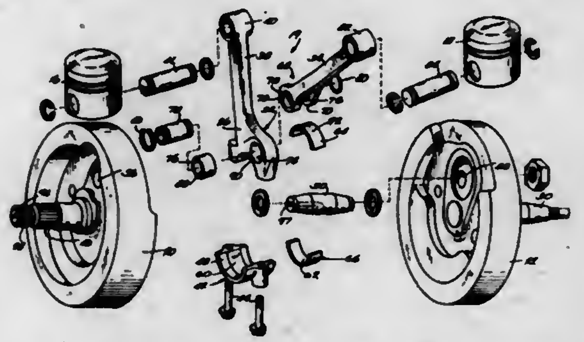
1. A shelter for use by a pet during a natural disaster comprising:
lower base means formed of a moisture-resistant, buoyant shell having a top surface supported by an air mattress positioned within said buoyant shell, said top surface and said air mattress for supporting the weight of said pet; and
upper dome means mounted upon said lower base means for housing said pet, said upper dome means including a weather-resistant material for providing protection to said pet against a plurality of weather conditions.

5,615,641
INTERNAL-COMBUSTION ENGINE CYLINDER HEAD
Dietrich Koch, Teunang; Werner Leicht, Stetten, and Norbert Wand, Friedrichshafen, all of Germany, assignors to MTU Motoren- Und Turbinen-Union Friedrichshafen GmbH, Friedrichshafen, Germany
Filed Jun. 7, 1995, Ser. No. 487,533
Claims priority, application Germany, Jun. 9, 1994, 44 20 130.3
Int. Cl.⁶ F02F *1/36*
U.S. Cl. 123—41.82 R **5 Claims**
1. An internal-combustion engine cylinder head with four valves



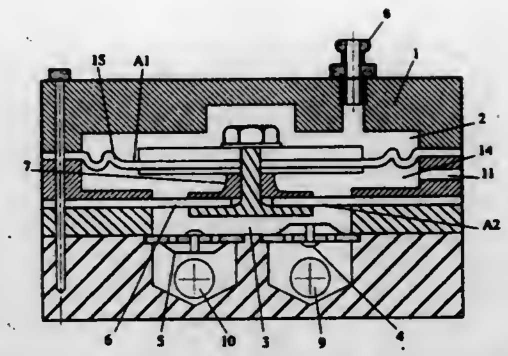
and an injection valve arranged in a center area thereof, comprising a bore arranged concentrically with respect to a central axis of the injection valve wherein the bore connects a compression chamber side of the cylinder head with side of the cylinder head, feeding bores in the cylinder head for flowing coolant to the cylinder head, coolant bores connecting the feeding bores to an interior coolant space of the cylinder head, a collecting pipe through with the coolant is conveyed from the interior coolant space of the cylinder head to another cylinder head, two inlet ports for air and two outlet ports for exhaust gases of the internal-combustion engine arranged in the cylinder head, and an overflow bore arranged between the outlet ports, wherein the inlet ports are cast to the bore, first and second sets of transverse bores are provided in the compression chamber side, the first set of the transverse bores intersect a first of the coolant bores at an obtuse angle, and the second set of transverse bores intersect a second of the coolant bores at an obtuse angle, with the first set of transverse bores intersecting at a first point and the second set of transverse bores intersecting at a second point, a respective first and a second set of transverse intersects at a third point, and additional transverse bores lead through the overflow bore into the interior coolant space.

5,615,642
MOTORCYCLE ENGINE
Jeffrey P. Coughlin, Germantown, Wis., assignor to Harley-Davidson Motor Company, Milwaukee, Wis.
Filed Feb. 5, 1996, Ser. No. 595,414
Int. Cl.⁶ F02B *75/32*
U.S. Cl. 123—54.4 **12 Claims**



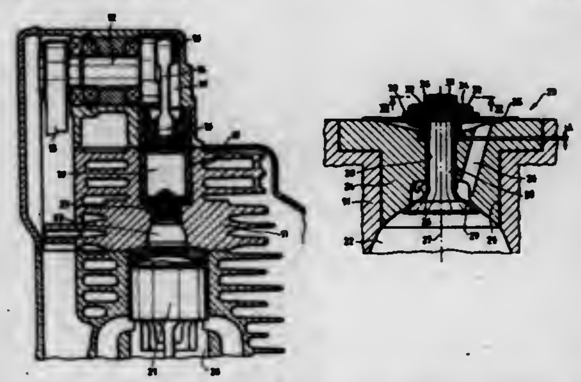
1. A motorcycle engine having at least a pair of cylinders, a piston disposed in each said cylinder, cranking means for translating reciprocal movement of said pistons into rotary motion, and a connecting rod assembly for coupling said cranking means to said pistons, said connecting rod assembly including a master connecting rod connected to one of said pistons, a slave connecting rod connected to the other of said pistons, and pivot means for pivotally connecting said slave connecting rod to said master connecting rod, said cranking means and said master connecting rod each including an oil passage adapted to provide oil to said pivot means.

5,615,643
FUEL PUMPS FOR INTERNAL COMBUSTION ENGINES
Raymond J. Hill, Beldon, Australia, assignor to Orbital Engine Company (Australia) Pty. Limited, Balcatta, Australia
Filed Jul. 1, 1996, Ser. No. 673,560
Claims priority, application Australia, Jun. 30, 1995, 3911
Int. Cl.⁶ F04B *43/06*
U.S. Cl. 123—65 B **19 Claims**
1. A pump for an internal combustion engine including a pumping chamber for pumping a liquid, at least part of the pumping chamber being formed by a pumping means having a pumping area, an actuation chamber in communication with a source of pressurised fluid, at least part of the actuation chamber being formed by an actuation means having an actuation area, the actuation area being different than the pumping area, a connection means connecting the actuation means and the pumping means, so that, at least during periods when liquid is required to be pumped



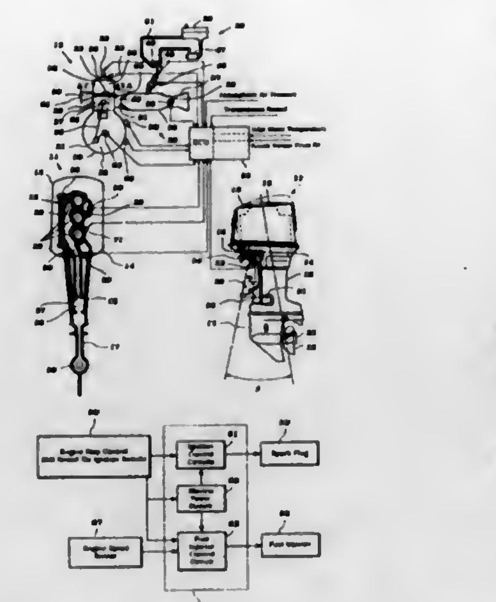
by the pump, variations of the pressure in the actuation chamber effect movement of the actuation means which in-turn effects movement of the pumping means to enable supply of liquid to the pumping chamber and delivery of liquid therefrom, wherein the pressurised fluid source is provided by the engine, and a relatively constant pressure differential is provided between the pumped liquid and the pressurised fluid.

5,615,644
VALVE ARRANGEMENT IN AN INTERNAL COMBUSTION ENGINE
Marco Nuti, Pisa, Italy, assignor to Piaggio Veicoli Europei S.p.A., Pisa, Italy
Filed Apr. 17, 1996, Ser. No. 633,381
Claims priority, application Italy, Jun. 20, 1995, MI95A1318
Int. Cl.⁶ F02B *75/02*
U.S. Cl. 123—65 VB **7 Claims**



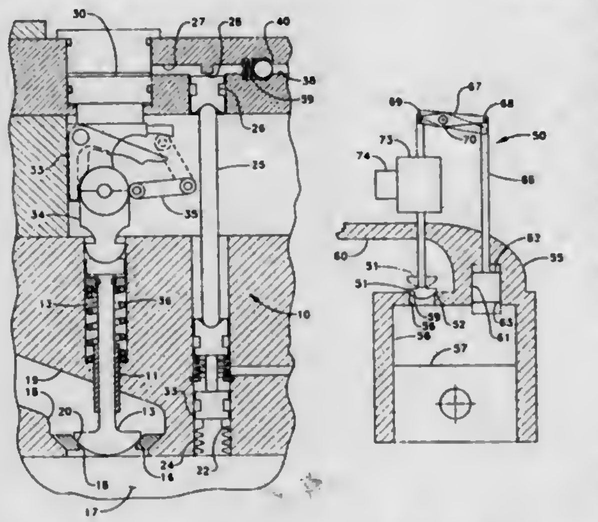
1. A valve arrangement in an internal combustion engine, into which engine the air-fuel mixture is directly injected by relative pumping elements from a pressure chamber towards at least one cylinder provided with a valve aperture with its relative valve located within a valve body provided with at least one communication channel, between the valve and the valve aperture there being positioned an elastic element which when at rest maintains said valve in its closed position, characterised in that said valve is inserted into said valve body by way of interposed elements, lockable in their selected position, for adjusting both the preload and its travel.

5,615,645
ENGINE CONTROL
Isao Kanno, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan
Filed Feb. 5, 1996, Ser. No. 597,022
Claims priority, application Japan, Feb. 7, 1995, 7-019423
Int. Cl.⁶ F02B *77/00*
U.S. Cl. 123—73 C **26 Claims**
1. An internal combustion engine and control therefor, said engine comprising a combustion chamber, an induction system for



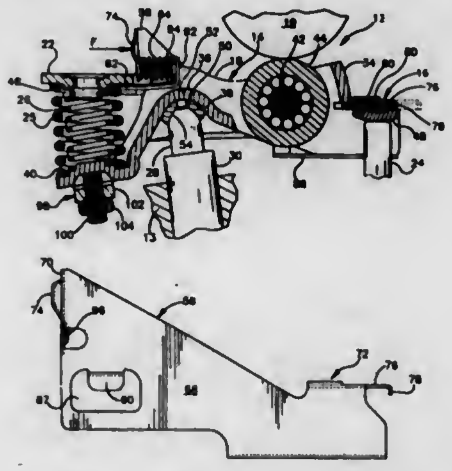
delivering a charge to said combustion chamber, a fuel injector for injecting fuel into said induction system, an engine starting device for starting said engine, an engine stopping device for stopping the running of said engine, and means for continuing the injection of fuel from said fuel injector into said induction system after the initiation of engine stopping by said engine stopping device and for a time period before the engine actually stops its operation.

5,615,646
METHOD AND APPARATUS FOR HOLDING A CYLINDER VALVE CLOSED DURING COMBUSTION
Dennis D. Feucht, Morton, Ill., assignor to Caterpillar Inc., Peoria, Ill.
Filed Apr. 22, 1996, Ser. No. 635,799
Int. Cl.⁶ F01L *9/02; 1/30*
U.S. Cl. 123—90.12 **8 Claims**



4. An outwardly opening valve system for an engine, comprising:
an engine having a hollow piston cylinder in fluid communication with a gas passageway via an opening, and having a piston bore that opens to said hollow piston cylinder;
said opening including an outward valve seat adjacent said gas passageway;
an outward valve member with a valve face, and said valve member being movable between a closed position in which said valve face is against said valve seat closing said opening and an open position in which said valve face is away from said valve seat;
an intensifier piston positioned in said piston bore with one end contacting gas within said hollow piston cylinder; and
a coupling linkage interconnecting said intensifier piston and said outward valve member.

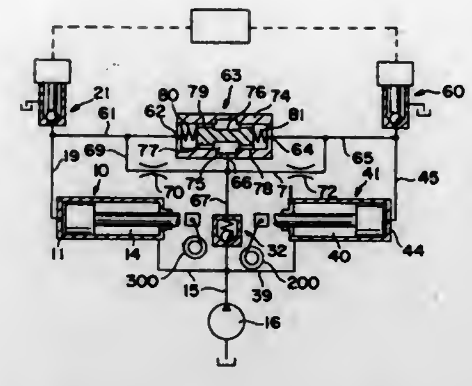
5,615,647
LATCH ASSEMBLY FOR A VALVE CONTROL SYSTEM
Douglas J. Nielsen, Marshall, Mich., assignor to Eaton Corporation, Cleveland, Ohio
Continuation-in-part of Ser. No. 412,474, Mar. 28, 1995. This application Jun. 17, 1996, Ser. No. 665,273
Int. Cl.⁶ F01L *1/18; 13/00*
U.S. Cl. 123—90.16 **6 Claims**



1. A valve control system for an internal combustion engine including a cylinder head, a poppet valve, and a valve actuating cam; said control system comprising a first rocker arm pivotally mounted on said cylinder head and engageable with said poppet valve; a second rocker arm pivotally mounted in relation to said first rocker arm and engageable with said cam; and means for selectively interconnecting said first and second rocker arms for rotation in unison in response to a force applied by said cam to said second rocker arm comprising a plate member movable relative to said first and second rocker arms between a first position wherein said plate member interferes with relative rotation between said first and second rocker arms and a second position permitting relative rotation between said first and second rocker arms; characterized by said means for selectively interconnecting said first and second rocker arms further comprising a housing slidingly received on one of said rocker arms, and means formed on said housing for retaining said plate member in sliding relation to said one rocker arm.

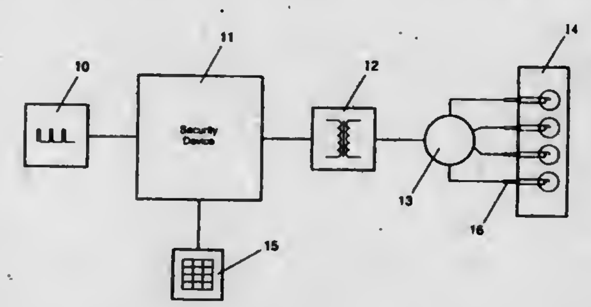
5,615,648
ELECTRO-HYDRAULIC ADJUSTING DEVICE
Manfred Ruoff, Möglingen, and Helmut Rembold, Stuttgart, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Continuation of Ser. No. 373,320, Jan. 18, 1995, abandoned. This application Aug. 5, 1996, Ser. No. 691,196
Claims priority, application Germany, Jul. 25, 1992, 42 24 653.9
Int. Cl.⁶ F01L *1/34;* **F15B** *11/16; 11/22*
U.S. Cl. 123—90.17 **3 Claims**

1. An electrohydraulic adjusting system for actuating a device for adjusting at least one camshaft of an internal combustion engine relative to a crankshaft of the engine, having a first differ-



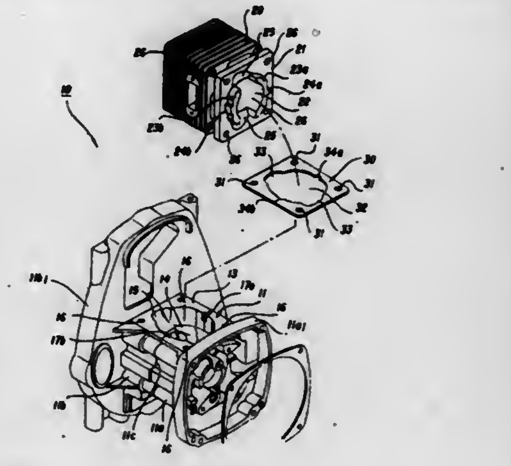
ential cylinder (10), said first differential cylinder including a pressure chamber (11) separated by a piston from an annular chamber (14), a pump that pumps fluid under pressure, said piston having a smaller piston surface in said annular chamber (14) that is acted upon with pressure fluid by said pump (16, 100), while a pressure in said pressure chamber (11) on a larger piston surface is varied by means of a first electromagnetically actuatable control valve (21) which communicates with said pressure chamber (11), a second differential cylinder (41), said second differential cylinder including a second pressure chamber (44) separated by a second piston from a second annular chamber (40), said second piston having a small piston surface in said second annular chamber (40) that is acted upon with pressure fluid by the pump (16, 100), in which the pressure in the second pressure chamber (44) on a larger effective piston surface than the small piston surface of the second piston is varied via a second electromagnetically actuatable control valve (46, 60), and a second camshaft of the engine is adjusted relative to a said crankshaft by use of said second differential piston (42) wherein first and second electromagnetically actuatable control valves (21, 46, 60) communicate with each other and the pump via a flow dividing valve (63, 85).

5,615,649
ENGINE SECURITY SYSTEM
Siu M. Yung, Fotan, Hong Kong, assignor to Cosmo Solution Limited, Fotan, Hong Kong
Filed Oct. 5, 1995, Ser. No. 539,694
Int. Cl.⁶ F02P *11/04;* **B60R** *25/04;* **H01H** *27/00*
U.S. Cl. 123—146.5 B **20 Claims**



2. An engine security system for an internal combustion engine comprising a security device arranged to receive a sequence of timing pulses containing engine position and rotational speed information and generated in dependence on the rotation of said engine, said security device being further arranged to generate an ignition pulse sequence synchronous with the rotation of the engine from said information on receipt of an enabling code, and to supply said sequence to an ignition system of said engine for the generation of ignition sparks, said sequence of timing pulses having an identity code encoded therein.

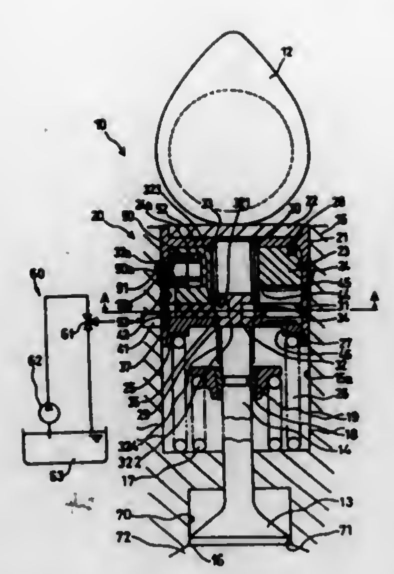
5,615,650
ENGINE
Tsuneo Araki, Tokyo, Japan, assignor to Kioritz Corporation, Tokyo, Japan
Filed Nov. 8, 1995, Ser. No. 554,414
Claims priority, application Japan, Nov. 11, 1994, 6-277786
Int. Cl.⁶ F02B *77/00*
U.S. Cl. 123—195 R **13 Claims**

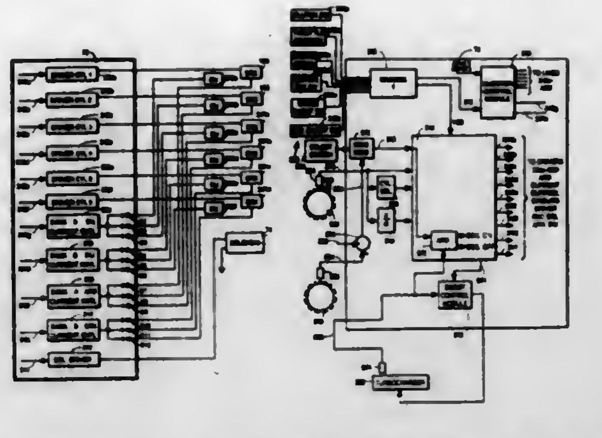


1. An internal combustion engine, comprising:
a cylinder block including a connecting surface formed at a lower portion thereof and a skirt portion extending outwardly from said connecting surface;
a crankcase including a connecting surface for contacting said connecting surface of said cylinder block and a bore for inserting said skirt portion of said cylinder block therewithin;
a gasket interposed between said connecting surface of said crankcase and said connecting surface of said cylinder block when assembled, said gasket including a bore formed at the central portion thereof;
a first and second detent portion formed at the outer peripheries of said skirt portion, wherein said first detent portion is different in shape from said second detent portion; and
a first and second recess portion, corresponding in shape to said first and second detent portions, respectively, said recess portions formed at each of said bores of said crankcase and of said gasket.

5,615,651
VALVE GEAR DEVICE FOR INTERNAL COMBUSTION ENGINES
Eiji Miyachi, Aichi-ken, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Aichi-pref., Japan
Filed Nov. 30, 1995, Ser. No. 565,106
Claims priority, application Japan, Nov. 30, 1994, 6-297456
Int. Cl.⁶ F01L *13/00;* **F02D** *13/06*
U.S. Cl. 123—198 F **4 Claims**

1. A valve gear device for internal combustion engines comprising:
a stem connected to an intake or exhaust valve which opens or closes an intake or exhaust bore, respectively, that opens into a combustion chamber of an internal combustion engine;
urging means for urging said stem to maintain said intake or exhaust valve in a closed state;
a cam provided on a cam shaft; and
a valve deactivating mechanism provided between said cam and said stem, wherein said valve deactivating mechanism comprises:
a cylinder bore defined in a cylinder head of said internal combustion engine and extending along an axial direction of said intake or exhaust valve;
a movable member movably engaged within said cylinder bore and operatively contacting said cam;





a relative movement regulating means for one of engaging and disengaging said stem with said movable member, said regulating means being operatively positioned to move across an axial center of said stem so as to one of prevent and allow, respectively, relative movement between said movable member and said stem;

an oil pressure supplying and discharging means for one of supplying and discharging oil pressure for said relative movement regulating means so as to one of engage and disengage said regulating means, respectively; and

a valve means for controlling a flow of oil between said oil pressure supplyling and discharging means and said relative movement regulating means, wherein the flow of oil through said valve means allows movement of said relative movement regulating means after said movable member returns to an initial position after said movable member moves downwardly and then upwardly relative to said stem based on movement of said cam.

5,615,652

Patent Not Issued For This Number

5,615,653
INFINITELY VARIABLE ENGINE COMPRESSION BRAKING CONTROL AND METHOD

James J. Faletti, Spring Valley; Dennis D. Feucht, and Scott G. Sinn, both of Morton, Ill., assignors to Caterpillar Inc., Peoria, Ill.

Division of Ser. No. 468,937, Jun. 6, 1995, Pat. No. 5,540,201, which is a continuation of Ser. No. 282,573, Jul. 29, 1994, abandoned. This application Oct. 30, 1995, Ser. No. 549,894

Int. Cl.[6] F02D *13/04;* **F01L** *13/06*

U.S. Cl. 123—322 **20 Claims**

1. A control for operating an engine in a braking mode of operation wherein the engine includes an exhaust valve, comprising:

an actuator engagable with the exhaust valve;

means for selecting a braking magnitude from a continuous range of braking magnitudes between minimum and maximum levels;

means responsive to the selecting means for establishing turn-on and turn-off points for the actuator in dependence upon the selected braking magnitude; and

means coupled to the establishing means for operating the actuator in accordance with the turn-on and turn-off points to cause the engine to develop the selected braking magnitude.

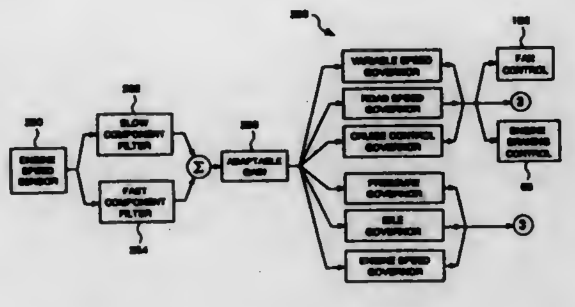
5,615,654
METHOD FOR ENGINE CONTROL

S. Miller Weisman, II, Farmington Hills; Dennis M. Letang, Canton, and Douglas J. Babcock, South Lyon, all of Mich., assignors to Detroit Diesel Corporation, Detroit, Mich.

Division of Ser. No. 406,114, Mar. 17, 1995, Pat. No. 5,483,927, which is a division of Ser. No. 113,424, Aug. 27, 1993, Pat. No. 5,445,128. This application Sep. 28, 1995, Ser. No. 535,617

Int. Cl.[6] F02D *41/04;41/38*

U.S. Cl. 123—350 **6 Claims**



1. A method for governing the operation of a compression-ignition internal combustion engine so as to improve the response time of an engine control system, the control system having an electronic control unit, the method comprising:

sensing at least one engine operating parameter to obtain an operating signal;

processing the operating signal to obtain a plurality of signal components;

applying a first filter to at least one of the plurality of signal components so as to determine a moving average value of the at least one engine operating parameter over a predetermined interval;

applying a second filter to at least one of the plurality of signal components not subjected to the first filter so as to determine an instantaneous value of the at least one engine operating parameter;

combining the moving average value and the instantaneous value so as to obtain a controlling value;

determining a system gain factor based on the at least one engine operating parameter; and

controlling the engine based on the system gain factor and the controlling value so as to reduce the response time of the control system.

5,615,655
CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

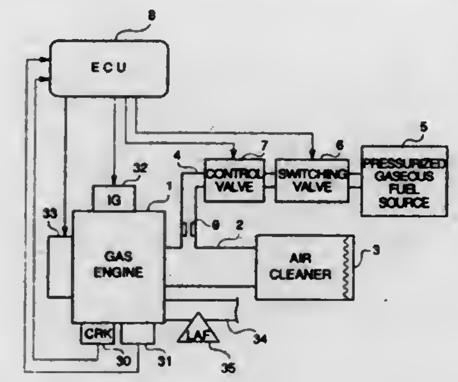
Motohiro Shimizu, Wako, Japan, assignor to Honda Giken Kogyo K.K., Tokyo, Japan

Filed Jun. 26, 1995, Ser. No. 495,754

Claims priority, application Japan, Jun. 29, 1994, 6-170225; Aug. 1, 1994, 6-199026

Int. Cl.[6] F02P *5/15;* **F02D** *41/14*

U.S. Cl. 123—419 **6 Claims**



1. In a control system for an internal combustion engine having a pressurized gaseous fuel source, a control valve for regulating an amount of gaseous fuel supplied from said pressurized gaseous fuel source, and an intake passage in which said gaseous fuel, the amount of which has been regulated by said control valve, is mixed with intake air and supplied to said engine as an air fuel mixture, said engine being a throttleless type in which an output of said engine is controlled solely by controlling a flow rate of said gaseous fuel supplied to said engine without controlling an amount of intake air supplied to said engine,

the improvement comprising:

air-fuel ratio control means for controlling an air-fuel ratio of said air-fuel mixture to be supplied to said engine by regulating the amount of said gaseous fuel through said control valve;

operating condition-detecting means for detecting operating conditions of said engine;

ignition timing-calculating means for calculating an optimum value of ignition timing of said engine, based on said operating conditions detected by said operating condition-detecting means; and

ignition timing-correcting means for decreasing the output of said engine by retarding the ignition timing of said engine when the air-fuel ratio of said air-fuel mixture is in a predetermined lean limit region, while controlling the ignition timing of said engine to said optimum value calculated by said ignition timing-calculating means before the air-fuel ratio of said air-fuel mixture reaches said predetermined lean limit region.

5,615,656
FUEL-INJECTION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE, IN PARTICULAR FOR A DIESEL MOTOR, AND A METHOD FOR MONITORING THE SAME

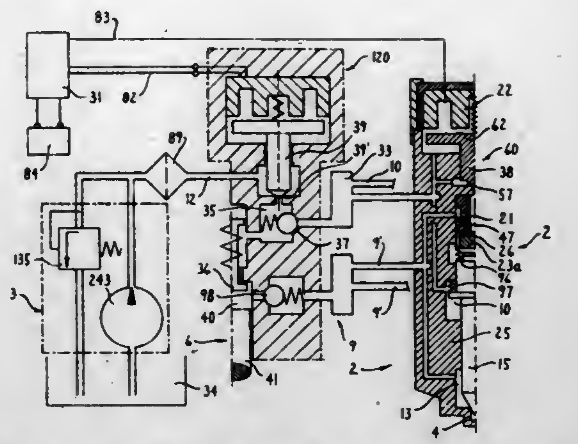
Christian Mathis, Muttaweg 16, P.O. Box 244, CH-7250 Klosters-Platz, Switzerland

Filed Jan. 31, 1995, Ser. No. 381,219

Claims priority, application Switzerland, Feb. 3, 1994, 315/94

Int. Cl.[6] F02M *7/00*

U.S. Cl. 123—447 **16 Claims**



1. In a fuel-injection system for an internal combustion engine, which includes at least one combustion cylinder, comprising a control device, a fuel pump, a high-pressure part supplied with fuel by said fuel pump in dependency on the motor speed, load and load change of said engine, and at least one injection element for each said combustion cylinder controlled from said control device for injecting an injection amount of said fuel into said combustion cylinder, said injection element having an injection opening in communication with said combustion cylinder, means for opening and closing said injection opening and a pressure chamber arranged upstream of said injection opening in communication therewith, said pressure chamber being in communication with said high-pressure part so as to receive said fuel from said fuel pump, comprising the improvement wherein said injection amount of said fuel being injected into said combustion cylinder is determined by means of a metering device, said metering device being constructed as a flow controller connected upstream of said fuel pump and having a first throttle valve operable by said control device, a pressure-correcting second throttle valve being arranged in series in combination with said first throttle valve, said pressure-correcting second throttle valve being adapted to balancingly change the pressure drop above said first throttle valve so that there always exists the desired required pressure over said flow regulator.

5,615,657
METHOD AND APPARATUS FOR ESTIMATING INTAKE AIR PRESSURE AND METHOD AND APPARATUS FOR CONTROLLING FUEL SUPPLY FOR AN INTERNAL COMBUSTION ENGINE

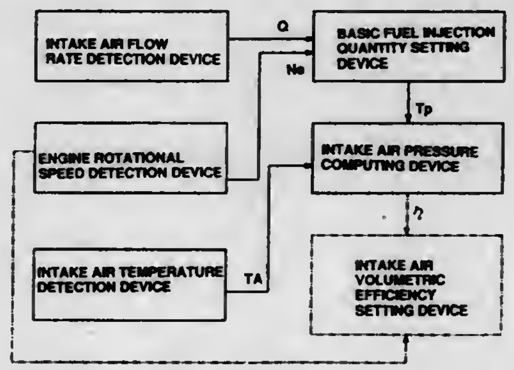
Keita Yoshizawa, Atsugi, Japan, assignor to UNISIA JECS Corporation, Kanagawa-ken, Japan

Filed Jan. 4, 1996, Ser. No. 579,478

Claims priority, application Japan, Jan. 6, 1995, 7-000537

Int. Cl.[6] F02D *41/34*

U.S. Cl. 123—494 **7 Claims**



1. A method for estimating the intake air pressure of an internal combustion engine, comprising the steps of:

detecting an intake air flow rate and a rotational speed of an internal combustion engine having a throttle valve disposed in an intake air passage;

setting a basic fuel injection quantity Tp, based on said detected engine intake air flow rate and rotational speed,

detecting an intake air temperature TA; and

computing an estimation value for an intake air pressure Pm downstream of the throttle valve, using said set basic fuel injection quantity Tp, the detected intake air temperature TA, a constant C, and an intake air volumetric efficiency η, according to the equation $Pm=C \cdot Tp \cdot TA/\eta$.

5,615,658

COMBUSTION AIR QUALITY IMPROVING DEVICE FOR INTERNAL COMBUSTION ENGINE OR GENERAL COMBUSTION EQUIPMENT

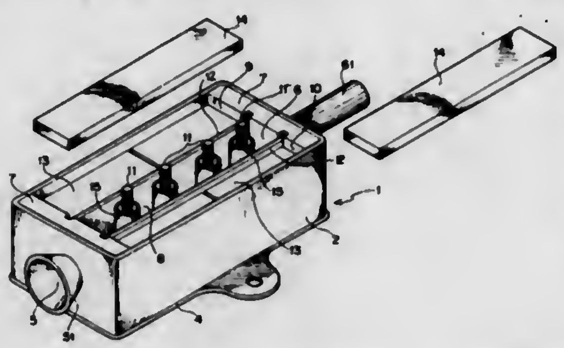
Akira Hashimoto, 4-26-308, Takanawa 1-chome, Minato-ku, Tokyo 108, Japan

PCT No. PCT/JP93/01466, § 371 Date Mar. 27, 1995, § 102(e) Date Mar. 27, 1995, PCT Pub. No. WO95/10702, PCT Pub. Date Apr. 20, 1995

PCT Filed Oct. 13, 1993, Ser. No. 406,915

Int. Cl.⁶ F02M *27/04*

U.S. Cl. 123—539 **8 Claims**



1. A combustion air quality improving device for internal combustion engines or general combustion equipment, comprising

a casing made of magnetic materials in a shape of a relatively elongated box having end faces provided with an air inlet on one end face and an outlet on the other end face in the longitudinal direction, said casing having an air duct communicating said inlet with said outlet formed inside thereof, and being fixed so as to have said air outlet connected to an intermediate point of the suction air duct for combustion air in internal combustion engines or general combustion equipment,

said casing further including

permanent magnets disposed in such a manner that the same poles are opposed to each other with said air duct sandwiched therebetween,

shaft members made of magnetic materials being transversely disposed in said air duct,

first cylindrical members made of metals being fitted loosely around the shaft members, and

second cylindrical members made of metals different in ionization tendency from those of said first cylindrical members being fitted loosely around the outer periphery of respective first cylindrical members with a gap therebetween

whereby said first and second cylindrical members, different in ionization tendency from each other, are rotatably moved around said shaft members with aid of the air flow passing from said inlet through the air duct to said outlet.

5,615,659

IGNITION APPARATUS FOR INTERNAL COMBUSTION ENGINE

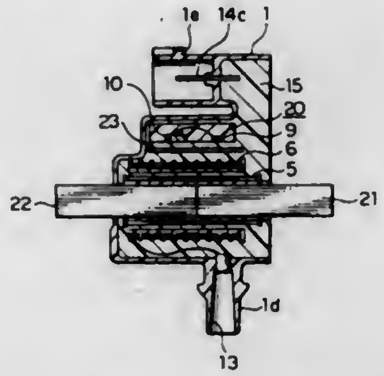
Shiogo Morita, and Mitsuru Koiwa, both of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 1, 1996, Ser. No. 625,115

Claims priority, application Japan, Apr. 24, 1995, 7-098812

Int. Cl.⁶ F02P *11/00*

U.S. Cl. 123—634 **4 Claims**



1. An ignition apparatus for an internal combustion engine comprising: an ignition coil; a power switch for supplying a primary current to said ignition coil; an electrically insulating caste containing said ignition coil and said power switch therein; an electromagnetic shield disposed between said ignition coil and said power switch for protecting said power switch from electromagnetic waves generated at the ignition coil; and an electrically insulating resin disposed within said case for securely holding said ignition coil, said power switch, and said shield within said case.

5,615,660

ENGINE AIR-FUEL RATIO CONTROLLER

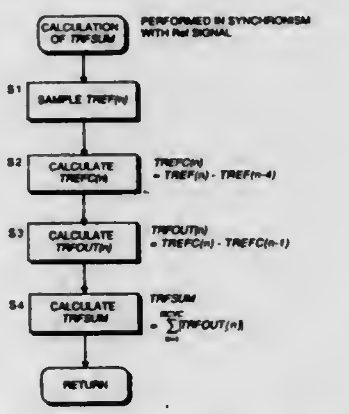
Hiroshi Iwano, Yososuka, and Hiraku Ohba, Tokyo, both of Japan, assignors to Nissan Motor Co., Ltd., Kanagawa, Japan

Filed Mar. 5, 1996, Ser. No. 610,923

Claims priority, application Japan, Mar. 15, 1995, 7-055890

Int. Cl.⁶ F02D *41/00*

U.S. Cl. 123—680 **6 Claims**



1. A device for controlling a air-fuel ratio of an air-fuel mixture supplied to an engine during warmup, comprising:

means for initializing a warmup fuel amount corresponding to a predetermined heavy fuel,

means for detecting an engine speed variation,

means for determining whether or not said warmup has been completed,

means for computing a difference between a post-warmup engine speed variation and a first reference value as a post-warmup stability tolerance factor,

means for computing a stability indicator learning value based on said post-warmup stability tolerance factor,

means for storing said learning value after the engine has stopped,

means for decreasing said warmup fuel amount to a decreased warmup mount based on said learning value when the engine is restarted, and

means for supplying said decreased warmup fuel amount to the engine.

5,615,661

CONTROL FOR ENGINE

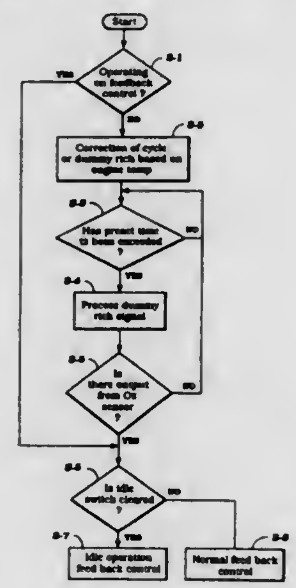
Toshio Suzuki, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Division of Ser. No. 297,646, Aug. 29, 1994, Pat. No. 5,474,053. This application Aug. 7, 1995, Ser. No. 512,064

Claims priority, application Japan, Aug. 31, 1994, 5-216383

Int. Cl.⁶ F02D *41/14*

U.S. Cl. 123—688 **16 Claims**



1. An engine having an induction system including a charge former for supplying a fuel air mixture to said engine, said charge former comprising an air induction passage for receiving atmospheric air and a fuel supply circuit for receiving fuel from a source and mixing said fuel with the air in said induction passage for forming a fuel/air mixture for said engine, mixture control means for controlling the mixture strength, an engine combustion sensor for detecting the air/fuel ratio, feedback control means for receiving a signal from said engine combustion sensor and controlling said mixture control means to maintain the desired air/fuel ratio, said engine combustion sensor having an operating temperature below which it will not output a signal, means for determining a condition when said engine combustion temperature may be below said predetermined condition and disabling the feedback control for said control means for providing a leaner than stoichiometric air/fuel ratio for a first predetermined time period, means for providing a richer than stoichiometric air/fuel ratio at timed intervals during said first predetermined time period for a second predetermined time period shorter than said first predetermined time period to determine if the engine combustion sensor is outputting a signal, and means for returning to feedback control immediately when said engine combustion sensor outputs a signal during one of said second predetermined time periods indicating the existence of a rich mixture.

5,615,662

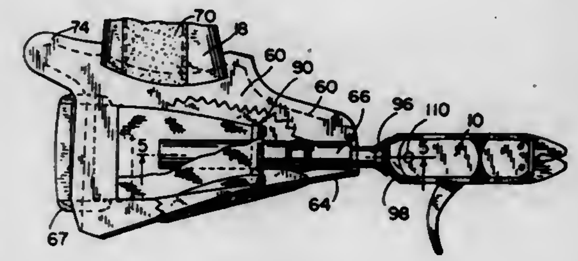
CONTINUOUS LOOP WRIST STRAP FOR BOW STRING RELEASE

Lynn A. Tentler, Fond Du Lac, and Louis R. Linsmeyer, Hustisford, both of Wis., assignors to Tru-Fire Corporation, North Fond Du Lac, Wis.

Continuation-in-part of Ser. No. 979,106, Nov. 20, 1992, Pat. No. 5,357,939. This application Aug. 4, 1994, Ser. No. 285,993

Int. Cl.⁶ F41B *5/18*

U.S. Cl. 124—35.2 **19 Claims**



1. A wrist strap for a bow string release for selectively securing and releasing the string of a bow for firing an arrow therefrom, the release of the type having a body which is adapted to be mounted on the wrist strap for attaching the release body selectively positioned to facilitate firing, the wrist strap comprising:

a. a base area;

b. means for securing the release to the base area;

c. a strap secured to the base area and adapted for securing the strap about the wrist with the release normally positioned in a firing position;

d. means for tightening the strap in place about the wrist; and

e. wherein the strap is made of a material of sufficient flexibility for permitting the base area and release to be moved away from the palm and out of the firing position without removing the strap from the wrist.

5,615,663

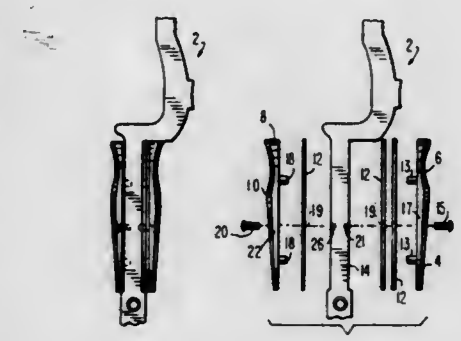
ARCHERY BOW WITH IMPROVED ADJUSTABLE GRIP

Gary L. Simonds, Gainesville, Fla., assignor to Bear Archery, Inc., Gainesville, Fla.

Filed Oct. 12, 1995, Ser. No. 541,244

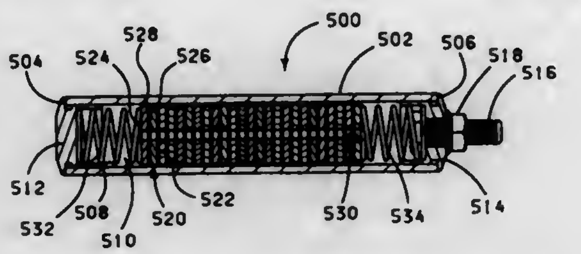
Int. Cl.⁶ F41B *5/00*

U.S. Cl. 124—88 **8 Claims**



1. An archery bow having a riser handle portion and an improved laterally adjustable grip affixed to said riser handle portion, said grip comprising a thumb side plate and a finger side plate, said thumb side plate and finger side plate moveable with respect to each other, and at least one adjustment insert located between the thumb side plate and the finger side plate.

5,615,664
STABILIZERS ADAPTED TO BE CONNECTED TO A BOW
Norman J. McDonald, Jr., Rte. 1, Box 155, Hendrix, Okla. 74741
Continuation of Ser. No. 127,846, Sep. 28, 1993, Pat. No. 5,471,969. This application Nov. 29, 1995, Ser. No. 564,692
Int. Cl.⁶ F41B *5/20*
U.S. Cl. 124—89 **10 Claims**

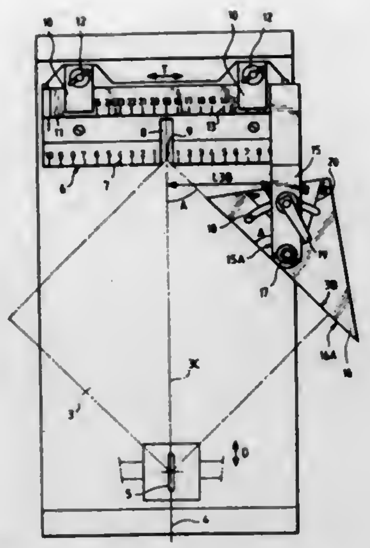


1. A stabilizer for use with a bow, the stabilizer comprising:
a stabilizer tube having a first end and a second end and an opening formed through the stabilizer tube forming a stabilizer chamber defining a stabilizer inner peripheral surface with the stabilizer inner peripheral surface defining a stabilizer inner diameter, the stabilizer chamber having a hydraulic fluid disposed therein;
a piston assembly disposed in the stabilizer chamber, the piston assembly comprising at least two circularly shaped piston rings, each piston ring having a first surface and a second surface and an outer peripheral edge, the piston rings being stacked with each piston ring being disposed adjacent at least one of the other piston rings in a side-by-side relationship, the piston rings being slidingly disposed in the stabilizer chamber; and
means for connecting the stabilizer tube to the bow.

8. A stabilizer for suppressing recoil vibrations, the stabilizer comprising:
a stabilizer tube having a first end and a second end and an opening formed through the stabilizer tube forming a stabilizer chamber defining a stabilizer inner peripheral surface with the stabilizer inner peripheral surface defining a stabilizer inner diameter, the stabilizer chamber having a hydraulic fluid disposed therein;
a piston assembly disposed in the stabilizer chamber, the piston assembly comprising at least two circularly shaped piston rings, each piston ring having a first surface and a second surface and an outer peripheral edge, the piston rings being stacked with each piston ring being disposed adjacent at least one of the other piston rings in a side-by-side relationship, the piston rings being slidingly disposed in the stabilizer chamber,
a first spring disposed in the stabilizer chamber with the first spring engaging the piston assembly and a portion of the stabilizer tube near the first end of the stabilizer tube; and
a second spring disposed in the stabilizer chamber with the second spring engaging the piston assembly and a portion of the stabilizer tube near the second end of the stabilizer tube.

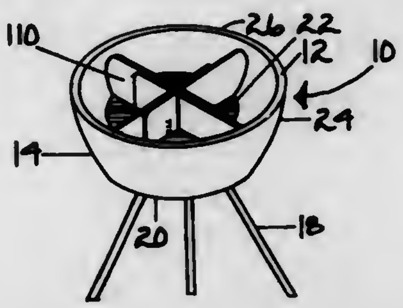
5,615,665
MACHINE FOR CUTTING TILES, THE MACHINE INCLUDING AN ADJUSTABLE ARM FOR POSITIONING THE TILES
Abel Thirlet, Dole, France, assignor to Tomecanic, Aubergenville, France
Continuation of Ser. No. 126,048, Sep. 23, 1993, abandoned. This application Apr. 10, 1996, Ser. No. 629,911
Claims priority, application France, Sep. 25, 1992, 91/11489
Int. Cl.⁶ B28D *1/24*
U.S. Cl. 125—23.02 **10 Claims**

1. A machine for cutting tiles including in combination means providing a generally horizontal flat surface for supporting a tile,



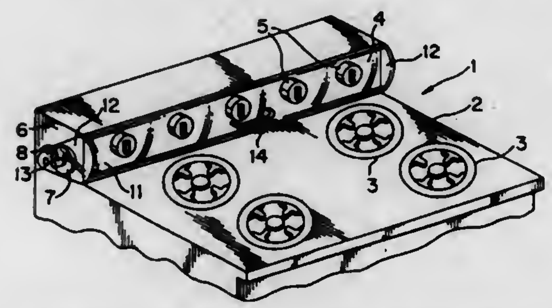
said surface having orthogonally disposed longitudinal and lateral axes, cutting means disposed to move along the longitudinal axis, means providing a laterally extending face of small vertical extent, said laterally extending face being abutted by the tile, a laterally slidable member mounted on the supporting means, the member comprising a generally longitudinally extending first arm having a vertically disposed pivot axis which is appreciably displaced longitudinally from said lateral face, and a second arm mounted on the first arm for rotation parallel to said surface about the pivot axis, the second arm having a straight face of small vertical extent which is abutted by the tile, the straight face having an appreciable horizontal extent in each direction from a normal to the straight face which intersects the pivot axis, the tile abutting the straight face at points appreciably spaced horizontally from said normal in each direction.

5,615,666
FUEL CONCENTRATING AND CONSERVING DEVICE FOR BARBECUE AND CHARCOAL GRILLS
Harry T. Ransom, 730 Elliot St., Longmont, Colo. 80501
Filed Mar. 5, 1996, Ser. No. 611,239
Int. Cl.⁶ A47J *37/00*
U.S. Cl. 126—25 R **15 Claims**



1. A device for concentrating and conserving a fuel source in a cooking appliance, the cooking appliance having a fuel supporting surface, an appliance side wall about the fuel supporting surface and a cooking surface supported substantially between the side wall and above the fuel supporting surface, the cooking surface receiving food items to be cooked, the device comprising:
free-standing fuel concentrating means supported solely upon the fuel supporting surface for selectively concentrating the fuel source beneath at least a portion of the cooking surface, the concentrating means creating a plurality of fuel enclosures such that loading at least two of the fuel enclosures and the ignition and combustion of the fuel source within one of these loaded fuel enclosures saves ignition and combustion of the fuel source located within any adjacent fuel source area wherein the fuel concentrating means comprises at least two sheet-like bands releasably interconnected to each other, the bands resting upon the fuel supporting surface free from support of the side wall or cooking surface.

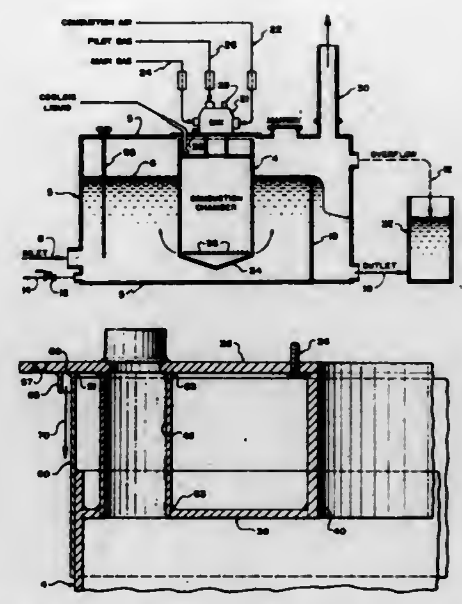
5,615,667
SPLATTER OR GREASE GUARD
Patricia M. Seeley, and Roger L. Seeley, both of HCR, Box 92A, Warba, Minn. 55793
Filed May 13, 1996, Ser. No. 644,952
Int. Cl.⁶ F24C *3/12*
U.S. Cl. 126—42 **5 Claims**



1. A protective cover for a stove having a raised control panel with control knobs on a front portion of said control panel, and said control panel having side panels, said cover comprising
said cover having a front portion and at least two side portions, said side portions each having at least one aperture therein,
means for detachably mounting said cover to said side panels of said control panel,
said means comprising a mounting portion,
means for permanently mounting said mounting portion to said side panels,
pin means attached to said mounting portion for engaging said apertures in said side portions.

5,615,668
APPARATUS FOR COOLING COMBUSTION CHAMBER IN A SUBMERGED COMBUSTION HEATING SYSTEM
Eric Panz, West Vancouver, and Steven E. Panz, North Vancouver, both of Canada, assignors to Inprobest Industries Ltd., Vancouver, Canada
Filed Mar. 22, 1994, Ser. No. 215,596
Int. Cl.⁶ F24H *1/20*
U.S. Cl. 126—360 A **5 Claims**

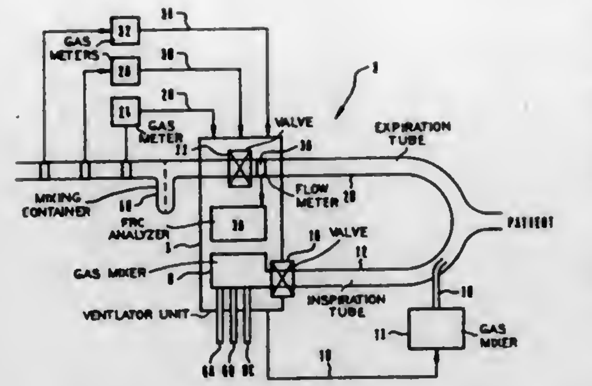
1. A submerged combustion system comprising:
(a) tank means for holding liquid, the tank means having a liquid inlet and a liquid outlet, and an exhaust gas outlet;
(b) a closed bottom combustion chamber means positioned in at least a portion of an interior of the tank means;
(c) means in the combustion chamber means for enabling fuel and air to be introduced into an interior of the combustion chamber means and being ignited in the interior of the combustion chamber means to create a hot gaseous combustion product in the interior of the combustion chamber;
(d) a plurality of port means located in a lower region of the combustion chamber means for enabling the hot gaseous combustion product to be exhausted from the interior of the combustion chamber into liquid in the tank means and ultimately out through the exhaust gas outlet;
(e) means for controlling level of liquid in the tank means so that the liquid is above the port means and below a top of the combustion chamber means and a top of the tank means, the hot gaseous combustion product passing from the interior of



the combustion chamber means through the plurality of port means into the liquid and heating the liquid, the liquid heated by the hot gaseous combustion product being withdrawn from the tank means through the liquid outlet, and unheated liquid being introduced into the tank means through the liquid inlet;
(f) cooling liquid means located at an upper region of the combustion chamber means, an exterior surface of the combustion chamber means extending above the level of the liquid in the tank means being cooled by a continuous downwardly flowing curtain of cooling liquid which is introduced into the cooling liquid means located in the upper region of the combustion chamber, and spills by gravity over top exterior edges of the combustion chamber means and runs down outer walls of the combustion chamber means until the cooling liquid reaches and joins the liquid being heated by the hot gaseous combustion product;
(g) the cooling liquid means is a hollow circular chamber and the cooling liquid is introduced into the hollow circular chamber at the upper region of the combustion chamber means by a pipe which causes the cooling liquid to circulate in the hollow circular chamber in a vortex pattern; and
(h) elevation of the hollow circular chamber can be adjusted relative to elevation of the combustion chamber means.

5,615,669
GAS MIXTURE AND DEVICE FOR DELIVERING THE GAS MIXTURE TO THE LUNGS OF A RESPIRATORY SUBJECT
Sven-Gunnar Olsson, Arloev; Goeran Rydgren, Bunkeflostrand; Anders Larsson, Kaevlinge; Stefan Brauer, Södra Sandby, and Anders Linge, Kaevlinge, all of Sweden, assignors to Siemens Elema AB, Solna, Sweden
Division of Ser. No. 279,108, Jul. 22, 1994. This application Dec. 11, 1995, Ser. No. 570,525
Int. Cl.⁶ A61M *15/00*
U.S. Cl. 128—203.12 **7 Claims**

1. A device for administering a predetermined amount of NO to a patient's lungs comprising:
a first gas source containing a breathing gas;
a second gas source containing a gas mixture having a predetermined concentration of NO and a predetermined concentration of an inert, nontoxic trace gas so that said trace gas and said NO are present in said gas mixture in a predetermined ratio;
an inspiration tube connected to said first and second gas sources and adapted to deliver said breathing gas and said gas mixture to the lungs of said respirating subject;



an expiration tube adapted to conduct expired breathing gas and NO from the lungs of said respirating subject, said inspiration tube and said expiration tube in combination comprising gas flowways; and

gas concentration meter means, disposed in said gas flowways, for measuring the concentration of said trace gas for obtaining, from said ratio, the concentration of said NO.

5,615,670

POWDER INHALER WITH CENTRIFUGAL FORCE USED TO METER POWDER

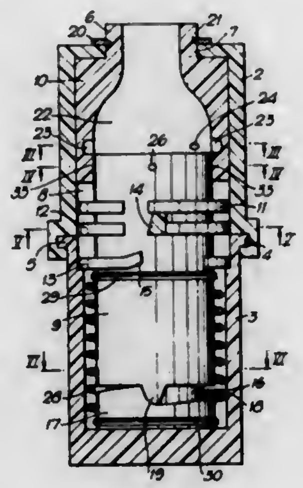
Ian Rhodes, Hertfordshire, England, assignor to Fisons plc, Ipswich, United Kingdom

Continuation of Ser. No. 210,253, Mar. 18, 1994, abandoned, which is a continuation of Ser. No. 934,445, Sep. 4, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 468,766

Claims priority, application United Kingdom, Mar. 7, 1990, 90/05110

Int. Cl.⁶ A61M *15/00; 16/00;* **B05D** *7/14;* **B65D** *83/06*

U.S. Cl. 128—203.15 **8 Claims**



1. A device for the administration by inhalation of a medicament in dry powder form, which comprises:

(a) a housing;

(b) a medicament reservoir, having an interior, mounted in the housing for rotation relative to said housing;

(c) means to rotate the reservoir relative to said housing about an axis within said housing; and

(d) medicament metering means mounted in the housing for concerted rotation with the reservoir, said metering means including a metering chamber located radially of the axis and communicable with the reservoir;

in which the metering chamber is charged with medicament by the centrifugal force generated by rotation of the reservoir.

5,615,671

PROCESSES AND DEVICES FOR CONTINUOUSLY MONITORING LEVELS OF ANALYTE

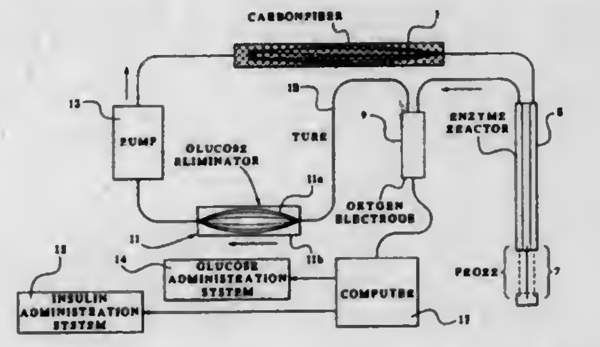
Adelbert J. M. Schoonen, Groningen; Fransiscus J. Schmidt, Drachten, and Klaas-Jan C. Wientjes, Groningen, all of Netherlands, assignors to Siemens-Elema AB, Solna, Sweden, and Rijksuniversiteit te Groningen, Groningen, Netherlands

Continuation of Ser. No. 326,196, Oct. 20, 1994, abandoned. This application Jul. 11, 1996, Ser. No. 680,280

Claims priority, application European Pat. Off., Oct. 22, 1993, 93202972

Int. Cl.⁶ G01N *27/404*

U.S. Cl. 128—632 **21 Claims**



1. A process for continuously measuring a concentration of an analyte in tissue, comprising the steps of:

disposing a hollow fiber in contact with said tissue having a pore size between a size of said analyte and a size of macromolecules;

perfusing said hollow fiber with a macromolecule-free prefusion fluid compatible with said tissue so that said analyte enters said perfusion fluid through said hollow fiber;

feeding said perfusion fluid with said analyte therein from said hollow fiber through a reactor for said analyte, said reactor including a further hollow fiber having a pore size between said size of said analyte and said size of macromolecules, said further hollow fiber being disposed in a non-porous container containing macromolecular reactants so that said perfusion fluid with said analyte therein is exposed to said macromolecular reactants exclusively in said container;

detecting said analyte using macromolecular reactants exclusively in said container and generating an electrical signal corresponding to a detected level of said analyte;

feeding said perfusion fluid from said reactor to an eliminator and, in said eliminator, removing at least 95% of said analyte from said perfusion fluid; and

reintroducing said perfusion fluid, after removing said analyte therefrom, in a closed loop into said hollow fiber with 5% or less of said analyte therein.

5,615,672

SELF-EMISSION NONINVASIVE INFRARED SPECTROPHOTOMETER WITH BODY TEMPERATURE COMPENSATION

James R. Braig, Alameda, Calif.; Daniel S. Goldberger, Boulder, Colo., and Bernhard B. Sterling, Danville, Calif., assignors to Optiscan, Inc., Alameda, Calif.

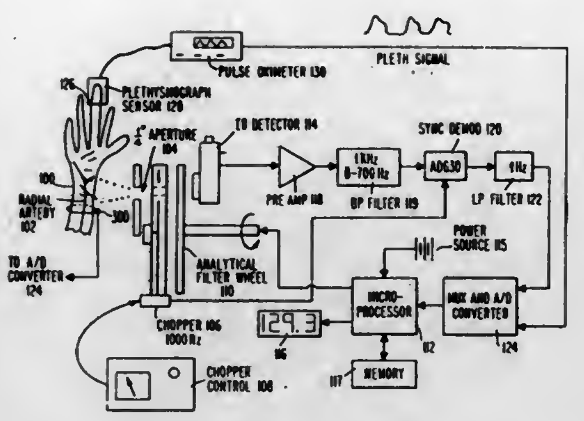
Continuation-in-part of Ser. No. 247,311, May 23, 1994, Pat. No. 5,515,847, which is a continuation-in-part of Ser. No. 10,634, Jan. 28, 1993, Pat. No. 5,313,941. This application Dec. 9, 1994, Ser. No. 353,099

Int. Cl.⁶ A61B *5/00*

U.S. Cl. 128—633 **29 Claims**

1. A noninvasive infrared spectrophotometer, comprising:

means for detecting infrared emissions generated and emitted by a vascularized appendage of a person;



means for determining infrared absorption of at least one predetermined constituent of the person's blood from said infrared emissions detected by said detecting means;

means for measuring an internal temperature of said person at a point of said vascularized appendage where said infrared emissions are detected by said detecting means; and

processing means for determining the infrared emissions corresponding to said internal temperature measured by said temperature measuring means and for calculating a concentration of said at least one predetermined constituent as a function of the infrared emissions detected by said detecting means and the determined infrared emissions corresponding to said internal temperature measured by said temperature measuring means.

5,615,673

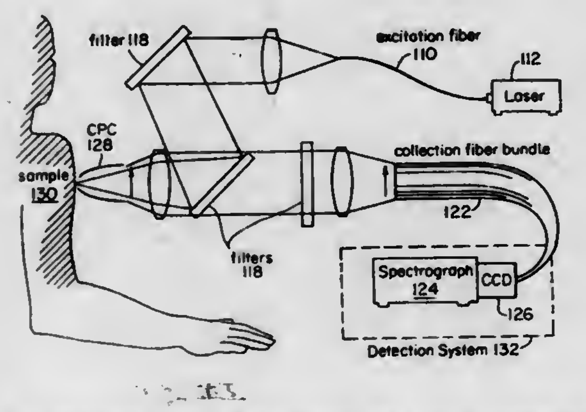
APPARATUS AND METHODS OF RAMAN SPECTROSCOPY FOR ANALYSIS OF BLOOD GASES AND ANALYTES

Andrew J. Berger; James F. Brennan, III, both of Cambridge; Ramanchandra R. Dasari, Lexington; Michael S. Feld, Newton; Irving Itzkan, Boston; Kaz Tanaka, and Yang Wang, both of Somerville, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Mar. 27, 1995, Ser. No. 410,927

Int. Cl.⁶ A61B *5/00*

U.S. Cl. 128—633 **38 Claims**



1. A method of measuring a dissolved gas in blood comprising the steps of:

irradiating blood with laser radiation having a wavelength such that Raman scattering occurs in a dissolved gas in the irradiated blood;

collecting Raman scattered light from the dissolved gas; and

detecting the collected Raman-scattered light from the dissolved gas in response to the laser radiation.

5,615,674

CLAMPING CONTACT CONNECTION

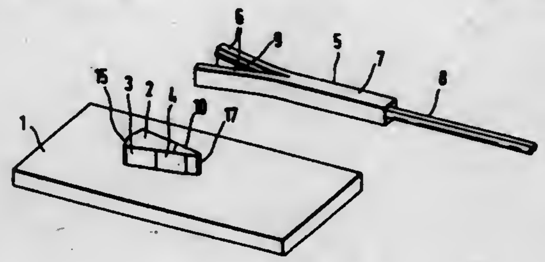
Andreas Maurer, Stuttgart, Germany, assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 22, 1995, Ser. No. 408,201

Claims priority, application Germany, May 17, 1994, 44 17 200.1

Int. Cl.⁶ A61B *5/0408*

U.S. Cl. 128—642 **8 Claims**



1. A clamping contact connection for electrical connection of a fetal scalp electrode to a leg plate that is fixable to an expectant mother, and comprising:

a fetal scalp electrode;

a leg plate;

a first contact element coupled to said leg plate and including a portion which is wedge-shaped or tapers and includes, on said portion, at least two outer contact faces;

a second contact element having at least two openable jaws with inner contact faces, said second contact element connected to the fetal scalp electrode and constructed as an elongated, substantially cylindrical part with a gripping area and a contact area which includes said inner contact faces, the first contact element and the second contact element, when engaged, enabling said jaws of the second contact element to engage said portion of the first contact element, so that the inner contact faces of the second contact element contact the outer contact faces of the first contact element and said jaws prevent an unintentional separation of an inter-connection therebetween.

5,615,675

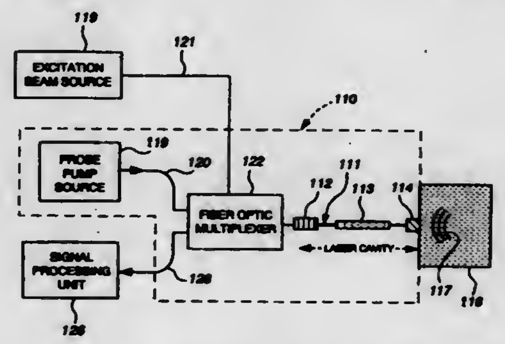
METHOD AND SYSTEM FOR 3-D ACOUSTIC MICROSCOPY USING SHORT PULSE EXCITATION AND 3-D ACOUSTIC MICROSCOPE FOR USE THEREIN

Matthew O'Donnell, and James D. Hamilton, both of Ann Arbor, Mich., assignors to Regents of the University of Michigan, Ann Arbor, Mich.

Filed Apr. 19, 1996, Ser. No. 635,361

Int. Cl.⁶ A61B *8/00*

U.S. Cl. 128—653.1 **58 Claims**

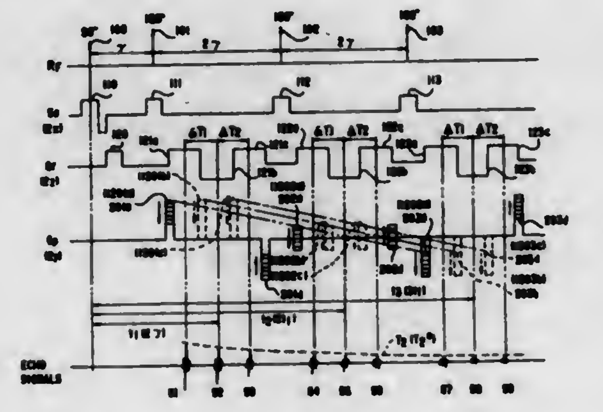


1. A method for examining an object internally, the method comprising the steps of:

positioning an opto-acoustic transducer having a reflecting surface and an absorbing layer capable of converting a burst of

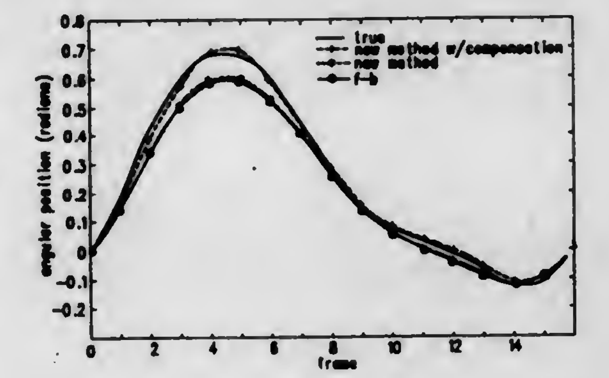
electromagnetic energy into a thermal pulse relative to the object so that the thermal pulse propagates as an acoustic wave in the object and is internally reflected within the object;
scanning a plurality of bursts of the electromagnetic energy over a surface of the absorbing layer to obtain acoustic waves in the object;
detecting acoustic waves reflected within the object at a plurality of positions on the reflecting surface of the opto-acoustic transducer to generate resultant signals;
calculating a 3-D representation of the object from the resultant signals; and
displaying the 3-D representation as an image.

5,615,676
MR IMAGING METHOD AND APPARATUS UTILIZING GRADIENT AND SPIN ECHO TECHNIQUE
Satoru Kohno, Kyoto, Japan, assignor to Shimadzu Corporation, Kyoto, Japan
Filed Mar. 29, 1995, Ser. No. 412,567
Claims priority, application Japan, May 31, 1994, 6-142551
Int. Cl.^{6} A61B *5/055*
U.S. Cl. 128—653.2 **8 Claims**



1. An MR imaging method using NMR phenomenon, comprising the steps of:
(a) emitting an excitation RF pulse and thereafter a plurality of refocus RF pulses to an object to generate a plurality of spin echo signals successively;
(b) applying slice selecting gradient field pulses simultaneously with said excitation RF pulse and said refocus RF pulses, respectively, for selecting slice planes;
(c) switching polarity of reading gradient field pulses a plurality of times, during periods between said refocus RF pulses, to generate a plurality of gradient echo signals distributed across one of said spin echo signals, and applying said reading gradient field pulses in timed relationship with generation of said spin echo signals;
(d) varying, during said periods between said refocus RF pulses, a strength of said phase-encoding gradient field pulses for application to each of a plurality of echo signals (hereinafter called the same group of echo signals) generated upon lapse of a same time period from a point of time at which each of said spin echo signals is generated, to vary integrated phase encode amounts of said echo signals from a positive (or negative) value through 0 to a negative (or positive) value according to an order of generation of said echo signals;
(e) repeating a pulse sequence of steps (a) through (d) above while varying said integrated phase encode amount at step (d) above; and
(f) acquiring data from the same group of echo signals and processing said data to be arranged in one of different k spaces according to said integrated phase encode amount applied to each of said echo signals, to reconstruct a plurality of slice images based on said k spaces, respectively.

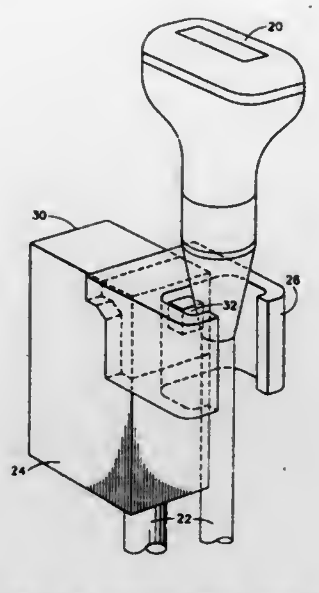
5,615,677
MRI TRACKING OF CYCLICAL MOTION BY FOURIER INTEGRATION OF VELOCITY
Norbert J. Pelc, Los Altos, and Yudong Zhu, Stanford, both of Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.
Filed Aug. 4, 1995, Ser. No. 511,501
Int. Cl.^{6} A61B *5/055*
U.S. Cl. 128—653.2 **18 Claims**



1. A method of determining a trajectory of a moving particle in a portion of an object comprising the steps of:
a) obtaining velocity measurements within said object for a plurality of time frames,
b) estimating a first particle trajectory based on said velocity measurements,
c) refining the estimated trajectory by:
i) computing frequency components of velocity along said first particle trajectory using a Fourier transform,
(ii) modifying said frequency components by a filtering function, and
(iii) computing an improved trajectory from the modified frequency components.

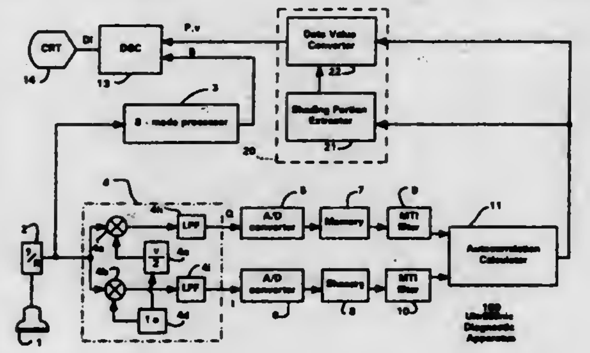
5,615,678
INTEGRAL AUTO-SELECTING YOKE/TRANSDUCER CONNECTOR FOR ULTRASOUND TRANSDUCER PROBE
Thomas R. Kirkham, Dousman; Kirsten N. Laconte, Waukesha; Michael L. Hall, Pewaukee; Jonathan E. Snyder, Whitefish Bay, all of Wis.; Edward S. Wallace, Tempe, Ariz.; William H. Phillips, Jr., Issaquah, Wash., and Robert L. Petersen, Jr., Lake Zurich, Ill., assignors to General Electric Company, Milwaukee, Wis.
Filed Nov. 25, 1994, Ser. No. 344,920
Int. Cl.^{6} A61B *8/00*
U.S. Cl. 128—660.01 **18 Claims**

1. An integral probe assembly comprising:
an ultrasound transducer probe;
a transducer connector;
a coaxial cable having one end secured to said probe and another end secured to said transducer connector; and
a yoke secured to said transducer connector,



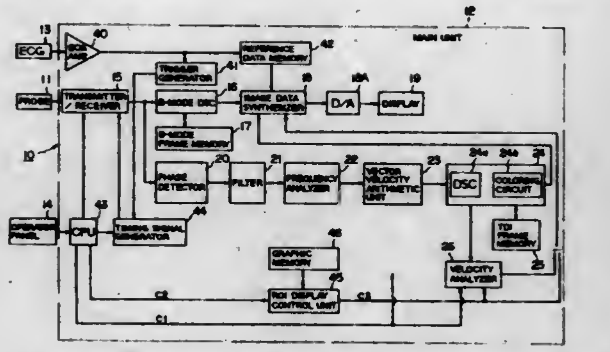
wherein said probe is configured to seat snugly within a center space of said yoke, and said yoke is supported by only said connector.

5,615,679
METHOD OF DISPLAYING ULTRASONIC IMAGES AND APPARATUS FOR ULTRASONIC DIAGNOSIS
Taiho Ri; Shinichi Amemiya, and Takao Jibiki, all of Tokyo, Japan, assignors to GE Yokogawa Medical Systems, Limited, Tokyo, Japan
Filed Dec. 18, 1995, Ser. No. 573,621
Claims priority, application Japan, Feb. 6, 1995, 7-018131
Int. Cl.^{6} A61B *8/00*
U.S. Cl. 128—660.05 **18 Claims**



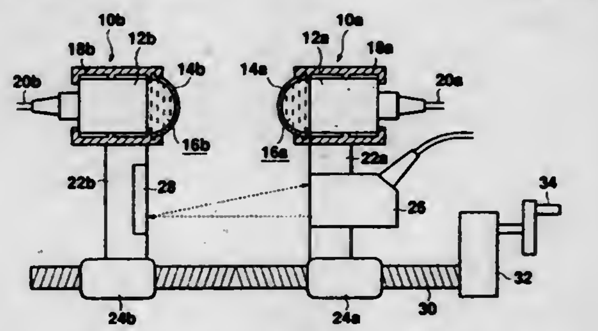
1. A method of displaying an ultrasonic image which transmits ultrasonic waves into a body under test, receives ultrasonic echo signals from inside of the body and displays an ultrasonic image produced from the ultrasonic echo signals, wherein said method comprises the step of shading part of a profile section of the image, and wherein ultrasonic images are shaded, and the shaded images are time-wise averaged, and the resulting averaged image is displayed, or ultrasonic images which are not shaded are time-wise averaged and the resulting averaged image is shaded and displayed.

5,615,680
METHOD OF IMAGING IN ULTRASOUND DIAGNOSIS AND DIAGNOSTIC ULTRASOUND SYSTEM
Akihiro Sano, Otawara, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa-Ken, Japan
Filed Jul. 21, 1995, Ser. No. 505,540
Claims priority, application Japan, Jul. 22, 1994, 6-171338
Int. Cl.^{6} A61B *8/00*
U.S. Cl. 128—661.09 **37 Claims**



1. A diagnostic ultrasound system for examining tissue of an object using an ultrasonic beam signal, the system comprising:
means for detecting tissue motion velocities at a plurality of sampling points in a section of the object scanned by the ultrasonic beam;
means for producing a single frame of two-dimensionally mapped velocity data based on the detected tissue motion velocities;
means for obtaining plural sets of velocity data indicating properties of plural local regions in the single frame of the two-dimensionally mapped velocity data;
means for analyzing a motion state of the tissue on the basis of the plural sets of velocity data; and
means for displaying analysis results of the tissue motion state.

5,615,681
METHOD FOR MEASURING SPEED OF SOUND IN TISSUE AND TISSUE ASSESSMENT APPARATUS
Naoki Ohtomo, Mitaka, Japan, assignor to Aloka Co., Ltd, Mitaka, Japan
Filed Dec. 21, 1995, Ser. No. 576,682
Claims priority, application Japan, Dec. 22, 1994, 6-319721
Int. Cl.^{6} A61B *8/00*
U.S. Cl. 128—661.03 **17 Claims**



1. A method for measuring the speed of sound in tissue wherein a tissue is held between a pair of transducer units, ultrasound is transmitted and received by said units, and each of said units comprises an ultrasonic transducer, a transducer cover of which at least part deforms freely and which covers said ultrasonic transducer, and an acoustic matching material filling the space between said cover and said transducer, said method comprising the steps below:
(a) a preparing step wherein the transducers of said pair of transducer units are pressed together under a predetermined

pressure, ultrasound is transmitted and received, and the propagation time of said ultrasound from one to the other of said transducers is measured;

(b) a measuring step wherein a tissue is held between said pair of transducer units under said predetermined pressure, ultrasound is transmitted and received, the propagation time of said wave from one to the other of said transducers is measured, and the distance between said transducers is measured; and

(c) a calculating step wherein the speed of sound in said tissue is computed based on the propagation time measured in said preparing step, and on the propagation time and distance between ultrasonic transducers measured in said measuring step.

5,615,682

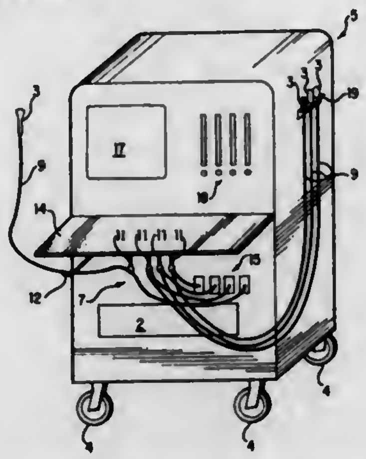
ULTRASOUND TRANSDUCER CABLE MANAGEMENT SYSTEM

James R. Stratz, Sr., Barrington, N.H., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 26, 1995, Ser. No. 548,510

Int. Cl.[6] A61B *8/00*

U.S. Cl. 128—662.03 **9 Claims**



1. A mobile ultrasound imaging system for obtaining ultrasound images of a patient's body, comprising:

multiple transducer probes, each of the multiple transducer probes for ultrasonically interrogating the patient's body:

a cable array, each cable of the cable array connecting to a corresponding transducer probe at a first end and connecting to the mobile ultrasound imaging system at a second end;

a display for generating an ultrasound image based on the ultrasonic interrogation;

a cable management system, slidably securing each cable of the cable array to the mobile ultrasound imaging system;

a slot assembly having a slotted aperture, attached to the mobile ultrasound imaging system;

multiple clasps, each clasp removably attached to a corresponding cable of the cable array; and

multiple fasteners for slidably retaining the clasps within the slotted aperture.

5,615,683

OPHTHALMOLOGIC MEASURING APPARATUS

Yoshiyuki Toge, Kawasaki, and Shinya Tanaka, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

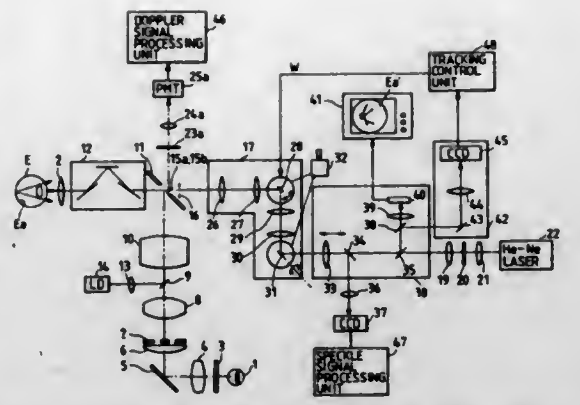
Filed Dec. 9, 1994, Ser. No. 352,506

Claims priority, application Japan, Dec. 14, 1993, 5-343089

Int. Cl.[6] A61B *5/026*

U.S. Cl. 128—666 **14 Claims**

1. An opthalmologic measuring apparatus comprising:



first projection means for applying a first laser beam to a predetermined area of a fundus of an eye to be examined;

first detecting means for two-dimensionally detecting reflected light of said first laser beam from said predetermined area;

first measuring means for measuring a blood flow condition two-dimensionally in said predetermined area of the fundus of the eye on the basis of a signal obtained by said first detecting means;

second projection means for applying a second laser beam to a spot area including at least one blood vessel in said predetermined area of the fundus of the eye;

second detecting means for detecting reflected light from said spot area;

second measuring means for measuring a blood flow velocity in a blood vessel in said spot area on the basis of a signal obtained by said second detecting means; and

calculating means for adding velocity information of each region of said predetermined area to the blood flow condition in said predetermined area measured by said first measuring means, on the basis of a result of a measurement by said second measuring means.

5,615,684

MEDICAL DEVICE FOR DETECTING HEMODYNAMIC CONDITIONS OF A HEART

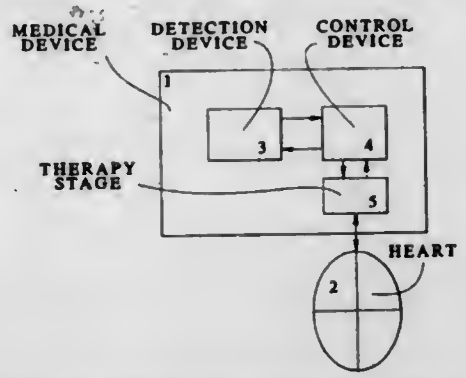
Pia Hagel, Sollentuna; Kjell Noren, Solna, and Kurt Hoegnelid, Västerhaninge, all of Sweden, assignors to Pacesetter AB, Solna, Sweden

Filed Apr. 27, 1995, Ser. No. 429,614

Claims priority, application Sweden, May 6, 1994, 9401578

Int. Cl.[6] A61B *5/021*

U.S. Cl. 128—670 **10 Claims**



1. A device for detecting hemodynamic conditions of a heart, comprising:

sensor means for sensing a physiological variable in a living subject and for emitting an electrical signal dependent of said physiological variable, said electrical signal having an average value;

signal editing means for editing said electrical signal to produce an edited signal;

calculating means supplied with said edited signal for calculating a variability measure of the edited sign related to but different from said average value of said electrical signal and correlated to average blood pressure of said living subject; and

comparator means for comparing said variability measure to a threshold selectable dependent on a selected hemodynamic condition, for emitting an indication signal indicating the presence of said selected hemodynamic condition in said living subject when said variability measure falls below said threshold.

5,615,685

PERSONAL PHYSICAL FITNESS MEASURING APPARATUS

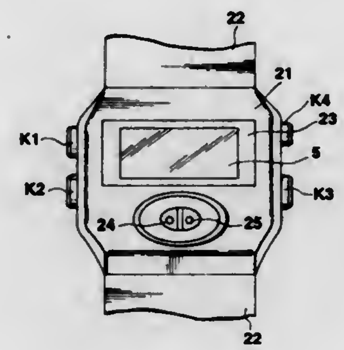
Fusao Suga, Ome, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed May 22, 1995, Ser. No. 446,411

Claims priority, application Japan, May 30, 1994, 6-116182

Int. Cl.[6] A61B *5/02*

U.S. Cl. 128—670 **8 Claims**



1. A measuring apparatus comprising:

height setting means for setting a height of a footstool;

personal data setting means for setting personal data of an exerciser, the personal data including at least an age, weight and sex distinction;

pace-sound generating means for generating pace sounds for a footstool exercise, the pace sounds being generated plural times, each of the plural times providing a different exercise pace;

physical data measuring means for measuring physical data of the exerciser when the exerciser steps up on and down from the footstool, a height of the footstool being set by said height setting means, in synchronism with the pace sounds generated by said pace-sound generating means; and

physical-strength evaluation data outputting means for calculating physical-strength evaluation data of the exerciser based on the physical data measured by said physical data measuring means, the height of the footstool set by said height setting means and the personal data set by said personal data setting means, and for outputting the calculated physical-strength evaluation data.

5,615,686

Patent Not Issued For This Number

5,615,687

HEART MONITORING SYSTEM AND METHOD WITH REDUCED SIGNAL ACQUISITION RANGE

Bruce A. Pritchard, McMinnville, Oreg., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 6, 1995, Ser. No. 567,975

Int. Cl.[6] A61B *5/0402*

U.S. Cl. 128—696 **17 Claims**

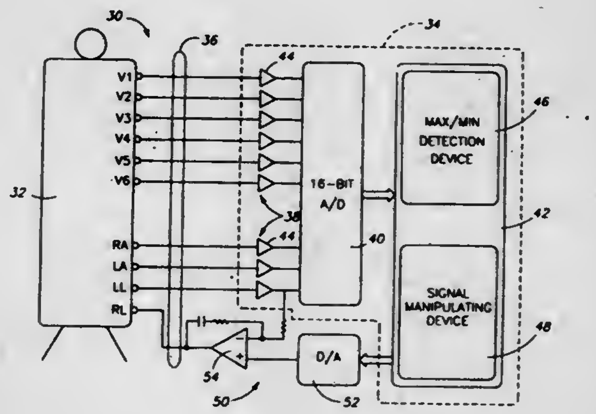
6. A method for monitoring heart activity in a human patient, the method comprising the following steps:

receiving a plurality of electrical signals indicative of heart activity of the patient, the electrical signals having associated variable voltage levels;

acquiring the electrical signals having voltage levels that fall within a predetermined signal acquisition range;

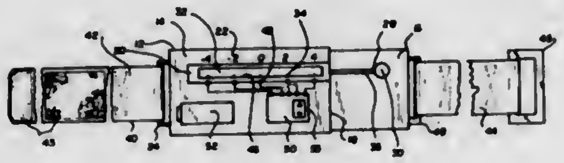
producing an offset adjustment signal using at least one of the acquired electrical signals; and

producing a difference between the offset adjustment signal and a voltage level of at least one other of the electrical signals to establish a potential for application to the patient to maintain



the voltage levels of the received electrical signals within the signal acquisition range.

5,615,688
APNEA DETECTION DEVICE WITH A REMOTE MONITOR
Joseph E. O'Dwyer, 149 Old York Rd., Ringoes, N.J. 08551-1802
Filed May 28, 1996, Ser. No. 654,163
Int. Cl.⁶ A61B *5/08;5/113*
U.S. Cl. 128—716 **1 Claim**



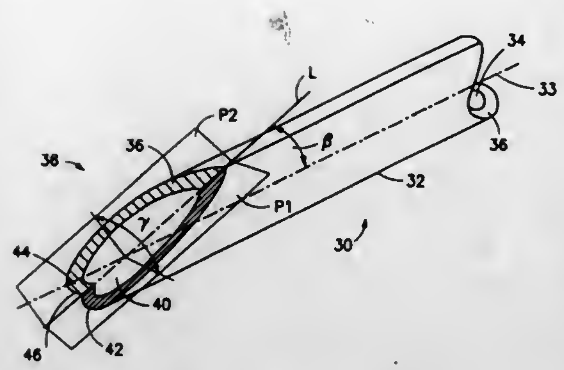
1. A new and improved apnea detection device with a remote monitor comprising, in combination:
a transmitter housing with a generally rectangular configuration having a first portion and a second portion, the first portion including a top face, a bottom face, and a thin periphery formed therebetween defining an interior space with access afforded thereto via an open side face, the first portion further including a transparent window formed on the top face with indicia printed adjacent thereto including a plurality of evenly spaced numbers, a closed coupling loop formed on a side face opposite the open side face, and a bottom planar extension integrally formed with the bottom face and extended outwardly therefrom within a plane in which the bottom face resides, the bottom planar extension including a post coupled thereto and extended upwardly therefrom with a bulb formed on a top portion thereof, the second portion of the housing including a top face with a periphery integrally coupled thereto and depending therefrom, the second portion further including a top planar extension integrally formed with the top face thereof with the top planar extension adapted to be slidably inserted within the interior space of the first portion wherein a plurality of markers printed thereon are visible through the window of the first portion so as to work in conjunction with the indicia of the first portion for indicating a depth the top planar extension is inserted within first portion, the second portion further including a groove formed in the top surface thereof for accepting the post therein so as to maintain a slidable relationship between the first portion and second portion and another closed coupling loop integrally coupled to the periphery of the second portion opposite the top planar extension thereof, wherein the second portion has an unbiased contracted orientation with the second portion proximally situated with respect to the first portion and a biased extended orientation with the second portion distally situated with respect to the first portion;
a stiff strap with a first extent having a first end coupled to the coupling loop of the first portion of the housing and a second end with a pair of pile fasteners coupled thereto, the strap further having a second extent with a first end coupled to the coupling loop of the second portion of the housing and a second end with a buckle coupled thereto, whereby the strap allows securement of the housing to a chest of an infant thus allowing the housing to be repeatedly biased coincidently with breathing of the infant;
a conductive strip situated on the top planar extension of the second portion of the housing;
a plurality of linearly aligned contacts situated within the interior space of the first portion of the housing in linear alignment and contact with the conductive strip, whereby a decreasing amount of contacts are connected via the conductive strip upon the sliding of the second portion of the housing from an unbiased orientation to a biased orientation;
a transmitter unit situated within the interior space of the first portion of the housing and connected to a small battery and the contacts, the transmitter unit adapted to monitor the conductivity between subsequent contacts and further transmit an activation signal upon the detection of the strip connecting an amount of contacts less than a predetermined amount;
a receiver including a housing with a generally rectangular configuration, a speaker adapted to emit an alarm upon the actuation thereof, and a receiver unit adapted to actuate the speaker upon the receipt of the activation signal via the transmitter unit; and
a pair of switches situated on the top face of the housing adapted to selectively increase or decrease the predetermined amount of contacts and the predetermined amount of time.

5,615,689
METHOD OF PREDICTING BODY CELL MASS USING BIOIMPEDANCE ANALYSIS
Donald P. Kotler, New Rochelle, N.Y., assignor to St. Luke's-Roosevelt Hospital, New York, N.Y.
Filed Dec. 12, 1994, Ser. No. 353,933
Int. Cl.⁶ A61B *5/05*
U.S. Cl. 128—734 **4 Claims**

1. A method for predicting body cell mass, fat free mass, and total body water of a person, said method comprising the steps of:
measuring height and weight of said person;
providing at least one signal representative of the measured height and weight;
measuring impedance of said person, said impedance comprising a resistance value and a reactance value;
correcting said measured impedance to indicate a value for said reactance in parallel to said resistance;
providing at least one signal representative of the corrected impedance;
calibrating at least one of the signals according to the sex of said person: and
predicting body cell mass, fat free mass, and total body water of said person using the signals.

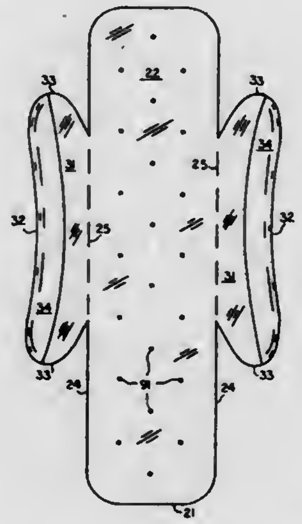
5,615,690
TISSUE CORE BIOPSY CANNULA
Joel F. Giurtino; David Turkel, both of Miami, Fla., and David P. Gordon, Stamford, Conn., assignors to Symbiosis Corporation, Miami, Fla.
Filed Feb. 15, 1995, Ser. No. 389,757
Int. Cl.⁶ A61B *10/00*
U.S. Cl. 128—754 **20 Claims**

1. A tissue core biopsy cannula, comprising:
a tube member defining a lumen, said tube member having a longitudinal axis and a distal end, said lumen extending proximally from said distal end, said distal end lying in two



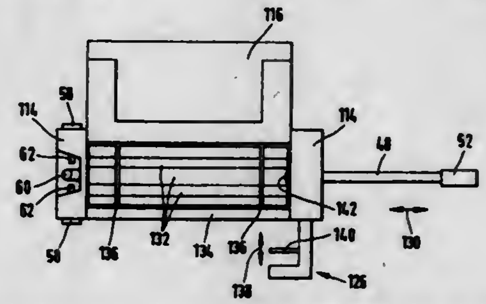
planes which intersect each other at a first angle along a line, with said line intersecting said longitudinal axis at a second angle.

5,615,691
SHIELDING DEVICE FOR THE PERINEAL AREA
Mary Huffman, 168 24th St. North, Jacksonville Beach, Fla. 32250
Filed Jan. 17, 1995, Ser. No. 373,646
Int. Cl.⁶ A61F *13/00;13/15*
U.S. Cl. 128—891 **12 Claims**



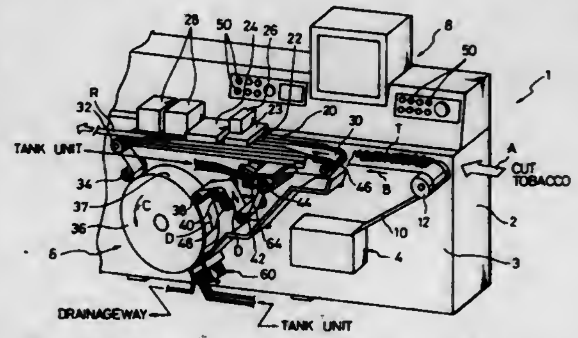
1. A shield for use in the perineal area, the device comprising a main body and two lateral panels composed of a relatively rigid but flexible material, said main body having an inner surface, an outer surface and two opposing longitudinal edges, said two lateral panels being each connected to one of said longitudinal edges along a folding junction, each said folding junction being shorter than each said longitudinal edge, each of said two lateral panels having an arcuate outer edge which conforms to the perineal area when said device is worn, each said lateral panel having an expanded portion adjacent each said arcuate outer edge of greater thickness than said lateral panel and said main body, said expanded portions securing said lateral panels in proper position when said device is worn, where said device is relatively planar when said lateral panels are in the non-folded position, and whereby said lateral panels when folded in angular relation to said main body provide sufficient rigidity to separate and maintain said inner surface of said main body a distance away from the perineal area when said device is worn.

5,615,692
METHOD AND APPARATUS FOR FILLING CIGARETTE-PAPER TUBES WITH TOBACCO
Heinrich W. Ruppert; Gunter Schütze, and Klaus G. Gätschmann, all of Trossingen, Germany, assignors to EFKA-Werke Fritz Kiehn GmbH, Germany
Continuation of Ser. No. 351,791, Dec. 8, 1994, abandoned. This application Jul. 29, 1996, Ser. No. 681,619
Claims priority, application Germany, Dec. 23, 1993, 43 44 281.1; Jan. 5, 1994, 44 00 192.4
Int. Cl.⁶ A24C *5/00;5/42*
U.S. Cl. 131—70 **25 Claims**



2. An apparatus for filling a cigarette-paper tube having an open end with tobacco comprising
a tobacco strand casing of a substantially sound and constant diameter and filled with an elongated and tubular tobacco strand,
a housing including at least one tubular receptacle open at both ends and defining first and second open ends for receiving said tobacco strand casing, said receptacle and said tobacco strand having the same cross-section,
a nozzle connected to said housing to which an open end of the cigarette-paper tube can be attached, said nozzle connected to the first open end of said receptacle,
a plunger means mounted on the housing and aligned with the second open end of said receptacle, said plunger means being displaceable through said receptacle and having a diameter for passing through said casing and transferring said tobacco strand out of the strand casing and through the nozzle and into the cigarette-paper tube attached to the nozzle;
support means within the receptacle engaging the outer surface of said strand casing and for externally and radially supporting said strand casing over at least a portion of said tobacco during the transfer of the tobacco strand from the casing into the cigarette-paper tube.

5,615,693
CIGARETTE ROD MANUFACTURING APPARATUS
Masayoshi Saitoh, Tokyo, Japan, assignor to Japan Tobacco Inc., Tokyo, Japan
Filed Feb. 9, 1996, Ser. No. 598,914
Claims priority, application Japan, Feb. 9, 1995, 7-022089
Int. Cl.⁶ A24C *5/18*
U.S. Cl. 131—84.1 **10 Claims**



1. A cigarette rod manufacturing apparatus comprising:

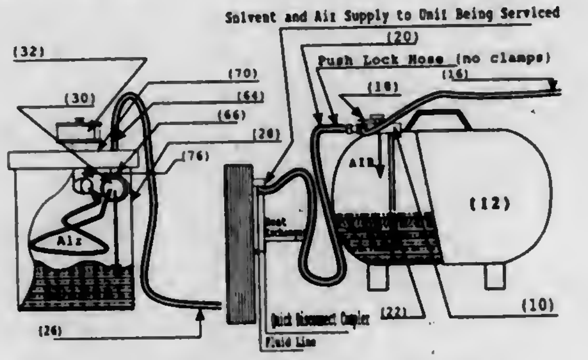
a shaping section for continuously forming a cigarette rod in a manner such that cut tobacco fed onto paper is wrapped in the paper as the paper travels, the shaping section including an endless garniture tape for running the paper and a shaping tool for forming the paper and the cut tobacco into the cigarette rod in cooperation with the garniture tape, the shaping tool having an inlet and an outlet for the garniture tape; and

humidifying means for humidifying the garniture tape.

5,615,694
METHOD OF MODIFYING AND AROMATIZING THE PRIMARY OR SECONDARY SMOKE OF SMOKING PRODUCTS
Jean-Claude Battard, and Daniel Esnault, both of Loiret, France, assignors to Societe Nationale D'Exploitation Industrielle des Tabacs et Allumettes, France
Continuation of Ser. No. 940,436, Sep. 4, 1992, abandoned. This application Jun. 1, 1995, Ser. No. 459,535
Claims priority, application France, Sep. 5, 1991, 91 10991
Int. Cl.⁶ A24B *3/12*
U.S. Cl. 131—365 **13 Claims**

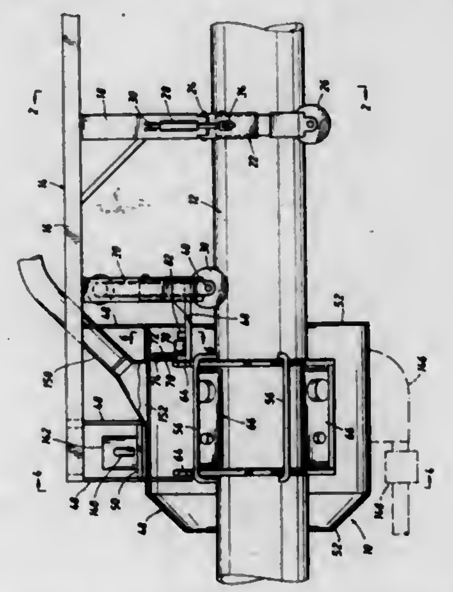
1. A method of modifying or aromatizing the primary or secondary smoke of smoking products, by applying to the wrapping of these products aromatizing or modifying substances dissolved in a solvent which is non-volatile at room temperature and has a vapor tension less than that of the aromatizing or modifying substances to be applied so that the substances are transferred to the smoking products in the vapor phase of the confined atmosphere within the wrapping material of these products.

5,615,695
PULSATER FLUID SYSTEM FLUSHER
Harvey E. Chambers, 3395 Fox St., Suite 102C, Duluth, Ga. 30136
Filed Dec. 15, 1995, Ser. No. 573,544
Int. Cl.⁶ B08B *3/04;9/02*
U.S. Cl. 134—102.1 **22 Claims**



1. An apparatus for cleaning fluid lines comprising
a hose for carrying cleaning liquid and air to said fluid lines,
means for supplying cleaning liquid and air to said hose for cleaning said fluid lines, comprising,
a source of compressed air,
an enclosed tank having a reservoir partially filled with cleaning liquid,
an air and liquid manifold means operatively connected to said air source and to said tank,
said manifold means comprising an air flow system and a liquid distribution system, said air flow system having an air valve interconnecting said source of compressed air with an air chamber openly communicated with an upstream air passage and with a downstream air passage for simultaneously flowing compressed air therein, said upstream air passage having a predetermined restricted sized orifice openly communicating with said tank for restricting the flow of compressed air therein to gradually increase the air pressure in said tank, said downstream air passage openly air flowingly connecting with a hose barb means having an oval rear channel section integral with a restricted diameter sized oval front channel section,
said liquid distribution system having a vertical liquid supply tube descending into said liquid for passing cleaning liquid to an upwardly connected downstream liquid passage having a liquid control means disposed therein which controls the flow of liquid through an interior tube extending from said downstream liquid passage longitudinally within said downstream air passage and said rear oval channel section and within said front channel section terminating at the tip end of said interior tube partway within said front channel wherein the cleaning liquid passes from said tip end into said front channel section,
the exterior surface of said interior tube exposed to an open passage of air flowing through said downstream air passage and said rear channel section and a restricted passage of air flowing to its tip partway within said front channel section, where the air flow encounters said cleaning fluid passing from said tip into said rear channel section,
said front channel section of said hose barb means connected to said hose for passing a mixture of cleaning liquid and pressurized air into said hose.

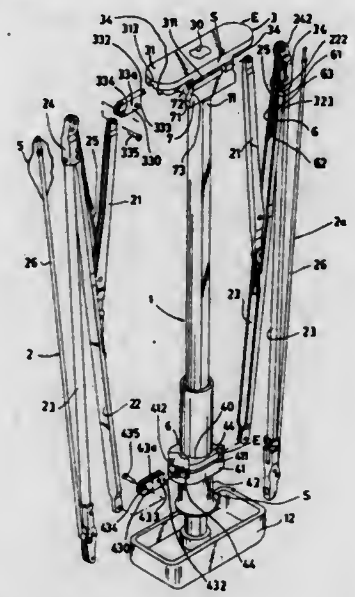
5,615,696
APPARATUS FOR TREATING PIPE
Oliver W. Lawler, 307 Banana Bend Loop, Highlands, Tex. 77562
Continuation-in-part of Ser. No. 919,534, Jul. 24, 1992, abandoned. This application Aug. 16, 1993, Ser. No. 106,928
Int. Cl.⁶ B08B *3/02*
U.S. Cl. 134—104.2 **44 Claims**



1. An apparatus for providing patterned movement to a cleaning jet nozzle in a cleaning system comprising:
a) a nozzle having a jet cleaning outlet for providing a cleaning liquid flow from said nozzle wherein said nozzle also has an inlet for cleaning liquid delivered through said nozzle to said inlet;
b) an elongate flexible hose fixedly connected at one end to said nozzle inlet and extending to a remote source of high pressure cleaning liquid and said hose has sufficient length to permit nozzle movement in a controlled patterned movement;
c) support means connected to said nozzle to secure said nozzle with respect to a surface so that said nozzle cleaning outlet is operatively directed toward the surface for cleaning the surface;

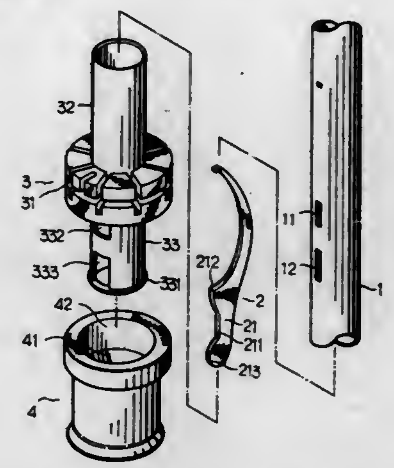
d) rotating nozzle support means for moving said support means in a controlled patterned movement over the surface and wherein said nozzle and nozzle support means move as a unit at the end of said flexible hose in a patterned movement repetitively;
e) motor means providing motion; and
f) motion transfer means connected from said motor means to said rotating nozzle support means so that said nozzle is moved over the surface for cleaning, and wherein said nozzle is moved in a controlled pattern of movement while connected with said flexible hose to provide cleaning liquid for said jet cleaning outlet and said flexible hose and nozzle permit patterned movement without rotation of said nozzle with respect to said one end of said hose.

5,615,697
POCKETABLE FOLDING UMBRELLA WITH FOLDABLY SANDWICHED RIBS
Chung-Kuang Lin, and Jung-Jen Chang, both of Taipei Hsien, Taiwan, assignors to Fu Tai Umbrella Works, Ltd., Taipei Hsien, Taiwan
Filed Jun. 10, 1996, Ser. No. 662,466
Int. Cl.⁶ A45B *11/00*
U.S. Cl. 135—20.1 **9 Claims**



1. A pocketable folding umbrella comprising:
an upper notch secured on an upper portion of a central shaft;
a lower runner slidably held on the central shaft and positioned under the upper notch:
two extremity rib means respectively pivotally secured on two extremity portions disposed on two opposite end portions of each said upper notch and said lower runner;
four flat-side rib means respectively pivotally secured to said upper notch and said lower runner, with each said flat-side rib means universally disposed in between each said extremity portion and a flat side portion of each said upper notch and said lower runner;
an umbrella cloth secured on said rib means;
a plurality of folding springs each secured to at least a foldable parallelogram linkage of each said rib means for resiliently retracting the rib means when closing the umbrella; and
a narrowing member formed below said upper notch and having a pair of U-shaped recesses recessed in two opposite end portions of the narrowing member for guiding each said flat-side rib means into each said U-shaped recess to allow each said extremity rib means to be sandwiched in between two said flat-side rib means for minimizing a folding volume of the umbrella when closed from an opening state.

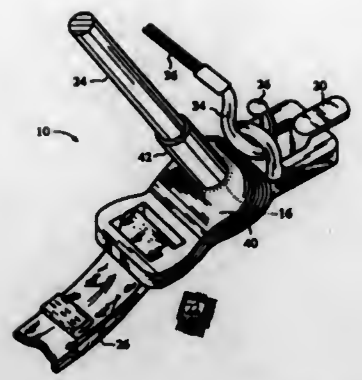
5,615,698
UMBRELLA FOLDING AND UNFOLDING DEVICE
Chin-Sung Ko, 7, Lane 30, Chung Hsiao Street, Changhua, Taiwan
Filed May 21, 1996, Ser. No. 651,148
Int. Cl.⁶ A45B *25/06*
U.S. Cl. 135—28 **5 Claims**



1. An umbrella frame shaft assembly comprising:
a shaft of a hollow construction and provided in a wall of an upper segment thereof with two through holes separated from each other by a predetermined distance;
a spring piece comprising a retaining protuberance having an upper retaining projection, a lower retaining projection, and a recessed portion located between said upper retaining projection and said lower retaining projection, said spring piece being disposed in a hollow interior of said shaft such that said upper retaining projection and said lower retaining projection are movably jutted out of said two through holes of said shaft;
a runner comprising a main body, an upper tubular portion extending from one side of said main body, and a lower tubular portion extending from another side of said main body such that said lower tubular portion is opposite to said upper tubular portion, said lower tubular portion provided at one end thereof with a flange, said runner being fitted over said shaft such that said runner can be moved up and down along said shaft; and
a sleeve provided in an inner wall thereof with an arresting edge and fitted over said lower tubular portion of said runner such that said arresting edge of said sleeve is engaged securely with said flange of said lower tubular portion of said runner;
whereto said lower retaining projection of said retaining protuberance of said spring piece is greater in height than said upper retaining projection of said retaining protuberance of said spring piece;
wherein said lower tubular portion of said runner is provided in a wall thereof with an upper retaining hole and a lower retaining hole for locating said upper retaining projection and said lower retaining projection of said retaining protuberance of said spring piece;
wherein said sleeve is provided with two retaining recesses engageable with said upper retaining projection and said lower retaining projection of said retaining protuberance of said spring piece.

5,615,699
BASE BRACKET FOR TENTS AND POLES
Youn J. Lee, Kyong Ki-Do, Rep. of Korea, assignor to Jinwoong, Inc., Seoul, Rep. of Korea
Filed Jan. 23, 1996, Ser. No. 589,245
Int. Cl.⁶ E04H *15/62*
U.S. Cl. 135—118 **4 Claims**

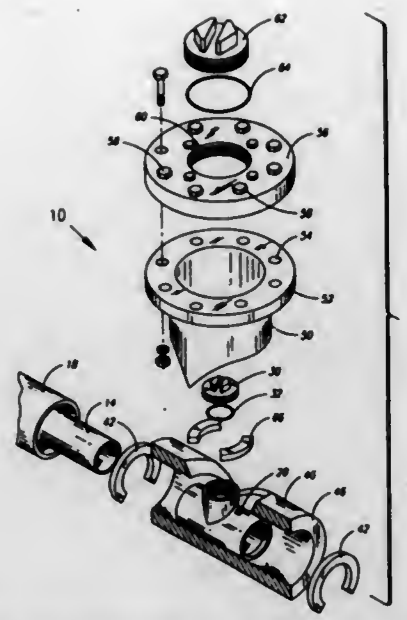
1. A tent base bracket, comprising:
a bracket plate having defined therein:



a bottom side, for resting said bracket plate upon a surface,
a top side, located opposite said bottom side,
an inner end of said bracket plate, for orientation closest to an assembled tent using said tent base bracket,
an outer end, opposite said inner end, and
a central region, located between said inner end and said outer end of the bracket plate;
said bracket plate having therein a stake orifice, located in said outer of said bracket plate;
said bracket plate further having therein a pose orifice, located in said central portion of said bracket plate,
a rim defined around said pole orifice; said rim is angled relative to the bracket plate such that a lower end of said rim is oriented closest to said inner end of said bracket plate and a higher end of said rim is oriented closest to said outer end of said bracket plate;
wherein an acute angle is defined between a pole axis defined as extending perpendicular to said rim around said pole orifice away from said top surface of the bracket plate, and a plate axis defined as extending from said pole orifice in the direction of said inner end of said bracket plate; and
tent attachment means, located in said inner end of said bracket plate, to attach said bracket plate to tent wall materials, and cords and straps attached to tent wall materials.

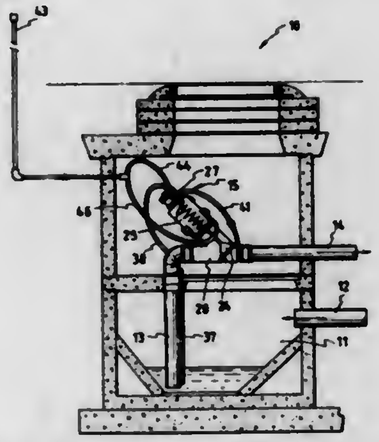
5,615,700
DOUBLE CONTAINMENT FITTING
David A. Chaney, and Mark Wallen, both of Tulsa, Okla., assignors to Conley Corporation, Tulsa, Okla.
Continuation-in-part of Ser. No. 207,945, Mar. 8, 1994, Pat. No. 5,546,977. This application Apr. 1, 1996, Ser. No. 626,022
Int. Cl.^{6} G01M *3/08;* **F16K** *43/00*
U.S. Cl. 137—15 **8 Claims**

1. A method to produce a double containment manhole fitting for use with a double containment pipe having inner carrier pipes for fluid and outer containment pipes, which method comprises:
molding an inner T carrier housing on a mold;
mitering a V-shaped opening in an outer containment housing having a larger diameter than the height of said inner carrier housing;
slipping said inner carrier housing into said outer containment housing;
attaching a plurality of spiders to said inner carrier housing to concentrically space said inner carrier housing in said outer containment housing;



attaching a branch assembly onto said outer containment housing at said V-shaped opening; and
attaching a removable cover to said branch assembly.

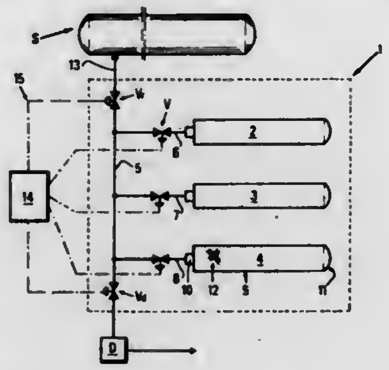
5,615,701
VACUUM VALVE CONTROL DEVICE AND VACUUM VALVE
Yasuo Yamabe, Shiga, and Tetsushi Ohtsuka, Saitama, both of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan
Filed Jun. 7, 1994, Ser. No. 255,716
Claims priority, application Japan, Jun. 7, 1993, 5-135764; Jun. 7, 1993, 5-135765; Jun. 28, 1993, 5-157103; Nov. 29, 1993, 5-297926; May 24, 1994, 6-109820; May 24, 1994, 6-109823
Int. Cl.^{6} E03F *1/00;* **B65G** *53/00;* **F16K** *31/126*
U.S. Cl. 137—205 **11 Claims**



1. A vacuum valve control device for controlling operation of a vacuum valve by opening and closing a pipe-shaped connecting section connecting a vacuum discharge pipe in a vacuum condition with the suction pipe for sucking liquid-like materials from a tank, said vacuum valve control device comprising:
a liquid level detecting pipe whose inside pressure fluctuates in accordance with a liquid level in said tank;
a pressure adjusting chamber communicating with said liquid level detecting pipe;
a freely movable diaphragm that is not secured at its peripheral edge disposed between said liquid level detecting pipe and said pressure adjusting chamber;

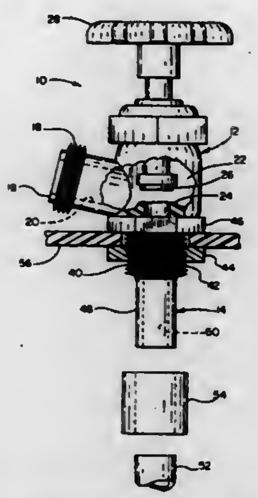
a liquid level detecting diaphragm resiliently deformable in response to a pressure increase in said pressure adjusting chamber being transmitted thereto via a through-hole;
a detection valve controlled by deformation of said liquid level detecting diaphragm;
a changeover valve controlled by said detection valve to selectively supply a vacuum pressure and an atmospheric pressure to said valve,
wherein said damping diaphragm has at least one small through-hole so that said damping diaphragm does not resiliently deform when the pressure in said liquid level detecting pipe is gradually increased,
wherein said damping diaphragm resiliently deforms due to decompression of said pressure adjusting chamber to close said through-hole,
wherein said damping diaphragm quickly releases the pressure around the non-secured peripheral edge thereof to said liquid level detecting pipe when the pressure in said pressure adjusting chamber is rapidly increased to quickly close as said liquid level in said tank reaches a substantially empty condition.

5,615,702
TANK FOR STORING PRESSURIZED HYDROCARBONS
François Dawans, Bougival, and Jean-François Le Page, Rueil Malmaison, both of France, assignors to Institut Francais du Petrole, Rueil Malmaison, France
Filed Jun. 20, 1994, Ser. No. 262,608
Claims priority, application France, Jun. 18, 1993, 93 07394
Int. Cl.^{6} F17D *1/04*
U.S. Cl. 137—255 **12 Claims**



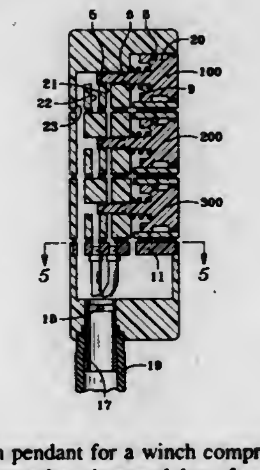
1. A storage system for pressurized fluid fuel for an engine of a vehicle, said system comprising:
inlet and monitoring means for said pressurized fluid fuel in said system,
several containers comprising at least one inlet orifice,
transfer lines for said pressurized fluid fuel, said transfer lines connecting the inlet and monitoring means to at least one of the inlet orifices of said containers, and
said inlet and monitoring means being designed to allow simultaneously, during at least part of filling of the system, the pressurized fluid fuel to pass freely between said inlet and monitoring means and at least two containers; each container having a cylindrical part with two ends, said cylindrical part being comprised of a corrugated internal sheath having hollow parts, said hollow parts of said corrugated internal sheath being filled with a reinforcing element.

5,615,703
PLASTIC VALVE WITH INLET CONDUIT EXTENSION
Raun A. Kopp, Brunswick, Ohio, assignor to Oatey Co., Cleveland, Ohio
Filed Dec. 20, 1995, Ser. No. 575,602
Int. Cl.^{6} F16L *5/00*
U.S. Cl. 137—360 **5 Claims**



1. A fluid valve comprising a plastic valve body having an integrally formed plastic inlet conduit, said inlet conduit including an external threaded portion proximate said valve body having external threads adapted to cooperate with a nut to mount the valve body in place and an integrally formed plastic extension at an outer end of said threaded portion, said extension having a smooth cylindrical outside surface dimensioned to fit snugly within a conventional solvent-weldable coupling, said extension having a smaller outside diameter than the root diameter of said external threads on said threaded portion to permit the nut to be slipped over said extension and threaded onto said threaded portion.

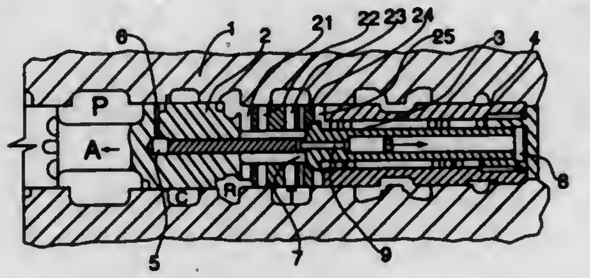
5,615,704
PUSH BUTTON PENDANT FOR A HOIST OR WINCH
Leslie J. Sell, Bothell, Wash., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.
Filed Nov. 2, 1995, Ser. No. 556,789
Int. Cl.^{6} F15B *13/02;* **F16K** *11/22*
U.S. Cl. 137—596.1 **10 Claims**



1. A push button pendant for a winch comprising:
a generally rectangular elongated box formed by stacking a plurality of generally rectangular push button modules on a generally rectangular base which is in turn connected to a pneumatic actuator for a winch by hose means; and
each of said push button modules being further provided with a push button connected to a balanced spool stem sequentially

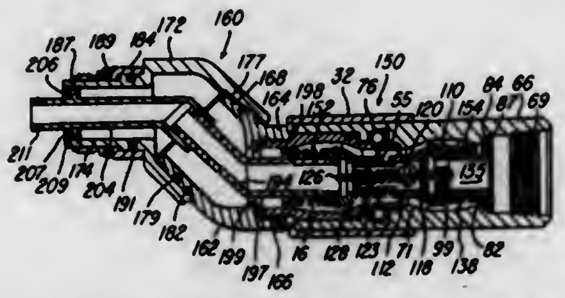
addressing an air pressure inlet supply port, an appropriate signal port, and an exhaust port as a means for effecting winch control.

5,615,705
CONTROL VALVE FOR HEAVY CONSTRUCTION EQUIPMENT HAVING REGENERATION FUNCTION
Hyung J. Cho, Changwon, Rep. of Korea, assignor to Samsung Heavy Industries Co., Inc., Seoul, Rep. of Korea
Filed Jun. 30, 1995, Ser. No. 497,125
Claims priority, application Rep. of Korea, Oct. 5, 1994, 94-25400
Int. Cl.⁶ F15B *13/04*
U.S. Cl. 137—596.2 **16 Claims**



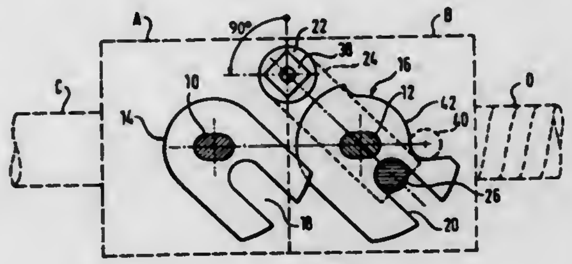
1. A control valve having a regeneration function, comprising:
a hollow valve body;
a plurality of spaced ports provided at the valve body, the ports including a pump port, an actuator port, a regeneration port and a tank port;
a hollow main spool movably disposed in the valve body;
a regeneration spool movably disposed in the main spool, said regeneration spool being movable by a flow of fluid delivered from a pump through the pump;
a fluid passage provided at the main spool and adapted to communicate the actuator port and the tank port together, the fluid passage being opened or closed by the movement of the regeneration spool, with means for increasing a part, to be fed to the tank port, of a flow of fluid emerging from the actuator port and correspondingly decreasing a part to be fed to the regeneration port as the regeneration spool is moved by the fluid flow delivered by the pump.

5,615,706
COAXIAL BREAKAWAY COUPLING WITH VAPOR ASSIST CHECK VALVE
Robert W. Guertin, Troy, Ohio, assignor to Catlow, Inc., Tipp City, Ohio
Division of Ser. No. 286,507, Aug. 5, 1994, Pat. No. 5,433,247. This application Jul. 12, 1995, Ser. No. 501,679
Int. Cl.⁶ F16L *29/04*
U.S. Cl. 137—614.04 **13 Claims**



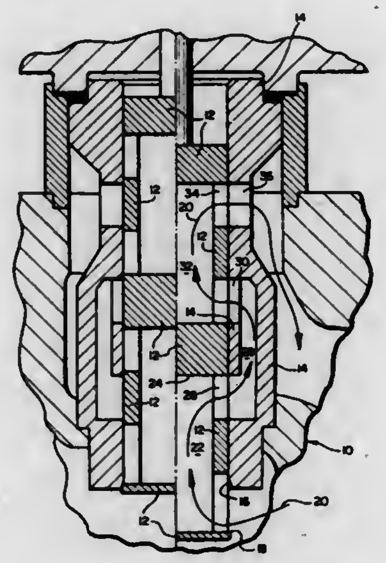
1. A breakaway coupling for use with a flexible coaxial fuel supply hose defining a vapor return passage and a liquid fuel supply passage, said coupling comprising a first tubular valve body and a second tubular valve body disposed with a common center axis, means for releasably connecting said valve bodies and providing for movement of said valve bodies from a connected position to a disconnected position in response to an axial tension force, each of said valve bodies having an axially extending support tube defining therein an inner passage and cooperating with the surrounding said valve body to define therebetween an axially extending outer passage, a tubular valve member supported by each of said support tubes for axial movement, each of said valve bodies including means forming an annular valve seat within the corresponding said passage, means for moving each of said valve members axially on the corresponding said support tube from a closed position engaging the corresponding said valve seat to an open position retracted axially from said valve seat in response to movement of said valve bodies from said disconnected position to said connected position, spring means for urging each of said valve members towards said closed position, a swivel coupling including a set of angular fittings, means connecting said fittings for relative rotation on an axis forming an acute angle with said center axis, one of said fittings connected to said first tubular valve body, said support tube within said first valve body including an angular extension tube within the center of said one fitting and defining a continuation of the corresponding said passage, and a center tube within the other said fitting and having an end portion rotatably connected to said extension tube.

5,615,707
APPARATUS FOR JOINTLY ACTUATING A PAIR OF VALVES
Erhard Pfannenschmidt, Kriegkamp 12, D-22147 Hamburg, Germany
Filed Jun. 2, 1995, Ser. No. 459,733
Claims priority, application Germany, Jun. 3, 1994, 44 19 545.1
Int. Cl.⁶ F16L *37/28*
U.S. Cl. 137—614.06 **7 Claims**



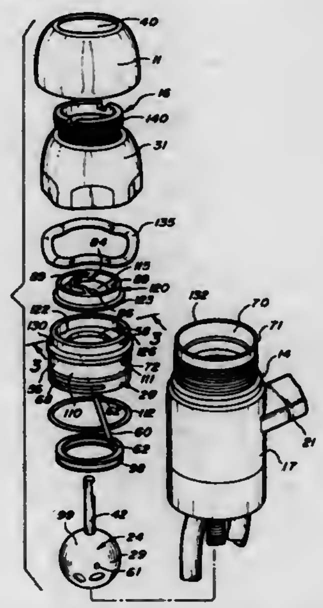
1. An apparatus for jointly and sequentially actuating a pair of valves associated with coupling members serving as closure valves, having closure members which can be actuated only sequentially from an opened to a closed position and vice versa if the coupling members are coupled, said closure members having actuating shafts each of which is connected to a cam for sequentially operating the actuating shafts to displace the respective closure member from the opened position to the closed position, and vice versa, characterized in that
a) an actuating lever (**24**) connected to manual means or a 90° actuating drive (**50**) is mounted so as to be pivotal about an axis (**22**) which is parallel and spaced from the axes of the actuating shafts (**10, 12**),
b) a single dog member (**26**) is provided on the actuating lever (**24**) in spaced relationship to the pivot axis, and
c) the cams (**14, 16**) have receiving portions (**18, 20**) for the dog member (**24**) such that in a first pivoting step of the actuating lever (**24**) about 45° the actuator causes the first cam (**14**) to be rotated about 90° and in a second pivoting step of the actuating lever (**24**) about another 45° the actuator causes the second cam (**16**) to be rotated also about 90°.

5,615,708
FLOW CONTROL VALVE WITH NON-PLUGGING MULTI-STAGE VALVE TRIM
Kimball R. Barron, Marshalltown, Iowa, assignor to Fisher Controls International, Inc., Clayton, Mo.
Filed Oct. 23, 1995, Ser. No. 546,945
Int. Cl.⁶ F16K *47/08*
U.S. Cl. 137—625.3 **8 Claims**



1. A high-pressure flow control valve for reducing the flow pressure in multiple pressure throttling stages comprising:
a valve body having an inlet, an outlet, and a central passageway communicating therebetween;
a cage member received within and cooperating with said passageway to define a center bore, a cage member inlet communicating with said valve body inlet, a cage member outlet communicating with said valve body outlet, and a cage member internal passageway communicating said cage member inlet with said cage member outlet;
a valve plug reciprocally received within and movably engaging said cage member center bore and having a plurality of valve plug sealing surfaces and intermediate spaced valve plug restricted flow openings leading to internal plug passageways;
said valve plug selectively movable to enable said plug sealing surfaces to disengage from said cage member inlet and outlet, and to enable said valve plug restricted flow openings to communicate with said cage member inlet and outlet to enable fluid flow through the valve body central passageway; and
said cage member inlet and outlets registering with said valve plug restricted flow openings to enable said fluid flow to define a combination of flow paths through the cage member inlet and outlet and the internal plug passageways which are a combination of substantially right angle reversing flow paths wherein each reversing flow path provides flow pressure reduction, said reversing flow paths including axially along said internal plug passageways and said cage member internal passageway, outwardly radially between said valve plug restricted flow openings and said cage member, and inwardly radially between said cage member and said valve plug restricted flow openings to provide a series of fluid flow throttling stages in which the flow path is alternately restricted and expanded in each said reversing flow path, each throttling stage corresponding to said outwardly radial and inwardly radial flow paths providing respective flow pressure reduction in said outward and inward flow paths.

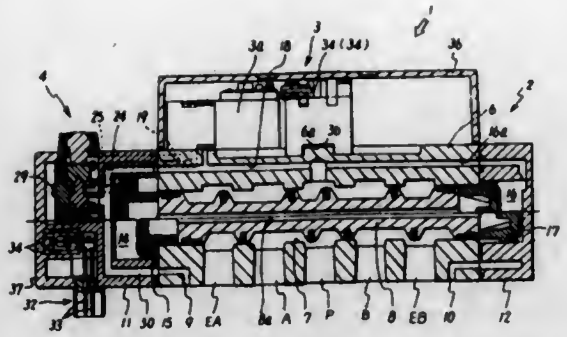
5,615,709
MIXER VALVE HAVING A BALL VALVE ELEMENT HOUSED IN A CARTRIDGE
Alfons Knapp, Biberach/Riss, Germany, assignor to Masco Corporation, Taylor, Mich.
PCT No. PCT/US92/10739, § 371 Date Jun. 9, 1995, § 102(e) Date Jun. 9, 1995, PCT Pub. No. WO94/13985, PCT Pub. Date Jun. 23, 1994
PCT Filed Dec. 11, 1992, Ser. No. 454,143
Int. Cl.⁶ F16K *11/076*
U.S. Cl. 137—625.41 **32 Claims**



1. A ball valve cartridge for a mixer valve characterized by:
a ball valve element having at least one inlet and an outlet;
a cartridge housing having an upper opening for allowing a control stem passing therethrough to be connectable to said ball valve;
means for seating said ball valve movably within said cartridge housing;
said cartridge having a lower opening through which said ball valve element protrudes, said cartridge being removably installable in a cavity of said mixer valve as a single unit with said ball valve remaining interconnected with said cartridge housing, said ball valve element being seatable in proximity to inlet ports within said mixer valve below said cartridge such that its at least one inlet is selectively alignable or misalignable with said inlet port.

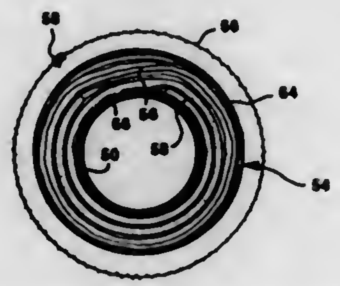
5,615,710
PILOT-TYPE CHANGE-OVER VALVE
Hideharu Sato, Yawara-mura, Japan, assignor to SMC Corporation, Tokyo, Japan
Filed Aug. 30, 1995, Ser. No. 521,326
Claims priority, application Japan, Sep. 22, 1994, 6-254689; Dec. 21, 1994, 6-335786
Int. Cl.⁶ F15B *13/043*
U.S. Cl. 137—625.64 **1 Claim**

1. A pilot-type change-over valve, comprising:
a main valve segment having multiple ports passing a fluid, a valve member switching communication between the individual ports and a pilot valve segment switching the valve member by supplying and discharging a pilot fluid to and from a pilot chamber in the main valve segment,
the pilot valve segment comprising a poppet-type amplifying pilot valve supplying and discharging the pilot fluid to the pilot chamber in the main valve segment and a solenoid pilot valve switching the amplifying pilot valve by utilizing the pilot fluid; and



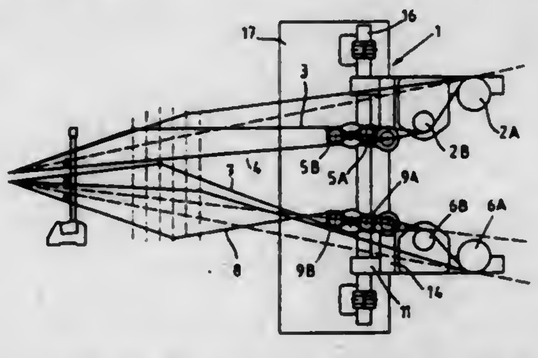
the amplifying pilot valve having a capacity larger than the capacity of the solenoid valve and corresponding to the capacity of the pilot chamber in the main valve segment, wherein
the amplifying pilot valve comprises a manual operation unit permitting a supply of the pilot fluid to the pilot chamber in the main valve segment by manual operation, the amplifying pilot valve being located so as to minimize the length of a passage communicating the amplifying pilot valve with the pilot chamber and to increase response speed;
the solenoid pilot valve is mounted on top of the main valve segment and the amplifying pilot valve is attached to one axial end of the main valve segment and is separated from said solenoid pilot valve, with the manual operation unit being located in a position accessible from above the main valve segment and the manual operating member switching the valve member in the absence of operation of the solenoid valve member, and wherein the solenoid and amplifying pilot valves are directly connected to a supply port of the main valve segment through a pilot supply passage branching off from the supply port.

5,615,711
SCREEN ENCASED EXHAUST HOSE
Harvey S. Lewis, 646 W. Orange Ave., St. Paul, Minn.
Filed Jul. 11, 1995, Ser. No. 500,634
Int. Cl.⁶ F16L *9/14*
U.S. Cl. 138—149 **21 Claims**



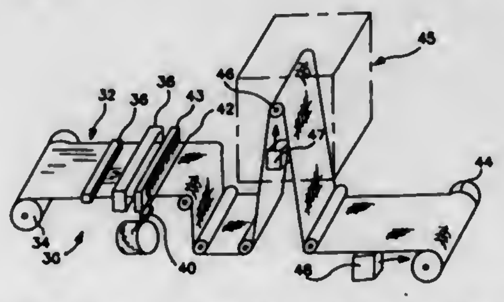
1. A bendable exhaust hose for transmitting exhaust fumes from an internal combustion engine, comprising:
a metal tube, the metal tube being bendable, the metal tube being able to withstand temperatures in excess of 500° F.;
a thermal insulation layer around the metal tube; and
a screen mesh sleeve around the insulation layer, wherein the screen mesh sleeve is made of metal, is flexible and allows air flow radially therethrough to the thermal insulation layer, and wherein the screen mesh sleeve provides an outermost surface of the bendable exhaust hose for handling of the bendable exhaust hose.

5,615,712
TECHNIQUE FOR SEPARATING AND TENSIONING WARP THREADS IN A FACE-TO-FACE WEAVING MACHINE
Carlos Derudder, Heule, and Johnny Debaes, Wenduine, both of Belgium, assignors to N.V. Michel Van De Wiele, Marke, Belgium
Filed Mar. 10, 1995, Ser. No. 402,015
Claims priority, application Belgium, Mar. 11, 1994, 09400273
Int. Cl.⁶ D03D *39/16; 49/22*
U.S. Cl. 139—21 **7 Claims**



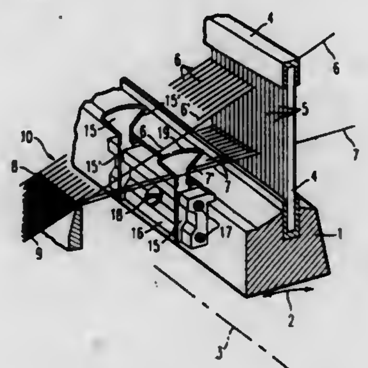
1. A device for use in a face-to-face weaving machine for weaving at least a first fabric and a second fabric to be linked to each other, said first fabric including at least a plurality of first binding warp threads and first tension warp threads, said second fabric including at least a plurality of second binding warp threads and second tension warp threads, said device comprising:
a first set of rollers for separating said first binding warp threads from said first tension warp threads;
a second set of rollers for causing the separated first binding warp threads to cross each other between the rollers in the second set;
a third set of rollers for separating said second binding warp threads from said second tension warp threads;
a fourth set of rollers for causing the separated second binding warp threads to cross each other between the rollers in the fourth set;
whereby the first binding warp threads in said first fabric attain substantially the same tension as the second binding warp threads in said second fabric.

5,615,713
METHOD FOR WEAVING A FILTER FABRIC BELT FOR PRESSURE FILTER APPARATUS
Steve C. Benesi, 611 McClay Rd., Novato, Calif. 94947
Division of Ser. No. 272,026, Jul. 8, 1994, Pat. No. 5,477,891. This application Sep. 29, 1995, Ser. No. 536,652
Int. Cl.⁶ D03D *15/00*
U.S. Cl. 139—97 **8 Claims**



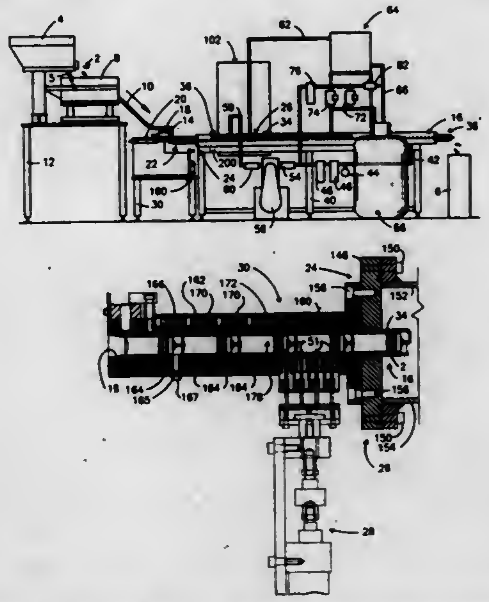
1. A method of forming a belt filter medium by machine weaving a dimensionally stable controlled permeability woven fabric for use as a belt filter medium in a pressure filter machine, said woven fabric having warp yarns in the direction of said machine and weft yarns in a cross direction of said machine and being adapted for repeated use as a belt filter medium in said pressure filter machine, comprising the steps of:
a) in a weaving loom machine establishing a plurality of individual parallel sized warp yarns with the axis of said warp yarns being in the machine direction of said machine, each of said warp yarns having a total density of about 2,000 denier,
b) placing each warp yarn under equal tension in said machine direction with resulting tension on said woven fabric being about 200 to about 5,000 pounds,
c) weaving a plurality of sized weft yarns through said warp yarns with the axis of said weft yarns being in a cross direction of said machine and placing each of said weft yarns under equal tension in said cross machine direction to produce said woven fabric,
d) transporting said woven fabric from said weaving loom while maintaining said woven fabric under tension by uniformly pulling said warp yarns,
e) passing said woven fabric with tensioned warp yarns through a heating means having a temperature range of about 200° F. to about 400° F. to heat set and crimp said warp and weft yarns of said woven fabric, the size of said weft yarns and said warp yarns being related to each other to cause said warp yarns and said weft yarns to become crimped during said heat set step to produce said dimensional stability in said woven fabric,
f) maintaining said tension on said woven fabric as said fabric is accumulated as a continuous woven fabric,
g) and forming said woven fabric as a continuous belt filter medium for use in said pressure filter machine by joining the ends of the woven fabric.

5,615,714
GUIDE SYSTEM FOR THE GRIPPER INSERTION TAPE IN A SHUTTLELESS LOOM
Giulio Bortoli, Schio; Luciano Corain, and Gianluigi Sora, both of Vicenza, all of Italy, assignors to Nuovo Pignone S.p.A., Florence, Italy
Filed May 17, 1995, Ser. No. 443,314
Claims priority, application Italy, May 27, 1994, MI94A1086
Int. Cl.⁶ D03D *47/27*
U.S. Cl. 139—449 **6 Claims**



1. A guide system for gripper insertion tape in a shuttleless, loom comprising:
a sley with a reed, the reed having dents through which pass upper and lower warp yarns forming a shed,
a least one insertion tape moving with reciprocating motion between said upper and lower warp yarns of the shed,
a gripper fixed to one end of said tape and conveying a weft yarn through said shed, and
a plurality of guide teeth fixed spaced apart on said sley and projecting through the lower warp yarns of said shed when said shed is open, said teeth being provided with a bearing and guiding surface for said insertion tape and for said gripper, wherein said bearing and guiding surface of said teeth comprises a convex surface which extends in a direction of the warp yarn; and
a control mechanism making guiding of said insertion and said gripper more effective during travel thereof within the shed;
wherein said convex surface of said teeth is in the form of an arc of a circle with a center thereof coinciding with a rocking axis of said sley, the circle having a radius equal to a distance between a lower surface of said tape and said rocking axis of said sley.

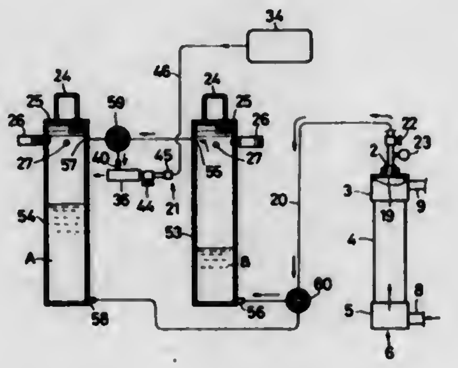
5,615,715
CONTAINER FLUID REMOVAL AND RECOVERY SYSTEM
John W. Yore, Riverview, Fla., assignor to Rainbow Recovery, Inc., Gibsonton, Fla.
Continuation of Ser. No. 228,212, Apr. 15, 1994, abandoned. This application Feb. 21, 1996, Ser. No. 604,709
Int. Cl.⁶ B65B *31/00*
U.S. Cl. 141—51 **27 Claims**



10. An apparatus for removing fluid from a sealed, pressurized container, comprising:
a chamber having a first end for introduction of said containers thereinto and a second end for removal of said containers therefrom;
first sealing means attached to said chamber proximal said first end for sealingly engaging the exterior of said containers passing therethrough, such that the exterior of said chamber is sealed against pressure leakage as said containers are so introduced thereinto;
second sealing means attached to said chamber proximal said second end for sealingly engaging the exterior of said containers passing therethrough, such that the interior of said chamber is sealed against pressure leakage as said containers are so removed therefrom;
means for introducing said containers through said first sealing means into said first end of said chamber;
means for forming at least one opening in each said container sufficient to permit fluid within said container to pass out of said container through said opening;
means for maintaining the pressure within said chamber at a level lower than the pressure within said sealed containers, such that fluid from an opened container passing through said chamber will flow into said chamber; and
means for guiding said opened containers along a predetermined path through said chamber and out said second end thereof, whereby fluid from an opened container within said chamber

will flow into said chamber prior to passage of said container out said chamber second end.

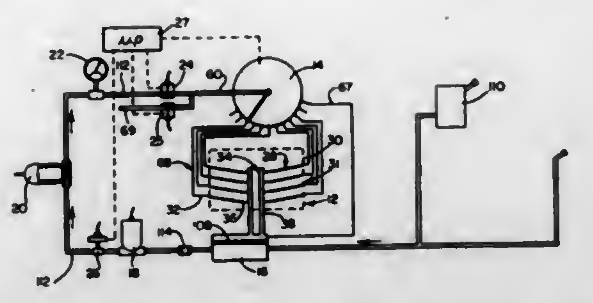
5,615,716
ENGINE COOLANT CHANGING APPARATUS
Yasumasa Akazawa, 2-8-14 Higashi-shinmachi, Matsubara shi, Osaka, Japan
Division of Ser. No. 373,136, Jan. 17, 1995, Pat. No. 5,573,045. This application Mar. 4, 1996, Ser. No. 607,995
Claims priority, application Japan, Dec. 15, 1994, 6-333900
Int. Cl.[6] B65B *3/00*
U.S. Cl. 141—91 **2 Claims**



1. An engine coolant changing apparatus comprising:
waste liquid storing means comprising a negative pressure action port and a liquid inlet;
fresh liquid storing means comprising a positive pressure action port and a liquid outlet;
detaching means to be attached to or detached to or from a radiator;
pressure action means for applying a negative pressure to said negative pressure action port of said waste liquid storing means to overheat the coolant to a low temperature by driving an engine when discharging the coolant from an engine coolant system, and for applying a positive pressure to said positive pressure action port of said fresh liquid storing means when feeding a fresh liquid; and
communicating means for communicating between the detaching means and the liquid inlet of said waste liquid storing means when discharging the coolant, and for communicating between the liquid outlet of said fresh liquid storing means and the detaching means when feeding fresh liquid; wherein said pressure action means comprises a plurality of flexible suction members for sucking the coolant between a water tube projecting into a radiator upper tank and an upper plate when discharging the coolant, wherein the plurality of flexible suction members communicate with said detaching means.

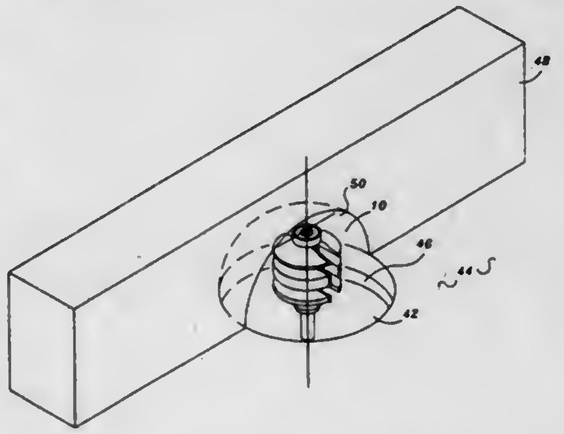
5,615,717
ELECTROLYTE DISTRIBUTING SYSTEM AND METHOD
Michael C. Cheiky, Santa Barbara, Calif., assignor to Dreisbach Electromotive Inc., Santa Barbara, Calif.
Filed Dec. 22, 1994, Ser. No. 361,770
Int. Cl.[6] B65B *1/04;3/04*
U.S. Cl. 141—100 **17 Claims**

1. A method of providing electrolyte to an electrolyte starved battery, comprising the steps of:
supplying electrolyte from a source to a dispenser;



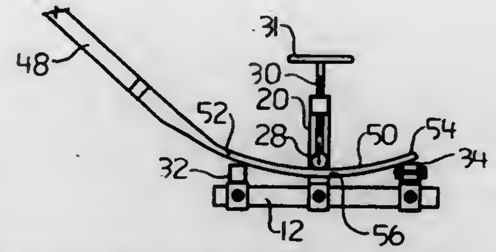
rotating said dispenser to dispense the electrolyte from said dispenser sequentially to each of a plurality of electrolyte inputs in the electrolyte starved battery.

5,615,718
RAIL AND STILE CUTTER
Carlo M. Venditto, Clearwater, Fla., assignor to Tooltrend, Inc., Oldsmar, Fla.
Filed Nov. 7, 1995, Ser. No. 554,456
Int. Cl.[6] B27C *5/00*
U.S. Cl. 144—135.2 **20 Claims**



9. A vertically spindled wood cutting tool comprising:
(a) a shaft;
(b) a first bearing secured to said shaft;
(c) a second bearing secured to said shaft;
(d) a body secured to said shaft between said first bearing and said second bearing; and
(e) a cutting profile provided on said body, said cutting profile comprising:
(i) a first bladed tongue of a construction capable of cutting a first wood groove;
(ii) a first bladed groove of a construction capable of cutting a first wood tongue, said first wood tongue being of a shape capable of fitting into mating alignment with said first wood groove;
(iii) a second bladed tongue of a construction capable of cutting a second wood groove; and
(iv) a second bladed groove of a construction capable of cutting a second wood tongue, said second wood tongue being of substantially different dimensions than said first wood tongue and being of a shape capable of fitting into mating alignment with said second wood groove.

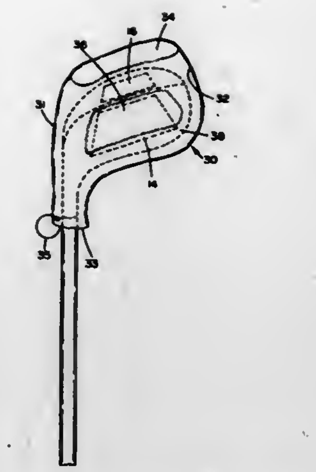
5,615,719
HOCKEY STICK CURVING APPARATUS
Richard L. Balon, 12303 - 141 Street, Edmonton, Alberta, Canada
Filed Jul. 9, 1996, Ser. No. 678,456
Int. Cl.[6] B27H *1/00*
U.S. Cl. 144—269 **11 Claims**



11. A hockey stick curving apparatus, comprising:
a rail having a first end, a second end, and an exterior surface;
a generally "C" shaped movable pressure member support frame mounted to a sleeve that slides along the exterior surface of the rail between the first end and the second end;
a locking screw extending through a threaded aperture in the sleeve and bearing against the rail to lock the pressure member support frame to the rail in a selected position;
an elongate pressure member positioned transversely across the rail and mounted to the pressure member support frame by means of a mounting screw, such that by turning the screw in a selected direction the pressure member is movable in a first direction toward the rail and in a second direction away from the rail;
a pair of supports, each support being secured to sleeves that slide along the exterior surface of the rail, the supports being positioned in spaced relation with one of the pair of supports being on one side of the pressure member support frame and the other one of the pair of supports being on an other side of the pressure member support frame;
each of said supports having a locking screw extending through a threaded aperture in the sleeve and bearing against the rail to lock the support to the rail in a selected position;
one of said supports being angularly adjustable having a pivoting portion pivotally mounted to the rail engaging sleeve, the pivoting portion being pivotally movable relative to the rail;
the exterior surface of the rail having indicia to indicate the axial positioning of the pressure member support frame and the supports along the rail;
the pressure support member having indicia to indicate the positioning of the pressure member relative to the rail; and
the rail engaging sleeve of the angularly adjustable support having indicia to indicate the angular positioning of the pivoting portion of the support relative to the rail.

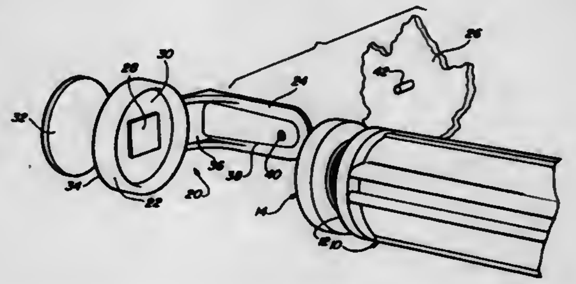
5,615,720
GOLF CLUB CLEANING COVER
Kevin P. O'Sullivan, 4 Bridle Path Dr., Old Westbury, N.Y. 11568
Filed Apr. 24, 1995, Ser. No. 427,445
Int. Cl.[6] A63B *57/00*
U.S. Cl. 150—160 **15 Claims**

1. An apparatus for cleaning and removably covering a golf club head having a front ball striking face and a bottom sole face which should be cleaned by removing debris and dirt which collects thereon during golf play, and other surface faces, comprising a flexible sock shaped cover member which can receive therein a golf club head, a first abrasive surface disposed on an inner surface of said cover member positioned in abrading contact relation to the ball striking face of the golf club head, a second abrasive surface disposed on an inner surface of said cover member positioned in abrading contact relation to the sole face of the golf club head, and



wherein the other surface faces of the golf club head are contacted by nonabrasive surfaces of the cover member.

5,615,721
SHOWER ROD ATTACHMENTS
Paul H. Winter, Wilmington, Del., assignor to Zenith Products Corp., Aston, Pa.
Filed Aug. 22, 1995, Ser. No. 517,934
Int. Cl.[6] E04F *10/00*
U.S. Cl. 160—38 **5 Claims**

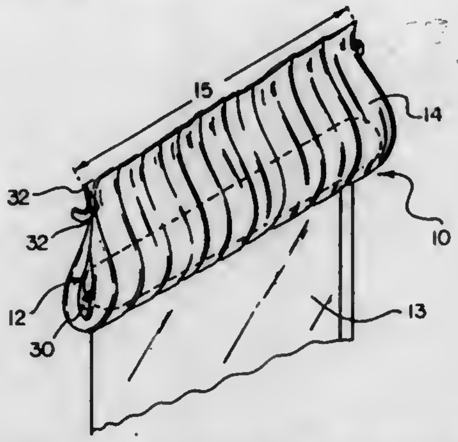


1. An attachment for a bathroom shower rod for securing a decorative accent to the shower rod, the shower rod having an end adapted to engage a wall for positioning of the shower rod, said attachment comprising:
a decorative accent piece having a mounting stud;
a circular mounting member having a circular end wall and a tubular side wall, said mounting member adapted to receive the end of the shower rod such that the circular end wall of said mounting member is positionally captured between the end of the shower rod and the wall; and
an L-shaped bracket arm extending from said mounting member and including means for receiving a decorative accent piece, said bracket arm having a first segment extending forwardly from said mounting member and a second segment disposed perpendicular to said first segment to position said accent piece in front of said attachment when said mounting member is attached to said wall, and said means for receiving comprising an aperture in said second segment.

5,615,722
VALANCE SHAPED ENHANCEMENT APPARATUS

Julie Garrett, and Thomas Ashlock, both of 2209 Shannawood Dr., Lexington, Ky. 40513

Filed Oct. 27, 1995, Ser. No. 548,963
Int. Cl.⁶ E04F *10/00*
U.S. Cl. 160—38 **1 Claim**



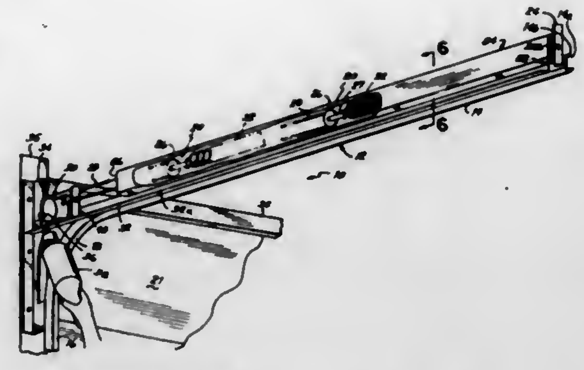
1. A valance shape enhancement apparatus suitable for placement near the upper portion of a window so as to cover at least a portion of the window, said apparatus comprising:
a flexible valance having a longitudinal valance length, and
an inflatable valance shape enhancement assembly, substantially coextensive with said flexible valance along said longitudinal valance length,
wherein said flexible valance is formed from a quantity of flexible material having two edges that are juxtaposed and connected together, such that said flexible valance includes a longitudinally shaped pocket extending downward from said top portion of said window such that said quantity of flexible material and said pocket covers a longitudinal expanse of said window,
wherein said inflatable valance shape enhancement assembly is received in said longitudinally shaped pocket of said flexible valance,
wherein said inflatable valence shape enhancement assembly is of light transmissive material such that said assembly is not visible in said pocket when light shines through said longitudinal expanse of window covered by said valence and coextensive with said pocket therein,
wherein said inflatable valance shape enhancement assembly includes:
an inflatable body portion, and
a valve assembly connected to said inflatable body portion, and
wherein said apparatus further includes
a quantity of ballast material contained within said inflatable body portion to provide a downward shaping force to said flexible valence and wherein said quantity of ballast material comprises sand.

5,615,723
EXTENSION SPRING SYSTEM FOR AN OVERHEAD DOOR

Kenneth E. Carper, Madeira, Ohio, assignor to Clopay Building Products Company, Inc.

Continuation-in-part of Ser. No. 288,328, Aug. 10, 1994, Pat. No. 5,577,544, which is a continuation-in-part of Ser. No. 262,135, Jun. 16, 1994. This application May 5, 1995, Ser. No. 435,965
Int. Cl.⁶ E05F *11/00*
U.S. Cl. 160—191 **12 Claims**

1. An extension spring system for an overhead door system, said mechanism comprising:



a first mounting bracket;
a housing having mounting structure for mating with mounting structure on said first mounting bracket;
a spool carrying a door operating cable, said spool being mounted for rotation within said bousing;
a ring gear connected for rotation with said spool;
a worm mounted to said housing in intermeshing engagement with said ring gear;
a second mounting bracket; and
an extension spring connectable between said door operating cable and said second mounting bracket.

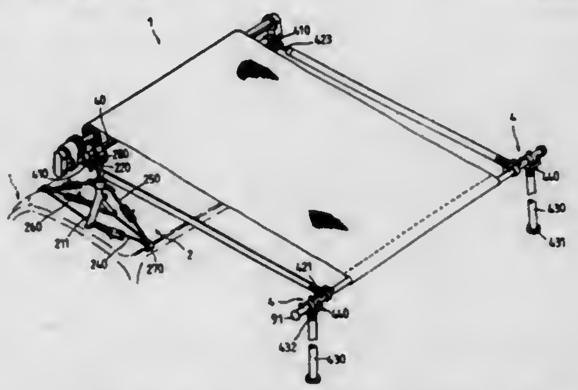
5,615,724

Patent Not Issued For This Number

5,615,725
OUTDOOR SUN SHADE

Yang Ming-Shun, Taipei, Taiwan, assignor to Formosa Saint Jose Corp., Taipei, Taiwan

Filed Dec. 14, 1995, Ser. No. 572,634
Int. Cl.⁶ B60J *1/20*
U.S. Cl. 160—370.22 **3 Claims**



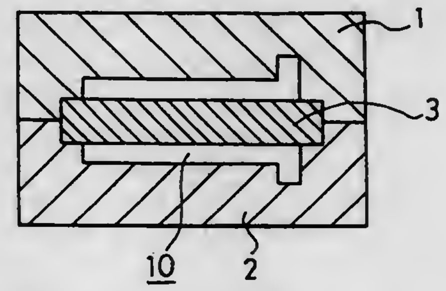
1. An outdoor sun shade, comprising one screen-rolling device, two fixing frames for mounting the screen-rolling device on the roof of a car, and two support frames for mounting the screen-rolling device on the ground, wherein:
the screen-rolling device comprising;
a left fixing seat with two fixing holes;
a right fixing seat with two fixing holes;
a movable seat with an upper toggle and a lower toggle, wherein the upper toggle is nested on a fixing rod, the lower toggle is nested on a shaft lever, a convex grip is provided on one side of the movable seat, a knob with a notch is provided on an outer perimeter of the lower toggle on another side of the movable seat, and an elastic stop block is provided on a wall of the lower toggle;
a fixing rod, of which two ends are fixed on left and right fixing seats;

a shaft lever, of which one end together with a loop coter is fixed on the left fixing seat, and another end is fixed on the right fixing seat;
a twisting spring set nested on the shaft lever, comprising a larger twisting spring, a middle twisting spring, a smaller twisting spring and two connecting thimbles for connecting these three twisting springs, two hook holes on two side walls of these two connecting thimbles, a hook at each of two ends of each of these three twisting springs, the hook at one end of the smaller twisting spring to be hooked and fixed in a hook hole on the shaft lever, and the hook at one end of the larger twisting spring to be hooked and fixed in a hook hole on a catch element;
a catch element, of which one side is provided with a hook hole and a convex block, and another side is a gear;
a movable tube with a slot on a right end to be nested on the twisting spring set; and
a canvas screen, of which one end is fixed on the movable tube and another end is provided with a tie rod;
the fixing frame comprising:
a foldable foot rest consisting of two corresponding round concave plates to pivotally nest a thimble, and each bottom end of these two round concave plates with two rope holes and a soft pad;
a hollow tube, inserted in the thimble of the foldable foot rest, a U-shaped catch nested in a top end of the hollow tube, a concave slide way on a perimeter of said tube, a spring catch nested in a lower end thereof to be caught in an upper hole or a lower hole on the thimble so that a higher or lower position of said tube can be adjusted and controlled in the thimble;
a support seat, whereon four catch holes at a center for catching two ends of the U-shaped catch, and two threaded holes on each of two sides of the support seat;
an upper clip and a lower clip, of which inner walls are provided with a soft liner, able to clamp and fix the fixing rod of the screen-rolling device;
a cap nested at a top end of the foldable foot rest, and two opposite rope holes on two sides of said cap;
four catches, of which each one is provided with three catch holes and two clamps;
two hooks, of which each one is provided with a hook hole and a hook; and
a foot rest rope and a cap rope; and
the support frame comprising:
two toggles nested at two ends of the fixing rod of the screen-rolling device, and each of these two toggles with a catch hole;
two cross bars, one end of each cross bar is a threaded connector, and another end thereof is provided with a hook seat whereon a movable hook is pivotally provided;
two upright bars, of which each bottom end is provided with a foot pad, and a top end is a threaded connector; and
four fastening elements, of which each one comprising a fastening clip, a clamping block and a threaded sleeve, two fastening clips nested at two ends of the tie rod, the lower end of each fastening clip nested in and extending out from a narrow hole at a center of the clamping block and inserted in a guide hole at a center of the threaded sleeve;
through the foregoing structure, when the screen-rolling device, fixing frames and support frames are assembled totether integrally, the screen-rolling device can be mounted on the roof of a car through two fixing frames, and the canvas screen of the screen-rolling device can be mounted on the ground through two support frames to form an outdoor sun shade.

5,615,726
CASTING MOLD

Atsushi Ota, Toyota; Seizi Uda, Okazaki; Shingo Nakamura, Toyota, and Hidehiko Kadono, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi-ken, Japan

Division of Ser. No. 295,031, Aug. 25, 1994, abandoned. This application Dec. 26, 1995, Ser. No. 578,487
Claims priority, application Japan, Aug. 27, 1993, 5-213128
Int. Cl.⁶ B22C *9/10;* **B22D** *19/00;29/00*
U.S. Cl. 164—32 **13 Claims**

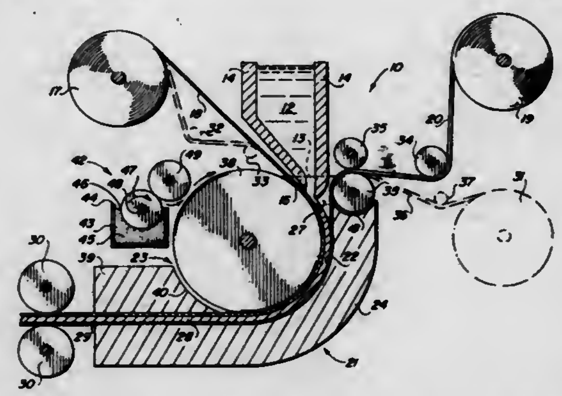


1. A method of molding, comprising:
providing a cavity in a casting mold;
projecting an auxiliary mold having a thermal expansion coefficient that is greater than a thermal expansion coefficient of a molten metal to be charged into said cavity for forming a concave portion in a cast article;
charging said molten metal into said cavity; and
forcibly cooling said auxiliary mold before and after said molten metal has completely solidified for contracting said auxiliary mold so as to form a clearance between said auxiliary mold and said solidified molten metal.

5,615,727
COMPOSITE METAL STRIP AND METHODS OF MAKING SAME

Melvin L. Ollman, 841 S. Heathwood Dr., Marco Island, Fla. 33937

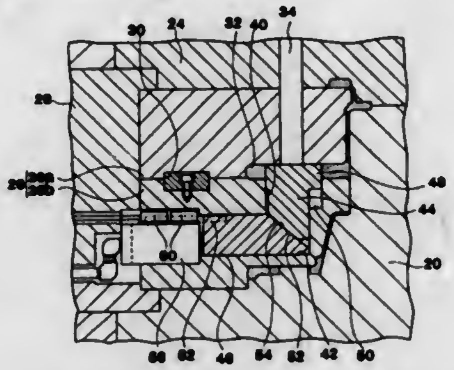
Filed Feb. 24, 1995, Ser. No. 394,406
Int. Cl.⁶ B22D *19/16;11/06*
U.S. Cl. 164—98 **12 Claims**



1. A method for producing an integral composite metal member comprising the steps of:
(a) feeding a first and a second metal strip in spaced generally parallel relationship to each other into a cooled mold system, said strips defining a channel therebetween;
(b) pouring molten metal into said channel to form a sandwich with said strips;
(c) applying a thin layer of metal onto the outer portion of at least one of said strips;
(d) pressing said thin layer onto said strip; and

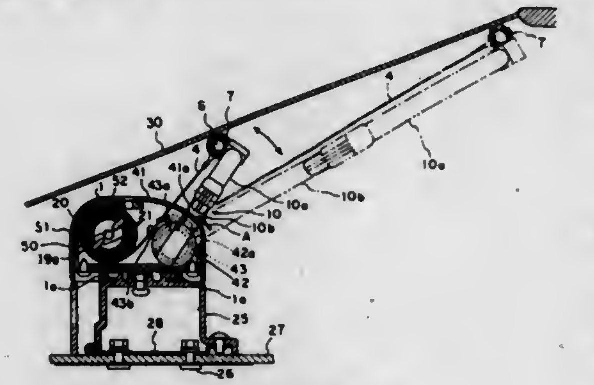
(e) cooling said coated layered sandwich until said molten metal solidifies.

5,615,728
UNDERCUT TREATING DEVICE OF DIE CASTING MOLD
Sangkyu Lee, Kyungsangnam-do, Rep. of Korea, assignor to Hyundai Motor Company, Seoul, Rep. of Korea
Filed Nov. 29, 1994, Ser. No. 350,004
Claims priority, application Rep. of Korea, Dec. 8, 1993, 93-26867
Int. Cl.⁶ B22D *17/24*
U.S. Cl. 164—340 **9 Claims**



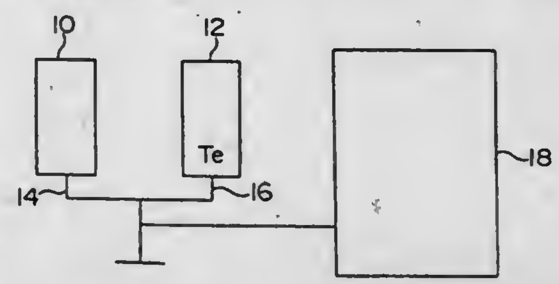
1. An undercut treating device of a die casting mold, comprising:
a movable die;
a sliding core slidably mounted around the movable die and forming an undercut portion for forming an undercut, said sliding core being provided with an undercut portion, a first channel communicating with an undercut portion, a second channel communicating with the first channel;
a first means for forming the undercut, said first means being movably disposed in the first channel; and
a second means, movably disposed in the second channel, for displacing the first means into the undercut portion to form the undercut when a molten metal is poured into the mold.

5,615,729
CURTAIN WINDING APPARATUS
Tohru Matsumoto, and Sadayuki Matsurugi, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 505,656, Jul. 21, 1995. This application Aug. 8, 1996, Ser. No. 693,506
Claims priority, application Japan, Oct. 26, 1994, 6-262482
Int. Cl.⁶ B60J *3/00*
U.S. Cl. 160—370.22 **5 Claims**



1. A curtain winding apparatus comprising:
means for holding a base end portion of a curtain and for winding said curtain;
means for holding a leading end portion of said curtain by means of a leading end portion of an expansible arm, and for drawing said curtain in a direction away from said winding means by stretching said arm; and
a spring loaded mechanism for loading said arm in a direction substantially perpendicular to a surface of said curtain drawn by said drawing means so as to urge said leading end portion of said expansible arm against a window.

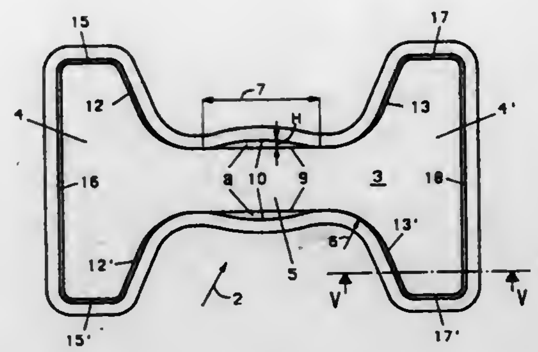
5,615,730
METHODS FOR INSPECTING THE CONTENT OF STRUCTURE MODIFYING ADDITIVES IN MOLTEN CAST IRON AND CHILLING TENDENCY OF FLAKY GRAPHITE CAST IRON
Hidetaka Hiraoka; Mayuki Morinaka, and Yasushi Kubota, all of Shizuoka, Japan, assignors to Nippon Sublance Probe Engineering Ltd., Japan
Filed Oct. 5, 1994, Ser. No. 320,420
Claims priority, application Japan, Oct. 15, 1993, 5-280664
Int. Cl.⁶ B22D *46/00;27/00*
U.S. Cl. 164—4.1 **4 Claims**



1. A method of determining the presence of structure modifying additives in a molten bath of cast iron comprising the steps of:
pouring a first sample of a molten bath of cast iron into a first sampling vessel having a thermocouple connected to a recording device outside of the vessel containing the molten bath;
obtaining a first eutectic supercooling curve of the sample of the molten bath of cast iron poured into the first vessel;
putting small amounts of tellurium into a second sampling vessel having a thermocouple connected to the recording device,
pouring a second sample of the molten bath of cast iron with the same composition as the first sample into the second sampling vessel and obtaining a second eutectic supercooling curve of the sample of the molten bath of cast iron; and
comparing the first and second supercooling curves obtained to determine the temperature difference is not zero which indicates the presence of structure modifying additives.

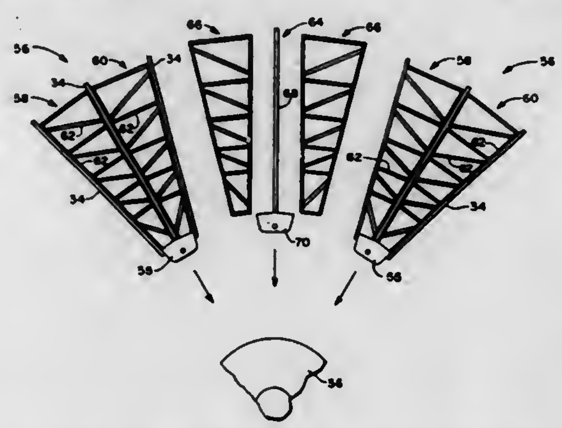
5,615,731
CONTINOUS CASTING MOULD FOR AN I-SHAPED PRELIMINARY SECTION
Adalbert Roehrig, Thalwil, and Franciszek Kawa, Adliswil, both of Switzerland, assignors to Concast Standard AG, Zurich, Switzerland
Filed Jul. 20, 1995, Ser. No. 504,597
Claims priority, application Switzerland, Jul. 25, 1994, 02337/94; Feb. 3, 1995, 00305/95
Int. Cl.⁶ B22D *11/00*
U.S. Cl. 164—418 **13 Claims**

1. A continuous casting mold, comprising a first wall section having first lateral ends; a second wall section facing and spaced from said first wall section and having second lateral ends; a third wall section joining one of said first ends to one of said second ends; and a fourth wall section joining the other of said first ends to



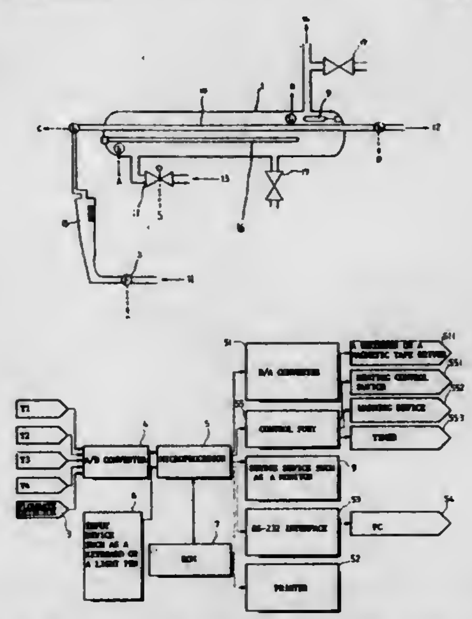
the other of said second ends, said wall sections cooperating to define a generally I-shaped casting passage having a web part between said first and second wall sections and two flange parts respectively delimited by said third and fourth wall sections, said casting passage further having an inlet end for molten metal and an outlet end for a continuously cast strand formed from the molten metal, and said first wall section being provided with a first outward bulge in said web part while said second wall section is provided with a second outward bulge in said web part, said bulges extending between respective first locations nearer said inlet end and respective second locations more remote from said inlet end, and said bulges having heights, as considered transversely of said passage, which decrease in a direction from said first locations to said second locations so as to at least partially compensate for shrinkage in said web part of a strand transversely of said passage to prevent jamming of the two flange parts by shrinkage of the strand shell of the web part.

5,615,732
AIR PREHEATER WITH SEMI-MODULAR ROTOR CONSTRUCTION
Mark E. Brophy, Wellsville; William C. Cox, Hornell, both of N.Y.; Harlan E. Finnemore, Pocatello, Id.; Glenn D. Mattison, Wellsville, N.Y.; Rex R. Snider, Corfu, N.Y., and Michael W. Wonderling, Scio, N.Y., assignors to ABB Preheater, Inc., Wellsville, N.Y.
Filed Feb. 22, 1996, Ser. No. 604,914
Int. Cl.⁶ F23L *15/02*
U.S. Cl. 165—8 **4 Claims**



1. A method of fabricating a rotor for a rotary regenerative air preheater having a rotor hub and a plurality of diaphragm plates extending radially outward from said hub dividing said rotor into a plurality of sectors for supporting modular heat transfer baskets therein comprising the steps of:
a. assembling a plurality of rotor modules each including at least one sector and comprising:
i. radially extending diaphragm plates extending along the side of each sector,
ii. at least one support grating mounted between said diaphragm plates in each sector adapted to support said modular heat transfer baskets thereon,
iii. means attached to said diaphragm plates adapted to mount said rotor module on said rotor hub;
b. forming a plurality of diaphragm assemblies each including an independent radially extending diaphragm plate and means adapted to mount said independent diaphragm plate on said rotor hub;
c. forming a plurality of separate support gratings adapted to be mounted in said rotor sectors and adapted to support said modular heat transfer baskets thereon;
d. mounting said plurality of rotor modules on said rotor hub at spaced intervals;
e. mounting one of said plurality of diaphragm assemblies on said rotor hub in each of said intervals between said spaced rotor modules thereby forming sector spaces on each side of each of said diaphragm assemblies and between said diaphragm assemblies and the adjacent said rotor module adjacent rotor modules;
f. mounting at least one of said plurality of separate support gratings in each of said sector spaces between said diaphragm assemblies and said adjacent rotor module.

5,615,733
ON-LINE MONITORING SYSTEM OF A SIMULATED HEAT-EXCHANGER
Ming-Chia Yang, Taipei, Taiwan, assignor to Helio-Compatic Corporation, Taipei, Taiwan
Filed May 1, 1996, Ser. No. 641,574
Int. Cl.⁶ F23G *13/00*
U.S. Cl. 165—11.1 **14 Claims**



1. An on-line monitoring system of a simulated heat-exchanger monitoring system comprising:
a heat exchanging chamber for the performance of a heat exchanging process, having one heat exchanging tube passing therethrough, a hot water inlet, and a hot water outlet, said heat exchanging tube having a cold water inlet at one end, and a cold water outlet at an opposite end;
a heat source installed in said heat exchanging chamber outside said heat exchanging tube, and controlled to heat said heat exchanging tube through water passing through said heat exchanging chamber;
a first temperature sensor T1 installed in said hot water inlet;
a second temperature sensor T2 installed in said hot water outlet;
a third temperature sensor T3 installed in said cold water outlet;
a fourth temperature sensor T4 installed in said cold water inlet;

a flowrate detector installed in said heat exchanging tube outside said exchanging chamber to detect the flow rate of water W passing through said heat exchanging tube;

an analog-to-digital converter connected to said temperature sensors and said flowrate detector to convert detected temperature signals and flowrate signal into corresponding digital signals; and

a microprocessor connected to said analog-to-digital converter, said microprocessor being connected with a data output device, a memory, and a data input device; wherein after receiving digital data from said analog-to-digital converter, said microprocessor computes the heat transmission rate subject to the heat transmission equation stored in said memory that total heat flow rate Q is directly proportional to heat transmission area A and temperature difference of object DT, and indirectly proportional to thickness of object DX, i.e.,

$$Q1=-KA\frac{DT}{DX} \quad (1)$$

in which:

"-": heat transmission from high temperature toward low temperature

Q: coefficient of heat conductivity

K: heat transmission constant

A: heat transmission area

DT: temperature difference at heat transmission surface

DX: thickness of heat transmission surface so as to obtain the total heat flow rate as:

$$Q1=-KOA\frac{(T1-T3)+(T2-T4)}{2DX}$$

and to obtain the total heat transmission rate as:

$$Q2=W\times C\times \Delta T \quad \ldots (2)$$

in which: Q2: total heat absorption capacity

W: weight of heat absorbing liquid

C: specific heat of heat absorbing liquid

ΔT: temperature difference before and after heat absorption (T3, T4);

if the temperature difference between the two opposite ends of the heat exchanging tube before and after heat absorption is ΔT=T4-T3, the weight or flow rate of cold water is W, and the specific heat is C, thus the total heat absorption capacity is:

$$Q2=WC(T4-T3);$$

according to the aforesaid equations (1) and (2), if Q1=Q2, thus the heat transmission constant K0 of the heat exchanging tube **10** is:

$$KO=\frac{-2xDXxWxCx(T4-T3)}{Ax[(T1-T3)+(T2-T4)]} \quad (3)$$

the K0 value thus obtained is stored in said memory for use as a reference value for the calculation of a next heat transmission rate by said microprocessor; because the inside wall of said heat exchanging tube will produce a fouling resistance when it is covered with fouling causing the value of the coefficient of heat transmission to drop, thus the heat transmission rate and the thickness of fouling of said heat exchanging tube can be calculated by comparing the latest coefficient of heat transmission with the previous coefficient of heat transmission K0, said microprocessor outputting, responsive to said coefficient of heat transmission, at least one of an indication or a control action.

5,615,734

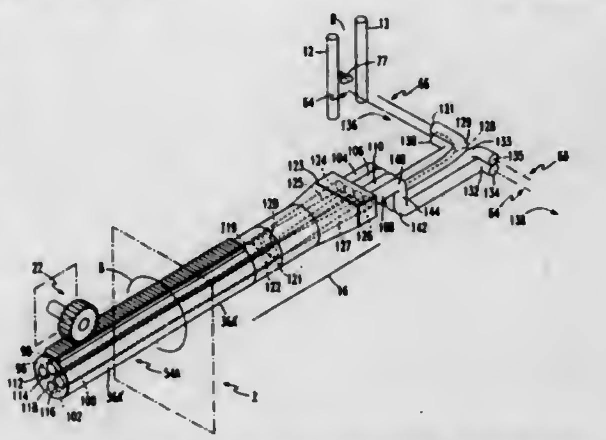
SLUDGE LANCE INSPECTION AND VERIFICATION SYSTEM

Edward J. Hyp, Irwin, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 16, 1994, Ser. No. 340,695

Int. Cl.[6] F28F *27/00*

U.S. Cl. 165—11.2 **20 Claims**



1. An apparatus for use with a search device and a foreign object extrication device in a heat exchanger, said apparatus comprising:

routing means including a plurality of conduits for routing said search device and said extrication device, each of the plurality of conduits having an input which is outside of said heat exchanger and an output which is inside of said heat exchanger; and

positioning means for positioning the output of each of the plurality of conduits within said heat exchanger.

5,615,735

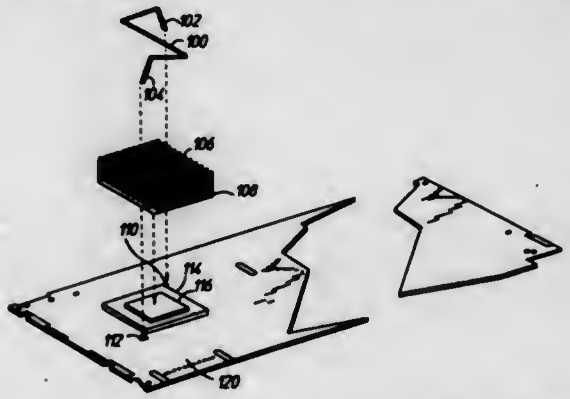
HEAT SINK SPRING CLAMP

Stuart Yoshida; Rex Seader, and Stephen P. Nelsen, all of Fort Collins, Colo., assignors to Hewlett-Packard Co., Palo Alto, Calif.

Filed Sep. 29, 1994, Ser. No. 315,036

Int. Cl.[6] F28F *7/00*

U.S. Cl. 165—80.3 **6 Claims**



6. A method for attaching a heat sink to an integrated circuit package, said method comprising the following steps:

(a) mounting an integrated circuit package on a printed circuit board;

(b) mounting a heat sink having fins extending across an upper surface with a groove integral with said heat sink and extending across said upper surface between said fins on said integrated circuit package;

(c) inserting a spring loaded clamp having two cut-out notched feet into said groove in said heat sink; and

(d) securing said clamp to said printed circuit board by locking said two cut-out notched feet into two holes in said printed circuit board located at opposing corners of said integrated circuit package, said two holes in said printed circuit board being shaped in such a manner that said two cut-out notched feet of said spring loaded clamp are inserted into a wide portion of said two holes and said two cut-out notched feet of said spring clamp are locked into a narrower portion of said two holes by means of the spring loading on said clamp.

5,615,736

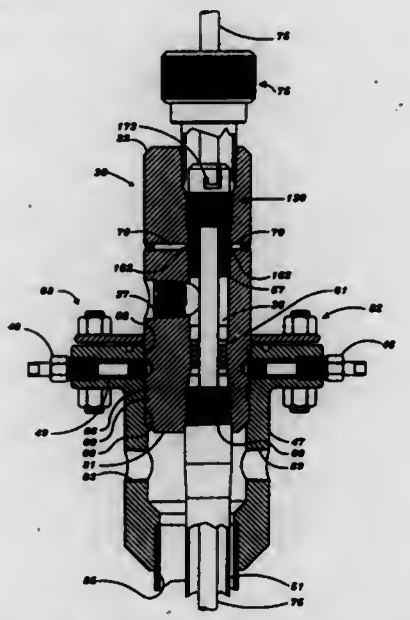
UNITARY DIVERSIONARY-TUBING HANGER AND ENERGIZABLE ROD SEAL

Lehman T. Reed, 3219 Candlewood Dr., Bakersfield, Calif. 93306

Division of Ser. No. 373,837, Jan. 17, 1995, Pat. No. 5,577,556. This application Sep. 23, 1996, Ser. No. 716,767

Int. Cl.[6] E21B *33/02*

U.S. Cl. 166—84.4 **9 Claims**



1. A removable energizable vertical rod seal for removable installation of a pump rod therethrough for use in a vertical passageway of a member connected to a wellhead, the removable energizable vertical rod seal comprising:

a separable first part comprising:

a first annular member having a top, a bottom, a first outer cylindrical section for removable installation in the vertical passageway of the member, and a first inner cylindrical section concentric with the first outer cylindrical section for removable installation of the pump rod therethrough,

outer sealing means on the first outer cylindrical section for sealing the space between the separable first part and the vertical passageway of the member,

a seating surface on the first annular member for seating on an opposing seating surface in the vertical passageway of the member,

a seal cavity within the separable first part having a circumferential inner opening to the first inner cylindrical section,

at least one laterally extending passageway from the first outer cylindrical section to the seal cavity, and

removable energizable resilient inner sealing means housed in the seal cavity for sealing, when energized, the space between the separable first part and the pump rod installed therethrough; and

a separable second part comprising:

a second annular member having a top, a bottom, a second outer cylindrical section for removable installation in the vertical passageway of the member, and a second inner cylindrical section concentric with the second outer cylindrical section for removable installation of the pump rod therethrough,

means for rotatable attachment of the bottom of the separable second part to the top of the separable first part with concentric alignment of the first outer cylindrical section with the second outer cylindrical section,

means, on the second outer cylindrical section, for removable attachment of the separable second part to the vertical passageway of the member, and

means for removable attachment of a device to the top of the separable second part for facilitating removable installation of the removable energizable vertical rod seal into the vertical passageway of the member,

whereby, when the removable energizable vertical rod seal is installed in the vertical passageway of the member, the separable first part is non-rotatably installed therein.

5,615,737

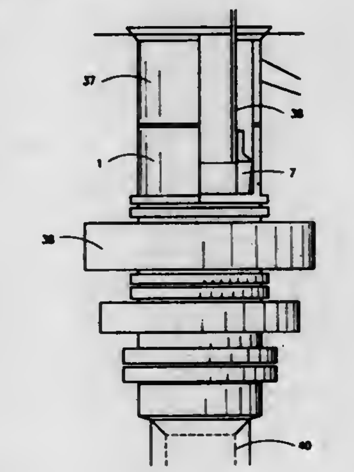
APPARATUS FOR INSERTION OF FULL BORE TOOLS INTO AN EARTH BOREHOLE

Muriel W. Ables, 1026 Walter Dr., Breaux Bridge, La. 70517

Filed Sep. 19, 1995, Ser. No. 530,693

Int. Cl.[6] E21B *33/06*

U.S. Cl. 166—85.4 **17 Claims**



1. An apparatus for introducing full bore tools into earth boreholes, comprising:

a blowout preventer assembly sealingly superimposed on an earth borehole with a bore diameter, said blowout preventer assembly having a concentric fully penetrating bore with a diameter, said blowout preventer assembly further having an upper end with a flange connected thereto and concentric with said bore;

a seal body of a generally cylindrical shape having first and second ends, said first end having a flange connected concentrically thereto, said flange superimposed concentrically on said flange on said blowout preventer assembly and fastened thereto to form a pressure seal therebetween, said seal body having an inner diameter at least as large as said diameter of said bore of said earth borehole, said seal body having one or more internal circumferential seal surfaces;

a tubular bell nipple concentrically connected end-to-end to said second end of said seal body and forming a pressure seal therebetween;

a tubular mandrel having first and second ends and a fully penetrating concentric bore with a diameter at least as great as said diameter of said earth borehole, said first end having one or more external circumferential seal elements;

means for connecting said first end of said tubular mandrel within said seal body, holding said seal elements in contact with said seal surfaces and forming a pressure seal therebetween; and

sealing means connected to said second end of said tubular mandrel forming a pressure seal between said tubular mandrel and a workstring contained therein, said sealing means permitting axial and rotational movement of said workstring within said tubular mandrel.

5,615,738

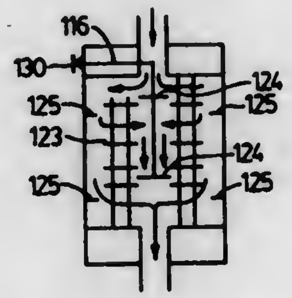
INTERNAL BYPASS VALVE FOR A HEAT EXCHANGER

Gordon M. Cameron, Willowdale; Charles G. Cooper, and Gregory J. Bellamy, both of Vancouver, all of Canada, assignors to Cecebe Technologies Inc., Willowdale, Canada

Filed Jun. 29, 1994, Ser. No. 268,183

Int. Cl.⁶ F28F 27/02

U.S. Cl. 165—103 25 Claims



1. A shell and tube heat exchanger for exchanging heat between a shell side fluid and a tube side fluid comprising:

(a) a longitudinally extending shell;

(b) a plurality of tubes extending longitudinally in said shell, said tubes being positioned to define a first and a second longitudinally extending window;

(c) a plurality of baffle means positioned within said shell between the entry port for the shell side fluid and the exit port for the shell side fluid, said first and said second windows extending through said baffle means for directing the shell side fluid to flow across said tubes, the temperature of the shell side fluid where it exits from said heat exchanger being sufficiently uniform to define a stream effectively having a single temperature;

(d) at least one valve means positioned within said first longitudinally extending window and operable between a first open position and a second closed position, each of said valve means co-operating with one of said baffle means for adjusting the flow of the shell side fluid in said shell in response to the temperature of the shell side fluid or the tube side fluid where said fluid exits from said heat exchanger; and,

(e) actuator means coupled to said valve means for moving said valve means between said first and second positions such that, when said valve means is in said second closed position, said baffle means and said valve means define a continuous surface and the shell side fluid is deflected by said valve means and said baffle means to pass through said second window, and as said valve means is moved to said first open position, the amount of shell side fluid passing through said valve means, and accordingly through said first window in said baffle means, from the upstream side of said baffle means to the downstream side of said baffle means increases.

5,615,739

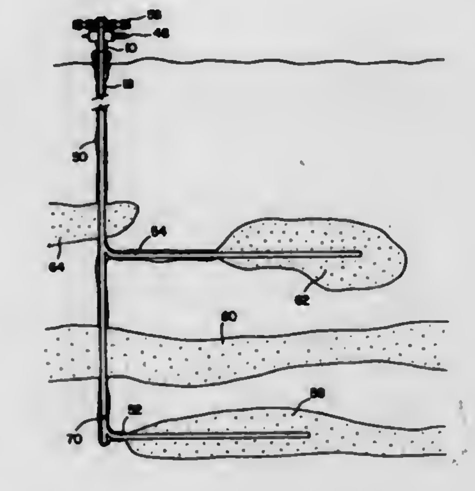
APPARATUS AND METHOD FOR COMPLETING AND RECOMPLETING WELLS FOR PRODUCTION

L. Murray Dallas, 801 New England Ct., Allen, Tex. 75002

Division of Ser. No. 328,144, Oct. 21, 1994, Pat. No. 5,540,282. This application Apr. 30, 1996, Ser. No. 640,335

Int. Cl.⁶ E21B 43/25

U.S. Cl. 166—306 12 Claims



1. A method of completing oil and gas wells for production, comprising the steps of:

a) mounting a header spool to a casing spool of a cased, unheaded well, the header spool having a pressure rating which is at least about equal to the pressure burst strength of a casing in the well, an internal passage communicating with the casing and a diameter at least as large as the internal diameter of the casing, the internal passage being closed at an upper end by a high pressure valve having a gate at least as large as the diameter of the casing, the header spool including a pressure test port located between a flange for mounting the header spool to the casing spool and the internal passage, and the header spool engaging a top end of the casing in a fluid tight seal adapted to contain pressurized fluids up to pressures about equal to the burst strength of the casing;

b) pressurizing the well to test the seal between the header spool and the casing;

c) inserting a casing perforation tool through the high pressure valve, the header spool and the casing and perforating the casing in a first production zone;

d) extracting the casing perforation tool from the casing, the header spool and the high pressure valve;

e) connecting a stimulation line to the high pressure valve, if necessary, and injecting stimulation fluids or proppants into the first production zone;

f) monitoring the pressure test port to ensure that pressurized stimulation fluids do not escape the seal between the header spool and the casing;

g) inserting an isolation plug into the casing to isolate the first production zone from a balance of the casing;

i) repeating steps b) through f) for each additional production zone of the well;

j) depressurizing the casing to normal well pressure;

k) plugging the casing in an instance when normal well pressure is greater than atmospheric pressure at the top of the well casing; and

l) removing the header spool from the casing spool and the well casing.

5,615,740

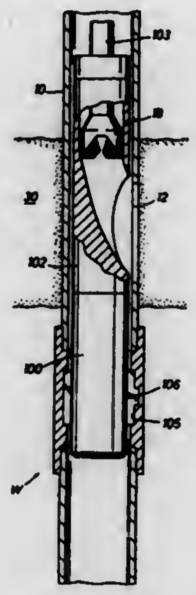
INTERNAL PRESSURE SLEEVE FOR USE WITH EASILY DRILLABLE EXIT PORTS

Laurier E. Comeau; Ian Gillis, both of Leduc, and Elis Vandenberg, Sherwood Park, all of Canada, assignors to Baroid Technology, Inc., Houston, Tex.

Filed Jun. 29, 1995, Ser. No. 496,775

Int. Cl.⁶ E21B 33/13

U.S. Cl. 166—380 16 Claims



1. A casing assembly for use in drilling lateral boreholes, comprising:

a joint of tubular casing having a central passage and a drilling bit exit port in the lateral wall thereof for receiving a drilling bit extending from said central passage; and

a tubular sleeve fixedly positioned within said central passage of said joint of tubular casing, the outer surface of said sleeve being sealed against the inner surface of said tubular casing on opposing sides of said exit port.

5,615,741

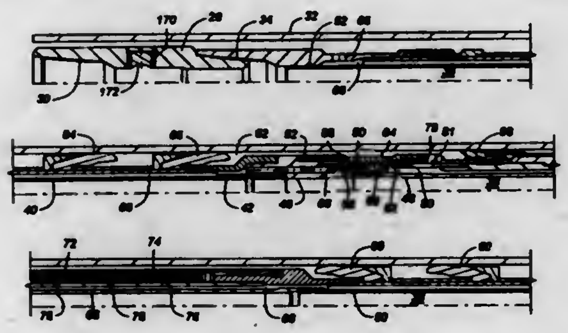
PACKER INFLATION SYSTEM

Martin P. Coronado, Houston, Tex., assignor to Baker Hughes Incorporated, Houston, Tex.

Filed Jan. 31, 1995, Ser. No. 380,973

Int. Cl.⁶ E21B 33/127

U.S. Cl. 166—387 24 Claims



1. In combination, a tool for inflation of one or more packers in a wellbore and at least one external casing packer, said tool having an opening which is aligned with said packer for inflation thereof, comprising:

a tubular having an external casing packer mounted thereon and an inflation opening into the interior of said tubular;

said tool comprising:

a body;

a seal assembly on said body extending sufficiently upon assembly to said tubular to span an annular space between said body and said packer and seal it off around the opening into said packer;

said body formed having a passage in communication with said annular space whereupon application of pressure to said passage, said packer is inflated as said seal assembly retains the applied pressure in said annular space and facilitates its communication into the opening of said packer for fluid inflation thereof;

said body further comprises a valve member mounted to said body and movable to an open position responsive to applied pressure in said passage to selectively allow pressurization of said annular space from said body and thereafter said valve member is biased to return to a closed position upon removal of applied pressure.

11. A method of inflating at least one external packer mounted on a casing or liner, comprising:

positioning an inflating tool adjacent an opening leading into the packer;

isolating the opening with a sealing system that straddles the opening;

applying fluid pressure to operate a valve on said inflation tool to open said valve and to inflate the packer;

removing fluid pressure to allow said valve to be biased to a closed position.

5,615,742

NONCOMBUSTIBLE HYDROGEN GAS CONTAINING ATMOSPHERES AND THEIR PRODUCTION

Mark L. Robin; Charles J. Mazac, and John S. Rubacha, all of West Lafayette, Ind., assignors to Great Lakes Chemical Corporation, West Lafayette, Ind.

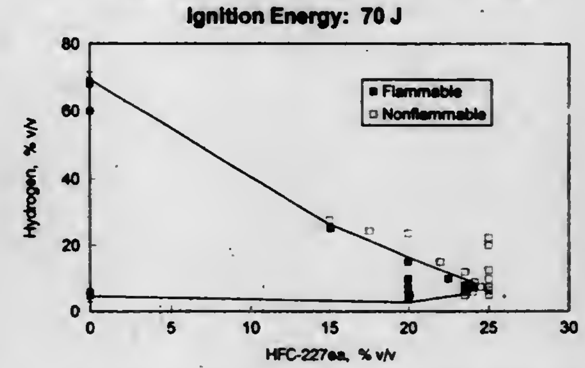
Continuation-in-part of Ser. No. 434,157, May 3, 1995, abandoned. This application Sep. 15, 1995, Ser. No. 528,734

Int. Cl.⁶ A62C 2/00;3/00; A62D 1/00

U.S. Cl. 169—45 13 Claims

Flammability Diagram for the System Hydrogen/Air/HFC-227ea

Ignition Energy: 70 J

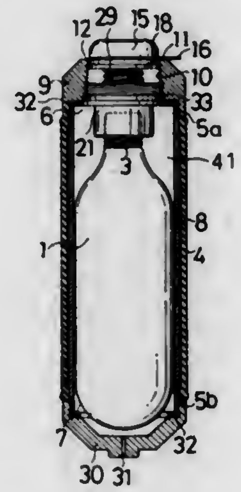


1. A method for treating an atmosphere containing hydrogen and an oxidizer, the hydrogen and oxidizer being present in amounts sufficient to support the combustion of the hydrogen by the oxidizer, the method comprising introducing to the atmosphere a concentration of a composition consisting essentially of 1,1,1,2,3,3,3-heptafluoropropane sufficient to render the atmosphere incapable of supporting combustion of the hydrogen.

5,615,743
FIRE EXTINGUISHER

Katsutoshi Matsumoto, 9-26, Senriokanaka, Suita-shi, Osaka, Japan, and Shigeyuki Shiraishi, Yamato, Japan, assignors to Katsutoshi Matsumoto, Osaka, Japan

Filed May 19, 1995, Ser. No. 446,051
Claims priority, application Japan, May 24, 1994, 6-133811; Jan. 19, 1995, 7-024781; Jan. 19, 1995, 7-024782; Mar. 1, 1995, 7-064050
Int. Cl.[6] A62C *13/62*
U.S. Cl. 169—74 **8 Claims**



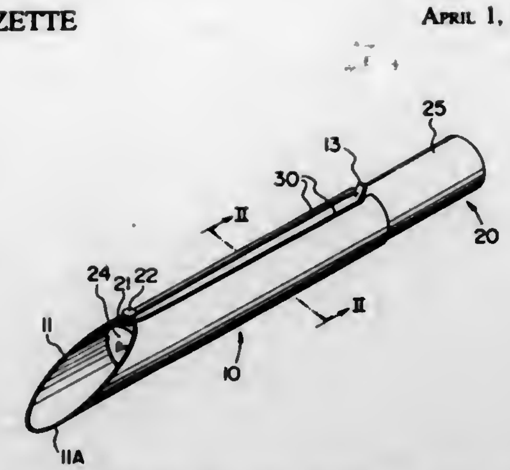
1. A fire extinguisher comprising:
a hollow extinguisher body containing a container filled with fire-extinguishing gas, said extinguisher body including a nozzle having an extinguishing gas ejection hole formed at one end thereof, and an opening formed in another end of said extinguisher body;
a first extinguishing gas passage defined between the container and said extinguisher body;
a hollow pusher guide member detachably mounted to the opening of said extinguisher body;
a pusher axially movably arranged in an internal space of said pusher guide member and being non-removable from said pusher guide member;
a needle attached to said pusher and having a striker pin for breaking a seal plate of the container;
a container receiver mounted to said pusher guide member, said container receiver detachably receiving the container such that the seal plate of the container faces the striker pin of said needle, said container receiver and said needle having a second extinguishing gas passage formed therein in communication with the first extinguishing gas passage;
wherein said extinguisher body includes a pipe member and a cylindrical cover fitted around the pipe member, said nozzle being mounted at one end of the pipe member, and said pusher guide member being mounted at another end of the pipe member.

5,615,744
GARDEN HAND TOOL

Edward G. Krafka, 144 Arlington Avenue, Ottawa, Ontario, Canada

Filed Feb. 12, 1996, Ser. No. 600,290
Int. Cl.[6] A01B *1/24*
U.S. Cl. 172—22 **8 Claims**

1. A garden tool comprising:
(a) a rigid elongate tubular member terminating in an earth penetrating elliptically shaped outer peripheral edge at one end thereof, said edge having a relatively sharp leading edge facilitating penetration of such edge into the earth, said first

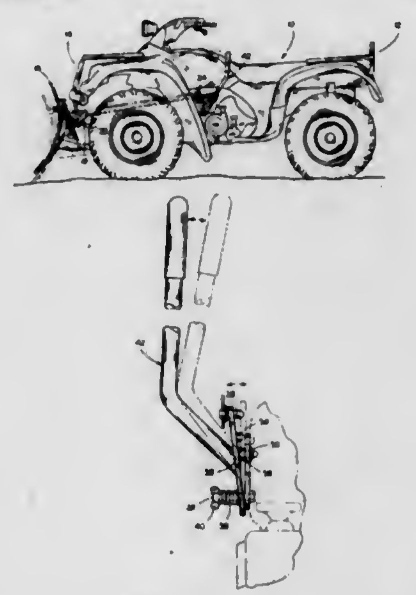


member terminating in an open trailing end located opposite said earth penetrating end;
(b) a second rigid elongate member telescopically disposed in said first member having a portion projecting from the trailing end of said first member, said second member providing at a first end thereof a plunger for discharging earth from said earth penetrating end of said first member and wherein said portion projecting from said first member provides a hand grippable portion;
(c) spring means resiliently biasing said plunger in a direction away from said one end of said first member, said spring means comprising an elastic, stretchable member located on an outer surface of said first member, means anchoring said stretchable member at a first position to said first member and at a second position to said second member, said first and second positions being spaced apart from one another longitudinally along said tool; and
(d) means limiting relative movement of said first and second members comprising pin means on said second member and a pin abutment portion on said first member, said spring means resiliently urging said pin means against said abutment portion on said first member which limits movement of said plunger into said first member in a direction toward the trailing end of such member.

5,615,745
ATV LIFT HANDLE RUB BLOCK

Gary Cross, Estherville, Iowa, assignor to Cycle Country Accessories Corp., Milford, Iowa

Filed Jun. 12, 1996, Ser. No. 662,045
Int. Cl.[6] E01H *5/04;* **E02F** *3/00*
U.S. Cl. 172—811 **6 Claims**

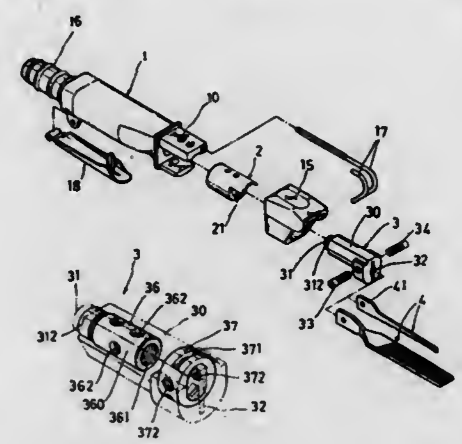


1. In combination:
a self-propelled vehicle having a forward end, a rearward end, and opposite sides;
a blade selectively vertically movably mounted at the forward end of said vehicle and being movable between raised and lowered positions;
a lift handle bracket secured to said vehicle at one side thereof rearwardly of said blade;
said lift handle bracket having inner and outer surfaces, a rearward end and a forward end;
an upstanding lift handle, having upper and lower ends, positioned adjacent the outer surface of said lift handle bracket and being pivotally secured thereto;
said lift handle being pivotally movable, with respect to said lift handle bracket, between a rear position and a forward position;
pivot means connecting said lift handle to said lift handle bracket;
a linkage operatively connecting said lift handle to said blade whereby said blade is positioned in its said raised position when said lift handle is positioned in its said rear position and whereby said blade is positioned in its said lowered position when said lift handle is positioned in its said forward position;
a locking pin extending from said lift handle towards said lift handle bracket;
said locking pin being positioned rearwardly of said rearward end of said lift handle bracket, and being in engagement therewith, when said lift handle is in its said rear position to yieldably prevent said lift handle from moving to its said forward position;
spring means mounted on said pivot means for yieldably urging said lift handle towards said lift handle bracket to permit said lift handle to be yieldably moved away from said lift handle bracket to permit said locking pin to be moved out of engagement with said rearward end of said lift handle bracket when it is desired to move said lift handle to its said forward position;
and a rub block means positioned on the outer surface of said lift handle bracket for engagement with said lift handle, as said lift handle is moved with respect to said lift handle bracket, to limit the engagement of said locking pin with said outer surface of said lift handle bracket.

5,615,746
REINFORCED PNEUMATIC TOOL HOLDER

George Chu, c/o Hung Hsing Patent Service Center, P.O. Box 55-1670, Taipei, Taiwan

Filed Feb. 2, 1996, Ser. No. 594,664
Int. Cl.[6] B26B *27/00*
U.S. Cl. 173—171 **3 Claims**

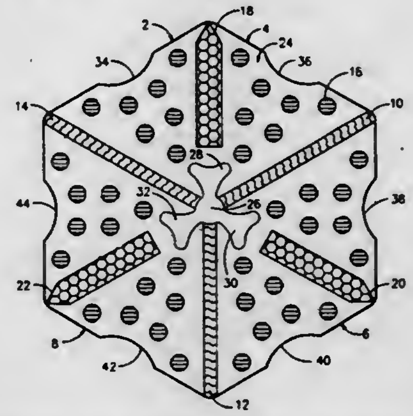


1. A pneumatic tool holder comprising:
a handle having a tool clamping device reciprocatively held in a front portion of said handle, a tool clamped in said tool clamping device, a piston reciprocated in a pneumatic cylinder in said handle and a piston rod connected to said tool clamping device for driving said tool clamping device for operating said tool;
said tool clamping device including: a cross-linking reinforcing member made of rigid materials and integrally formed with an elastomer block made of elastomer materials, said cross-linking reinforcing member having a sleeve portion formed with a female-threaded sleeve hole longitudinally formed through the sleeve portion of the cross-linking reinforcing member for engaging a male-threaded portion of the piston rod with the female-threaded sleeve hole, said sleeve portion having a plurality of slots formed through a thickness of the sleeve portion each said slot perpendicularly communicated with the female-threaded sleeve hole and each said slot filled with a grafting protrusion therein when integrally molding the reinforcing member in the elastomer block for binding the sleeve portion with the elastomer block, a female-threaded hole formed in the elastomer block matching with the female-threaded sleeve hole formed in the sleeve portion of the cross-linking reinforcing member for engaging the male-threaded portion of the piston rod in the female-threaded hole, a rear stem protruding rearwardly having a rear fastening ring fastening the rear stem and the piston rod secured therein, a cross-linking collar integrally formed with a front portion of the elastomer block for fastening a root portion of the tool inserted in a tool socket recessed in a front portion of the elastomer block, and at least two transverse collar slots formed through the cross-linking collar for filling a front grafting protrusion into each said transverse collar slot when integrally molding the cross-linking collar in the elastomer block for binding the collar with the elastomer block.

5,615,747
MONOLITHIC SELF SHARPENING ROTARY DRILL BIT HAVING TUNGSTEN CARBIDE RODS CAST IN STEEL ALLOYS

William B. Vail, III, 3123-198th Pl. SE., Bothell, Wash. 98012

Continuation of Ser. No. 301,683, Sep. 7, 1994, abandoned. This application Jun. 17, 1996, Ser. No. 664,791
Int. Cl.[6] E21B *10/46*
U.S. Cl. 175—379 **4 Claims**



1. A monolithic long lasting rotary drill bit assembly for attachment to a rotary drill string for drilling a relatively constant diameter borehole into a geological formation comprising:
at least one tungsten carbide rod cast into a relatively soft steel matrix material to make at least a portion of the body of a drill bit,
whereby said body of the drill bit has a top end, a bottom end, and a lateral extent,
said top end of the drill bit being attached to said rotary drill string,
said bottom end of the drill bit being in contact with the bottom of the borehole during rotary drilling, and

a portion of said lateral extent of the body of the drill bit being in contact with a part of the wall of the borehole during rotary drilling.

whereby during rotary drilling, the bottom end of the drill bit undergoes wear that progressively exposes new portions of the tungsten carbide rod whereby said rod has a length exceeding three times its diameter and whereby said rod wears and undergoes breakage as the relatively soft steel matrix material located at the bottom end of the drill bit erodes during rotary drilling operations thereby making the drill bit that self sharpens on the bottom of the drill bit during drilling operations;

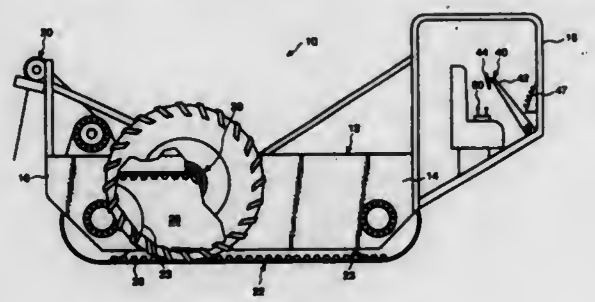
means to compensate for the lateral wear of the drill bit that produces a relatively constant lateral extent of the body of the drill bit during drilling operations to make a drill bit that drills a relatively constant diameter borehole as the drill bit undergoes said lateral wear,

whereby said means to compensate for the lateral wear of the drill bit is comprised of at least two pre-stressed mechanical means joined together to form the body of the monolithic drill bit that produce internal lateral stresses within the body of the drill bit whereby the body of the drill bit possesses a lateral flair in the lateral extent of the drill bit near the bottom of the drill bit and whereby said lateral flair expands radially as the bottom end of the drill bit erodes during rotary drilling operations in response to said internal lateral stresses;

at least one watercourse that conducts mud from the drill string to the borehole being drilled through at least one opening in the drill bit;

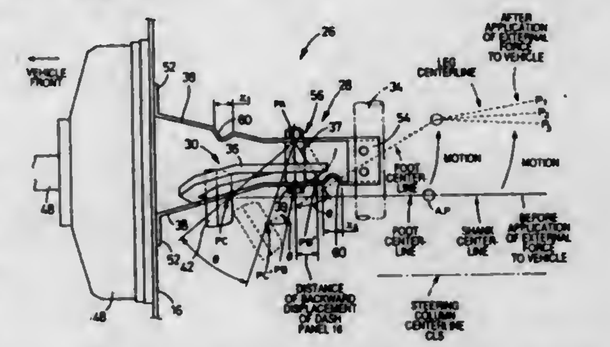
thereby providing a long lasting drill bit that self sharpens on the bottom end of the drill bit during drilling operations and that compensates for lateral wear of the drill bit to produce a relatively constant diameter borehole.

5,615,748
EARTH-BASED VEHICLE
John B. Lansberry, R.D. #1, Box 331-C, Woodland, Pa. 16681
Filed Feb. 8, 1996, Ser. No. 598,530
Int. Cl.⁶ B62D *55/02*
U.S. Cl. 180—9.36 **43 Claims**



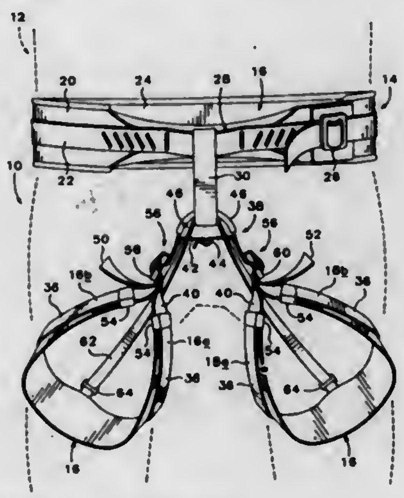
1. A vehicle comprising:
a main frame structure,
a track assembly mounted to said main frame structure and having an endless ground-engaging track extending in a longitudinal direction,
a pair of steerable ground-engaging wheels mounted with respect to the main frame structure such that each said wheel of said pair flanks said track, said wheels being constructed and arranged to exert ground bearing pressure sufficient to change a direction of travel of said track in response to turning of said wheels so as to steer the vehicle,
steering structure operatively associated with said wheels to turn said wheels, and
power drive structure mounted with respect to said main frame structure and constructed and arranged to drive said wheels and said track simultaneously so as to move the vehicle along the ground.

5,615,749
VEHICLE PEDAL DEVICE HAVING MECHANISM FOR DISPLACING PEDAL PAD AWAY FROM STEERING DEVICE UPON APPLICATION OF EXTERNAL FORCE TO THE VEHICLE
Yoshihisa Kato, Aichi-ken, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan
Filed Dec. 26, 1995, Ser. No. 578,839
Claims priority, application Japan, Dec. 28, 1994, 6-326551
Int. Cl.⁶ B60K *28/10;* **B60T** *7/12*
U.S. Cl. 180—274 **16 Claims**



1. A pedal device for a vehicle having a body, a passenger compartment and a steering device disposed within the passenger compartment, said pedal device being disposed within said passenger compartment and including (a) a pedal bracket attached to said body, and (b) a pedal pivotally supported by said pedal bracket and having at a lower end thereof a pedal pad to be depressed by a foot an operator of the vehicle, wherein the improvement comprises:
a pedal pad displacing mechanism for permitting, upon application of an external force to the vehicle, said pedal pad to be displaced such that a leg of the operator whose foot is depressing said pedal pad is moved in a direction away from said steering device.

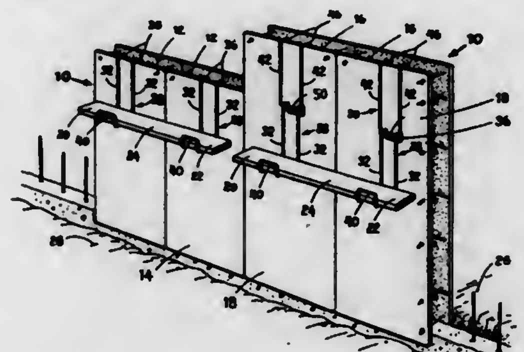
5,615,750
CLIMBING HARNESS HAVING ADJUSTABLE LEG LOOPS AND RISE
Douglas D. Phillips, H.C.R. 2193, Camp Sherman, Oreg. 97730
Filed Apr. 3, 1995, Ser. No. 415,487
Int. Cl.⁶ A62B *1/16*
U.S. Cl. 182—6 **10 Claims**



1. A climbing harness comprising:
a waist band having an adjustable-girth closing strap;
a tie-in point located on said closing strap;
a pair of leg loops, each leg loop being constructed and arranged to encompass the leg of a user about the user's thigh;

a leg loop strap for attaching each of said leg loops to said waist band; and
an adjustment mechanism associated with each leg loop for simultaneously adjusting the girth of each of said leg loops to a fixed circumference and adjusting the length of said leg loop strap to a fixed length, thereby providing an adjustment in the length of rise between said leg loops and said waist band.

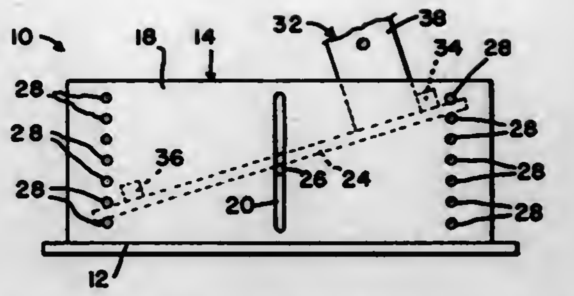
5,615,751
SCAFFOLD SYSTEM USED WITH WOOD PANELS
Richard J. Snow, 8500 E. Warren Ave., Denver, Colo. 80231
Filed Feb. 13, 1995, Ser. No. 387,225
Int. Cl.⁶ E04G *3/10*
U.S. Cl. 182—82 **10 Claims**



1. A scaffold system used with different size wood and metal panels in the pouring of concrete foundations and the like, the system used for holding a first end and a second end of a wood plank and suspending the wood plank adjacent a side of a panel, the wood plank used for workman to walk on, the system comprising:
a pair of one piece panel brackets, each of said panel brackets including a first vertical support arm with an end of an upper portion of the arm bent rearwardly for a certain distance, the end of the upper portion then bent downwardly for a certain distance and then bent 90 degrees;
said panel brackets including a second vertical support arm with an end of an upper portion of the arm bent rearwardly for a certain distance, the end of the upper portion then bent downwardly a certain distance and then bent 90 degrees with the end of the upper portion of the second vertical support arm joining the end of the upper portion of the first vertical support arm, the bending of the upper portion of the first and second vertical support arms forming an upper "hook" portion;
the first vertical support arm with an end of a lower portion of the arm bent forward for a certain distance, then bent upward a certain distance and then bent 90 degrees; and
the second vertical support arm with an end of a lower portion of the arm bent forward for a certain distance, then bent upward a certain distance and then bent 90 degrees with the end of the lower portion of the second vertical support arm joining the end of the lower portion of the first vertical support arm, the bending of the lower portion of the first and second vertical support arms forming a "J" shaped plank support member.

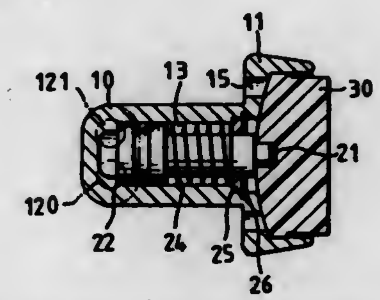
5,615,752
LADDER-LEVELING PLATFORM ASSEMBLY
Leonard Wassil, 4 Polk Pl., Vernon, N.J. 07462
Filed Dec. 26, 1995, Ser. No. 578,358
Int. Cl.⁶ E06C *7/44*
U.S. Cl. 182—200 **6 Claims**

1. A ladder-leveling platform assembly, comprising:
a platform; and



a base centrally located and supported on said platform; wherein
said base has a pair of parallel, side walls; and
a plate fully confined within said base;
means engaging said plate and said side walls for accommodating a selected inclination of said plate; and
said base has a series of apertures, formed therein, for receiving rods therethrough for maintaining said plate at a selected inclination; wherein
said plate comprises only a flat, thin element having (a) an axle, and (b) means fastened to said element for confrontingly engaging only an outermost and lowermost, side portion of a ladder upright;
said platform comprises outrigger means for providing lateral stability for said base and assembly to resist any tipping over of said assembly; wherein
said outrigger means comprises lateral portions of said platform which outreach from said base and define said platform with a width which is greater than said base.

5,615,753
BRAKE ASSEMBLY FOR A BICYCLE
Jenny C. H. Wang, No. 23, 21th Rd., Taichung Industrial Park, Taichung City, Taiwan
Filed Jan. 11, 1996, Ser. No. 584,683
Int. Cl.⁶ B60T *11/00*
U.S. Cl. 188—24.12 **4 Claims**

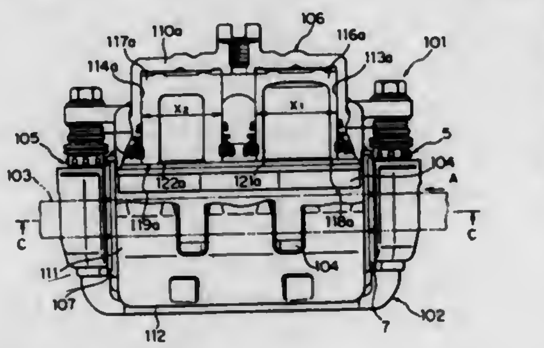


1. A brake assembly for a bicycle and comprising:
a base adapted to be mounted to a handlebar of said bicycle and having a first chamber defined in said base and oil filling said first chamber, a first piston movably received in said first chamber and a connecting rod connected to said first piston, said connecting rod having a first end and a second end, said first end thereof engaged to a ball which is rotatably received in a recess defined in said first piston;
a brake lever having a first end pivotally engaged to said base at a first point of said brake lever, said first point located on a line vertical to a longitudinal axis of said connecting rod, a pin extending through said first end of said brake lever and said connecting rod engaged to said pin at a second point located on an axis of said first chamber such that when a second end of said brake lever is grasped, said brake lever is rotated about an axis of said first point and said connecting rod is pushed to move with said first piston to push the oil in said first chamber;
a first arm and a second arm respectively mountable on a frame of said bicycle, said first arm being mountable on one side of

a wheel of said bicycle, said second arm mountable on the other side of said wheel, said first arm having a first end and a second end, said first end thereof having a first hole and a second hole defined therein, said second end thereof having a second chamber defined therein and said second chamber communicating with said first and said second holes, a second piston movably received in said second chamber and a spring mounted to said second piston which has a protrusion extending longitudinally therefrom and said protrusion securely engaged to a first brake pad, said second arm having a first end and a second end, said first end thereof having only a first hole defined therein, said second end thereof having a second chamber defined therein and said second chamber thereof communicating with said first hole thereof, a second piston movably received in said second chamber thereof and a spring mounted to said second piston thereof which has a protrusion securely engaged to a second brake pad, and

a first pipe extending from said base, one end of said first pipe communicating with said first chamber, the other end of said first pipe communicating with said first hole of said first arm, a second pipe extending from said second hole of said first arm and connected to said hole of said first end of said second arm.

5,615,754
DISC BRAKE
Kinzo Kobayashi; Shinichi Izumi; Shinji Suzuki, and Shinichi Nakayama, all of Yamanashi-ken, Japan, assignors to Tokico Ltd., Japan
Filed Mar. 17, 1995, Ser. No. 405,875
Claims priority, application Japan, Mar. 18, 1994, 6-049533; Mar. 18, 1994, 6-049534
Int. Cl.⁶ F16D *55/224;65/02*
U.S. Cl. 188—73.35 **2 Claims**



1. A disk brake, comprising:

a disk;

a caliper having a portion extending across said disk and a first cylinder portion on one side of said disk having a plurality of cylinder bores of the same diameter and the same depth; and

a plurality of pistons received in the respective said cylinder bores, each of said pistons comprising a circumferential wall;

wherein said plurality of pistons have the same outer diameter and wherein said circumferential wall of at least one of said plurality of pistons has a thickness that is different from the thickness of said circumferential walls of the others of said plurality of pistons;

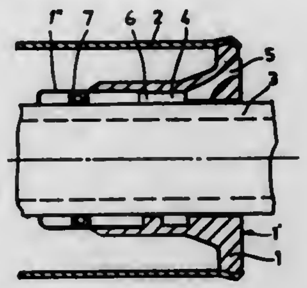
wherein said caliper further comprises a second cylinder portion that is located on the other side of said disk, said second cylinder portion comprising a plurality of second cylinder bores of the same diameter and the same depth;

wherein said disk brake further comprises a plurality of second pistons received in said second cylinder bores of said second cylinder portion, each of said second pistons comprising a circumferential wall;

wherein said plurality of second pistons have the same outer diameter and wherein said circumferential wall of at least one of said plurality of second pistons has a thickness that is different from the thickness of said circumferential walls of the others of said plurality of second pistons; and

wherein one of said plurality of pistons, having a thickest circumferential wall of said plurality of pistons, and one of said plurality of second pistons, having a thickest circumferential wall of said plurality of second pistons, have a natural frequency which is outside of the range of 20 Hz to 20 kHz.

5,615,755
END PIECE SEAL FOR A RAIL VEHICLE SLACK ADJUSTER
Uno Karlsson, Malmo, Sweden, assignor to SAB WABCO AB, Sweden
PCT No. PCT/SE94/00166, § 371 Date Oct. 11, 1995, § 102(e) Date Oct. 11, 1995, PCT Pub. No. WO94/20348, PCT Pub. Date Sep. 15, 1994
PCT Filed Mar. 1, 1994, Ser. No. 507,306
Claims priority, application Sweden, Mar. 1, 1993, 9300668
Int. Cl.⁶ F16J *15/16;* **B61H** *15/00;* **F16F** *9/38*
U.S. Cl. 188—322.12 **1 Claim**



1. In an annular sealing end piece connected to a slack adjuster barrel for joint axial and rotatable movement on a slack adjuster tube, said end piece positioned between said barrel and said tube and functioning to prevent external contaminants from entering the slack adjuster barrel, said end piece providing a number of channels extending through an end piece wall and connected with an internal groove circumferentially positioned about said slack adjuster tube, the improvement comprising in combination:

a sleeve coupled by axial notches to said end piece to extend inwardly into said barrel from said groove, and

a circumferential sealing ring sealingly disposed between the sleeve and the slack adjuster tube.

5,615,756
SHOCK ABSORBER FOR A MOTOR VEHICLE, WHICH SHOCK ABSORBER HAS A PISTON VALVE
Manfred Grundel, Niederwerrn, and Hans Reimer, Waigolshausen, both of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Germany
Filed Mar. 28, 1995, Ser. No. 411,990
Claims priority, application Germany, Mar. 30, 1994, 44 10 996.2
Int. Cl.⁶ F16F *9/32;* **F16J** *1/12;9/00*
U.S. Cl. 188—322.15 **15 Claims**

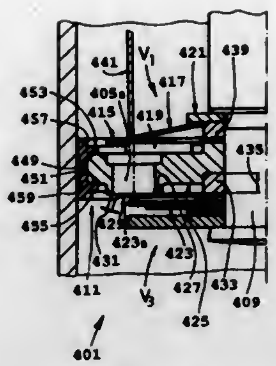
1. A piston in a shock absorber, said piston being attached to a piston rod, said piston comprising:

a piston body being formed by a substantially solid body of metal which has been deformed into shape by a stamping operation utilizing two die portions;

said piston body including a plurality of raised and recessed portions on each side of the piston body;

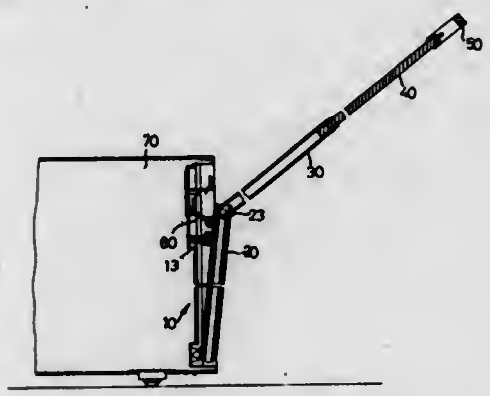
the raised portions on one side being opposite the recessed portions on the other side such that said piston body has a substantially constant thickness;

said piston including a circumferential seal between the piston body and a cylinder of the shock absorber; and



said seal having a longitudinal width greater than the thickness of the piston body.

5,615,757
RETRACTABLE HANDLE ASSEMBLY FOR A SUITCASE
Hsiung-chih Chen, No. 428, Tung-an Rd., Wenchu Li, Tachia Chen, Taichung Hsien, Taiwan
Filed Oct. 18, 1995, Ser. No. 544,485
Int. Cl.⁶ A45C *13/26*
U.S. Cl. 190—115 **6 Claims**



1. A retractable handle assembly for a suitcase (70) which includes a side plate (10) securely mounted thereon and having an upper portion, a mediate portion and a lower portion, said retractable handle assembly comprising:

an elongated outer casing (20) having an upper portion, a mediate portion and a lower portion pivotally mounted to the lower portion of said side plate (10), a first passage (21) longitudinally defined in said outer casing (20), a lug (26) laterally formed on the mediate portion of said outer casing (20) and protruding outwardly therefrom, a chamber (262) transversely defined in said lug (26);

a horizontal post (121) laterally formed on the mediate portion of said side plate (10) and detachably engaged in said chamber (262) of said lug (26);

a biasing member (13) mounted in said chamber (262) and urged between said horizontal post (121) and said lug (26);

two retaining blocks (141) each laterally formed on the upper portion of said side plate (10) and protruding outwardly therefrom, each of said two retaining blocks (141) having a guiding groove (14) vertically defined therein;

a linking member (60) including a first axle (62) pivotally attached to the upper portion of said outer casing (20) and a second axle (61) having two distal ends each being stopped by a corresponding one of said two retaining blocks (141) and each being slidable in an associated said guiding groove (14);

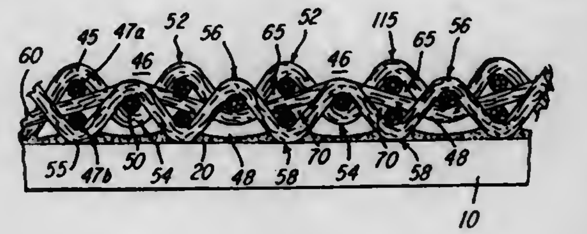
an elongated inner casing (30) slidably mounted in said first passage (21) of said outer casing (20) and having an upper portion, a second passage (31) longitudinally defined in said inner casing (30);

an elongated handle (40) slidably mounted in said second passage (31) of said inner casing (30) and having an upper end portion (41) extending outward of the upper portion of said inner and outer casings (30) and (20);

a handgrip (50) having a lower portion (52) fixedly attached to the upper end portion (41) of said elongated handle (40), a hole (51) transversely defined through said handgrip (50), a slot (511) defined in the lower portion (52) of said hand gripper (50) and communicating with said hole (51); and

a resilient knob (16) laterally formed on the upper portion of said side plate (10) located above said two retaining blocks (141) and received in said hole (51) of said handgrip (50), a stop block (161) formed on an underside of said resilient knob (16) and detachably engaged in said slot (511) of said handgrip (50).

5,615,758
FABRIC ARRANGEMENT AND METHOD FOR CONTROLLING FLUID FLOW
Terry E. Nels, 2973 Southfield Dr., Beavercreek, Ohio 45434
Filed Sep. 30, 1994, Ser. No. 316,204
Int. Cl.⁶ F16D *13/72*
U.S. Cl. 192—113.36 **11 Claims**



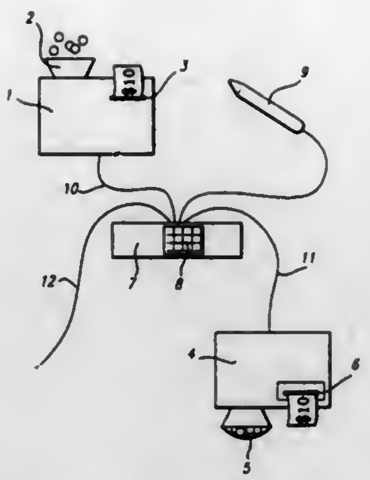
1. A method of controlling the flow of cooling medium between cooperating friction elements of a power absorption-transmission assembly, comprising the steps of:

(a) determining a desired pattern of flow paths for directing said cooling medium away from an interface between the cooperating friction elements; and

(b) weaving a friction facing material to provide a plurality of channels for channeling said cooling medium in accordance with said desired pattern of flow paths when said friction facing material is situated on at least one of the cooperating friction elements.

5,615,759
CASH HANDLING APPARATUS
Matthew J. Cadbury, 13 Sloane Gardens, London SW1W 8EB, England
PCT No. PCT/GB94/00889, § 371 Date Dec. 23, 1994, § 102(e) Date Dec. 23, 1994, PCT Pub. No. WO94/25940, PCT Pub. Date Nov. 10, 1994
PCT Filed Apr. 26, 1994, Ser. No. 360,748
Claims priority, application United Kingdom, Apr. 27, 1993, 93080687
Int. Cl.⁶ G07D *11/00;* **G07G** *1/12*
U.S. Cl. 194—206 **11 Claims**

1. Cash handling apparatus comprising: insertion means for the insertion of cash into the apparatus by a customer for an article or articles; a container for holding the cash inserted into the apparatus; detection means for detecting the amount of cash inserted price; infeed means to notify to the apparatus a price of the article or articles; calculation means for comparing the difference between the cash fed into the apparatus and the price of the article or articles; and dispensing means for dispensing cash equal to the difference in the price to be paid and the amount of cash inserted as detected by the detection means; wherein the insertion means and container are arranged so that once the cash has been inserted into



the container it is not thereafter readily accessible and the cash insertion means and cash dispensing means and price infeed means are provided such that the customer inserts the cash as payment and dispensed cash representing the change due is delivered directly to the customer; and wherein an electrical datalink connects the apparatus to a central monitoring, alarm and checking system.

5,615,760

METHOD AND APPARATUS FOR VALIDATING MONEY

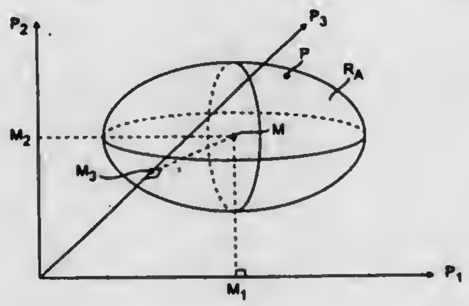
Jeffrey E. Vaks, Irvine, Calif., assignor to Mars Incorporated, McLean, Va.

Division of Ser. No. 133,142, Nov. 5, 1993, abandoned. This application Aug. 9, 1995, Ser. No. 512,837

Claims priority, application United Kingdom, Apr. 18, 1991, 9108355

Int. Cl.⁶ G07D *5/08; 7/00*

U.S. Cl. 194—206 **8 Claims**



1. A method of validating items of money, the method comprising taking n different measurements of an item of money, wherein n is an integer equal to or greater than 2, to define a point in n-dimensional space defined by axes representing the n respective measurements, determining whether or not the point lies within an n-dimensional ellipse the axes of which each are parallel to a respective property measurement axis associated with a particular item, and using the determination in evaluating whether or not the tested item corresponds to said particular item.

5,615,761

UNIT FOR TRANSFERRING CIGARETTE PORTIONS FROM A DUAL ROD CIGARETTE MANUFACTURING MACHINE TO A FILTER ASSSEMBLY MACHINE

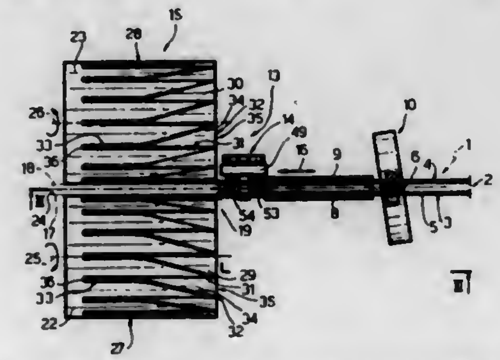
Florenzo Draghetti, Medicina, and Massimo Sartoni, Bologna, both of Italy, assignors to G.D Societá per Azioni, Bologna, Italy

Filed May 19, 1995, Ser. No. 445,052

Claims priority, application Italy, May 20, 1994, BO94A0235; May 3, 1995, BO95A0195

Int. Cl.⁶ B65G *29/00*

U.S. Cl. 198—441 **15 Claims**



1. A unit 13; 89 for transferring cigarette portions 8, 9 from a dual rod cigarette manufacturing machine 1 to a filter assembly machine 11, the unit 13; 89 comprising conveyor means 15; 65; 78 traveling in a first direction 20 and presenting seats 29, 30; 72, 76; 81, 82 for receiving respective said cigarette portions 8, 9, said seats 29, 30; 72, 76; 81, 82 being oriented in a second direction 16 crosswise to said first direction 20; a loading station 19 through which each said seat 29, 30; 72, 76; 81, 82 travels in said first direction 20, and at which each said seats 29, 30; 72, 76; 81, 82 receives a respective said cigarette portion 8, 9; and transfer means 14; 90 facing said loading station 19, and which provide for successively receiving from said manufacturing machine 1 pairs of first 8 and second (9) said cigarette portions arranged side by side and parallel to said second direction 16, and for transferring them to the loading station 19 and into respective said seats 29, 30; 72, 76; 81, 82; characterized in that said conveyor means 15; 65; 78 present a number of first said seats 29; 72; 81 and a number of second said seats 30; 76; 82, for respectively receiving said first 8 and said second 9 cigarette portions at the loading station 19; said transfer means 14; 90 comprising launching means 14; 90 for successively receiving said pairs of first 8 and second 9 cigarette port ions, and for simultaneously feeding the two cigarette portions 8, 9 in each said pair substantially in said second direction 16 and to the loading station 19 in time with the respective said seats 29, 30; 72, 76; 81, 82.

5,615,762

CONVEYOR APPARATUS FOR COLLATING BAGGED PRODUCTS

William B. Dyess, Rowlett, Tex., assignor to Dallas A.C. Horn & Co., Inc., Dallas, Tex.

Continuation of Ser. No. 208,644, Mar. 9, 1994, Pat. No. 5,495,932. This application Dec. 14, 1995, Ser. No. 572,109

Int. Cl.⁶ B65G *47/22*

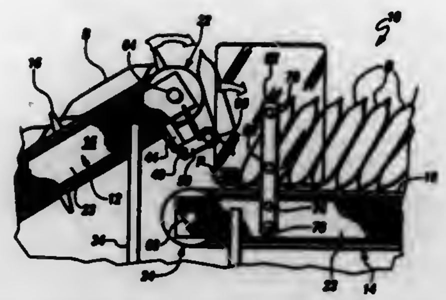
U.S. Cl. 198—464.1 **4 Claims**

1. A conveyor apparatus comprising:

an inclined conveyor portion having a discharge end from which bagged food products are dropped;

a horizontal conveyor portion disposed beneath the discharge end of the inclined conveyor portion for receiving the dropped bagged food products; and

a cylinder, normally fixedly positioned between the inclined conveyor portion and the horizontal conveyor portion, for engaging the bagged food products as they fall from the inclined conveyor portion and flipping the bagged food products forward such that bagged food products land in a substantially upright position on the horizontal conveyor portion, thereby collating them.



5,615,763

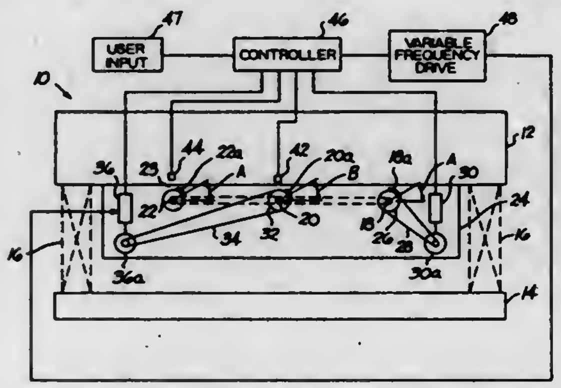
VIBRATORY CONVEYOR SYSTEM FOR ADJUSTING THE PERIODIC RESULTANT FORCES SUPPLIED TO A CONVEYOR TROUGH

Douglas A. Schieber, PeWee Valley, Ky., assignor to Carrier Vibrating Equipment, Inc., Louisville, Ky.

Filed Aug. 18, 1995, Ser. No. 516,526

Int. Cl.⁶ B65G *25/00*

U.S. Cl. 198—751 **8 Claims**



1. A vibratory control system for adjustably controlling a resultant force supplied to a conveyor trough by changing a phase angle relationship between eccentric weights mounted on rotating shafts comprising

(a) a base connected by a plurality of spring members to a conveyor trough;

(b) a frame connected to said conveyor trough;

(c) three shafts each coupled to and rotating respective associated eccentric weights, a first shaft of said three shafts being driven by a first motor and driving a second shaft at the same revolutions per minute, and a third shaft being driven independently of said first shaft by a second motor;

(d) a speed control device continuously adjusting the speed of one of said first and second motors and the revolutions per minute of said shafts driven by said one motor so as to maintain the real phase angle at approximately the same value as the predetermined phase angle, said first and third shafts and associated eccentric weights being constantly in phase with each other, and the angle difference between said first and third shafts and associated eccentric weights and said second shaft and associated eccentric weight determining said relative phase angle, said associated weights collectively imparting a resultant vibratory force to said conveyor trough;

(e) a pair of phase angle sensing devices each associated with said first and third shafts and associated eccentric weights for generating a signal indicative of the position of the associated eccentric weight;

(f) a control device responsive to the signals received from said phase angle sensing devices for

measuring a real time phase angle between said eccentric weights and comparing the real phase angle value and a value of a predetermined phase angle and

generating a phase angle signal proportional to a difference between said real and predetermined phase angles; and

(g) a motor speed control device responsive to said phase angle signal for adjusting the speed of one of said motors until said real phase angle has about the same value as said predetermined phase angle.

5,615,764

ELECTROLYTIC IONIZED WATER PRODUCER

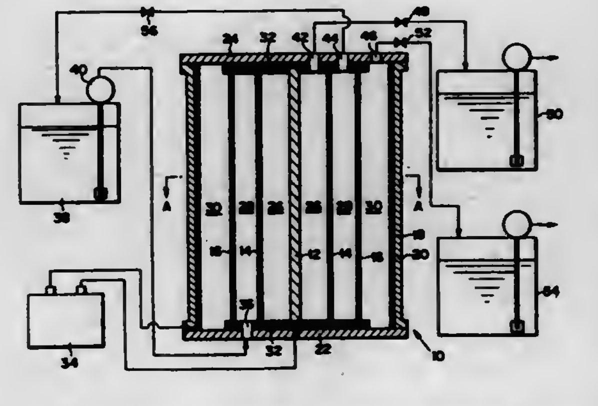
Yukimasa Satoh, 5-22, Jindaiji-higashimachi 6-chome, Chofu-shi, Tokyo, Japan

Filed Oct. 18, 1995, Ser. No. 544,671

Claims priority, application Japan, Oct. 18, 1994, 6-277198

Int. Cl.⁶ C02F *1/461; 1/469*

U.S. Cl. 204—252 **4 Claims**



1. An electrolytic ionized water producer, comprising;

a second space having an anion membrane, selectively permeable to anions, and a cation membrane, selectively permeable to cations, as wall surfaces,

a first space having said anion membrane as a wall surface, located adjacent to said second space and having a positive electrode exposed to the interior thereof,

a third space having said cation membrane as a wall surface, located adjacent to said second space and having a negative electrode exposed to the interior thereof,

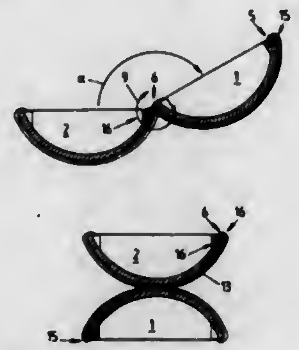
a water inlet for feeding water into said second space,

a first ionized water outlet for discharging ionized water from said first space,

a second ionized water outlet for discharging ionized water from said third space and

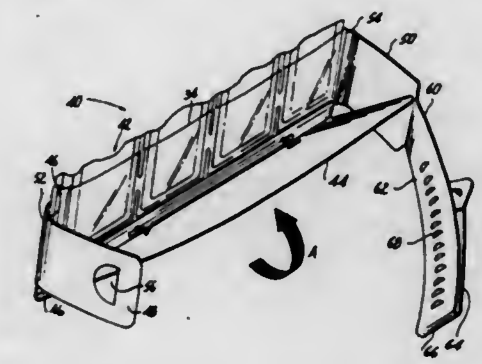
wherein said positive electrode is in the form of a rod, said anion membrane is a cylinder defining said first space as an annulus centered on the positive electrode, said cation membrane is a cylinder annularly arranged radially outward of and spaced from said anion membrane, said negative electrode is a cylinder annularly arranged radially outward of and spaced from said cation membrane, wherein the annular space between the anion membrane and the cation membrane is said second space, and the annular space between the cation membrane and the negative electrode is said third space.

5,615,765
CONTAINER FOR THE RECEPTION OF OBJECTS
Hans Roericht, Am Hochstraess 8/24, 89081 Ulm, Germany
PCT No. PCT/DE94/00352, § 371 Date Oct. 2, 1995, § 102(e) Date Oct. 2, 1995, PCT Pub. No. WO94/22342, PCT Pub. Date Oct. 13, 1994
PCT Filed Mar. 26, 1994, Ser. No. 530,225
Claims priority, application Germany, Apr. 5, 1993, 43 11 222.6
Int. Cl.⁶ B65D *43/16*
U.S. Cl. 206—45.23 **20 Claims**



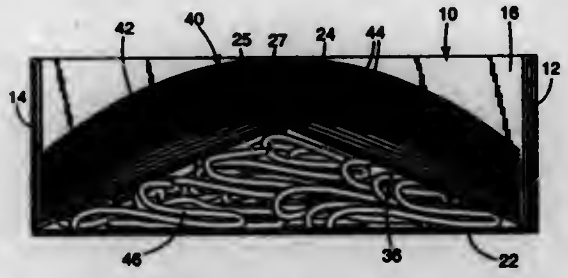
1. An openable and closeable container that receives objects, comprising:
first and second mutually-opposing half-shells that are positionable relative to one another to form a hollow body when the container is closed, each half-shell having first and second opposing, longitudinally extending edges, said first edges abutting against each other and said second edges abutting against each other when said half-shells are positioned to form the hollow body; and
at least first, second and third joint straps arranged sequentially in the longitudinal direction and extending transverse to the longitudinal direction and in an arcuate path over an outer surface of the respective half-shells to join said half-shells together, said first and second joint straps each having a first end fastened to the first edge of said first half-shell, and a second end fastened to the second edge of said second half-shell, said third joint strap having a first end fastened to the first edge of said second half-shell, and a second end fastened to the second edge of said first half-shell, said joint straps allowing the outer surfaces of said half-shells to roll upon one another when the container is open.
11. An openable and closeable container that receives objects, comprising:
first and second mutually-opposing half-shells that are positionable relative to one another to form a hollow body when the container is closed, each half-shell having first and second opposing, longitudinally extending edges, said first edges abutting against each other and said second edges abutting against each other when said half-shells are positioned to form the hollow body;
at least first and second joint straps arranged sequentially in the longitudinal direction and extending transverse to the longitudinal direction in an arcuate path over an outer surface of the respective half-shells to join said half-shells together, said first joint strap having a first end fastened to the first edge of said first half-shell, and a second end fastened to the second edge of said second half-shell, said second joint strap having a first end fastened to the first edge of said second half-shell, and a second end fastened to the second edge of said first half-shell, said joint straps allowing the outer surfaces of said half-shells to roll upon one another when the container is open; and
a fastening device attached to said edges for holding said half-shells together when the container is closed.
16. An openable and closeable container that receives objects, comprising:
first and second mutually-opposing half-shells that are positionable relative to one another to form a hollow body when the container is closed, each half-shell having first and second opposing, longitudinally extending edges, said first edges abutting against each other and said second edges abutting against each other when said half-shells are positioned to form the hollow body;
at least one continuous, one-piece joint strap extending transverse to the longitudinal direction and in an arcuate path from the first edge to the second edge of said first half-shell and over an outer surface of said first half-shell, from the second edge of said first half shell to the first edge of said second half-shell, from the first edge to the second edge of said second half-shell and over an outer surface of said second half-shell, and from the second edge of said second half shell back to the first edge of said first half-shell, respectively, to join said half-shells together, said joint straps allowing the outer surfaces of said half-shells to roll upon one another when the container is open; and
a fastening device attached to said edges for holding said half-shells together when the container is closed.

5,615,766
SUTURE PACKAGE RETENTION SLEEVE AND PROCEDURE KIT
Edward A. Gemma, Jr., Milford, Conn., and Andrew P. Stellon, Rivervale, N.J., assignors to United States Surgical Corporation, Norwalk, Conn.
Filed May 5, 1995, Ser. No. 435,743
Int. Cl.⁶ A61B *17/06;* **B65D** *85/48*
U.S. Cl. 206—63.3 **6 Claims**



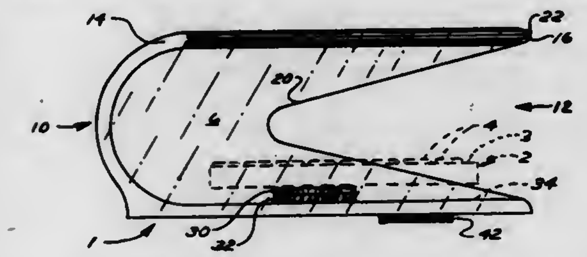
1. An adjustable sleeve for retaining suture package sheaths comprising:
a) a first panel having lower edge;
b) a second panel foldably interconnected to the first panel along the lower edge; and
c) first and second flaps foldably formed on opposite end portions of the first panel, the first and second flaps configured for interlocking engagement such that when the second panel is folded adjacent the first panel and the first and second flaps are interlocked, the first and second interlocked flaps hold the second panel adjacent to the first panel to define the pocket, wherein the first flap has an aperture and the second flap has a strap extending therefrom, the strap configured for insertion through the aperture to thereby engage the first flap with the second flap.

5,615,767
METHOD AND PACKAGING FOR SURGICAL MASKS
Patricia A. Eull, Mahtomedi, Minn.; Todd R. Berger, Hudson, Wis., and Joel S. Graf, Vadnais Heights, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Apr. 11, 1995, Ser. No. 420,111
Int. Cl.⁶ B65D *85/18*
U.S. Cl. 206—278 **22 Claims**



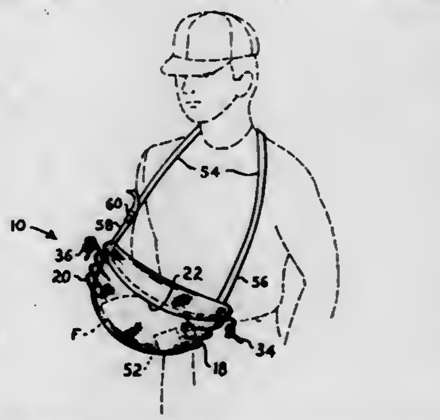
12. A package for retaining and dispensing a plurality of face shields each comprising a flexible, substantially transparent, abrasion-sensitive eye shield portions, the package comprising:
a container having a bottom comprising a raised central portion with an apex along a line parallel to a minor axis of the container;
a stack of face shields within the container such that the eye shield portions are in a bent configuration over the raised central portion of the container; and
means for applying a fanning force to the plurality of face shields such that the eye shield portions are held in a semi-rigid, separated condition so that abrasion of the eye shield portions is minimized.

5,615,768
MAGNIFYING HOLDER FOR A REMOTE CONTROL UNIT
David W. Schermerhorn, RR#2, Box 2245, Fort Ann, N.Y. 12827
Filed Dec. 1, 1994, Ser. No. 348,378
Int. Cl.⁶ B65D *85/38*
U.S. Cl. 206—305 **10 Claims**



1. A holder for at least one remote control unit, said holder comprising:
a receptacle having a top portion, at least a portion of which is transparent, a bottom portion, a first end portion that includes an opening, a second end portion and first and second side portions, each having an opening therein, said top, bottom, end and side portions thereby defining an interior area of the receptacle, and wherein said openings in said side portions have a size to allow access by a user's fingers to said interior area;
a first attachment means capable of releasably securing a portable first remote control unit fully within said interior area; and
wherein the interior area of the receptacle is divided by a horizontally-oriented divider member and wherein the receptacle includes a second attachment means capable of releasably securing a second remote control unit fully within the interior area of the receptacle and wherein at least a portion of the bottom portion of the receptacle is transparent and wherein the top and bottom portions of the receptacle each includes a magnifying lens, adapted to complement the transparent portions of the top and bottom portions, whereby the first and second remote control units can be attached within the receptacle and each of the magnifying lenses will function to magnify the top surface of one of the units.
6. A holder and remote control unit apparatus, said apparatus comprising:
a portable first remote control unit adapted to be handheld and having a top surface that includes a plurality of buttons that function to control a remotely-located electrical appliance;
a receptacle having a top portion, at least a portion of which is transparent, a bottom portion, a first end portion that includes an opening, a second end portion and first and second side portions, each having an opening therein, said top, bottom, end and side portions thereby defining an interior area of the receptacle, and wherein said openings in said side portions have a size to allow access by a user's fingers to said interior area;
a first attachment means capable of releasably securing said first remote control unit whereby said unit will be completely contained within said interior area; and
wherein the interior area of the receptacle is divided by a horizontally-oriented divider member and wherein the receptacle includes a second attachment means capable of releasably securing a second remote control unit fully within the interior area of the receptacle and wherein at least a portion of the bottom portion of the receptacle is transparent and wherein the top and bottom portions of the receptacle each includes a magnifying lens, adapted to complement the transparent portion of the top an bottom portions, whereby said first and second remote control units can be attached within the receptacle and each of the magnifying lenses will function to magnify the top surface of one of the units.

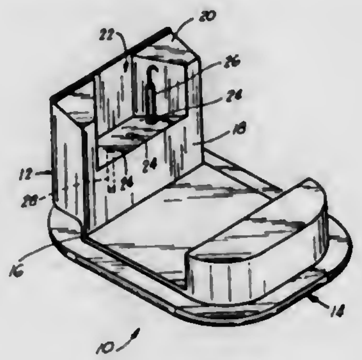
5,615,769
SPORTS BALL BAG
Stanley L. Stephenson, 7121 Alabama Hwy. 101, Town Creek, Ala. 35672
Filed Nov. 13, 1995, Ser. No. 556,513
Int. Cl.⁶ A45C *15/00*
U.S. Cl. 206—315.9 **14 Claims**



1. A sports ball bag, comprising:
a cover comprising a flat, thin, flexible, waterproof, rectangular sheet of material having an outer surface and an opposite inner surface, a first end and an opposite second end with each said end having selectively openable closure means, a first edge and an opposite second edge with each said edge cooperating to form a selectively openable side closure seam, with each said end and said side closure seam being selectively closed to form said sports ball bag, and;
a lining comprising a rectangular sheet of moisture absorbent material securable to said inner surface of said bag;

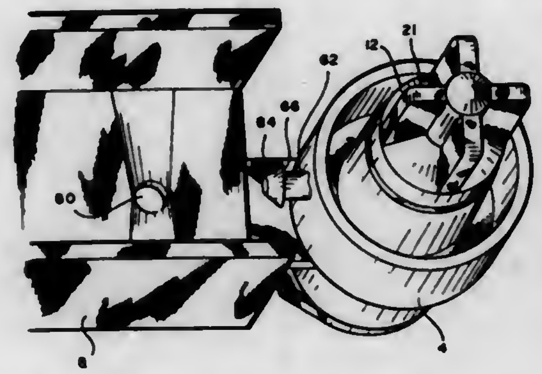
said lining being selectively removable from said bag, said lining having a cover contact surface having a periphery including a plurality of spaced apart first hook and loop fastener components disposed therearound;
said inner surface of said cover having corresponding plurality of spaced apart cooperating second hook and loop fastener components disposed therearound and adapted to engage said first hook and loop fastener components of said liner selectively and removably, said inner surface of said cover including a continuous strip of first hook and loop fastener material disposed adjacent said first edge;
said outer surface of said cover including a continuous strip of cooperating second hook and loop fastener material disposed adjacent said second edge, with said first continuous strip and said second continuous strip being selectively engageable to provide for the overlapping securing of said first edge and said second edge to one another and the selective and openable closure of said side closure seam of said cover, whereby;
when a sports ball is placed within said sports ball bag by means of one said selectively openable end, the ball receives care and drying by means of said moisture absorbent lining of said bag and is precluded from contact with additional moisture by means of said waterproof cover of said bag.

5,615,770
IMPLANT PACKAGE INSERT DELIVERY SYSTEM
Edward L. Applebaum, Chicago, Ill., and Brad Beale, Cordova, Tenn., assignors to Smith & Nephew, Inc., Memphis, Tenn.
Filed Aug. 10, 1995, Ser. No. 513,387
Int. Cl.⁶ A61B *19/00;17/06*
U.S. Cl. 206—363 **13 Claims**



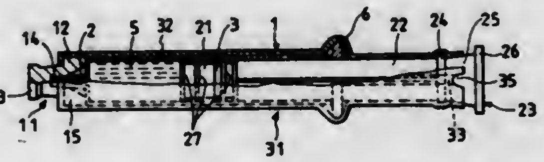
1. A sterilizable medical implant package insert for placement in a depression of a sterilizable implant package, the insert comprising:
a base sized to securely fit within the package depression;
a lid sized to fit within the package depression, said lid including holding means for removably and securely holding an implant, said lid and said base having a combined height less than the effective height of the package depression; and
attaching means for pivotally attaching said lid to said base, said attaching means adapted to automatically elevate said lid and hold said lid in an open position in the absence of external forces and to allow said lid to pivot into a closed position by an application of external force to said lid, said lid being pivotable between said open and said closed position,
said lid and said base adapted to define an at least partially enclosed chamber therebetween when said lid is in said closed position,
said holding means securely holding an implant at least partially within said chamber when said lid is in said closed position and presenting an implant for removal in an accessible manner when said lid is in said open position.

5,615,771
SAFETY NEEDLE CARTRIDGE SYSTEM
William H. Hollister, Nelson, N.H., assignor to Smiths Industries Medical Systems, Inc., Keene, N.H.
Continuation-in-part of Ser. No. 884,191, May 18, 1992, abandoned. This application Apr. 7, 1993, Ser. No. 43,890
Int. Cl.⁶ B65D *83/10;* **A61M** *5/32;5/00*
U.S. Cl. 206—368 **10 Claims**



1. A safety package comprising:
a base having a first end matable with a syringe and a second end matable with a needle assembly;
cap means for enclosing said first end;
sheath means for enclosing said second end, said sheath means being fitted to said second end;
housing means hingedly attached to said base and pivotable to a position to be in substantial alignment along the longitudinal axis of said base;
wherein said needle assembly comprises a needle attached to a hub;
wherein after said sheath means has been removed from said second end and said needle assembly mated thereto, said housing means pivotable for substantially enveloping said needle mated via said hub to said second end; and
wherein said sheath means encloses at least a portion of said needle assembly including a needle, said second end of said base comprises an internal thread for receiving a hub of said needle assembly, said sheath means having a first portion cooperatively biasing against a second portion of said base so that when said sheath means is rotated to fully thread said hub into said base, said sheath means is automatically loosened from said hub for easy removal from said needle.

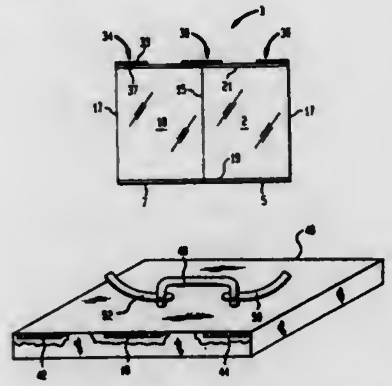
5,615,772
MEDICATION FILLED SYRINGE EQUIPMENT
Masateru Naganuma, Kanagawa, Japan, assignor to Seikagaku Kogyo Kabushiki Kaisha (Seikagaku Corporation), Tokyo, Japan
PCT No. PCT/JP94/00331, § 371 Date Sep. 29, 1995, § 102(e) Date Sep. 29, 1995, PCT Pub. No. WO94/20161, PCT Pub. Date Sep. 15, 1994
PCT Filed Mar. 1, 1994, Ser. No. 495,624
Claims priority, application Japan, Mar. 2, 1993, 5-014004 U; Mar. 2, 1993, 5-066139
Int. Cl.⁶ B65D *85/08;75/00*
U.S. Cl. 206—365 **3 Claims**



1. A medication filled syringe equipment comprising a barrel having a foremost end and a rear end; a needle attaching portion at

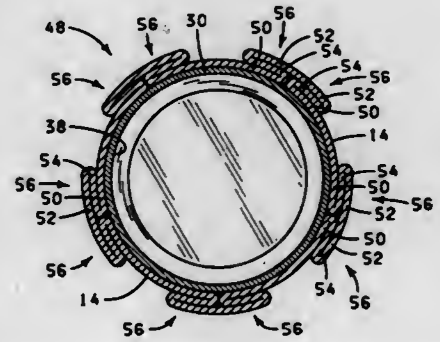
said foremost end of said barrel; a cap fitted on said needle attaching portion; a plunger fitted in said barrel from said rear end of said barrel to a predetermined position in said barrel; and a plunger rod connected to said plunger and having a portion projecting backward beyond the rear end of said barrel and terminating in a basal head; with a predetermined dose of a medication being contained in said barrel,
wherein said cap, said barrel, as well as the portion of said plunger rod projecting backward beyond said barrel and said basal head of said plunger rod are covered with a tubular sealing device including a front end and a rear end and which is made from a heat-shrinkable film and which has been shrunk under heat so that said sealing device adheres closely to an outer surface of each of said cap, said barrel, the portion of said plunger rod projecting backward beyond said barrel and said basal head of said plunger rod.

5,615,773
ARRANGEMENT FOR RETAINING AND TRANSPORTING AUDIO TAPE CASSETTE CASES
Roxanne Sturdivant, 213 S. Harrison St., Apt. 3N, East Orange, N.J. 07018
Continuation-in-part of Ser. No. 376,939, Jan. 23, 1995, abandoned. This application Dec. 8, 1995, Ser. No. 569,575
Int. Cl.⁶ B65D *85/575*
U.S. Cl. 206—387.1 **6 Claims**



1. An arrangement for retaining and transporting a plurality of audio tape cassette cases, comprising:
a plurality of like cassette cases arranged in a stack in adjacent relationship, including at least two rows of like cases arranged in parallel relationship and each of said rows including an equal number of like cases, each said case having a back and a front;
means for retaining said plurality of like cases in said stack including a first member attached to the stack and spaced so as to extend parallel to one side of one row thereof, a second member attached to the stack and spaced so as to extend along a corresponding side of the other row thereof and substantially parallel to the first member, a third member attached to the stack and spaced so as to extend between the first and second members in substantially parallel relation thereto, said first and second members being attached to the cases in the one and the other rows, respectively, and said third member being attached to each of the cases in the one and the other rows, each said first member, said second member and said third member each being one component of a two-component fastener; said retaining means being effective for permitting selected cases to be displaced from adjacent cases, whereby cassettes stored in the selected cases are easily removable from said selected cases;
said two-component fastener having a loop member and a pile member, with at least said first and second members each having the same type component of the loop and pile members and each of the first, second and third members having adhesive surface by which each of said first, second and third members is attached to the stack and having an exposed surface opposite the adhesive surface, said exposed surface being effective as the one type component of the fastener including loop and pile members;
a cover which is sized to fit over the stack and having an inside surface and an outside surface;
a fourth member of a loop and pile member of the opposite type component as said first and second members, said fourth member attached to the inside surface of the cover and extending along one side thereof;
a fifth member of a loop and pile member of the opposite type component as said first and second members, said fifth member attached to the inside surface of the cover and extending along an opposite side thereof substantially parallel to said fourth member; and
a sixth member of a loop and pile member of the opposite type component as said third members, said sixth member attached to the inside surface of the cover between the fourth and fifth members and extending substantially parallel thereto.

5,615,774
FLOWER POT ASSEMBLY FORMED FROM A SHEET WITH AN OPENING
Donald E. Weder, Highland, Ill., assignor to Southpac Trust International, Inc., Oklahoma City, Okla.
Continuation of Ser. No. 347,611, Nov. 30, 1994, Pat. No. 5,526,932, which is a continuation-in-part of Ser. No. 165,215, Dec. 10, 1993, Pat. No. 5,373,943, which is a continuation of Ser. No. 40,330, Mar. 30, 1993, Pat. No. 5,311,991, which is a division of Ser. No. 906,089, Jun. 29, 1992, Pat. No. 5,205,108, said Ser. No. 347,611is a continuation-in-part of Ser. No. 305,246, Sep. 13, 1994, Pat. No. 5,473,856, which is a continuation of Ser. No. 991,737, Dec. 17, 1992, Pat. No. 5,345,745, which is a continuation of Ser. No. 876,947, May 1, 1992, Pat. No. 5,396,992, which is a continuation of Ser. No. 708,521, May 31, 1991, Pat. No. 5,161,348, which is a division of Ser. No. 360,367, Jun. 2, 1989, Pat. No. 5,038,933, said Ser. No. 347,611is a continuation-in-part of Ser. No. 926,098, Aug. 5, 1992. This application Jun. 6, 1995, Ser. No. 469,033
Int. Cl.⁶ B65D *85/52*
U.S. Cl. 206—423 **7 Claims**

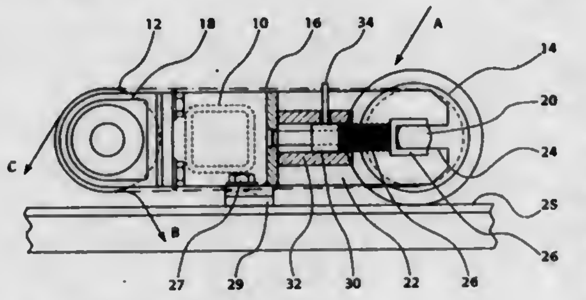


1. A method of providing a decorative covering for a pot means, comprising:
providing a pot means having a base, an upper end, a bottom, and an outer peripheral surface;
providing a skirt of unitary construction having an upper surface, a lower surface, an outer peripheral edge, and a plurality of folds, at least some of which have portions which are bondingly connected to each other, and the skirt having an opening formed through a portion thereof and spaced a distance from the outer peripheral edge, the skirt further comprising adhesive or cohesive bonding means for holding the sheet of material in a position about an upper portion of the pot means;
positioning the skirt about the upper portion of the pot means wherein at least a portion of the skirt near the opening thereof

engages the upper portion of the pot means such that the skirt extends a distance generally outwardly from the upper end of the pot means; and
bondingly connecting the skirt to the pot means via the adhesive or cohesive bonding means for holding the sheet of material in a position about the pot means.

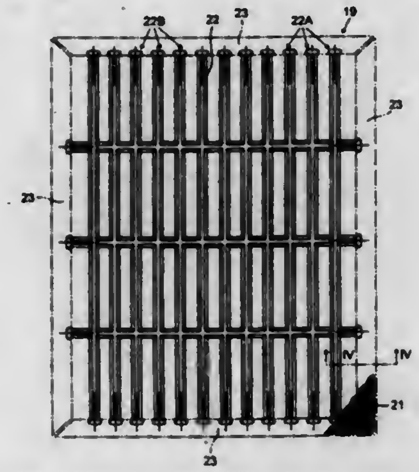
5. A method of providing a decorative covering for a pot means, comprising:
providing a pot means having a base, an upper end, a bottom, and an outer peripheral surface;
providing a skirt of unitary construction having an upper surface, a lower surface, an outer peripheral edge, and a plurality of folds, at least some of which have portions which are bondingly connected to each other, and the skirt having an opening formed through a portion thereof and spaced a distance from the outer peripheral edge;
positioning the skirt about an upper portion of the pot means wherein at least a portion of the skirt engages the upper portion of the pot means such that the skirt extends a distance generally outwardly from the upper end of the pot means; and
bondingly connecting the skirt to the pot means via adhesive or cohesive bonding means for holding the skirt in a position about the pot means.

5,615,775
HIGH-INTENSITY MAGNETIC SEPARATOR
Pascal Barbaret, Saint Chamond, France, assignor to FCB, Montreuil-sous-Bois, France
Filed Jan. 29, 1996, Ser. No. 593,254
Claims priority, application France, Feb. 2, 1995, 95 01209
Int. Cl.⁶ B03C *1/00*
U.S. Cl. 209—219 **8 Claims**



1. A magnetic separator comprising
(a) a chassis,
(b) a magnetic rotor and a return roll supported on the chassis, the rotor consisting of a stock of disk-shaped pole pieces and permanent magnets, and the rotor and return roll having axes extending parallel to each other,
(c) an endless band trained over the magnetic rotor and return roll, the endless band having an upper course and a lower course, and the endless band serving to convey products to be separated to the magnetic rotor and to remove magnetic particles separated by the rotor,
(1) the chassis being constituted by a beam positioned between the upper and lower course of the endless band,
(d) a frame supporting opposite ends of the beam projecting from the opposite sides of the endless band at a plane of support,
(1) one of the beam ends being rigidly fixed on the frame,
(e) a removable shim positioned at the level of the lower course of the endless band adjacent the plane of support, the removable shim supporting the beam end opposite the one beam end on the frame whereby the beam is cantilevered on the frame when the shim is removed and a space is defined between the opposite beam end and the frame, the space permitting the endless band to be dismounted from, and mounted on, the rotor and return roll,
(f) a tensioning device for applying an operating tension to the endless band mounted on the rotor and return roll, and
(g) means for deactivating the tensioning device to reduce the tension.

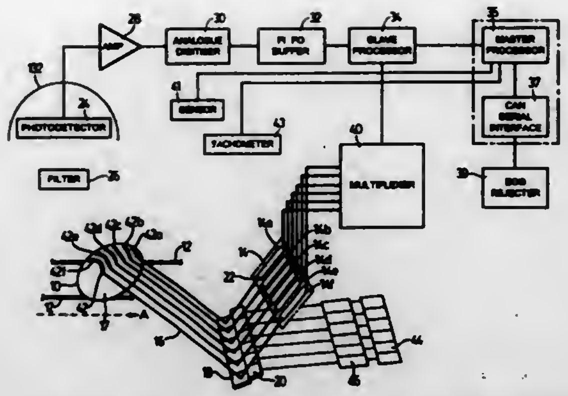
5,615,776
MOUNTING & TENSIONING ARRANGEMENTS FOR SCREENS
Ola Björklund, Älvsjö, Sweden; Alexander Ritchie, Kincardineshire, and George Souter, Aberdeen, both of Great Britain, assignors to Alfa Laval Separation AB, Tumba, Sweden
Continuation of Ser. No. 302,742, Jan. 30, 1995, abandoned. This application Jul. 8, 1996, Ser. No. 676,436
Claims priority, application United Kingdom, Apr. 21, 1992, 9208629
Int. Cl.⁶ B07B *1/49*
U.S. Cl. 209—403 **18 Claims**



1. A screen assembly comprising a mesh material (21) under tension, a generally horizontally disposed apertured support means (22, 26) for distributed support of said mesh material (21), said mesh material (21) being superimposed on and in contact with said support means (22) and fixed to said support means at substantially all points of contact, said support means comprising a first grate (26) of relatively rigid construction and a superimposed second grate (22) of a material which is relatively yieldable at least in the generally horizontal direction, said mesh material (21) being fixed to said second grate (22) and the two grates (22, 26) being arranged in contact with one another.

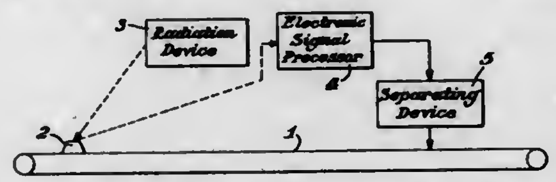
5,615,777
EGG CANDLING SYSTEM
Frank L. Weichman, Edmonton, Canada; Jelle van der Schoot, Aalten, Netherlands; Daniel J. Kenway, Edmonton, Canada; Alan J. Hughes, Edmonton, Canada, and Carl S. Flatman, Edmonton, Canada, assignors to FPS Food Processing Systems, Barneveld, Netherlands
Filed Jan. 17, 1995, Ser. No. 373,158
Int. Cl.⁶ A01K *43/04;* **G01N** *21/00*
U.S. Cl. 209—511 **32 Claims**

1. Apparatus for detecting flaws in eggs and for distinguishing between flaws in different natures, the apparatus comprising:
a) means to rotate the egg about its longitudinal axis;
b) means to form at least one laser beam and focus it to a spot focus;
c) means to vibrate the laser beam at a speed and amplitude such that the spot focus appears as a geometric figure selected from closed curves and straight lines;
d) means to direct the at least one laser beam to scan the egg along at least one circumferential path thereabout during at least one revolution of the egg with said at least one vibrating laser beam such that sequential geometric figures of the laser beam overlap one another along the circumferential path;



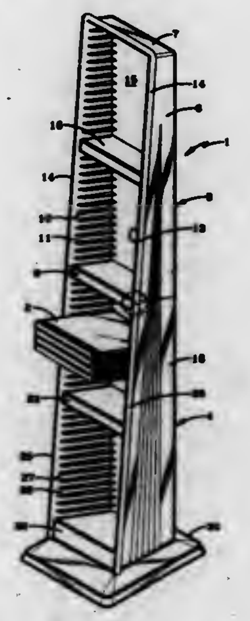
e) detection means to detect peaks in intensity in light emanating from the egg;
f) signal processing means to develop a progression of signals corresponding to the number, size and character of said peaks in intensity of said light emanating from the egg;
g) computer means to process said signals and to deduce, from the number, size and character of the peaks in intensity, the nature of a flaw in the egg.

5,615,778
PROCESS TO SORT WASTE MIXTURES
Dieter Kaiser, Dortmund, and Franz Wintrich, Essen, both of Germany, assignors to RWE Entsorgung Aktiengesellschaft, Essen, Germany
PCT No. PCT/DE92/00627, § 371 Date Jun. 4, 1993, § 102(e) Date Jun. 4, 1993, PCT Pub. No. WO93/02813, PCT Pub. Date Feb. 18, 1993
PCT Filed Jul. 27, 1992, Ser. No. 30,404
Claims priority, application Germany, Jul. 29, 1991, 41 25 045.1
Int. Cl.⁶ B07C *5/00*
U.S. Cl. 209—578 **4 Claims**



1. A process for sorting a waste mixture after sufficient distribution of the waste mixture on a conveyor belt, said process comprising:
exposing characteristic features of each waste object to light wave radiation, said characteristic features being detectible with light wave radiation and including a shape, a color, and any characteristic markings, including lettering,
scanning each object with a video camera, which receives light wave radiation emanating from each object, for said characteristic features, and receiving an image of each waste object, which image includes said characteristic features,
identifying each waste object by said characteristic features and transmitting a signal from the video camera to an electronic signal processor having stored data with respect to said characteristic features, said electronic signal processor being responsive to said signal from the video camera,
processing the signals from the video camera with the electronic signal processor on the basis of said data, and categorizing the material of which each waste object is comprised,
transmitting a signal from the electronic signal processor to a pneumatic separator means, responsive to said signal from said signal processor, said pneumatic separator means including air jet means for removing objects from the conveyor belt by propelling one type of object in one direction and a different type of object in a different direction.

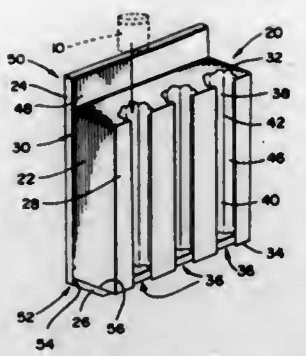
5,615,779
STORAGE AND DISPLAY RACK FOR RECORDED MEDIA
Ronald M. Marsilio, Mogadore; James T. Weisburn, Massillon; James K. Sankey, Hudson, and Larry K. Mundorf, North Canton, all of Ohio, assignors to Alpha Enterprises, Inc., N. Canton, Ohio
Filed May 12, 1995, Ser. No. 439,763
Int. Cl.⁶ A47G *29/00*
U.S. Cl. 211—40 **16 Claims**



1. A rack for the storage and display of recorded media including:
a base;
separate upper and lower sections, each being formed with a plurality of vertically spaced compartments for receiving recorded media therein, said lower section extending upwardly from the base;
said upper and lower sections having longitudinal lengths substantially equal to each other, with said upper section being in juxtaposition with said lower section on the base forming a generally rectangular parallelpiped configuration with said base when in a disassembled position; and
attachment means for mounting the upper section on the lower section in a vertical stacked relationship when in an assembled position.

5,615,780
FULL-ACCESS, NON-GRAVITY DEPENDENT, JAR STORAGE RACK
Steven A. Nimetz, and Caroline H. Nimetz, both of 25 Inverin Cir., Timonium, Md. 21093
Filed Oct. 31, 1995, Ser. No. 550,558
Int. Cl.⁶ A47F *7/28;7/00;* **A47B** *73/00*
U.S. Cl. 211—49.1 **4 Claims**

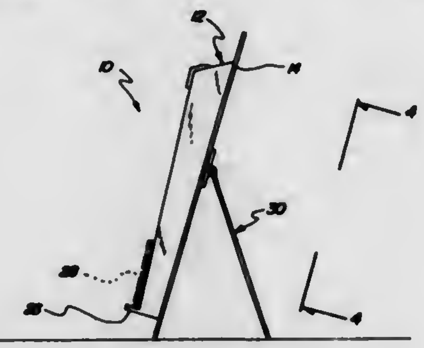
1. A full-access, non-gravity dependent, jar storage rack, comprising:
an elastic body having front, rear and top surfaces, said body having a jar receiving bore with an interior surface that penetrates into the body from the body's top surface, said bore interior surface intersecting body's front surface so as to define a slot that provides access through the body's front surface to jars stored in the bore;
said elastic properties of the body and the bore's diameter are chosen so as to allow the bore's interior surface to be expanded when accepting jars, thereby yielding a biasing force against the jars which is sufficient to prevent the jars' slippage in the bore under the force of gravity;



said slot having a width chosen so as to allow a user's fingers to grasp and remove a jar through the slot, and

a planar mounting member having front and rear surfaces, said elastic body rear surface being secured to the mounting member's front surface.

5,615,781
LITERATURE DISPLAY SYSTEM
Daniel A. Janssen, 101-765-6 Street, New Westminster, BC, Canada
Filed Sep. 21, 1995, Ser. No. 528,997
Int. Cl.⁶ A45F 5/12
U.S. Cl. 211—50 **1 Claim**



1. A literature display system comprising:

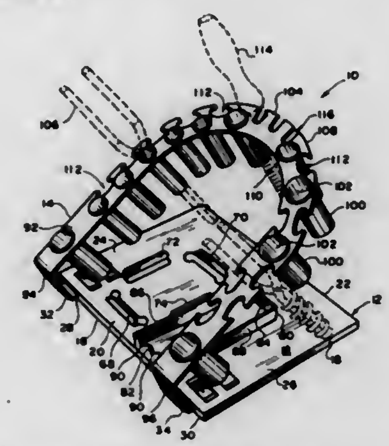
a pocket assembly having a receiving cavity and including a substantially planar main level having a pair of lateral panels projecting therefrom and oriented in a spaced relationship relative to one another, a front panel extending between the lateral panels in a spaced relationship relative to the main panel so as to define the receiving cavity, and a bottom panel extending between the lateral panels and between both the front panel and the main panel, the main panel being shaped so as to define a pair of upper apertures positioned proximal to an upper edge of the main panel, and a pair of lower apertures positioned proximal to a lower edge of the main panel, joining links adapted to be engaged to the upper apertures and adjacent lower apertures of another similarly constructed pocket assembly so as to permit coupling of two pocket assemblies together in a substantially vertical orientation whereby one pocket assembly hangs below another pocket assembly, the joining links each comprising an elongated center member having a first U-shaped end formed at a first end thereof and a second U-shaped end oriented so as to face the first U-shaped end;

a dividing member positioned within the receiving cavity and slidably mounted to an upper edge of the front panel so as to partition the receiving cavity, the dividing member including a substantially L-shaped bracket which extends over the upper edge of the front panel and frictionally engages the same to support the dividing member in a desired orientation between the lateral panels and within the receiving cavity·

a shelf panel projecting beyond the front panel, the shelf panel extends from the bottom panel so as to project beyond a lower edge of the front panel;

a horizontal support assembly coupled to the pocket assembly for supporting the pocket assembly in a substantially vertical orientation upon a horizontal support surface, the horizontal support assembly comprising a hinge mounted to a back surface of the main panel, a support leg projecting from the hinge at an oblique angle relative to the main panel for engagement with the horizontal support surface such that the pocket assembly can be supported by the support leg and a lower edge of the main panel, the main panel being shaped so as to define a hinge aperture directed therethrough, with the hinge including a groove extending about a periphery thereof positioned within the hinge aperture to removably couple the hinge to the main panel.

5,615,782
WORK STAND
In J. Choe, 5817 McCann Dr., Baton Rouge, La. 70809
Filed May 18, 1995, Ser. No. 444,328
Int. Cl.⁶ A47F 7/00
U.S. Cl. 211—70.6 **23 Claims**



1. A work stand for supporting hair styling instruments, comprising:

a base; and

a generally U-shaped supporting plate oriented at an angle to and detachably engageable with said base, said supporting plate being provided with means formed in an outer edge of the supporting plate for retaining said hair styling instruments on said supporting plate, said supporting plate having a top surface and a pair of downwardly inclined legs, each of said legs comprising a first portion oriented at a right angle to said top surface and a second portion unitary connected at an angle to said first portion, and wherein said second portion of each of said legs is slidably engageable within a corresponding slot formed in a front side of the base.

5,615,783
PORTABLE FOLDING SADDLE RACK
Dwight C. Warnken, 1750 Waplty View Rd., Deer Lodge, Mont. 59722
Filed Oct. 18, 1995, Ser. No. 544,586
Int. Cl.⁶ A47F 7/00
U.S. Cl. 211—118 **14 Claims**

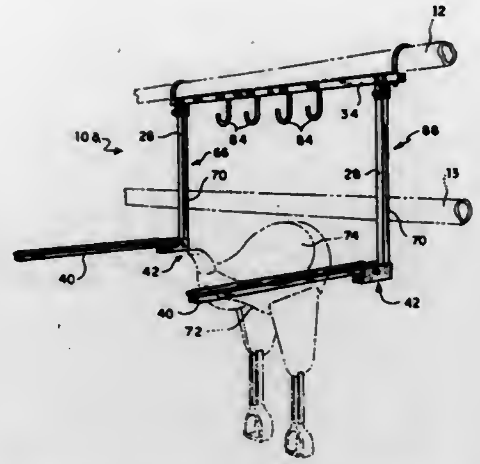
1. A portable saddle rack comprising,

an elongated top member,

hanger elements on said top member,

a hanger arm depending from said top member,

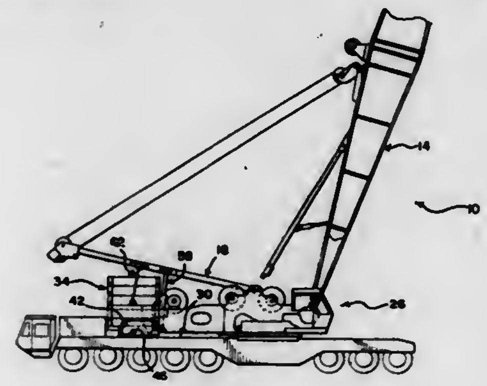
a saddle support arm extending substantially horizontally and outwardly from said hanger arm,



pivot assemblies movably attaching said hanger arm respectively to said top member and saddle support arm, and

said pivot assembly attaching said hanger arm to said top member permitting displacement of said hanger arm in a plane substantially parallel with said top member with said pivot assembly attaching said saddle support arm to said hanger arm permitting displacement of said saddle arm in a plane normal to the displacement plane of said hanger arm.

5,615,784
CRANE COUNTERWEIGHT INSTALLATION AND REMOVAL APPARATUS
David Pech, and Larry Schwelgl, both of Manitowoc, Wis., assignors to The Manitowoc Company, Inc., Manitowoc, Wis.
Continuation of Ser. No. 926,812, Aug. 7, 1992, abandoned. This application Sep. 29, 1994, Ser. No. 315,195
Int. Cl.⁶ B66C 23/72; B60B 17/00; B60S 9/00
U.S. Cl. 212—178 **15 Claims**



1. A truck-mounted crane comprising:

a) a crane carrier deck;

b) a plurality of tires supporting said carrier deck;

c) a ring bearing mounted on said crane carrier deck;

d) a crane upperworks rotatably supported on said crane carrier deck by said ring bearing;

e) a gantry connected to said crane upperworks, said gantry comprising a handling linkage;

f) a backhitch connected to said crane upperworks;

g) a boom connected to said crane upperworks;

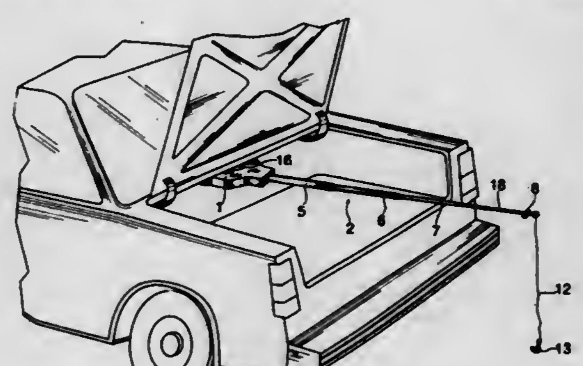
h) a counterweight having a bottom surface, said counterweight being removably supported on said crane upperworks, the handing linkage being removably connected to said counterweight;

i) a plurality of rollers attached to the bottom surface of said counterweight;

j) at least two inclined bars positioned on said crane carrier deck to engage said plurality of rollers, said at least two inclined bars each being inclined with respect to said crane carrier deck at an angle sufficient to cause said counterweight to roll therealong under the influence of gravity when said counterweight is positioned on said at least two inclined bars and said crane carrier deck is substantially horizontal; and

k) a stopping mechanism attached to said counterweight, said stopping mechanism being positioned to stop said counterweight from rolling off said at least two inclined bars at a position on said crane carrier deck where said crane upperworks is allowed to freely rotate past said counterweight.

5,615,785
IN-VEHICLE DEVICE FOR MOVING AND STORING OBJECTS
Albert Kaner, Sylvan Lake, Mich., assignor to AGC Research and Development Corp., Southampton, N.J.
Filed Oct. 3, 1995, Ser. No. 538,513
Int. Cl.⁶ B66C 23/44
U.S. Cl. 212—180 **10 Claims**



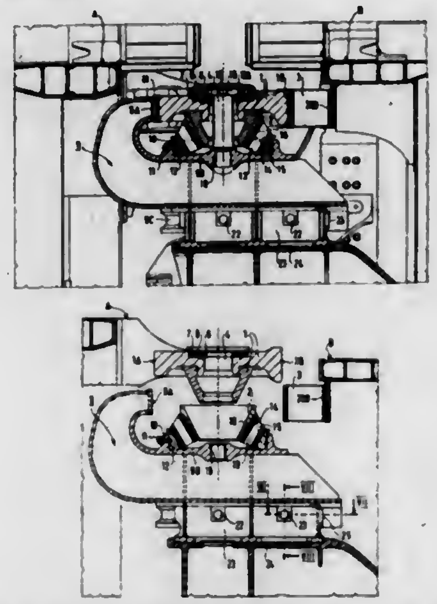
1. A telescoping arm device adapted for attachment to the inside of an automobile trunk, said device including a hollow swivel base and a fixed mounting element wherein the telescoping arm of said telescoping arm device contains a cable running through it from a winch at one end through a swivel wrist joint at a second end wherein

(a) said hollow swivel base is adapted to receive said telescoping arm containing said cable running through it, said hollow swivel base is attached by a joint allowing said hollow swivel base to swivel on said fixed mounting element which is fixed to an inside surface of said automobile trunk forward of the juncture of a hinge of a lid or door of said automobile trunk and on the chassis of an automobile at the rear of said automobile;

(b) said telescoping arm is comprised of a plurality of concentric tubes which telescope into said hollow swivel base, which telescoping arm has a ball and socket wrist joint on its end which is remote from said hollow swivel base and said cable with two ends, one end is attached to said winch and the other end is attached to a hook, said cable runs through said wrist joint and the innermost of said concentric tubes to said winch, whereby

(c) said winch to which said cable is attached raises and lowers said cable.

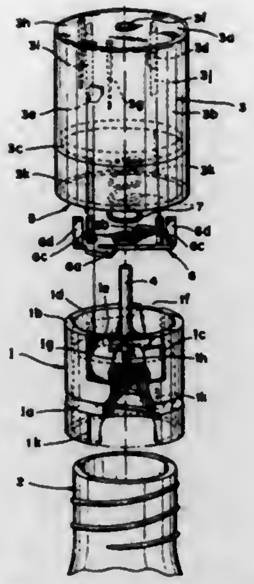
5,615,786
ARTICULATED COUPLING AND A METHOD OF ABSORBING ENERGY BETWEEN TWO RAIL VEHICLES
Christophe Hoyon, Ferrieres d'Aunis, and Michel Cros, La Jarne, both of France, assignors to GEC Alsthom Transport SA, Paris, France
Filed Feb. 14, 1995, Ser. No. 388,426
Claims priority, application France, Feb. 15, 1994, 94 01690
Int. Cl.⁶ B61D *49/00*
U.S. Cl. 213—75 R **15 Claims**



1. An articulated coupling between two vehicles A and B, the coupling resting on a shared bogey between said two vehicles and comprising:
a toroidal part connected to one of the two vehicles, having a frustoconical surface in its lower portion, and a cylindrical surface in its upper portion, thereby defining first and second cylindrical outside surfaces, and including a cylindrical bore in its center;
a support part connected to the other of said two vehicles, including an inside cylindrical portion in its upper portion facing said cylindrical outside surface of the upper portion of said toroidal part and surrounding said toroidal part by means of a soleplate situated at a level below the level of said toroidal part;
a cylindrical pivot fixed on said soleplate and engaged in said cylindrical bore;
a toroidal coupling element fixed on said soleplate and providing articulated coupling between said soleplate and said toroidal part;
energy absorption means disposed between one of the first and second cylindrical outside surfaces of said toroidal part and the surface of said vehicle facing said first or second outside surface; and
shear means holding said support part to longitudinal translation means fixed to a support arm connected to said other vehicle.

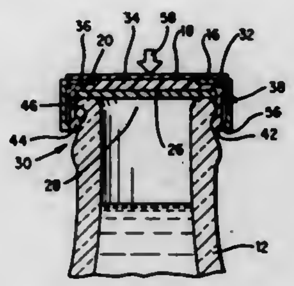
5,615,787
CONDITION INDICATING CHILD-RESISTANT CLOSURE
Glenn H. Morris, Sr., 1192 Cumberland Rd., Chattanooga, Tenn. 37419
Filed Aug. 2, 1995, Ser. No. 510,266
Int. Cl.⁶ A61J *1/03;* **B65D** *41/04;55/02*
U.S. Cl. 215—217 **11 Claims**

1. A child-resistant closure comprising an inner cap having a top wall and adapted to be threadably mounted on a container, an outer cap having a top wall and mounted on said inner cap, means



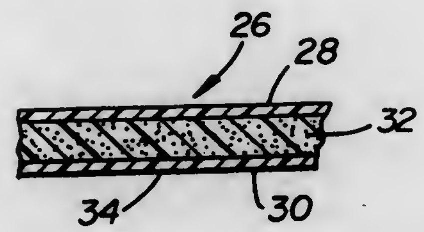
interconnecting the inner and outer caps, whereby the inner cap is captivated within the outer cap and freely rotatable relative to each other during a child resistant mode of the closure but connectable to each other for removal from the container during a non-child-resistant mode of the closure, a vertically extending post integral with the top wall of the inner cap, a bridge member freely rotatable on said post, said bridge member being rotatable between a first position prohibiting the inner and outer caps from being interconnected for removal from the container and a second position permitting the manipulation of the outer cap relative to the inner cap for interconnecting the inner and outer caps for removal of the closure from the container.

5,615,788
CONTAINER SAFETY CAP
Constancio Larguia, Talcahuano 1175 2nd B, Buenos Aires (1013), Argentina
Filed Aug. 10, 1995, Ser. No. 513,508
Int. Cl.⁶ B65D *41/62;45/32;51/18*
U.S. Cl. 215—274 **16 Claims**



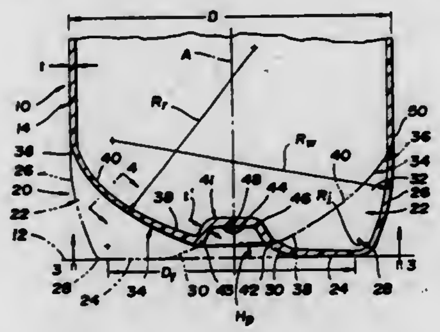
1. A cap for a container, said cap comprising:
an internal structure and an external structure movable with respect to said internal structure,
said internal structure including a plurality of flexible hooks for engaging a groove of the container,
said external structure including a radially inwardly extending flange for engaging said hooks in a closed position and forcing said hooks to remain engaged in the groove of the container, and
a safety seal positioned on a surface defined by cooperation between said internal structure and said external structure for indicating relative movement between said internal structure and said external structure,
wherein said safety seal includes two portions interconnected to each other by perforations.

5,615,789
CAP LINER FOR HOT FILLED CONTAINER AND METHOD OF MAKING
Harvey Finkelstein, Washington Township, N.J.; Victor Flores, Goldens Bridge, N.Y.; Murray Singer, Clark, and Anatoly Verdel, Fairlawn, both of N.J., assignors to Tri-Seal International, Inc., Blauvelt, N.Y.
Continuation-in-part of Ser. No. 755,733, Sep. 6, 1991. This application Mar. 16, 1994, Ser. No. 214,273
Int. Cl.⁶ B65D *53/04*
U.S. Cl. 215—348 **6 Claims**



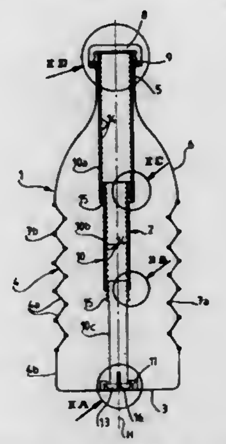
1. A cap liner in the form of a disk having an intermediate layer for positioning against the inside of the cap and a lower outer layer bonded to said intermediate layer wherein, said intermediate layer is a resilient foamed admixture of 15–40% ethylene vinyl acetate, 15–40% low density polyethylene and 15–40 percent of a copolymer comprising 10 to 90% polypropylene with the balance polyethylene, and said outer layer comprises a substantially homogenous admixture of 10–98% by weight polypropylene with the balance polyethylene.

5,615,790
PLASTIC BLOW MOLDED FREESTANDING CONTAINER
William C. Young, Superior Township, Mich., and Richard C. Darr, Seville, Ohio, assignors to Plastipak Packaging, Inc., Plymouth, Mich.
Continuation of Ser. No. 166,460, Dec. 14, 1993, abandoned, which is a continuation of Ser. No. 915,072, Jul. 16, 1992, Pat. No. 5,287,978, which is a continuation-in-part of Ser. No. 771,636, Oct. 4, 1991, Pat. No. 5,139,162, which is a continuation of Ser. No. 614,220, Nov. 15, 1990, Pat. No. 5,064,080. This application Apr. 27, 1995, Ser. No. 429,946
Int. Cl.⁶ B05D *1/02;1/42;23/00*
U.S. Cl. 215—375 **11 Claims**



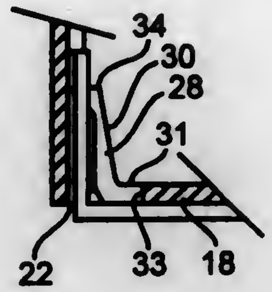
1. In a plastic blow molded container having a central axis A and including a cylindrical body portion that extends vertically about the central axis A with a diameter D, an upper end closure unitary with the upper extremity of the cylindrical body portion and including a dispensing spout, and a freestanding base structure unitary with the cylindrical body portion to close the lower extremity thereof, said freestanding base structure comprising:
a plurality of downwardly projecting hollow legs spaced circumferentially from each other with respect to the body portion; each leg having a lower flat foot coplanar with the feet of the other legs to cooperate therewith in supporting the container in an upright position; each leg also having an outer wall that extends from the outer extremity of the flat foot thereof to the cylindrical body portion with a radius of curvature R_s greater than 0.75 of the diameter D of the cylindrical body portion; the flat foot and the outer wall of each leg having a curved junction; each leg also having a planar inner connecting portion that is inclined and extends upwardly and inwardly from the inner extremity of the flat foot thereof; and each leg also having a pair of side walls that cooperate with the flat foot, the outer wall and the inner planar connecting portion to close the leg;
a plurality of curved ribs spaced circumferentially from each other between the downwardly projecting legs and connecting the adjacent side walls of the legs; each rib having an outer upper end that extends upwardly for connection to the cylindrical body portion of the container; each rib also having an inner lower end located between the inner connecting portions of the legs on opposite sides thereof and extending downwardly and inwardly toward the central axis A of the container; and each rib also having a curved intermediate portion that extends between the outer upper and inner lower ends thereof with an outwardly convex shape having a radius of curvature R_i greater than about 0.6 of the diameter D of the cylindrical body portion and with a center of curvature on the opposite side of the central axis A from the rib; and
a generally round hub that is located along the central axis A with the legs and curved ribs extending radially therefrom; said hub having a diameter D_h in the range of about 0.15 to 0.25 of the diameter D of the cylindrical body portion; and the hub having connections to the upwardly extending planar inner connecting portions of the legs and the hub also having connections to the downwardly extending inner lower ends of the curved ribs.

5,615,791
SYSTEM OF A BOTTLE AND OF AN ASSOCIATED CO-OPERATING DEVICE
Yves Vatelot, 31 Place de la Madeleine, Paris, France, and Jacques Demeester, Via Delle Scuole 1, Lugano, Switzerland
Filed Jun. 7, 1995, Ser. No. 485,696
Claims priority, application France, Aug. 10, 1994, 94 09910; Jan. 11, 1995, 95 00271
Int. Cl.⁶ B65D *21/08*
U.S. Cl. 215—382 **23 Claims**



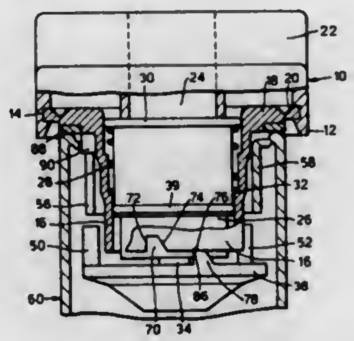
1. A system consisting of a collapsible bottle with a variable volume intended to contain a liquid, and comprising a axially deformable outer side wall and of an associated cooperating device integrated into the inside of the bottle and retained therein, said device having means for gradually adjusting the inner volume of the bottle to the volume of the liquid remaining in the bottle after each subsequent use and for holding the bottle in one of a series of collapsed states of reduced volume corresponding to the volume of remaining liquid.

5,615,792
ENCLOSURE FOR A SOLID STATE OVERLOAD RELAY MECHANISM OR OTHER DEVICE
Stanley H. Edwards, Jr., and Richard Marshall, both of Raleigh, N.C., assignors to Square D Company, Palatine, Ill.
Filed Oct. 13, 1994, Ser. No. 322,844
Int. Cl.[6] H02G *3/08;3/16*
U.S. Cl. 220—3.8 **15 Claims**



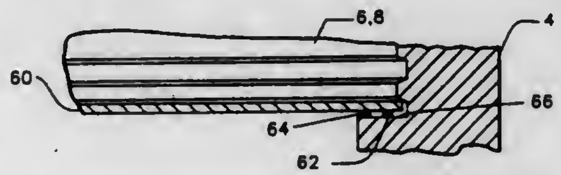
1. An enclosure securable to a selected structure comprising:
a mounting plate defining at least one flange, said flange defining at least one flange opening; and
a housing defining at least one housing opening dimensioned to receive said at least one flange defined by said mounting plate and having at least one integrally formed tab member proximate each said at least one housing opening, said tab member having a distal end for being selectively received upon manipulation within said at least one flange and thereby engaging an edge of said flange opening to apply a constant positive force between said housing and said mounting plate in order to fix a relative position therebetween.

5,615,793
FUEL TANK FILLER PIPE CLOSURE
Paul W. Muller, Emsworth, England, assignor to Britax Wingard Limited, Portchester, England
Filed Mar. 17, 1995, Ser. No. 406,069
Claims priority, application United Kingdom, Mar. 31, 1994, 9406499
Int. Cl.[6] B65D *41/06*
U.S. Cl. 220—295 **18 Claims**



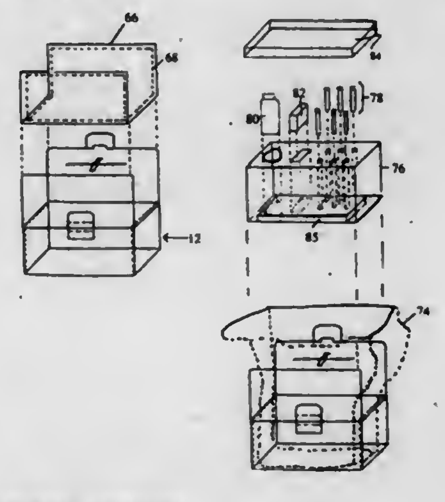
1. A closure for a fuel tank filler pipe comprising a body carrying a sealing formation at one end for engagement with an outer end of the filler pipe, an outer cover, a latch member at the other end of the body having latching projections for engagement with complementary formations on the filler pipe, coupling means connecting the latch member to the outer cover for angular movement therewith while allowing a predetermined amount of relative angular movement between the latch member and the body, and a main spring for causing relative axial movement between the latch member and the body so as to urge the sealing formation into engagement with the end of the filler pipe when the latching projections on the latch member are in engagement with the complementary formations on the filler pipe, characterised in that the coupling means includes lost-motion means allowing a predetermined range of angular movement of the outer cover relative to the latch member in the unlocking direction.

5,615,794
ASSEMBLY FOR SEALING A LID TO A MATING CONTAINER BODY
Holt Murray, Jr., 6 Prospect St., Hopewell, N.J. 08525, assignor to Holt Murray, Jr., Hopewell, N.J.
Division of Ser. No. 16,990, Feb. 10, 1993, Pat. No. 5,391,887. This application Dec. 23, 1994, Ser. No. 363,292
Int. Cl.[6] B65D *53/00*
U.S. Cl. 220—304 **2 Claims**



1. In a container comprising a lid and a cylindrical body, the improvement comprising a seal assembly included therewith for providing a seal between an internal shoulder of said cylindrical body and bottom of said lid screwed into an open top portion of the clindrical body, with the bottom of said lid being in relatively close proximity to a surface of said shoulder when said lid is screwed fully into the top of said cylindrical body, said seal assembly comprising:
a soft non-corrosive metal coating on said shoulder;
a metal disk having a substantially flat top side and a substantially flat bottom side;
two concentric metal "O"-rings, each coated with a soft non-corrosive metal, rigidly affixed to the bottom side of said disk, whereby when said lid is screwed into said body, the bottom of said lid is rotated against the top side of said disk for compressing said metal "O"-rings into the plastic regime to flatten them against said shoulder of said body for providing a double "O"-ring seal therebetween.

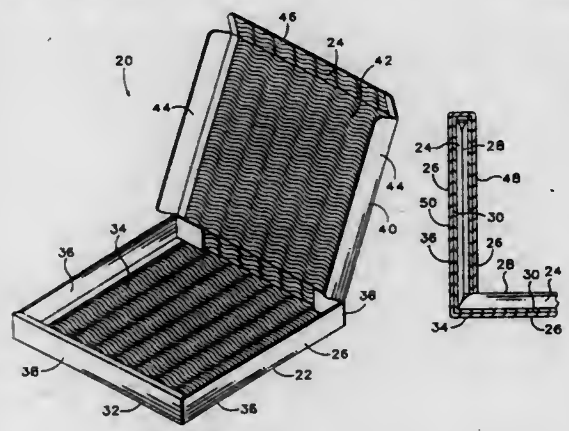
5,615,795
HAZARDOUS MATERIALS CONTAINER
Steven V. Tipps, P.O. Box 820369, Dallas, Tex. 75382
Filed Jan. 3, 1995, Ser. No. 367,955
Int. Cl.[6] B65D *5/56;5/60*
U.S. Cl. 220—410 **11 Claims**



1. A container comprising:

a. a carton shaped generally as a parallelepiped having opposing left and right side panels, opposing front and rear panels, a top panel, and a bottom panel, all of the panels defining an interior of the carton;
b. wherein each of the left, right, top, and bottom panels are formed of at least a double thickness of a corrugated material and further wherein the left and right side panels, opposing front and rear panels, top panel, and bottom panel are formed from a single piece of corrugated material;
c. a strength-reinforcing layer bonded to the interior;
d. an insert laminated with a strength-reinforcing layer, shaped to conform to the bottom and the front and rear panels;
e. a foam block configured to conform to the insert; and
f. a foam top configured to fit between the foam block and the top panel.

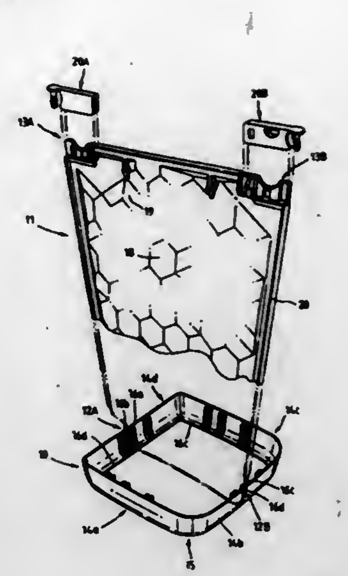
5,615,796
CONTAINER FOR HOT FOOD
Frederick A. Rench, Boise, Id., assignor to Boise Cascade Corporation, Boise, Id.
Filed Sep. 19, 1994, Ser. No. 308,294
Int. Cl.[6] B65D *5/20;5/56*
U.S. Cl. 220—441 **2 Claims**



1. A pizza box, comprising:
(a) a base having a bottom and two sides; and
(b) a lid having a top and sides;
(c) wherein the base includes meandering corrugation and further including lateral sides having a plurality of layers of corrugation each layer having a liner on one side thereof and having no liner between the layers.

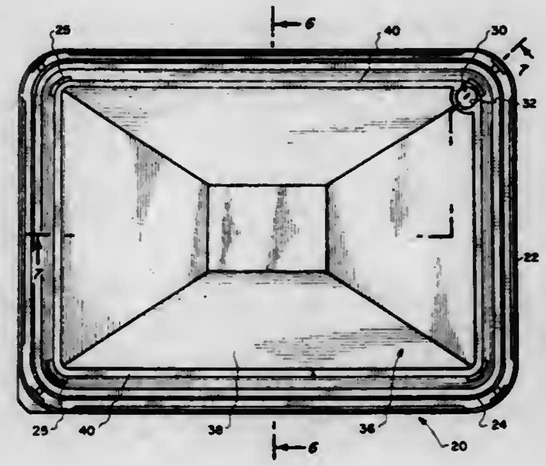
5,615,797
INSERT FOR A RUBBISH BIN
Mario B. Ripamonti, Brisbane, Australia, assignor to Otto Plastics Pty. Ltd., Queensland, Australia
PCT No. PCT/AU94/00007, § 371 Date Jan. 19, 1996, § 102(e) Date Jan. 19, 1996, PCT Pub. No. WO95/03238, PCT Pub. Date Feb. 2, 1995
PCT Filed Jan. 5, 1994, Ser. No. 578,670
Claims priority, application Australia, Jul. 20, 1993, PM0034
Int. Cl.[6] B65D *90/00*
U.S. Cl. 220—529 **10 Claims**

1. An insert assembly for a bin, the insert assembly comprising a sleeve which is insertable into the bin and which can be positioned adjacent a bottom wall of the bin, the sleeve including a first engaging means; a bin dividing panel insertable into the bin to divide the bin into a plurality of separate zones, the panel being extendible from adjacent the bottom wall of the bin and being engageable with the first engaging means to prevent sideways movement of the panel in at least one direction in the bin; second engaging means in use being adjacent the mouth of the bin to hold



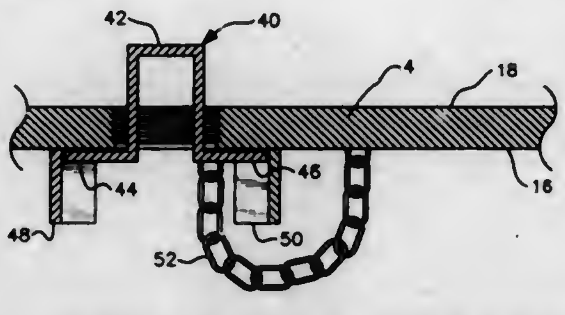
the panel against sideways movement in at least one direction, and, means to prevent the panel from being removed from the bin upon emptying of the bin.

5,615,798
CONTAINER INCORPORATING LIQUID DRAINING MEANS, AND RELATED METHOD
Frano Luburic, Fullerton, and C. Richard Roper, Orange, both of Calif., assignors to Ropak Corporation, Fullerton, Calif.
Filed Sep. 8, 1994, Ser. No. 302,597
Int. Cl.[6] B65D *1/34*
U.S. Cl. 220—572 **14 Claims**



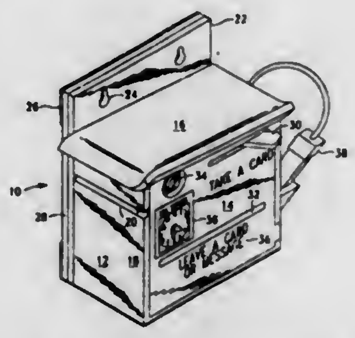
1. A container for particulate matter which matter is initially in a slurry, including a base portion and a sidewall portion extending upwardly therefrom when said container is in its normally upright position, said base portion including a particulate-supporting portion and a sluice channel having a substantially U-shaped configuration formed integrally with said particulate-supporting portion, said sluice channel being configured to receive liquid from the slurry when said container is in its normally upright position and including channel sidewalls that are substantially vertical when said container is in its normally upright position; said particulate-supporting portion being sloped toward said sluice channel to urge fluid to drain from the slurry into said channel, and said sluice channel including a sloped bottom portion capable of directing the liquid toward a point coincident with a drainage opening therethrough.

5,615,799
DISAPPEARING LIFTING LUG ASSEMBLY
David T. Palazzo, P.O. Box 290676, Tampa, Fla. 33687
Filed Jan. 11, 1996, Ser. No. 584,467
Int. Cl.⁶ B65D *25/22*
U.S. Cl. 220—751 **11 Claims**



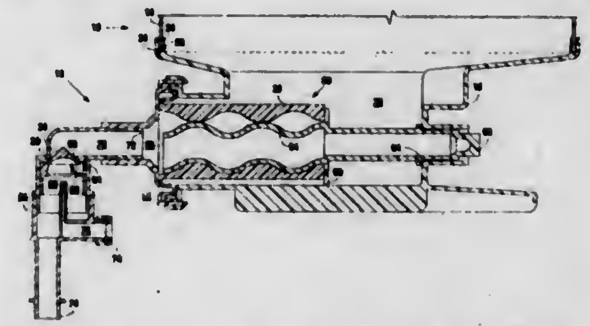
1. A combination of a storage tank and a lifting lug for securing a hoist to said tank, said tank comprising a generally upwardly facing sidewall having an inner surface facing the interior of said tank and an outer surface and an opening formed through said sidewall, said lifting lug comprising
- a lug member comprising a securing portion attached to said inner surface of said sidewall and a hoist engaging portion for engaging said hoist; and
- said lug member being anchored to said inner surface of said sidewall of said tank and permitting selective movement of said lug member between a first position in which said hoist engaging portion extends through said sidewall opening for use and a second position in which said lug member is disposed entirely within the interior of said tank for storage.

5,615,800
INTEGRATED BUSINESS CARD DISPENSER
Michael C. Meyers, 4360 Muirwood Dr., Pleasonton, Calif. 94588
Filed Apr. 13, 1995, Ser. No. 422,125
Int. Cl.⁶ B65H *1/08*
U.S. Cl. 221—232 **9 Claims**



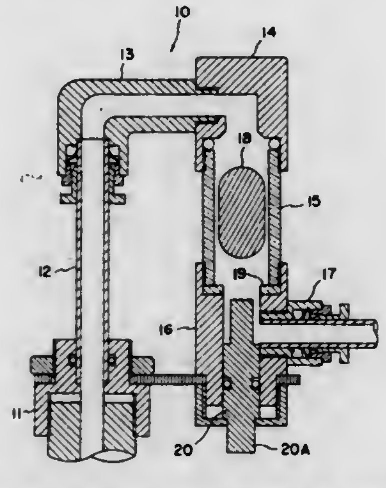
1. An integrated business card and information dispenser for storing a stack of flat articles such as business cards, promotional literature or real estate information, for dispensing the articles, and for securely receiving deposits and deliveries, the integrated business card and information dispenser device comprising:
- a housing, the housing having a top portion, a front face and a plurality of side portions, one of the side portions having a dispensing slot extending horizontally across the portion, the dispensing slot having an aperture of a predetermined dimension such that a predetermined number of articles are dispensed from the device;
- a lower internal article storage section accessible via a deposit window, the deposit window allowing articles to be deposited into the lower section;
- a central cross member;
- an upper article storage and dispensing section, the upper section being divided from the lower section by the central cross member, the upper section having:
- a floating platform for supporting the articles to be dispensed from the lower side;
- a biasing means, the biasing means urging the floating platform upward, the biasing means disposed between the central cross member and the floating platform;
- an upper cross member, the biasing means urging the stack of articles to be dispensed against the upper cross member;
- a slider with a lower friction surface, the slider disposed between the upper cross member and the stack of articles to be dispensed; and
- a dispensing lever, the lever extending through the front face of the housing for manual or mechanical operation, the lever connected to the slider by a linking element and a pusher element, the position of the lever determining the lateral position of the slider, whereby as the lever is operated so as to effect a transverse motion of the slider such that the friction surface of the slider acts upon the uppermost article of the stack of articles to be dispensed, that particular article is moved outward from the upper article storage and dispensing section through the dispensing slot.

5,615,801
JUICE CONCENTRATE PACKAGE FOR POSTMIX DISPENSER
Alfred A. Schroeder; Michael T. Romanyszyn, Jr., both of San Antonio, Tex.; Stephen B. Getsy, Erie, Pa.; Gregg S. Montgomery, West Chester, Ohio; Joseph J. Wolfe, Scottsdale, Ariz., and Norman P. Wittig, Corry, Pa., assignors to The Coca-Cola Company, Atlanta, Ga.
Continuation-in-part of Ser. No. 178,721, Jan. 10, 1994, Pat. No. 5,494,193, which is a division of Ser. No. 843,757, Feb. 28, 1992, Pat. No. 5,305,923, which is a continuation of Ser. No. 752,406, Aug. 30, 1991, abandoned, which is a continuation-in-part of Ser. No. 634,857, Dec. 27, 1990, abandoned, which is a continuation-in-part of Ser. No. 534,601, Jun. 6, 1990, abandoned, and a continuation-in-part of Ser. No. 715,433, Jun. 14, 1991, abandoned. This application May 18, 1995, Ser. No. 443,985
Int. Cl.⁶ B67D *5/22; 5/56*
U.S. Cl. 222—51 **21 Claims**



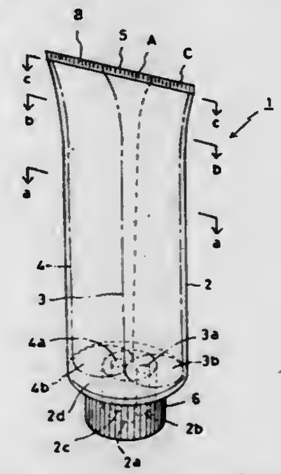
1. A juice concentrate package for insertion into a postmix juice dispenser comprising:
(a) a package housing enclosing a concentrate chamber;
(b) said package housing including an upper container housing;
(c) said package housing including a lower pump housing;
(d) said container housing including an upper wall having a fill opening and side walls having a lower peripheral connecting edge surrounding a container housing bottom opening;
(e) said pump housing enclosing a pumping chamber and having a concentrate outlet opening and an upper peripheral attaching edge sized to mate with said connecting edge;
(f) said connecting edge being connected to said attaching edge in a liquid-tight seal;
(g) a fill plug installed in said fill opening with a liquid-tight seal, said fill plug including a one-way air vent valve that is normally closed to prevent liquid from escaping and that is adapted to open to allow air to enter into said container housing under reduced air pressure in said container housing occurring when concentrate has been pumped out;
(h) a progressive cavity pump including a rotor and a stator located in said pump chamber, a flexible bellows sealing the distal end of said stator to said pump housing adjacent said concentrate outlet opening, while allowing radial movement thereof, a stop connected to said pump housing and abutting a proximal end of said stator and preventing axial movement of said stator, said rotor including a drive shaft extending through a liquid-tight seal through said pump housing exteriorily of said pump housing; and
(i) a mixing nozzle connected to said pump housing and having a mixing chamber, a concentrate passageway leading from a concentrate inlet opening to a concentrate inlet port into said mixing chamber, a water inlet opening, a water passageway leading from said water inlet opening into said mixing chamber, said mixing nozzle including a valve downstream from said concentrate inlet opening adapted to close for separating said mixing chamber from said concentrate passageway when said pump is not pumping and for opening during pumping, and means for spreading the flow of concentrate into said mixing chamber into a thin stream and for directing incoming water against said thin stream for a high degree of mixing.

5,615,802
FLOW PASSAGE CLOSING MECHANISM OF BEVERAGE POURING APPARATUS
Morikatsu Horino, Shibuya-ku, and Hiroshi Satoh, Fujisawa, both of Japan, assignors to Kirin Beer Kabushiki Kaisha, and Dai-Ichi Electric Co., Ltd., both of Tokyo, Japan
Filed Sep. 20, 1994, Ser. No. 309,975
Claims priority, application Japan, Sep. 20, 1993, 5-233651
Int. Cl.⁶ B67D *1/04*
U.S. Cl. 222—66 **8 Claims**



1. A flow passage closing mechanism of a beverage pouring apparatus for supplying a beverage in a keg to a dispenser under pressure of gas introduced into a keg, comprising:
- a first connecting portion connected to the keg to introduce the beverage into the keg;
- a descending tube connected to the first connecting portion and permitting the beverage to flow in a downward direction;
- a floating ball movably positioned in the descending tube to float in the beverage flowing in the descending tube due to buoyancy of the floating ball;
- a valve seat formed at a lower end portion of the descending tube, said valve seat closing a flow passage in the descending tube by engagement of the floating ball With the valve seat;
- separating means for lifting the floating ball engaged with the valve seat and separating the floating ball therefrom;
- a second connecting portion connected to the dispenser, said dispenser dispensing the beverage passed through the descending tube; and
- an ascending tube interconnecting the first connecting portion and an upper portion of the descending tube and forming an inverted U-shaped flow passage.

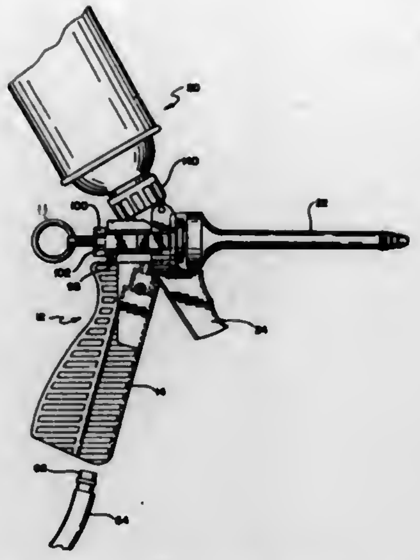
5,615,803
TUBE CONTAINER
Yoshiharu Hatakeyama; Kenzo Teshima, and Tatsuo Ishikawa, all of Tokyo, Japan, assignors to Yoshida Kogyo Co., Ltd., Tokyo, Japan
Filed Apr. 24, 1995, Ser. No. 426,845
Claims priority, application Japan, Dec. 15, 1994, 6-311556
Int. Cl.⁶ B65D *35/22*
U.S. Cl. 222—94 **6 Claims**



1. A tube container having an outer tube formed with an extruding mouth at one end and two inner tubes each formed with an extruding mouth at one end thereof, said inner tubes being inserted into said outer tube so that said extruding mouths of said two inner tubes are secured into said extruding mouth of said outer tube, and the other ends of said two inner tubes and the other end of said outer tube are pressed and welded together to form a hermetically sealed portion, comprising;
- said outer tube having a transverse cross section of an ellipse or a closed running track shape;
- said inner tubes arranged in said outer tube in a direction of a major axis of the transverse cross section of said outer tube;
- said hermetically sealed portion of said two inner tubes and said outer tube being pressed in a direction of a minor axis of said transverse cross section and welded together; and
- said respective inner tubes having a length more than half of said hermetically sealed portion of said outer tube when pressed in said direction of the minor axis so that said respective inner tubes partially overlap each other.

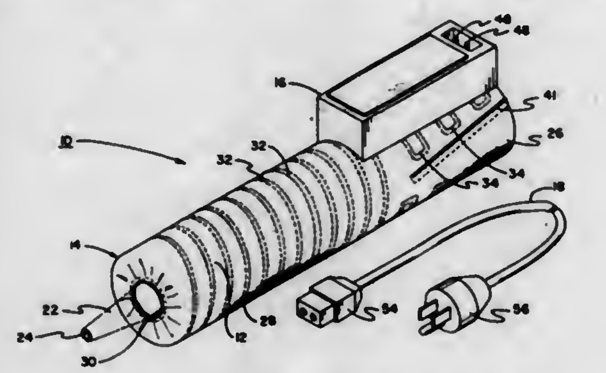
5,615,804
GUN FOR DISPENSING FLUENT SEALANTS OR THE LIKE
Daniel P. Brown, Palos Park, Ill., assignor to Insta-Foam Products, Inc., Joliet, Ill.
Filed Jun. 23, 1994, Ser. No. 264,641
Int. Cl.⁶ B67D *5/52*
U.S. Cl. 222—136 **10 Claims**

1. An improved dispensing gun for fluent products, said dispensing gun comprising, in combination, a valve body having a product inlet passage and a product outlet passage, said outlet passage including annular surfaces forming a valve seat, a mount for receiving a removable nozzle and a fitting for attachment to a



source of fluent products in liquid-tight relation, a valve disposed in said valve body and including a core portion, a nose forming a part of said core and having surfaces thereon for contact with said annular surfaces forming said valve seat in said outlet passage, a spring urging said valve core to a closed position wherein said surfaces on said nose engage said annular surfaces forming said valve seat, an operating rod extending through and secured to said core against axial movement, said operating rod having a rear handle portion and a forward end portion adapted to cooperate with a nozzle affixed to said gun, with said nozzle including tapered seating surfaces for engagement with said forward end of said operating rod, a yoke secured to said operating rod, and a trigger movably secured to a portion of said body and operative to move said yoke relative to said housing, with said parts being constructed and arranged so that trigger movement unseats both said forward end of said operating rod and said nose portion of said core to dispense fluent products from said nozzle.

5,615,805
CAULK CONTAINER WITH HEATER COILS
Alexander T. Yoncak, 358 Liberty St., Old Bridge, N.J. 08857
Filed May 15, 1995, Ser. No. 440,671
Int. Cl.[6] B67D *5/62*
U.S. Cl. 222—146.5 **2 Claims**



1. A new and improved caulk container with heater coils comprising, in combination:

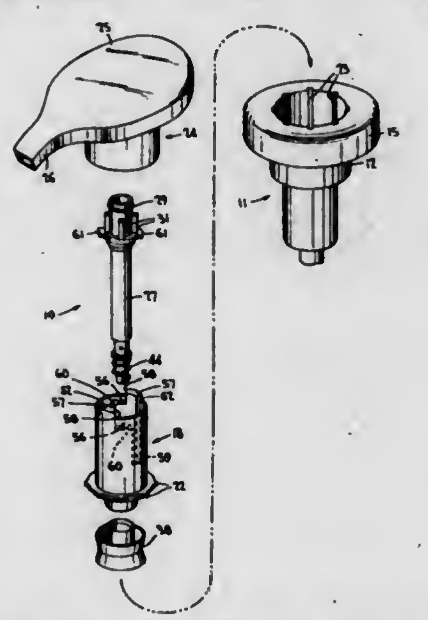
a tube of caulking material formed in a generally cylindrical configuration with an inboard end and an outboard end, the outboard end including a conical shaped dispensing tip having an axial aperture, the tube permitting a user to squeeze it thereby expelling caulking material through the dispensing tip and onto a desired surface;

a thermal sleeve formed in a generally cylindrical configuration with an inboard region and an outboard region, the outboard region including an end with an aperture, the sleeve being formed of heat resistent semi-rigid materials, the outboard region including a plurality of circular heater coils formed contiguously with each other, the inboard region including a plurality of heater coil loops formed in a semi-circular offset arrangement, the heater coil loops being operatively coupled to the circular heater coils, an opening being defined between the loops, the opening including VELCRO coupling means and a linear slit to permit a user to open the inboard end of the sleeve and insert a tube of caulking material therein, the tube of caulking material being securely positioned within the sleeve with its dispensing tip extending through the aperture in the outboard end of the sleeve;

a battery pack formed as a generally rectangular shaped box, the batter pack including an upper surface containing a lid to permit removal and placement of at least one battery therein, the battery pack also including a pair of male prong members and battery terminals, the male prong members and battery terminals being operatively coupled to the circular heater coils and heater coil loops of the apparatus; and

an extension cord having two free ends, a first end including a female plug affixed thereto, the female plug adapted to mate with the male prong members of the battery pack in an operative orientation, a second end including a male plug affixed thereto, the male plug adapted to be positioned in a standard ground electrical outlet in an operative orientation, the cord permitting the flow of a source of potential to the apparatus when coupled to an electrical outlet, the batteries supplying a source of electrical potential to the apparatus when utilizing it in a location distant from an electrical outlet, in an operative orientation the circular heater coils and heater coil loops serving to heat a tube of caulking material in order to maintain proper consistency in cold weather conditions.

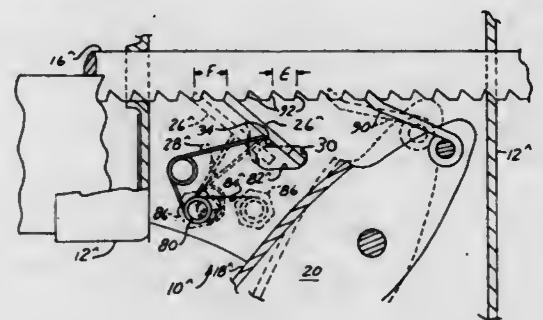
5,615,806
PLUNGER LOCK-UP DISPENSER
Hans Grothoff, Dortmund, Germany, assignor to Calmar-Albert GmbH, Hemer, Germany
Filed May 31, 1996, Ser. No. 655,923
Int. Cl.[6] B67D *5/33*
U.S. Cl. 222—153.13 **6 Claims**



1. A liquid pump dispenser comprising, a pump body including a container closure, a locking sleeve fixedly mounted in said pump body, a manually actuated pump plunger having a discharge spout rotatable in opposite directions about a central axis thereof and

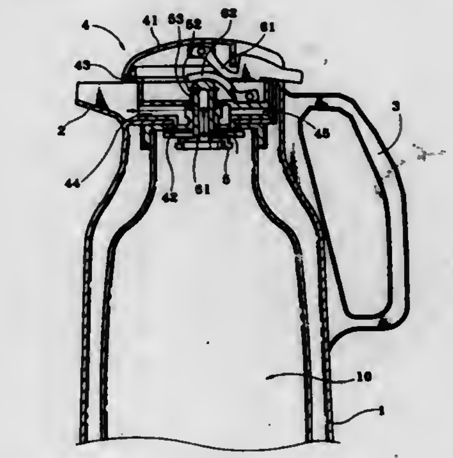
extending through coaxial openings in said closure and sleeve and being disposed for reciprocation between lowered and spring biased raised positions, said locking sleeve having at least one edge wall lying in a plane perpendicular to said axis, at least one upstanding limit stop at one end of said wall, and at least one longitudinal groove at an opposite end of said wall, a detent on said wall adjacent said groove, said wall between said detent and said stop defining an abutment shoulder, said plunger having at least one radially extending projection in engagement with said shoulder in one rotative position of said plunger about said axis to lock said plunger in said raised position, as said projection is in a cradled position between said detent and said limit stop for positively retaining said plunger in said one rotative position, said projection sliding along said detent and being placed into alignment with said groove upon rotation of said plunger about said axis to another rotative position opposite said one position to unlock said plunger for reciprocation.

5,615,807
CONVERTIBLE DRIPLESS CAULKING GUN FOR VARIANT VISCOSITY MEDIA
Yuenan Peng, 635 S. Pueblo Dr., Monterey Park, Calif. 91754
Continuation-in-part of Ser. No. 322,945, Oct. 12, 1994, abandoned. This application May 12, 1995, Ser. No. 439,706
Int. Cl.[6] G01F *11/00*
U.S. Cl. 222—391 **6 Claims**



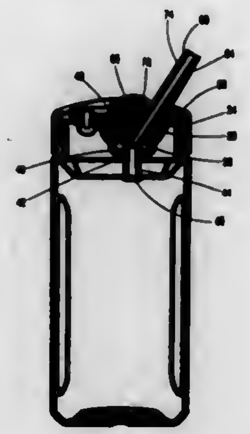
1. A caulking gun comprising:
(a) a frame for receiving a supply of caulking material;
(b) a plunger shaft axially movable in the frame for forwardly urging the caulking material from the gun;
(c) a handle mechanism movably supported on the frame and operatively connected for engaging and forwardly advancing the plunger shaft in response to reciprocal operation of the handle mechanism, the handle mechanism having a released position for permitting at least some rearward movement of the plunger shaft, the handle mechanism further including first and second ratchet members sequentially engaging an array of discontinuities on the plunger shaft, the first ratchet member being coupled to a handle member for reciprocal operation thereby, the second ratchet member being pivotably supported about a first position relative to the frame for permitting rearward movement of the plunger shaft up to a distance less than a spacing between adjacent discontinuities being engaged by the second ratchet member when the handle mechanism is returned to the released position, and about a second position for permitting rearward movement of the plunger shaft up to a distance greater than the spacing between the adjacent discontinuities when the handle mechanism is returned to the released position;
(d) an engagement member movably supported relative to the frame and having a first orientation for gripping the plunger shaft and preventing rearward movement of the shaft relative to the engagement member while permitting forward movement of the plunger shaft relative to the engagement member, and a second orientation for permitting free axial movement of the plunger shaft relative to the engagement member;
(e) means for biasing the engagement member toward the first orientation in contact with the plunger shaft;
(f) a first bearing surface fixably located relative to the frame for preventing rearward movement of the engagement member in the first orientation thereof relative to a first position thereof;
(g) a control surface movably located relative to the frame for selectively providing forward movement of the engagement member in the first orientation thereof relative to the first position thereof in response to forward movement of the plunger shaft; and
(h) means for permitting rearward movement of the plunger shaft in response to a predetermined force that is produced by pressure within the supply of caulking material upon return of the handle mechanism to the released position when the control surface is permitting rearward movement of the plunger shaft.

5,615,808
TEAPOT
Frank T.-H. Huang, Suite 804, 8 Fl., No. 128, Sec. 3, Ming-Sheng E. Rd., Taipei, Taiwan
Filed May 21, 1996, Ser. No. 651,985
Int. Cl.[6] B67D *3/00*
U.S. Cl. 222—472 **2 Claims**



1. A valve control switch for a teapot of the type comprising a pot body defining a water chamber and having an opening through which water is poured out of said water chamber, a spout at the periphery of the opening of said pot body for guiding water out of said water chamber, a handle fixedly secured to said pot body on the outside opposite to said spout, a pot cover fastened to said pot body by a screw joint to close said opening, said pot cover defining a water passage in communication between said water chamber and said spout, and an air passage in communication between said water chamber and the atmosphere, a valve mounted in said pot cover and moved to close and open said water passage and said air passage, said valve having an upright valve stem axially coupled to said pot cover, and spring means coupled between said valve stem and said pot cover to hold said valve in the close position, the valve control switch comprising a lever having a fixed end pivoted to said pot cover and a free end extending out of said pot cover for operation by the user, and a link having a fixed end pivoted to said pot cover, a middle part disposed in contact with said lever, and a free end supported on said valve stem and driven by said lever to move said valve to the open position and to simultaneously compress said spring.

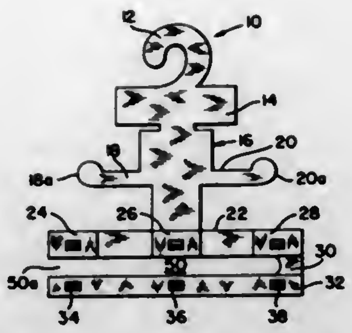
5,615,809
VENTED BEVERAGE CONTAINER LID
David L. Feer, Dorchester, Mass., and William A. Pesa, Wooster, Ohio, assignors to Rubbermaid Incorporated, Wooster, Ohio
Continuation of Ser. No. 262,560, Jun. 20, 1994, Pat. No. 5,477,994. This application Jun. 22, 1995, Ser. No. 493,722
Int. Cl.^{6} B67D *3/00*
U.S. Cl. 222—484 **10 Claims**



1. A bleeder valve for venting a liquid dispensing container through a container lid, comprising:
a valve body adapted to mount within a first aperture extending through an upper container lid surface, the valve body having an upper body portion, an intermediate portion, and a lower valve portion residing below the container lid upper surface;
an air passageway extending between an upper end and a lower end, the passageway extending through the container aperture and through the valve body disposed therein; a slit opening extending into the lower valve portion and communicating with the air passageway, the slit opening operating subject to the differential pressure between the inside and the outside of the container, widening into an open condition when the differential is negative to admit air through the passageway and the slot opening narrowing into a closed condition when the differential is positive, wherein the slit having a width sufficiently narrow to prevent the escape of liquid therethrough;
and an elongate closure member pivotally mounted at a first end to the container lid and moveable from a first position away from the passageway upper end to a second position above the passageway, the closure member having a lower surface for closing the passageway upper end and deterring escape of liquid therefrom.

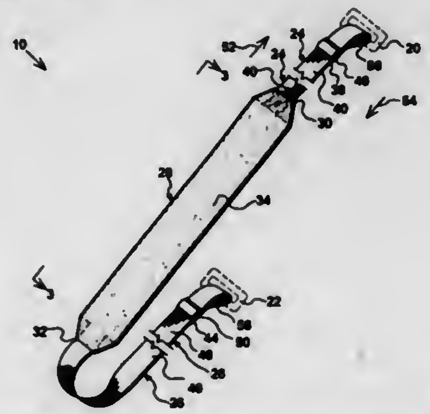
5,615,810
HANGER FOR SUSPENDERS WITH TROUSER WAISTBAND SNAPS
Chester Kolton, Westfield, and Stuart S. Spater, Livingston, both of N.J., assignors to B&G Plastics, Inc., Newark, N.J.
Filed Jan. 11, 1996, Ser. No. 583,944
Int. Cl.^{6} A47G *25/34;25/14*
U.S. Cl. 223—85 **20 Claims**

1. A hanger comprised of an elongate, upstanding, one-piece body of plastic material, said hanger having a main body portion having arms extending oppositely therefrom to respective free ends, and having a retention member downwardly of said arms, a fold line segment below the main body portion and a flap member below the fold line segment, said retention member and said flap member having interfitting securement parts and defining a



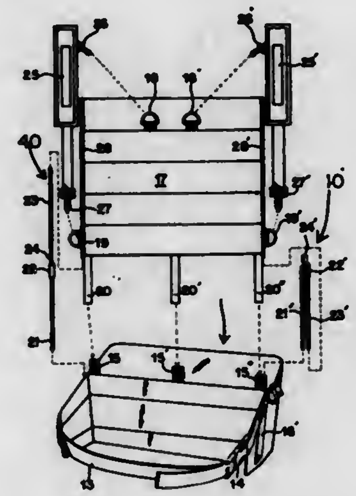
sidewardly and downwardly open, horizontal slot therebetween, said slot having open expanse downwardly of each of said main body portion arms.

5,615,811
RETRACTABLE CARRYING DEVICE
Dennis L. Bell, Greeley; Barry B. Hewitt, Bailey, and John P. McCarty, Greeley, all of Colo., assignors to The Hunter Company, Westminster, Colo.
Filed Apr. 22, 1996, Ser. No. 636,070
Int. Cl.^{6} F41C *23/02;33/00*
U.S. Cl. 224—150 **27 Claims**



1. A retractable carrying device for carrying an object, the object having receiving means to which the retractable carrying device is removably attached, the retractable carrying device allowing a user to carry the object for long periods of time without stress and irritation, comprising:
a. a first elongated flexible securing means having an end, an opposite end, a body, a side and an opposite side;
b. a retractable mechanism having a first connecting means, a retracting means and a second connecting means, the first connecting means of the retractable mechanism being fixedly attached to the end of the first elongated flexible securing means;
c. a second elongated flexible securing means, having an end, an opposite end and a body, the end of the second elongated flexible securing means being fixedly attached to the second connecting means of the retractable mechanism;
d. flexible elongated friction reducing means, the flexible elongated friction reducing means being fixedly attached to the side of the first elongated flexible securing means and to the opposite side of the first elongated flexible securing means thereby covering the retractable mechanism; and
e. shielding means having a closed end, an open end, a body having length and retaining means, the closed end being fixedly attached around and to the body of the first elongated flexible securing means near the end of the first elongated flexible securing means, the body of the shielding means enveloping the flexible elongated friction reducing means and the retractable mechanism, wherein the flexible elongated friction reducing means extends the length of the body of the shielding means, the body of the second elongated flexible securing means is movably disposed through the open end of the shielding means and the retaining means prevent the second connecting means from moving past the open end of the body of the shielding means.

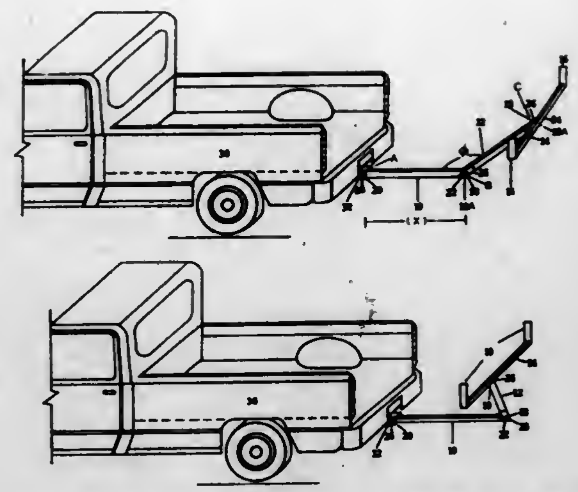
5,615,812
CONVERTIBLE PACKING FRAME
Timothy F. Martin, 1106 N. 21st, Boise, Id. 83702
Filed May 12, 1995, Ser. No. 439,632
Int. Cl.^{6} A45F *4/02*
U.S. Cl. 224—153 **8 Claims**



1. A convertible pack frame comprising:
a belt having top and bottom edges and first and second ends;
a compartment attached to the belt, the compartment having top and bottom edges, a defined volume and a closure;
a foldable back panel having first and second side edges and top and bottom edges the foldable back panel bottom edge being attached to the belt top edge;
a first pair of vertical tubular channels having first and second ends, the first pair of vertical tubular channels being attached to the foldable back panel;
a pair of stay supports having open top ends and closed bottom ends, the pair of stay supports being attached to the belt and arranged in an in-line configuration with the first pair of vertical tubular channels attached to the foldable back panel;
a pair of foldable stays removably disposed within the first pair of vertical tubular channels attached to the foldable back panel and the pair of stay supports being attached to the belt;
a pair of shoulder straps, each shoulder strap having a first and a second end, each shoulder strap being removably attached to the foldable back panel; and
means for removably attaching the pair of shoulder straps to the foldable back panel.

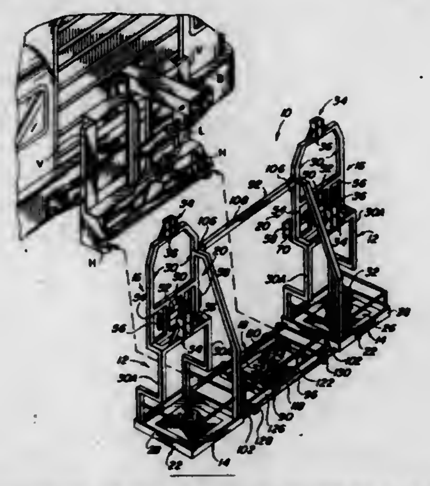
5,615,813
VEHICLE LONG LOAD STABILIZER
Philip G. Ouellette, 7 Hadley Rd., Newton, N.H. 03858
Filed Feb. 23, 1995, Ser. No. 393,205
Int. Cl.^{6} B60R *11/06*
U.S. Cl. 224—405 **1 Claim**

1. A long load stabilizing apparatus, for attachment to a standard trailer hitch receiver on a vehicle having a cargo area, comprising:
a horizontal member adapted to extend substantially rearwardly from the vehicle and to be attached to the hitch receiver via a clevis pin;



a vertically angled member attached, via a second clevis pin, to the horizontal member at such an angle so as to extend above the vehicle's cargo area by 2" to 6";
a horizontal stabilizing member attached via a third clevis pin to the vertically angled member;
wherein the vertically angled member can be attached to the horizontal member in a first position which extends rearwardly from the horizontal member, or in a second position in order to decrease the distance from the horizontal stabilizing member to the cargo area of the vehicle for carrying shorter loads.

5,615,814
EQUIPMENT CARRIER ASSEMBLY FOR MOUNTING TO SNOWPLOW MOUNTING BRACKET
George A. Dechant, Rte. 3, Box 29, Stafford, Kans. 67578
Filed Oct. 23, 1995, Ser. No. 546,589
Int. Cl.^{6} B60R *9/00;11/00*
U.S. Cl. 224—488 **21 Claims**



1. An equipment carrier assembly for mounting to a snowplow mounting bracket, said assembly comprising:
(a) at least one carrier stand including
(i) a lower platform for supporting equipment thereon, and
(ii) an upright mast attached to and extending upwardly from said lower platform for securing equipment thereto;
(b) lower means on said lower platform of said carrier stand for mounting said carrier stand to the snowplow mounting bracket; and
(c) upper means on said upright mast of said carrier stand for securing said carrier stand to the snowplow mounting bracket;
(d) said upper securing means on said upright mast of said carrier stand being a slide locking mechanism mounted to a

rear side of said upright mast of said carrier stand for securing said carrier stand to the snowplow mounting bracket, said slide locking mechanism including

(i) a mounting sleeve attached to said rear side of said upright mast,

(ii) a rod slidably fitting through said sleeve,

(iii) a handle attached at one end of said rod,

(iv) a clevis attached at an opposite end of said rod from said one end with said handle, said clevis interfitting with a side edge of the snowplow mounting bracket, and

(v) retaining means for releasably securing said clevis to the snowplow mounting bracket.

5,615,815

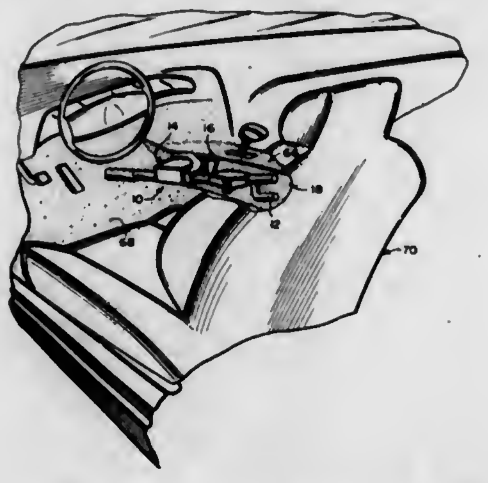
STORAGE RACK FOR AN AUTOMOTIVE ANTI-THEFT DEVICE

Christopher M. Hogan, 273 77th St., Brooklyn, N.Y. 11209

Filed Jun. 7, 1995, Ser. No. 478,786

Int. Cl.⁶ B60R *7/00*

U.S. Cl. 224—571 **9 Claims**



1. A storage rack for an automotive anti-theft device comprising:

a) a framework for holding the automotive anti-theft device, said framework including a first panel having a first end and a second end, a second panel depending at a right angle on its first end from a side of said first panel midway between said first end and said second end of said first panel, a third panel supported at a right angle on its first end from a second end of said second panel, said third panel being of a length longer than half the length of said first panel and extending parallel to said first panel, a fourth panel extending at a right angle on its first end from a second end of said third panel, said fourth panel being of equal length to said second panel and extending parallel to said second panel, and a fifth panel projecting at a right angle on its first end from said second end of said first panel, said fifth panel being of a length shorter than said second panel and said fourth panel and extending parallel to and between said second panel and said fourth panel, thereby leaving a clearance space between a second end of said fifth panel and a side of said third panel, to allow the automotive anti-theft device to be inserted therein; and

b) means for retaining said framework to a stationary surface, to prevent movement of the automotive anti-theft device.

5,615,816

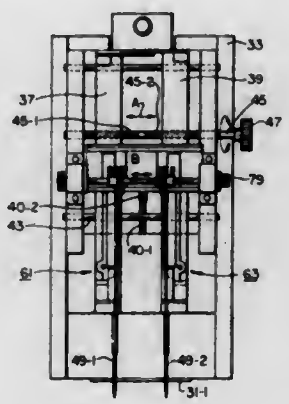
DISPENSING OF ATTACHMENTS

Charles L. Deschenes, North Attleboro, Mass.; Hitoshi Kogiso, Mizunami, Japan; Tomoyasu Ito, Mizunami, Japan, and Hidekatsu Kimbara, Mizunami, Japan, assignors to Avery Dennison Corporation, Pasadena, Calif.

Filed May 8, 1995, Ser. No. 435,039

Int. Cl.⁶ B65C *7/00*

U.S. Cl. 227—71 **8 Claims**



8. Apparatus for dispensing attachments from continuously connected ladder stock, the continuously connected ladder stock comprising a pair of plastic side members coupled together by a plurality of plastic cross links, said apparatus comprising:

a pair of parallel disposed hollow, slotted needles,

a pair of parallel disposed feed wheels for advancing the continuously connected ladder stock into said hollow slotted needles, and

a pair of feed tracks through which said continuously connected ladder stock passes from said feed wheels into said pair of hollow slotted needles, and

said feed wheels being movable sideways relative to each other so as to accommodate different sized continuously connected ladder stock,

said needles being movable sideways relative to each other to accommodate different needle spacings, and

each one of said pair of feed tracks including a pivotally mounted section to enable said apparatus to accommodate changes in at least one of feed wheel spacing and needle spacing.

5,615,817

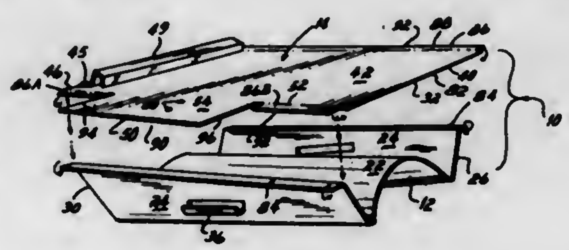
KNEEBOARD WITH SUPPORT EAR

Harold Shevers, Jr., Cincinnati, Ohio, assignor to Sportsman's Market, Inc., Batavia, Ohio

Filed Oct. 3, 1995, Ser. No. 538,735

Int. Cl.⁶ A45F *5/00*

U.S. Cl. 224—267 **17 Claims**



1. An avionics kneeboard comprising:

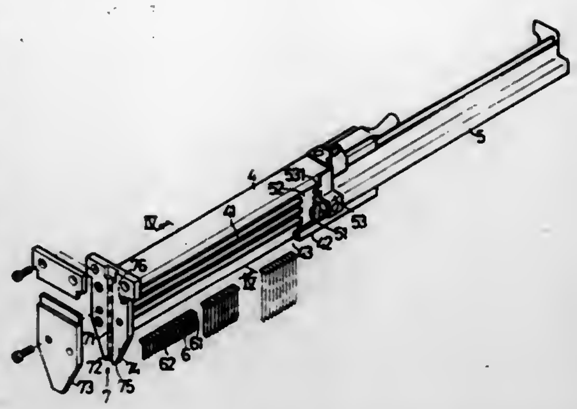
a leg arch adapted to sit on a leg of a pilot, said leg arch having a pair of sidewalls, each said sidewall having an upper flange;

means for holding the leg arch to said pilot's leg;

a generally flat work surface mounted with the leg arch, the work surface having a pair of spaced sides, each said side having at least one lip which captures one of said upper flanges;

a clip associated with the work surface for holding a paper to the work surface; and

a hand-held avionics instrument supporting ear associated with the clipboard and extending beyond the periphery of the work surface, one of said sides having first and second spaced apart lips for capturing one of said flanges, said ear being positioned between said first and second lips and on said one side, the ear including means for supporting said instrument in a convenient position relative to the work surface.



5,615,818

ARRANGEMENT IN A LOAD CARRIER

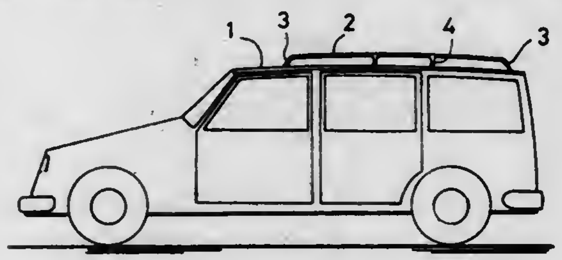
Claes-Göran Lindén, Gnosjö, Sweden, assignor to Industri AB Thule, Hillerstorp, Sweden

Filed Jun. 22, 1993, Ser. No. 79,605

Claims priority, application Sweden, Jun. 24, 1992, 9201934

Int. Cl.⁶ B60R *9/00*

U.S. Cl. 224—326 **20 Claims**



1. An anchorage arrangement for anchoring an accessory to a vehicle load carrier, the arrangement comprising:

a railing having at least one elongate, undercut accommodation space, the space being defined by walls of the railing and an opening in the railing, the opening having a first transverse dimension;

at least one anchorage body having a greater transverse dimension than the first transverse dimension of the opening, the anchorage body including a top and a bottom portion, the top and bottom portions each having transverse dimensions less than the first transverse dimension to permit separate insertion of the top and bottom portions into the space through the opening, the top and bottom portions fitting together to form the anchorage body; and

a face of the top portion of the anchorage body contacting a top wall of the space and a face of the bottom portion of the anchorage body contacting a bottom wall of the space when the top and bottom portions are fit together to form the anchorage body inside of the space.

5,615,819

NAIL MAGAZINE STRUCTURE OF A POWER NAILER

Chang Feng-Mei Hou, and Ming-Ta Wei, both of No. 52, Alley 17, Lane 20, Chung-Shan Road, Tai-Ping Hsiang, Taichung Hsien, Taiwan

Filed Oct. 3, 1995, Ser. No. 538,720

Int. Cl.⁶ B25C *1/04*

U.S. Cl. 227—109 **2 Claims**

1. A nail magazine structure of a power nailer, comprising a nail magazine formed with multiple parallel nail head channels on an inner face and a cover board mated with the nail magazine and formed with multiple nail head channels on an inner face corresponding to the nail head channels of the nail magazine, the cover board having a pushing plate forced by a spring for defining a clearance between the cover board and the nail magazine, whereby a row of T-shaped nails are placed in the clearance, an intermediate board being fixed at a front end of the nail magazine, the intermediate board being formed with a nail head channel passing through a front end and a rear end thereof corresponding to the clearance, the intermediate board being further formed with a nail striking channel on one face, a stopper board being locked on the face, said nail magazine structure further comprising a preset length of rail being disposed along a rear section of a bottom end of the nail magazine for the cover board to slide back and forth thereon, a front section of the bottom end of the nail magazine being railfree and connected with the intermediate board, permitting the clearance to communicate with external space, the nail heads of the T-shaped nails being supported by the nail head channels, said rail having a length substantially less than a length of said magazine.

5,615,820

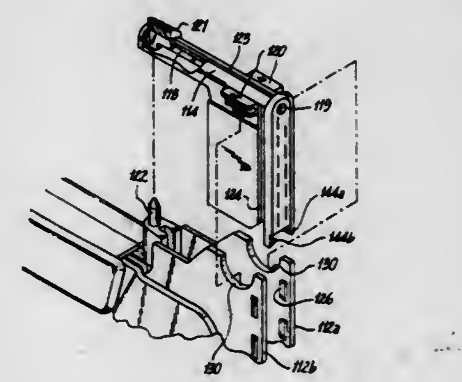
CARTRIDGE SURGICAL FASTENER APPLYING APPARATUS

Frank J. Viola, Sandy Hook, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

Continuation of Ser. No. 350,583, Dec. 6, 1994, Pat. No. 5,439,155, which is a continuation of Ser. No. 133,697, Oct. 7, 1993, abandoned. This application Aug. 7, 1995, Ser. No. 511,795

Int. Cl.⁶ A61B *17/068*

U.S. Cl. 227—176.1 **12 Claims**



9. A cartridge for a surgical fastener applying instrument comprising:

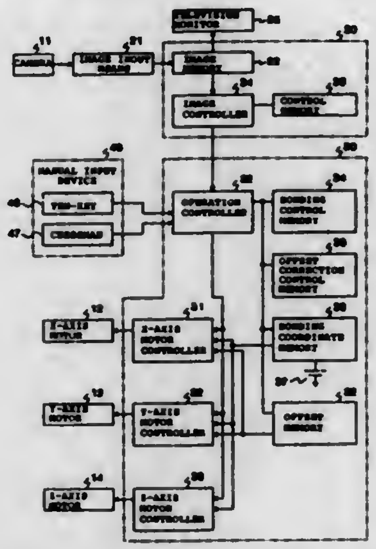
a housing containing a plurality of fasteners;

means for aligning said housing with respect to said instrument;

visual indicating means extending outwardly from said housing, said visual indicating means being received in a complementary recess on said instrument; and

at least one tab member extending inwardly with respect to said housing for securing said housing to said instrument.

5,615,821
WIRE BONDING METHOD AND APPARATUS
Toshiaki Sasano, Sagamihara, Japan, assignor to Kabushiki Kaisha Shinkawa, Tokyo, Japan
Filed Apr. 27, 1995, Ser. No. 429,708
Claims priority, application Japan, Apr. 27, 1994, 6-110241
Int. Cl.[6] H01L *21/60*
U.S. Cl. 228—102 **3 Claims**



1. A wire bonding method which uses a capillary executing wire bonding on a workpiece consisting of a semiconductor chip installed on a lead frame, a camera having a central axis of workpiece detection which is set to have an offset distance from the capillary, and an XY table which moves the capillary and camera together in X and Y directions, said method performing bonding by detecting an amount of shift of said workpiece via said camera, correcting bonding coordinates accordingly, moving said table by an amount that corresponds to said offset distance, and successively moving said capillary to said corrected bonding coordinates in accordance with a predetermined program, and said method being further characterized in that after an offset correction time has passed since bonding has been performed, said XY table is automatically driven so that said central axis of said workpiece detection of said camera is positioned above a bonded ball or capillary pressure mark, a positional shift of said ball or capillary pressure mark is detected, said shift in said offset is corrected accordingly, and said offset correction time is decreased during operational time periods when large fluctuations in said offset distance are predicted and increased during operational time periods when small fluctuations in said offset distance are predicted.

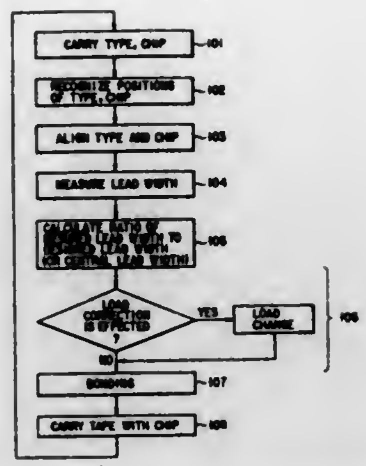
5,615,822
METHOD AND APPARATUS FOR CONTROLLING BONDING LOAD OF FINE LEAD ELECTRODE
Chiaki Takubo, Yokohama; Hiroshi Tazawa, Ichikawa; Eiichi Hosomi, and Koji Shibasaki, both of Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Sep. 22, 1995, Ser. No. 532,281
Claims priority, application Japan, Sep. 27, 1994, 6-231718
Int. Cl.[6] H01L *21/603*
U.S. Cl. 228—102 **19 Claims**

1. A method of bonding a connecting lead on a bump electrode provided on a semiconductor chip surface by aligning the connecting lead with the bump electrode and applying pressure from above the connecting lead by use of a tool, comprising:

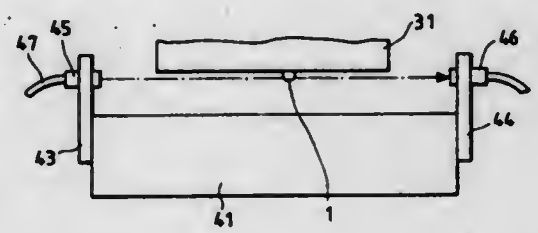
a preliminary setting step of previously setting the standard lead width of the connecting lead and a standard tool load which is optimum for the standard lead width and applied by the tool;

a comparing step of acquiring a measured lead width by measuring a width corresponding to the width of a connecting lead to be bonded and actually carried and comparing the measured lead width with the standard lead width; and

a bonding step of determining tool load suitable for the actual lead width according to the result of comparison in said comparing step and bonding the connecting lead on the bump electrode by the tool load.



5,615,823
SOLDERING BALL MOUNTING APPARATUS AND METHOD
Kazuhiro Noda, Chikushino, and Siniti Nakazato, Fukuoka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Jul. 26, 1995, Ser. No. 506,747
Claims priority, application Japan, Jul. 26, 1994, 6-173993; Nov. 7, 1994, 6-272158
Int. Cl.[6] B23K *1/00;31/02*
U.S. Cl. 228—103 **12 Claims**

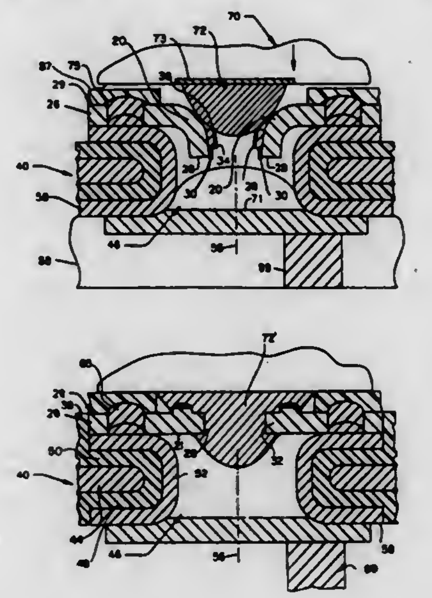


1. A soldering ball mounting method in which a pickup head includes a bottom formed with a plurality of absorber holes for vacuum-absorbing soldering balls from a soldering ball feeder and mounting the soldering balls onto a workpiece, said method comprising the steps of:

monitoring the bottom of said pickup head after mounting the soldering balls onto said workpiece; and

determining presence of a soldering-ball mounting error by said pickup head when at least one of the soldering balls is detected at the bottom of said pickup head.

5,615,824
SOLDERING WITH RESILIENT CONTACTS
Joseph Fjelstad, Sunnyvale; Thomas H. DiStefano, Monte Sereno, and John W. Smith, Palo Alto, all of Calif., assignors to Tessera, Inc., San Jose, Calif.
Continuation-in-part of Ser. No. 306,205, Sep. 14, 1994, which is a continuation-in-part of Ser. No. 254,991, Jun. 7, 1994. This application Mar. 24, 1995, Ser. No. 410,324
Int. Cl.[6] B23K *1/00*
U.S. Cl. 228—180.1 **15 Claims**



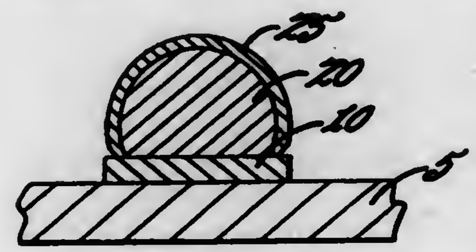
1. A method of making an electrical connection comprising the steps of:

(a) forcibly engaging a first element bearing a mass of a bonding material and a second element bearing a resilient metallic contact so that said contact wipes the surface of said bonding material mass and so that said contact is deformed and bears against the wiped surface; and

(b) bringing the contact and the bonding material mass to an elevated bonding temperature sufficient to soften the bonding material, so that the contact penetrates into the solder mass under the influence of its own resilience; and

(c) cooling the engaged contact and mass.

5,615,825
FLUORINATED FLUXLESS SOLDERING
Stephen M. Bobbio, Wake Forest, and Glenn A. Rinne, Cary, both of N.C., assignors to MCNC, Research Triangle Park, N.C.
Filed May 12, 1995, Ser. No. 439,591
Int. Cl.[6] H05K *3/34*
U.S. Cl. 228—206 **28 Claims**



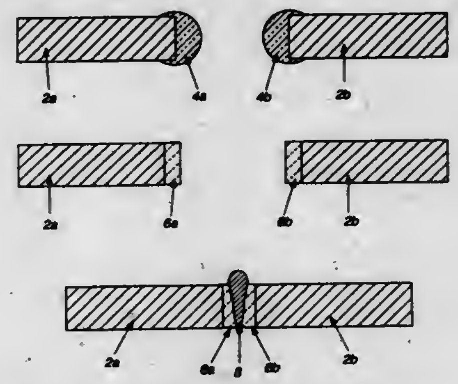
1. A method of soldering without the need for fluxing agents, comprising the steps of:

depositing solder on a first surface;

exposing the deposited solder to a vapor including a fluorine compound which suffuses the solder surface without the use of external stimulation; and

reflowing said solder.

5,615,826
METHOD FOR WELDING BERYLLIUM
Raymond D. Dixon, Los Alamos; Frank M. Smith, Espanola, and Richard F. O'Leary, Los Alamos, all of N.M., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Aug. 29, 1995, Ser. No. 520,632
Int. Cl.[6] B23K *15/00*
U.S. Cl. 228—208 **8 Claims**



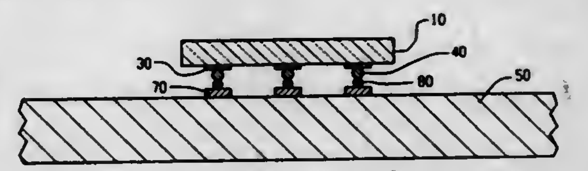
1. A method for joining beryllium pieces comprising:

(a) depositing aluminum alloy on at least one beryllium surface;

(b) contacting said at least one beryllium surface with at least one other beryllium surface; and

(c) welding said at least one beryllium surface to said at least one other beryllium surface.

5,615,827
FLUX COMPOSITION AND CORRESPONDING SOLDERING METHOD
Roy L. Arldt, Georgetown; Susan H. Downey; Harry J. Golden, both of Austin, all of Tex.; Issa S. Mahmoud, Apalachin, N.Y.; Clement A. Okoro, Round Rock, Tex., and James Spalik, Kirkwood, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Division of Ser. No. 435,896, May 5, 1995, Pat. No. 5,531,838. This application May 31, 1994, Ser. No. 251,806
Int. Cl.[6] B05D *5/12;* **B23K** *1/20*
U.S. Cl. 228—223 **10 Claims**

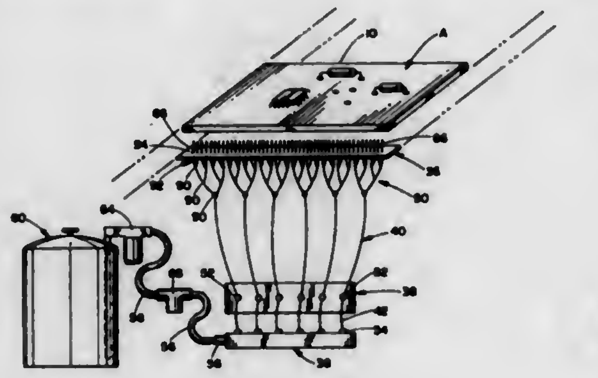


1. A method for mounting an electronic component onto a printed circuit board, which electronic component includes a surface bearing component contact pads and which printed circuit board includes a surface bearing board contact pads corresponding to said component contact pads, said component contact pads and/or said board contact pads bearing regions of solder, comprising the steps of:

applying a flux composition to said solder regions and/or said component contact pads and/or said board center pads, said flux composition including pimelic acid and first and second organic solvents, said second organic solvent having a higher evaporation temperature than said first organic solvent, and

said pimelic acid and said second organic solvent being soluble in said first organic solvent, said flux composition further containing water in an amount of up to 2% by weight, said second solvent being capable of substantially dissolving the water in said composition upon evaporation of said first organic solvent;
positioning said electronic component in relation to said printed circuit board so that said regions of solder substantially extend from said component contact pads to said board contact pads; and
applying heat, so that at least portions of at least some of said solder regions melt and flow.

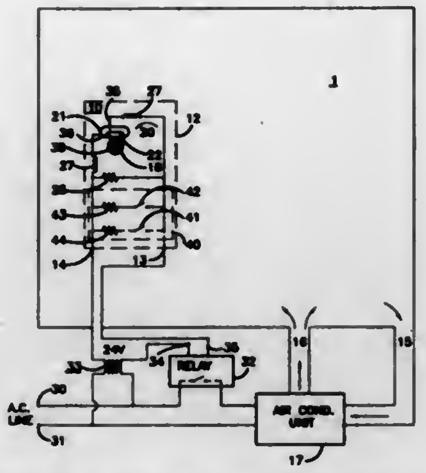
5,615,828
METHOD AND APPARATUS FOR APPLYING FLUX
Bradley N. Stoops, Bay Village, Ohio, assignor to Precision Dispensing Equipment, Inc., Bay Village, Ohio
Continuation-in-part of Ser. No. 90,663, Jul. 13, 1993, abandoned, which is a continuation-in-part of Ser. No. 931,786, Aug. 18, 1992, Pat. No. 5,328,085. This application Mar. 2, 1995, Ser. No. 397,395
Int. Cl.⁶ B23K *37/00*
U.S. Cl. 228—223 **31 Claims**



26. A method of applying flux from a dispenser to a surface such as a printed circuit board to prepare the surface for subsequent soldering, the flux applying method comprising the steps of:
pressurizing a supply of flux to a level substantially less than 400 psi;
dispensing the flux through orifices on the order of 0.003 to 0.010 inches wide toward a surface in the form of pulsed streams; and
dispensing the flux at an angle less than orthogonal to the surface of the board.

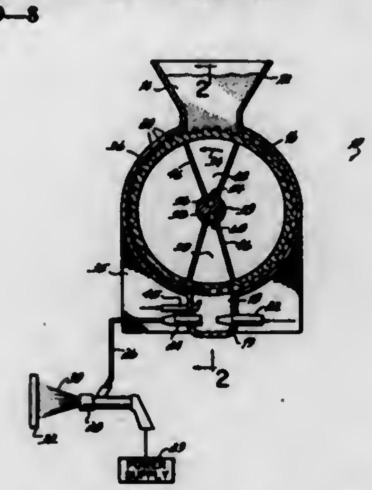
5,615,829
AIR CONDITIONING SYSTEM THERMOSTAT HAVING ADJUSTABLE CYCLING RATE
Richard B. Porter, Bloomington, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Jun. 6, 1995, Ser. No. 471,722
Int. Cl.⁶ G05D *23/32*
U.S. Cl. 236—68 B **5 Claims**

1. In an air conditioning system thermostat of the type having a housing in which is mounted a temperature sensing element, a power switch controlled by said temperature sensing element and having first and second terminals for controlling flow of power to an air conditioning system, and an anticipator resistor connected between the first and second power switch terminals and proximate to the temperature sensing element, the improvement comprising
a) a first cycling resistor having a first terminal connected to the first terminal of the power switch and having a second terminal, said first cycling resistor physically located proximate to the temperature sensing element; and



b) a first manually operable switch having closed and open settings, and having a first terminal connected to the second terminal of the first cycling resistor, and a second terminal connected to the second power switch terminal, for providing a manually alterable amount of resistance across the power switch dependent on the setting of the manually operable switch,
whereby changing the setting of the first manually operable switch alters the amount of heat provided to the temperature sensing element, thereby changing the number of cooling cycles during a given time interval.

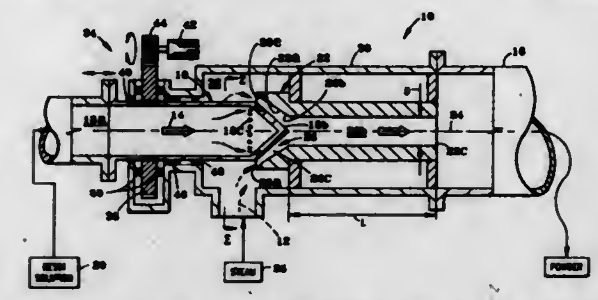
5,615,830
APPARATUS AND METHOD FOR SUPPLY AND TRANSPORT OF POWDER PARTICLES
Masafumi Matsunaga; Wataru Kakuta, both of Yokohama, and Hikaru Saito, Tokyo, all of Japan, assignors to Nordson Corporation, Westlake, Ohio
Filed Dec. 8, 1994, Ser. No. 351,702
Claims priority, application Japan, Dec. 17, 1993, 5-343874
Int. Cl.⁶ A62C *5/02*
U.S. Cl. 239—8 **24 Claims**



1. A powder supply and transport apparatus comprising:
a powder holding station for holding powder particles;
a powder ejection station spaced from the powder holding station;
a conveyor transporting powder particles from the powder holding station to the powder election station during operation, the conveyor including a conveying member movable relative to the powder holding station and the powder ejection station; and

the conveying member having a plurality of cavities formed therein, the conveying member adapted to be moved relatively, during operation, between the powder holding station, where the cavities are filled with powder particles, and the powder ejection station where the powder particles are emptied from the cavities, wherein each of the cavities comprises a continuous groove.

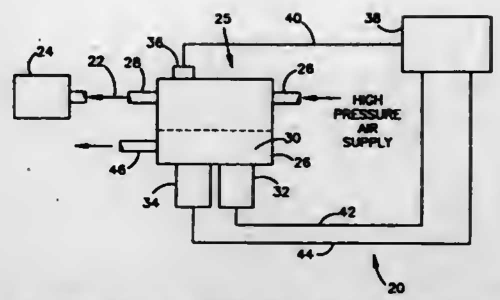
5,615,831
STEAM PRECIPITATION JET
Michael J. Molezzi, Schenectady, N.Y.; Harry W. Crumbacher, New Harmony, Ind.; Bernard McConville, and Connie H. Shannon, both of Evansville, Ind., assignors to General Electric Company, Schenectady, N.Y.
Filed Jun. 5, 1995, Ser. No. 461,798
Int. Cl.⁶ B05B *7/12*
U.S. Cl. 239—8 **15 Claims**



1. A jet for atomizing a liquid resin solution with a gas for precipitating resin powder therefrom comprising:
a nozzle having an inlet for receiving said liquid resin solution, a conical tip at a distal end thereof, and a plurality of circumferentially spaced apart outlets extending through said nozzle tip for discharging said resin solution;
a tubular receiver disposed coaxially with said nozzle tip and spaced axially therefrom, said receiver including a frustoconical impingement surface spaced axially from said nozzle tip to define therewith an annular flow channel having at opposite ends thereof a channel inlet for receiving said gas and a channel outlet for discharging an atomized spray of said gas and said resin solution injected into said flow channel from said nozzle outlet for precipitating said resin powder from said spray;
said receiver further comprises a cylindrical barrel extending from said channel outlet and coaxially with said nozzle for channeling said spray therethrough;
said nozzle outlets are disposed in said nozzle tip axially between said channel inlet and said channel outlet; and
said flow channel includes a diverging portion increasing in flow area from said nozzle outlets to said channel outlet.

5,615,832
AIR REGULATOR CONTROL SYSTEM FOR POWDER COATING OPERATION
Richard P. Price, Parma Heights, Ohio, assignor to Nordson Corporation, Westlake, Ohio
Continuation of Ser. No. 206,597, Mar. 3, 1994, abandoned. This application Nov. 3, 1995, Ser. No. 552,981
Int. Cl.⁶ G05D *9/12*
U.S. Cl. 239—8 **26 Claims**

7. A method of controlling an on-off vent valve and an on-off fill valve of an electrically controlled air regulator, comprising the steps of:
generating a reference signal corresponding to a desired pressure in an outlet pressure port of said air regulator;
generating a feedback signal in response to the pressure in said outlet pressure port of said air regulator, said feedback signal having an envelope with a lower value corresponding to a

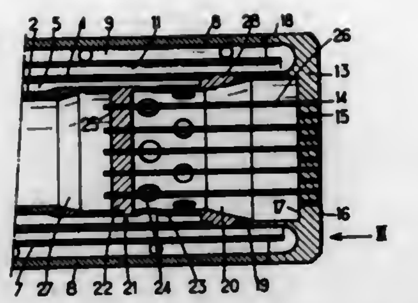


vent trigger threshold value, and an upper value corresponding to a fill trigger threshold value;
comparing said feedback signal with said reference signal for outputting a vent trigger signal to open said on-off vent valve whenever said reference signal is below said vent trigger threshold value;
comparing said feedback signal with said reference signal for outputting a fill trigger signal to open said on-off fill valve whenever said reference signal is above said fill trigger threshold value; and
pulsing at least one of said fill trigger and said vent trigger signals whenever said feedback signal approaches said reference signal.

13. An electrically controlled air regulator to operate at least one air operated device, comprising:
a pressure regulator having an inlet supply port connected to a source of pressurized air, an outlet pressure port connected to said air operated mechanism, and means for regulating the flow of pressure regulated air from said inlet supply port to said outlet pressure port comprising piston means for opening and closing a regulator valve to control the flow of said pressure regulated air at said outlet pressure port;
a solenoid on-off fill valve connected to a source of pressurized control air for moving said piston means to open said regulator valve and increase the pressure of said pressure regulated air at said outlet pressure port;
a solenoid on-off vent valve for moving said piston means to close said regulator valve and decrease the pressure of said pressure regulated air at said outlet pressure port;
transducer means for generating a feedback signal proportional to the pressure in said outlet pressure port;
means for providing a reference signal corresponding to a desired pressure at said outlet pressure port;
circuit control means outputting fill and vent trigger signals to said solenoid on-off fill valve and said solenoid on-off vent valve, respectively, in response to said means for providing a reference signal and said means for generating a feedback signal for opening and closing said solenoid on-off vent valve and said solenoid on-off fill valve, respectively, said circuit control means including:
an oscillator for pulsing at least one of said fill trigger and said vent trigger signals whenever said feedback signal approaches said reference signal; and
pulse width modulating means for reducing the duration of said pulsing of said at least one of said vent trigger and fill trigger signals as said feedback signal moves closer to said reference signal.

5,615,833
EXTERNAL MIXING TYPE BURNER
Dominique Robillard, Versailles, and Michel Inizan, Clayes Sous Bois, both of France, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France
Filed Dec. 20, 1995, Ser. No. 575,753
Claims priority, application France, Dec. 21, 1994, 94 15412
Int. Cl.⁶ B05B *15/00*
U.S. Cl. 239—132.3 **9 Claims**

1. A burner of the external mixing type, comprising a nozzle including conduit means for supplying a first fluid and conduit



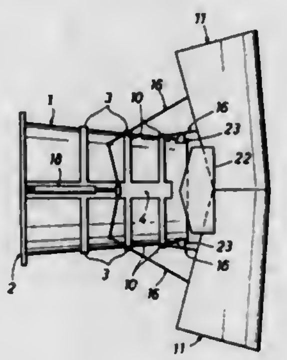
means for supplying a second fluid capable of forming a flame when it is in contact with the first fluid, the burner operating by forming the flame at a short distance from the nozzle, with the nozzle comprising:

a piece having an external face drilled with holes, some of the holes running into a chamber fed with the first fluid, the chamber being delimited by the nozzle external face, an annular sidewall drilled with orifices spaced around the annular sidewall and in communication with the conduit means for the first fluid for the intake of the first fluid into the chamber where mixing occurs, and an end wall transverse to the sidewall, the sidewall being in sealed connection with the nozzle piece and with the end wall, and

some other holes in the nozzle each connected to a respective one of a plurality of tubes which are fixed to the nozzle external face in a sealed manner and which pass through the end wall also in a sealed manner, in order to run into a conduit for supplying the second fluid,

the set of holes running into the chamber and the set of holes connected to the tubes each having a regular and uniform distribution over the external face of the nozzle.

5,615,834
ULTRA THRUST REVERSER SYSTEM
Medhat A. Osman, 1416 Ridgeback Rd. #D, Chula Vista, Calif. 91910
Filed Jan. 31, 1995, Ser. No. 381,473
Int. Cl.⁶ B64D *33/04*
U.S. Cl. 239—265.19 **23 Claims**



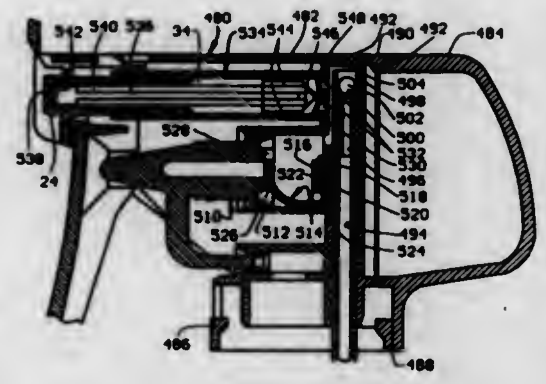
3. A thrust reverser system for a jet engine, comprising:

a tailpipe having an integrally corrugated body comprising corrugations formed monolithically with the tailpipe skin;

clamshell doors moveable between a stowed position, out of contact with internal gas flow, and a deployed position, diverting internal gas flow aft of the tailpipe; and

actuators, including linkage, attached between the tailpipe and the doors for moving the doors.

5,615,835
TRIGGER SPRAYER HAVING DISC VALVE
Philip L. Nelson, Ellisville, Mo., assignor to Contico International, Inc., St. Louis, Mo.
Continuation of Ser. No. 372,061, Jan. 12, 1995, Pat. No. 5,509,608, which is a division of Ser. No. 964,158, Oct. 21, 1992, Pat. No. 5,385,302, which is a continuation-in-part of Ser. No. 603,281, Oct. 25, 1990, Pat. No. 5,234,166. This application Jun. 1, 1995, Ser. No. 456,511
Int. Cl.⁶ B05B *11/00;* **F16K** *15/14*
U.S. Cl. 239—333 **18 Claims**



1. A liquid dispenser apparatus comprising:

a sprayer housing a cavity extending longitudinally therethrough, the cavity having a center axis with a liquid inlet opening at one end of the cavity and a liquid discharge orifice at an axially opposite end of the cavity;

a flexible diaphragm disc valve is positioned in the cavity overlying the inlet opening, the flexibility of the disc valve enables the disc valve to move away from the inlet opening and permit a flow of liquid through the inlet opening into the cavity in response to a positive liquid pressure being exerted on the disc valve from the inlet opening, and the flexibility of the disc valve enables the disc valve to move toward the inlet opening and overlie the opening blocking a flow of liquid through the inlet opening from the cavity in response to a negative liquid pressure being exerted on the disc valve from the inlet opening; and

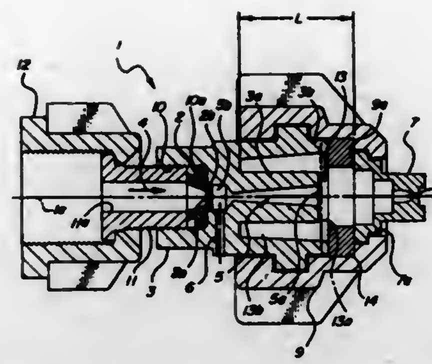
a main body portion connected to said disc valve, the body portion extending longitudinally through the cavity and fitting in close proximity with an interior surface of the cavity to center the disc valve relative to the center axis of the cavity.

5,615,836
INJECTOR NOZZLE
Jordt-Steffen Graef, Koferinger Str. 5, 93083 Obertraubling, Germany
Filed Oct. 26, 1994, Ser. No. 329,528
Claims priority, application Germany, Nov. 11, 1993, 43 38 585.0
Int. Cl.⁶ E03C *1/08*
U.S. Cl. 239—428.5 **19 Claims**

1. An injector nozzle construction for producing air-filled drops of liquid comprising:

a dosaging nozzle element having a nozzle orifice aligned coaxially with a central longitudinal axis of said nozzle construction for producing a jet of liquid in a downstream direction along said axis;

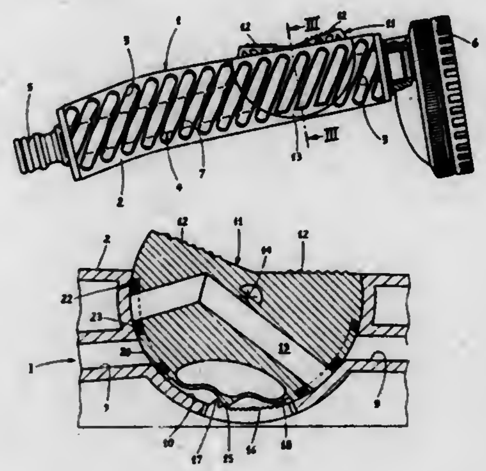
a mixing chamber arranged immediately downstream of said dosaging nozzle element having a fluid inlet aligned coaxially with said nozzle orifice for receiving said liquid, at least one air intake opening for introducing air into said chamber to produce a liquid/air mixture, and an outlet of predetermined cross-sectional size for discharging said liquid/air mixture from said mixing chamber, said mixing chamber conically widening in a direction toward said outlet;



an outlet element having at least one outlet orifice spaced longitudinally downstream of said mixing chamber for expelling said liquid/air mixture; and

a homogenizing and stabilizing chamber between said mixing chamber and said outlet element, said homogenizing and stabilizing chamber having an inlet communicating directly with said outlet of said mixing chamber and having a cross-sectional size substantially greater than said cross-sectional size of said mixing chamber outlet.

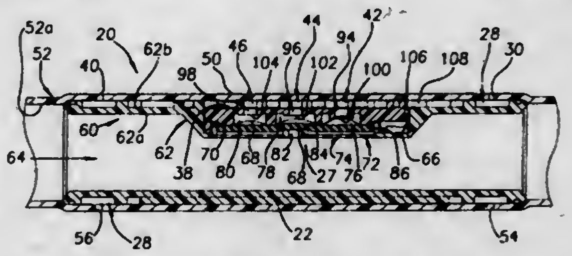
5,615,837
DELIVERY NOZZLE FOR FLEXIBLE-HOSE IRRIGATION SYSTEMS
Gianfranco Roman, Pasiano, Italy, assignor to Claber S.p.A., Fiume Veneto, Italy
Filed Mar. 13, 1995, Ser. No. 403,285
Claims priority, application Italy, Mar. 22, 1994, MI94U-0210
Int. Cl.⁶ B05B *1/30*
U.S. Cl. 239—530 **7 Claims**



1. A nozzle having a casing which extends generally rectilinearly in a longitudinal direction, the casing having an upstream section and a downstream section, the upstream section being attachable to a flexible hose, the upstream section having an upstream fluid passage formed therein and the downstream section having a downstream fluid passage formed therein, the nozzle including an actuator which selectively fluidically connects the upstream fluid passage and the downstream fluid passage by selective orientation of an actuator fluid passage formed in the actuator, the nozzle having a seal member at an interface between the casing and the actuator, the seal member being of one piece construction and having two orifices therein, a first of the orifices being circumferentially provided about one of the upstream fluid passage and the downstream fluid passage when the actuator fluid passage does not fluidicly connect the upstream fluid passage and the downstream fluid passage.

6. A nozzle having a casing which extends generally rectilinearly in a longitudinal direction, the casing having an upstream section and a downstream section, the upstream section being attachable to a flexible hose, the upstream section having an upstream fluid passage formed therein and the downstream section having a downstream fluid passage formed therein, the nozzle including an actuator which selectively fluidically connects the upstream fluid passage and the downstream fluid passage by selective orientation of an actuator fluid passage formed in the actuator, the actuator being rotatable about an actuator axis, the actuator axis being perpendicular to the longitudinal direction, wherein the actuator has a semi-circular cross-sectional shape in a plane lying in the longitudinal direction, a portion of a semi-circular periphery of the actuator having the shape of a cross-bow, the cross-bow being provided with a protrusion, the protrusion selectively engaging notches formed on an internal semi-circular cavity provided in the casing.

5,615,838
IN-LINE RETENTION DRIP EMITTER
Gershon Eckstein, and Eran Eckstein, both of San Diego, Calif., assignors to Drip Irrigation Systems, Ltd., San Diego, Calif.
Filed Mar. 10, 1995, Ser. No. 401,853
Int. Cl.⁶ B05B *1/30*
U.S. Cl. 239—533.1 **19 Claims**



1. An in-line retention drip irrigation emitter comprising:

means defining a flow-limiting passageway having an inlet end for receiving pressurized fluid from an irrigation pipe and an outlet end for conducting fluid to a pipe outlet opening; and

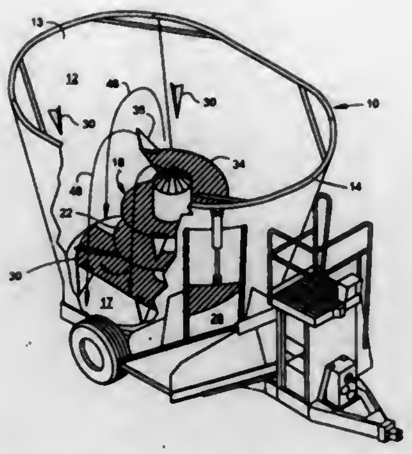
first valve means responsive to fluid pressure in the pipe for closing the passageway when the fluid pressure in the pipe is below a minimum pressure and for opening the passageway when the fluid pressure in the pipe is above the minimum pressure, and thereby preventing the draining of water from within the pipe when the pipe fluid is at a pressure less than the minimum pressure.

5,615,839
MIXER
Gert Hartwig, Wetaskiwin, Canada, assignor to Alteen Distributors, Ltd., Wetaskiwin, Canada
Continuation-in-part of Ser. No. 274,467, Jul. 13, 1994, Pat. No. 5,456,416. This application Aug. 11, 1995, Ser. No. 514,066
Int. Cl.⁶ B02C *18/08*
U.S. Cl. 241—260.1 **19 Claims**

1. A mixer for mixing fibrous material comprising:

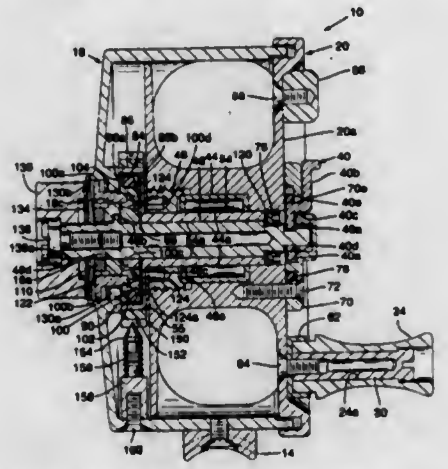
a container tub having a floor;

a rotating auger flighting member positioned uprightly within said container tub and comprised of an auger cylinder member having at least a lower flighting portion and an upper flighting portion, with each of said flighting portions being continuous with respect to one another and spirally wound about said auger cylinder member to lift the cut material upwardly from said floor to facilitate mixing, with said lower flighting portion comprised of an extension member having a leading edge cooperating with the floor of said tub to remove



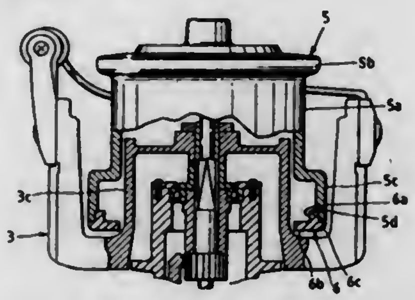
the cut material from said floor and to feed the cut material into said auger flighting member to facilitate continuous mixing within the mixer, and an outer peripheral edge cooperating with the floor of said tub to facilitate mixing of material, with the radial width of said extension member being at least equal to the remainder of said lower flighting portion and with the radial width of said lower flighting portion being greater than the radial width of said upper flighting portion; and
a plurality of knife members secured to said auger flighting member and extending outwardly therefrom.

5,615,840
FISHING REEL WITH DRAG SYSTEM
Raymond B. Bushnell, Oregon City; William H. Evilsizer; Paul D. Henderson, both of Beaverton, all of Oreg., and Scotte L. Hughes, Vancouver, Wash., assignors to Astro Tool Corp., Beaverton, Oreg.
Filed Apr. 28, 1994, Ser. No. 234,655
Int. Cl.⁶ A01K *89/02*
U.S. Cl. 242—301 **7 Claims**



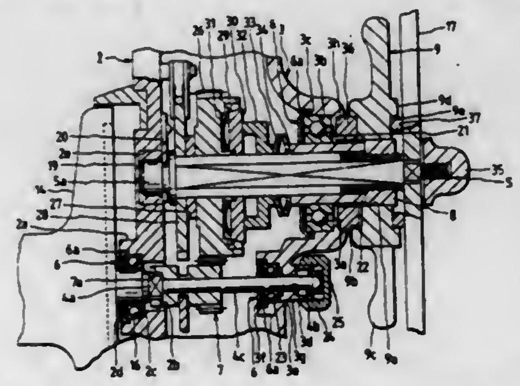
1. In a fishing reel, a drag system comprising:
a housing and a fishing reel spool rotatively mounted to the housing;
a drum element defining a peripheral interior drum surface;
a radially outward expanding expansion element within said drum element including a peripheral edge portion engaging said inner drum surface upon radial expansion thereof, and one of said drum element and expansion element coupled to said housing and the other coupled to said spool;
said drum surface provided with a low co-efficient of friction and said peripheral edge portion provided with an elastomeric material that substantially conforms to the peripheral interior drum surface upon engagement therewith whereby dynamic and static friction as between the drum surface and elastomeric material are substantially equal; and
an adjustment mechanism determining the magnitude of expansion of said expansion element whereby upon expansion of said expansion element to frictionally engage the inner surface of said drum element a magnitude of drag against rotation of said drum element relative to said fishing reel is established.

5,615,841
FISHLINE ENTRANCE PREVENTIVE DEVICE FOR A FISHING REEL
Masaji Saito, Saitama, Japan, assignor to Daiwa Seiko Inc., Tokyo, Japan
Filed Dec. 15, 1994, Ser. No. 356,543
Claims priority, application Japan, Dec. 17, 1993, 5-72716 U
Int. Cl.⁶ A01K *89/01*
U.S. Cl. 242—231 **11 Claims**



1. A spinning reel for fishing comprising:
a spool reciprocally driven back and forth by a handle;
a rotor rotatably driven by said handle to wind a fishline onto said spool; and
an annular portion projecting radially inwardly from a rearmost end portion of said spool to define a first clearance between said annular portion and said rotor, said first clearance being substantially smaller than a second clearance defined by a distance between a radially inner periphery of said spool adjacent said rearmost end portion and said rotor.

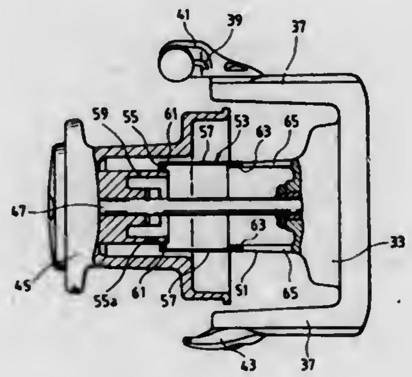
5,615,842
FISHING REEL BRAKE DEVICE
Tadashi Furubayashi, Saitama, Japan, assignor to Daiwa Seiko, Inc., Tokyo, Japan
Filed Feb. 6, 1995, Ser. No. 386,803
Claims priority, application Japan, Feb. 22, 1994, 6-002338 U
Int. Cl.⁶ A01K *89/033*
U.S. Cl. 242—268 **3 Claims**



1. A brake device in a fishing reel having a reel body; a handle shaft having a handle and rotatably supported by said reel body;

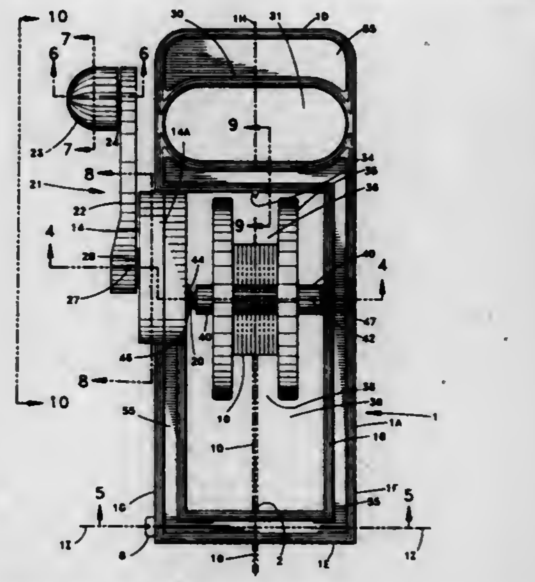
and a drive gear for turning a spool rotatably supported by said reel body in a line take-up direction, said drive gear being rotatably supported on said handle shaft and at least partially enclosed within said reel body by side plates oppositely disposed with respect to said spool, said brake device comprising:
a coupling means for frictional coupling said drive gear to said handle shaft, said coupling means having a brake member non-rotatably fitted on said handle shaft and depressed against said drive gear to produce a frictional force;
an adjuster rotatably supported by said reel body between said handle and one of said side plates for adjusting the frictional force;
support means for rotatably supporting the adjuster on the reel body, said support means contiguous with and interposed between said adjuster and said one of said side plates, said support means thereby extends from said reel body to said adjuster to remove looseness of said adjuster irrespective of said frictional force; and
a nut member threadingly engaged with said handle shaft and movably, non-rotatably fitted in said adjuster, and wherein:
when said adjuster is rotated relative to said handle shaft, said nut member is moved along an axial direction of said handle shaft relative to said adjuster to vary the depression of said brake member against said drive gear, while said adjuster is maintained in a substantially fixed position along said axial direction of said handle shaft.

5,615,843
SPINNING REEL FOR FISHING HAVING FISH-LINE ENTRY RESTRAINER
Shinji Takeuchi; Eiji Shinohara, and Masayuki Kawashiro, all of Tokyo, Japan, assignors to Daiwa Seiko, Inc., Tokyo, Japan
Filed Dec. 20, 1994, Ser. No. 359,616
Claims priority, application Japan, Dec. 28, 1993, 5-338620; Apr. 21, 1994, 6-083354; Apr. 25, 1994, 6-086708
Int. Cl.⁶ A01K *89/01*
U.S. Cl. 242—319 **22 Claims**



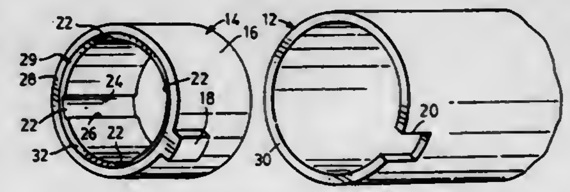
1. A spinning reel for fishing, comprising a rotor rotatably mounted on a reel body, and a spool supported to the reel body through a spool shaft such that the spool is capable of reciprocating in an axial direction of the spool shaft and that a fishing line is wound on the spool when the rotor is rotated by a manually operated handle, characterized by further comprising:
a fishing-line entry restrainer for preventing the fishing line from being wound on the spool shaft, the fishing-line entry restrainer being movably mounted on a radially outwardly facing cylindrical surface of the rotor, which cylindrical surface is adapted to be located within the spool; and
follow-up means for causing the fishing-line entry restrainer to move forward when the spool is moved forward.

5,615,844
CONSTRUCTION AND SPORT LINE REEL
Thomas L. Bosch, 1621 Road 80, Pasco, Wash. 99301
Filed Dec. 14, 1995, Ser. No. 572,506
Int. Cl.⁶ B65H *75/40*
U.S. Cl. 242—395 **11 Claims**



9. A construction and sport line reel wherein:
A. a frame means supports a spool means which has a spool throat (36); a spool biasing means restrains backlash movement of the spool means;
B. line (10) is contained in the spool throat (36) and passes from the spool throat (36) through a line guide means in the frame means; line tension means maintains tension in the line (10) between the spool throat (36) and the line guide means providing additional control over and reduction of spool backlash and ease of line (10) release and reeling in and tension in the line (10) during reeling in to enable all line (10) to be returned to the spool throat (36)
C. a gear means is secured by means to the frame means, and includes gears in mechanical communication to cause rotation of a pinion gear shaft (20) which is in mechanical communication with and rotates the spool means; a crank means in mechanical communication with the gear means to permit rotation of the gear means; a line leveler affixed to the frame means which guides the line (10) into the spool throat (36) during reeling in.

5,615,845
TUBULAR CORE ASSEMBILIES FOR ROLLS OF PAPER OR OTHER SHEET MATERIAL
Daniel D. Kewin, 16 Dogwood Drive, Brantford, Ontario, Canada
Filed Apr. 3, 1996, Ser. No. 624,347
Int. Cl.⁶ B65H *75/10;75/30*
U.S. Cl. 242—613.5 **30 Claims**



1. A tubular core assembly for a roll of paper or other sheet material comprising:
a hollow cylindrical core member formed of paperboard material, and

an annular end member of plastic material within each opposite end portion of the core member, each end member having an outer annular surface secured to the inner annular surface of the core member and an inner annular surface shaped to receive a roll supporting chuck,

each end member having a radially-projecting lug at the respective end of the tubular core assembly, said core member having a lug-receiving notch at each end receiving said lug of the respective end member to facilitate transmission of torque and axial chuck pressure from the end member to the core member, and

each end member having a plurality of circumferentially-spaced axially-extending channels in its inner annular surface to receive radially outwardly movable portions of a chuck, said channels including bottom portions extending axially and having side walls engageable by said chuck portions to enable rotational movement of the chuck to be transmitted to the end member, and said channels being circumferentially positioned in relationship to at least one feature of the core assembly which is visible to an operator when mounting the core assembly on the chuck, whereby observation of said feature indicates the position of said channels to the operator.

5,615,846

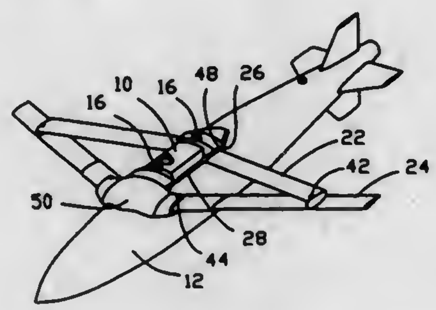
EXTENDABLE WING FOR GUIDED MISSLES AND MUNITIONS

John D. Shmoldas, Thousand Oaks; Michael B. Hutchings, Westlake Village, and Christopher W. Barlow, Newbury Park, all of Calif., assignors to GEC Marconi Dynamics Inc., Westlake Village, Calif.

Filed Nov. 4, 1994, Ser. No. 334,423

Int. Cl.⁶ F42B *10/32*

U.S. Cl. 244—3.28 **7 Claims**



1. A folding wing kit for a guided munition, comprising:

a. a hardback assembly which is attached to the munition and launch platform by the use of existing lug wells and aircraft weapon suspension equipment,

b. a motor mounted within the hardback assembly,

c. a carriage assembly attached to the hardback assembly and connected to the motor so as to translate fore and aft when energized,

d. a pair of wing assemblies comprising of a forward wing and rear wing joined with a pivot near the wingtips of which the said forward wing is attached with a pivot to the hardback assembly and the said rear wing is attached with a pivot to said carriage assembly such that aft movement of the carriage will cause both wings to extend and forward movement will cause both wings to retract, and

e. a means for controllably coupling mechanical energy from the motor to the wings whereby extension and retraction of the joined wings can be performed.

5,615,847

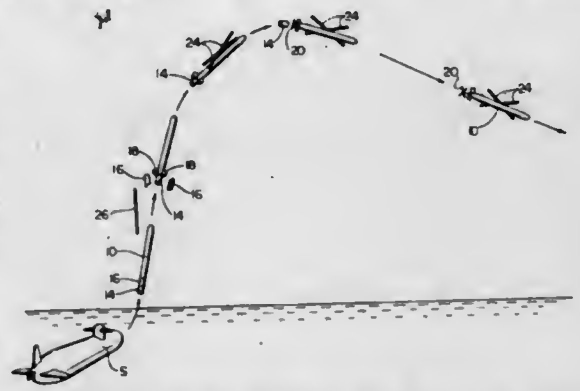
SUBMARINE LAUNCHED UNMANNED AERIAL VEHICLE

Steven P. Bourlett, Tiverton, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 11, 1995, Ser. No. 528,627

Int. Cl.⁶ F41F *3/04;* **F42B** *15/20;10/14;* **B63G** *8/30*

U.S. Cl. 244—63 **12 Claims**



1. A submarine launched unmanned aerial vehicle, said vehicle comprising:

an elongated generally cylindrically-shaped body;

tail fins stored in said body and self-deployable to extend outwardly from said body;

a booster motor fixed to an aft end of said body and self-releasable from said body;

a propeller disposed between said booster motor and said aft end of said body and self-deployable upon loss of said booster motor to an exposed position at said aft end of said body;

a propulsion motor mounted in said body and operative to drive said propeller; and

rotor means stored in said body and self-deployable to an exposed position wherein said rotor means provide lift to said vehicle.

5,615,848

RESCUE AND AMBULANCE HELICOPTER

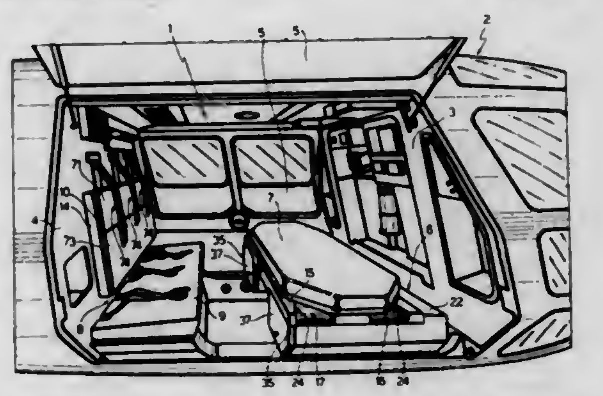
Mario Ceriani, New Town, Pa., assignor to Agusta Eli S.r.l., Agusta, Italy

Filed Dec. 23, 1994, Ser. No. 363,155

Claims priority, application Italy, Dec. 23, 1993, T093A0989

Int. Cl.⁶ B64D *11/00;13/00*

U.S. Cl. 244—118.5 **8 Claims**



1. A helicopter (2) presenting a passenger compartment (1) equipped for administering first aid and the conveyance of casualties and comprising at least one support (6) for a first stretcher (7), and a main attendants' seat (8); characterized in that it comprises a support (14), incorporated in said main seat (8), for a second stretcher; and at least one retractable standby seat (36); said passenger compartment (1) is defined longitudinally by two transverse walls (3, 4), and laterally by two swing-up doors (5); said support (6) for said first stretcher (7) and said main seat (8) being respectively adjacent to said transverse walls (3, 4).

5,615,849

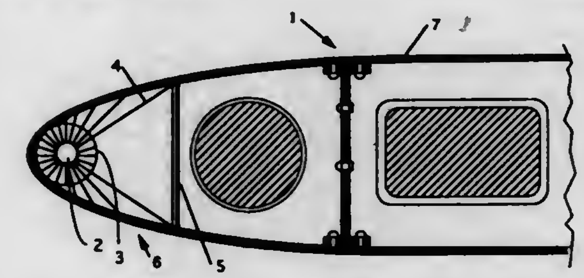
MICROWAVE DEICING AND ANTI-ICING SYSTEM FOR AIRCRAFT

Jonathan T. Salisbury, 22908 Connells Prairie Rd., Buckley, Wash. 98321

Filed Apr. 14, 1995, Ser. No. 421,855

Int. Cl.⁶ B64D *15/00*

U.S. Cl. 244—134 R **4 Claims**



1. In an aircraft having wings, rotors, or airfoils, which wings, rotors, or airfoils have outer and inner surfaces and leading edges, the improvement which comprises:

(a) at least one microwave generator which generates microwave energy;

(b) at least one thermal propagation tube which is connected to the microwave generator and which abuts the inner surface of, and is parallel to, the leading edge of the wings, rotors or airfoils;

(c) a plurality of thermal transfer vanes connecting the thermal propagation tube and the inner surface of the wings, rotors, or airfoils; and

(d) a microwave reflection and heat insulation unit, which prevents the heat energy and microwave energy from escaping the leading edge area.

5,615,850

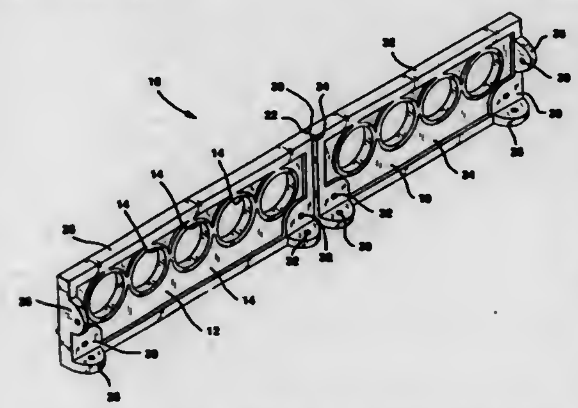
WIRE SUPPORT BRACKET

Leonard W. Cloninger, 2131 Spokane Creek Rd., East Helena, Mont. 59635

Filed Mar. 6, 1995, Ser. No. 398,696

Int. Cl.⁶ F16L *3/22*

U.S. Cl. 248—68.1 **5 Claims**



1. A wire bracket, to be fastened to a construction member, for holding and organizing electrical wire comprising;

an elongated body having a length, width, and depth axis;

the elongated body having a first portion and a second portion separated by a breakaway line;

the elongated body further having a plurality of holes extending through the depth of the elongated body and spaced along the length of the elongated body in both the first and second portions through which holes the electrical wire is to be threaded;

a plurality of reinforced fastener accepting means, positioned parallel to each of the three axes, for use in fastening the wire bracket to the construction member; and

indexing fingers extending outwardly from the body for indexing the bracket on a construction member.

5,615,851

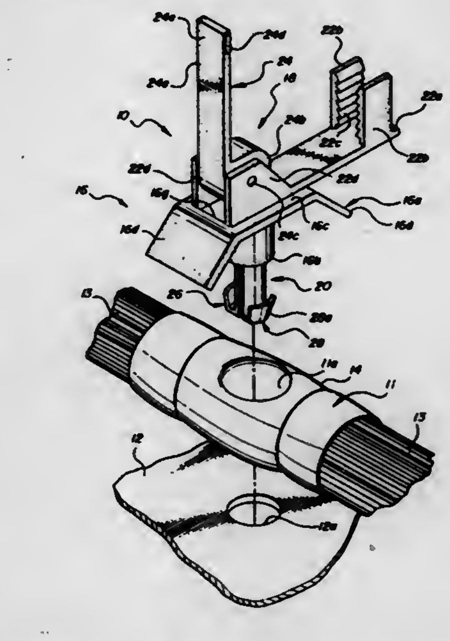
WIRE HARNESS ATTACHMENT CLIP

Howard S. LeBeau, Shelby Township, Mich., assignor to Yazaki Corporation, Tokyo, Japan

Filed Nov. 6, 1995, Ser. No. 553,837

Int. Cl.⁶ A47F *5/00*

U.S. Cl. 248—73 **19 Claims**

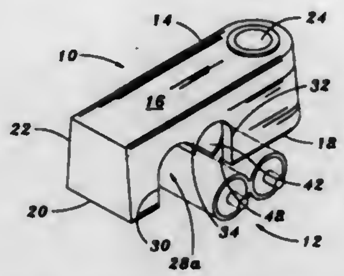


1. An attachment clip for attaching a wire harness to a panel and including a body structure for engaging the wire harness to position the harness proximate one side face of the panel and an elongated leg assembly connected to the body structure, having a free end distal from the body structure, having a head structure on the distal free end, extending beyond the body structure by an effective length, and adapted to be passed through an aperture in the panel to dispose the head structure on the free end of the leg assembly proximate the other side face of the panel, characterized in that:

the leg assembly has a relaxed diameter and a relaxed effective length allowing the leg assembly to pass through the panel aperture to dispose the leg assembly head structure proximate the other side face of the panel; and

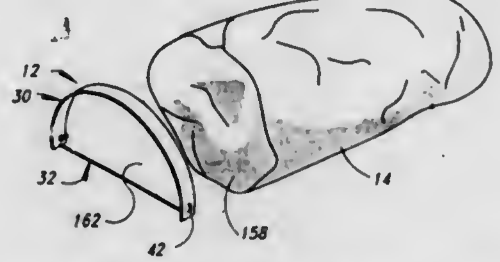
the clip includes locking means carried by the body structure and operative when actuated to decrease the effective length of the leg assembly so as to draw the head structure against the other side face of the panel.

5,615,852
CABLE CLIP
Richard H. Heidorn, Lombard, and Mohammad Masghati, Addison, both of Ill., assignors to Illinois Tool Works Inc., Glenview, Ill.
Filed Apr. 24, 1995, Ser. No. 427,678
Int. Cl.⁶ F16L *3/08*
U.S. Cl. 248—74.5 **21 Claims**



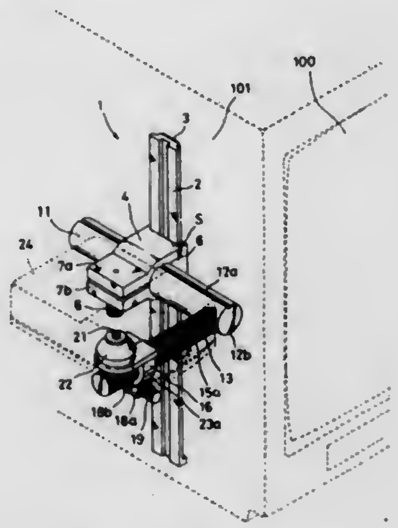
1. A cable clip for resiliently retaining cables, comprising:
a housing member having an upper surface and a lower surface disposed substantially parallel to said upper surface; and
cable receiving means formed within said lower surface of said housing member for accommodating cables of different-sized diameters and comprising a double cable receiving opening defined by first and second arcuate walls separated by a dependent mid-portion and a pair of flexible, resilient fingers for respectively cooperating with said dependent mid-portion so as to respectively retain said cables of different-sized diameters within said double cable receiving opening and between said fingers and said mid-portion.

5,615,853
BAG OPENING SUPPORT AND EXPANDER ASSEMBLY AND METHOD OF USE
Byirl J. Hearst, 28509 Everett Rd., Pueblo, Colo. 81006
Filed Oct. 3, 1994, Ser. No. 316,863
Int. Cl.⁶ B65B *67/04*
U.S. Cl. 248—99 **12 Claims**



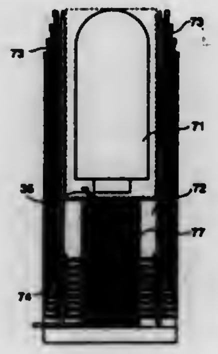
1. A bag opening support and expander assembly operable to engage and support an open end section of a bag member and hold in semi-circular shape, comprising:
a) a flexible support body member including outer end sections;
b) one of said outer end sections having a pair of adjacent connector holes;
c) a flexible tension and connector member having one end trained through said connector holes and a opposite end secured to another one of said outer end sections;
d) said one end of said flexible tension and connector member moved in one direction in said connector holes to cause bending of said support body member and movement of said outer end sections toward each other to form an arcuate shape to be mounted within the open end section of the bag member;
e) after bending said support body member to said arcuate shape, said support body member and interconnected flexible tension and connector member are inserted into said open end section of said bag member;
f) said open end section is folded over said support body member and said flexible tension and connector member to form a folded cuff section; and
g) said one end of said flexible tension and connector member is movable in minute continuous increments in an opposite direction in said one of said outer end sections to decrease tension on said flexible tension and connector member and concurrently increase an arch of said support body member to apply pressure against an inside surface of said folded cuff section to hold said open end section of said bag member in the open position.

5,615,854
CAMERA STAND
Atsushi Nomura, and Takashi Nakamura, both of Sakado, Japan, assignors to Nippon Control Industrial Co., Ltd., Saitama, Japan
Filed Mar. 21, 1995, Ser. No. 407,667
Claims priority, application Japan, Nov. 10, 1994, 6-301492
Int. Cl.⁶ E04G *3/00*
U.S. Cl. 248—287.1 **7 Claims**



1. A camera support comprising:
a rail member mountable on a vertical surface;
a clamp slidably mounted on said rail member;
a first rod slidably received in said clamp, wherein said first rod is movable along a line corresponding to a central longitudinal axis of said first rod, and can be fixed in a stationary position by said clamp;
a second rod connected to said first rod so as to extend orthogonally from said first rod; and
a camera mounting clamp which includes a tilt means and is slidably and rotatably attached to said second rod, wherein said camera mounting clamp can be fixed in a stationary location by clamping said second rod, and said tilt means allows full rotations of a camera about an axis perpendicular to said second rod and limited vertical swings of the camera about an axis parallel to a longitudinal axis of said second rod.

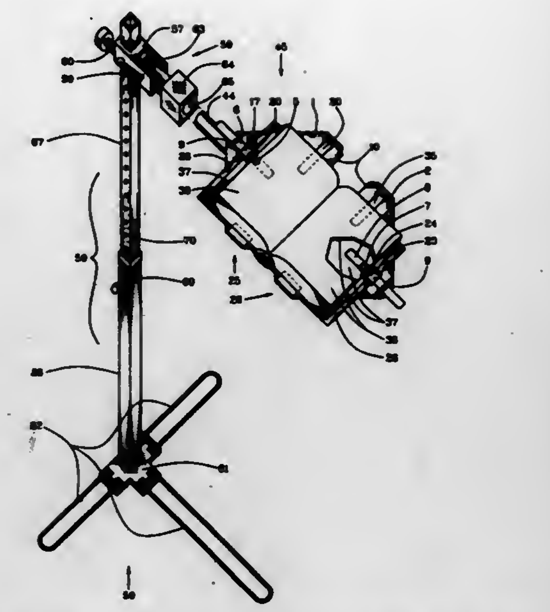
5,615,855
TELESCOPING MAST WITH INTEGRAL PAYLOAD
Edward A. Marue, Tuscon, Ariz., and Kenneth J. Pereira, Hanford, Calif., assignors to Tri-Ex Tower Corporation, Visalia, Calif.
Continuation-in-part of Ser. No. 72,817, Jun. 7, 1993, which is a continuation-in-part of Ser. No. 772,167, Oct. 7, 1991, Pat. No. 5,163,650. This application Dec. 9, 1994, Ser. No. 353,118
Claims priority, application WIPO, Mar. 31, 1994, PCT/US94/03549
Int. Cl.⁶ F16M *11/00*
U.S. Cl. 248—405 **5 Claims**



1. In a telescoping mast assembly, including:
a plurality of nesting, telescoping mast sections, including a top section and at least one lower section, each of said sections having upper and lower ends, and
means for extending and retracting each of said sections relative to the next-lower section,
the improvement comprising:
a payload, located only in said top section,
said top section, including said payload, being dimensioned to be received and nest within the next-lower section,
at least a portion of said payload being received within said next-lower section when said top section is fully retracted,
such that said next-lower section provides protection for said payload when said top section is fully retracted,
said payload being a member of the group consisting of radio antennas, lights, instrumentation and telemetry packages for robotic vehicles, television cameras, antenna rotators, preamplifiers, radiation sensors and electronic and electro-mechanical instrument packages.

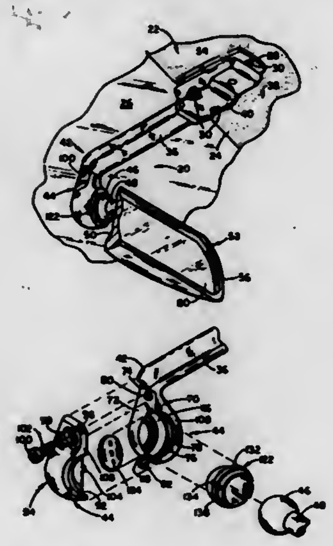
5,615,856
BOOK HOLDING DEVICE AND METHOD
George H. Simington, 822 SW. 108th St., Ocala, Fla. 34481
Filed May 5, 1995, Ser. No. 435,990
Int. Cl.⁶ A47B *23/00;97/02*
U.S. Cl. 248—452 **25 Claims**

1. A book holder comprising:
a first-side book-support plate and a second-side book-support plate that are oppositely disposed at a desired angle on a plate-connecting member;
a connector bracket attached to the plate-connecting member;
a first-side page holder and a first-side book holder attached to the first-side book-support plate;
a second-side page holder and a second-side book holder attached to the second-side book-support plate;
a first-side book-holder groove on a bottom side of the first-side book-support plate;
a first-side top-holder clamp on a top side of the first-side book-support plate;



a second-side book-holder groove on a bottom side of the second-side book-support plate; and
a second-side top-holder clamp on a top side of the second-side book-support plate.

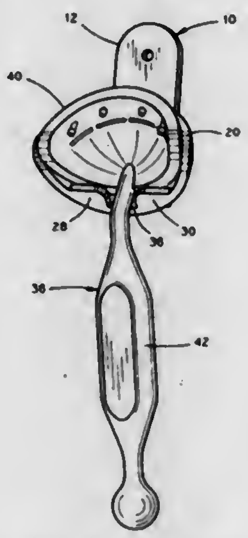
5,615,857
MIRROR SUPPORT BRACKET
Richard R. Hook, Hudsonville, Mich., assignor to Donnelly Corporation, Holland, Mich.
Continuation-in-part of Ser. No. 159,838, Nov. 30, 1993, Pat. No. 5,487,522. This application Nov. 8, 1994, Ser. No. 336,296
Int. Cl.⁶ B60R *1/00*
U.S. Cl. 248—549 **18 Claims**



1. A support bracket for a vehicle rearview mirror assembly, the mirror assembly having a ball member extending therefrom, comprising:
a mirror stay having a first end terminating in a generally spherical socket;
a cup adapted to substantially enclose the ball member extending from the mirror assembly when the ball member is received therein, and disposed within said generally spherical socket; and
a biasing member disposed substantially behind said cup and configured to force said cup toward one end of said socket

and compress about the ball to sustain a substantially constant clamping force on the ball over a range of temperatures; and
a mechanism disposed at one end of said biasing member for adjusting a force exerted by said biasing member on said cup.

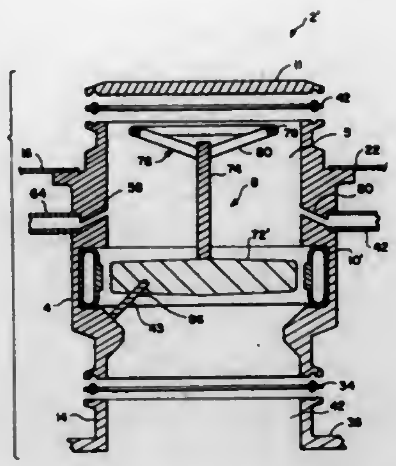
5,615,858
HOLDER FOR SHAVER
Gerald A. Sferruzza, Jr., 1150 Cherry St., B.V.S., Lakeville, Mass. 02717
Filed Apr. 26, 1994, Ser. No. 233,386
Int. Cl.⁶ F16M *13/00*
U.S. Cl. 248—682 **2 Claims**



1. A holder for a razor, the razor having a handle, the holder comprising a base portion and a holding portion, said base portion having an upper surface and a lower surface, said holding portion integral with said base portion and extending therefrom, said holding portion having the configuration of one quarter of a sphere having an outer convex surface and an inner concave surface, said one quarter sphere being cup like and facing away from said base portion, said convex surface being attached to said upper surface, and said one quarter sphere includes a continuous rear edge and a continuous forward edge, said continuous forward edge having a first barrier portion and a second barrier portion attached thereto and spaced from each other, whereby the razor and the handle may be held in said holding portion.

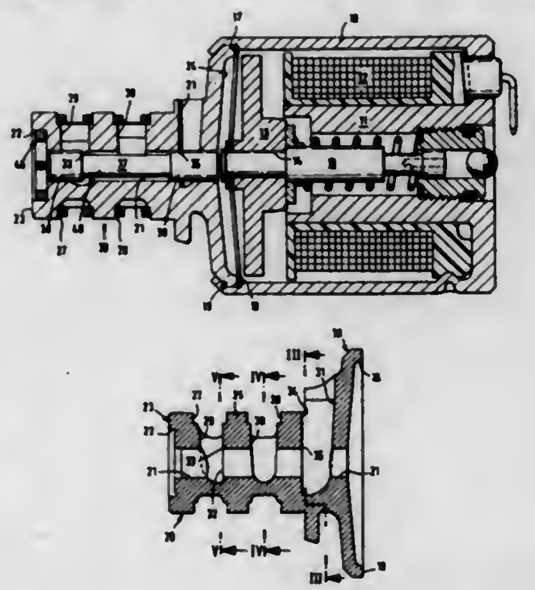
5,615,859
STERILIZABLE VALVE ASSEMBLY
Earl C. Haag, III, 2933 Herrlyn Ct., Dallastown, Pa. 17313
Filed Mar. 24, 1995, Ser. No. 410,493
Int. Cl.⁶ F16K *7/10*
U.S. Cl. 251—61.1 **2 Claims**

1. A valve assembly for permitting the introduction and removal of material therethrough from at least one enclosure to another comprising:
a cylindrical housing having a first opening and a second opening at each end of said cylindrical housing and an inner chamber therebetween, said inner chamber including an annular ridge adjacent said annular hollow gasket for supporting said annular hollow gasket within said inner chamber of said cylindrical housing, said inner chamber further including a recess portion adjacent said annular ridge for receiving said annular hollow gasket within an inner wall of said inner chamber;
an annular hollow gasket positioned within said inner chamber; and



a removable sealing means positionable within said inner chamber for sealing said first opening from said second opening, said annular hollow gasket being engagable with said sealing means by inflation of said annular hollow gasket, said sealing means including a plug member having a first end and a second end, said first end including a handle means for manipulating said plug member within said inner chamber of said cylindrical housing and said second end including a disc-shaped portion positionable within said annular hollow gasket,
wherein said cylindrical housing includes a support pin rigidly attached to an inner wall of said inner chamber receivable within a hole provided in a surface of said disc-shaped portion of said plug for securing said plug within said inner chamber.

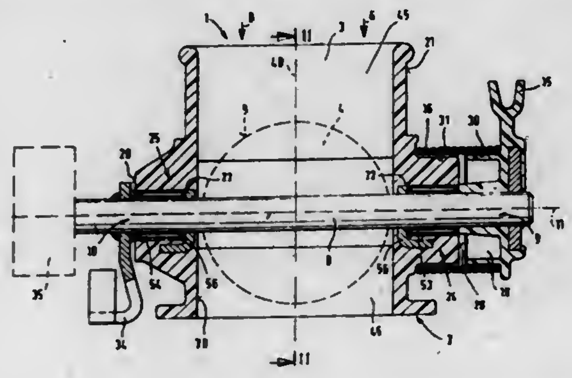
5,615,860
ELECTROMAGNETIC VALVE
Werner Brehm, Hemmingen, and Walter Fleischer, Stuttgart, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed Aug. 12, 1994, Ser. No. 289,749
Claims priority, application Germany, Aug. 26, 1993, 43 28 709.3
Int. Cl.⁶ F16K *31/06*
U.S. Cl. 251—129.07 **8 Claims**



1. An electromagnetic valve, comprising a magnet housing; a valve closing element arranged in said magnet housing and having a longitudinal opening and control edges; a valve slider located in

said longitudinal opening and having control portions cooperating with said control edges with said valve closing element, said valve closing element being formed as a die cast part and said control edges being formed as a pocket-shaped depressions extending from an outer periphery, said depressions reducing in cross-section toward said longitudinal opening.

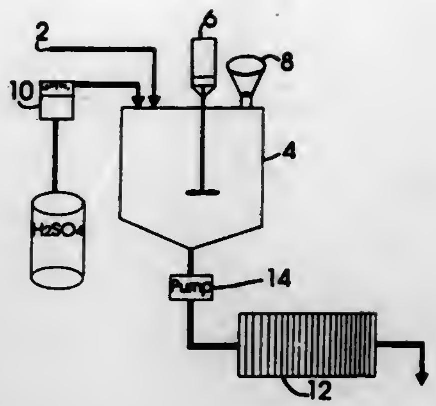
5,615,861
THROTTLE DEVICE FOR AN INTERNAL COMBUSTION ENGINE
Herbert Pollmann; Wolfgang Hodulik, both of Karlstein, Austria; Klaus-Jürgen Peters, Affalterbach, Germany; Karl Gmelin, Flein, Germany; Matthias Entenmann, Bietigheim-Bissingen, Germany, and Peter Ropertz, Möglingen, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
PCT No. PCT/DE94/01183, § 371 Date Jun. 6, 1995, § 102(e) Date Jun. 6, 1995, PCT Pub. No. WO95/09978, PCT Pub. Date Apr. 13, 1995
PCT Filed Oct. 4, 1994, Ser. No. 448,478
Claims priority, application Germany, Oct. 7, 1993, 43 34 180.2
Int. Cl.⁶ F16K *1/22*
U.S. Cl. 251—306 **14 Claims**



1. A throttle device with a throttle-flap connection piece having a suction duct, through which projects an actuating shaft which is mounted in the throttle-flap connection piece by means of two bearing arrangements and which is connected rotatably about an axis of rotation to a throttle member that controls the suction duct, wherein the throttle-flap connection piece (2) is designed as a plastic injection molding, into which an annular insertion part (56) is embedded transversely relative to the suction duct (3), and has angular straps (70), through which the actuating shaft (8) projects, and the straps (70) each bear with a strap surface (76) facing away from the throttle member (4) against a bearing end face (58, 59) of the bearing arrangement (53, 54) which faces the throttle member (4).

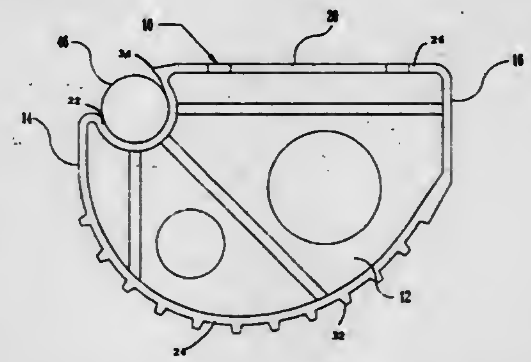
5,615,862
METAL PRECIPITATION COMPOSITION FOR TREATING SPENT DRY FILM STRIPPING SOLUTION
Robert M. Gaudette, 42 Lance Ave., Litchfield, N.H. 03103
Filed Feb. 2, 1995, Ser. No. 382,615
Int. Cl.⁶ C02F *5/02;5/08*
U.S. Cl. 252—175 **22 Claims**

1. A composition for treating a spent dry film stripping solution comprising:
10 to 70 percent by weight of an aluminum source;
28 to 95 percent by weight of siliceous particulates;
about 3 to about 35 percent by weight of a metal precipitating agent; and



less than about 10 percent by weight of a dust-suppression agent.

5,615,863
DANDY JACK
Bobby G. Bailey, P.O. Box 591, Sneads, Fla. 32460
Filed Apr. 24, 1995, Ser. No. 430,927
Int. Cl.⁶ B66F *7/22*
U.S. Cl. 254—94 **13 Claims**



1. A jack to be used to lift a vehicle off a ground comprising:
an arcuate base having a first end and a second end;
said second end includes a flat surface;
a first semi-circular pivot engages said first end;
said semi-circular pivot includes a first distal point and a second distal point;
said first distal point contacts said first end of said arcuate base;
a straight edge extends from said distal end of said semi-circular pivot to said second end of said base;
a first flange extends perpendicularly from said first semi-circular pivot, a second flange extends perpendicularly from said arcuate base, and a third flange extends perpendicularly from said straight edge;
said second flange increases in width from said first end of said base to said second end of said base; and
a plurality of supports extend from a lower surface of said first flange to an upper surface of said second flange.

5,615,864
ELEVATOR HOIST APPARATUS WITH TORQUE SUPPORT DEVICE

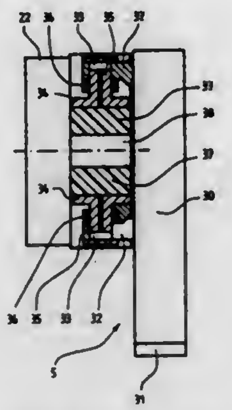
Christoph Liebetrau, Menziken, and Utz Richter, Ebikon, both of Switzerland, assignors to Inventio AG, Hergiswil NW, Switzerland

Filed Mar. 17, 1995, Ser. No. 405,996

Claims priority, application European Pat. Off., Mar. 25, 1994, 94104765.6

Int. Cl.⁶ B66D *1/00*

U.S. Cl. 254—329 **8 Claims**



2. A drive unit for an elevator comprising:
a machine frame including a base plate, a bearing block, an axle mount, and at least one vertically arranged resilient torque support;
an axle fastened to said machine frame, and secured against rotation, said axle being affixed in said axle mount;
a drive pulley for driving hoist cables of said elevator, said drive pulley rotatably journalled on a protruding end of said axle;
driving means for rotatably driving said drive pulley, said driving means extending from said drive pulley and said at least one resilient torque support securing a portion of said driving means against rotation.

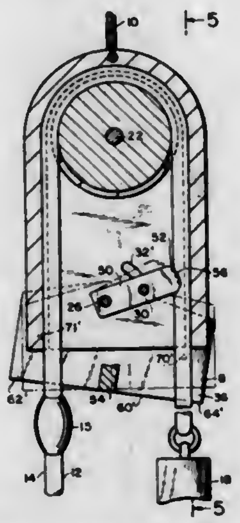
5,615,865
AUTOMATICALLY ENGAGING AND DISENGAGING PAWL AND PULLEY LIFTING MECHANISM

Edward Fountain, 27 Riverview Ave., Ardsley, N.Y. 10502

Filed Mar. 8, 1995, Ser. No. 400,562

Int. Cl.⁶ B66D *1/00*

U.S. Cl. 254—391 **1 Claim**



1. An automatically engaging and disengaging pawl and pulley lifting mechanism comprising a pulley carried on a first pintle mounted in a pulley enclosure, a cable entrained over said pulley, said cable having a pulling side and a lifting side, said pulley enclosure having walls spaced slightly from said cable, a pawl pivoted on a second pintle and carrying teeth at one end thereof to engage said lifting side of said cable, a pin extending from at least one side of said pawl intermediate its pivot point and said teeth and extending through an arced slot in one of the walls of said pulley enclosure, tiltable lever means pivoted at an upper end thereof on pivot means mounted on said pulley enclosure, a lower edge of said lever means extending below a bottom end of said pulley enclosure, a portion of a top edge of said lever means being engageable with said pin when said lever means is pivoted, said lower edge of said lever means being engageable with means on said lifting side of said rope and wherein said lever means is tilted when said lower edge of said lever means is engaged by said means on said lifting side thereby causing the upper edge of said lever means to move said pin in an upwardly arcing motion to pull said pawl teeth away from said cable to allow the load side to descend freely, and whereby when the opposite end of said lower edge of said lever means is engaged by stop means on the pulling side of said cable, said pawl is moved back to engage said lifting side of said cable.

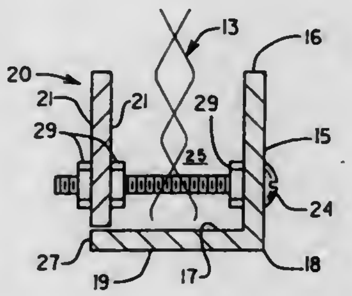
5,615,866
VEGETATION BARRIER FOR FENCING

Robert W. Kinnison, P.O. Box 168, Fort Collins, Colo. 80522-0168

Filed Nov. 29, 1995, Ser. No. 564,453

Int. Cl.⁶ E04H *17/06*

U.S. Cl. 256—1 **2 Claims**



1. A vegetation barrier adapted to engage the bottom edge of chain link fencing, said barrier comprising:
a) a first member in the form of an extruded L-shaped form of uniform cross-sectional configuration and comprised of an upright sidewall portion elongated along the direction of extrusion and bounded by a straight upper edge and a linear lower extremity that joins in a right angle corner configuration a flat floor panel portion intended to be horizontally disposed, said floor panel portion terminating in a straight distal edge which is parallel to said upper edge, said sidewall portion being provided with axially spaced installation apertures and having a height, defined by the distance between said upper edge and lower extremity, which is greater than the width of said floor panel portion, measured between said linear lower extremity and distal edge,
b) a second member in the form of an elongated strip of uniform cross-sectional configuration bounded by opposed flat wall surfaces and opposed straight terminal edge surfaces, said strip having installation apertures spaced apart to align with the apertures of said first member, and having a width, measured orthogonally between said terminal edge surfaces which is equal to the height of the sidewall of said first member,
c) threaded bolts which penetrate the aligned apertures of said first and second members, and
d) nuts which threadably engage said bolts in abutment with said first an second members, and
e) said first and second members being assembled in embracing relationship with the bottom edge of said chain link fence, providing an U-shaped structure defining an interior region adapted to hold a water-leachable composition.

5,615,867
FLUID-FILLED UNIT OF A CYLINDER AND A PISTON ROD, IN PARTICULAR GAS SPRING

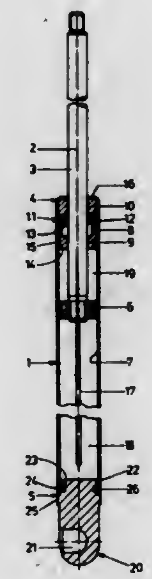
Hans-Peter Bauer, Altdorf, Germany, assignor to Suspa Compart Aktiengesellschaft, Altdorf, Germany

Filed Feb. 22, 1996, Ser. No. 605,781

Claims priority, application Germany, Feb. 24, 1995, 195 06 479.8

Int. Cl.⁶ F16F *9/36;9/54;* **F16J** *15/02;10/02*

U.S. Cl. 267—64.11 **3 Claims**



1. A fluid-filled unit of a cylinder and a piston rod, comprising:
a substantially cylindrical housing (1, 1"), which has a central longitudinal axis (2) and a closed first end (5) and a second end (4) and a inside wall (7);
a piston rod (3) disposed coaxially of the central longitudinal axis (2) partially within the housing (1, 1") and partially outside the housing (1, 1");
a piston (6) attached to the piston rod (3) and associated with the inside wall (7);
a guide disposed at the second end (4) of the housing (1, 1") for the guidance of the piston rod (3) in the direction of the central longitudinal axis (2);
a exterior seal (12) disposed in the vicinity of the guide and bearing sealingly against the piston rod (3);
a plug (20, 20", 20""), which is disposed in the vicinity of the first end (5), which is joined to the housing (1, 1") by positive fit, which is provided with an annular seal (24) bearing against the inside wall (7), which has an end (31) located in the housing (1, 1"), and which is provided with a fastening element (21, 35);
wherein the plug (20, 20", 20"") is provided with a stop (25) to bear against the first end (5) of the housing;
wherein the end of the plug (31), located in the bousing (1"), has an annular recess (32) open to said end of the plug (31) and accommodating the annular seal (24), and wherein the annular seal (24) bears against a bearing surface (33) projecting from the inside wall (7) of the bousing (1") radially the central longitudinal axis (2);
said bearing surface (33) formed by a crimp, whereby the annular seal (21) is pressed against the crimp wben the first end (5) of the housing (14) is pressed against annular collar (25);
wberein the plug (20") is arrested in relation to the housing (1") by a crimp (26) which engages with an annular groove (23"); wherein the annular groove (23") is positioned between the annular recess (32) and the stop (25) of the plug (20").

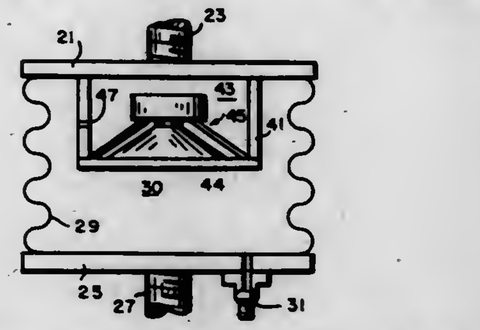
5,615,868
ACTIVE PNEUMATIC MOUNT

Bruce S. Murray, Winchester, Mass., assignor to Bolt Beranek and Newman Inc., Cambridge, Mass.

Filed Oct. 4, 1995, Ser. No. 538,904

Int. Cl.⁶ F16F *9/04*

U.S. Cl. 267—64.27 **11 Claims**



1. An active mount for isolating vibrations between a piece of equipment and a foundation supporting that equipment, said mount comprising:
first and second mounting plates adapted for attachment to said equipment and said foundation respectively;
flexible sealing means connecting the peripheries of said first and second plates thereby to contain a volume of pressurized gas therebetween for supporting the weight of said equipment;
within said volume, means defining a chamber having an opening for receiving an acoustic transducer; and
an acoustic transducer mounted in said opening for generating oscillatory pressure variations in said pressurized volume between said plates cancelling those variations induced by machinery vibration, the space within said chamber being vented to said volume thereby to equalize the static pressure in said space with that acting on said plates.

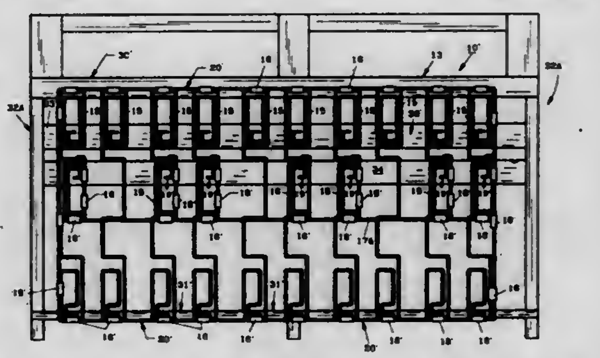
5,615,869
TORSION SPRING ASSEMBLY

Herman R. Phillips, Bennett, and Fred L. Ingle, West End, both of N.C., assignors to Lancer, Inc., Star, N.C.

Continuation of Ser. No. 417,081, May 12, 1995, abandoned. This application Apr. 26, 1996, Ser. No. 639,343

Int. Cl.⁶ F16F *3/00*

U.S. Cl. 267—103 **10 Claims**



1. In a spring assembly for a furniture seating frame, said frame baving front and rear rails and utilizing a plurality of intermediately supported parallel torsion springs disposed therealong, the improvement for each of said intermediately supported torsion springs consisting of an intermediate folded form spring, means for

joining each of said intermediate folded form springs to a different one of said torsion springs, each of said intermediate folded form springs being the sole intermediate folded form spring joined by said joining means to the different ones of said torsion springs to provide intermediate support thereto, a lateral member, said lateral member connecting all of said torsion springs at the position of said intermediate folded form spring, each of said intermediate folded form springs positioned approximately ⅔ of the distance from said front rail to said rear rail, proximate said rear rail, an intermediate spring rail, said intermediate spring rail affixed to said frame parallel to said front rail for supporting said intermediate folded form springs, and a stiffening frame, said stiffening frame surrounding said torsion springs.

5,615,870

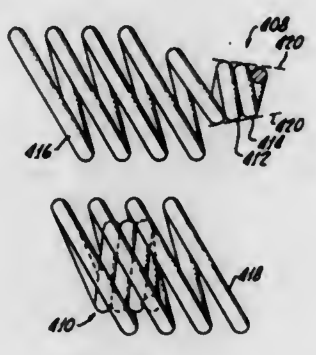
COIL SPRING WITH ENDS ADAPTED FOR COUPLING WITHOUT WELDING

Peter J. Balsells, Santa Ana, Calif., assignor to Bal Seal Engineering Company, Inc., Santa Ana, Calif.

Division of Ser. No. 336,789, Nov. 9, 1994, Pat. No. 5,503,375. This application Jun. 2, 1995, Ser. No. 456,662

Int. Cl.⁶ F16F *1/06*

U.S. Cl. 267—167 **1 Claim**



1. A spring apparatus comprising:

a coiled spring having two ends and a plurality of intermediate coils canted along a centerline of the coiled spring, each coil having a leading portion disposed at a front angle to a normal line to the centerline and a trailing portion disposed at a back angle to the normal line; and

end coils congruent with said plurality of intermediate coils, disposed at the two ends and having back angle means, defining a trailing portion of at least one of said end coils for locking the end coils on one end of the intermediate coils to the end coils on another end of the intermediate coils, the end coil trailing portion of said at least one of said end coils having a back angle different from the intermediate coil trailing portion back angle, said last mentioned end coil further having a front angle different from the intermediate coil leading portion front angle, said end coils being disposed in positions not interfering with deflection of the intermediate coils; and

wherein the intermediate coils are elliptical, one of the end coils has a trailing portion disposed at a back angle equal to the back angle of the intermediate coils and another of the end coils is tapered with at least one tapered round coil.

5,615,871

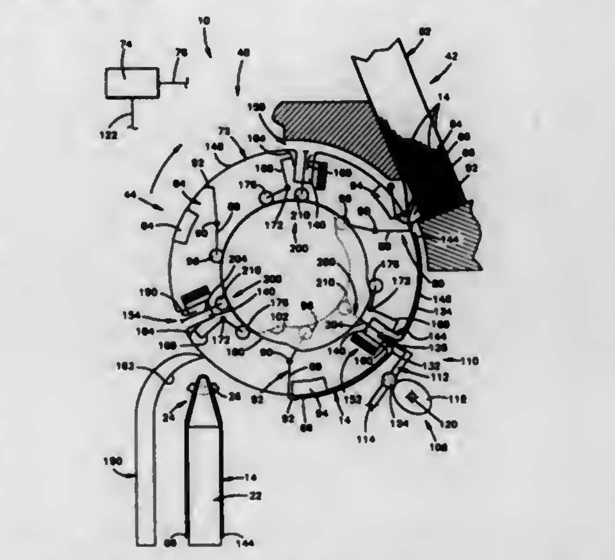
SHEET MATERIAL HANDLING APPARATUS AND METHOD

Stephen R. Kleinhen, Eaton, Ohio, assignor to Heidelberg Finishing Systems, Inc., Dayton, Ohio

Filed Jan. 26, 1996, Ser. No. 592,009

Int. Cl.⁶ B42C *1/00;* **B65H** *39/00*

U.S. Cl. 270—45 **28 Claims**



1. An apparatus for use in handling sheet material articles, said apparatus comprising a conveyor which is operable to convey sheet material articles, a hopper which holds a plurality of sheet material articles, and sheet transfer means for sequentially transferring sheet material articles from said hopper to said conveyor, said sheet transfer means including a rotatable drum, gripper means disposed on said drum for gripping an edge portion of a sheet material article as said drum is rotated, and creaser means disposed on said drum for forming a crease in a sheet material article as said drum is rotated and the edge portion of the sheet material article is gripped by said gripper means.

5,615,872

DETACHABLE DUPLEX COPYING UNIT FOR AN IMAGE FORMING APPARATUS

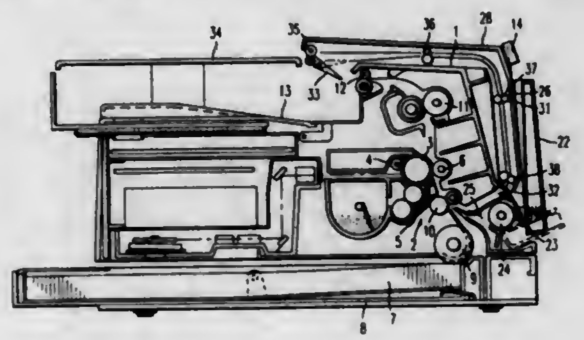
Hideaki Mochimaru, Atsugi, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Nov. 18, 1994, Ser. No. 344,644

Claims priority, application Japan, Nov. 18, 1993, 5-288888

Int. Cl.⁶ B65H *5/22*

U.S. Cl. 271—3.14 **19 Claims**



1. A printer system comprising:

a printer having a printer body;

an operation panel composed of a key switch and a display;

a duplex unit for feeding a copy paper having an image on one side thereof toward an inlet of the printer body;

wherein said operation panel is disposed on a front side of said printer body and said operation panel is slidable with respect to said printer body between an extended position and a retracted position, and wherein at least in said extended position a space is provided between said operation panel and said printer body, said space extending in a direction of sliding movement of said operation panel, and said duplex unit is disposed in said space between said printer body and said operation panel.

5,615,873

PAPER FEEDER IN A PRINTER

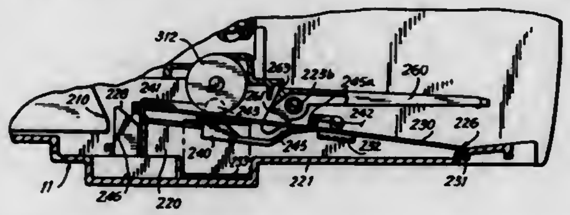
Yoichi Kobayashi; Tsuyoshi Tomii; Koichi Endo; Hayato Nishikaze, and Seiichi Hirano, all of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Division of Ser. No. 119,012, Sep. 9, 1993. This application Jun. 5, 1995, Ser. No. 461,959

Claims priority, application Japan, Sep. 10, 1992, 4-242228; Sep. 10, 1992, 4-242229; Sep. 10, 1992, 4-242230; Oct. 6, 1992, 4-267621; Oct. 8, 1992, 4-270561; Oct. 8, 1992, 4-270562; Oct. 8, 1992, 4-270563; Oct. 8, 1992, 4-270567

Int. Cl.⁶ B65H *3/52*

U.S. Cl. 271—121 **15 Claims**



1. A printer comprising:

a printer case having a print area therein, said printer case having a bottom wall;

a print head for printing on a sheet of paper, said print head being disposed within said print area;

an automatic paper feeder having a stacker section capable of setting a plurality of sheets of paper therein, the bottom of said stacker section being formed by said bottom wall;

a feed-in roller for individually feeding a plurality of sheets of paper from said automatic paper feeder in a sheet feeding direction toward said print area;

at least a first separation pawl positioned above a corner of a leading edge of a top sheet of paper for urging said leading edge downward and thereby forming a first loop in said top sheet of paper when said feed-in roller feeds said top sheet of paper in a sheet feeding direction;

at least a first loop holder for restricting said first loop, said first loop holder being connected to said bottom wall of said printer case; and

at least a first loop canceling wall formed uprightedly from said bottom wall of said printer case downstream in said sheet feeding direction from said first separation pawl for canceling said first loop after said top sheet of paper has separated from said plurality of sheets of paper.

5,615,874

APPARATUS AND METHOD FOR SEPARATING SHEETS OF MEDIA BY CREATING PRIMARY AND SECONDARY STACK DEPRESSIONS

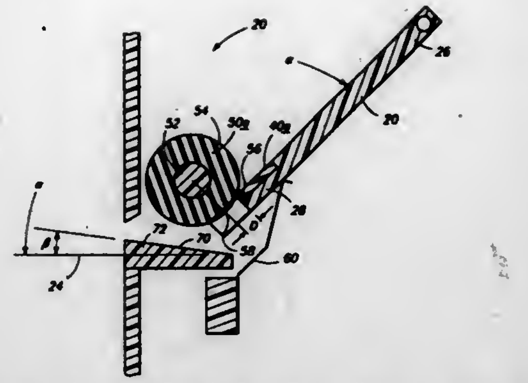
Baskar Parthasarathy; Pui W. Huang; Yuh W. Sum, and Lian H. Ng, all of Singapore, Singapore, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 21, 1995, Ser. No. 560,220

Int. Cl.⁶ B65H *3/52;1/02*

U.S. Cl. 271—121 **15 Claims**

1. A media separation system for separating sheets of media, the media separation system comprising:



a pressure plate positioned at an angle to support a stack of individual sheets of media along an incline, the pressure plate having a relieved area formed therein;

a pick roller disposed in juxtaposition to the relieved area of the pressure plate and having an outer surface to engage and separate a top sheet from the stack of sheets; and

a ribbed surface positioned elevationally below the pressure plate and pick roller and aligned vertically beneath the pick roller to support leading edges of the stack of sheets prior to sheet separation, the ribbed surface having at least one raised rib positioned centrally beneath the pick roller to cause formation of a depression in the sheets of media.

5,615,875

DEVICE FOR RECEIVING SHEET PILES THEREON IN A SHEET-FED PRINTING PRESS

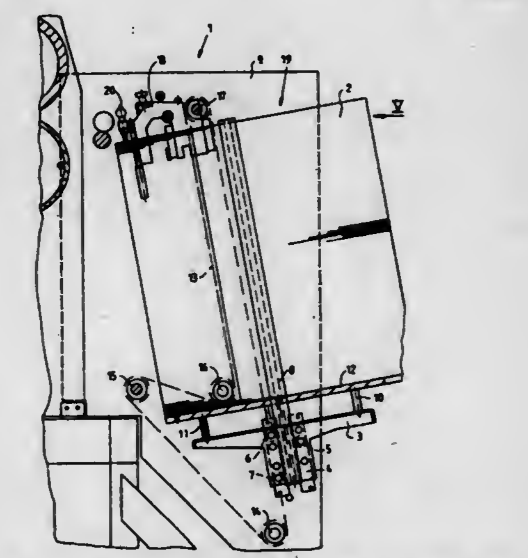
Martin Greive, Heidelberg, and Bernd Ruf, Weiterstadt, both of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Germany

Filed Apr. 13, 1995, Ser. No. 421,192

Claims priority, application Germany, Apr. 13, 1994, 44 12 661.1

Int. Cl.⁶ B65H *1/08*

U.S. Cl. 271—147 **9 Claims**



1. In a sheet-fed printing press, a device for receiving sheet piles thereon, comprising a pile table movable up and down, spacers disposed on said pile table, and pile supports of respective sizes corresponding to respective sizes or formats of the sheets disposable on said pile supports, said spacers being distributed over and permanently fixed to said pile table so that the respective pile supports of varying sizes rests on a selected number of spacers sufficient for safely supporting the respective pile supports against tilting, the pile supports of relatively smaller size resting on a

smaller number of the respective spacers than the pile supports of relatively larger size, and all of said spacers remaining fixed to said pile table regardless of the size of the respective pile support resting on said spacers.

5,615,876

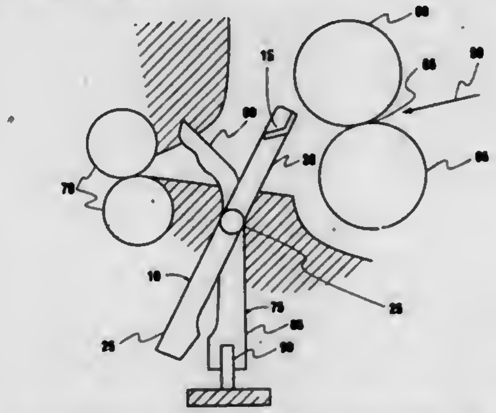
APPARATUS AND METHOD FOR SENSING ACCORDION JAMS IN A LASER PRINTER

Robin P. Yergenson, Eagle, and Richard F. Beaufort, Boise, both of Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 8, 1995, Ser. No. 569,817

Int. Cl.⁶ B65H *7/02*

U.S. Cl. 271—258.01 **9 Claims**



1. An apparatus for detecting an accordion effect on a transfer medium in a processing path of an image transfer device, the apparatus comprising:
 (a) a pivotally movable arm for contacting the accordioned portion of the transfer medium in the event an accordion effect occurs to the transfer medium in the processing path;
 (b) a pivotally movable fuser sensor flag for contacting the transfer medium prior to the transfer medium exiting the image transfer device; and
 (c) a fuser sensor for signaling movement of the arm and the fuser sensor flag.

5,615,877

SHEET TRANSPORTING DEVICE FOR USE IN AN IMAGE FORMING APPARATUS

Takeshi Watanabe; Kikunosuke Tsuji; Setsuo Hori; Seiji Kado; Kenichi Satake; Hiromi Nakatsu; Kohichi Baba; Masayuki Ishii, and Yoshiko Uriu, all of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka-fu, Japan

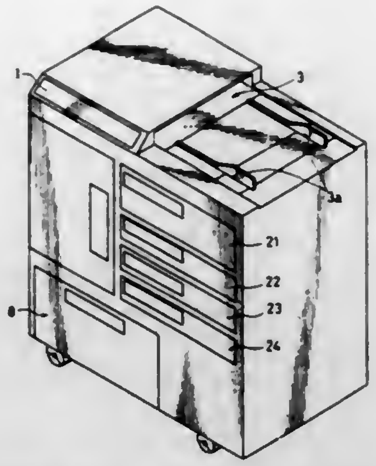
Filed May 22, 1995, Ser. No. 445,967

Claims priority, application Japan, May 26, 1994, 6-112513

Int. Cl.⁶ B65H *7/02*

U.S. Cl. 271—259 **12 Claims**

1. A sheet transporting device for use in an image forming apparatus, the sheet transport device comprising:
 a first and second sheet transporting members disposed at a predetermined spacing in a widthwise direction of a sheet to be transported, the first sheet transporting member for transporting the sheet in a lengthwise direction of the sheet in contact with one side end portion of the sheet, the second sheet transporting member for transporting the sheet in the lengthwise direction in contact with the other side end portion of the sheet;
 a sheet feeder provided at an upstream of the first and second sheet transporting members for feeding the sheet to the first and second sheet transporting members;
 a measure for measuring a first time period in which a first specified portion of the sheet comes from the sheet feeder to a



first position defined before the first sheet transporting member and a second time period in which a second specified portion of the sheet comes from the sheet feeder to a second position defined before the second sheet transporting member;
 a judger for judging whether a difference between the first and second time periods is larger than a predetermined value; and
 a controller in responsive to the judger for controlling the sheet feeder to suspend the feeding of the sheet to the first and second sheet transporting members when the difference is larger than the predetermined value.

5,615,878

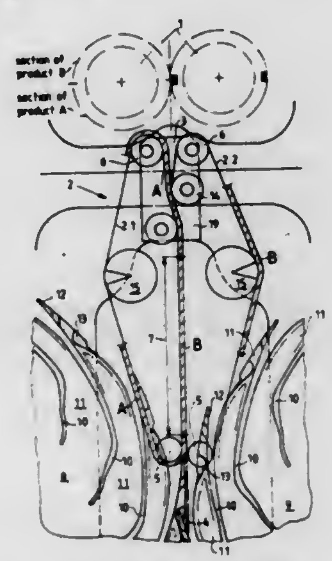
METHOD AND APPARATUS FOR ACCELERATING AND DIVERTING FLAT PRODUCTS

Roger R. Belanger, Dover, and Michael A. Novick, New Durham, both of N.H., assignors to Heidelberg Harris Inc., Dover, N.H., and Heidelberger Druckmaschinen AG, Heidelberg, Germany

Filed Aug. 15, 1995, Ser. No. 515,201

Int. Cl.⁶ B65H *39/10*

U.S. Cl. 271—302 **20 Claims**



1. Apparatus for product delivery comprising:
 two fan wheel arrangements overlapping each other;
 a mechanism for conveying a flat product into said two fan wheel arrangements; and
 devices attached to said mechanism in a timed arrangement for positioning said flat product in its entirety, off a centerline of said fan wheel arrangements, prior to entry of the flat product in a pocket of said fan wheel arrangements.

5,615,879

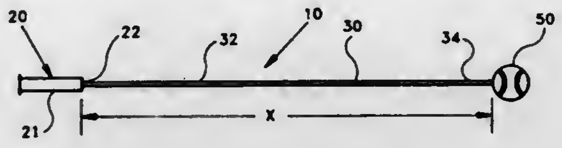
BATTING PRACTICE AID AND METHOD OF USING SAME

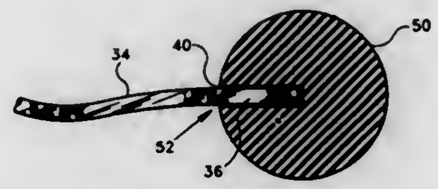
Peter M. Bailey, 3518 Mission Blvd., San Diego, Calif. 92109

Filed Aug. 21, 1995, Ser. No. 517,555

Int. Cl.⁶ A63B *69/40*

U.S. Cl. 473—424 **2 Claims**





1. A batting practice aid which comprises:
 a line formed from an elastic "bungee" cord material capable of stretching significantly in response to an elongating force and returning to original length upon removal of said elongating force;
 a ball formed from soft elastomeric material having a radial hole extending into said ball a distance at least generally equal to the radius of said ball;
 a first end of said line inserted into said hole and secured thereto by an adhesive layer filling interstices in said line and bonding to walls of said radial hole;
 a generally cylindrical handle sized to be held in one hand of a user, said handle having an axial hole in one end;
 a second end of said line inserted into said axial hole and secured therein;
 whereby said handle may be held by a user and the ball and line swung in a circular path so that the ball moves past a batter who may strike the ball with a bat, causing said ball to move away from the batter and said line to stretch and absorb energy, reducing forces on said line-to-ball and handle-to-line connections, then elastically return to the original line length.

5,615,880

ELECTRONIC GOAL DETECTING SYSTEM

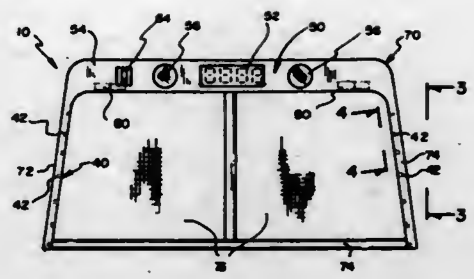
Jason P. Booth, and Deborah A. Booth, both of 660 Galloway Cres, Mississauga, Ontario, Canada

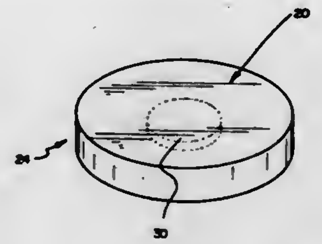
Filed May 6, 1996, Ser. No. 644,624

Int. Cl.⁶ A63B *63/00*

U.S. Cl. 473—471 **4 Claims**

1. A Electronic Goal Detecting System comprising:
 a hockey goal;
 a sensing means secured to the hockey goal;
 a goal signal means attached to the upper front portion of the hockey goal;
 a power supply electronically connected to the goal signal means and the sensing means;





 a hockey puck or hockey ball which is received by the hockey goal; and
 a pickup means positioned within the hockey puck or the hockey ball.

5,615,881

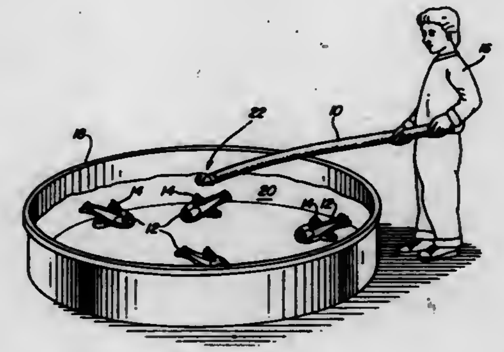
CHILDREN'S FISHING GAME

Denise P. Potter, 39 Creek View Rd., Coto de Caza, Calif. 92679

Filed Nov. 13, 1995, Ser. No. 557,964

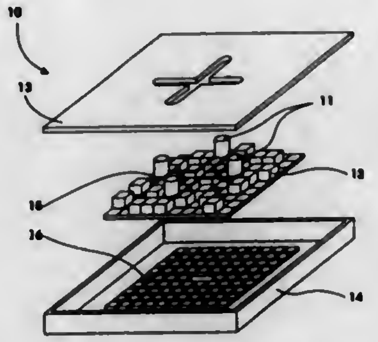
Int. Cl.⁶ A63F *9/00*

U.S. Cl. 273—140 **19 Claims**



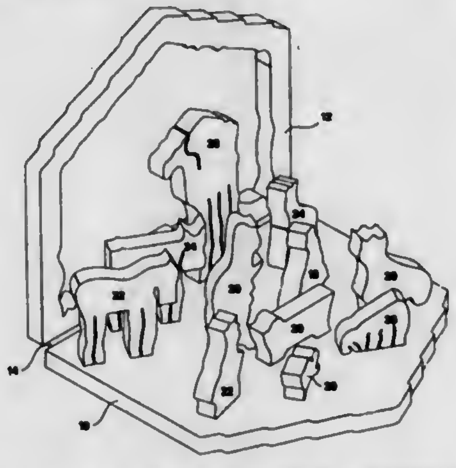
1. A fishing game for playing in water, comprising:
 an elongated, large diameter, lightweight fishing pole having a first end and a second end with a catching means secured to said first end; said fishing pole being flexible and made from a foamed plastic;
 a body of water having a surface;
 a plurality of substantially flat, fish shaped members made from a lightweight material floating on the surface of the body of water; each of the fish shaped members having a loop means secured thereto;
 said catching means including a holding portion secured to said first end, and a resilient catching portion secured to said holding portion; and
 said loop means being sized and dimensioned so as to allow a child manipulating said elongated, enlarged diameter lightweight fishing pole by said second end to insert said resilient catching portion into a loop means of one of said plurality of substantially flat fish shaped members.

5,615,882
MAZE GAME WITH MULTIPLE PIECES
Dmitry Zlotsky, 59 W. Cedar St., Livingston, N.J. 07039
Filed Nov. 13, 1995, Ser. No. 559,762
Int. Cl.[6] A63F 9/08
U.S. Cl. 273—153 S **15 Claims**



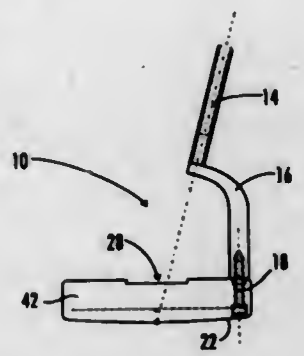
1. A maze game with multiple game pieces comprising:
a polygonal housing,
a maze board, including a flat surface with a convex pattern having passages of substantially identical width, located inside said housing, and further including means to provide the movement of said board inside the housing in predetermined directions only,
a top, covering said housing and containing a plurality of cut through passages, or slots,
a plurality of movable maze pieces of substantially elongated shape, located in said slots and extending inside the housing, to be received by said maze board passages, and outside, to be controlled by the maze game handler, said maze pieces further including means of prevention to be lifted off of the maze board;
the object of the maze game being to move said maze pieces from one predetermined position to another;
another object of the maze game being to achieve a predetermined relative orientation of maze pieces,
yet another object of the maze game being to move the maze board from one predetermined position inside said housing to another, by manipulating maze pieces.

5,615,883
FIGURINE PUZZLE WITH DISPLAY APPARATUS
Denise M. Stevens, 35,000 Pacific Coast Hwy., Malibu, Calif. 90265
Filed Aug. 28, 1995, Ser. No. 519,794
Int. Cl.[6] A63F 9/10
U.S. Cl. 273—157 R **1 Claim**



1. A figurine puzzle with display apparatus comprising of:
a plurality of puzzle figurines, altogether creating a specific theme, each said puzzle figurine represents a specific identifiable shape, each said puzzle figurine can stand in a perpendicular position as a figurine and can lay in a horizontal assembled position as a puzzle piece, altogether joining into a puzzle formation;
a base that lays in a horizontal position and supports said puzzle figurines in their assembled position and acts as a pedestal for said puzzle figurines to stand on in their perpendicular position; and
a frame that is shaped to correlate with the theme of said puzzle figurines and lays horizontally on top of said base surrounding and holding said puzzle figurines onto said base in their assembled position, said frame can lift from said base releasing said puzzle figurines for handling, and said frame can stand in a perpendicular position behind said base alone creating an appropriate background for said puzzle figurines, said frame in its perpendicular position behind said base creates a display apparatus and appropriate setting for said puzzle figurines in their perpendicular position;
a means for connection at the bottom edge of said base and said frame, securing said frame in its horizontal position on top of said base, said base remains stationery while said means for connection enables
said frame to lift releasing said puzzle figurines from their assembled position, said means for connection further secures said frame in its perpendicular position behind said base, altogether said base, said frame, and said means for connection create a holding and display apparatus for said puzzle figurines in their horizontal and perpendicular position.

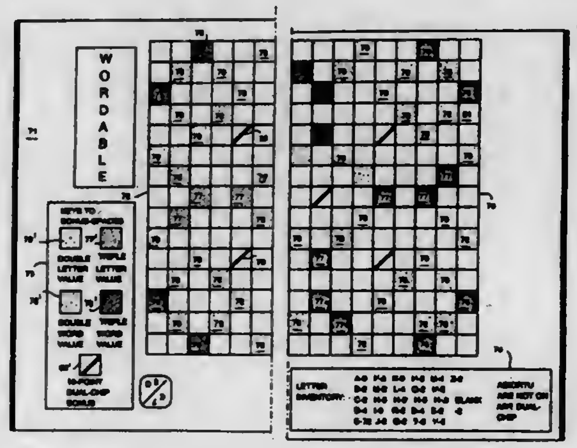
5,615,884
REAR ALIGNMENT GOLF PUTTER
Donald D. Modglin, 924 Rodney Dr., Nashville, Tenn. 37205
Filed Nov. 8, 1994, Ser. No. 336,386
Int. Cl.[6] A63B 53/04
U.S. Cl. 473—238 **3 Claims**



1. An improved golf putter including a grip, a shaft, a connecting arm, and a putting head having an upstanding front section including a ball striking surface and a back section at a lower elevation than a top surface of said front section, said improvement comprising:
a. a rear alignment notch used to align said putting head with a line through the center of a golf ball to a point substantially behind the golf ball and behind said putter, said rear alignment notch extending along a top surface of said back section of said putting head from a point directly behind a rear surface of said front section to a back end of said back section of said putting head;
b. said rear alignment notch extending for a length of sufficient distance to accurately align said putting head with said line; and
c. all visible edges beginning at the rear of said ball striking face, excluding said connecting arm and said notch, being non-linear and symmetrical.

5,615,885
Patent Not Issued For This Number

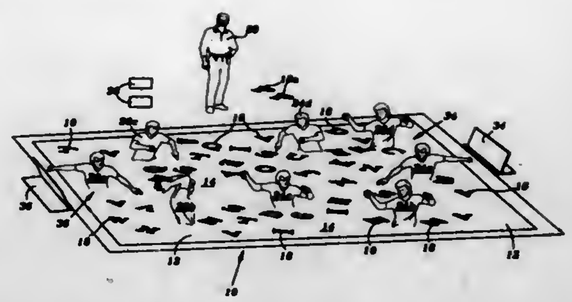
5,615,886
WORD FORMING BOARD GAME WITH COLORED TRANSPARENT TILES
William Chaifin, and Julia M. Chaifin, both of 1435 E. 101 St., Brooklyn, N.Y. 11236
Continuation-in-part of Ser. No. 385,421, Feb. 9, 1995. This application Aug. 29, 1995, Ser. No. 520,687
Int. Cl.[6] A63F 3/00
U.S. Cl. 273—272 **4 Claims**



1. A word game apparatus for playing a word game on a gameboard having a crossword grid for two or more players where players alternately form words on the crossword grid to score points, the word game set comprising:
a set of playing chips, each playing chip having a letter and numerical value thereon, said chips being for placement on said crossword grid to form words and
a gameboard marked with a crossword grid providing chip-receiving spaces at least some of which are marked with scoring colors, different scoring colors indicating different numerical scoring values for ones of letters and words associated with chips placed thereon,
a scoring color key on the gameboard outside the crossword grid,
chips having transparent bodies so that respective indicia can be viewed directly through the respective bodies of overlying chips and the bodies of at least some of the chips are of different scoring colors so that a grid space marked with a first scoring color, viewed through an occupying chip of a second scoring color, will appear to be a third, scoring color, different from the first and the second scoring colors, with the value of the third scoring color indicated by the scoring color key.

5,615,887
FLOATING WORD GAME IN A BODY OF WATER
Thomas W. Park, 408 Pearly Top, DeSoto, Tex. 75115
Filed Jul. 2, 1996, Ser. No. 677,446
Int. Cl.[6] A63F 9/00
U.S. Cl. 273—272 **6 Claims**

1. A method for playing a word game to be played in a body of water, the water having a surface, the game played by two teams, each team having at least one player, comprising the steps of:
providing a plurality of players and dividing them into two teams;
positioning the teams in a body of water,
providing a plurality of gaming pieces and randomly distributing them on a surface of the body water, the gaming pieces having a letter of the alphabet formed thereon;



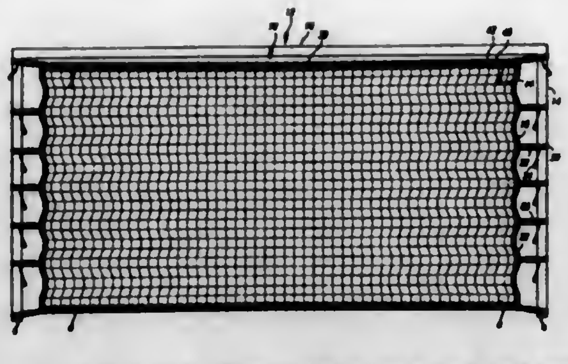
identifying a word; and
players of each team moving within the body of water and among the gaming pieces in order to collect gaming pieces to spell the identified word, and declaring a winner to be the first team to have collected and arranged the collected gaming pieces to spell the identified word.

5,615,888
SPANISH TWENTY-ONE CARD GAME METHOD OF PLAY
Richard Lofink, and Kurt Lofink, both of P.O. Box 33388, Las Vegas, Nev. 89133
Filed Apr. 10, 1996, Ser. No. 633,876
Int. Cl.[6] A63F 1/00
U.S. Cl. 273—292 **31 Claims**

31. A method of playing a modified version of Twenty-One which uses the conventional manner of play of Twenty-One with various rule modifications comprising:
a) providing at least one standard deck of fifty-two cards;
b) a player making a wager to be eligible to play a hand;
c) a dealer dealing two cards to the player and two cards to the dealer, one of the dealer's cards being face up;
d) allowing the player to make an additional Double Down wager at any time regardless of the number of cards held by the player;
e) the player standing on his first two cards or drawing additional cards, as desired;
f) the dealer standing or drawing additional cards according to the conventional manner of play of Twenty-One;
g) allowing the player to take back the amount of his Double Down wager if the player's numerical hand count does not exceed twenty-one if the player is dissatisfied with his numerical hand count after receiving his Double Down card;
h) determining whether the player's hand is a winning hand according to conventional manner of play of Twenty-One; and
i) paying the player based on the amount of the player's wagers if the player has a winning hand.

5,615,889
SOCCER GOAL PRACTICE NET
Phillip E. Long, 412 NW. 279th St., Ridgefield, Wash. 98642
Filed Jan. 24, 1996, Ser. No. 590,595
Int. Cl.[6] A63B 69/00
U.S. Cl. 273—396 **5 Claims**

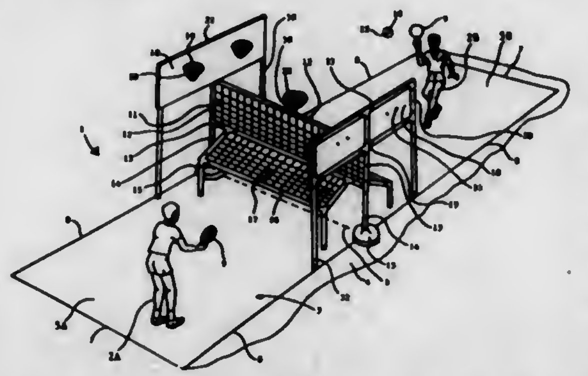
1. A soccer practice device for use in connection with a soccer goal frame, the goal frame having a pair of spaced-apart side posts and an overhead crossbar connected to and spanning the distance between the side posts, the practice device comprising:
a rectangular net having a predefined height and width relative to the goal frame, so that when the net is in use, a lower horizontal edge of the net is positioned adjacent the ground on which the goal frame rests and an upper horizontal edge of the net is positioned adjacent the overhead crossbar, and further, the net having a pair of vertical side edges;
a pair of nonelastic vertical webbing strips, one vertical webbing strip each being connected to and along one vertical side edge of the net and a plurality of spaced-apart nonelastic loops



connected to each vertical webbing strip, each loop being made of a nonelastic material and having cinch means for adjusting the size of the loop, each cinch means being capable of withstanding at least 50 pounds of tensile force, and further, each loop having means for being connected to and released from one of the side posts, so that the loops connected to each vertical webbing strip cooperate to connect the vertical side edges of the net to the side posts of the goal frame; and

a pair of horizontally extending webbing strips, wherein one of the horizontal webbing strips is loosely woven along the lower horizontal edge of the net and the other horizontal webbing strip is loosely woven along the upper horizontal edge of the net.

5,615,890
NO BOUNCE NO DUNK RECREATION BALL GAME
John D. Blue, P.O. Box 1992, Tarpon Springs, Fla. 34688-1992
Filed May 16, 1996, Ser. No. 648,726
Int. Cl.⁶ A63B *67/00*
U.S. Cl. 473—469 **9 Claims**

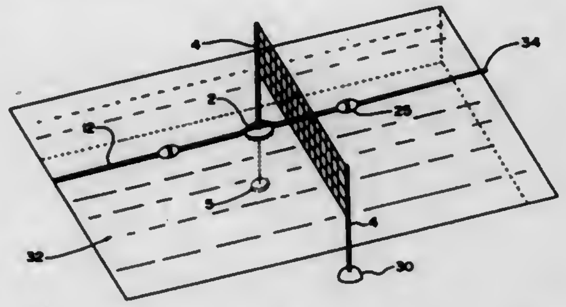


1. A competitive no bounce no dunk recreational ball game assembly in which opposed players return a ball within a prescribed court extending along a horizontal playing surface in opposite longitudinal directions from an apparatus located on the playing surface between the players such that the court is divided into first and second opposed playing areas with the apparatus placed therebetween, the ball game assembly comprising in combination:

rules and regulations for scoring points to win said game;
at least one game ball;
at least one ball striking instrument;
and an apparatus,said apparatus comprising:

a frame having a first angular supporting means for supporting a return to player net in an angular downward position, a second vertical supporting means connected to said angular supporting means for supporting another net in a vertical position above said. angular net wherein the angular and virtical nets form 135 degree downward angles on either side of said vertical net, a plurality of supporting stands, each stand connected to and extending downwardly form an opposite lateral edge of said angular supporting means for supporting said apparatus on a playing surface, a plurality of third supporting means extending downwardly to the playing surface and connected to said vertical supporting means, each third supporting means supporting a common to both opposed players basketball backboard, with at least one hoop and net assembly, said hoop and net dimensioned for said ball, driven by said striking instrument to pass therethrough, each basketball assembly positioned on opposite ends of said virtical net at right angles and above said horizontal net, said game ball being deflectable off said backboards into either opposed playing areas, said vertical frame acts as a fourth supporting means for a common to opposed sides hoop and net assembly positioned in and connected to the center of the top portion of said vertical supporting means.

5,615,891
WATER VOLLEYBALL GAME AND APPARATUS
Brian Pankz, 8414 Intrepid La., Rowlett, Tex. 75088
Filed Jun. 3, 1996, Ser. No. 657,195
Int. Cl.⁶ A63B *71/00*
U.S. Cl. 473—492 **3 Claims**

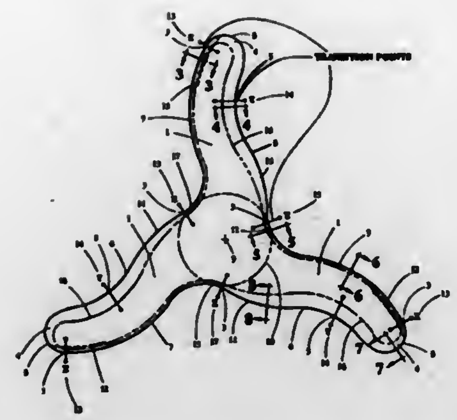


1. A system for supporting a volleyball net across a body of water comprising: a floatation device for floating upon the body of water so as to present a water line across said floatation device and said floatation device having an upper surface above said water line and an under surface below said water line, said floatation device in connection with a vertically oriented support said support in connection with one end of the net, a second support in connection with the other side of said net, said floatation device having a means for securing a line upon said upper surface of said floatation device, said floatation device having a weighted means in connection with an underwater line, said underwater line in connection with said underside of said float, said line of suitable length so that said weighted means does not contact the floor of said pool, said weighted means of sufficient weight to maintain the orientation of said floatation means upon said body of water, and said guide line secured to at least one point outside of said body of water in order to secure said floatation device and said net upon the body of water in a fixed position.

5,615,892
BOOMERANG WITH CONSISTENTLY ACCURATE FLIGHT AND RETURN CAPABILITIES
William L. Miller, 120 S. Rochelle Ave., Lake Alfred, Fla. 33850
Filed Nov. 29, 1995, Ser. No. 564,403
Int. Cl.⁶ A63B *65/08*
U.S. Cl. 473—590 **1 Claim**

1. A boomerang comprising:

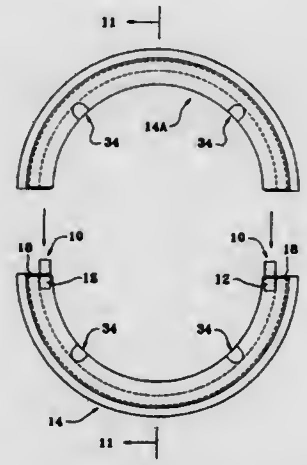
a substantially flat top and bottom side connected by a peripheral edge defining a thickness and forming a peripheral bottom edge where the bottom side meets the peripheral edge and a peripheral top edge where the top side meets the peripheral edge,



a plurality of blades, having a leading edge, trailing edge and outer end, being arranged about a central hub in a radial fashion,

the blades having an airfoil shape defined by a varying the peripheral top and bottom edge configuration wherein the top edge configuration at a central hub portion of the blade on its leading edge has a radius and the bottom edge configuration is substantially 90 degrees, at a point about the periphery distant from the outer end said 90 degree bottom edge configuration changes to an angular shaped bevel and continues for a distance along the periphery towards the outer end, at a point about a periphery of the outer end the radius of the top edge gradually changes to an angled bevel and said bottom edge changes back to a substantially 90 degree configuration, said top edge angled bevel having a width that increases then decreases as one progresses along the trailing edge periphery towards said central hub, and gradually said top edge angled bevel turns into a radius as the periphery of the trailing edge approaches the central hub.

5,615,893
SPLIT FACE MECHANICAL SEALING RINGS AND THEIR USE
Michael P. Reagan, Greenwell Springs, La., assignor to Power Packing Company, Inc., Baton Rouge, La.
Filed Jan. 16, 1996, Ser. No. 585,925
Int. Cl.⁶ F16J *15/34*
U.S. Cl. 277—81 S **20 Claims**

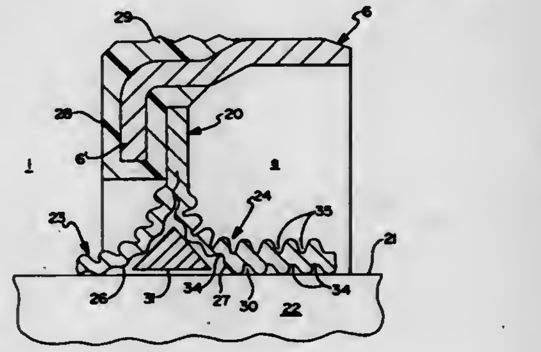


1. A sectioned mechanical sealing ring divided into at least two sealing ring segments, each segment having:

a) an arcuate outer wall portion,
b) a radially extended sealing face,
c) two sealing end surfaces, each sealing end surface being co-engageable with a sealing end surface of another said segment to form an interface between that pair of sealing end surfaces, and
d) an arcuate inner wall portion having an arcuate recess therein traversing and extending laterally on both sides of said interface, said recess being defined in width by a pair of spaced-apart parallel radially extended interior wall faces of a pair of spaced-apart arcuate walls in said segment,

one of each pair of said sealing end surfaces having projecting therefrom an aligning clip disposed between and engaging the interior wall faces of the recess on one side of said interface and extendable into the recess on the other side of said interface to maintain said sealing end surfaces in detachable co-engagement and alignment with each other.

5,615,894
SHAFT SEAL RING AND A METHOD AND A DEVICE OF MANUFACTURING SAME
Michael vom Schemm, Kiel, Germany, assignor to Dichtungstechnik G. Bruss GmbH & Co. KG, Hoisdorf/Hamburg, Germany
Filed Jan. 17, 1996, Ser. No. 588,668
Claims priority, application Germany, Jan. 20, 1995, 195 01 724.212
Int. Cl.⁶ F16J *15/32*
U.S. Cl. 277—134 **10 Claims**



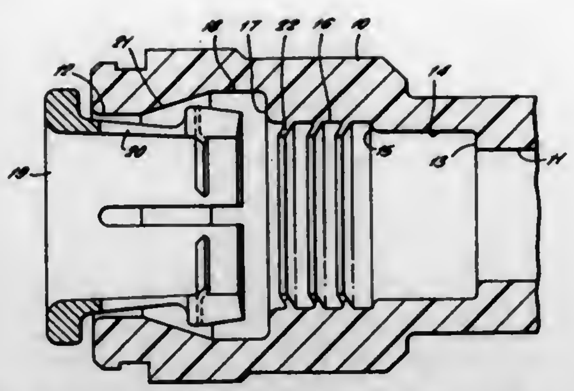
1. A shaft seal, comprising:

a carrier; and

a wafer mounted to the carrier, said wafer comprising a sealing lip and a protective lip each having a shaft-engaging surface formed with an embossed hydrodynamic surface, wherein said protective lip and said sealing lip are formed integrally on said wafer and wherein at least a portion of said embossed hydrodynamic surface formed on said protective lip comprises a surface profile which complements, matches and fits within said embossed hydrodynamic surface formed on said sealing lip as said profile is formed.

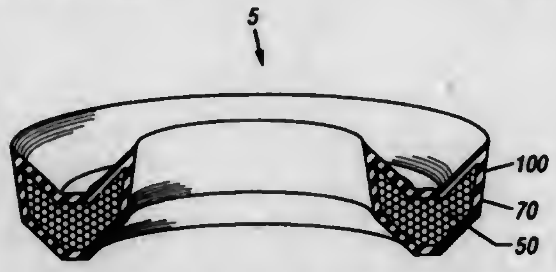
5,615,895
SEAL ARRANGEMENTS
John D. Guest, "IONA", Cannon Hill Way, Bray, Maidenhead, Berkshire, SL6 2EX, England
Filed Dec. 8, 1994, Ser. No. 351,666
Claims priority, application United Kingdom, Dec. 13, 1993, 9325432
Int. Cl.⁶ F16J *15/32;* **F16L** *21/06*
U.S. Cl. 277—208 **3 Claims**

1. A seal arrangement comprising a resilient molded plastic body having a stepped bore open at one end to receive a cylindrical component, a smaller diameter portion remote from said open end in which the cylindrical component is a close fit, a larger diameter portion near said open end, and a plurality of resiliently flexible annular lips molded integrally with said larger diameter portion of



said bore at spaced locations along said larger diameter portion of said bore and extending inwardly of said bore beyond said smaller diameter portion to seal with the cylindrical component inserted in said bore through said open end, said lips being angled inwardly and along said bore toward said open end to receive the cylindrical component, said lips being adapted to flex away from said open end of said bore upon insertion of the cylindrical component to provide a fluid pressure resistant seal with the component.

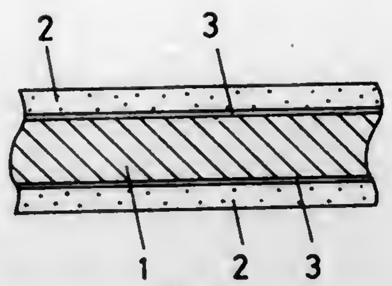
5,615,896
RUBBER ENCAPSULATED VEE RING SEAL
John D. Morvant, 14535 Chrisman, Houston, Tex. 77039
Continuation-in-part of Ser. No. 11,338, Jan. 29, 1993, Pat. No. 5,551,703, which is a continuation-in-part of Ser. No. 950,820, Sep. 24, 1992, Pat. No. 5,306,021, which is a continuation of Ser. No. 512,734, May 21, 1990, abandoned, which is a continuation of Ser. No. 833,690, Feb. 25, 1986, abandoned.
This application Dec. 22, 1993, Ser. No. 171,832
Int. Cl.⁶ F16J *15/10*
U.S. Cl. 277—229 **18 Claims**



1. A seal, for sealing an axially extending, interior inner surface and an axially extending, interior outer surface of an annulus member comprised of:
a knitted wire mesh member; and
an outer coating covering substantially all of said wire mesh member, said outer coating including a first pressure responsive raised sealing surface to form an interference seal with the axially extending, interior outer surface of the annulus and a second pressure responsive raised sealing surface to form an interference seal with the axially extending, interior inner surface of the annulus.

5,615,897
GASKET MATERIAL LAYER INCLUDING CORK, FIBERS, RUBBER, AND A RUBBER CHEMICAL
Hiroaki Akita, Oyamacho, Japan, assignor to U-Sun Gasket Corporation, Shizuoka, Japan
Filed Sep. 15, 1995, Ser. No. 529,157
Claims priority, application Japan, Sep. 19, 1994, 6-250040
Int. Cl.⁶ F16J *15/12*
U.S. Cl. 277—233 **8 Claims**

1. A gasket material comprising:



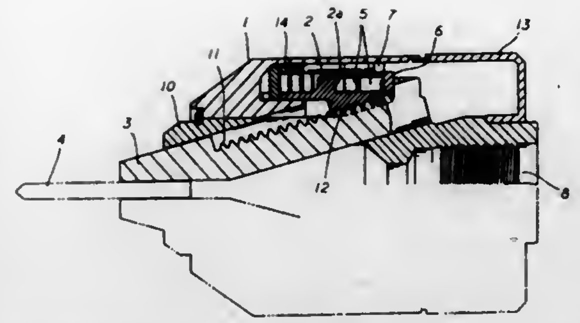
a sheet metal blank having a surface having applied thereon a coating of heat resistant adhesive; and
a coating layer formed on said surface on said adhesive, said coating layer comprising a composition containing proportions of 15 to 25% by weight of fibrous material including a compressible inorganic fiber, 10 to 20% by weight of cork material in fine particles, 30 to 50% by weight of rubber material, and 7 to 13% by weight of rubber chemical.

5,615,898
BEAD SEAL MOTORCYCLE GASKET
James M. Clark, 637 Bangs Ave., Modesto, Calif. 95356, and Ralph E. Cholez, P.O. Box 3985, Sonora, Calif. 95370
Filed Aug. 15, 1995, Ser. No. 515,459
Int. Cl.⁶ F16J *15/12*
U.S. Cl. 277—235 B **7 Claims**

1. A motorcycle engine gasket comprising a flat metallic blank that fits between the engine crankcase and the cylinder barrel of a Harley-Davidson motorcycle, said blank having a layer of rubber coating on the top and bottom surfaces thereof, a large central bore therethrough, a first raised annular rubberized bead on said top surface surrounding said bore, and a corresponding second raised annular rubberized bead on said bottom surface, said first and second beads being provided around the outer perimeter of said blank; a third and fourth raised annular bead provided, respectively and correspondingly, on the top and bottom surfaces of said blank around the perimeter of the inner bore; and a broad raised rubberized area provided on both the top and bottom surfaces of said blank between said raised beads, said area corresponding to potential irregularities where the surfaces of the two attached halves of said Harley-Davidson engine crankcase come together.

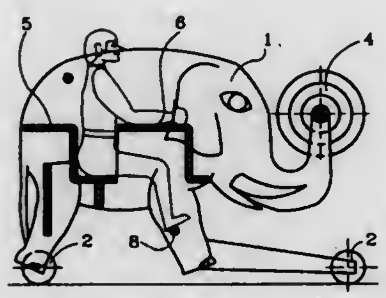
5,615,899
CHUCK APPARATUS
Akira Sakamaki, Ojiya, Japan, assignor to Yukiwa Seiko Kabushiki Kaisha, Niigata-ken, Japan
Filed Aug. 30, 1995, Ser. No. 521,572
Claims priority, application Japan, Aug. 31, 1994, 6-207498; May 31, 1995, 7-134163
Int. Cl.⁶ B23B *31/12*
U.S. Cl. 279—62 **8 Claims**

1. A chuck apparatus in which an internally provided nut member (2) is rotated by rotating a sleeve (1) so that claws (3) threadedly engaged with said nut member (2) by the rotation of the nut member (2) are advanced/retracted for narrowing/expanding a diameter defined therewith and pressingly fastening/releasing a tool (4), characterized in that a rotary member (7) is provided to face said nut member (2); a set of an even number of rolling members (5) are provided in a recess portion (7*a*) formed in said rotary member (7); said rolling members (5) are provided under the condition that said rolling members (5) are in contact with said nut member (2) and a rolling member receiving portion (6) between a



predetermined surface of the nut member (2) and the rolling member receiving portion (6) provided to face the predetermined surface of said nut member (2); the predetermined surface is formed into a slant surface (2*a*); and the rolling members (5) are rollingly rising along the slant surface (2*a*) by rotating said rotary member (7) to thereby press said nut member (2) forwardly.

5,615,900
TOY
Iosif Gaportsin, 820 E. 10 St. Apt. 4J, Brooklyn, N.Y. 11230
Filed Apr. 17, 1995, Ser. No. 425,195
Int. Cl.⁶ A47D *1/08*
U.S. Cl. 280—1.22 **7 Claims**

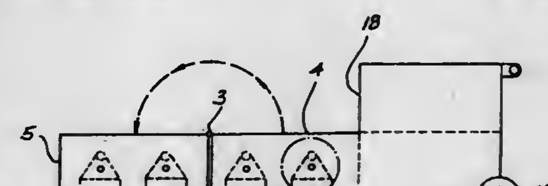


1. A toy, comprising a body part formed by two animal body elements spaced from one another in a transverse direction, each of said body elements having two legs extending downwardly and engaging a ground surface in a first position of the toy and a curved back extending in the first position of the toy upwardly beyond all remaining parts of the toy, each of said body elements also having a nose portion projecting horizontally forwardly in the first position of the toy; and means for connecting said body elements with one another and including two Z-shaped connecting elements each consisting of two horizontal portions which are offset relative to one another in a horizontal direction and in a vertical direction and a vertical portion connecting proximal ends of said horizontal portions with one another, so that in the first position of the toy a user sits on one horizontal portion and places his legs on another horizontal portion of a first one of said connecting elements, while in a second position wherein the toy is turned upside down said curved back engages the ground surface and a user sits on said horizontal portion of a second one of said connecting elements and rocks on said curved back of said body elements, and in a third position wherein the toy is turned 90° and said nose portion engages the ground surface, the user sits on said vertical portion of said first connecting element.

5,615,901
ADJUSTABLE FOOT EQUIPMENT
David J. Piotrowski, 235 W. 56th St., No. 25G, New York, N.Y. 10019
Filed Nov. 2, 1994, Ser. No. 333,374
Int. Cl.⁶ A63C *1/28*
U.S. Cl. 280—7.14 **30 Claims**

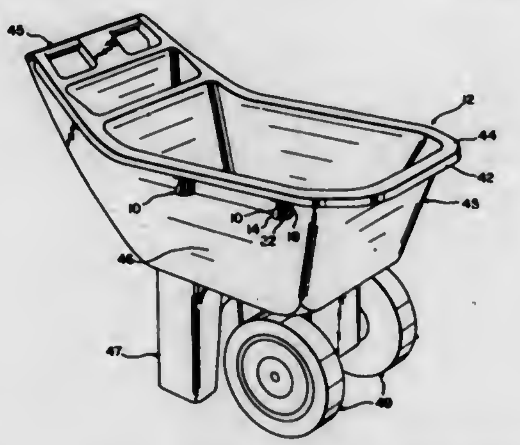
1. Adjustable foot equipment comprising:
a) a boot having a toe end and a heel end for accommodating a foot, said boot having a base portion with a curved bottom surface,
b) substantially rigid support means at said base portion, said support means including a toe portion at the toe end of the boot and a heel portion at the heel end of the boot configured to receive the curved bottom surface of said base portion such that the toe portion and the heel portion of said support means engage said base portion to permit relative rotatable movement between said boot and the toe and heel portion of said support means to selected angular orientations with respect to each other about an axis extending longitudinally of the base portion of said boot, and
c) securing means for locking said support means and said base portion together at one of said selected angular orientations between the toe and heel portions of said support means and said boot.

5,615,902
WHEELED CABINET WITH SELF-LEVELLING REMOVABLE TRAYS
Peter Reurich, 15 The Appian Way, Clareville Beach, NSW 2107, Australia
PCT No. PCT/AU94/00077, § 371 Date Aug. 22, 1995, § 102(e) Date Aug. 22, 1995, PCT Pub. No. WO94/19224, PCT Pub. Date Sep. 1, 1994
PCT Filed Feb. 23, 1994, Ser. No. 507,367
Claims priority, application Australia, Feb. 23, 1993, PL7442
Int. Cl.⁶ B62B *1/16*
U.S. Cl. 280—47.18 **3 Claims**



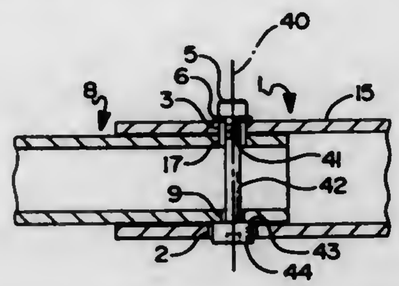
1. A wheeled container comprising:
a cabinet having a first compartment; a second compartment hingedly connected to said first compartment, said second compartment moveable between a closed position, whereby access to said first compartment and said second compartment is prevented, and an open position allowing access to both said first compartment and said second compartment;
tray means having a tray body in which to receive items, side support means extending upwardly from each side of the tray body, a handle joining across said side supports means, and a slot in each of said side support means in the shape of a J or an inverted 7;
projections located on each side of said first and second compartments, whereby the projections pivotally releasably engage in a respective one of said slots, such that each tray is pivotally held between two opposed projections and can pivot around said two projections without interfering with the movement of adjacent tray means or touching the cabinet when the orientation of said wheeled container is altered, thus keeping the tray bodies in a substantially horizontal position;
wheels located at or adjacent the back bottom edge of said cabinet;
a handle located at or adjacent the top back edge of said cabinet; and
roller elements located on said handle to allow the cabinet to easily move on said roller elements when said wheeled container is laid over.

5,615,903
UTILITY CART HAVING TOOL HANDLE HOLDING DEVICE
Kenneth J. Spear, Vienna; Frank G. Czerwinski, Parkersburg, and Bryan S. Ritchie, Davisville, all of W. Va., assignors to O. Ames Co., Parkersburg, W. Va.
Filed Jan. 4, 1996, Ser. No. 584,208
Int. Cl.⁶ B62B *5/00; 1/26*
U.S. Cl. 280—47.19 **9 Claims**



6. A cart having a tool handle holding device for supporting a portion of a tool handle on said cart, said tool handle holding device comprising:
handle retaining structure constructed and arranged to receive the portion of the tool handle and releasably retain the portion of the tool handle on said cart, said handle retaining structure being integrally molded in a molded position with said cart, said handle retaining structure having a receiving portion with a lateral opening and an elastically deformable retaining portion for retaining the portion of the tool handle, said handle retaining structure being constructed and arranged to be pivotable with respect to said cart between said molded position and an operative position in which said handle retaining structure is capable of receiving and releasably retaining the portion of the tool handle; and
fastening structure constructed and arranged to secure said handle retaining structure with respect to said cart in said operative position.

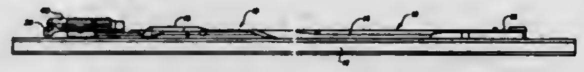
5,615,904
DRAWBAR COUPLER FOR AN AUTOMOTIVE VEHICLE HITCH RACK
Donn S. Van Dusen, Loma Rica, and Douglas P. Gibbs, Yuba City, both of Calif., assignors to Advanced Accessory Systems, LLC, Port Huron, Mich.
Continuation of Ser. No. 392,409, Feb. 22, 1995, abandoned, which is a continuation of Ser. No. 144,155, Oct. 27, 1993, abandoned. This application Dec. 18, 1995, Ser. No. 575,113
Int. Cl.⁶ B60R *9/10;* **B60D** *1/58*
U.S. Cl. 280—506 **4 Claims**



1. An automotive vehicle rack for connection to a tow hitch of a vehicle, which tow hitch has a receiver, comprising the combination of:
(A) article support structure for an article to be carried by the rack;
(B) a coupler for connecting the rack to said tow hitch, said coupler including:
(i) a drawbar that telescopes within said tow hitch receiver to provide an opposed pair of overlapping receiver and drawbar surfaces, said drawbar and tow hitch having registerable bolt holes, the relative locations of the bolt holes being such that when the drawbar is telescoped within the tow hitch receiver, at least one telescoped position exists in which the bolt hole in the tow hitch receiver is aligned with the bolt hole in the drawbar with overlapping receiver and drawbar surfaces in contact with one another; and
(ii) a tightener which normally applies force to maintain said receiver and drawbar overlapping surfaces in contact with one another but selectively allows disengagement thereof, said tightener comprising:
(a) a tail whose diameter is smaller than the diameter of said bolt holes;
(b) a mid-section, located between a shoulder and said tail, whose diameter is also smaller than the diameter of the aligned bolt holes and which has an axis extending for its length;
(c) a shoulder disposed at the end of the tightener opposite the tail, which shoulder has a diameter larger than an aligned bolt hole of the tow hitch receiver but smaller than the aligned bolt hole in the corresponding drawbar so that said shoulder can engage a first drawbar surface when said mid-section extends through said aligned bolt holes;
(d) a head attached to the shoulder, which head has an exterior side surface;
(e) at least one nut coupled coaxially and tightened to the tail such that when said mid-section extends through the aligned bolt holes of the overlapped receiver and drawbar, said nut engages a second coupler surface and a force is applied from the nut to said surface and a force is applied between said shoulder and the first drawbar surface to maintain the overlapped receiver and drawbar surfaces in contact with one another;

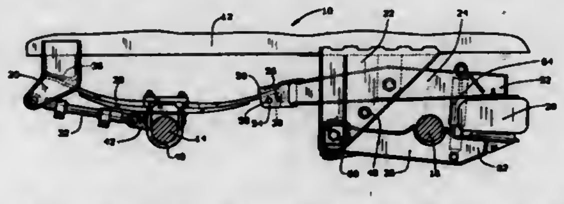
(f) the diameter of the bolt hole in the tow hitch receiver aligned with a corresponding bolt hole in the drawbar being larger than said shoulder and said head to thereby form a recess within said drawbar within which said shoulder and head reside when said shoulder is in engagement with said first drawbar surface; said recess generally encompassing said exterior side surface of said head and being configured to be sufficiently closely spaced to said head exterior surface, to prevent said head exterior surface from being grasped by common removal tools;
(C) an arm extending between and secured to said article support structure and said coupler.

5,615,905
SYSTEM FOR MODIFICATION OF THE VIBRATIONAL PROPERTIES OF A SKI
Premek Stepanek, Garmisch-Partenkirchen, and Ludwig Wagner, Farchant, both of Germany, assignors to Marker Deutschland GmbH, Germany
Filed Nov. 23, 1994, Ser. No. 344,563
Claims priority, application Germany, Nov. 24, 1993, 93 17 997.9 U
Int. Cl.⁶ A63C *5/07*
U.S. Cl. 280—602 **10 Claims**



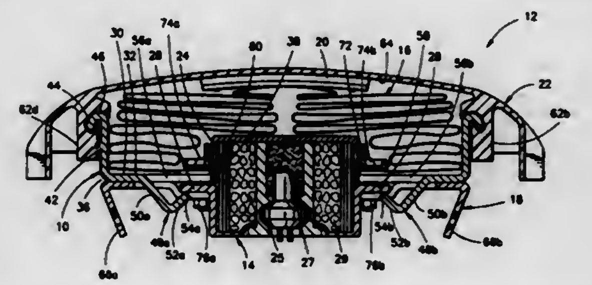
1. A vibration modifying system for a ski, the vibration modifying system comprising:
a support means having a fixed end attachable to a ski and a free end portion having an elongated recess,
a holding means, attachable to the ski, for receiving the free end portion of the support means, said free end portion movable longitudinally within said holding means,
an hydraulic cylinder fixed to the ski within the elongated recess of said support means, and
a piston movable within the hydraulic cylinder and having a piston rod connected in a pivotal fashion with the free end of said support means.

5,615,906
TANDEM AXLE SUSPENSION WITH LEAF SPRING GUIDED FORWARD AXLE SUSPENSION AND TORQUE AND TORQUE BEAM GUIDED REAR AXLE SUSPENSION CONNECTED BY A LOAD EQUALIZING BOLSTER BEAM
John E. Raidel, Sr., Rte. 9, Box 400-M, Springfield, Mo. 65804
Continuation of Ser. No. 71,470, Jun. 3, 1993, Pat. No. 5,458,360. This application Oct. 10, 1995, Ser. No. 541,310
Int. Cl.⁶ B60G *5/00*
U.S. Cl. 280—686 **20 Claims**



1. A suspension system for a vehicle having a chassis, a forward axle and a rearward axle, the system comprising:
a forward hanger connected to the vehicle chassis;
a rearward hanger connected to the vehicle chassis;
a leaf spring having opposite forward and rearward ends, the forward end being mounted to the forward hanger;
a forward axle mounted on the leaf spring;
a radius rod connected between the forward axle and one of the forward and rearward hangers;
a bolster beam mounted on the rearward hanger, the bolster beam having opposite forward and rearward ends with the rearward end of the leaf spring being mounted to the forward end of the bolster beam;
a spring mounted to the rearward end of the bolster beam;
a torque beam having opposite forward and rearward ends with the forward end being mounted to the rearward hanger and the spring being mounted between the torque beam and the bolster beam; and,
a rearward axle rigidly secured to the torque beam.

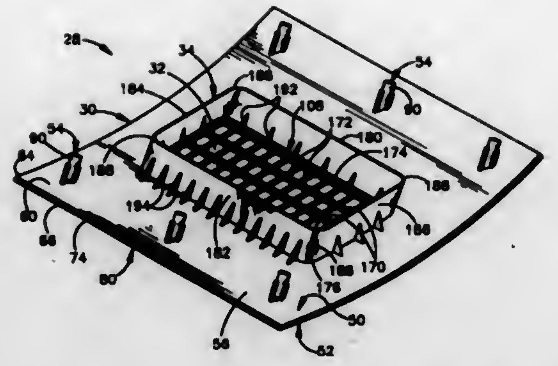
5,615,907
AIRBAG INFLATOR RETENTION TABS
Randy M. Stanger, Hooper, Utah, assignor to Morton International, Inc., Chicago, Ill.
Filed Jun. 25, 1996, Ser. No. 670,007
Int. Cl.⁶ B60R *21/16*
U.S. Cl. 280—728.2 **15 Claims**



1. A module housing for mounting an airbag inflator within an airbag module, the airbag inflator having a cylindrical sidewall and a inflator flange extending radially outwardly from the cylindrical sidewall, the module housing comprising:
A) a module baseplate having a bottom surface and defining an inflator-receiving aperture sized to receive the cylindrical sidewall of the airbag inflator with the inflator flange of the airbag inflator butting against the bottom surface of the module baseplate; and
B) a plurality of resiliently bendable retention tabs extending from the bottom surface of the module baseplate around the inflator-receiving aperture for deflecting and then clamping the inflator flange against the bottom surface of the module baseplate when the airbag inflator is inserted into the inflator-receiving aperture and wherein each retention tab has an upper tab portion extending downwardly from the bottom surface of the module baseplate and radially inwardly towards the inflator-receiving aperture to a lower tab portion extending upwardly from the upper tab portion and also radially inwardly toward the inflator-receiving aperture to a distal end of the retention tab, the distal ends of each of the retention tabs spaced apart from the bottom surface of the module baseplate less than a thickness of the inflator flange.

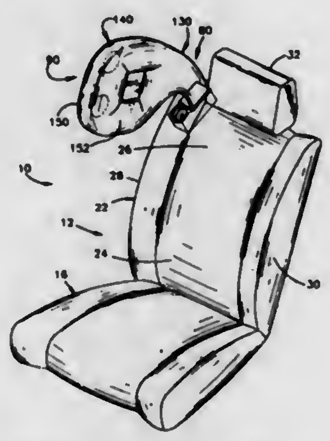
5,615,908
DEPLOYMENT DOOR ASSEMBLY
Jack A. Phillion, Shelby Township; Jamie L. Klomhaus, North St.; Gary M. Meyers, East China, and Richard J. Barton, Fort Gratiot, all of Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio, and Huron Plastics Group, Inc., Port Huron, Mich.
Filed Jun. 7, 1995, Ser. No. 478,711
Int. Cl.⁶ B60R *21/20*
U.S. Cl. 280—728.3 **6 Claims**

3. Apparatus for covering an inflatable occupant restraint contained in a canister in a vehicle, said apparatus comprising:



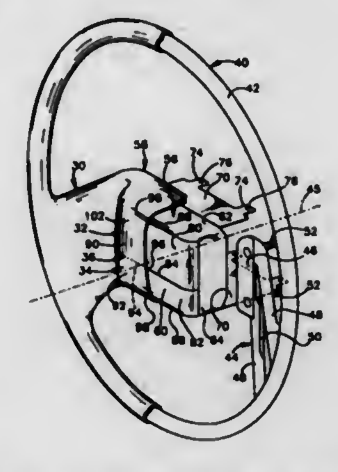
a part having a panel portion, first wall portions, second wall portions, and mounting portions;
said panel portion comprising means for closing an opening in the vehicle, said panel portion having a peripheral edge surface and including a deployment door spaced fully from said peripheral edge surface;
said first wall portions extending across said deployment door and projecting inward from said panel portion;
said second wall portions surrounding said deployment door and projecting inward from said panel portion;
said mounting portions comprising means for mounting said part on the vehicle at locations spaced from the canister, said mounting portions projecting inward from said panel portion at locations between said second wall portions and said peripheral edge surface;
said mounting portions comprising mounting bosses projecting inward from said panel portion along respective central axes, said axes being parallel to each other and inclined from a vertical line at a first angle, each of said first wall portions being inclined from a vertical plane at a second angle equal to said first angle.

5,615,909
VEHICLE SAFETY APPARATUS
Pongdet P. Wipasuramonton, Rochester, and Louis R. Brown, Oxford, both of Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio
Filed Dec. 27, 1995, Ser. No. 580,439
Int. Cl.⁶ B60R 21/22
U.S. Cl. 280—730.2 **17 Claims**



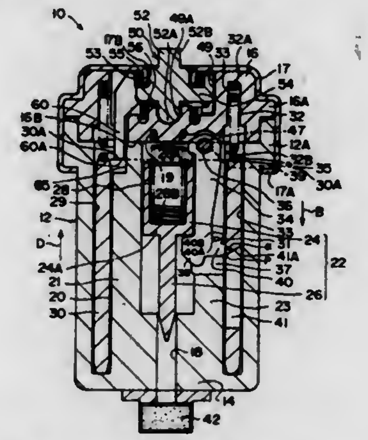
1. A vehicle safety apparatus comprising:
a seat for supporting an occupant of the vehicle in a seated position with the occupant's head disposed adjacent to a side structure of the vehicle, said seat including a seat bottom portion and a seatback;
a housing;
an inflatable vehicle occupant protection device in said housing for, when inflated, helping to protect the occupant of the vehicle, said inflatable device having a body portion and an elongate tubular neck portion which lie adjacent to the occupant's head and neck when inflated for engagement by the occupant's head and neck;
an inflator for directing inflation fluid into said inflatable device to inflate said inflatable device;
means for sensing a side impact to the vehicle of a magnitude for which inflation of said inflatable device is desired to help protect the vehicle occupant and for actuating said inflator to inflate said inflatable device in response to sensing said side impact to the vehicle; and
support means for supporting said housing on said seatback for inflation of said inflatable device above the vehicle occupant's shoulder and between the vehicle occupant's head and the vehicle side structure;
said neck portion of said inflatable device when inflated extending from said housing and having a first axis extending through said neck portion, said body portion of said inflatable device when inflated extending from said neck portion and having a second axis extending through said body portion at an angle to said first axis;
said axis of said neck portion of said inflatable device extending forward at an angle of about 65° above the horizontal and at an angle of about 3° outward from a front-to-back axis of the vehicle when said inflatable device is inflated and said seatback is reclined at an angle of about 25° from the vertical.

5,615,910
APPARATUS FOR RESTRAINING A DRIVER OF A VEHICLE
Glen P. Margetak; Michael E. Heidorn, both of Mesa, and Eric W. Wright, Scottsdale, all of Ariz., assignors to TRW Inc., Lyndhurst, Ohio
Filed Dec. 14, 1995, Ser. No. 572,096
Int. Cl.⁶ B60R 21/22
U.S. Cl. 280—731 **25 Claims**



1. Apparatus for use with a vehicle steering column, said apparatus comprising:
a steering wheel unit comprising a plurality of parts which are interconnected separately from the steering column, said parts including a vehicle steering wheel structure, an inflatable vehicle occupant restraint, an inflator housing, and cover means for covering said restraint and said inflator housing on said steering wheel structure;
said steering wheel structure comprising a rim, at least one spoke, and a hub plate, said hub plate comprising means for supporting said rim and said spoke for rotation about an axis, said hub plate further comprising reaction plate means for supporting said inflator housing on said steering wheel structure;
said cover means comprising inner and outer cover parts which respectively include inner and outer deployment door layers extending over said restraint, each of said cover parts being connected directly to said steering wheel structure.

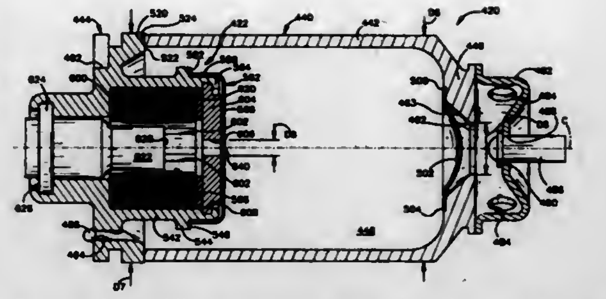
5,615,911
MECHANICAL IGNITION SENSOR
Hiroatsu Amano, Aichi-ken, Japan, assignor to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho, Aichi-ken, Japan
Filed Jul. 20, 1995, Ser. No. 504,315
Claims priority, application Japan, Aug. 1, 1994, 6-180086
Int. Cl.⁶ B60R 21/32
U.S. Cl. 280—734 **20 Claims**



1. A mechanical ignition sensor comprising:
an ignition pin moving in an axial direction of said mechanical ignition sensor to ignite an ignitor member;
an inertial mass body moving by not less than a predetermined inertial force thereof; and
a trigger lever engaging with said ignition pin to hold said ignition pin at a position separated from the ignitor member, when said inertial mass body moves, said trigger lever rotating in a direction of moving away from said ignition pin so that said ignition pin can move,
wherein, in a portion in which said inertial mass body and said trigger lever abut each other, an abutment surface of said trigger lever is formed as a curved surface along a locus of rotation of a leading end portion of the abutment surface, and an angle of inclination of an abutment leading end of said inertial mass body with respect to the axial direction is set small such that only the abutment leading end of said inertial mass body abuts against the abutment surface of said trigger lever.

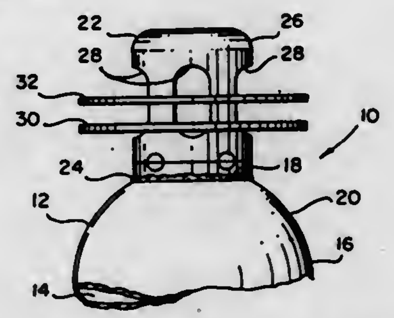
5,615,912
INFLATOR FOR AIR BAG
John P. O'Loughlin, Mesa, and James R. Hocking, Chandler, both of Ariz., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio
Filed Oct. 5, 1995, Ser. No. 539,591
Int. Cl.⁶ B60R 21/26
U.S. Cl. 280—737 **3 Claims**

1. An apparatus for inflating an air bag, said apparatus comprising:
a wall having a mounting portion and a tubular portion with a longitudinal central axis;
a cup fixed to said tubular portion of said wall and having a rupturable base portion extending across a first axial end of said tubular portion of said wall, said wall and said cup cooperating to define a combustion chamber;
an ignitable material supported by said tubular portion of said wall and being located in said combustion chamber;



an actuatable igniter supported by said mounting portion of said wall at a second axial end of said tubular portion, said igniter having an end located within the combustion chamber and, when actuated, igniting said ignitable material to rupture said base portion of said cup to release combustion products from said combustion chamber; and
a retainer for holding said ignitable material in said tubular portion of said wall and having an opening through which said combustion products flow;
said retainer being fixed to said wall by an axial end portion of said tubular portion which is deformed over a peripheral edge of said retainer, said opening in said retainer being located along said axis of said tubular portion of said wall.

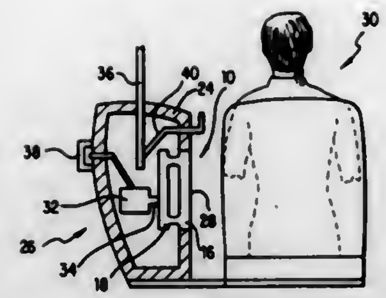
5,615,913
HYBRID INFLATOR WITH INTEGRAL DIFFUSER
Joseph D. Francis, and Daniel L. Steimke, both of Ogden, Utah, assignors to Morton International, Inc., Chicago, Ill.
Filed Feb. 6, 1996, Ser. No. 597,598
Int. Cl.⁶ B60R 21/28
U.S. Cl. 280—740 **10 Claims**



1. In an elongated, substantially, cylindrical, inflator having a longitudinal axis and extending from a first end to a second end and having a gas discharge outlet diffuser assembly at one of said first and second ends, said diffuser assembly comprising a generally cylindrical cap portion having a plurality of openings through which a non-symmetrical output flow of air bag inflation gas is dispensed when said inflator is initiated,
the improvement wherein said diffuser assembly includes at least one diffuser ring positioned on said cylindrical cap portion over said openings to straighten and direct the flow of gas directly out of said diffuser assembly.

5,615,914
INFLATABLE METAL BLADDERS FOR AUTOMOBILE PASSENGER PROTECTION
Lyle D. Galbraith, Redmond, and John R. Italiane, Seattle, both of Wash., assignors to Olin Corporation, Redmond, Wash.
Filed Jan. 17, 1995, Ser. No. 373,333
Int. Cl.⁶ B60R 21/16
U.S. Cl. 280—743.1 **4 Claims**

1. An air bag assembly for a motorized vehicle, comprising:

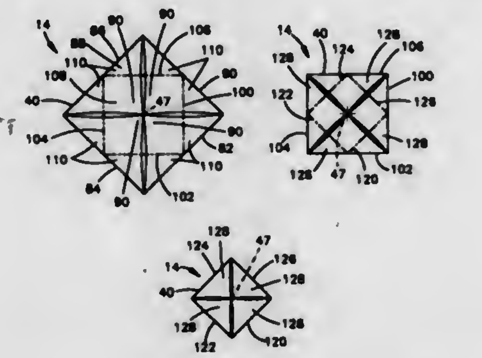


an inflatable metal bladder that includes a first metal sheet joined to a second metal sheet with an inflatable separation disposed therebetween, said respective first metal sheet and second metal sheet having a metal thickness of from 0.1 millimeter to 0.75 millimeter, wherein said first metal sheet forms a portion of a door panel of said motorized vehicle;

a gas generator that generates a gaseous stream when actuated; and

a conduit to direct said gaseous stream to said inflatable metal bladder thereby inflating said metal bladder.

5,615,915
AIR BAG FOLDING METHOD
David G. Magoteaux, Gilbert, Ariz., assignor to TRW Inc., Lyndhurst, Ohio
Filed May 6, 1996, Ser. No. 643,576
Int. Cl.^{6} B60R *21/16*
U.S. Cl. 280—743.1 **12 Claims**



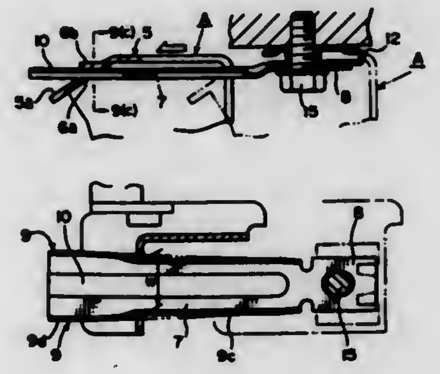
1. A method of folding an inflatable vehicle occupant protection device having a panel structure and an inflation fluid inlet opening, said method comprising the steps of:

placing the protection device in a square configuration, said square configuration being bounded by four side edges of a square panel layer which overlies the inlet opening;

pivoting four corner portions of the protection device inward about four corresponding fold lines to place the protection device in a smaller square configuration bounded by said fold lines; and

repeating said pivoting step to place the protection device in a successively smaller square configuration each time said pivoting step is repeated.

5,615,916
SHOCK ABSORBING APPARATUS FOR STEERING COLUMN
Isao Fujiu, and Mitsuo Yabutsuka, both of Kiryu, Japan, assignors to Kabushiki Kaisha Yamada Seisakusho, Gunma-ken, Japan
Filed Jun. 21, 1995, Ser. No. 493,072
Claims priority, application Japan, Aug. 10, 1994, 6-206208
Int. Cl.^{6} B62D *1/19*
U.S. Cl. 280—777 **8 Claims**



1. A shock absorbing apparatus for a steering column for absorbing a shock applied to the steering column, comprising:

an energy absorbing member which is immovably fixed to a vehicle body; and

a bracket mounted on said energy absorbing member and adapted to move together with the steering column, an inclined surface being formed at an end of a mounting and fixing portion of said bracket, a crushing through-hole portion being formed in the inclined surface, and said crushing through-hole portion being capable of absorbing the shock as said crushing through-hole portion relatively moves with respect to said energy absorbing member,

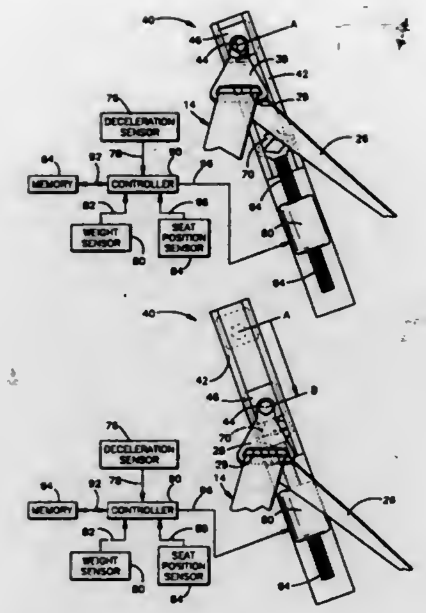
wherein said crushing through-hole portion includes a horizontally crushing through-hole portion including horizontally spaced opposite sides thereof and a supporting through-hole portion including vertically spaced opposite sides thereof, said energy absorbing member is provided with a main portion and a pair of crushable abutment portions formed respectively on opposite sides of said main portion, said energy absorbing member is disposed by being passed through said crushing through-hole portion, and said horizontally crushing through-hole portion normally abuts against an inclined portion of each of said crushable abutment portions in a state in which said supporting through-hole portion abuts against said main portion of said energy absorbing member, while during the occurrence of the shock said horizontally crushing through-hole portion moves while crushing said abutment portions and said supporting through-hole portion slides along said main portion.

5,615,917
APPARATUS FOR USE IN A VEHICLE OCCUPANT RESTRAINT SYSTEM
Barney J. Bauer, Fenton, Mich., assignor to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio
Filed Nov. 28, 1994, Ser. No. 345,305
Int. Cl.^{6} B60R *22/20*
U.S. Cl. 280—806 **21 Claims**

1. An apparatus for use in a vehicle having a vehicle seat and seat belt webbing extendable around an occupant in the vehicle seat, said apparatus comprising:

webbing guide means for guiding the seat belt webbing;

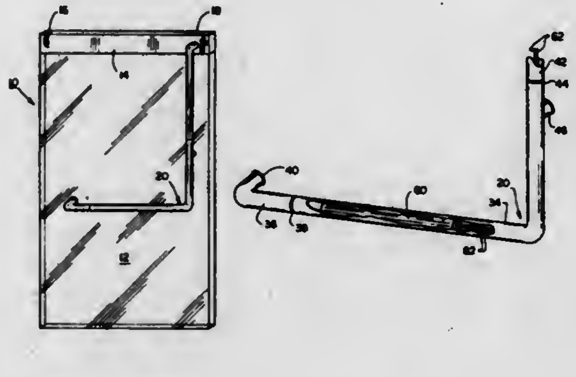
supporting means for supporting said webbing guide means for movement;



first sensing means for sensing at least one characteristic of an occupant in the vehicle seat and for providing a signal indicative of said occupant characteristic; and

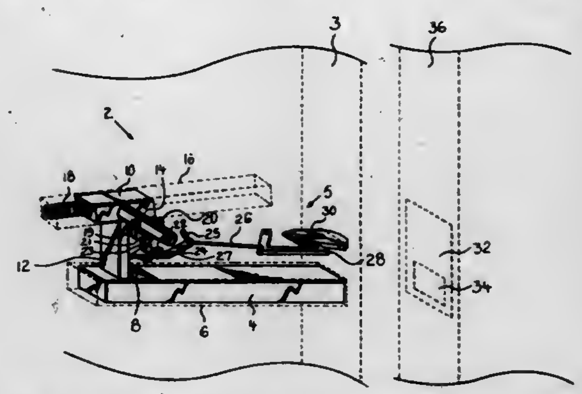
actuatable means actuatable in response to a condition indicative of a vehicle collision for causing said webbing guide means to move to a position dependent upon said signal indicative of said occupant characteristic.

5,615,918
GLASS DOOR RELEASE SYSTEM
W. Stuart Ferrell, 1244 Lanier Rd., Martinsville, Va. 24112
Filed Dec. 15, 1994, Ser. No. 356,855
Int. Cl.^{6} E05B *65/10*
U.S. Cl. 292—92 **15 Claims**



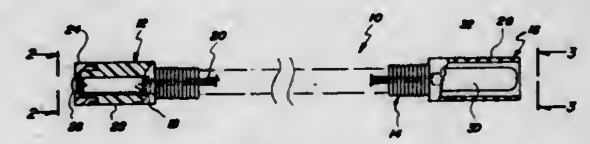
1. A door comprising:
(a) a frameless glass panel;
(b) a lock housing on one edge of said panel;
(c) a handle mounted on said panel, said handle including a conductive inner segment and an end segment extending from said inner segment to said lock housing;
(d) a sensor circuit responsive to variations in capacitance at said conductive inner segment in electrical communication with said conductive inner segment;
(e) non-conductive spacers to insulate said conductive inner segment from said end segment; and
(f) a lock connected in said circuit, said lock being switchable between a locked state and an unlocked state by a change in current flow within said circuit.

5,615,919
DEADBOLT EXTENDER
Brandon C. Ivey, 4587 Shady Oaks La., Edgewater, Fla. 32141
Filed Sep. 28, 1995, Ser. No. 537,587
Int. Cl.^{6} E05B *63/20*
U.S. Cl. 292—332 **12 Claims**



1. A deadbolt extender comprising a tongue body track, a tongue body reciprocating within said tongue body track, a first means of urging said tongue body towards an extension end of said tongue body track, a tongue attached to said tongue body, a deadbolt, a deadbolt track, said tongue engaging said deadbolt, said deadbolt reciprocating within said deadbolt track, said tongue body track diverging from said deadbolt track whereby the divergence of said tongue body track from said deadbolt track causes said tongue to disengage from said deadbolt at a predetermined location along the length of said deadbolt track, and a release mechanism engaged with said tongue body whereby said tongue body may be releasably held against the influence of said first means.

5,615,920
ILLUMINATED MAGNETIC PICKUP TOOL
John B. O'Kane, 238 Jefferson St., Belmont Hills, and Phillip S. Geary, 10 Montgomery Ave., Apt. D-4, Bala Cynwyd, both of Pa. 19004
Filed Jul. 6, 1995, Ser. No. 498,976
Int. Cl.^{6} B25J *15/06*
U.S. Cl. 294—65.5 **1 Claim**



1. An illuminated magnetic pickup tool comprising:

a handle means for being grasped and manipulated by an individual;

an elongated stanchion projecting from the handle means and terminating in a free distal end spaced therefrom;

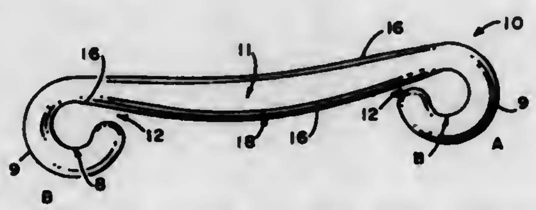
an illuminated magnetic attraction means coupled to the free distal end if the elongated stanchion for illuminating and magnetically coupling with an object, the handle means operating to receive and support a battery which can be electrically communicated with the illuminated magnetic attraction means, the handle means comprising a hollow handle body within which a battery can be positioned and electrically coupled to the illuminated magnetic attraction means;

a removable cap threadedly coupled to the handle body;

a switch mounted relative to the handle body and positioned in electrical communication with the illuminated magnetic attraction means, the illuminated magnetic attraction means comprising a cylindrical magnet secured to a free distal end of the elongated stanchion, the elongated stanchion comprising a coil spring projecting from the handle means and coupling with the illuminated magnetic attraction means, the coil

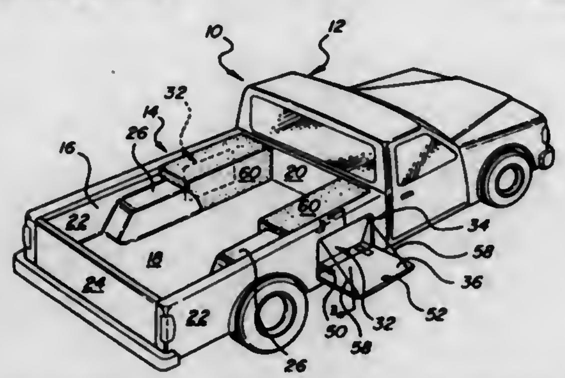
spring being formed of a substantially ductile material permitting selective deformation of the elongated stanchion into a desired shape, whereby the shape is then retained by the ductile material of the coil spring;
a light bulb mounted within the cylindrical magnet and positioned in electrical communication with the switch.

5,615,921
ERGONOMIC SHOPPING BAG HANDLE
Eugene Marley, and Gerhard Hofmann, both of 1157 Highland Ave., Rochester, N.Y. 14620
Filed Sep. 5, 1995, Ser. No. 523,711
Int. Cl.⁶ B65D *33/06*
U.S. Cl. 294—170 **6 Claims**



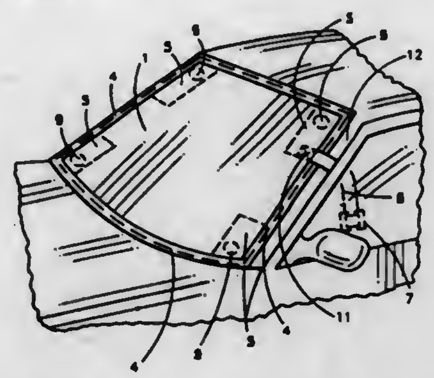
1. A carrier for shopping bags having handles, comprising: a generally cylindrical body having a substantially circular cross-section throughout its length, said body having an underside that is a substantially convex arc, said body being formed into an eye-loop at each end of said body, each of said eye-loops having an end positioned proximate said body to form a gap wide enough to easily accommodate a shopping bag handle while also minimizing the risk of accidental separation of a shopping bag handle from said eye-loops, said body further having a central axis that passes substantially through said eye-loops.

5,615,922
VEHICLE WITH SIDE ACCESSIBLE CARGO BED AND STORAGE COMPARTMENTS
Raymond W. Blanchard, White Lake, Mich., assignor to Roamer Corporation, Auburn Hills, Mich.
Filed Mar. 29, 1996, Ser. No. 624,177
Int. Cl.⁶ B60R *11/06*
U.S. Cl. 296—37.6 **15 Claims**



1. A vehicle having a bed defining a cargo carrying space, the bed comprising a floor and first and second spaced, parallel side walls, each side wall comprising inner and outer spaced panels, the vehicle characterized in that the bed further comprises:
at least one opening passing through the inner and outer panels of at least one of the side walls;
frame means disposed within the opening adjacent the periphery thereof and extending between the inner and outer panels of the one side wall; and
door means disposed adjacent the opening and movable between a closed position and an open position.

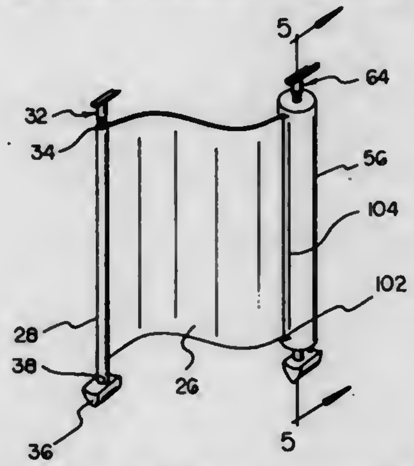
5,615,923
COVER FOR VEHICLE WINDOW
Donald T. Madison, 1209 Park Green Pl., Winter Park, Fla. 32789
Filed Sep. 1, 1995, Ser. No. 523,496
Int. Cl.⁶ B60J *3/00*
U.S. Cl. 296—95.1 **7 Claims**



1. A windshield protective cover for being attached to the exterior of a front vehicle window and a rear vehicle window comprising:
a flexible cover sized to fit over an exterior of front and rear windows of a vehicle;
hook and loop fasteners on interior surface edges of the flexible cover for attaching and detaching to mateable hook and loop fasteners attached to the exterior of the vehicle front and rear windows;
a first flexible strap having one end sewn to the flexible cover and a second end;
a first buckle attached to the second end by a sewn loop formed from the second end of the first flexible strap, the first buckle being inserted into an interior compartment of the vehicle;
a first width adjustment fastener strip attached to an upper middle interior surface of the flexible cover; and
a second width adjustment fastener strip attached to a lower middle interior surface of the flexible cover, wherein the first and the second width adjustment fastener strips allow for middle portions of the flexible to be folded when fitting the flexible cover over different sized windows.

5,615,924
WINDSHIELD COVERING SYSTEM
Richard D. Owen, 46 Mountain Dr., Pocatello, Id. 83204
Filed Mar. 19, 1996, Ser. No. 618,166
Int. Cl.⁶ B60J *3/02*
U.S. Cl. 296—95.1 **9 Claims**

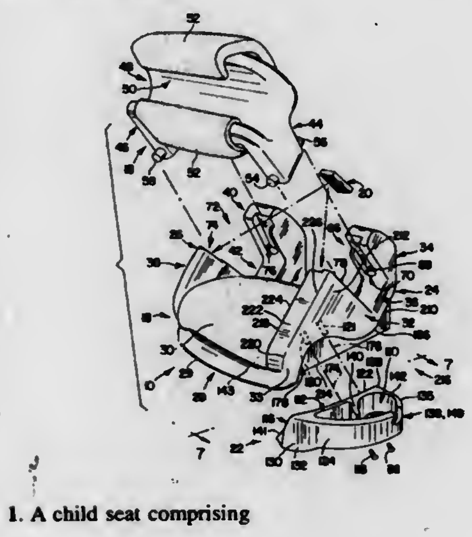
1. A new and improved windshield covering system for protect-



ing an interior of the vehicle and the windshield exterior comprising in combination:

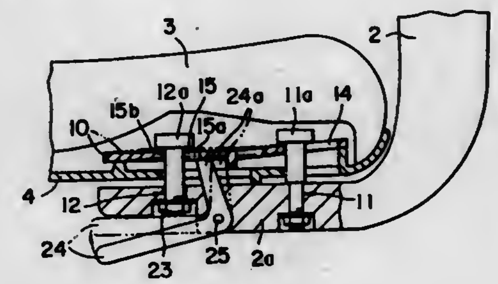
an elongated flexible covering having a first end, a second end and an interior surface being capable of lying adjacent to and covering an exterior surface of a windshield;
a retaining rod having the first end of the covering being fixedly attached thereto, the retaining rod having a coupler at one end and a tip member at another end;
a cylindrical roller mechanism having an axle rod therein and projecting from the roller mechanism, the axle rod being positionable through the roller mechanism and having an internal spring around a portion of the rod and attached thereto, the internal spring wrapping around that portion of the rod being contained within the roller mechanism, the roller mechanism having the second end of the covering attached thereto;
a cylindrical housing for the roller mechanism with a top end of the axle rod being rotatably attached within the housing, another end of the axle rod being fixedly attached to another end of the housing, the housing having a top arm having a coupler at one end and threadedly attached within the housing at another end, the housing having a lower recoil spring being inserted within a tip member at one end and within the housing at another end;
the coupler of the retaining rod and the coupler of the housing each having a head member being supported by a hollow base, each base having a recoil spring positioned within the base for height adjustment;
an elongated slot being positioned through the housing and extending about 90 percent of a length of the housing, the slot being capable of receiving the second end of the covering therethrough for attaching to the roller mechanism within the housing, the slot having an ice scraping member projecting from a vertical edge thereof; and
the covering capable of being wound around the roller mechanism being contained within the housing when in a closed position, the covering capable of being passed over the exterior of the windshield and two A-pillars of a vehicle frame, the covering being capable of wrapping completely around the two A-pillars for positioning of the retaining rod and housing within the interior of the vehicle, the covering being in use allows each tip end to be positioned between the dashboard and an interior surface of the windshield, while each coupler being positioned adjacent an upper interior frame member of the windshield.

5,615,925
ARTICLE HOLDER FOR CHILD SEAT
James M. Kain, Tipp City, Ohio, assignor to Cosco, Inc., Columbus, Ind.
Filed Sep. 26, 1995, Ser. No. 534,233
Int. Cl.⁶ B60N *2/28*
U.S. Cl. 297—188.01 **43 Claims**



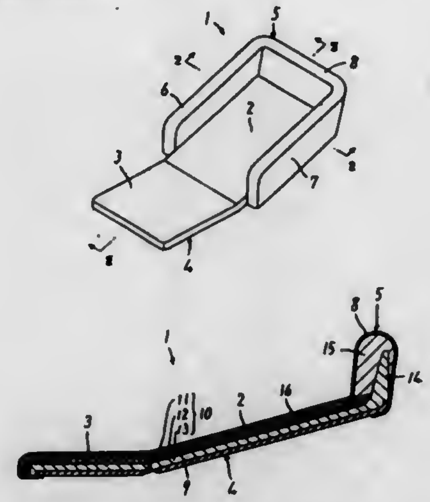
1. A child seat comprising
a seat including a left side wall, a right side wall positioned to lie in spaced-apart relation to the left side wall, and a seat bottom therebetween, one of the left and right side walls including an inner panel abutting the seat bottom, an outer panel spaced apart from and connected to the inner panel, and a downwardly-opening, article holder-receiving mounting chamber defined between the inner panel and outer panel, the inner panel having a bottom edge and the outer panel having a bottom edge that is vertically spaced from the bottom edge of the inner panel to define a side access port into the downwardly-opening, article holder-receiving mounting chamber,
an article holder, and
means for detachably connecting the article holder to the seat to position the article holder adjacent to the side access port.

5,615,926
CHAIR WITH REMOVABLE ARMREST
Hiroshi Kanai; Hideo Nishimura; Atsuo Okamoto, and Mitsunobu Choda, all of Kamakura, Japan, assignors to Uchida Yoko Co., Ltd., Tokyo, Japan
Division of Ser. No. 231,160, Apr. 22, 1994, Pat. No. 5,513,898. This application Jan. 23, 1996, Ser. No. 590,200
Claims priority, application Japan, May 12, 1993, 5-24565
Int. Cl.⁶ A47C *7/54*
U.S. Cl. 297—411.27 **2 Claims**



1. A chair comprising:
a seat having a seat cover on its underside, said seat cover having an inside surface which has a left side and a right side;
mounts provided on the left and the right sides of the inside surface of said seat cover;
armrests having bases;
positioning pins, each of which is inserted through a base of an armrest and has a rod and a head which are above the upper surface of the respective base;
each of said mounts including a support hole for receiving a fastening member, a pin-receiving hole through which a head of a said positioning pin is inserted, and a slit which is in communication with said pin-receiving hole, said slit having a rear end which has a width which closely receives a rod of a positioning pin;
L-shaped levers each having a first end and a second end and being arranged so that upward movement of the first end causes the second end to push up on the underside of a mount so as to resiliently fix the mount to the base of an armrest;
fastening members adjacent to said L-shaped levers, each of said fastening members having a head on its upper end and a retaining member, each of said fastening members extending through a support hole when a respective positioning pin is located at the rear end of the slit of a pin-receiving hole to secure an armrest to a mount.

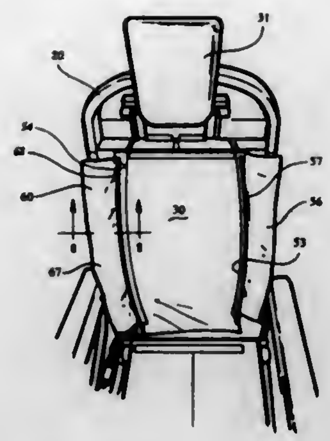
5,615,927
SEAT FOR CHILD-CARE IMPLEMENT
Kenzou Kassai, Osaka, Japan, assignor to Aprica Kassai Kabushikikaisha, Osaka, Japan
Filed Jul. 25, 1995, Ser. No. 506,860
Claims priority, application Japan, Aug. 5, 1994, 6-184381; Oct. 24, 1994, 6-257767
Int. Cl.⁶ A47C *7/02*
U.S. Cl. 297—452.27 **9 Claims**



1. A seat for a child-care implement, comprising
a principal part including a backrest portion and a seat portion for supporting the upper body and the lower body of a baby, respectively; and
a peripheral wall part forming walls having an upright shape at least around said backrest portion of said principal part,
said principal part comprising a rigid base for retaining said backrest portion and said seat portion, and a cushion member arranged on a front side of said rigid base, said rigid base and said cushion member forming together a firm first cushioning structure,
said peripheral wall part comprising an elastic core for retaining said upright shape, and a cushioning material covering said elastic core, said cushioning material having a smaller elastic coefficient than said elastic core, said cushioning material covering said elastic core on inner and outer side surfaces and on a top surface of said peripheral wall part to form together with said elastic core an elastic second cushioning structure that is softer than said first cushioning structure.

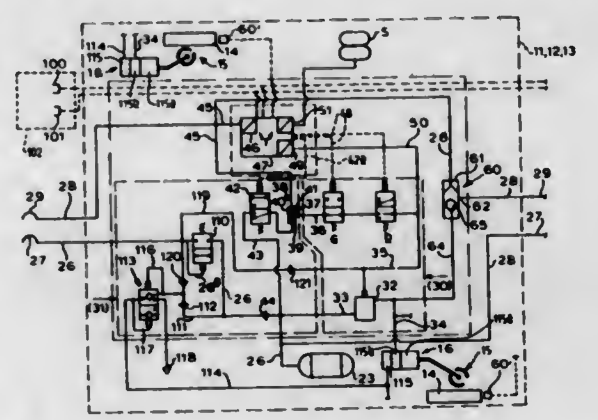
5,615,928
QUICK REPLACEMENT BOLSTER FOR PASSENGER SEAT
James R. Penley, Pfafftown, N.C., assignor to Burns Aerospace Corporation, Winston-Salem, N.C.
Continuation-in-part of Ser. No. 435,890, May 5, 1995. This application Jul. 20, 1995, Ser. No. 504,981
Int. Cl.⁶ A47C *7/02*
U.S. Cl. 297—452.56 **10 Claims**

7. A quick replacement seat back bolster assembly for a vehicle passenger seat, comprising:
(a) a seat back diaphragm formed of a tubular fabric panel for being placed over a seat back frame of the seat;
(b) two cushioned seat back bolsters for being positioned in an overlying relation on the seat back frame, said seat back bolsters each including a bolster attachment member for releasably attaching a respective seat back bolster to the seat back diaphragm and for quickly detaching said seat back bolsters from said seat back diaphragm for replacement;
(c) said seat back bolsters each comprising an elongate tubular cushion attached in a vertically extending position along substantially its entire length to said seat back diaphragm; and



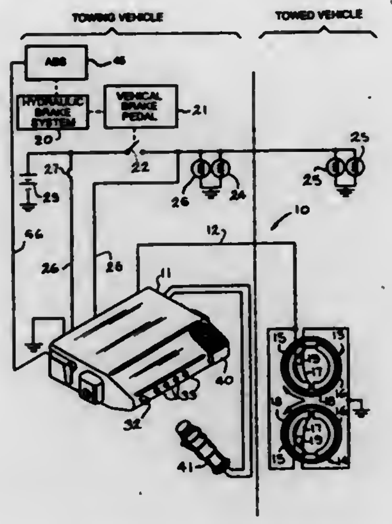
(d) wherein said bolster attachment member comprises one-half of a zipper component, and said diaphragm includes spaced-apart complementary zipper components for detachably securing the two bolsters thereto.

5,615,929
BRAKE SYSTEM FOR A VEHICLE TRAIN
William S. Broome, Inkberrow, United Kingdom, assignor to Grau Limited, United Kingdom
Filed Nov. 15, 1994, Ser. No. 340,113
Claims priority, application United Kingdom, Nov. 17, 1993, 9323698; May 19, 1994, 9410076
Int. Cl.⁶ B60T *13/00*
U.S. Cl. 303—7 **24 Claims**



1. A vehicle train comprising a tractor and at least two trailer wherein each trailer has a brake sub-system, comprising means to supply a fluid pressure brake demand signal, a pressure transducer on the trailer responsive to pressure of said fluid pressure brake demand signal supplied thereto to provide an electrical brake demand signal, an electronic control means on the trailer responsive to the electrical brake demand signal to provide an electrical brake operating signal, and brake valve means on the trailer responsive to the electrical brake operating signal supplied to the brake valve means by the electronic control means to supply fluid to an actuator to operate the trailer brake under a brake pressure from a primary source, determined in accordance with the electrical brake operating signal.

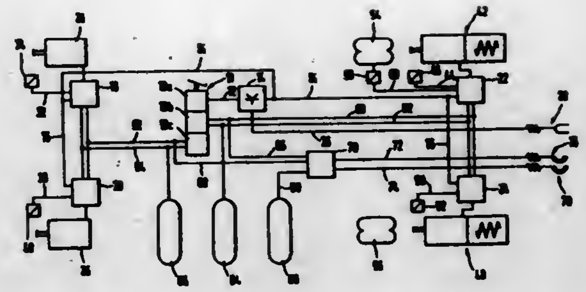
5,615,930
ELECTRONIC TRAILER BRAKE CONTROLLER
Michael C. McGrath, Farmington Hills, and Michael A. Hedding, Canton, both of Mich., assignors to Hayes Wheels International, Inc., Romulus, Mich.
Filed Dec. 15, 1995, Ser. No. 572,930
Int. Cl.⁶ B60T *8/16*
U.S. Cl. 303—7 **44 Claims**



1. An electronic controller for actuating electric wheel brakes of a towed vehicle in response to actuation of the brakes of an associated towing vehicle, the controller comprising:
a detection device for detecting an initiation of a braking cycle for the towing vehicle, said detection device responsive to said braking cycle initiation to generate an input signal;
a microprocessor connected to said detection device, said microprocessor including a memory, said memory storing a plurality of brake response curves, each of said brake response curves defining a time relationship between said input signal and said output signal; and
a selector coupled to said microprocessor and operative by the towing vehicle operator, said microprocessor being responsive to operation of said selector to select one of said brake response curves, said microprocessor also being responsive to said input signal and said selected brake response curve to generate an output signal for actuating the towed vehicle wheel brakes, said output signal varying as a function of time in accordance with said selected brake response curve.

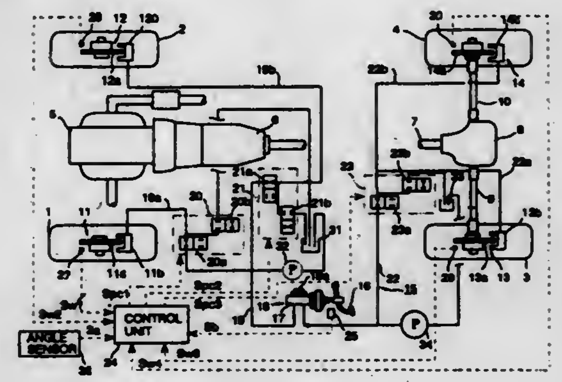
5,615,931
METHOD AND APPARATUS FOR REGULATING THE BRAKE SYSTEM OF A VEHICLE
Werner Stumpe, Stuttgart; Andreas Schlichenmaier, Zaberfeld, and Bernhard Schwendemann, Schorndorf, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed Aug. 21, 1995, Ser. No. 517,708
Claims priority, application Germany, Oct. 26, 1994, 44 38 222.7
Int. Cl.⁶ B60T *8/18*
U.S. Cl. 303—22.1 **8 Claims**

1. Method for regulating brake pressure at the wheels on axles of a vehicle, said method compromising:
measuring an axle load at at least one wheel of at least one axle,
determining a load state of the vehicle based on said axle load at said at least one wheel during non-braking operation,
determining a braking demand by the driver;
providing characteristic brake pressure profiles which prescribe required brake pressure based on braking demand and load state of the vehicle,



determining a characteristic brake pressure profile based on said determined load state of the vehicle during non-braking operation,
determining the required brake pressure at said at least one wheel based on said determined characteristic brake pressure profile and said braking demand, and
regulating brake pressure at said at least one wheel based on said required brake pressure at said at least one wheel.

5,615,932
ANTISKID BRAKING SYSTEM FOR VEHICLES
Haruki Okazaki, Hiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima-ken, Japan
Filed Jul. 25, 1995, Ser. No. 507,025
Claims priority, application Japan, Jul. 28, 1994, 6-176546
Int. Cl.⁶ B60T *8/32*
U.S. Cl. 303—121 **26 Claims**



1. An antiskid braking system for performing antiskid braking control by periodically increasing and reducing hydraulic braking pressure according to a wheel speed during braking so as to control a vehicle going into a skid, said antiskid braking system comprising:
speed sensor means for detecting rotational speeds of wheels and presuming a vehicle speed based on said wheel speeds;
a brake sensor for detecting commencement of braking; and
control means for performing said antiskid braking control at a control gain which is greater in a low speed range of vehicle speeds less than a specified speed when a vehicle speed at a time of commencement of braking detected by said brake sensor is low as compared to a vehicle speed at said time is high.

5,615,933

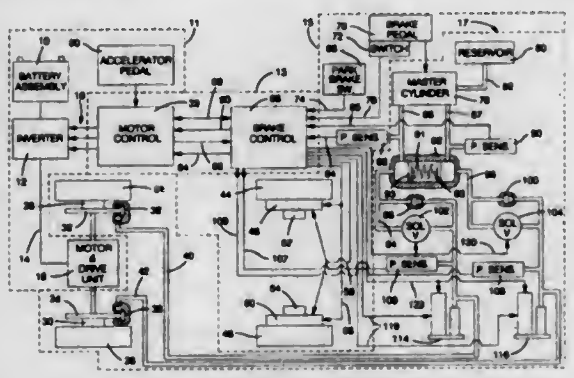
ELECTRIC VEHICLE WITH REGENERATIVE AND ANTI-LOCK BRAKING

Kevin S. Kidston, New Hudson, and Brendan M. Conlon, Royal Oak, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 31, 1995, Ser. No. 456,094

Int. Cl.^{6} B60T *13/74*

U.S. Cl. 303—152 **16 Claims**



1. A vehicle having an electric power supply, a front wheel, an electric propulsion motor mechanically coupled to the front wheel and electrically coupled to the electric power supply, a control for applying coastdown regenerative braking to the front wheel when the vehicle is in a coastdown mode, and a hydraulically activated friction brake system with an anti-lock apparatus which, when activated, responds to excess wheel slip of the front wheel during braking to modulate hydraulic pressure and thus control braking torque to reduce the excess wheel slip, the control comprising, in combination:

hydraulic pressure responsive means for determining when the front wheel is on a low friction road surface; and

means for eliminating the coastdown regenerative braking when the anti-lock apparatus is active and the hydraulic pressure responsive means determines that the front wheel is on a low friction road surface but maintaining the coastdown regenerative braking when the anti-lock apparatus is active and the hydraulic pressure responsive means determines that the front wheel is not on a low friction road surface.

5,615,934

METHOD AND SYSTEM FOR DETECTING AQUAPLANING OF A VEHICLE IN AN ANTI-LOCK BRAKE SYSTEM

Samir Abuelsamid, West Bloomfield, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.

Filed Nov. 29, 1994, Ser. No. 308,388

Int. Cl.^{6} B60T *8/00*

U.S. Cl. 303—191 **10 Claims**

1. In a vehicle ABS having a predetermined deceleration level for actuating the ABS on first and second front wheels of the vehicle, a system for detecting aquaplaning of the vehicle prior to braking of the vehicle, the system comprising:

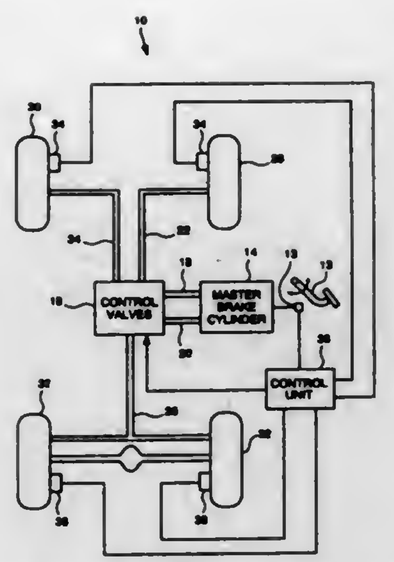
first and second means for generating first and second speed signals representing the speeds of the first and second front wheels, respectively;

third and fourth means for generating third and fourth signals representing the speeds of first and second rear wheels of the vehicle, respectively;

a control unit coupled to the first, second, third and fourth means for:

determining vehicle speed and comparing the vehicle speed with a predetermined vehicle speed at which aquaplaning may occur;

processing the first, second, third and fourth signals to determine if each of the speeds of the front wheels is more than



a predetermined amount below a reference speed based on the speeds of the rear wheels;

calculating acceleration data representing acceleration of each of the front wheels based on the speeds of the front wheels;

processing the acceleration data to determine if the acceleration of either of the front wheels is greater than a predetermined acceleration;

increasing the predetermined deceleration level if the following conditions are met:

(1) the vehicle speed is greater than the predetermined vehicle speed;

(2) each of the speeds of the front wheels is more than the predetermined amount below the reference speed; and

(3) the acceleration of neither of the front wheels is greater than the predetermined acceleration; and

generating an aquaplaning detect signal as long as conditions (2) and (3) are still met for a predetermined time period after the step of increasing.

5,615,935

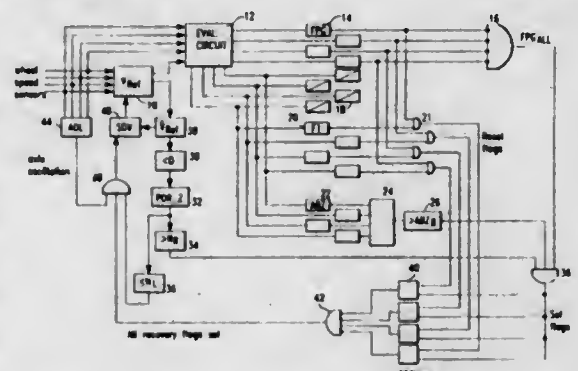
ABS CONTROL FOR A FOUR WHEEL DRIVE VEHICLE EXPERIENCING AXLE OSCILLATIONS

Claus Beyer, West Bloomfield; John Gatza, Flint; Carlos Atoche, West Bloomfield, and Sam Totonji, Novi, all of Mich., assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Sep. 21, 1995, Ser. No. 531,930

Int. Cl.^{6} B60T *8/66*

U.S. Cl. 303—195 **18 Claims**



1. Method for controlling slippage of wheels during braking of a vehicle equipped with four wheels and an antilock brake system effective at all four wheels, said method comprising

measuring the wheel speeds,

calculating a vehicle reference velocity V_{Ref} based on the wheel speeds,

determining the gradient of V_{Ref},

determining if the gradient of V_{REF} is negative,

measuring the time POR_Z that the gradient has been negative,

determining when the time POR_Z exceeds a threshold N_R,

determining presence of instability at each wheel based on said wheel speeds and V_{Ref},

measuring the time ABZ that pressure has been decreasing at each wheel,

adding the times of pressure decrease at all four wheels to produce a sum of pressure decrease times,

determining when said sum exceeds a threshold time ABZ_R,

setting a recovery flag for each wheel when the time POR_Z exceeds said threshold time N_R and all four wheels are unstable and the sum of pressure decrease times exceeds said threshold time ABZ_R,

limiting the reference velocity so that the negative gradient thereof is reduced when all four recovery flags are set,

generating brake pressure control signals based on said wheel speed signals and said reference velocity, and

varying brake pressure at each wheel in accordance with respective said control signals.

5,615,936

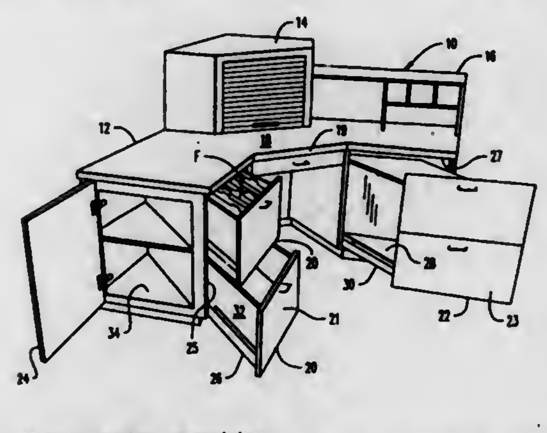
CORNER DESK OR LIKE UNIT

Danny R. Simmons, 5637 N. Key, Sebring, Fla. 33872, and W. Larry Johnson, Sebring, Fla., assignors to Danny R. Simmons, Sebring, Fla.

Filed Nov. 27, 1995, Ser. No. 562,526

Int. Cl.^{6} A47B *97/00;88/00*

U.S. Cl. 312—238 **4 Claims**



1. A work station comprising:

a center section having a horizontal center work surface defining a front margin facing a user;

two spaced apart side sections extending laterally in either direction from said center section;

each said side section including:

an upright front drawer opening which extends forward at an acute angle of at least about thirty degrees (30°) with respect to said front margin;

an angular drawer having a generally flat upright facing panel, connected upright parallel drawer panels, an upright back, and a horizontal bottom, said facing panel, said drawer panels and said back, when viewed from above, defining a parallelogram having included angles substantially equal to said acute angle;

a drawer glide means operably connected between each said side section and a corresponding said drawer for horizontal linear movement of each said drawer,

said linear movement being in a direction at said acute angle with respect to said front drawer opening whereby said drawers withdraw from said side sections substantially parallel to one another and without user interference;

each said facing panel substantially covering a corresponding said front opening when said drawer is in a closed position.

5,615,937

DEVICE FOR THE PROJECTION/REFLECTION OF IMAGES

Philippe Bellanger, Domaine des Hayes, F-49250 Brion, France

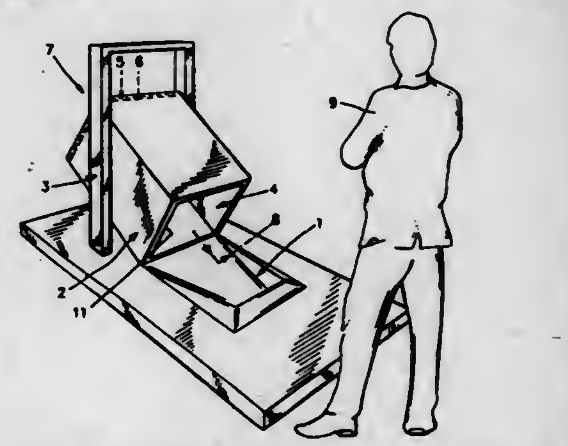
PCT No. PCT/FR94/00764, § 371 Date Dec. 21, 1995, § 102(e) Date Dec. 21, 1995, PCT Pub. No. WO95/00346, PCT Pub. Date Jan. 5, 1995

PCT Filed Jun. 24, 1994, Ser. No. 564,240

Claims priority, application France, Jun. 28, 1993, 93 08100

Int. Cl.^{6} G03B *21/14*

U.S. Cl. 353—97 **8 Claims**



1. Device for the projection and reflection of an image to optimize reading thereof, which comprises:

a housing having the function of dimming external light, open at two points called respectively a light inlet opening of the housing and a light outlet opening of the housing, said light inlet opening of the housing being partially closed by a diffuser for filtering ambient external light which will traverse a transparent image disposed adjacent the light inlet opening of the housing, while said light outlet opening of the housing being provided in its vicinity with a mirror visible to an observer and on which is reflected a projected image to permit remote reading thereof by the observer.

5,615,938

DEVICE FOR ILLUMINATING OBJECTS IN PARTICULAR THOSE TO BE RECORDED WITH A VIDEO CAMERA

Norbert Lemke, Danziger Str. 21, D-82194 Gröbenzell, Germany

PCT No. PCT/DE93/00127, § 371 Date Oct. 14, 1993, § 102(e) Date Oct. 14, 1993, PCT Pub. No. WO93/16326, PCT Pub. Date Aug. 19, 1993

PCT Filed Feb. 15, 1993, Ser. No. 137,173

Claims priority, application Germany, Feb. 14, 1992, 42 04 486.3

Int. Cl.^{6} G03B *15/02*

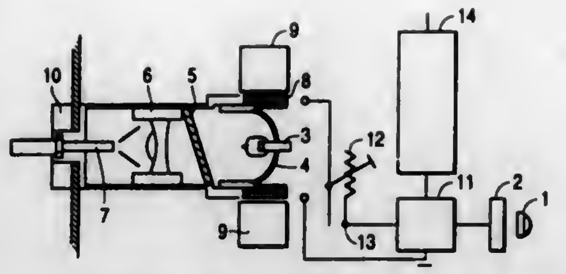
U.S. Cl. 362—18 **23 Claims**

1. A device using a fiber optic arrangement to transmit light for illuminating objects, in particular those objects to be recorded by a video camera, said device comprising:

at least one lamp;

a condenser system for condensing light from said at least one lamp;

an optical system including said fiber optic arrangement in a form of a fiberglass bundle which receives a condensed said light from said condenser system, and which directs said light onto an object or objects to be illuminated; and



a control means for controlling the intensity of the illumination delivered to said fiberglass bundle and with which said object is illuminated while operating said at least one lamp at substantially a constant power, said control means controlling the intensity of illumination by selecting a focus of said condenser system relative to said optical system to multiple positions using automatic means for changing the focus of said condenser system.

5,615,939
HEADLIGHT OF A SELF-PROPELLED VEHICLE, ESPECIALLY FOR A MOTOR VEHICLE

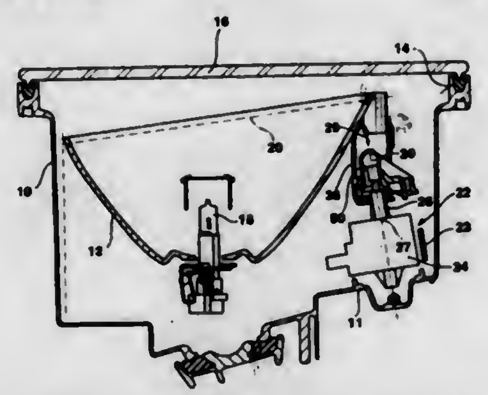
Karl-Otto Dobler, and Wolfgang Krieg, both of Reutlingen, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Jan. 22, 1996, Ser. No. 589,286

Claims priority, application Germany, Mar. 4, 1995, 19507586.2

Int. Cl.⁶ B60Q *1/06*

U.S. Cl. 362—66 **14 Claims**



1. A headlight for a self-propelled vehicle, said headlight comprising at least one pivotable reflector (12) having at least one reflector pivot axis (20), means (10) for holding the at least one pivotable reflector (12) and means for pivoting the reflector (12) relative to the means (10) for holding and about said at least one reflector pivot axis for adjustment of a reflector orientation,

wherein said means for pivoting the reflector includes an adjusting element (26) having a ball end (30), said adjusting element (26) being eccentrically engaged with the reflector (12) relative to the at least one reflector pivot axis (20), and a double-jointed pivotal connection means for pivotally connecting the adjusting element (26) with the reflector (12), said double-jointed pivotal connection means comprising a pivot means mount (36) provided with a spherical receptacle (42) and a socket insert (50) having a spherical-segment-shaped outer section (52) pivotally engaged in the spherical receptacle (42) of the pivot means mount (36), and

wherein said socket insert (50) has a ball socket (54) in which said ball end (30) of said adjusting element (26) is engaged so that said adjusting element (26) is pivotally connected with said socket insert (50), and said ball socket (54) of the socket insert (50) is positioned closer to said reflector (12) than said spherical receptacle (42) of said pivot means mount (36).

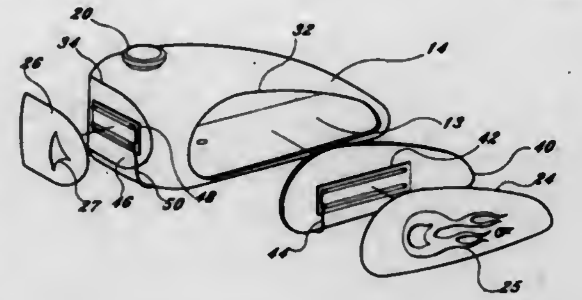
5,615,940
ILLUMINATED GAS TANK OR SHELL

James E. Barry, 3251 NW. 114th Ave., Coral Springs, Fla. 33065

Division of Ser. No. 169,999, Dec. 17, 1993, Pat. No. 5,479,324. This application Feb. 21, 1995, Ser. No. 390,982

Int. Cl.⁶ B62J *6/00*

U.S. Cl. 362—72 **22 Claims**



1. A method for altering a gasoline tank of a motorcycle or a hollow body shell disposed where a conventional motorcycle gasoline tank is normally disposed, to provide light at at least one side of the tank or shell and aid in the visibility of a motorcycle, the motorcycle having electrical circuitry, the gasoline tank or shell having outer portions, said method comprising the steps of:

(a) removing at least one outer portion from the gasoline tank or shell;

(b) attaching a flat wall member to the gasoline tank or shell where the outer portion was removed;

(c) providing an opening in the removed outer portion;

(d) reattaching the removed outer portion to the gasoline tank to create a chamber defined by said flat wall member and said outer portion;

(e) providing illumination means within said chamber; and

(f) energizing said illumination means;

wherein light from said illumination means is seen through said opening to aid in the visibility of the motorcycle.

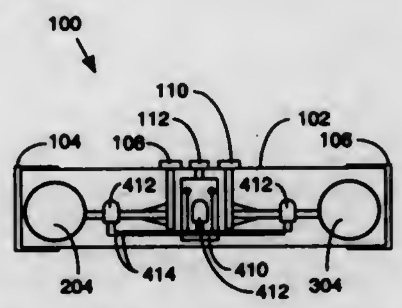
5,615,941
ILLUMINATED DUAL LOLLIPOP HOLDER AND STORAGE DEVICE

Jules Shecter, 3301 Harrington Dr., Boca Raton, Fla. 33496

Filed May 20, 1996, Ser. No. 653,659

Int. Cl.⁶ F21V *33/00*

U.S. Cl. 362—109 **20 Claims**



1. A lollipop holder and storage device for use with lollipops, comprising:

a storage compartment having sufficient room to accept at least one lollipop;

at least one retractable securing assembly having means to securely grasp a lollipop stick; and

means to move the retractable securing assembly to and from retracted and extended positions;

whereby a lollipop can be moved to an extended position for consumption and a retracted position for storage.

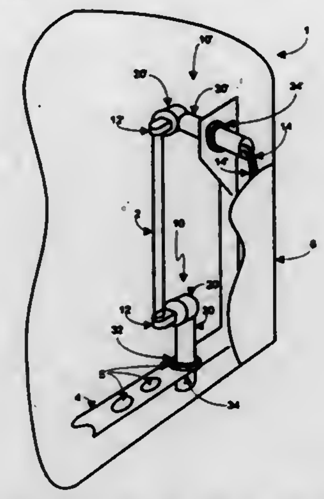
5,615,942
LIGHT SOCKET ADAPTER

John P. Langis, 502 Ossipee Trail, Gorham, Me. 04038

Filed Jun. 5, 1995, Ser. No. 461,399

Int. Cl.⁶ F21S *3/00*

U.S. Cl. 362—220 **10 Claims**



1. A light socket adapter for use with fluorescent tubular lamps within a sign housing, said adapter comprising:

a) a lamp socket accepting section;

b) an adjusting means having a first end connectable to one end of a lamp socket positionable within said lamp socket accepting section; and

c) an adjustable support element for attaching said adjusting means to an internal bracket wall of a sign housing wherein said support element is directly connected to a second end of said adjusting means so that said first end and said second end are rotatable with respect to one another while simultaneously linearly adjustable together via linear displacement of said support element.

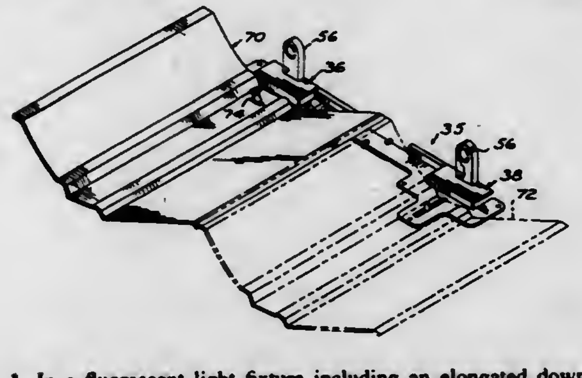
5,615,943
LAMP AND REFLECTOR BRACKET FOR FLUORESCENT FIXTURES

C. Michael Coldren, P.O. Box 921, Edmond, Okla. 73083-0921

Filed Feb. 20, 1996, Ser. No. 603,115

Int. Cl.⁶ F21S *3/00;* **F21V** *21/14*

U.S. Cl. 362—220 **4 Claims**



1. In a fluorescent light fixture including an elongated downwardly open housing having side and end walls depending from a top wall and dimensioned to house fluorescent lamps and mounting brackets, the improvement comprising:

a pair of laterally adjustable planar brackets, each bracket mounted to said top wall adjacent said side walls and one of said end walls, respectively, each bracket of said pairs of brackets having a lamp terminal socket receiving recess adjacent the respective end wall;

a lamp terminal socket in the respective recess, said sockets being wired to a source of electrical energy;

each bracket of said pairs of brackets having light reflector mounting means disposed in confronting relation with respect to the respective bracket at an opposite end of the housing; and,

a pair of light reflectors extending longitudinally of the housing between cooperating brackets of said pairs of brackets and supported by said reflector mounting means.

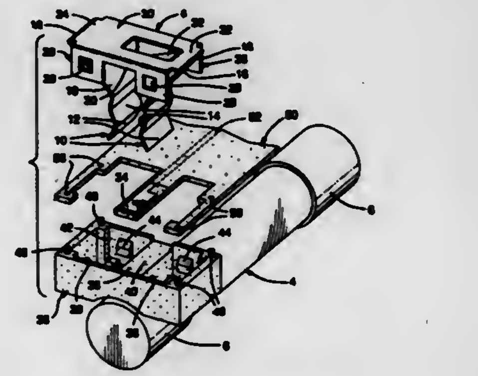
5,615,944
AUTOMOTIVE DOME LIGHT ARRANGEMENT

David G. Siegfried, Vienna, Ohio; Robert W. Rimko, Transfer, Pa., and Anthony J. Corso, Struthers, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 12, 1995, Ser. No. 527,293

Int. Cl.⁶ H01R *33/06*

U.S. Cl. 362—226 **2 Claims**



1. An automotive light arrangement comprising:

a cartridge bulb, the cartridge bulb being generally cylindrical with a terminal cup at first and second ends;

a terminal having two opposed arms, the arms having a first section of a bulb receiving end, the arms having a bulb clasping second section for compliantly holding a bulb terminal cap between the arms, the arms having a third section extending away from each other to a central plane section, the central plane section having first and second ends, the central plane section having at the first and second ends a pair of opposed ears extending in a direction toward the bulb cap generally perpendicular to the central plane section, each ear having an aperture, and the opposed ears at the first end being spaced from the opposed ears of the second end of the central section, and the terminal having at least one contact finger cut out from the plane section extending downwardly toward the cartridge bulb;

a nonconductive terminal housing mounting the terminal, the terminal housing having two apertures bifurcated by a bridge section, each aperture having an internal wall with a lock ramp for entry into the aperture of the terminal ears to rigidly secure the terminal within the terminal housing; and

a flexible circuit having an exposed conductor leg positioned on the terminal housing bridge being biased in position and contacted by the terminal finger.

5,615,945
LIGHTING DEVICE FOR USE WITH COMPUTERS

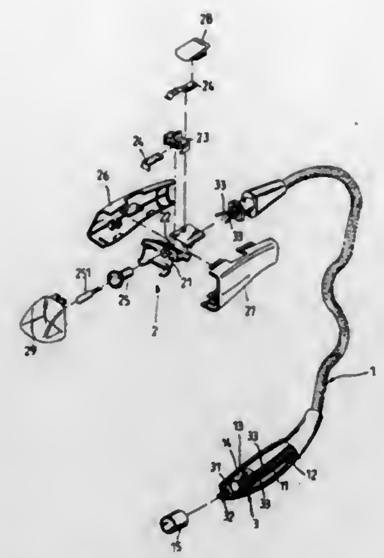
Winger Tseng, Taipei, Taiwan, assignor to Noopro Industrial Corporation, Taipei, Taiwan

Filed Mar. 27, 1996, Ser. No. 624,747

Int. Cl.⁶ H01R *33/00*

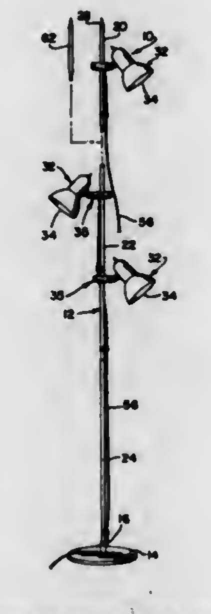
U.S. Cl. 362—226 **5 Claims**

1. A lighting device for use with a computer, comprising:



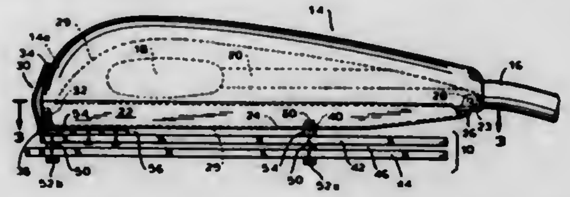
an elongated, hollow, flexible neck having a first end and a second end, a flexible metal wire axially mounted on the inside and having a hook at one end disposed in the first end of said flexible neck;
a plug fastened to the first end of said flexible neck and fixedly connected with a resin block molded on the hook of said flexible metal wire; and
a lamp assembly mounted on the second end of said flexible neck and connected to said plug by an electric wire.

5,615,946
MULTIPURPOSE TREE LAMP
John Yeh, 660 S. Aberdeen, Anaheim Hills, Calif. 90266
Filed Sep. 18, 1995, Ser. No. 529,573
Int. Cl.⁶ F21V *21/14*
U.S. Cl. 362—250 **3 Claims**



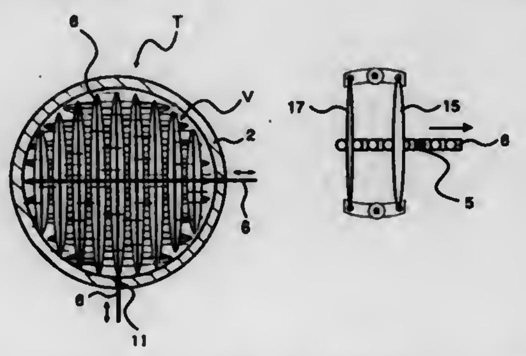
1. A method of forming a multipurpose tree lamp comprising the steps of:
mounting a lamppost on a base member wherein said lamppost is formed with at least three pole sections defined respectively as first, second and third pole sections;
interconnecting said first pole section formed with one open threaded end to one end of said second pole section formed with oppositely open threaded ends;
positioning a plurality of light fixtures on said lamppost by an adjustable mounting means;
forming a second lamp from said multipurpose tree lamp, comprising the steps of:
removing said first pole section from said lamppost and replacing said first pole section with an extended cap member;
removing one of said light fixtures with said first pole section;
mounting said first pole section to a second base member; and
positioning said light fixture on said first pole section to define a table lamp.

5,615,947
LUMINAIRE SHIELD
George Shambo, Davie; Robert B. Hodson, Boca Raton, and Robert C. Blackburn, Miami, all of Fla., assignors to Florida Power & Light Co., Miami, Fla.
Filed Jan. 12, 1995, Ser. No. 371,741
Int. Cl.⁶ F21V *15/00*
U.S. Cl. 362—376 **23 Claims**



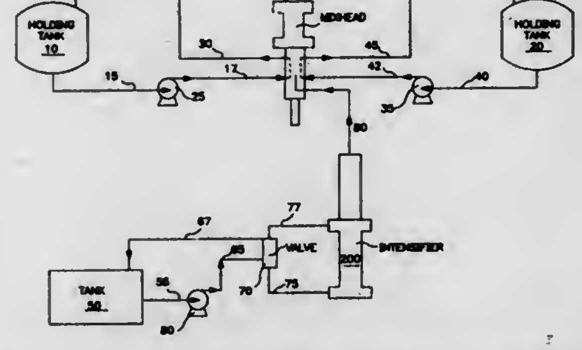
1. A shield for use on a luminaire which includes a front, a back, an open-bottom luminaire housing for a luminaire light source and a lens-bearing luminaire door movably mounted on the luminaire housing for closing the open bottom thereof and for mounting a luminaire lens below the luminaire light source, said shield comprising:
(A) an overlapping pair of substantially rigid but slightly flexible transparent planar panels separated by an air gap;
(B) a plurality of resilient spacers disposed intermediate said panels and providing the air gap, and
(C) means for mounting said shield on the bottom of the luminaire housing to protect the luminaire lens and the luminaire light source.

5,615,948
APPARATUS FOR AVOIDING SEDIMENTATION
Alexandra S. Frei, Eidbergstrass 64, 8405 Winterthur, Switzerland
Filed Aug. 17, 1994, Ser. No. 292,234
Claims priority, application Switzerland, Aug. 17, 1993, 02 469/93-2
Int. Cl.⁶ B01F *11/00*
U.S. Cl. 366—118 **4 Claims**



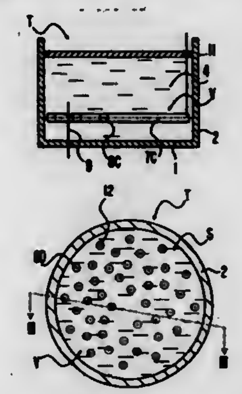
1. An apparatus for agitating a selected region of a container containing a quantity of liquid having a tendency to stratify and thicken in a precipitation zone above a bottom of the container and precipitate into sediment at the bottom of the container, the apparatus including
a plurality of elongated vibratory strings immersed in the liquid;
means for supporting said elongated strings in said precipitation zone in a predetermined pattern and for holding said strings under a predetermined level of tension, said means for supporting including
first and second support arms (H, H');
first and second ones of said strings extending generally parallel to each other between opposite ends of said support arms;
means for mounting said support arms intermediate the ends thereof with said arms spaced apart and generally parallel with each other; and
one end of each of said first and second ones of said strings being attached to opposite ends of said first arm, the other ends of said first and second strings being attached to the other ends of said arms so that said strings are substantially parallel with each other;
means adjacent said strings for repeatedly exciting said strings into vibration including means for laterally stretching and releasing said strings positioned substantially midway along the lengths of said strings to stretch and release said first one of said strings, causing said first string to vibrate, said second one of said strings being excited into vibration sympathetically to create waves of energy to agitate the liquid and prevent sedimentation thereof.

5,615,949
HIGH PRESSURE MIXING SYSTEM AND PROCESS FOR PRODUCING FOAMED ISOCYANATE-BASED POLYMERS CONTAINING FILLER MATERIAL
Nick Morano, Etobicoke; Wilfred W. T. Cheng, Oakville; Mohammad Allohverdi, North York, and Anthony G. Di Marco, Woodbridge, all of Canada, assignors to Woodbridge Foam Corporation, Mississauga, Canada
Filed Aug. 8, 1995, Ser. No. 512,683
Int. Cl.⁶ B01F *5/04; 15/02*
U.S. Cl. 366—159.1 **27 Claims**



12. A system for mixing at least two independent streams in a mixing device having independent inputs for each of the at least two independent streams, the system comprising:
a mixing device having a first input and a second input, the first input capable of receiving a first stream and the second input capable of receiving a second stream, and impingement means for allowing the first stream and second stream to impinge on one another for a period to time;
a compression chamber upstream of the mixing device, the compression chamber comprising: (i) an input for receiving the first stream as a free-flowing solids stream, (ii) compression means to compress the first stream to achieve a substantially linear relationship between a weight of the first stream and the period of time; and (iii) an output for allowing exit of the first stream from the compression chamber;
connection means to connect the output of the compression chamber to the first input in the mixing device.

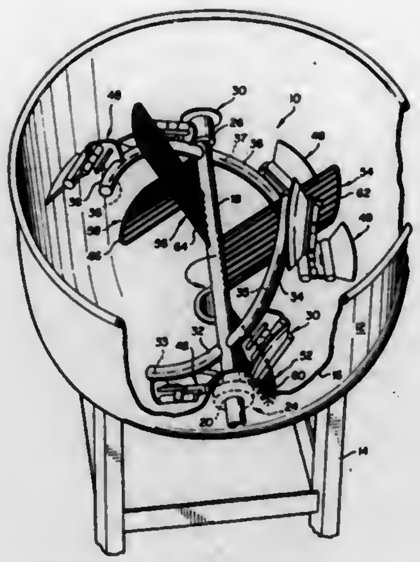
5,615,950
APPARATUS FOR PREVENTING SEDIMENTATION
Alexandra S. Frei, Eidbergstrasse 64, 8405 Winterthur, Switzerland, and Bernard Paringaux, 50 Blvd. Michelet, 13008 Marseille, France
Continuation of Ser. No. 292,241, Aug. 17, 1994, abandoned. This application Nov. 13, 1995, Ser. No. 557,384
Claims priority, application Switzerland, Aug. 17, 1993, 02468/93
Int. Cl.⁶ B01F *3/10; 5/04*
U.S. Cl. 366—173.1 **8 Claims**



1. A sediment-preventing apparatus comprising a container including a bottom having a total area defined by at least one wall;
a body of liquid in said container and having a top surface, said liquid having a tendency to stratify and thicken in a stratification zone above said bottom of said container and thereafter precipitate into sediment at the bottom of the container;
a conduit array immersed in said liquid and lying substantially in a plane in said zone above said bottom of said container and below said top surface of said body of liquid, said conduit array having an inlet opening and a multitude of outlet nozzles each being capable of ejecting liquid in a predetermined direction, said multitude of outlet nozzles being distributed throughout said plane over an area substantially equal to said total area of said bottom and being arranged to eject liquid in a plurality of different directions toward and away from said at least one wall and above and below said plane when said inlet opening is supplied with liquid under pressure;
a supply lance extending substantially vertically from above said top surface of said liquid to said inlet opening; and
pump means for extracting liquid from said container and supplying said liquid under pressure to said supply lance and thereby to said inlet opening, whereby liquid is ejected from said nozzles in different directions to disturb said stratification zone, thereby to prevent sedimentation in said container.

5,615,951
FOOD PROCESS AGITATORS
Valentino Gabriele, Baltimore, Md., assignor to J. C. Pardo & Sons, Baltimore, Md.
Filed Dec. 11, 1995, Ser. No. 570,716
Int. Cl.⁶ B01F *7/02*
U.S. Cl. 366—311 **47 Claims**

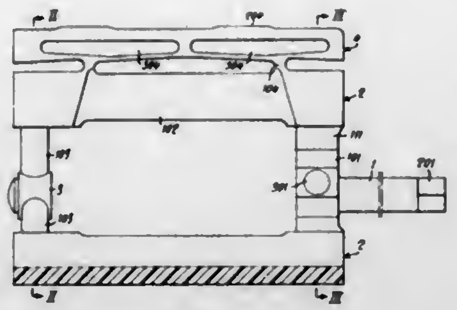
1. An agitator mounted for rotation within a kettle within which food materials are processed to produce a food product of a desired consistency and having a substantially creamy texture with a desirable proportion of lumps formed of and in the food materials consistent with preparation of a homemade product such as mashed potatoes and the like, comprising:

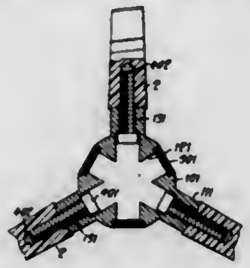


a rotary shaft horizontally disposed within the kettle;
arcuate segments rigidly attached to and disposed two each on each end of the shaft, the arcuate segments at each end being disposed substantially in the same plane and being disposed diametrically opposite each other relative to the shaft, the planes within which the arcuate segments at each end of the shaft lie being fixed relative to each other during rotation;
means carried by the arcuate segments and extending toward inner walls of the kettle for contacting at least portions of the food materials within the kettle and displacing said materials within the kettle to effect mixing thereof; and,
means carried by the agitator for reducing the particle sizes of at least a portion of the particles of the food materials to a desired range, number and distribution of particle sizes, thereby to produce a food product such as mashed potatoes having a creamy yet lumpy consistency indicative of home-made production of such food product.

5,615,952
STIRRER FOR MACHINES FOR MAKING ICE CREAM OR THE LIKE
Gino Cocchi, Bologna, Italy, assignor to Ali S.p.A. - Carpigiani Group, Italy
Filed Jan. 26, 1996, Ser. No. 592,467
Claims priority, application Italy, Feb. 2, 1995, GE95A0009
Int. Cl.⁶ A23G *9/22;* **B01F** *7/04*
U.S. Cl. 366—313 **5 Claims**

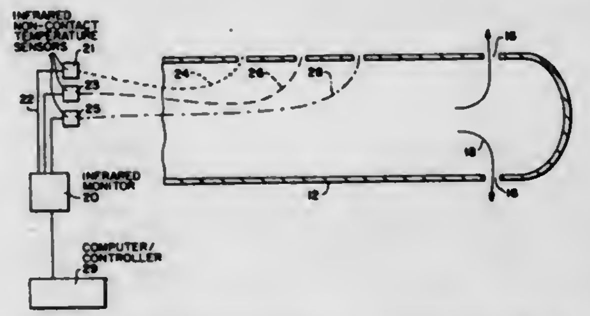
1. Stirrer for machines for making ice cream comprising:
a section of a rotary drive shaft;
a first hub supporting a plurality of angularly equidistant radial spokes integral with the drive shaft section;
a second hub supporting the same number of spokes as the first hub, said spokes of said second hub including screw-type fastening components at ends thereof, said first hub including radial passages extending from a position diametrically opposite said spokes of said first hub and through a longitudinal axis of said spokes of said first hub to accommodate screw-type fastening means; and
a plurality of stirrer blades including at their axial ends, tapped holes having means for engaging said screw-type fastening





means and said screw-type fastening components, whereby said first and second hubs are operatively connected.

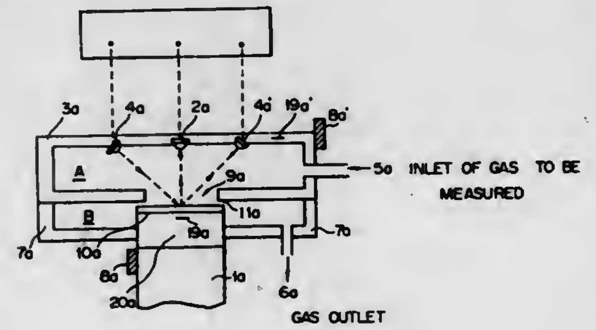
5,615,953
BOILER BANK SURFACE TEMPERATURE PROFILER
Thomas E. Moskal, Pickerington, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.
Filed Jul. 25, 1994, Ser. No. 279,736
Int. Cl.⁶ G01N *25/00;* **G01K** *1/14;13/00*
U.S. Cl. 374—7 **7 Claims**



1. A system for determining build-up on a plurality of tubes of a boiler, the system comprising:
extending means for being movably extendable into the boiler near the tubes and for removing build-up from the tubes;
optical fiber means for taking a separate temperature reading at a plurality of positions along a length of the extending means; and
means for determining build-up on the tubes, based on the separate temperature readings taken from the length of the extending means.

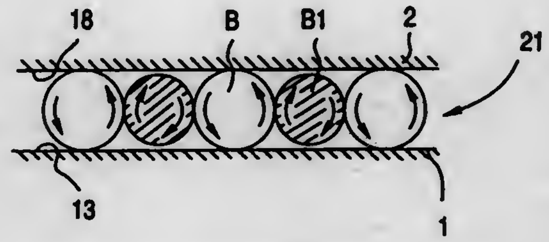
6. A method for determining and removing build-up on a plurality of tubes of a boiler, the method comprising the steps of:
movably extending an arm having a length near the tubes of the boiler;
taking a separate temperature reading at a plurality of positions along the length of the arm by using a plurality of optical fibers which are operably connected to a plurality of infrared non-contact temperature sensors;
determining an amount of build-up on the tubes by operably connecting a computer to the infrared non-contact temperature sensors and by using the separate temperature readings taken from the arm; and
removing build-up from the tubes, using the arm.

5,615,954
APPARATUS FOR MEASURING THE DEW POINT OR FROST POINT OF A GAS HAVING LOW WATER CONTENT
Junichi Nishizawa, Miyagi-ken; Takahiko Kijima, Hyogo-ken, both of Japan; Edward F. Ezell, Warren, N.J., and Akira Makihara, Chiba-ken, Japan, assignors to Osaka Sanso Kogyo Ltd., Osaka, Japan
Division of Ser. No. 286,395, Aug. 5, 1994, abandoned, which is a continuation of Ser. No. 992,447, Dec. 17, 1992, abandoned. This application Dec. 21, 1994, Ser. No. 360,441
Claims priority, application Japan, Apr. 18, 1991, 3-86905; Apr. 18, 1991, 3-86906; Nov. 30, 1991, 3-357405; Dec. 1, 1991, 3-357406; Dec. 1, 1991, 3-357407
Int. Cl.⁶ G01N *25/04;25/68;21/47;21/55*
U.S. Cl. 374—17 **2 Claims**



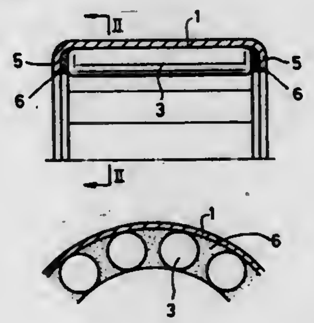
2. An apparatus for determining the frost point of a gas containing a very small amount of water wherein said apparatus comprises
(a) a reflector mirror;
(b) means to vary the temperature of said reflector mirror from room temperature to at least −80° C.;
(c) means for sensing the temperature of said reflector mirror;
(d) means for contacting said reflector mirror with the gas to be measured;
(e) means of irradiating said reflector mirror with light selected from the group consisting of focused rays of light and laser light;
(f) means for detecting the change in the intensity of scattered light or reflected light coming from said reflector mirror when condensation of frost occurs on said reflector mirror, and (g) means for determining the frost point of the gas as the temperature of said reflector mirror when said change in the intensity of the scattered light or reflected light is detected;
wherein said means for contacting said reflector mirror with gas to be measured comprises
(i) compartment A made of a good heat conductor;
(ii) an inlet for the gas to be measured, which inlet is provided on compartment A;
(iii) compartment B provided adjacent to compartment A, at least part or compartment B being made of a poor heat conductor;
(iv) a hole provided at the interface between compartments A and B;
(v) a small gap formed between said hole and said reflector mirror; and
wherein said reflector mirror is provided on compartment B in such a way as to face and cover said hole.

5,615,955
LINEAR GUIDE APPARATUS WITH LUBRICANT-CONTAINING POLYMER SPACER BALLS
Ken Namimatsu; Toru Tsukada, both of Gunma, and Toshikazu Yabe, Kanagawa, all of Japan, assignors to NSK Ltd., Tokyo, Japan
Filed Dec. 13, 1995, Ser. No. 571,713
Claims priority, application Japan, Dec. 16, 1994, 6-313643
Int. Cl.⁶ F16C *29/06*
U.S. Cl. 384—13 **7 Claims**



1. A self-lubrication linear guide apparatus comprising:
an axially extending guide rail having a first rolling groove on its outer surface;
a slider engaged with the guide rail and having a second rolling groove, rolling element return grooves and curved grooves, the second rolling groove confronting the first rolling groove, the rolling element return grooves being coupled to both end portions of the second rolling groove through the curved grooves, respectively;
a plurality of rolling elements loaded into the slider to be made circulatable through the second rolling groove, the curved grooves, and the rolling element return grooves; and
a plurality of spacer balls interposed between the rolling elements, the spacer balls being formed of lubricant-containing polymer.

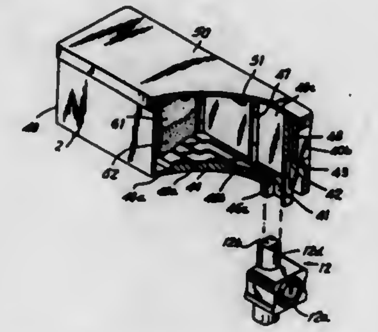
5,615,956
ROLLER BEARING
Fumio Oba, Iwata-gun; Toshihiko Matsushima, Iwata; Hitoshi Murakami, Iwata-gun, and Tomoaki Terada, Iwata, all of Japan, assignors to NTN Corporation, Osaka, Japan
Continuation of Ser. No. 388,835, Feb. 15, 1995, abandoned. This application Sep. 13, 1996, Ser. No. 712,674
Claims priority, application Japan, Feb. 28, 1994, 6-029405
Int. Cl.⁶ F16C *33/66;33/56*
U.S. Cl. 384—470 **1 Claim**



1. A roller bearing comprising an outer ring having a raceway formed on an inner periphery thereof, axial ends, and radially inwardly bent flanges at both axial ends, a plurality of rollers arranged in said outer ring along said raceway at predetermined intervals, lubricant gaps defined between outside surfaces of adjacent rollers and between both ends of each of said plurality of roller and inner surfaces of said flanges and a solid lubricant comprising a mixture of an ultra-high-molecular-weight polyolefin

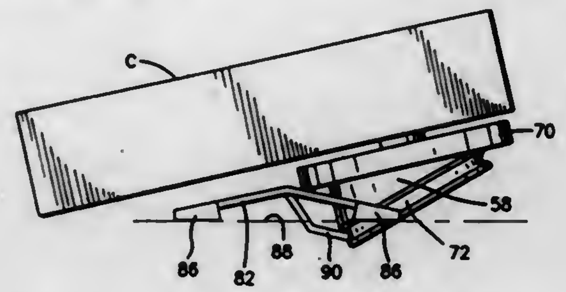
and a grease filling the lubricant, said plurality of rollers and said solid lubricant forming a one-piece body.

5,615,957
INK-SUPPLY TANK FOR A DOT MATRIX PRINTER
Takashi Suzuki; Masanao Matsuzawa, and Yoshinori Miyazawa, all of Shiojiri, Japan, assignors to Seiko Epson Corporation, Nagano, Japan
Continuation of Ser. No. 150,676, Nov. 10, 1993, Pat. No. 5,421,658, which is a continuation of Ser. No. 962,959, Oct. 16, 1992, Pat. No. 5,328,279, which is a continuation of Ser. No. 612,010, Nov. 9, 1990, Pat. No. 5,156,471, which is a continuation of Ser. No. 401,539, Aug. 31, 1989, Pat. No. 4,969,759, which is a continuation of Ser. No. 161,216, Feb. 17, 1988, abandoned, which is a continuation of Ser. No. 35,251, Mar. 23, 1987, abandoned, which is a continuation of Ser. No. 873,871, Jun. 12, 1986, abandoned, which is a continuation of Ser. No. 659,816, Oct. 11, 1984, abandoned. This application Jun. 5, 1995, Ser. No. 465,163
Claims priority, application Japan, May 22, 1984, 59-102841; May 22, 1984, 59-102842; May 22, 1984, 59-102843
Int. Cl.⁶ B41J *2/305;2/17*
U.S. Cl. 400—124.1 **23 Claims**



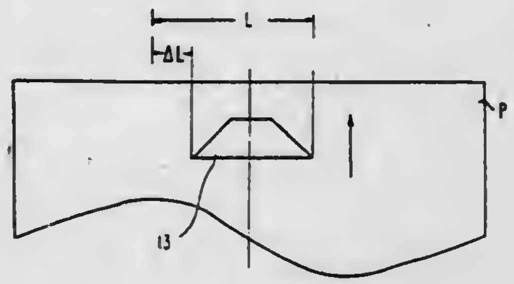
1. A dot matrix printer comprising:
a printing apparatus;
an ink supply system mounted in said printing apparatus; and
an ink supply tank mounted in said printing apparatus, said ink supply tank operatively engaging with said printing apparatus through said ink supply system, said ink supply tank dimensioned to accommodate ink therein to be delivered to said ink supply system, said ink supply tank comprising:
a tank housing having an interior space defined in part by first and second spaced opposed walls;
an ink supply delivery port extending through a first wall of said tank housing said port having an opening to said interior space to permit the passage of ink from said interior space to the exterior of said tank housing; and
an ink absorbing member substantially filling said interior space of said tank housing and being formed of a porous material, said ink absorbing member having a region facing and at least in part engaging said opening to said ink supply delivery port;
said second wall of said tank housing being spaced at least in part sufficiently apart from said ink absorbing member to provide an air communication space therebetween, said tank housing being formed with an air communication hole therethrough, said air communication space being in fluid communication with ambient air through said air communication hole.

5,615,958
OSCILLATORY RIBBON CARTRIDGE FOR A PRINTER
Edward D. Furrow, and Paul Snyder, both of Waynesboro, Va., assignors to Genicom Corporation, Waynesboro, Va.
Filed Dec. 20, 1995, Ser. No. 578,067
Int. Cl.⁶ B41J *32/02*
U.S. Cl. 400—208 **17 Claims**



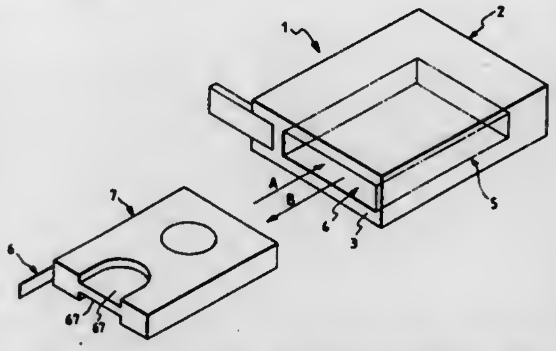
10. A ribbon cartridge for use with a printer comprising:
a ribbon cartridge housing having spaced ribbon exit and entrance portions and bearing surfaces for mounting said cartridge for oscillatory movement about an axis;
a ribbon disposed in said housing;
a drive mechanism carried by said housing for advancing ribbon from said ribbon cartridge exit portion to said ribbon cartridge entrance portion; and
an oscillator mounted on and carried by said housing for oscillating the housing about said axis, said oscillator including a drive mechanism therefor coupled to said ribbon advancing drive mechanism, said oscillator drive mechanism being responsive to actuation of said ribbon advancing drive mechanism to oscillate said housing about said axis, said axis lying generally parallel to the direction of movement of the ribbon between said ribbon cartridge exit portion and said ribbon cartridge entrance portion.

5,615,959
SERIAL PRINTER USING CARRIAGE FOR PAPER INSERTION
Katsuhiko Nishizawa; Osamu Koshiishi, and Kouichirou Yokoyama, all of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan
Filed Apr. 13, 1995, Ser. No. 421,176
Claims priority, application Japan, Apr. 14, 1994, 6-100637; Feb. 24, 1995, 7-061633
Int. Cl.⁶ B41J *13/16*
U.S. Cl. 400—279 **5 Claims**



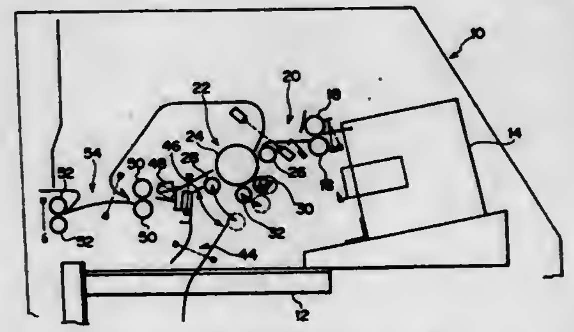
1. A method for controlling the printing of a portion of a recording medium, while inserting the recording medium into a printer, the printer including a platen, a carriage and a printing medium discharge section, the platen serving as a recording medium inserting member and being rotated by a motor, the carriage shuttling in parallel with the platen and having a recording head and a paper holder attached thereto, and the sheet discharge section arranged on a downstream side of the carriage for guiding the recording medium to a sheet discharge outlet, the method comprising the steps of:
moving the carriage toward a predetermined position and the center of the recording medium and stopping the carriage proximate the center of the recording medium;
decelerating the carriage before the center of the recording medium, when the recording medium is forwarded for printing until the recording sheet reaches the sheet discharge section from said predetermined position on a downstream side of the paper holder; and
starting a recording medium forward operation when said carriage reaches said predetermined position for a single line of the recording medium in sync with the deceleration of the carriage.

5,615,960
TAPE PRINTING APPARATUS HAVING A SLOT FOR INSERTION OF A TAPE CASSETTE
Masahiko Mori, and Yasuhiko Iwane, both of Iwate-ken, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan
Filed Dec. 28, 1995, Ser. No. 580,269
Claims priority, application Japan, Dec. 28, 1994, 6-328087
Int. Cl.⁶ B41J *11/56*
U.S. Cl. 400—613 **9 Claims**



1. A tape printing apparatus for printing onto a free end of a tape-shaped recording medium, the tape-shaped recording medium being wound in a tape cassette with the free end extending from an opening formed in a wall thereof, the tape cassette including a platen roller rotatably mounted adjacent the opening and a platen drive gear fixedly connected to the platen roller, the tape printing apparatus comprising:
a main unit having a wall defining a cassette insertion slot;
a cassette loading section communicating with the cassette insertion slot for receiving the tape cassette when the tape cassette is inserted in a first direction through the cassette insertion slot;
a gear rotatably mounted in the main unit adjacent the cassette loading section, the gear being positioned to engage with the platen drive gear when the tape cassette is loaded into said cassette loading section;
a drive motor for driving the platen roller via the gear and the platen drive gear;
a head drive mechanism including a first member pivotally mounted adjacent the cassette loading section, the first member having a contact portion extending into the cassette loading section, the head drive mechanism also having a second member pivotally mounted adjacent the cassette loading section, the second member having a first portion linked to the first member and a second portion; and
a print head mounted on the second portion of the second member of the head drive mechanism;
wherein when the tape cassette is inserted in the first direction into the cassette loading section, the contact portion of the first member contacts the tape cassette, thereby pivoting the first member and the second member such that the print head is brought into contact with the platen roller of said tape cassette with the free end of the tape-shaped recording medium located therebetween.

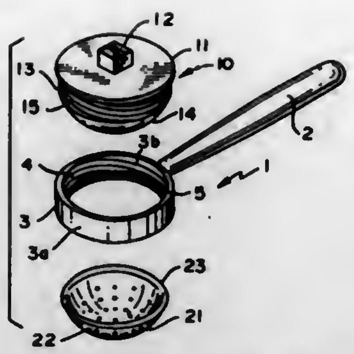
5,615,961
MATERIAL CONVEYING METHOD AND APPARATUS AND MATERIAL PROCESSING APPARATUS
Koji Wada, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Jun. 16, 1993, Ser. No. 77,043
Claims priority, application Japan, Jun. 18, 1992, 4-159257
Int. Cl.⁶ B41J *15/16*
U.S. Cl. 400—619 **17 Claims**



1. A material conveying apparatus, comprising:
a rotating drum;
a pair of winding and guiding rollers, spaced apart from said rotating drum, for guiding a length of material according to a curvature of said rotating drum and for winding said material around a part of an outer circumference of said rotating drum; and
at least one nipping roller having an elastic member in contact with the outer circumference of said rotating drum and deformed according to the curvature of said rotating drum,
wherein said at least one nipping roller has a plurality of roller portions disposed along an axial direction of said rotating drum,
wherein said roller portions are independently rotatable,
wherein said at least one nipping roller is pressed into contact with the outer circumference of said rotating drum at a material winding portion so that said at least one nipping roller rotates correspondingly with respect to said rotating drum at said material winding portion,
wherein said at least one nipping roller is pressed into contact with said material which is wound around the outer circumference of said rotating drum, said material being guided by said pair of winding and guiding rollers,
wherein said at least one nipping roller is disposed such that said material is nipped between said rotating drum and said at least one nipping roller when said material is being conveyed,
wherein said at least one nipping roller is designed such that said nipping roller eliminates a conveying force in said axial direction of said rotating drum to prevent said material from laterally moving in said axial direction of said rotating drum, and
wherein said at least one nipping roller applies a conveying force in a conveying direction to said material.

5,615,962
LOTION APPLICATOR
Nancy K. Staub, 1435 Maryland Ave., Woodbridge, Va. 22191
Continuation of Ser. No. 111,058, Aug. 24, 1993, abandoned. This application May 17, 1995, Ser. No. 443,386
Int. Cl.⁶ B05C *11/02;* **A45D** *40/06*
U.S. Cl. 401—173 **1 Claim**

1. An applicator device for dispensing lotions, creams, gels, soft pastes and similar body-treating substances consisting of:



(1) a frame member having proximal and distal ends, said proximal end defining an elongated handle and said distal end defining an annular ring having (a) an interior surface configured with grooves and (b) a rim disposed on its interior surface for supporting and retaining a removable convex reservoir;

(2) a pressure applying lid having (a) a top portion, (b) a central portion having an outer periphery configured with threads, said threads configured to matingly engage said grooves of said interior surface of said annular ring, and (c) a bottom portion in the form of a convex dome; and

(3) a removable convex reservoir adapted for receiving, retaining and dispensing a body treating substance being configured to complement the contour of said convex dome and having (a) an applicating surface having perforations and (b) an annular flange adapted for cooperating engagement with said rim of said annular ring for fixedly but removably supporting said reservoir on said frame member;

whereby mating engagement of said threads and grooves by a rotation of said pressure applying lid will cause a movement of said pressure applying lid, such that rotation in a first direction moves said pressure applying lid toward said convex reservoir and rotation in a second and opposite direction moves said pressure applying lid away from said convex reservoir wherein rotation in said first direction generates a pressure upon a body-treating substance retained between said bottom portion of said pressure applying lid and said removable convex reservoir, said pressure being functional to motivate said body-treating substance through said perforations in said applicating surface.

5,615,963

LIQUID APPLICATOR AND METHOD OF MAKING SAME

Nobuaki Kobayashi, Nara, Japan, assignor to Sakura Color Products Corp., Osaka-Fu, Japan

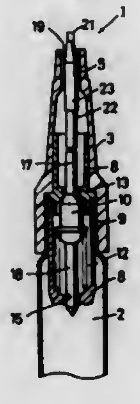
Filed Apr. 26, 1994, Ser. No. 233,819

Claims priority, application Japan, Apr. 27, 1993, 5-027854 U; Dec. 31, 1993, 5-352109

Int. Cl.^{6} B43K *8/02;8/04*

U.S. Cl. 401—206 **28 Claims**

1. A liquid applicator comprising:



a liquid reservoir;

a tip for applying liquid in the reservoir to an object,

the tip having a polygonal surface to engage an object;

a tip holder;

keying means cooperating between the tip and the tip holder for preventing relative rotation therebetween; and

means cooperating between the tip holder and liquid reservoir for connecting the tip holder to the liquid reservoir so that the tip holder does not rotate relative to the liquid reservoir,

the tip holder connecting means including a coupler, means for engaging the tip holder with the coupler, and means for connecting the coupler to the liquid reservoir;

wherein the means for engaging the tip holder with the coupler comprises a flatter.ed portion on the tip holder that engages the coupler.

5,615,964

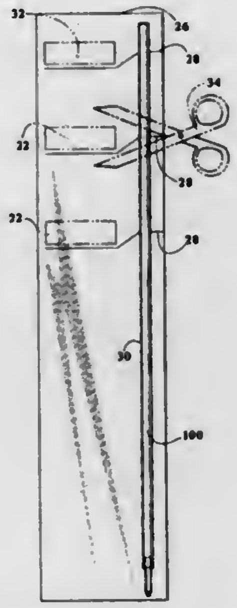
ADAPTABLE LENGTH PEN REFILL SYSTEM INCLUDING A REFILL AND A METHOD FOR ADAPTING THE LENGTH OF THE REFILL

Paul Smith, Glenview, Ill., assignor to Eversharp Pen Company, Franklin Park, Ill.

Filed May 3, 1995, Ser. No. 434,027

Int. Cl.^{6} B43K *7/02*

U.S. Cl. 401—210 **11 Claims**



1. An adaptable length refill system including a refill system for one of a plurality of available pens, the system comprising:

a continuous length of tubing having a hollow core defined between a first end and a second end wherein the second end is sealed with a writing tip and the first end is open to receive ink within the hollow tube wherein the ink is selectively spent through the writing tip;

at least one identifier means capable of identifying the length of the tubing between the first end and the second end necessary to remove to refill one of the plurality of available pens; and

a packaging card capable of holding the length of tubing in a substantially sealed display, the packaging card further having a scale printed thereon indicative of the length of tubing necessary to remove to refill one of the plurality of available pens.

5,615,965

DEVICE FOR INTERCONNECTING AN ELONGATE ELEMENT AND A SUPPORT FOR SAID ELEMENT

Jean Saurat, Etaples; Dominique Bigand, Stella Plage, and Jean-Louis Chevalier, Merlimont Plage, all of France, assignors to Sofamor S.N.C., Rang du Fliers, France

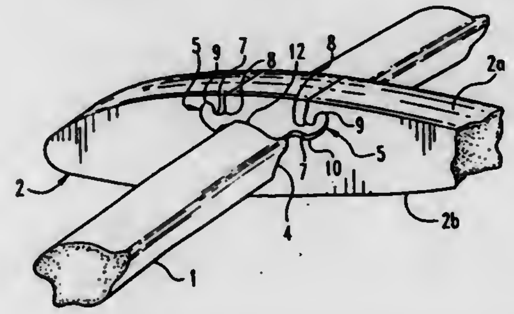
PCT No. PCT/US93/10917, § 371 Date May 10, 1995, § 102(e) Date May 10, 1995, PCT Pub. No. WO94/11642, PCT Pub. Date May 26, 1994

PCT Filed Nov. 10, 1993, Ser. No. 436,193

Claims priority, application France, Nov. 10, 1992, 92 13539

Int. Cl.^{6} F16B *7/04*

U.S. Cl. 403—24 **17 Claims**



1. In combination, an elongate spinal element with a longitudinal axis and a supporting device for use in medical prostheses, wherein said device comprising:

a spinal element support having a head portion defining a recess configured to receive the spinal element and two clamping ramps;

a slide so profiled as to be capable of being slidably inserted in said support coaxially with the elongate spinal element and in intimate contact therewith when the elongate spinal element is disposed on said support, said slide including two lateral lips cooperative with said clamping ramps; and

wherein said lips and said clamping ramps are inclined relative to the longitudinal axis of the elongate spinal element when received in said recess thereby achieving a self-clamping of each of said lips of said slide in a respective one of said clamping ramps of said support when the spinal element is received in said recess and said slide is inserted in said support.

5,615,966

DEVICE FOR CONNECTING A FIRST ELONGATE MEMBER TO TRANSVERSE SECOND ELONGATE MEMBER

Barry M. F. Jarvis, and Carolyn E. Morse, both of 10222 Hammerley No. 222, Houston, Tex. 77043

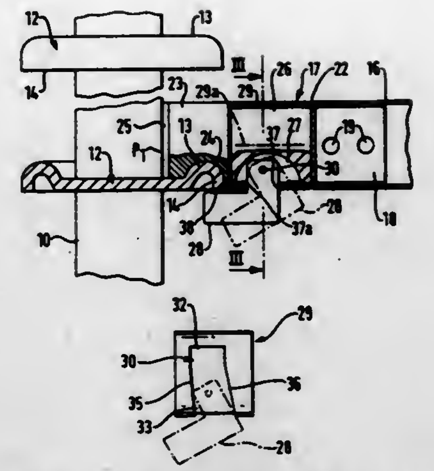
Filed Feb. 17, 1995, Ser. No. 390,640

Claims priority, application United Kingdom, Feb. 18, 1994, 9403141

Int. Cl.^{6} E04G *7/00*

U.S. Cl. 403—49 **29 Claims**

1. A device for connecting a first elongate member to a transverse second elongate member, the device comprising an end section for mounting on the second elongate member, a locator for mounting on the first elongate member for locating the end section, a movable locking means for mounting on the second elongate member and an operating member which enables the locking means to be moved from a position in which the end section is locked in position on the locator by the locking means to a further position in which the locking means permits the end section to be separated from the locator, the operating member being a rotary member mounted, in use, on the second elongate member and having a surface thereon which cooperates with the locking means



whereby rotation of the operating member effects movement of the locking means, the rotary operating member being rotatable about the longitudinal axis of the second elongate member.

5,615,967

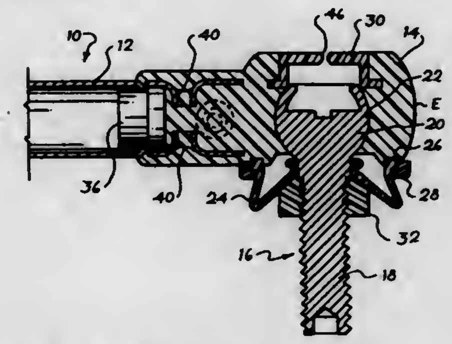
BALL JOINT LINK

Keith Hellon, Libertyville, Ill., assignor to Maclean-Fogg Company, Mundelein, Ill.

Filed Jun. 3, 1994, Ser. No. 253,688

Int. Cl.^{6} F16C *11/00;11/06;* **F16D** *1/12;* **B25G** *3/34*

U.S. Cl. 403—133 **28 Claims**



1. A ball joint link comprising:

a tubular first element having an end;

a ball stud comprising a stud which supports a ball;

a molded housing secured to the end of the first element and extending around the ball to form a ball joint, said housing comprising a fiber-reinforced plastic material that extends continuously between a first region immediately spatially adjacent the ball and a second region adjacent the end; and

a plug in the tubular first element near the end, wherein the fiber-reinforced plastic material of the housing substantially fills the tubular first element between the end and the plug, and wherein the end is insert molded in the housing the second region.

5,615,968

HAND RAIL COUPLER SYSTEM

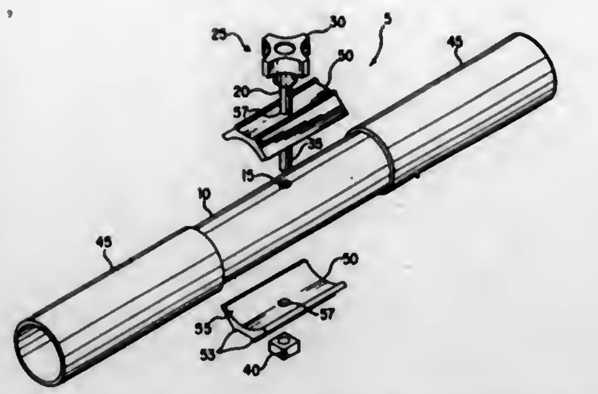
Douglas R. Verenski, Enon Valley, and Thomas E. Bayer, Greenville, both of Pa., assignors to Werner Co., Greenville, Pa.

Filed Sep. 19, 1995, Ser. No. 529,967

Int. Cl.^{6} F16B *7/04*

U.S. Cl. 403—312 **21 Claims**

1. A pipe coupler system for joining two coaxially aligned hollow pipe sections, wherein each hollow pipe section has an upper surface and a lower surface, comprising:



a coupling tube having an outer surface conformable to an inner surface of said each hollow pipe section, wherein each end of the coupling tube is adapted to be slidably disposed within an open end of said each hollow pipe section;

a first coupler clamp and a second coupler clamp, each of the coupler clamps having an inner surface with two outer parallel edges, wherein the inner surface of said each coupler clamp is generally conformable to an outer surface of said each hollow pipe section, and wherein said each coupler clamp is adapted to be disposed in opposing relationship on the outer surfaces of the hollow pipe sections, the first coupler clamp is adapted to be disposed on the upper surfaces of the hollow pipe sections and the second coupler clamp is adapted to be disposed on the lower surfaces of the hollow pipe sections, so that the inner surface of said each coupler clamp contacts a portion of the outer surface of said each hollow pipe section and the outer parallel edges of said each coupler clamp are parallel to a longitudinal axis of said each hollow pipe section; and

a threaded fastener and a nut for releasably securing the coupler clamps on the hollow pipe sections, and wherein the coupling tube includes a hole extending through opposing walls of the coupling tube, the hole being sized to accommodate passage of the threaded fastener, and wherein said each coupler clamp has a hole sized to accommodate passage of the threaded fastener, so that the threaded fastener is insertable through the first coupler clamp, the coupling tube, and the second coupler clamp so that tightening of the threaded fastener in the nut causes the first and second coupler clamps to secure the hollow pipe sections together.

5,615,969

ROTARY DRIVE COUPLING

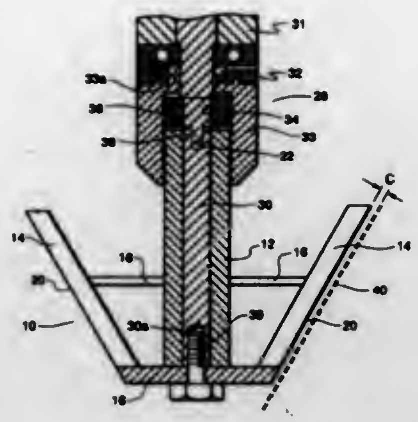
George Tunnicliffe, Stoke-on-Trent; John P. Lee, Prestbury, both of England, and Damian Dixon, Wigan, United Kingdom, assignors to Kemutec Group, Ltd., Maccles Field, United Kingdom

Division of Ser. No. 148,721, Nov. 8, 1993, Pat. No. 5,505,392. This application Oct. 2, 1995, Ser. No. 537,627

Int. Cl.^{6} B02C *13/284;* F16C *3/03;* F16D *3/06*

U.S. Cl. 403—348 10 Claims

1. An adjustable length rotary drive coupling comprising a first rotary shaft provided with at least one tooth and a second rotary shaft provided with a plurality of recesses spaced apart along the length thereof, each said recess being engageable with each of said at least one tooth, one of said first and second rotary shafts being a drive shaft and the other being a driven shaft, with each tooth being selectively engageable with any one of said plurality of



recesses, to enable the length of the rotary drive coupling to be adjusted, and wherein further the recesses are provided in an end face of the second shaft.

5,615,970

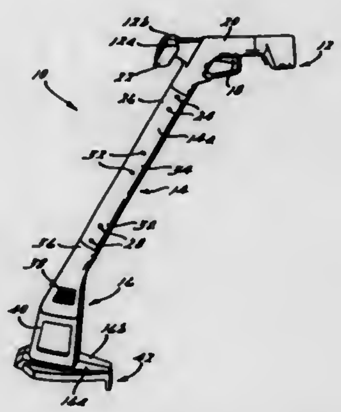
STRING TRIMMER HAVING KNOCK-DOWN HANDLE

George Reekie, North York; Jacob Prosper, Brockville; Sheldon Atos, Mallorytown, and Colin Dyke, North Augusta, all of Canada, assignors to Black & Decker Inc., Newark, Del.

Filed Oct. 20, 1994, Ser. No. 326,827

Int. Cl.^{6} B25G *3/26*

U.S. Cl. 403—379 11 Claims



1. A string trimmer apparatus for trimming vegetation, said apparatus comprising:

a handle assembly adapted to be held by an operator;

a base assembly;

an intermediate assembly coupled to said handle assembly and to said base assembly to form said trimmer apparatus; and

said intermediate assembly including an upper end portion and a lower end portion, said upper end portion being adapted to engage with a lower portion of said handle assembly and said lower end portion being adapted to lockably inter-engage with an upper portion of said base assembly such that said handle assembly, said intermediate assembly and said base assembly form a rigid housing assembly when coupled together;

said intermediate assembly comprising a first intermediate half member and a second intermediate half member adapted to be secured together to form at least one coupling recess at one end portion thereof; and

wherein at least one of said handle assembly and said base assembly includes a coupling neck adapted to matingly engage within said coupling recess to enable said intermediate assembly to be secured to said one of said handle assembly and said base assembly.

5,615,971

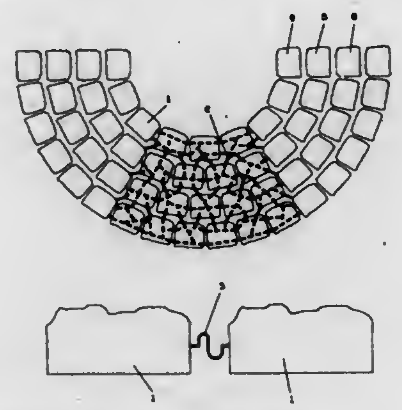
GROUNDCOVERING ELEMENT, METHOD FOR ITS MANUFACTURE AND METHOD FOR THE MANUFACTURE OF A MOULD TO BE APPLIED WITH THE MANUFACTURING METHOD

Jan A. Boevé, Burg. Vrylandweg 1, 6997 AB Hoog-Keppel, Netherlands

Filed Apr. 18, 1995, Ser. No. 423,355

Int. Cl.^{6} E01C *5/06*

U.S. Cl. 404—37 13 Claims



1. A groundcovering element comprising:

a plurality of components; and

links positioned between said components for providing a distance between adjacent components, said links having a curved shape for allowing the distance between adjacent components to be increased by straightening said curve or decreased by tightening said curve, said links comprising a deformable material selected from the group consisting of bendable plastic or metal.

5,615,972

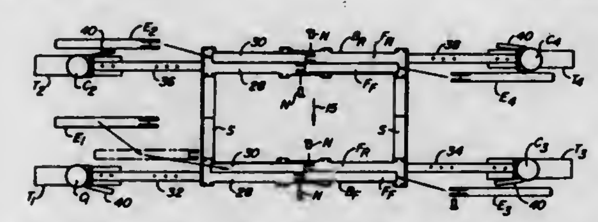
PAVING MACHINE WITH EXTENDED TELESCOPING MEMBERS

Ronald M. Guntert, Stockton, Calif., and William R. Cape, Racine, Wis., assignors to Guntert & Zimmerman Construction Div., Inc., Ripon, Calif.

Filed Jul. 20, 1995, Ser. No. 504,858

Int. Cl.^{6} E01C *19/22*

U.S. Cl. 404—72 11 Claims



8. A process for expanding transversely a paving machine having a tractor frame for propelling the paving machine along a paving path and supporting a paving kit for suspension from the tractor frame for spreading concrete in the paving path of the paving machine, leveling and vibrating the concrete into a semi-liquid state, and then confining and finishing the concrete into a slab with an upwardly exposed and finished surface, the paving machine having:

a tractor frame having longitudinal members parallel to the paving path and forward and rear transverse members across the paving path;

at least one of the forward and rear transverse members including relatively telescoping members with a first relatively telescoping member constituting a portion of the tractor frame and a second relatively telescoping member having a crawler attachment end and a frame support end for supported sliding extended movement relative to the tractor frame;

at least two crawlers, with one crawler on one side of the tractor frame and another crawler on the other side of the tractor frame;

one of said at least two crawlers affixed to the second relatively telescoping member at said crawler attachment end and supporting the tractor frame at said frame support end whereby extension and retraction of the second relatively telescoping member at the frame support end causes it frame dimension to expand and contract across the paving machine; the process of expanding the paver comprising the steps of:

providing a telescoping member extender for attachment to the second relatively telescoping member at one end and having a length for insertion to the first relatively telescoping member for support from the first relatively telescoping member;

inserting the telescoping member extender in the first relatively telescoping member into abutment with the second relatively telescoping member; and

connecting the frame support end of the first relatively telescoping member and the telescoping member extender for providing a rigid connection between the telescoping member extender and the second relatively telescoping member; and,

extending the second relatively telescoping member relative to a supported position from the first relatively telescoping member whereby supported telescoping movement of the second relatively telescoping member can occur from the first telescoping member through the telescoping member extender.

5,615,973

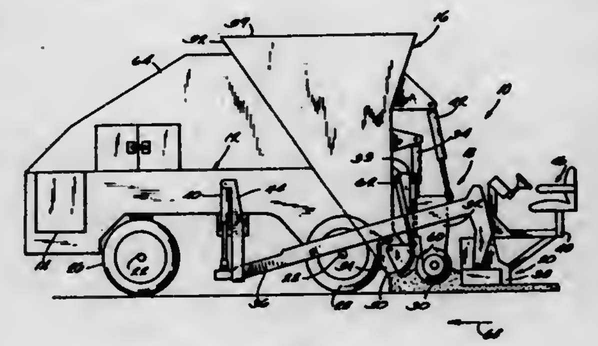
PAVING MACHINE WITH GRAVITY FEED HOPPER AND AUGER MECHANISM

Thomas R. Campbell, Chatanooga, Tenn., assignor to Astec Industries, Inc., Chattanooga, Tenn.

Filed Sep. 29, 1994, Ser. No. 314,348

Int. Cl.^{6} E01C *19/12*

U.S. Cl. 404—75 17 Claims



1. A paving apparatus, comprising:

a gravity feed hopper for holding paving materials, said gravity feed hopper having a capacity and including

a discharge opening for discharging paving materials, said discharge opening having a first transverse length;

a storage portion for storing paving materials, said storage portion including i) an upper section for increasing the capacity of said hopper, said upper section having a relatively constant width and terminating at an open top; and ii) a lower generally frusto-conical section having an upper end of enlarged cross section and a lower end of reduced cross section, said upper end of enlarged cross section being connected to said upper section; and

a discharge portion for directing paving materials from said storage portion to said discharge opening, said discharge portion having a second transverse length, a discharge portion

upper end connected to said lower end of reduced cross section and a bottom end in which said discharge opening is formed;

a feeder gate for selectively closing said discharge opening, said feeder gate being mounted on said discharge portion of said gravity feed hopper; and

a vertically adjustable distributing auger mechanism for distributing paving materials, said vertically adjustable distributing auger mechanism being supported by said lower generally frusto-conical of said gravity feed hopper, said vertically adjustable distributing auger having a third transverse length, a top and a screw auger extending transversely across the paving apparatus, said screw auger being mounted on a slide which is raiseable and lowerable with respect to said gravity feed hopper,

wherein i) said discharge opening is located between said storage portion and said vertically adjustable distributing auger mechanism and ii) said discharge portion is inclined downwardly and rearwardly towards said vertically adjustable distribution auger mechanism so as to direct paving materials towards said vertically adjustable auger mechanism without the aid of any external conveyors.

5,615,974

PROCESS FOR SOIL DECONTAMINATION BY OXIDATION AND VACUUM EXTRACTION

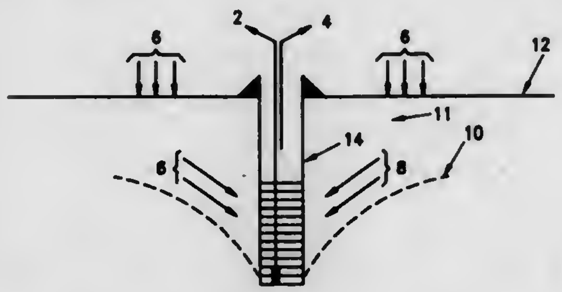
Christopher A. Land, Newton, N.J.; Joseph A. Pezzullo, Langborne, Pa.; James J. Malot, Dorado, Puerto Rico; Louis C. Papa, Cherry Hill, N.J., and Daniel Oberle, Sylvania, Ohio, assignors to Terra Vac, Inc., San Juan, Puerto Rico

PCT No. PCT/US94/01315, § 371 Date Apr. 4, 1994, § 102(e) Date Apr. 4, 1994, PCT Pub. No. WO95/21034, PCT Pub. Date Aug. 10, 1995

Continuation of Ser. No. 987,445, Jan. 7, 1992, abandoned. This PCT application Feb. 4, 1994, Ser. No. 211,559

Int. Cl.[6] B09B *3/00*

U.S. Cl. 405—128 **23 Claims**



1. An in situ process for removing one or more volatile, semivolatile or nonvolatile organic contaminants present in liquid, semisolid or solid form in a contaminated subsurface zone, which process comprises the steps of:

(a) introducing into said contaminated subsurface zone an oxidant having the capability to react exothermically with said contaminants to form oxidation products thereof;

(b) allowing said oxidant to react exothermically with said contaminants to form oxidation products;

(c) installing at least one vacuum extraction well into the contaminated subsurface zone or into another subsurface zone at a position proximate to the position in the contaminated zone at which oxidant was introduced;

(d) applying to the top of said vacuum extraction well a vacuum that is sufficient to create a negative pressure gradient in the subsurface; and

(e) removing through said vacuum extraction well to the surface oxidation products of said contaminants.

5,615,975

METHOD FOR REMEDIATION OF VOLATILE ORGANIC CONTAMINATED SOILS

Hugh H. Wang, Gastonia, N.C.; John Parker, Sylvania, Ohio; Paul Przygocki, Southfield, Mich., and Mike Ameel, Bethel Park, Pa., assignors to Sandoz Ltd., Basel, Switzerland

Filed Jul. 14, 1995, Ser. No. 502,593

Int. Cl.[6] B09C *1/08*

U.S. Cl. 405—128 **16 Claims**

1. A method for the decontamination of soil comprising the extraction of volatile organic compounds from the soil by contacting contaminated soil with a dispersing/desorption chemical admixture, said admixture comprising a dispersing/desorption agent selected from the group consisting of naphthalene sulfonates and salts thereof, lignosulfonates and salts thereof and mixtures thereof.

5,615,976

DOUBLE WALLED PIPE, JACKING METHOD AND PIPE END STRUCTURE OF LEADING PIPE

Tomoya Fujimoto; Kenko Okamura; Shigeru Morishita, all of Tokyo; Masaru Murakami; Akira Adachi, both of Chiba; Mitsutoshi Hayashi, Yokohama; Akinari Fujita, Yokohama; Shingo Nagashima, Yokohama; Minoru Kurashina, Yokohama, and Kentaro Yoshida, Yokohama, all of Japan, assignors to Kawasaki Steel Corp., Kobe, and Tokyo Gas Co. Ltd., Tokyo, both of Japan

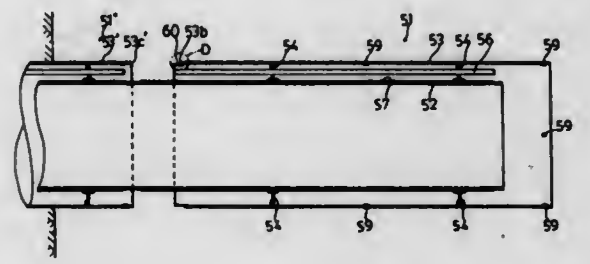
PCT No. PCT/JP93/01304, § 371 Date Sep. 14, 1994, § 102(e) Date Sep. 14, 1994, PCT Pub. No. WO94/20730, PCT Pub. Date Sep. 15, 1994

PCT Filed Sep. 13, 1993, Ser. No. 302,865

Claims priority, application Japan, Mar. 5, 1993, 5-044860; Mar. 25, 1993, 5-066598; Mar. 25, 1993, 5-066609; Aug. 2, 1993, 5-191212; Aug. 2, 1993, 5-191213

Int. Cl.[6] F16L *1/036*

U.S. Cl. 405—184 **11 Claims**



1. A double walled pipe for pipe jacking method comprising:

an inner pipe; and

an outer pipe which is movable relative to said inner pipe in a longitudinal direction of said inner pipe, wherein:

there is provided, between said inner pipe and said outer pipe, a ring member surrounding the periphery of said inner pipe, said ring member being fixed to said inner pipe,

said outer pipe is supported in such a way that it is slidingly movable relative to said ring member, and

said ring member is equipped with a grout hose insertion aperture, and said double walled pipe further comprises a grout hose extending through said grout hose insertion aperture in a longitudinal direction of said double walled pipe.

5,615,977

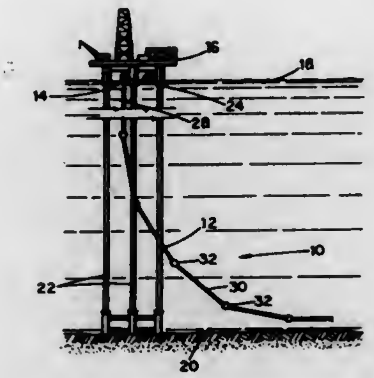
FLEXIBLE/RIGID RISER SYSTEM

Charles J. Moses, Alvarado, and Rajko M. Simic, Arlington, both of Tex., assignors to Continental Emsco Company, Garland, Tex.

Filed Sep. 7, 1993, Ser. No. 117,307

Int. Cl.[6] F16L *1/04*

U.S. Cl. 405—195.1 **20 Claims**



1. A riser for coupling an offshore platform to a subsea location on a seabed, said riser comprising:

a first rigid riser section having a first end portion and a second end portion, said first end portion being coupled to said offshore platform;

a last rigid riser section having a first end portion and a second end portion, said second end portion of said last rigid riser section being coupled to said subsea location;

at least one intermediate rigid riser section;

a first flexible elastomeric coupling joining the first rigid riser section to the at least one intermediate rigid riser section;

a second flexible elastomeric coupling joining the at least one intermediate rigid riser section to the last rigid riser section; and

wherein each of the flexible elastomeric couplings permits the adjacent rigid riser sections to be displaced angularly with respect to one another with a predetermined stiffness, so that said riser can be deployed in a catenary configuration.

5,615,978

MANAGEMENT SYSTEM FOR WATER-BARRIER SHEET

Katsumi Kotani, Tokyo; Masatoshi Kushima, Kashiwa, and Eiji Takahashi, Mitaka, all of Japan, assignors to Obayashi Corporation, Osaka, Japan

Filed Mar. 9, 1995, Ser. No. 401,256

Claims priority, application Japan, May 19, 1994, 6-105710

Int. Cl.[6] B65G *5/00;* **E21F** *17/16*

U.S. Cl. 405—270 **9 Claims**

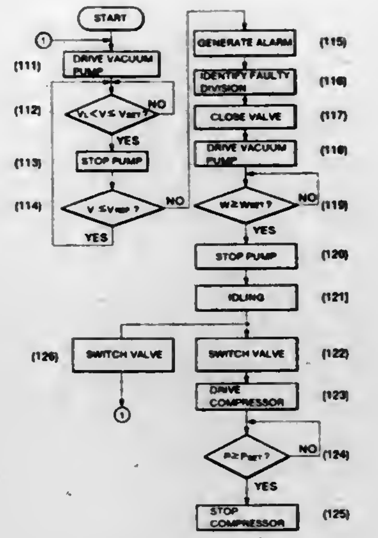
1. A management system for a water-barrier sheet having a double layer structure with an upper sheet and a lower sheet, said system comprising:

first means for hermetically sealing and dividing an interior space of said water-barrier sheet defined between said upper and lower sheets into a plurality of enclosed divisions;

second means for applying vacuum pressure to enclosed interior spaces of said respective enclosed divisions;

third means for monitoring vacuum conditions in said interior spaces of said respective enclosed divisions and identifying a faulty division when failure thereof occurs;

fourth means, responsive to said third means, for performing a repair operation of a failure in said faulty division, said fourth means including means for feeding pressurized air into said interior space of said faulty division for forming a resistance against water pressure penetrating into said faulty division; and



fifth means for sampling water penetrating into said faulty division.

5,615,979

MINE SUPPORT BAG

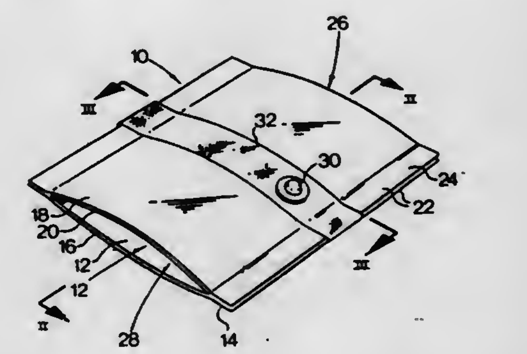
Fen-Fen Lin, 33 Champagne Street, Bayswater, Bloemfontein, South Africa

Filed Aug. 28, 1995, Ser. No. 520,243

Claims priority, application South Africa, Aug. 14, 1995, 95/6762

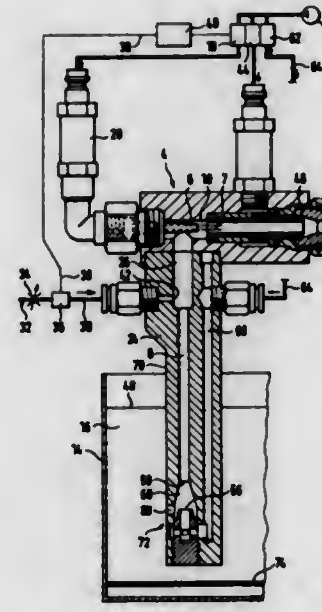
Int. Cl.[6] E02D *15/32;7/00*

U.S. Cl. 405—289 **8 Claims**



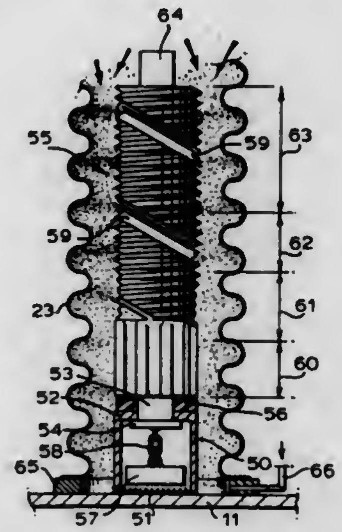
1. A mine support bag comprising an inner fabric tube of selected length and selected circumference having an inner surface and outer surface, a first fabric sheet laminated to the outer surface on the one side of the tube, said first fabric sheet having a width which is wider than half of said circumference, said first fabric sheet having longitudinal edges which run generally parallel with the length of said tube and extend beyond opposite lateral edges of said tube, a second fabric sheet laminated to the opposite side of said tube, said second fabric sheet having a width which is wider than half of said circumference, said second fabric sheet having longitudinal edges which run generally parallel with the length of the tube and extend beyond opposite lateral edges of said tube, the respective lateral edges of the first and second sheets overlying each other and being laminated together, the opposite ends of the tube each being sealed to thereby form a sealed bag; said sealed bag having a valve therein through which a pressurising fluid can be introduced into the interior of said bag.

5,615,980
INJECTOR-FEED DEVICE FOR PNEUMATIC FEED OF POWDER
Felix Mauchle, Abtwil, Switzerland, assignor to GEMA Volstatic AG, St. Gallen, Switzerland
Filed Jun. 7, 1995, Ser. No. 472,839
Claims priority, application Germany, Jun. 8, 1994, 44 19 987.2
Int. Cl.^{6} B65G *53/66*
U.S. Cl. 406—19 **13 Claims**



1. An injector-conveyor system, for pneumatic conveyance of powder coating material, comprising:
a powder container containing a supply of said powder coating material;
a powder-air channel for discharging air and said powder coating material toward an object to be coated;
a vacuum chamber disposed upstream of said powder-air channel;
a powder intake channel having one end thereof fluidically connected to said supply of said powder coating material contained within said powder container, and another end thereof fluidically connected to said vacuum chamber;
means for discharging a stream of said air through said vacuum chamber and into said powder-air channel for creating a vacuum within said vacuum chamber whereby an amount of said powder coating material from said powder container is drawn through said powder intake channel, into said vacuum chamber, mixed with said stream of said air, and discharged as a mixture of said stream of said air and said amount of said powder coating material through said powder-air channel and toward said object to be coated;
conduit means fluidically connecting said vacuum chamber to atmospheric air for drawing an amount of said atmospheric air through said conduit means and into said vacuum chamber for mixing with said powder coating material and said stream of said air; and
means disposed within said conduit means for measuring said amount of said atmospheric air flowing through said conduit means and into said vacuum chamber and for generating a measurement signal which is proportionally indicative of said amount of said powder coating material being drawn into said vacuum chamber, mixed with said stream of said air and said amount of said atmospheric air, and discharged along with said stream of said air and said amount of atmospheric air through said powder-air channel.

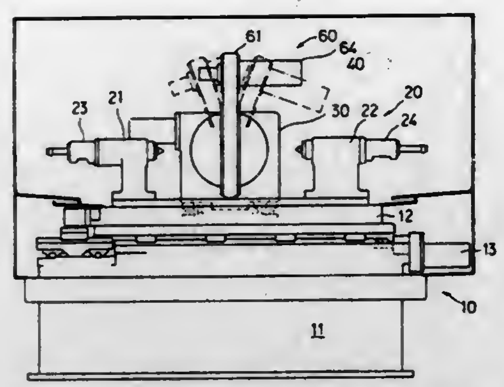
5,615,981
FORMING THREADED HOLES
Douglas J. Wheatley, Hudson Hill, Hedingham Road, Wethersfield, Braintree, Essex CM7 4EH, Great Britain
PCT No. PCT/GB94/00544, § 371 Date Oct. 30, 1995, § 102(e) Date Oct. 30, 1995, PCT Pub. No. WO94/21409, PCT Pub. Date Sep. 29, 1994
PCT Filed Mar. 17, 1994, Ser. No. 525,543
Claims priority, application United Kingdom, Mar. 18, 1993, 9305557
Int. Cl.^{6} B23B *35/00;41/08;51/00*
U.S. Cl. 408—1 R **15 Claims**



1. A method of forming a threaded hole through a plate such as a tank lid, comprising advancing a rotary hole-cutter into the plate to form a circular hole therethrough, continuing to advance the hole-cutter beyond the plate and following the hole-cutter into the cut hole with a tapered tap having a required thread form whilst rotating the tap to form a thread in the hole, in which method the circular hole is formed with a centre-less hole cutter and in that an inert atmosphere is maintained on the side of the plate from which the cutting was commenced, in the region of the hole being cut through the plate both during the cutting and subsequent tapping thereof.

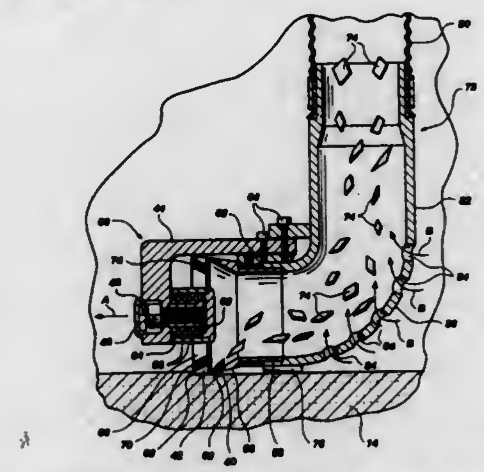
5,615,982
GEAR FINISHING APPARATUS
Toshihide Mihara, Amagasaki; Ryoji Yoshida, Suita; Yutaro Kuranaga, Sanda, and Tomoyuki Iwata, Asahikawa, all of Japan, assignors to Kanzaki Kokyukoki MFG. Co., Ltd., Japan
PCT No. PCT/JP94/01101, § 371 Date Apr. 17, 1995, § 102(e) Date Apr. 17, 1995, PCT Pub. No. WO95/01849, PCT Pub. Date Jan. 19, 1995
PCT Filed Jul. 7, 1994, Ser. No. 392,974
Claims priority, application Japan, Jul. 7, 1993, 5-167669
Int. Cl.^{6} B23F *19/06*
U.S. Cl. 409—55 **9 Claims**

1. A gear finishing apparatus in which a finishing wheel with internal teeth is rotated so as to finish a gear piece in mesh with the finishing wheel, the apparatus comprising:
a base portion;
a work holder supported by a machine table and for holding the gear piece;
a sliding section supported on the base portion and movable close to and away from the gear piece on the work holder in a direction substantially perpendicular to the axis of the gear; and
a finishing wheel holding section supported by the sliding section and for holding the finishing wheel,



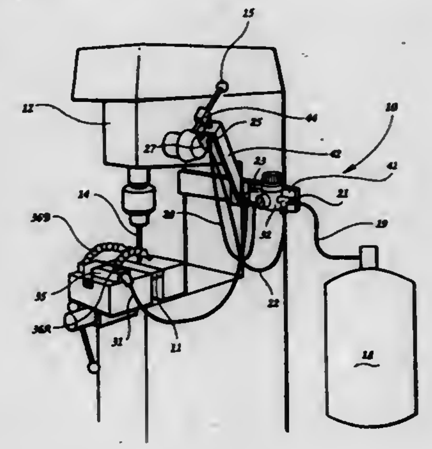
the sliding section having a supporting shaft extending from the sliding section toward the gear piece along the sliding direction of the sliding section.
the finishing wheel holding section comprising:
a joint portion supported by the supporting shaft and holding the finishing wheel at a selected crossed axes angle relative to the gear piece during processing;
an operating portion movable relative to the joint portion in a direction parallel to the axis of the finishing wheel while holding the finishing wheel at the crossed axes angle;
a fixing portion for fixing the operation portion to the joint portion at predetermined positions within the extent of the movement;
a circular support ring rotating with the finishing wheel and holding the finishing wheel therein, said circular support ring being supported rotatably about a central axis thereof by the operating portion; and
a drive portion attached to the operating portion and for driving the support ring to rotate,
wherein the support ring has a sufficient width and an engaging portion so that a plurality of individual finishing wheels can be arranged and fixed therein adjacent to each other in a direction parallel to the axis of the finishing wheel.

5,615,983
PROPELLANT GRAIN MACHINING DEVICE AND METHOD
Paul W. Hoekstra, Ogden, Utah, assignor to Thiokol Corporation, Ogden, Utah
Division of Ser. No. 388,249, Feb. 14, 1995, Pat. No. 5,511,914, which is a division of Ser. No. 871,966, Apr. 21, 1992, Pat. No. 5,391,025. This application Apr. 22, 1996, Ser. No. 635,745
Int. Cl.^{6} B23C *3/00*
U.S. Cl. 409—132 **5 Claims**



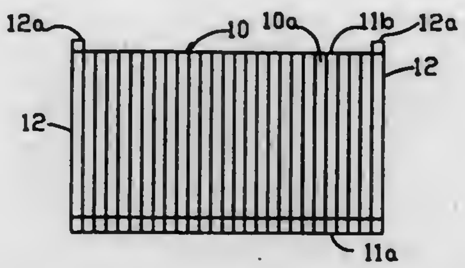
1. A method for cutting a portion of propellant grain away from a solid rocket motor along a path and removing the portion of propellant grain in a plurality of pieces, comprising the steps of:
positioning a cutting tool having a primary cutter and a secondary cutter to engage the propellant grain upon actuating the cutting tool;
paring the portion of propellant grain away from the solid rocket motor along the path using the primary cutter;
cutting the portion of propellant grain along the path using the secondary cutter such that the combination of said paring and said cutting divide the portion of propellant grain into a plurality of pieces; and
removing the plurality of pieces of propellant grain from the solid rocket motor.

5,615,984
MACHINING TOOL AND AUTOMATED AIR-BURST CONTROL DEVICE FOR USE WITH A MACHINING TOOL
Lester W. Oberbreckling, 7215 Connan La., Charlotte, N.C. 28226
Filed Jul. 28, 1995, Ser. No. 508,957
Int. Cl.^{6} B23B *51/06*
U.S. Cl. 409—137 **14 Claims**



1. An automated air-burst control device for use with a machining tool comprising a rotating cutter for machining a work piece, and a pivoted lever arm for being actuated to move the cutter between an operative position wherein the cutter engages the work piece and an inoperative position wherein the cutter is spaced apart from the work piece, an automated air-burst device to clear away fragments of the work piece being machined, said air-burst control device comprising:
(a) an inlet pneumatically communicating with a source of compressed air;
(b) a control valve pneumatically communicating with the inlet and movable between open flow and closed flow conditions, said control valve being normally disposed in the closed flow condition for blocking air flow from the inlet through the control valve;
(c) an actuator valve pneumatically connected to the control valve and including a pressure-responsive roller for being mounted to the machining tool and aligned for engagement with the pivoted lever arm as the cutter is moved from the operative position to the inoperative position after cutting, such that upon engagement of the lever arm and roller, said actuator valve moves the control valve out of its normally closed flow condition and into the open flow condition, to release air flow from the inlet through the control valve; and
(d) an air flow outlet line pneumatically communicating with the control valve and having a free end thereof aimed towards the work piece being machined to direct a burst of air flow from the inlet through the outlet line to the work piece thereby clearing away fragments of the work piece from the work piece and the machining tool.

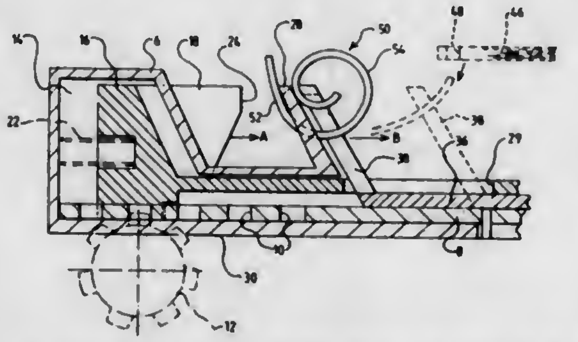
5,615,985
COLLATED FASTENER STRIP
Barbara A. Rose, West Chester; Ronald B. Fite, Milford, both of Ohio, and Alan W. Ray, Valdese, N.C., assignors to Senco Products, Inc., Cincinnati, Ohio
Filed Jun. 5, 1995, Ser. No. 461,155
Int. Cl.^{6} F16B *15/08*
U.S. Cl. 411—442 **16 Claims**



1. A collated strip of fasteners for use in a pneumatic fastener driving tool having a magazine containing a series of parallel grooves for accommodating the head of a headed fastener, said strip comprising:

- a plurality of essentially headless fasteners having elongated shanks arranged in side by side abutting relationship, with each fastener having a surface configured to penetrate a workpiece at one end thereof and a flat surface at the opposite end thereof, wherein said plurality of fasteners are adhered together to form a fastener strip having a forward end and a rearward end;
- and at least one headed fastener having an elongated shank and a head which is capable of being supported within a parallel groove within a magazine of a fastener driving tool, with said second headed fastener located within said fastener strip near its rearward end;
- whereby said fastener strip is operable to be used in the magazine of a fastener driving tool containing a series of parallel grooves.

5,615,986
BINDING MACHINES
Scott Cox, Warwick, United Kingdom, assignor to Acco-Rexel Group Services Plc., United Kingdom
PCT No. PCT/GB92/02193, § 371 Date Feb. 1, 1995, § 102(e) Date Feb. 1, 1995, PCT Pub. No. WO94/00302, PCT Pub. Date Jan. 6, 1994
PCT Filed Nov. 26, 1992, Ser. No. 356,337
Claims priority, application United Kingdom, Jun. 24, 1992, 9213447
Int. Cl.^{6} B42B *5/10*
U.S. Cl. 412—40 **6 Claims**



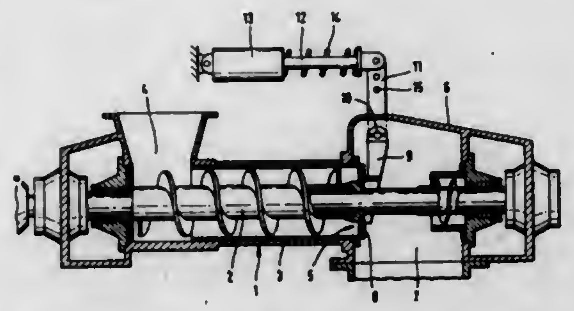
1. In a binding machine for binding packets of sheets having a plurality of apertures adjacent a side edge of the packets, said machine including

- a binding element having a spine and a plurality of curved, flexible, coilable, binding fingers for insertion in said apertures to bind the sheets into a book-like form,
- a clamping mechanism for clamping the binding element, and
- an operating member for uncoiling the binding fingers of the binding element,

the improvement comprising:

- a) a single drive member for both said clamping mechanism and said operating member and moveable among an inoperative position, a first operative position and a second operative position; and
- b) drive means for moving said drive member from said inoperative position to said first operative position and causing said clamping mechanism to clamp the binding element, and for moving said drive member from said first operative position to said second operative position and causing said operating member to uncoil the binding fingers of the binding element.

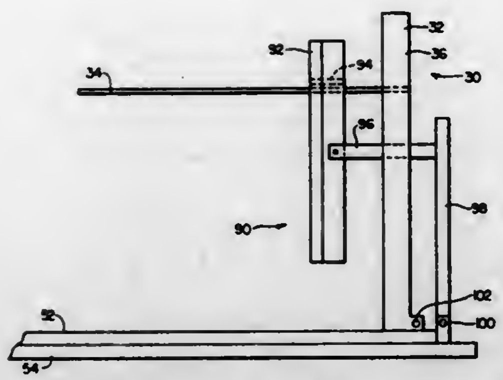
5,615,987
WORM CONVEYOR FOR BULK MATERIAL
Hans-Joachim Weist, Münsterdorf, Germany, assignor to Claudius Peters Aktiengesellschaft, Buxtehude, Germany
Filed Oct. 5, 1994, Ser. No. 318,273
Claims priority, application Germany, Oct. 6, 1993, 93 15 175.6
Int. Cl.^{6} B65G *53/08*
U.S. Cl. 414—218 **4 Claims**



1. In a worm conveyor for bulk material having an outlet port, a discharge chamber adjacent said outlet port for receiving said material passing through said port, a non-return flap closably covering said port and movable away from and toward a closed position for controlling flow of material through said port toward said chamber and reverse flow from said chamber through said port, and spring means operatively associated with said flap for constantly urging said flap toward its closed position, the improvement comprising damping means operatively acting on said flap for damping movement of said flap away from its closed position against the bias of said spring means wherein said damping means comprises a damping cylinder.

5,615,988
WAFER TRANSFER SYSTEM HAVING ROTATIONAL CAPABILITY
Mordechai Wiesler, Lexington, Mass., and Mitchell Weiss, Haverford, Pa., assignors to PRI Automation, Inc., Billerica, Mass.
Filed May 22, 1996, Ser. No. 651,715
Int. Cl.^{6} B65G *1/06*
U.S. Cl. 414—416 **26 Claims**

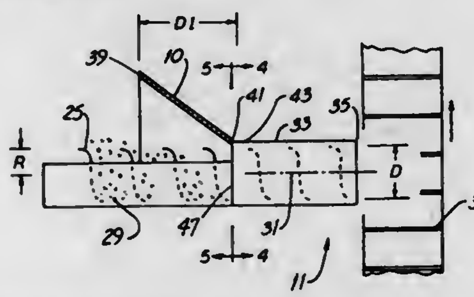
1. A semiconductor wafer transfer system for moving a wafer horizontally into and out of a wafer support device to and from a position in which the wafer is maintained in a vertical orientation accessible for further processing, the wafer support device having opposed, paired shoulders on interior walls thereof to support the



wafer in a horizontal orientation, the support device further having a vertical opening therein, the wafer transfer system comprising:

- a base positioned adjacent the opening in the wafer support device;
- an extraction structure mounted to the base for generally horizontal reciprocal movement into and out of the wafer support device for removing the wafer from the wafer support device along a generally horizontal path, the extraction structure further mounted to the base for rotation to a generally vertical orientation; and
- a wafer support structure comprising wafer receiving elements disposed to receive the wafer from the extraction structure, the wafer support structure mounted to the base for rotation to a generally vertical orientation concurrently with the extraction structure.

5,615,989
CONVERGING MEMBER AND RELATED APPARATUS FOR CONVEYING GRANULAR MATERIAL
Robert A. Matousek, Milan, Ill., and James W. Minnihan, Racine, Wis., assignors to Case Corporation, Racine, Wis.
Continuation of Ser. No. 492,373, Jun. 19, 1995, abandoned. This application Jul. 10, 1996, Ser. No. 677,788
Int. Cl.^{6} A01D *41/00*
U.S. Cl. 414—502 **2 Claims**



1. In a grain-harvesting combine, the combination of a quantity of grain, a first conveyor for conveying the grain to a second conveyor, and trough pans lateral to the first conveyor and supporting the grain during conveying, and wherein:

- the grain falls from a threshing drum to the trough pans;
- the grain has an upper level above the first conveyor and covers the first conveyor;
- the first conveyor extends along an axis substantially parallel to the trough pans, is of substantially uniform diameter along its length and conveys the grain through a coaxial converging member to a tubular guide portion between the converging member and a second conveyor,

and wherein the converging member:

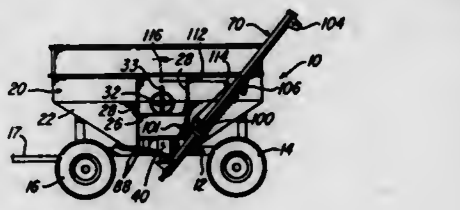
- includes an inlet terminus substantially normal to the axis, thereby equally engaging the grain moving along the trough pans;
- includes a substantially smooth interior surface for converging the grain into a guide portion feeding the second conveyor;
- includes an outlet terminus having a generally-horizontal bottom formed by the trough pans; and
- extends partially around the first conveyor;

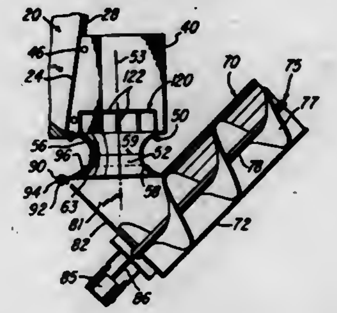
and wherein:

- the guide portion is of substantially uniform cross-sectional area along its length,

whereby the output of the second conveyor is increased.

5,615,990
AUGER UNIT FOR A GRANULAR MATERIAL TRANSPORT WAGON
Maurice Grieshop, Ft. Recovery, Ohio, assignor to J. & M. Manufacturing Co., Inc., Fort Recovery, Ohio
Continuation of Ser. No. 293,547, Aug. 22, 1994, abandoned. This application Nov. 22, 1995, Ser. No. 561,888
Int. Cl.^{6} B60P *1/40*
U.S. Cl. 414—526 **5 Claims**





1. A conveyor unit for granular material and adapted to be mounted on a wheel supported wagon including a container for transporting the material, said unit comprising an annular wall forming a tubular support member having a generally vertical axis and defining a passage, said support member including an outwardly curved lower annular flange having a radius of curvature substantially greater than the thickness of said wall, means for directing material from the container into said passage, an elongated conveyor conduit having a lower end portion and an upper end portion including means defining a discharge outlet, a power driven conveyor member within said conveyor conduit for conveying material from said lower end portion to said upper end portion and through said discharge outlet, said lower end portion of said conduit including an upper wall having an upwardly curved annular flange disposed around said tubular support member above said outwardly curved lower annular flange, said outwardly curved flange supporting said upwardly curved flange and said lower end portion of said conduit in suspended relation, said curved flanges cooperating to provide for substantial rotation of said conveyor conduit relative to said tubular support member generally on said axis to a selected angular position, said curved annular flanges also cooperating to provide for tilting said conduit in a generally vertical plane and relative to said tubular support member at a selected rotational position of said conduit, and said curved annular flanges further cooperating to provide for confining the granular material and self-centering of said flanges in response to the weight of said conveyor conduit and said conveyor member.

5,615,991

VARIABLE PRIORITY DEVICE FOR HEAVY CONSTRUCTION EQUIPMENT

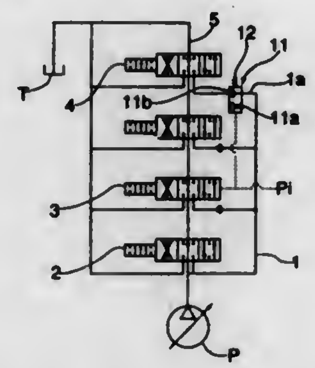
Dae S. Chung, Pusan, Rep. of Korea, assignor to Samsung Heavy Industries Co., Ltd., Seoul, Rep. of Korea

Filed Jun. 30, 1995, Ser. No. 497,173

Claims priority, application Rep. of Korea, Sep. 30, 1994, 94-25345

Int. Cl.⁶ F15B *13/08*

U.S. Cl. 414—685 **1 Claim**



1. In a hydraulic apparatus for heavy construction equipment adapted to supply fluid delivered from a single pump to a boom actuator and a bucket actuator respectively via parallel fluid lines, a variable priority device for a boom comprising:

means for limiting an amount of fluid passing through the bucket-side parallel fluid line when the boom operates alone and thereby decreasing an amount of fluid supplied to the bucket actuator, said means for limiting comprising a priority control valve installed in the bucket-side parallel fluid line and adapted to be switched between an orifice state and an orifice release state, and resilience means for initially maintaining the priority control valve at the orifice release state while being switched from the orifice release state to the orifice state against resilience of the resilience means in response to a pilot pressure for moving the spool of a boom-side switching valve communicating with the boom actuator.

5,615,992

METHOD STORING OR RESTACKING GOODS CARRIERS IN MULTI-STORIED WAREHOUSE

Hans Proske, Reinheim; Volker Treib, Brensbach, and Horst Wottke, Weiterstadt, all of Germany, assignors to Carl Schenck AG, Darmstadt, Germany

Filed Nov. 16, 1994, Ser. No. 340,214

Claims priority, application European Pat. Off., Nov. 24, 1993, 93118861

Int. Cl.⁶ B65G *1/04*

U.S. Cl. 414—786 **18 Claims**

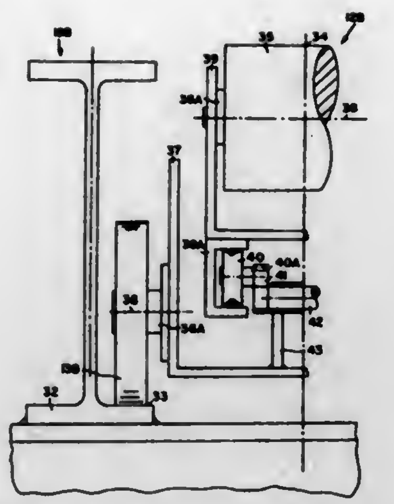
1. A method of conveying an item to be stored with respect to a storage rack having a plurality of storage levels with a plurality of storage locations on each storage level and a plurality of selectable storage positions within each storage location, using a conveyor device which is movable along the storage rack and which has a support member for carrying the item, the method comprising:

a) moving the conveyor device so that the support member is positioned at a selected target storage location;

b) moving the item on the support member into an optimized final position on the support member relatively corresponding to a selected target storage position at which the item is to be deposited in the selected target storage location;

c) moving the support member with the item thereon into the selected target storage location;

d) depositing the item from the optimized final position on the support member into the selected target storage position in the selected target storage location; and



e) withdrawing the support member from the selected target storage location.

5,615,993

METHOD OF REMOVING ARTICLES

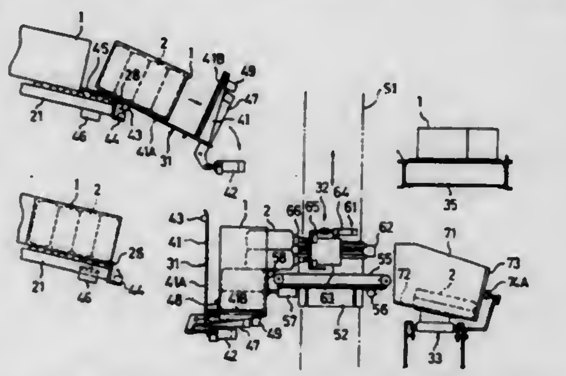
Nobuhiro Tanaka, Saitama, Japan, assignor to Kao Corporation, Tokyo, Japan

Filed Jun. 5, 1995, Ser. No. 462,522

Claims priority, application Japan, Aug. 9, 1994, 6-206149

Int. Cl.⁶ B65B *69/00*

U.S. Cl. 414—786 **2 Claims**



1. A method of removing a required number of articles from a packing box having a pair of lengthwise sides (L), a pair of heightwise sides (H) and a pair of widthwise sides (W), which said sides define a box interior for accommodating a plurality of layered articles stacked therein so as to form an array, and having a cut and open side on one side of said box sides, the method comprising steps of:

cutting and removing a selected side of said packing box, thereby creating an open box side;

orienting the packing box such that the open side thereof is directed to a side-wise facing position;

providing a movable article sucking and pick-out means and vertically positioning the sucking and pick-out means in front of said open side of said box to an article sucking position with respect to the articles in an upper layer of the packing box;

moving the sucking and pick-out means towards the articles in said box and then sucking only the required number of upper layer articles to be taken out, said means having a plurality of suction pads corresponding to the arrangement of the articles to be taken out of said box;

pulling and removing the articles via the suction pads by withdrawing the sucking and pick-out means away from the open side of the packing box;

lowering the sucking and pick-out means and positioning the sucking and pick-out means in front of the articles on a succeeding and lower layer of articles in the packing box;

moving the sucking and pick-out means towards the articles and sucking only the required number of articles to be taken out via the same suction pads;

pulling and removing the required number of articles via the suction pads by withdrawing the sucking and pick-out means away from the open side of the packing box,

wherein the sucking and pick-out means is repeatedly positioned to an article sucking position on any successively lower layer of articles remaining in said packing box so that all of the articles in the box are removed in the same manner as the articles removed from the upper layer.

5,615,994

ARTICLE CONVEYING, GROUPING AND STORING APPARATUS

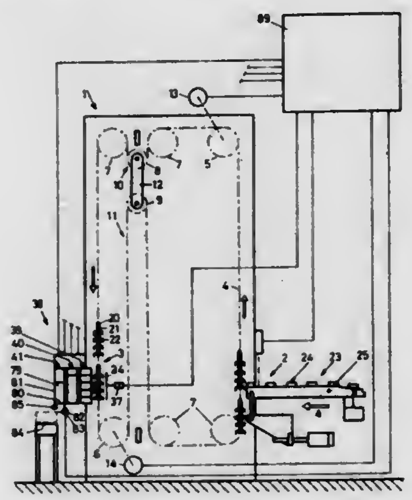
Markus Gasser, Gächlingen, Switzerland, assignor to SIG Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

Filed May 17, 1995, Ser. No. 443,224

Claims priority, application Switzerland, May 25, 1994, 1614/94

Int. Cl.⁶ B65G *57/03*

U.S. Cl. 414—794.2 **15 Claims**



1. An apparatus for conveying, grouping and storing flat articles, comprising

(a) a storing device including

(1) a plurality of gondolas each having a plurality of vertically spaced, generally horizontally oriented, superposed storing shelves;

(2) gondola support and conveying means for carrying said gondolas and moving said gondolas in a predetermined travelling path;

(3) means defining an input station along said travelling path for presenting therein said gondolas in succession to receive articles; said travelling path being vertically oriented in said input station;

(4) means defining an output station along said travelling path for presenting therein said gondolas in succession to discharge articles; said travelling path being vertically oriented in said output station;

(b) conveying means situated at said input station for advancing articles to said input station and for placing articles on the storing shelves of the gondola dwelling in said input station; and

(c) grouping means for removing articles from the superposed storing shelves of the gondola dwelling in said output station and for forming article stacks of the removed articles.

5,615,995

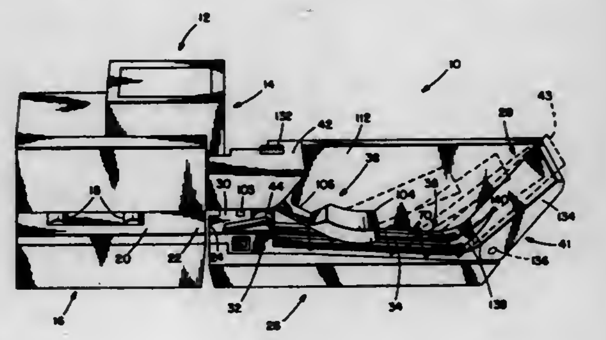
MAIL PIECE STACKING MACHINE

John Nobile, 65 Forest Ave., Fairfield, Conn. 06430, and John Hamma, 23 Sunnyside Ct., Milford, Conn. 06460

Filed Mar. 13, 1995, Ser. No. 402,937

Int. Cl.⁶ B65G *57/00*

U.S. Cl. 414—798.2 **16 Claims**



1. A stacking machine adapted to be used in conjunction with a mail piece processing or handling machine for stacking a plurality of pieces of mail as they are ejected seriatim from an outlet end of the mail piece processing or handling machine into the stacking machine, said stacking machine comprising:

A. an elongate frame,

B. means on said frame defining an elongate feed path along which mail pieces are adapted to be fed from an inlet end of said feed path to a stacking location extending along a portion of said feed path,

C. first feeding means mounted on said frame adjacent said inlet end of said feed path for receiving mail pieces ejected seriatim from the mail processing or handling machine into said stacking machine, said first feeding means operable at a rate of speed such that the linear velocity of mail pieces grasped by said first feeding means is at least equal to or greater than the linear velocity of mail pieces being ejected from the mail piece processing or handling machine,

D. second feeding means mounted on said frame downstream from said first feeding means and extending along said feed path through said stacking location in said feed path for receiving mail pieces seriatim from said first feeding means in a generally horizontal orientation and for feeding them into and through said stacking location,

E. pressure means pivotally connected to a portion of said frame overlying said first feeding means, said pressure means overlying a portion of said second feeding means for exerting a generally vertical force on mail pieces disposed on said second feeding means to urge the mail pieces into effective feeding contact with said second feeding means, and

F. stacking means disposed adjacent the downstream end of said feed path for arresting the movement of said mail pieces being fed by said second feeding means and for causing said mail pieces to change from said generally horizontal orientation to a generally upwardly angled orientation,

whereby continuous feeding of said mail pieces by said second feeding means causes said mail pieces to form a correspondingly upwardly angled stack of said mail pieces progressing from said stacking means toward said first feeding means.

5,615,996

METHOD FOR PREDICTION OF THE PERFORMANCE OF A CENTRIFUGAL PUMP WITH A THRUST BALANCE MECHANISM

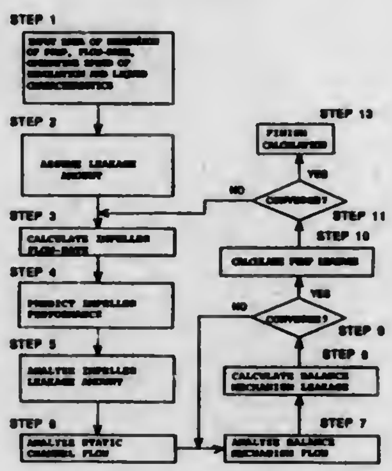
Kohmei Suzuki, Tokyo, and Junichi Kurokawa, Kangawa, both of Japan, assignors to Nikkiso Co. Ltd., Tokyo, Japan

Continuation of Ser. No. 304,135, Sep. 12, 1994, abandoned. This application Sep. 5, 1995, Ser. No. 523,218

Claims priority, application Japan, Sep. 10, 1993, 5-226081

Int. Cl.^{6} F04D *17/08*

U.S. Cl. 415—1 **3 Claims**



1. A method for predicting the performance of a centrifugal pump with a thrust balance mechanism comprising the steps of:

inputting data relating to pump dimensions, a flow-rate, an operational rate of revolution and liquid characteristics into an analyzer;

assuming leakage amounts in a back of an impeller and said thrust balance mechanism to calculate a flow-rate of said impeller for carrying out a prediction of performance in pressure and speed of said flow-rate of said impeller;

analyzing both leakage amounts in front and back of said impeller and a flow in a static channel for subsequent analysis of a flow of said thrust balance mechanism;

calculating a leakage amount in said thrust balance mechanism for judging whether or not a result of said calculation converges;

if said result does not converge, repeating said steps from said analysis of said flow in said thrust balance mechanism to said calculation of said leakage amount in said thrust balance mechanism;

if said result converges, calculating said leakage amount in said pump;

if a result of said calculation of said leakage amount does not converge, repeating said steps from said calculation of said flow-rate in said impeller up to said convergence for analyzing an inside flow of said impeller as a quasi-three-dimensional potential flow and modeling a reverse flow of said impeller inlet occurring in a low flow-rate using a quasi-three-dimension, analysis; and

predicting performances of flows in said back of said impeller and said thrust balance mechanism by a total analysis combined with a two-dimensional viscous analysis by using a momentum equation.

5,615,997

PUMP FOR PUMPING FIBROUS PULP SUSPENSION

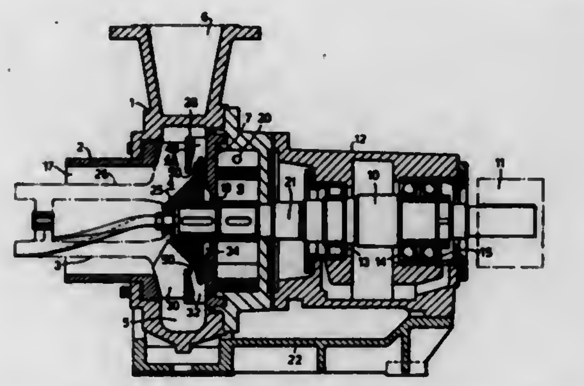
Ronny Höglund, Skoghall, and Ulf Jansson, Karlstad, both of Sweden, assignors to Kvaerner Pulping Technologies Aktiebolag, Sweden

Filed Nov. 20, 1995, Ser. No. 560,975

Claims priority, application Sweden, Sep. 7, 1995, 9503072

Int. Cl.^{6} F04D *29/22*

U.S. Cl. 415—169.1 **14 Claims**



1. A pump for pumping fibrous pulp suspension and separating gas from the suspension, comprising:

a pump casing having a pump casing chamber (4) with an axial inlet (17) and a radial outlet (6) for the suspension and also a gas outlet (19);

in the pump chamber a pump wheel (3) with a hub (27), on the hub front pump vanes (30) in a front pump chamber part (4A) facing the inlet, rear pump vanes (32) in a rear pump chamber part (4B) and an annular partition (28) between the front and rear pump chamber parts, which partition is joined to the hub; and

a drive shaft (10) for the pump wheel which extends through one end wall (7) of the pump casing, and also bearing members (13, 14, 15) for the drive shaft;

wherein the hub has an outer portion (36) which extends mainly radially outwards in the rear pump chamber part, the annular partition is arranged at a distance from and in front of said outer hub portion, the inner diameter of the partition is smaller than the outer diameter of the outer hub portion so that the radial extents of the partition and the outer hub portion at least partly overlap one another in the radial direction, and channels (50) extend with a portion mainly radially between the rear side (42) of the partition (28) and the front side (37) on the outer hub portion (36) from the inner part of the front pump chamber part (4A) towards the outer part of the rear pump chamber part (4B).

5,615,998

ELECTRONIC COMPONENT COOLING APPARATUS

Nobumasa Kodama, and Jiro Watanabe, both of Tokyo, Japan, assignors to Sanyo Denki Co., Ltd., Tokyo, Japan

Filed Jul. 11, 1995, Ser. No. 500,616

Claims priority, application Japan, Jul. 12, 1994, 6-160353; Jul. 3, 1995, 7-167730

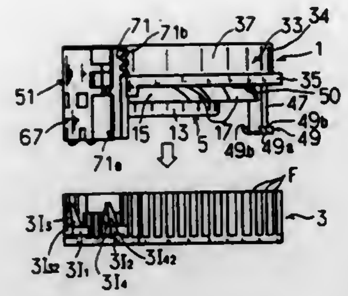
Int. Cl.^{6} F28F *7/00*

U.S. Cl. 415—177 **26 Claims**

1. An electronic component cooling apparatus comprising:

a fan including a motor having a rotor and a housing, an impeller having a plurality of blades and fixed on said rotor of said motor, a casing having a casing body, and a plurality of webs for interconnecting said housing of said motor and said casing;

a heat sink including a base and a plurality of radiation fins arranged on an upper surface of said base and connected to a lower section of said casing of said fan; and



an engagement connection structure for connecting said heat sink to said casing of said fan;

said engagement connection structure including first and second engagement structures arranged opposite to each other with said fan being interposed therebetween and said first and second engagement structures being constructed so as to complete connection between said heat sink and said fan by linearly moving at least one of said heat sink and fan toward the other one thereof;

at least one of said first and second engagement structures comprising a manual engagement release structure for manually releasing engagement between said casing and said heat sink without rotating said casing and heat sink relatively to each other.

5,615,999

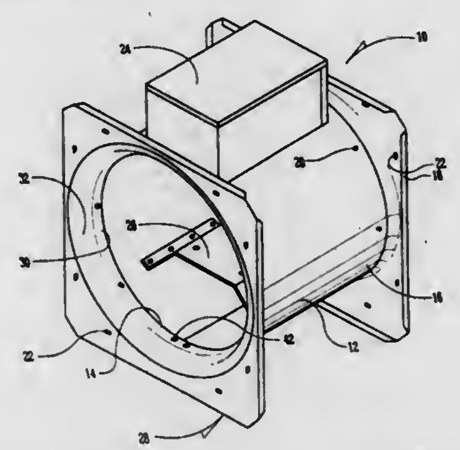
AXIAL FAN HOUSING WITH INTEGRAL VENTURI

Charles E. Sukup, Dougherty, Iowa, assignor to Sukup Manufacturing Company, Sheffield, Iowa

Filed May 25, 1995, Ser. No. 450,208

Int. Cl.^{6} F01D *1/00*

U.S. Cl. 415—182.1 **1 Claim**



1. A housing for an axial fan, comprising:

an elongated cylindrical main body having an outlet end and an inlet end opposite the outlet end;

a rectangular vertical endplate secured across the inlet end of the main body of the housing and having a circular inlet opening therein circumscribed by a venturi-shaped flange integrally formed in the inlet endplate so as to extend inwardly into communication with said main body toward the outlet end from the inlet end, said endplate having a lower portion having a straight horizontal edge to support said body in a stabilized horizontal position, and

said venturi shaped flange having a circular transverse cross section,

a second rectangular vertical endplate on the outlet end of said body having a straight horizontal edge to support said body in a stabilized horizontal position.

5,616,000

STATOR OF TORQUE CONVERTER FOR VEHICLES IMPROVED TO SUPPRESS SEPARATION OF WORKING FLUID

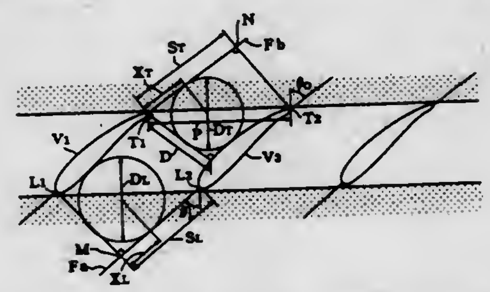
Masatoshi Yamada, Nagoya; Yasuhiro Kondo, Aichi-ken; Kenji Imai, Komaki; Masahiro Kojima, Okazaki, and Nobuyuki Nagashima, Toyota, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi-ken, and Toyota Jidosha Kabushiki Kaisha, Toyota, both of Japan

Filed Feb. 20, 1996, Ser. No. 603,991

Claims priority, application Japan, Feb. 21, 1995, 7-56589

Int. Cl.^{6} F04D *29/44*

U.S. Cl. 415—191 **6 Claims**



1. A stator of a torque converter for vehicles, comprising stator vanes each having such an aerofoil configuration and being arranged in such an array that, with respect to an area adjacent to a leading edge (L_1) of a pressure side surface of a first one (V_1) of said array of stator vanes, as viewed in a change of diameter (D_L) of a circle tangentially contacting with both said pressure side leading edge area surface of said first stator vane (V_1) and an inlet stream line (F_a) of working fluid directed to a leading edge (L_2) of a second one (V_2) of said array of stator vanes downstream of said first stator vane (V_1) along a flow of the working fluid, said circle substantially satisfies the following condition, for the purpose of suppressing a separation of the working fluid from said pressure side leading edge area surface of said first stator vane (V_1) in a fluid coupling condition attained after a substantial completion of torque conversion and therearound, against a shifting thereof between a position of $X_L=0.08S_L$ from a cross point (M) of a perpendicular extended from the leading edge (L_1) of said first stator vane (V_1) to said inlet stream line (F_a) and a position where it traverses the leading edge (L_2) of said second stator vane (V_2):

$$(D_L-D_{LMIN})/D_{LSL}\leqq 0.38(X_L/S_L-0.08)^{1.7}$$

wherein

S_L is a distance from point M to leading edge L_2 along inlet stream line F_a

X_L is a variable expressing distance from point M along inlet stream line F_a

D_L is the diameter of the circle according to the above definition which tangentially contacts inlet stream line F_a at X_L

D_{LMIN} is a minimum value of D_L

D_{LSL} is the diameter of the circle according to the above definition which tangentially contacts inlet stream line F_a at a position of $X_L=S_L$.

5,616,001

CERAMIC CERAMI TURBINE NOZZLE

Gary L. Boyd, Alpine, Calif., assignor to Solar Turbines Incorporated, San Diego, Calif.

Division of Ser. No. 369,238, Jan. 6, 1995, Pat. No. 5,511,940. This application Nov. 22, 1995, Ser. No. 561,786

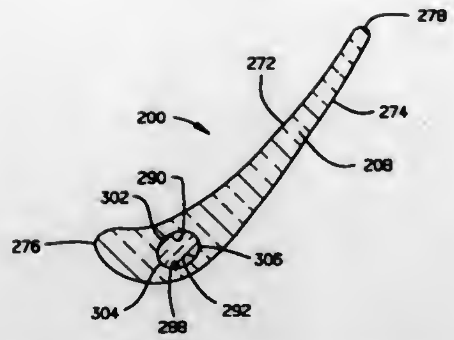
Int. Cl.^{6} F04D *29/60*

U.S. Cl. 415—209.2 **3 Claims**

1. A turbine nozzle vane assembly comprising:

an outer shroud defining an inner surface;

an inner shroud positioned radially within said outer shroud and defining a first end, a second end, an inner surface and an outer surface;



a plurality of segmented vanes being interposed the inner surface of the outer shroud and the outer surface of the inner shroud, each of said plurality of segmented vanes define a first end, a second end, a pressure side, a suction side, a leading edge, a trailing edge and a hole extending between the first end, and the second end, said hole including a preestablished contour said preestablished contour of the hole includes a generally elliptical surface; and

an apparatus for positioning including a connecting member positioning segmented vanes in functional relationship one to another.

5,616,002

DEVICE FOR THE TRANSMISSION OF MOMENT FROM A DRIVE UNIT TO A TRANSMISSION USING A HYDRODYNAMIC CONVERTER

Lutz Gärtner, Langenargen, Germany, assignor to ZF Friedrichshafen AG, Friedrichshafen, Germany

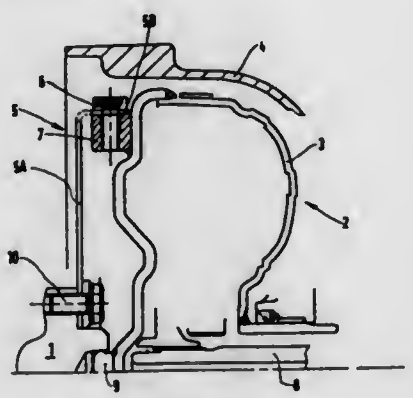
PCT No. PCT/EP94/03241, § 371 Date Apr. 23, 1996, § 102(e) Date Apr. 23, 1996, PCT Pub. No. WO95/09994, PCT Pub. Date Apr. 13, 1995

PCT Filed Sep. 28, 1994, Ser. No. 557,198

Claims priority, application Germany, Oct. 2, 1993, 43 33 644.2

Int. Cl.[6] F04D *29/38*

U.S. Cl. 416—180 **1 Claim**



1. A device for transmission of moment from a drive unit to a transmission using a hydrodynamic converter (2) comprising a converter housing (3), an impeller, a turbine wheel and a stator free wheel, said impeller being connected with said converter housing (3) and a dog (5) being situated between said drive unit and said hydrodynamic converter which is fixed by several connecting components (6) in a reciprocal radial direction, said dog (5) comprises two legs (5A, 5B) which define a right angle and has a plurality of recesses (11), wherein a number of said connecting elements (6) is even so that changes of a shape of said dog as result of opposite connecting components, produced by internal structural stresses, compensate themselves, and said dog (5) has a recess (11) in the area of said right angle.

5,616,003

TURBINE ENGINE EQUIPPED WITH MEANS FOR CONTROLLING THE PLAY BETWEEN THE ROTOR AND STATOR

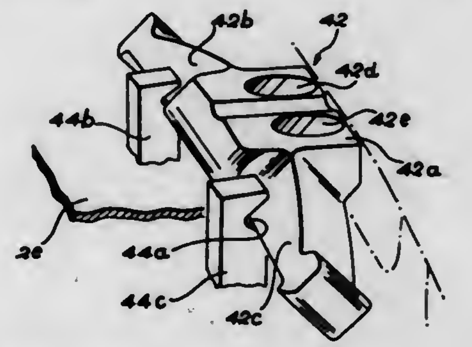
Jean-Louis Charbonnel, Boissise le Roi; Daniel J. Marey, Soisy S/Seine; Fabrice Marois, Hericy, and Gérard G. Miraucourt, Brie Comte Robert, all of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "SNECMA", Paris, France

Filed Oct. 26, 1994, Ser. No. 330,072

Claims priority, application France, Oct. 27, 1993, 93 12798

Int. Cl.[6] F03B *11/02*

U.S. Cl. 415—209.3 **15 Claims**



1. A turbine engine comprising:

a ferrule formed of a plurality of ferrule elements in the shape of circular sectors each bearing fixed vanes on one internal face thereof,

a circular housing surrounding the ferrule, wherein each ferrule element is integrally connected with the housing at a fixed point by a securing device and at least two sliding supports situated respectively on both sides circumferentially of the secured device so as to provide the ferrule element with circumferential flexibility;

a support ring housed between the housing and the ferrule and including a plurality of circular ring sectors each secured to the housing at a fixed point by a securing member and a sliding support, said ring sectors having a U-shaped section with an opening directed towards the ferrule, each ferrule element comprising a hooking member positioned inside at least one ring sector so as to integrally connect said ring sector and the ferrule element; and

a support chuck located on both sides of each ring sector so as to make said ring sector integral with the member hooking the ring sector to the ferrule element.

5,616,004

AXIAL FLOW FAN

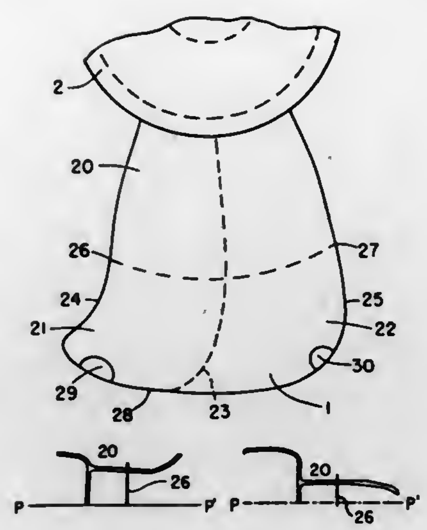
Ahmad Alizadeh, Indianapolis, Ind., assignor to Valeo Thermique Moteur, Le-Mesnil Saint Denis, France

Filed Apr. 19, 1995, Ser. No. 425,991

Int. Cl.[6] F04D *29/30*

U.S. Cl. 416—238 **17 Claims**

4. An axial flow fan having plural blades secured to a hub portion, the hub having an axis of rotation and a back plane that is perpendicular to the axis of rotation, each blade having a leading edge, a trailing edge and a radially inner region extending to a tip region, comprising a leading portion of the tip region swept relative to the radially inner region in a first direction with respect to the back plane that is perpendicular to the axis of rotation of the fan and a trailing portion of the tip region swept relative to the radially inner region in a second opposite direction with respect to said plane, wherein the radially inner region has an arc shaped cross-section, taken along a blade circumferential line, such that the bending ratio, defined as ratio of the maximum deviation from the chord at said circumferential line to the length of the chord, decreases over the radially innermost portion of the radially inner



region of each blade, and then increases over a radially adjacent portion of the radially inner region.

5,616,005

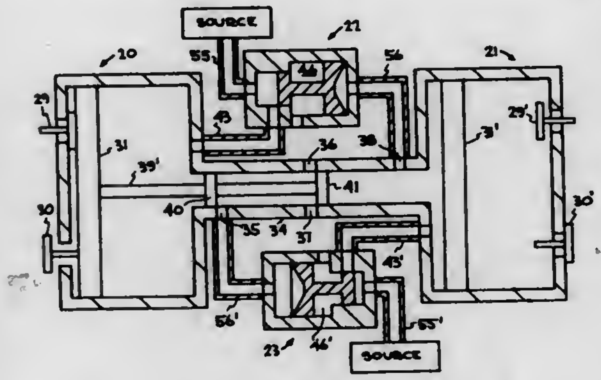
FLUID DRIVEN RECIPRICATING APPARATUS

John C. Whitehead, Davis, Calif., assignor to Regents of the University of California, Oakland, Calif.

Filed Nov. 8, 1994, Ser. No. 335,605

Int. Cl.[6] F04B *49/00;17/00*

U.S. Cl. 417—46 **33 Claims**



1. A fluid driven reciprocating apparatus, comprising:

a first intake-exhaust valve connected to a first chamber;

a second intake-exhaust valve connected to a second chamber;

a movable member located in each of Said chambers; and

a means sensitive to a state of fluid displacement in said first chamber for actuating said first and second intake-exhaust valves

said means for actuating said first and second intake-exhaust valves including a single signal valve assembly operatively connected to at least one of said movable members to activate said first and second intake-exhaust valves,

said means interconnecting said movable members in a back-to-back relation.

5,616,006

PUMPING METHOD AND DEVICE WITH SEQUENTIAL JETS

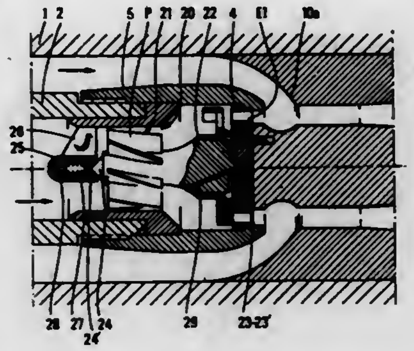
Yvon Castel, Croissy sur Seine, France, assignor to Institut Francais du Petrole, Rueil Malmaison, France

Filed Jul. 5, 1995, Ser. No. 498,393

Claims priority, application France, Jul. 5, 1994, 94 08379

Int. Cl.[6] F04F *5/10*

U.S. Cl. 417—54 **8 Claims**



1. A method for allowing energy to be communicated directly from a drive fluid to a primary fluid to be pumped within a pipe, which comprises producing at least one fluid jet of said drive fluid from a static distributing part having at least one first orifice and causing a movable part positioned upstream of said static distributing part to rotate, said movable part having at least one means for blocking said at least one first orifice and being in contact only with said drive fluid during rotation such that said at least one fluid jet of the drive fluid is sent intermittently as liquid pistons into the primary fluid located in a common meeting space positioned downstream of the static distributing part whereby a plurality of liquid pistons pump the primary fluid through said pipe.

5,616,007

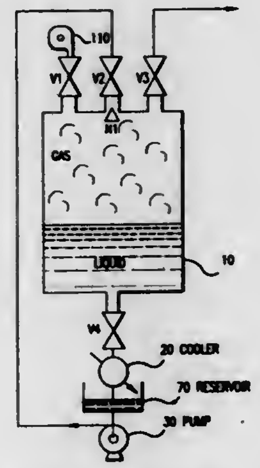
LIQUID SPRAY COMPRESSOR

Eric L. Cohen, 5 Thousand Oaks Ter., Howell, N.J. 07731

Continuation-in-part of Ser. No. 360,424, Dec. 21, 1994, abandoned. This application Jan. 17, 1996, Ser. No. 587,488

Int. Cl.[6] F04F *11/00*

U.S. Cl. 417—65 **1 Claim**



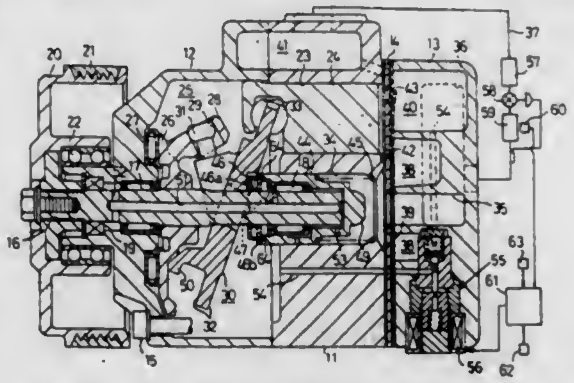
1. A liquid spray compressor comprising:

a compression vessel having a volume alternately filled with gas and liquid,

a liquid drain valve connected to said compression vessel permit liquid to drain from said compression vessel, said liquid drain valve being closed during a compression operation and open during a drain/recharge operation,

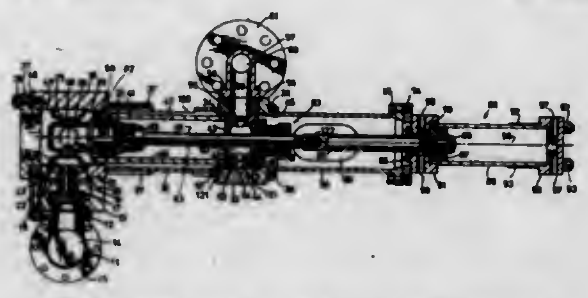
a cooler disposed down stream from said liquid drain valve for cooling said liquid,
a pump drawing suction from said cooler, said pump feeding said liquid to a liquid inlet valve, which allows entry of said liquid to said compression vessel during a compression operation,
a dispersion nozzle, disposed between said liquid inlet valve and said compression vessel, said nozzle dispersing said liquid to maximize heat transfer and minimize nozzle back pressure,
a feed gas inlet valve to said compression vessel which opens to permit said gas to enter said compression vessel as said liquid is draining out through said liquid drain valve, and
a compressed gas outlet valve connected to said compression vessel to allow compressed gas out of said compressed gas valve preventing backflow while said liquid is draining, and being closed until pressure has built up during said compression operation, and preventing passage of said liquid,
wherein the speed at which said liquid drains from said compression vessel is increased by one of: means for trapping a small amount of said compressed gas in said compression vessel to accelerate said liquid out of said liquid drain valve; means for storing mechanical energy in elastic elements, and releasing and mechanical energy to accelerate said liquid out said liquid drain valve; boosting pressure and velocity of said feed gas with a mechanical fan; means for boosting velocity of said feed gas with an air amplifier, employing a small stream of said compressed gas; and means for accelerating said compression vessel to create a centrifugal force propelling said liquid out said liquid drain valve.

5,616,008
VARIABLE DISPLACEMENT COMPRESSOR
Tomobiko Yokono; Masanori Sonobe; Masahiro Kawaguchi; Takuya Okuno, and Ken Suitou, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan
Filed Mar. 27, 1996, Ser. No. 624,002
Claims priority, application Japan, Mar. 30, 1995, 7-073667
Int. Cl.[6] F04B *1/28;49/00*
U.S. Cl. 417—222.2 **16 Claims**



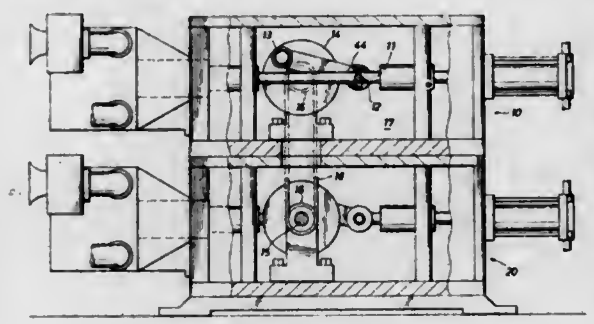
1. A variable displacement compressor including a swash plate supported within a crank chamber of a housing on a drive shaft for integral rotation with the drive shaft, the swash plate being tiltable between a maximum inclined angle and a minimum inclined angle with respect to a plane perpendicular to the longitudinal axis of the drive shaft, and at least one piston coupled to the swash plate and disposed in a bore within the housing, wherein rotation of the drive shaft is converted by the swash plate into reciprocating movement of the piston such that gas is drawn from a suction chamber through an inlet valve into the bore during a suction stroke and compressed gas is discharged from the bore through a discharge valve into a discharge chamber during a discharge stroke, and wherein the inclined angle of the swash plate is changed in accordance with the difference between the pressure in the crank chamber and the pressure in the suction chamber to vary the displacement of the compressor, said compressor comprising:
a spool disposed adjacent to the swash plate on the drive shaft;
a first bearing disposed on the drive shaft between the swash plate and said spool, said first bearing being arranged to receive axial load generated by and acting on the rotating drive shaft; and
a second bearing disposed on the drive shaft said spool, said second bearing being arranged to receive radial load generated by and acting on the rotating drive shaft.

5,616,009
MUD PUMP
J. C. Birdwell, 8535 Glencrest, Houston, Tex. 77061
Continuation of Ser. No. 220,607, Jul. 18, 1988, abandoned, which is a continuation-in-part of Ser. No. 680,849, Dec. 12, 1984, abandoned, which is a continuation-in-part of Ser. No. 309,979, Oct. 8, 1981, abandoned. This application Aug. 14, 1990, Ser. No. 567,145
Int. Cl.[6] F16J *10/04*
U.S. Cl. 417—342 **6 Claims**



1. A reciprocating piston type hydraulic pump comprising:
(a) at least three drive cylinders, each of said drive cylinders being provided with a separate movable first piston disposed within it;
(b) a separate second movable piston disposed within a second cylinder, there being a second cylinder corresponding to said drive cylinder, wherein the number of second cylinders is equal to the number of drive cylinders;
(c) connector means extending between said first piston and said second piston within each of said pair of cylinders for integral movement of said first and second pistons;
(d) each of said first pistons dividing said drive cylinders to define a first chamber and a second chamber within each of said drive cylinders;
(e) means for connecting to each of said second chambers of said drive cylinders to form an expansionary fluid circuit containing pressurized fluid, said pressurized fluid flowing between said second chambers of said drive cylinders when said fluid is displaced from one or more of said second chambers by said first pistons;
(f) each of said first pistons displacing said pressurized fluid from its respective second chamber when said first piston is displaced in a drive direction;
(g) said pressurized fluid being periodically discharged from said expansionary fluid circuit;
(h) a source of pressurized drive fluid for connection to each of said first chambers of each of said cylinders;
(i) control valve means for connecting each of said first chambers to said source of pressurized drive fluid to displace each of said first pistons within its respective drive cylinder, said control valve means supplying drive fluid to each of said first pistons independently of piston position and movement within each of said drive cylinders, but in a timed and overlapping sequence;
(j) said control valve means also sequentially connecting said first chambers of said drive cylinders, which are not receiving said drive fluid from said control valve means, to exhaust lower pressure drive fluid;
(k) means to regulate the quantity of pressurized fluid within said expansionary fluid circuit to thereby timely increase or decrease the volume of fluid within said expansionary fluid circuit to enable operation during piston displacement changes wherein said means to regulate the quantity of pressurized fluid is responsive to pressure required to return the drive pistons;
(l) means to vary the stroke length of said first pistons within said drive cylinders;
(m) means to vary the volume of said expansionary fluid circuit to accommodate changes in the stroke length of said first pistons; and
(n) wherein the volume of said expansionary fluid circuit decreases as stroke length of said first piston increase while not interrupting the sequential displacement of said first pistons within said drive cylinders.

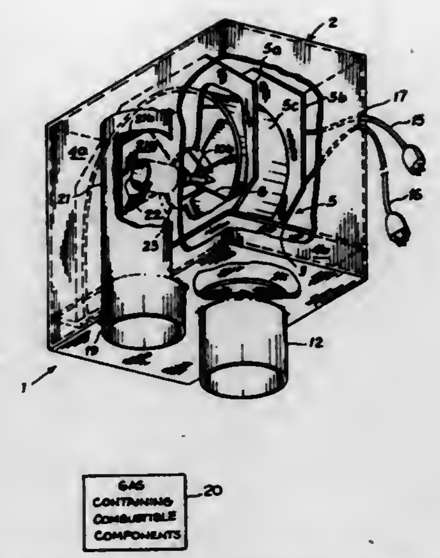
5,616,010
MULTIPLE CYLINDER ENGINE FEATURING A RECIPROCATING NON-ROTATING PISTON ROD
James K. Sawyer, 10311 Sagecourt Dr., Houston, Tex. 77089
Filed Nov. 6, 1995, Ser. No. 554,006
Int. Cl.[6] F04B *17/05*
U.S. Cl. 417—364 **12 Claims**



1. A power plant comprising:
(a) at least two similar engines wherein each comprises:
(1) a power piston and cylinder;
(2) a straight piston rod connected with said power piston;
(3) a pumped piston in a cylinder serially connected to said rod;
(4) wherein said power piston provides power for said rod and said rod is moved in axial reciprocating motion without rotation to operate said pump piston;
(b) a mechanical link connected between each of said engines so that the motion of one engine is timed with respect to the motion of the other of said engines so that said engines operate in timed, synchronized relationship, and wherein said mechanical link incorporates a clutch so that motion of one engine is selectively disconnected from another of said engines.

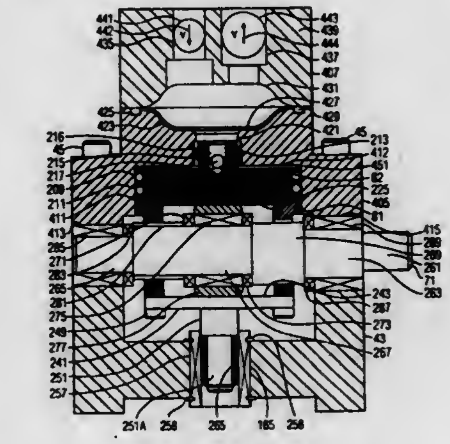
5,616,011
DEVICE FOR WITHDRAWING FLUIDS FROM TWO SEPARATE SOURCES
William A. Witschi, HCR 1699, Benson, Ariz. 85602
Filed Mar. 30, 1995, Ser. No. 413,385
Int. Cl.[6] F04B *39/06*
U.S. Cl. 417—366 **13 Claims**

1. A device for conveying fluids, comprising a rotor housing having an inlet opening and an outlet opening; a rotor in said rotor housing for creating suction at said inlet opening and superatmospheric pressure at said outlet opening; first wall means surrounding a first flow path which extends between said inlet opening and a first source of fluid; and second wall means surrounding a second flow path which extends between said inlet opening and a second source of fluid, said first wall means being at least partly constituted by a main housing having a compartment, and said rotor housing being accommodated in said compartment, said rotor



housing and said main housing cooperating to define a first chamber at least part of which is on a first side of said rotor housing and a second chamber at least part of which is on an opposite second side of said rotor housing, and at least one passage being provided inside said main housing to establish communication between said chambers, said first flow path extending through said one passage and at least a portion of each of said chambers.

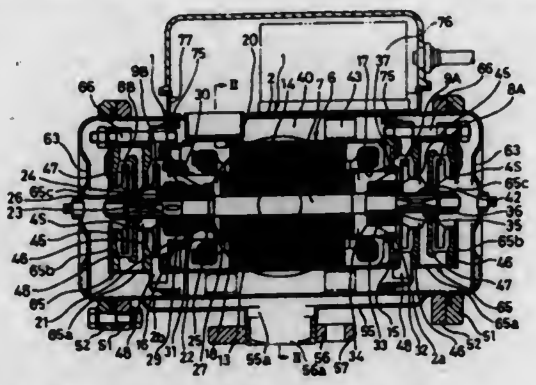
5,616,012
AMMONIA PUMP
Darrel D. Hillman, 2440 White Settlement Rd., Weatherford, Tex. 76086, and Charles T. Russell, Jr., P.O. Box 1325, Mineral Wells, Tex. 76068
Continuation-in-part of Ser. No. 521,967, Aug. 31, 1995, Pat. No. 5,547,352. This application Aug. 13, 1996, Ser. No. 696,345
Int. Cl.[6] F04B *35/02*
U.S. Cl. 417—383 **6 Claims**



1. A pump for pumping a fluid, comprising:
a body having a surrounding wall forming a cavity with a cylindrical chamber with opposite first and second ends and with an axis extending between said first and second ends,
a piston located in said chamber for movement in first and second opposite directions between said first and second opposite ends respectively of said chamber,
said piston having first and second opposite ends with an axis extending therebetween such that said first and second ends of said piston move toward and away from said first and second ends of said chamber respectively upon movement of said piston in said first direction and away and toward said first

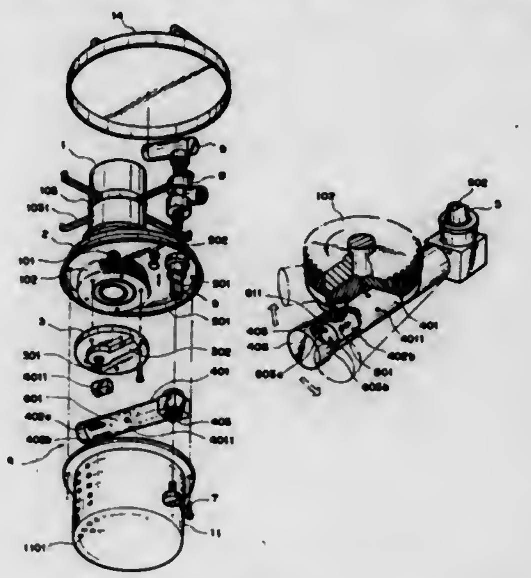
and second ends of said chamber upon movement of said piston in said second direction,
first and second apertures extending in said body from said first and second ends of said chamber respectively along the axis of said chamber,
first and second guide rods extending from said first and second ends of said piston respectively along the axis of said piston,
said first and second guide rods being movable in said first and second apertures respectively upon movement of said piston is said first and second directions,
inlet and outlet apertures formed in said body in fluid communication with said first aperture,
an inlet one way valve for allowing fluid to flow only from the exterior of said pump into said first aperture,
an outlet one way valve for allowing fluid to flow only from said first aperture to the exterior of said pump,
an axial aperture formed in said first guide rod along the axis of said piston,
at least one radial aperture formed in said guide first rod transverse to the axis of said piston and in fluid communication with said axial aperture,
a crank shaft receiving aperture formed through said piston transverse to the axis of said piston,
first and second diametrically opposite crank shaft apertures extending through said wall of said body of said cavity transverse to said axis of said chamber,
a crank shaft extending through said crank shaft apertures of said body and through said crank shaft receiving aperture of said piston and supported for rotation,
said piston having first and second cam surfaces axially spaced from each other and facing each other in said crank shaft receiving aperture,
said crank shaft having a cam located in said crank shaft receiving aperture of said piston such that upon rotation of said crank shaft, said cam alternately engages said first and second cam surfaces of said piston to move said piston in said first and second directions respectively,
upon movement of said piston in said second direction, said inlet one way valve allows fluid to flow into said chamber by way of said axial and radial apertures of said first guide rod,
upon movement of said piston is said first direction, said piston causes fluid in said chamber to be forced outward through said outlet one way valve by way of said radial and axial apertures of said first guide rod.

5,616,013
FULL-CIRCUMFERENTIAL FLOW PUMP
Makoto Kobayashi; Masakazu Yamamoto; Yoshio Miyake; Koji Isemoto; Keita Uwai, and Yoshiaki Miyazaki, all of Fujisawa, Japan, assignors to Ebara Corporation, Tokyo, Japan
Filed Nov. 22, 1995, Ser. No. 562,155
Claims priority, application Japan, Nov. 25, 1994, 6-315894
Int. Cl.⁶ F04B *17/03*
U.S. Cl. 417—423.14 **14 Claims**



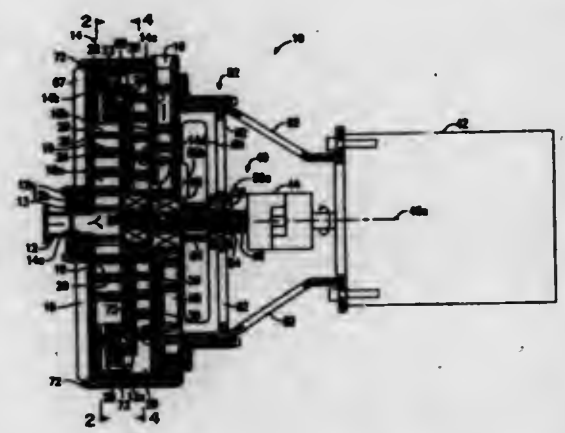
1. A full-circumferential flow pump comprising:
a motor having a stator, a shaft, a rotor mounted on said shaft and positioned in said stator for rotation relative to said stator, and an outer frame barrel enclosing said stator;
an outer cylindrical pump casing positioned around said outer frame barrel, an annular space defined between said outer cylindrical pump casing and said outer frame barrel;
a pump assembly having at least one impeller mounted on an end of said shaft for one of pumping a fluid into said annular space and pumping a fluid from said annular space;
an inner casing provided in said outer cylindrical pump casing, said impeller provided in said inner casing;
a resilient seal located between said outer cylindrical pump casing and said inner casing to prevent a pumped fluid in said outer cylindrical pump casing from leaking towards a suction side of said impeller; and
a suction case mounted on an outer circumferential surface of said outer cylindrical pump casing and having a suction opening defined therein for introducing a fluid therethrough;
wherein said outer cylindrical pump casing has a suction window for introducing a fluid therethrough, and a fluid to be pumped is introduced through said suction opening of said suction case and said suction window of said outer cylindrical pump casing into said pump assembly.

5,616,014
POWER GREASE PUMP
Shih-Tien Tsai, No. 1, Al 3rd Road, Taoyuan Hsien, Taiwan
Filed Jun. 19, 1995, Ser. No. 492,166
Int. Cl.⁶ F04B *19/02*
U.S. Cl. 417—464 **15 Claims**



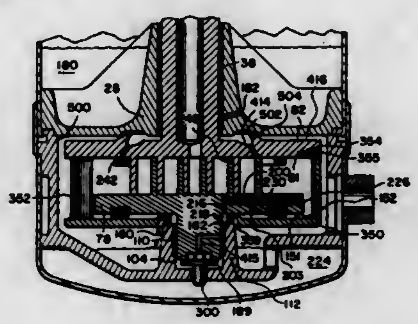
1. A power grease pump, comprising:
a rotary disk pivoted on a base plate and rotating by a power apparatus, and a rotary axis being mounted eccentrically thereon;
a pump unit including a cylinder body with both ends being sealed and a piston assembly comprising a piston body and a piston rod accommodated therein, one end of the cylinder body is pivoted in a hollow column vertically fixed on the base plate, near to the other end of the cylinder body a plurality of longitudinal slotted holes are provided to penetrate the cylinder wall and a further longitudinal long slotted hole is provided at an upper end of the cylinder wall, the rotary axis of the rotary disk penetrates said long slotted hole to connect with the piston assembly; and a plurality of grease discharge holes penetrating the cylinder wall are provided on the cylinder near the bottom dead center of the piston body;
a set of grease paths being provided in said piston assembly, the cylinder body and hollow column, and being communicated with each other, so that the pump unit can swing around the hollow column by the rotation of the rotary disk to sweep the grease of a grease barrel through the slotted holes into the cylinder body, while the piston assembly is made to move back and forth to squeeze the grease in said cylinder body out through the grease paths.

5,616,015
HIGH DISPLACEMENT RATE, SCROLL-TYPE, FLUID HANDLING APPARATUS
Anthony Liepert, Lincoln, Mass., assignor to Varian Associates, Inc., Palo Alto, Calif.
Filed Jun. 7, 1995, Ser. No. 484,145
Int. Cl.⁶ F04C *18/04;23/00;25/02*
U.S. Cl. 418—5 **21 Claims**



1. A high volumetric displacement rate fluid handling apparatus comprising
a housing with an inlet and an outlet for the fluid,
a first scroll set of at least two nested pairs of fixed and movable spiral blades mounted in said housing, said first scroll set having an inlet and an outlet, with said inlet in fluid communication with said housing inlet,
a plate mounted within said housing that carries said movable blades,
an eccentric drive operatively connected to said plate and said movable blades that causes said movable blades to orbit said fixed blades and thereby interact with the fluid in inter-blade pockets,
said at least two pairs of fixed and movable blades being in a nested array and each extending from a point adjacent the center of said first scroll set to a point adjacent its periphery over an angular distance sufficient to close said pockets in each cycle of operation,
a second scroll set mounted in said housing formed of at least one pair of fixed and movable spiral blades that both extend angularly for multiple revolutions, said eccentric drive also propelling said movable spiral blades of said second stage scroll set to move in an orbital motion that creates a series of inter-blade pockets moving toward said housing outlet, said second scroll set having an inlet and an outlet, and
a fluid connection between said outlet of said first scroll set to said inlet of said second scroll set, said second scroll set discharging the fluid from said second scroll set outlet to said housing outlet,
said first scroll set having a volumetric displacement rate at its inlet that is greater than the volumetric displacement rate of said second scroll set.
16. A high volumetric displacement rate fluid handling apparatus comprising
a housing with an inlet and an outlet for the fluid,
a first scroll set of at least two nested pairs of fixed and movable spiral blades mounted in said housing with a first scroll set inlet and a first scroll set outlet, said first scroll set inlet being in fluid communication with said housing inlet,
a plate mounted within said housing that carries said movable blades,
an eccentric drive operatively connected to said plate and said movable blades that causes said movable blades to orbit said fixed blades and thereby interact with the fluid in inter-blade pockets,
said at least two pairs of fixed and movable blades being in a nested array and each extending from a point adjacent the center of said first scroll set to a point adjacent its periphery over an angular distance sufficient to close said pockets in each cycle of operation,
a second scroll set mounted in said housing formed of at lease one pair of fixed and movable spiral blades that both extend angularly for multiple revolutions, said eccentric drive also propelling said movable spiral blades of said second stage scroll set to move in an orbital motion that creates a series of inter-blade pockets moving toward said housing outlet, said second scroll set having an inlet and an outlet, and
a fluid connection between said outlet of said first scroll set to said inlet of said second scroll set, said second scroll set discharging the fluid from said second scroll set outlet to said housing outlet, and
said second scroll set blades have an axial height less than that of said blades of said first scroll set.

5,616,016
PRESSURE BIASED CO-ROTATIONAL SCROLL APPARATUS WITH ENHANCED LUBRICATION
Joe T. Hill, Whitehouse; John R. Williams, Tyler; Robert E. Utter, Whitehouse, all of Tex., and Gene M. Fields, Bristol, Tenn., assignors to Alliance Compressors, Tyler, Tex.
Division of Ser. No. 299,692, Sep. 1, 1994, Pat. No. 5,462,419, which is a division of Ser. No. 125,684, Sep. 22, 1993, Pat. No. 5,449,279. This application Aug. 22, 1995, Ser. No. 517,932
Int. Cl.⁶ F01C *1/04;21/04;* **F04C** *18/04;29/02*
U.S. Cl. 418—55.4 **12 Claims**



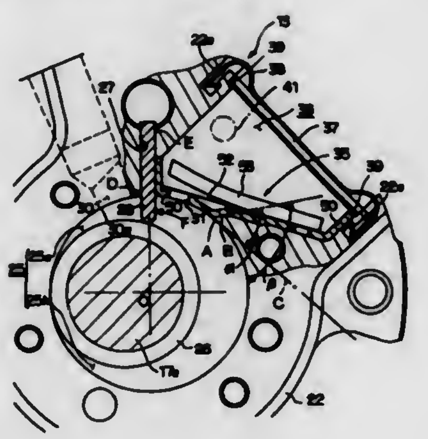
1. Co-rotating scroll apparatus comprising:
a shell having a suction pressure portion and a discharge pressure portion, said suction pressure portion defining a lubricant sump and said discharge pressure portion defining a lubricant sump;
a first bearing surface;
a second bearing surface;
a first scroll member having an end plate from which an involute wrap extends, said first scroll member being mounted for rotation in said first bearing surface;
a second scroll member having an end plate from which an involute wrap extends, said second scroll member being mounted for rotation in said second bearing surface, the wraps of said first and said second scroll members being interleaved;
means for causing the rotation of one of said scroll members;
means for drivingly coupling said first and said second scroll members; and
means, having a pressure responsive surface, for pressure biasing said second scroll member toward said first scroll member, said means for pressure biasing said second scroll member towards said first scroll member including a unitary

pressure plate, said pressure responsive surface being a surface of said unitary pressure plate, said unitary pressure plate including a plurality of legs extending therefrom and attached to said first scroll member, the length of said legs being determinative of the distance between said pressure responsive surface and said first scroll member end plate.

10. Co-rotating scroll apparatus comprising:
a shell having a suction pressure portion and a discharge pressure portion, said suction pressure portion defining a lubricant sump and said discharge pressure portion defining a lubricant sump;
a first bearing surface;
a second bearing surface;
a first scroll member having an end plate from which an involute wrap extends, said first scroll member being mounted for rotation in said first bearing surface;
a second scroll member having an end plate from which an involute wrap extends, said second scroll member being mounted for rotation in said second bearing surface, the wraps of said first and said second scroll members being interleaved;
means for causing the rotation of one of said scroll members;
means for drivingly coupling said first and said second scroll members; and
means for lubricating an area of juxtaposition between the tip of the involute wrap of said second scroll member and the surface of said first scroll end plate from which the involute wrap of said first scroll member extends, said means for lubricating including a passage communicating through said first scroll end plate and annular lubricant collection means on the surface of said first scroll end plate which is opposite the surface from which the involute wrap of said first scroll member extends, said annular lubricant collection means being in flow communication with said passage and said passage opening on to the surface of said first scroll end plate from which said first scroll involute extends in the proximity of the tip of the involute wrap of said second scroll member, said annular lubricant collection means projecting above the plane of the surface of said first scroll member end plate.

5,616,017
ROTARY COMPRESSOR HAVING A CYLINDER PORTION FORMED OF A VALVE SHEET
Hirokazu Iizuka, Susono; Masashi Ohmura, Fuji; Masataka Kondo, Fuji; Hideki Kobayashi, Fuji; Hiroyuki Mizuno, Fuji; Takaya Yamazaki, Shizuoka, and Kazuo Shibata, Fuji, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagana-ken, Japan
Filed Sep. 12, 1995, Ser. No. 527,326
Claims priority, application Japan, Dec. 28, 1994, 6-327908; Mar. 1, 1995, 7-042076
Int. Cl.⁶ F04C *18/356;29/00*
U.S. Cl. 418—63 **17 Claims**

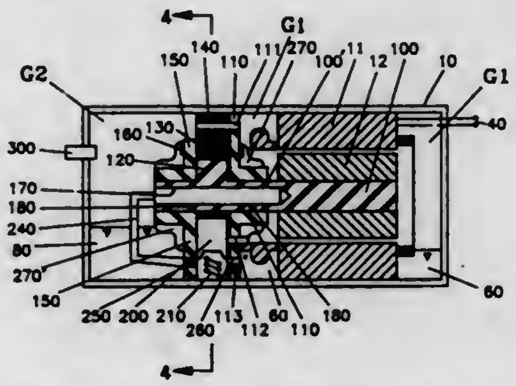
1. A rotary compressor comprising:



an outer casing;
a rotary compression mechanism accommodated in the outer casing in a sealed manner;
an electric motor for driving the rotary compression mechanism, said rotary compression mechanism being provided with a cylinder having an inner peripheral surface in which a discharge port is formed; and
said inner peripheral surface of the cylinder having a portion formed of a valve sheet in which said discharge port is formed, said cylinder being formed with a blade groove which extends outwardly in a radial direction of the cylinder, and said valve sheet being bent to provide a substantially L-shape on the blade groove side thereof so that the L-shaped bent portion constitutes a portion of a groove side wall of said blade groove.

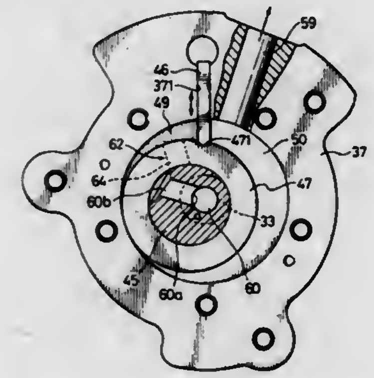
12. A rotary compressor comprising:
an outer casing;
a rotary compression mechanism accommodated in the outer casing in a sealed manner;
an electric motor for driving the rotary compression mechanism, said rotary compression mechanism being provided with a cylinder having an inner peripheral surface in which a discharge port is formed;
a leaf spring; and
said cylinder being formed with a discharge chamber formed outwardly of said discharge port in a radial direction of the cylinder integrally with the cylinder and said discharge chamber being closed by a chamber cover which covers said discharge chamber from an outside of the cylinder, and wherein an elastic seal means is disposed to a portion at which said chamber cover is in contact with said cylinder and said chamber cover is fixed to said cylinder by said leaf spring.

5,616,018
OIL SUPPLYING APPARATUS FOR A HORIZONTAL TYPE ROTARY COMPRESSOR
Young C. Ma, Kyungki-Do, Rep. of Korea, assignor to Goldstar Co., Ltd., Rep. of Korea
Continuation of Ser. No. 347,711, Dec. 1, 1994, abandoned. This application Apr. 29, 1996, Ser. No. 641,086
Claims priority, application Rep. of Korea, Dec. 3, 1993, 26393
Int. Cl.⁶ F04C *18/356;29/02*
U.S. Cl. 418—63 **3 Claims**



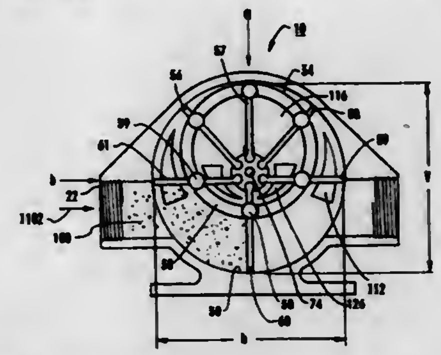
1. A horizontal type rotary compressor comprising:
a cylindrical body and an oil reservoir defined in the cylindrical body;
a cylinder in the cylindrical body;
a crank shaft including an oil path having threaded portions with a plurality of pitches, an eccentric crank shaft disposed within the cylinder and a refrigerant suction chamber and compression chamber defined within the cylinder adjacent the eccentric crank shaft;
a circular main bearing rotatably supporting the crank shaft and fixed to said cylindrical body, the main bearing having a circumferential surface which sealingly engages an inner circumferential surface of the cylindrical body, and including a refrigerant guide opening passing through the main bearing for guiding compressed refrigerant therethrough;
an oil pump operatively associated with said eccentric crank shaft, and means forming an oil supplying passage between said oil pump and said oil path;
the main bearing having a crank shaft opening formed at a center portion of the main bearing and an oil opening formed below the crank shaft opening between said oil reservoir and said oil pump;
means forming a refrigerant injection opening for injecting refrigerant therethrough into the refrigerant suction chamber, and means forming a refrigerant exhaust opening below the crank shaft opening for exhausting compressed refrigerant from the compression chamber to said oil reservoir; whereby said compressed refrigerant assists in supplying oil from said oil reservoir to said oil pump.

5,616,019
ROLLING PISTON TYPE EXPANSION MACHINE
Hitoshi Hattori; Motonori Futamura; Kazuo Saito, and Masao Ozu, all of Kanagawa-ken, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Sep. 27, 1995, Ser. No. 534,983
Claims priority, application Japan, Jun. 13, 1995, 7-146580
Int. Cl.⁶ F01C *1/02*
U.S. Cl. 418—66 **9 Claims**



1. A rolling piston type expansion machine comprising:
a cylinder having a discharge port therein;
a crank shaft portion located within the cylinder;
a roller located within the cylinder and coaxially supported by the crank shaft;
a blade movably supported by the cylinder and contacting the roller to prevent the roller from rotating around an axis of the roller and forming an expansion chamber;
a main shaft eccentrically supported by the crank shaft with an axis of the main shaft displaced from an axis of the crank shaft;
a gas passage formed through the main shaft in an axial direction of the main shaft;
a roller inflow inlet extending in the roller; and
a crank shaft inflow extending in the crank shaft to communicate working gas between the roller inflow inlet and the gas passage,
wherein the working gas is intermittently supplied to the expansion chamber in synchronism with rotation of the main shaft.

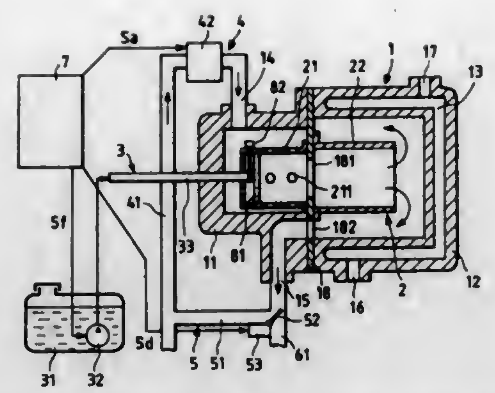
5,616,020
ROTARY VANE PUMP
Douglas B. Firestone, Santee, Calif., assignor to Quik Pump, Inc., Santee, Calif.
Continuation-in-part of Ser. No. 309,791, Sep. 21, 1994, abandoned, which is a continuation-in-part of Ser. No. 104,341, Aug. 9, 1993, abandoned. This application Apr. 26, 1995, Ser. No. 430,149
Int. Cl.⁶ F01C *19/02*
U.S. Cl. 418—138 **9 Claims**



1. A rotary vane pump, comprising:
(a) a housing having an inner cam surface defining a chamber, said housing having an inlet and an outlet for establishing fluid communication with said chamber;
(b) a plurality of vanes arranged substantially about a central vane axis of rotation, each said vane having an edge for following said cam surface;
(c) a rotatable carousel rotor positioned in said chamber for driving movement of said vanes, said carousel having a drive axis of rotation displaced a predetermined distance from said central vane axis, said carousel having spaced slot members positioned therein for reciprocally carrying said vanes during rotation of said vanes;
(d) a central rotor means rotatably mounted in said housing on said central vane axis, said central rotor means including a one-piece member for pivotally coupling each said vane thereto at a point offset from said vane axis to establish rocking lever action between said carousel and said vanes upon rotation of said vanes by said carousel;
(e) said inlet and outlet being located opposite and in line with one another along a flow axis;
(f) said housing having an inner surface including at least one inclined fluid escape channel for directing fluid out of an upper portion of said chamber to a lower portion of said chamber for expulsion during rotation of said vanes; and,
(g) each said vane being carried in said central rotor means and carousel rotor so that during rotation of said carousel a pair of said vanes move through a position in which said pair of vanes are situated on a line offset from said central vane axis and parallel to said flow axis.

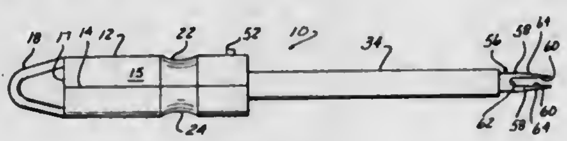
5,616,021
FUEL BURNING HEATER
Sadahisa Onimaru, Chiryu; Takashi Inoue; Masanori Yasuda, both of Okazaki, and Hiroshi Okada, Kariya, all of Japan, assignors to Nippon Soken Inc., Nishio, Japan
Filed Sep. 19, 1995, Ser. No. 530,736
Claims priority, application Japan, Sep. 19, 1994, 6-251199
Int. Cl.⁶ F23M *9/00*
U.S. Cl. 431—115 **11 Claims**

1. A fuel burning heater comprising:
a housing having a member defining a fluid passage;
a burner disposed within said housing, said burner being capable of heating a fluid contained in said fluid passage;
fuel supply means for supplying fuel into said burner;
air supply means for supplying air into said burner, said air supply means including an air supply pipe;



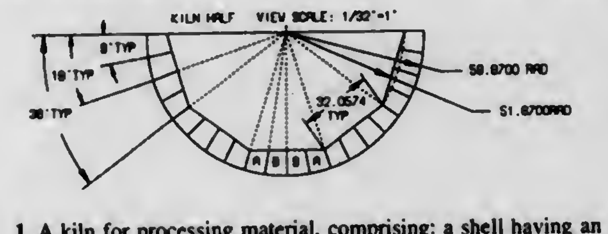
exhaust gas circulating means for circulating exhaust gas, produced in said burner by combustion of an air-fuel mixture, to said air supply pipe,
circulating amount control means for controlling a total amount of said air and said exhaust gas supplied to said burner such that the total amount is maintained at a constant value, regardless of any change to an amount of fuel supplied by said fuel supply means.

5,616,022
BARBECUE IGNITOR AND SCRAPER
Thomas J. Moran, IV, 4150 Arkwright Rd., Apt. 21, Macon, Ga. 31210
Filed Jan. 3, 1995, Ser. No. 367,585
Int. Cl.[6] F23Q *2/00;2/28*
U.S. Cl. 431—253 **16 Claims**



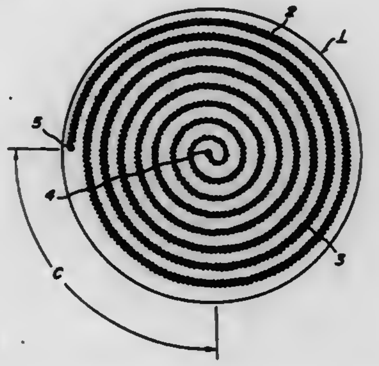
1. An igniting and scraping apparatus comprising:
a hollow body comprising a hollow handle portion;
an elongated hollow tubular member communicating and extending from the hollow handle portion at a first end and having a second end spaced from the first end;
a fuel container mounted in the hollow handle portion of the body for holding a supply of fuel;
a valve communicating to the fuel container;
a trigger mounted on the body and connected to the valve, said trigger movable from a first normally closed position to a second open position for selectively moving the valve to an open position thereby directing fuel from fuel container;
an elongated fuel supply line connected to the valve at one end and extending to the second end of tubular member for communicating fuel flow to said second end;
an ignitor responsive to movement of the trigger to the second position for generating a spark in the fuel flow at the second end of the fuel supply line to ignite fuel; and
a scraper mounted in the tubular member, the scraper formed of a planar member having a first end extending outward from the second end of the tubular member, a slot extending from the first end of the planar member to a central edge, and two spaced tines formed on opposite sides of the slot and extending from the central edge to the first end of the planar member.

5,616,023
ROTARY KILN WITH A POLYGONAL LINING
Ricardo A. Mosci, Butler, Pa., assignor to Quigley Company, Inc., New York, N.Y.
Division of Ser. No. 195,799, Feb. 14, 1994, Pat. No. 5,460,518, which is a division of Ser. No. 815,102, Dec. 24, 1991, Pat. No. 5,299,933. This application Aug. 22, 1995, Ser. No. 517,995
Int. Cl.[6] F27B *7/00*
U.S. Cl. 432—103 **6 Claims**



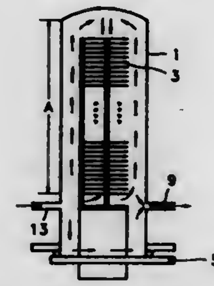
1. A kiln for processing material, comprising: a shell having an inner wall and a longitudinal axis, and a lining disposed within and adjacent at least a portion of said wall, comprising N planar sides, with a selected width of each side being made from a series of bricks disposed in an arch or wedge pattern which is frictionally fit against said shell for defining an open processing zone having a generally polygonal cross sectional configuration and which is generally aligned along the longitudinal axis of said shell.

5,616,024
APPARATUSES FOR HEATING SEMICONDUCTOR WAFERS, CERAMIC HEATERS AND A PROCESS FOR MANUFACTURING THE SAME, A PROCESS FOR MANUFACTURING CERAMIC ARTICLES
Kazuhiro Nobori, Haguri-gun; Ryusuke Ushikoshi, Tajimi; Koichi Umemoto, Toyota; Atsushi Sakon, Nagoya; Yusuke Niiori, Inuyama, and Masahiro Murasato, Chita, all of Japan, assignors to NGK Insulators, Ltd., Japan
Filed Jan. 27, 1995, Ser. No. 380,190
Claims priority, application Japan, Feb. 4, 1994, 6-012667
Int. Cl.[6] F27D *3/12*
U.S. Cl. 432—241 **20 Claims**



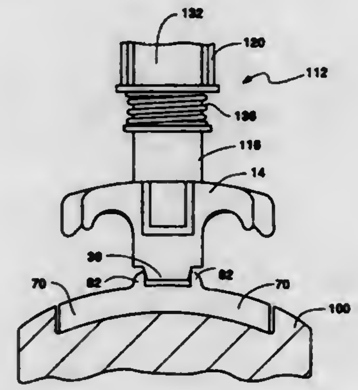
1. A process for manufacturing ceramic heaters, comprising the steps of:
holding a convolution of a spiral-coiled high melting point metallic filament in a predetermined planar pattern;
then, heat-treating said convolution at a temperature not higher than a primary recrystallization commencement temperature of said high melting metal under a non-oxidative atmosphere to provide a resistant heating element;
embedding the resulting resistant heating element within a ceramic shaped body; and
then, sintering said ceramic shaped body to provide a ceramic heater comprising a ceramic substrate and said resistant heating element embedded within said ceramic substrate along said predetermined planar pattern.

5,616,025
VERTICAL DIFFUSION FURNACE HAVING IMPROVED GAS FLOW
Sang-kook Choi, Suwon; Chung-hwan Kwon, Yongin-gun, and Hong-keun Kim, Suwon, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea
Filed Nov. 16, 1995, Ser. No. 558,398
Claims priority, application Rep. of Korea, Jul. 11, 1995, 95-20391
Int. Cl.[6] F27D *3/12*
U.S. Cl. 432—241 **5 Claims**



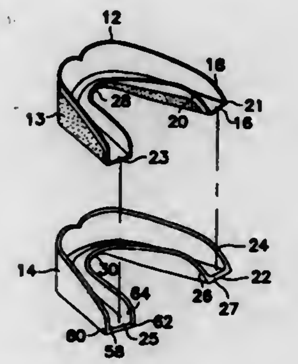
1. A vertical diffusion furnace comprising:
a quartz tube defining an interior reaction environment receiving a plurality of vertically stacked wafers;
a gas inlet formed in the quartz tube at a position beneath a lowermost wafer in the plurality of vertically stacked wafers, and adapted to provide a first stream of reactive gas from a reactive gas source into the interior reaction environment; and,
a gas injector injecting a second stream of reactive gas from the reactive gas source into the interior reaction environment proximate an uppermost wafer in the plurality of vertically stacked wafers.

5,616,026
ORTHONDONTIC APPLIANCE AND METHOD OF MAKING THE SAME
David A. Cash, Nederland, Colo., assignor to RMO, Inc., Denver, Colo.
Filed Jun. 7, 1995, Ser. No. 485,983
Int. Cl.[6] A61C *3/00*
U.S. Cl. 433—8 **29 Claims**



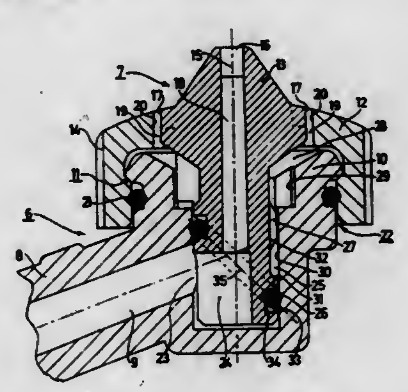
1. A method for manufacturing an at least aesthetically integral orthodontic appliance, comprising the steps of:
metal injection molding a green orthodontic base;
metal injection molding a green orthodontic body;
positioning said green orthodontic base and said orthodontic body in at least partial abutting relationship; and
heating said green orthodontic base and body after said positioning step; and
forming said orthodontic appliance from said heating step.

5,616,027
CUSTOM DENTAL TRAY
Allison J. Jacobs, 10795 Skinner Rd. N. E., Bainbridge Island, Wash. 98110, and Scott Jacobs, 12105 W. Cedar Ave., Lakewook, Colo. 80228
Continuation-in-part of Ser. No. 423,895, Apr. 18, 1995, Pat. No. 5,562,449. This application Apr. 15, 1996, Ser. No. 630,067
Int. Cl.[6] A61C *9/00*
U.S. Cl. 433—37 **15 Claims**



1. A dual tray assembly, comprising:
a carrier tray configured generally to conform to a patient's teeth; and
an inner tray with a configuration which extends over the teeth that removably nests inside the carrier tray making a dual tray assembly;
the inner tray being made of a thermoplastic compound including 50% to 80% by weight polycaprolactone and 10% to 40% by weight of ethylene vinyl-acetate.

5,616,028
DENTAL-JET DEVICE AND MOUTHPIECE FOR A DENTAL-JET DEVICE
Peter Häfele, Unterbergen, and Ernst Poganitsch, Klagenfurt, both of Austria, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Jun. 15, 1995, Ser. No. 491,010
Claims priority, application Austria, Jun. 21, 1994, 1222/94
Int. Cl.[6] A61C *17/02*
U.S. Cl. 433—80 **4 Claims**



1. A dental-jet device comprising a grip member and at least one mouthpiece, which mouthpiece is connectible to the grip member and comprises a tubular part having a fluid channel and a nozzle head mounted on the tubular part at the location of the free end of said tubular part so as to be rotatable about an axis of rotation between a central-jet position and a peripheral-jet position, which nozzle head has at least one central jet orifice and a plurality of peripheral jet orifices, a ring-shaped seal being interposed between the tubular part and the nozzle head to preclude an undesirable

water discharge to the exterior of the mouthpiece, wherein the tubular part has a single tubular-part outlet which communicates with the fluid channel of the tubular part and which is off-centered from the axis of rotation of the nozzle head, the nozzle head having only two nozzle-head inlets, which are off-centered from the axis of rotation of the nozzle head and which are sealed from one another by means of a second ring-shaped seal acting between the tubular part and the nozzle head, the first nozzle-head inlet being in fluid-transmitting communication with the tubular-part outlet in the central-jet position of the nozzle head and the second nozzle-head inlet being in fluid-transmitting communication with the tubular-part outlet in the peripheral-jet position of the nozzle head and wherein the first nozzle-head inlet is in fluid-transmitting communication with the at least one central-jet orifice of the nozzle head and the second nozzle-head inlet is in fluid-transmitting communication with the peripheral-jet orifices of the nozzle head.

5,616,029

DENTAL TREATMENT DEVICE FOR FORMING SCREW HOLE FOR EMBEDMENT OF IMPLANT MATERIAL

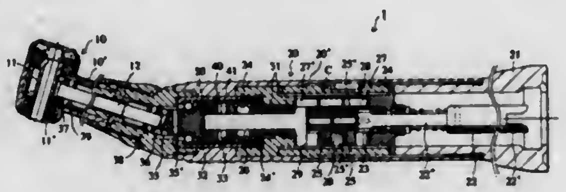
Tetsuji Suzuki, Utsunomiya, Japan, assignor to Nakanishi Dental Mfg. Co., Ltd., Tochigi-Ken, Japan

Filed Jun. 26, 1995, Ser. No. 494,473

Claims priority, application Japan, Jun. 27, 1994, 6-144764

Int. Cl.⁶ A61C *1/07*

U.S. Cl. 433—122 **4 Claims**



1. A dental treatment device for forming a screw hole for embedment of an implant material by a tool attached to said dental treatment device comprising a speed-reducing unit for decelerating rotation of an external electric motor and raising torque for transmitting rotation to the tool, and a clutch unit provided between the speed-reducing unit and the tool, said clutch unit comprising a driving side clutch having a first indented surface on its forward side, a tool side clutch having a second indented surface on its rear side, and a spring for thrusting said driving side clutch towards the tool side clutch for axially mating the first indented surface and the second indented surface with each other, said first indented surface comprising a plurality of alternately and circumferentially formed indentations thereon, each indentation having a first inclined surface inclined relative to a cross-section extending perpendicularly to and diametrically of the clutch unit and a flat surface contiguous to said first inclined surface and terminating at a first vertical surface perpendicular to said cross-section, said second indented surface comprising a plurality of alternately and circumferentially formed indentations thereon, each indentation having a second inclined surface inclined relative to said cross-section and a flat surface contiguous to said second inclined surface and terminating at a second vertical surface perpendicular to said cross-section, rotation during forming of said screw hole by said tool being transmitted from the driving side clutch to the tool side clutch via said first and second indented surfaces, the first inclined surfaces of said first indented surface riding on the second inclined surfaces against bias of the spring when a countertorque exceeding an allowable limit value is applied to said tool for interrupting rotation from said driving side clutch to said tool side clutch.

5,616,030

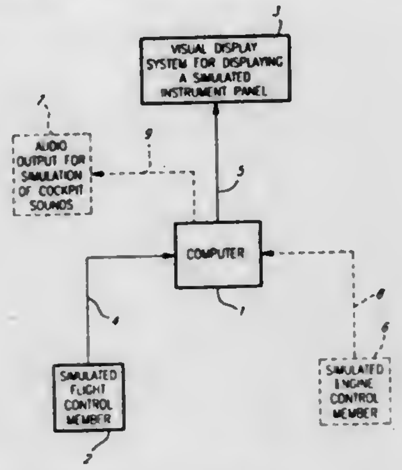
FLIGHT SIMULATOR EMPLOYING AN ACTUAL AIRCRAFT

Bruce L. Watson, 339 Main Road, P.O. Box 1024, Hudson, Quebec, Canada

Filed Jun. 1, 1994, Ser. No. 252,464

Int. Cl.⁶ G09B *9/00*

U.S. Cl. 434—38 **4 Claims**



1. A flight simulator system comprising
an actual aircraft not in flight;
a simulated aircraft cockpit control system disposed in said aircraft, said simulated aircraft control system comprising one or more simulated moveable cockpit control members, each simulated moveable cockpit control member being capable of mimicking the movements of an actual aircraft control member, said simulated aircraft control system being capable of providing output control signals indicative of operation of said simulated moveable cockpit control members, said simulated moveable cockpit control members including at least a simulated aircraft flight attitude control member, said simulated flight attitude control member being capable of mimicking the movements of an actual aircraft flight attitude control member;
a visual display system for receiving input signals and in response thereto visually display a video simulation of a plurality of simulated aircraft flight instruments mimicking the movements and responses of actual aircraft instruments; and
a computer for receiving said output signals from said simulated control system and in response thereto for providing said input signals to said visual display system.

5,616,031

SYSTEM AND METHOD OF SHADOWING AN OBJECT IN MOTION

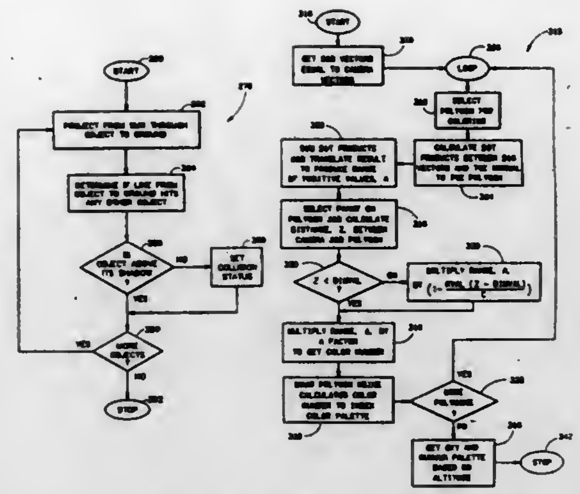
G. Edward Logg, Los Altos, Calif., assignor to Atari Games Corporation, Milpitas, Calif.

Division of Ser. No. 673,633, Mar. 21, 1991, Pat. No. 5,415,549. This application May 15, 1995, Ser. No. 441,588

Int. Cl.⁶ G09B *9/34;9/44;9/46*

U.S. Cl. 434—38 **29 Claims**

1. A shadowing system, comprising:
a computer having a processor and a memory;
a visual display connected to the computer;
means for simulating, and displaying on the visual display, a moving object in a universe generated by the computer, wherein the universe includes a terrain defined by a set of planes which includes at least one plane which is non-parallel and non-orthogonal to any other plane in the set; and
means for continuously projecting a shadow of the moving object on the terrain, including the non-parallel and non-orthogonal planes, the position of the shadow depending on



the position and direction of a simulated light source located above the object in the universe; and
means for displaying the shadow on the visual display, thereby improving depth perception.

19. In a shadowing system, including a computer and a visual display, a method of shadowing an object in motion, the method comprising the steps of:
simulating, and displaying on the visual display, an object in motion in a universe generated by the computer, wherein the universe includes a terrain defined by a set of planes which includes at least one plane which is non-parallel and non-orthogonal to any other plane in the set; and
continuously projecting a shadow of the moving object on the terrain, the position of the shadow depending on the position and direction of a simulated light source located above the object in the universe, wherein the light source is non-orthogonal to the normal of a one of the planes of the terrain; and
displaying the shadow on the visual display, thereby improving depth perception.

5,616,032

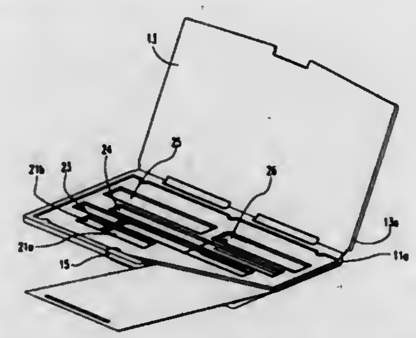
MULTIPURPOSE CHECK WRITING GUIDE

John E. Keitzer, and Betty J. Keitzer, both of 5324 Ingleside, Plantation at Leesburg, Leesburg, Fla. 34748

Filed Jan. 13, 1995, Ser. No. 372,379

Int. Cl.⁶ G09B *21/00*

U.S. Cl. 434—117 **2 Claims**



1. A check writing guide for drafting a check when placed in a first orientation relative to said guide or for endorsing a check when placed in a second orientation relative to said guide and transverse to the first orientation, comprising:
(a) a base plate member;
(b) a template member overlaying said base plate member, said template member having:
(i) a first aperture sized and positioned to facilitate writing the date on a check when placed in said first orientation,
(ii) a second aperture sized and positioned to facilitate writing the name of the payee on a check when placed in said first orientation,
(iii) a third aperture sized and positioned to facilitate writing the amount, in numerals, on a check when placed in said first orientation,
(iv) a fourth aperture sized and positioned to facilitate writing the amount, in text, on a check when placed in said first orientation,
(v) a fifth aperture sized and positioned to facilitate signing the name of the payor on a check when placed in said first orientation, and
(vi) a sixth aperture sized and positioned to facilitate filling out the memo line of a check when placed in said first orientation and to facilitate endorsing a check when placed in said second orientation; and
(c) means for positively aligning a memo line area of said check with said sixth aperture when said check is placed in said first orientation and for positively aligning an endorsement area of said check with said seventh aperture when said check is placed in said first orientation.

5,616,033

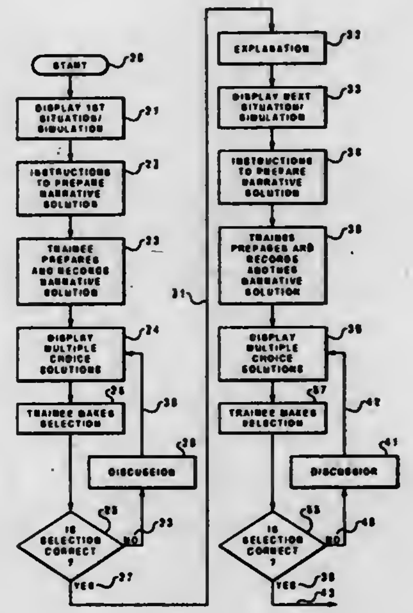
SPEED LEARNING SYSTEM COMPUTER BASED TRAINING

Patrick A. Kerwin, 4561 Bordeaux, Dallas, Tex. 75205

Filed Aug. 3, 1994, Ser. No. 285,187

Int. Cl.⁶ G09B *3/00*

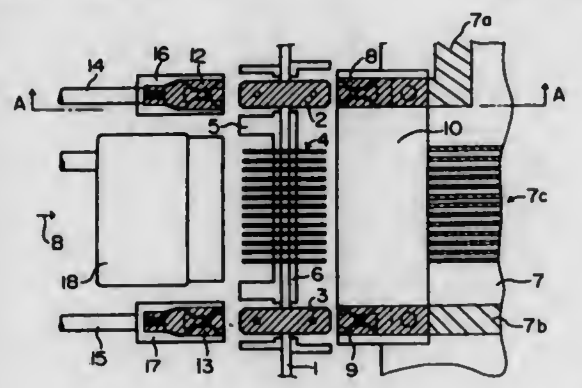
U.S. Cl. 434—118 **20 Claims**



1. A speed learning system for trainee teaching comprising:
(a) a computer;
(b) an input to said computer;
(c) an output from said computer;
(d) storage means associated with said computer for receiving and storing a plurality of customized problem situations;
(e) means including said storage means for storing a set of multiple choice solutions for each of said problem situations;
(f) means for presenting said problem situations to said trainee;
(g) means for instructing said trainee to prepare and store in said computer narrative descriptions of his/her proposed solutions to said problem situations;
(h) means including said computer for presenting to said trainee sets of multiple-choice solutions to said problem situations;

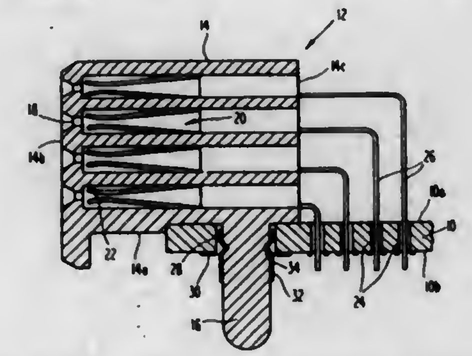
(i) means including said output for instructing said trainee to select one of said multiple-choice solutions;
(j) selection identification means including said input and said output for identifying the selection made by said trainee and
(i) when said selection is correct, for displaying considerations supporting such selection, and
(ii) when said selection is incorrect, for displaying an indicia thereof together with instructions to said trainee to make another selection.

5,616,034
POWER SUPPLY APPARATUS FOR PACKAGE
Natsuo Masuda; Hiroshi Yamamoto; Haruhiko Horizoe; Shinji Hiramatsu; Hidehiko Hizuka; Manabu Matsumoto, and Toshihiko Motoseko, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Jun. 21, 1995, Ser. No. 493,389
Claims priority, application Japan, Oct. 20, 1994, 6-254934
Int. Cl.^{6} H01R *9/09*
U.S. Cl. 439—78 **6 Claims**



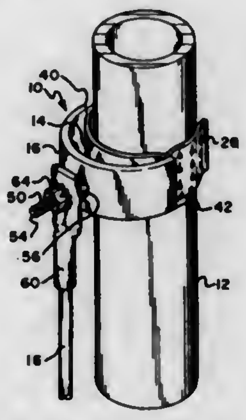
1. An apparatus for supplying power to a package, which consists of printed wiring boards and is connected to a shelf, comprising:
a first terminal provided on a back wiring board;
a second terminal provided on said back wiring board;
a third terminal consisting of a plurality of pins provided on said back wiring board;
a fourth terminal provided at a position of a package, where said fourth terminal can be fitted to said first terminal, and connected to a first power supply side of a circuit in said package;
a fifth terminal provided at a position of said package, where said fifth terminal can be fitted to said second terminal, and connected to a second power supply side of the circuit in said package;
a sixth terminal provided at a position of said package, where said sixth terminal can be fitted to said third terminal, and consisting of a plurality of pins connected to each signal line of the circuit in said package;
a seventh terminal fitted to said first terminal for supplying a first power;
an eighth terminal fitted to said second terminal for supplying a second power; and
a ninth terminal fitted to said third terminal and consisting of a plurality of pins connected to an external signal line.

5,616,035
ELECTRICAL CONNECTOR
Shinzui Shu, Kawasaki, Japan, assignor to Berg Technology, Inc., Reno, Nev.
PCT No. PCT/US94/03560, § 371 Date Sep. 19, 1995, § 102(e) Date Sep. 19, 1995
PCT Filed Mar. 31, 1994, Ser. No. 525,581
Claims priority, application Japan, Mar. 31, 1993, 5-015919 U
Int. Cl.^{6} H01R *9/09*
U.S. Cl. 439—79 **23 Claims**



1. An electrical connector to be automatically soldered to a circuit board having a through hole, said electrical connector comprising:
a housing body to be positioned on one side of the circuit board;
a plurality of contact terminals arranged in the housing body; and
a plastic peg projecting from a surface of the housing body and adapted to project through the through hole on the circuit board when the housing body is placed on said one side of the circuit board, said plastic peg having solder means for securing said peg to the circuit board during a soldering step thereby fixing the electrical connector in place on the circuit board.

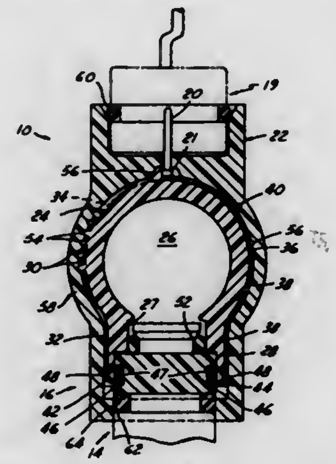
5,616,036
GROUNDING CLAMP
Mario Polidori, Medford Lakes, N.J., assignor to Thomas Polidori, Medford, N.J.
Filed Oct. 27, 1995, Ser. No. 549,429
Int. Cl.^{6} H01R *4/66*
U.S. Cl. 439—100 **4 Claims**



1. A grounding clamp for connecting an electrical device to a riser pipe comprising:
a substantially C-shaped resilient inner segment having a first end, a second end, an inside surface and an outside surface, said first and second ends of said inner segment being flared outwardly in order to facilitate the securement of said grounding clamp to said pipe;

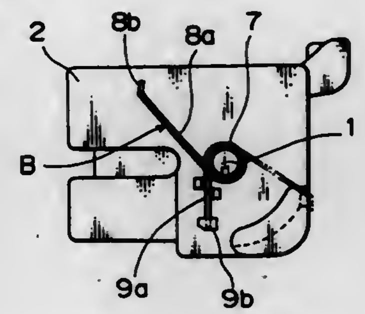
means for securing a grounding cable to said inner segment, and camming means adapted to force said inside surface of said inner segment against said riser pipe, said camming means including an outer segment having a first end and a second end, means for connecting said outer segment to said inner segment, said outer segment being movable relative to said inner segment and said connecting means being adapted to cause said inner and outer segments to move relative to each other and to cause said outer segment to forcibly engage said outside surface of said inner segment.

5,616,037
FUEL RAIL WITH COMBINED ELECTRICAL CONNECTOR AND FUEL INJECTOR RETAINER
Jack R. Lorraine, Newport News, Va., and John Smith, Watuaga, Tenn., assignors to Siemens Automotive Corporation, Auburn Hills, Mich.
Filed Aug. 4, 1995, Ser. No. 511,386
Int. Cl.^{6} F02M *51/00*
U.S. Cl. 439—130 **13 Claims**



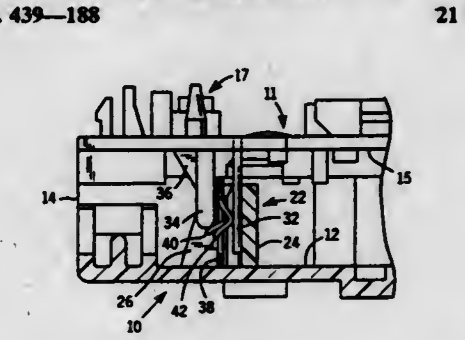
1. An electrical connector and fuel injector retainer arrangement of a fuel rail assembly, comprising:
an inner fuel rail for a plurality of fuel injectors, each injector adapted to be positioned within a respective one of a series of injector seats formed along said inner fuel rail;
a series of electrical conductor strips extending along one side of said inner fuel rail, and a common connector strip extending along another side of said inner fuel rail, each conductor strip having a contact segment extending downwardly to a respective fuel injector seat, and an array of connector contacts projecting from said fuel rail, each connector contact connected to a respective one of said conductor strips and adapted to mate with an external connector adapted to provide a connection to external controls for said injectors;
each fuel injector having a contact on opposite sides thereof with each contact engaged by an end of a respective contact segment to electrically connect each of said fuel injectors to said external connector contacts,
wherein each of said contact segments are reversely shaped to form a hook end, a contact pocket located on opposite sides of each of said fuel injectors, an edge of said hook end hooked within a contact pocket of an associated fuel injector to hold said fuel injector, whereby each is retained in said fuel rail seat.

5,616,038
CONNECTOR-COUPLING-LEVER MOUNTING METHOD AND ASSEMBLY THEREOF
Kenichi Okamoto, and Naoto Taguchi, both of Haibara-gun, Japan, assignors to Yazaki Corporation, Tokyo, Japan
Filed Sep. 5, 1995, Ser. No. 523,247
Claims priority, application Japan, Sep. 6, 1994, 6-212680
Int. Cl.^{6} H01R *13/62*
U.S. Cl. 439—157 **6 Claims**



1. A connector-coupling-lever mounting method, comprising the steps of:
engaging the windings of a spring with a supporting shaft extending outwardly from a side wall of a connector housing, and fixing a first end of said spring to a locking portion of said side wall;
engaging a second end of said spring, remote from said first end, with a provisional locking channel by way of an insertion channel, wherein both said insertion channel elongated along said side wall of said connector housing and said provisional locking channel extending in an outward direction from said side wall are provided in a provisional locking portion attached to said connector housing;
engaging a beating hole formed in a side arm of said connector-coupling lever with said supporting shaft; and
pushing said second end of said spring toward said side wall by a side arm of a connector-coupling lever so that a resilient force of said spring can release said second end of said spring from said provisional locking channel so as to fit said second end in a spring-end receiving portion formed in said side arm of said lever.

5,616,039
SYSTEM FOR SELECTIVELY EFFECTING ELECTRICAL CONNECTION AMONG A PLURALITY OF LOCI IN A HOUSING
Edwin R. Morley, Two Rivers, Wis., assignor to Paragon Electric Company, Inc., Two Rivers, Wis.
Filed Jan. 23, 1995, Ser. No. 376,400
Int. Cl.^{6} H01R *29/00*
U.S. Cl. 439—188 **21 Claims**



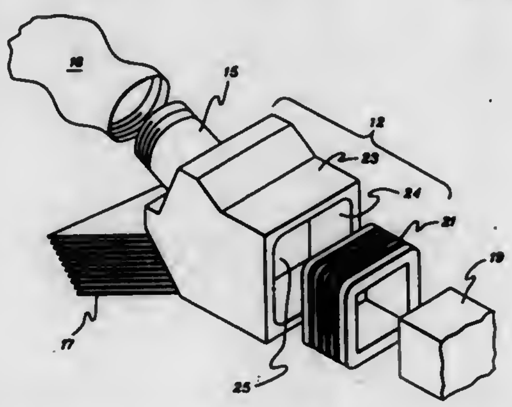
1. An improved system for selectively effecting electrical connection intermediate a plurality of electrical leads at a plurality of loci in a housing; said housing including a first housing portion and a second housing portion, said first housing portion and said

second housing portion being configured to engage in a predetermined orientation during assembly of said housing; the system comprising:

an electrical bridging member; said bridging member being located in one housing portion of said first housing portion and said second housing portion; said bridging member having a plurality of bias units, each respective bias unit of said plurality of bias units being situated substantially at a respective locus of said plurality of loci; an electrical device being located in said one housing portion, said device having a plurality of components, selected components of said plurality of components being electrically coupled to said plurality of electrical leads at said plurality of loci; and

a bearing member; said bearing member being located in the other housing portion of said first housing portion and said second housing portion than said one housing portion; said bearing member including a plurality of urging units, said plurality of urging units including a respective urging unit substantially in register with each said respective locus when said first housing portion and said second housing portion are in said predetermined orientation; said plurality of urging units cooperating with said plurality of bias units during said assembly to bias each said respective bias unit against a respective electrical lead of said plurality of electrical leads at each said respective locus to selectively electrically connect said respective electrical leads to each other.

5,616,040
TWO PIECE ELECTRICAL AND FLUIDIC CONNECTOR AND INSTALLATION METHOD THEREFORE
James K. Taillon, High Ridge, and Frank R. Reidelberger, III, Chesterfield, both of Mo., assignors to Mechanical Dynamics & Analysis, Inc., Scotia, N.Y.
Continuation of Ser. No. 405,225, Mar. 16, 1995, Pat. No. 5,573,414. This application Jul. 23, 1996, Ser. No. 685,106
Int. Cl.⁶ H01R *4/60*
U.S. Cl. 439—191 **20 Claims**



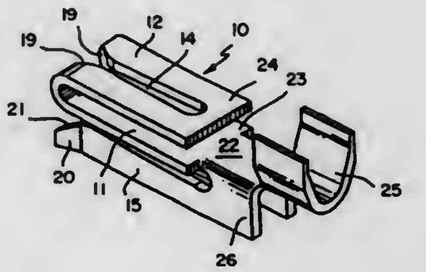
1. An electrical and fluidic connector for connecting an integrated electro-fluidic conductor to a fluidic conductor and an electrical conductor, said electrical and fluidic connector comprising:

a first monolithic member that is formed of an electrically conductive material and is configured to encircle and thereby electrically attach to an exposed end portion of said integrated electro-fluidic conductor;

a second monolithic member that is formed of an electrically conductive material and is configured for matable engagement to said first monolithic member, said second monolithic member including a fluid port for facilitating connection to said fluidic conductor and being configured for electrical connection to said electrical conductor; and

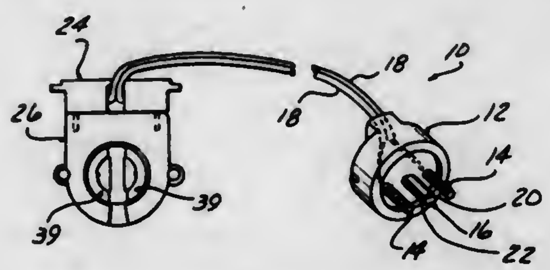
wherein said first monolithic member and said second monolithic member define a hollow inner chamber when said first monolithic member and said second monolithic member are in matable engagement, said hollow inner chamber comprising a fluid tight chamber such that fluid is passed between said saturated electro-fluidic conductor and said fluid port of said second monolithic member, said fluid passing through said hollow inner chamber, and wherein said first monolithic member and said second monolithic member themselves provide electrical connection between said integrated electro-fluidic conductor and said electrical conductor when said second monolithic member is connected to said electrical conductor.

5,616,041
FEMALE CONNECTOR FOR A PLASTIC MOLDED RECEPTACLE AND AN EXTENSION CORD
Donald C. Brown, Freehold, and Suzanne V. Hickey, Brick, both of N.J., assignors to Heyco Stamped Products, Inc., Toms River, N.J.
Continuation of Ser. No. 373,900, Jan. 17, 1995, abandoned. This application Sep. 7, 1995, Ser. No. 524,895
Int. Cl.⁶ H01R *27/00*
U.S. Cl. 439—222 **13 Claims**



1. A female connector for a molded plastic receptacle including a T opening, said female connector to receive a male blade at a low temperature, said female connector including a spine, a first arm and a second arm, said first and second arms being substantially the same length, bent over each other, substantially parallel, spaced apart a short distance, and one-piece with said spine; said first and second arms having first and second slots, respectively, opposed to each other; and a third and fourth arm extending from said spine perpendicular to said first and second arms and spaced a short distance therefrom.

5,616,042
ADAPTER FOR CONVERTING FLUORESCENT LIGHT FIXTURES
Frederick R. Raby, Sr., and Bruce R. Raby, both of 3030 N. Middle Side Road, Amherstburg, Ontario, Canada
Filed Jun. 28, 1995, Ser. No. 496,054
Int. Cl.⁶ H01R *33/02*
U.S. Cl. 439—226 **21 Claims**

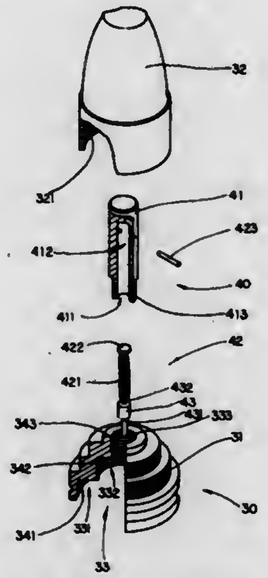


1. An adapter for installation in a fluorescent tube socket having a pair of spring contacts to establish an electrical connection between each electrical spring contact provided in said socket for contact pins of said tube with respective one of a pair wire leads, said adapter including:

a generally cylindrical adapter body, a pair of parallel radially spaced apart conductive contact pins extending axially from said adapter body, each contact pin electrically connected with a respective one of said pair of wire leads;

a central locking pin axially projecting from said adapter body between said contact pins, extending from said adapter body into and engaging said socket to secure said socket and adapter together.

5,616,043
VEHICLE ANTENNA CONNECTOR
Henry L.P. Liou, 20277 Valley Blvd., Apt. J, Walnut, Calif. 91789
Filed Mar. 11, 1996, Ser. No. 615,523
Int. Cl.⁶ H01R *4/38*
U.S. Cl. 439—322 **11 Claims**



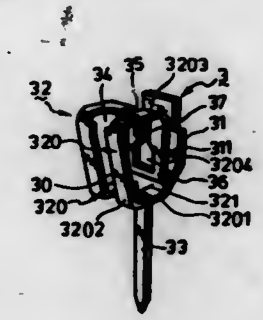
1. A vehicle antenna connector, comprising

a coupling housing having at least an outer connector member for connecting with an antenna element and a central through hole having a first, a second and a third hole section, in which said first hole section located at a bottom portion of said coupling housing has a largest inner diameter and an inside first female screw, said third hole section is located at a top portion of said coupling housing, and said second hole section having a diameter smaller than the diameter of said first hole section is located between said first and third hole sections and has an inside second female screw;

an adaptor comprising a body, a loading device and a conductive contact member, said body having at least an end opening and a receiving chamber therein for receiving said loading device, said body being firmly fastened to said third hole section of said coupling housing so as to enable said end opening coaxially confronting with said first and second hole sections, said contact member being placed at said end opening of said body, capable of moving up and down along an axis of said body, and having a contact head extending into said coupling housing; and

said loading device, disposed inside said receiving chamber of said body, incorporating with said contact member and providing a pressing force to said contact member to maintain its contact head extending into at least said first hole section and said second hole section, thereby said contact head of said contact member can be pressed toward another end of said body with a predetermined linear displacement until it is located in said second hole section of said coupling housing.

5,616,044
ZERO INSERT-FORCE INTEGRATED CIRCUIT SOCKET ASSEMBLY AND CONDUCTIVE TERMINAL PIN THEREFOR
Chou-Hsuan Tsai, 4-4F1., No. 8, Lane 609, Sec. 5, Chung-Hsig Rd., Sanchung City, Taipei Hsien, Taiwan
Filed Jun. 6, 1995, Ser. No. 485,822
Int. Cl.⁶ H01R *4/50*
U.S. Cl. 439—342 **18 Claims**



1. A zero-insert force socket assembly for an integrated circuit, said socket assembly including a base body formed with a plurality of terminal holes, a plurality of conductive terminal pins received respectively in said terminal holes, a chip mounting plate mounted slidably on said base body and formed with a plurality of through-holes which permit extension of pins of the integrated circuit into a respective one of said terminal holes, and an actuating lever associated operably with said chip mounting plate and said base body and operable so as to move said chip mounting plate slidably on said base body to make or break electrical connection between the pins of the integrated circuit and said conductive terminal pins in said terminal holes, wherein:

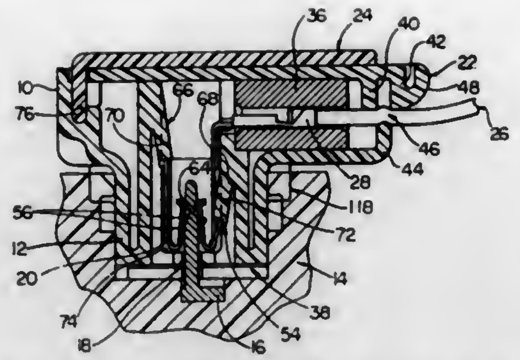
each of said conductive terminal pins includes an upper part with a back portion and a curved contact portion, and a lower part that serves as a mounting leg, said contact portion including a pair of elongated contact arms that are connected spacedly to a bottom edge of said back portion, each of said contact arms having a first segment that extends substantially horizontally from said back portion, a second segment that extends upwardly from a distal end of said first segment, and a third segment that extends substantially horizontally from a distal end of said second segment toward said back portion, said contact arms defining therebetween a pin receiving channel with an insert portion that extends between a portion of said third segments of said contact arms adjacent to said second segments, and a retaining portion that extends between a portion of said third segments of said contact arms adjacent to said back portion, said insert portion being wider than the pins of the integrated circuit, said retaining portion being narrower than the pins of the integrated circuit, said lower part extending downwardly from said bottom edge of said back portion and being disposed between said contact arms.

5,616,045
SQUIB CONNECTOR FOR AUTOMOTIVE AIR BAG ASSEMBLY
Bradford K. Gauker, Clinton Township, Mich., assignor to Augat Inc., Mansfield, Mass.
Filed Jul. 14, 1995, Ser. No. 502,523
Int. Cl.⁶ H01R *13/627*
U.S. Cl. 439—352 **13 Claims**

1. A squib connector for an automotive air bag assembly having a squib, the squib having a pair of terminal pins anchored thereto and extending upwardly in a squib connector receiving receptacle, said squib connector comprising:

a connector housing having a portion adapted to mate with the receiving receptacle of the squib;

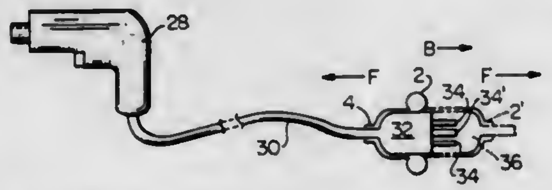
a terminal assembly disposed within said connector housing for electrical communication with the terminal pins of the squib;



a latching assembly extending from said connector housing moveable from a latched position to a released position, said latching assembly having a latching member thereon adapted to mate with a corresponding latch receiving member on the squib when said latching assembly is in the latched position;

a connector position and lock assurance assembly comprising a pivoting member hingedly connected to said connector housing for pivoting about an axis to and from a closed position against said connector housing and having an opening therein located to receive said latching assembly when said pivoting member is in the closed position, thereby ensuring said latching assembly is in the latched position.

5,616,046
CONNECTION DEVICE FOR SECURING TWO ENGAGED MEMBERS
Robert A. Sundstrom, and Donald R. Dumont, both of Hudson, N.H., assignors to Lynx Enterprises, Inc., Nashua, N.H.
PCT No. PCT/US93/08381, § 371 Date Feb. 21, 1995, § 102(e) Date Feb. 21, 1995, PCT Pub. No. WO94/06175, PCT Pub. Date Mar. 17, 1994
PCT Filed Sep. 7, 1993, Ser. No. 387,826
Int. Cl.⁶ H01R *13/62*
U.S. Cl. 439—367 **13 Claims**



1. A method for achieving a substantially waterproof connection between first and second parts of a two part coupling, which are repeatedly connectable and disconnectable from one another, solely by the use of a resilient elongate tubular member formed from a single unitary piece of a substantially water impermeable material, said elongate tubular member having first and second opposed open ends, and said two part coupling can be used repeatedly in combination with said tubular member;

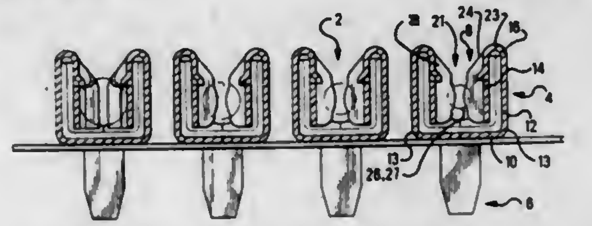
said method comprising the steps of:

placing said tubular member directly on only one of said first and said second parts of a two part coupling in a single rolled-up donut configuration;

interconnecting said first part with said second part;

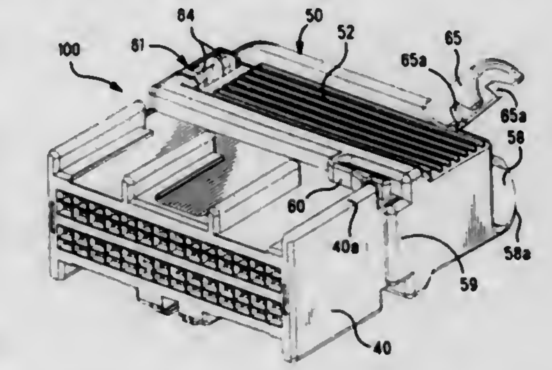
unrolling said tubular member from one of said first and said second parts toward the other of said first and said second parts so that said first end of said tubular member encompasses a portion of one of said first and second parts and said second end of said tubular member encompasses a portion of the other of said first and second parts whereby abutting surfaces of said first and said second parts are completely encompassed by said tubular member and an inner surface of said tubular member immediately adjacent the abutting surfaces directly contacts an outer surface of said first and second parts such that said tubular member is resiliently expanded thereby minimizing penetration of a liquid between said tubular member and said first and second parts to achieve a substantially waterproof engagement therebetween.

5,616,047
INSULATION DISPLACEMENT CONTACT TERMINAL
Harald M. Lutsch, Dietzenbach, Germany, assignor to The Whitaker Corporation, Wilmington, Del.
Filed Mar. 13, 1995, Ser. No. 402,440
Claims priority, application United Kingdom, Mar. 17, 1994, 9405294
Int. Cl.⁶ H01R *4/24*
U.S. Cl. 439—397 **15 Claims**



1. An insulation displacement contact for engaging an electrical lead, wherein the contact comprises opposing arms, where each arm includes a cutting surface followed continuously and nondisjointed therewith, along the direction of insertion of the lead, by a contacting surface, both surfaces being arranged opposite the corresponding surface on the other arm, such that an IDC slot is defined therebetween for receiving the lead each arm being supported towards the cutting surface and exetnding freely therefrom in a cantilevered manner to a deflectable free-end such that the resiliency of the arms at the cutting surface is less than the resiliency of the arms at the contacting surface.

5,616,048
ELECTRICAL CONNECTOR WITH ELECTRICAL CONTACT AND STRAIN RELIEF
John M. Myer, Millersville; John R. Shuey, Mechanicsburg, and Kenneth F. Folk, Harrisburg, all of Pa., assignors to The Whitaker Corporation, Wilmington, Del.
Filed Jun. 26, 1995, Ser. No. 495,163
Int. Cl.⁶ H01R *13/40*
U.S. Cl. 439—398 **17 Claims**



1. An electrical connector assembly, comprising:

an inner housing with at least one contact receiving slot;

at least one electrical contact disposed in said slot, the contact having a termination section;

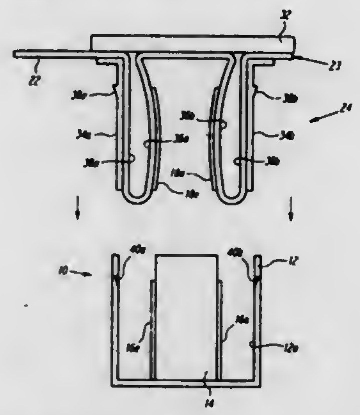
an outer housing with a cavity for receiving said inner housing completely within the cavity, said outer housing includes at least one latch arm for latching said inner housing within said cavity in first and second latched positions when the inner housing is in the first latched position, the termination section of the contact is exposed for termination, when the inner housing is in the second latched position, the inner housing is completely received within the cavity and the termination section is covered; and

said inner housing includes a wall shaped to receive said latching arm in said first and second latched positions.

5,616,049
CONNECTOR ASSEMBLY FOR METAL-JACKETED LAMBDA PROBE CONDUCTOR
Michael Schwäger, Mörfelden; Jürgen Ryll, Egelsbach, and Lutz Wittig, Langen, all of Germany, assignors to The Whitaker Corporation, Wilmington, Del.
Filed Mar. 13, 1995, Ser. No. 402,448
Claims priority, application United Kingdom, Mar. 24, 1994, 9405845
Int. Cl.⁶ H01R *13/516*
U.S. Cl. 439—455 **19 Claims**

1. A connector assembly for interconnecting a semi-rigid high temperature conductor (2) having an outer metal jacket (4) and wire conductors therein, to low temperature conductors, characterized in that the connector assembly (10) comprises a connection section (14) having a housing (16) with terminals (18) mounted therein for pluggable and unpluggable electric connection with a complementary low temperature connector (56), the assembly (10) further comprising a retention member (12) rigidly bonded to the metal jacket (4) and having latching members (88, 76) cooperable with housing latching members (40, 78) for secure assembly of housing (16) thereto, the retention member (12) and housing (16) having complementary anti-rotation sections (86, 84) cooperating to prevent rotation of the housing (16) with respect to the high temperature conductor (2), the housing further comprising an intermediate housing section (26) having wire receiving channels (36) therethrough extending from a face proximate an end of the metal jacket (6), the channels (36) guiding and separating the wire conductors to avoid contact between the wire conductors.

5,616,050
FLEXIBLE CIRCUIT CONNECTOR
Edward D. Suski, Lake Forest, Calif., assignor to AST Research Inc., Irvine, Calif.
Filed Jan. 19, 1995, Ser. No. 375,537
Int. Cl.⁶ H01R *23/66*
U.S. Cl. 439—495 **4 Claims**



1. A flexible circuit connector comprising

a flexible printed circuit comprising a plurality of embedded electrically conductive lines,

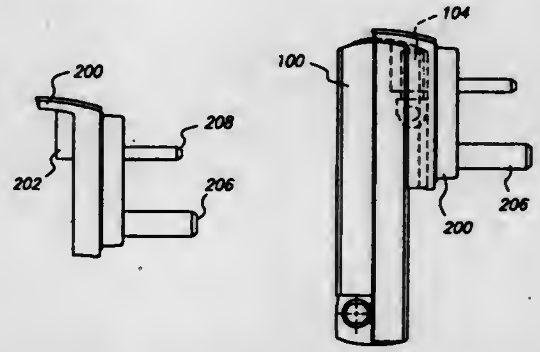
at least one aperture on a region of said flexible printed circuit partially exposing at least some of said plurality of embedded electrically conductive lines,

said region of said flexible printed circuit being formed into at least one loop to allow said partially exposed plurality of embedded electrically conductive lines to function as contacts of a mating connector to mate with corresponding contacts on a board mounted connector when said flexible circuit connector is inserted into the board mounted connector,

at least one insert stiffener attached to an outer side of said loop opposite said aperture, thereby acting as a support guide to ease the insertion and extraction of said flexible circuit connector into and out of the board mounted connector, and

at least one abutment protruding from said insert stiffener to enable said abutment to click into a recess formed on an inner edge of a housing for the board mounted connector, thereby providing for a secure interface when said flexible circuit connector is properly inserted into the board mounted connector.

5,616,051
A.C. MAINS ADAPTERS FOR INTERNATIONAL USE
Conrad Rogers, Belmont, and Daniele G. De Iuliis, San Francisco, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.
Filed Jun. 21, 1995, Ser. No. 493,381
Int. Cl.⁶ H01R *29/00*
U.S. Cl. 439—518 **2 Claims**



1. A power connecting device for connecting an electronic appliance to an A.C. mains source comprising:

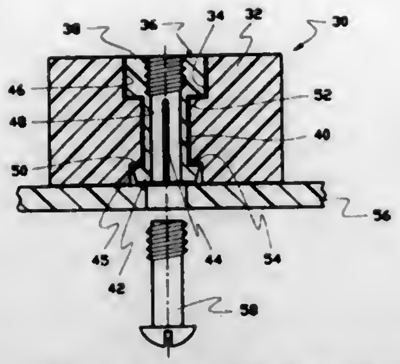
a device body having a base and a recess in the base extending to one end of the device body;

two metal prongs rotatably mounted in the device body adapted for electrically contacting said A.C. mains source, the prongs having at least two positions, the first position having the prongs extending outward from the device base, and the second position having the prongs folded into the device base and within the recess in the device base; and

an adapter body having a receptacle body with two receptacle contacts for contacting the prongs in the device body, and mains connectors connected to the receptacle contacts, the adapter body connecting slidably to the device base such that the receptacle body fits within the recess in the device base and the prongs contact the receptacle contacts in the receptacle body.

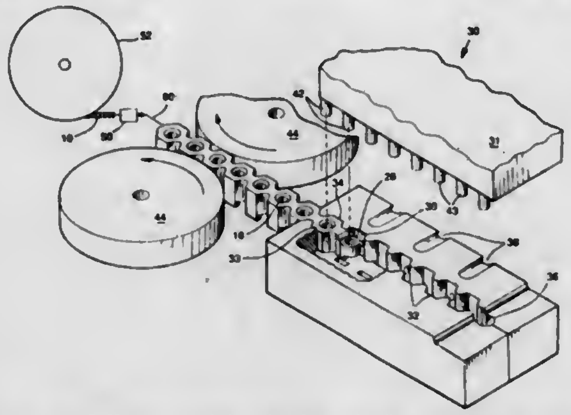
5,616,052
SCREW MOUNTING KIT FOR USE WITHIN CONNECTOR
Hua-Tsung Pan, Taipei, and Y. M. Ho, Pan-Chiao, both of Taiwan, assignors to Hon Hai Precision Ind. Co., Ltd., Taiwan
Filed May 10, 1995, Ser. No. 437,967
Int. Cl.⁶ H02B *1/01*
U.S. Cl. 439—573 **5 Claims**

1. An electrical connector comprising:



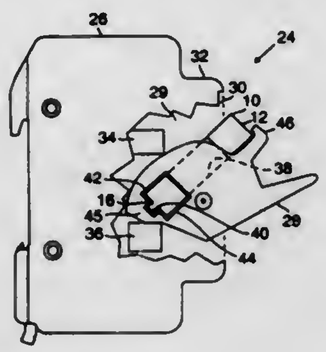
an insulative housing having at least one kit receiving hole for receiving a screw mounting kit therein;
said screw mounting kit including a head portion, a tubular portion and a tubular conical portion wherein a plurality of slots extend axially along the tubular portion and the tubular conical portion; and
said kit receiving hole including a large section, a narrow section and medium section for respectively compliantly receiving the corresponding head portion, tubular portion and tubular conical portion of the screw mounting kit so that the screw mounting kit can be fully embedded within the corresponding kit receiving hole wherein an upper step is formed on a top portion of the narrow section adjacent the large section, and a lower step is formed on a bottom portion of the narrow section adjacent the medium section.

5,616,053
CONTINUOUS MOLDED ELECTRICAL CONNECTOR
Robert M. Bogursky, Encinitas; Michael Krupin, San Diego; Peter V. Bellantoni, Vista, and Martin E. McGrath, San Diego, all of Calif., assignors to Auto Splice Systems, Inc., San Diego, Calif.
Filed Jul. 5, 1995, Ser. No. 498,536
Int. Cl.⁶ H01R *13/40*
U.S. Cl. 439—590 21 Claims



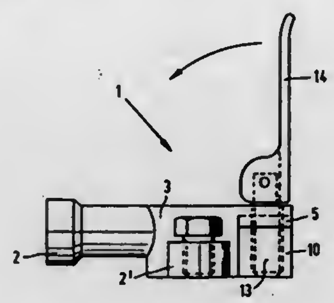
1. A continuous elongated injection-molded length of insulating material containing a plurality of spaced approximately in-line electrical or mechanical parts inserted in and along substantially the entire length of said insulating material, comprising:
(a) a consecutive series of injection-molded segments of insulating material,
(b) each segment comprising a consecutive series of connected integral, insulated units comprised of first leading and second trailing end units and a plurality of middle units between the end units, said middle units each being of insulating material and separated along their length from each other by severance means, some middle and end units containing holes for receiving an electrical or mechanical part, the first and second end units forming portions in line with the spaced electrical or mechanical parts,
(c) except for the end segments, the second end unit of each segment being nested within the first end unit of the adjacent segment whereby successive segments are integrally coupled by their respective second and first end units with their respective holes aligned to receive a common electrical or mechanical part,
(f) electrical or mechanical pans being mounted into holes of the middle units and into the aligned holes of the nested end units of some of the segments.

5,616,054
FUSE HOLDER
Michael Quinlan, Exeter, N.H., assignor to Gould Electronics Inc., Eastlake, Ohio
Filed Oct. 30, 1995, Ser. No. 550,524
Int. Cl.⁶ H01R *13/68*
U.S. Cl. 439—621 5 Claims



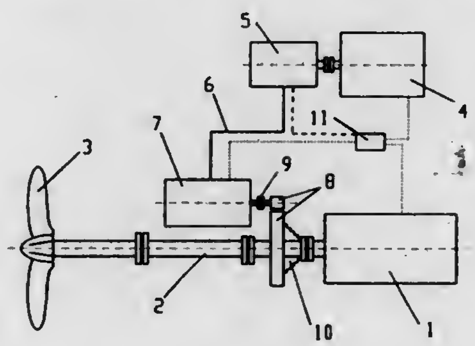
1. A fuse holder comprising
a housing defining an enclosed region and an opening to said enclosed region,
a pair of live contacts at opposite ends of said enclosed region and spaced to engage full diameter portions of end cap terminals on the ends of a tubular fuse moved into said enclosed region, said contacts being fixedly mounted with respect to said housing, and
a fuse carrier that is pivotally mounted on said housing at said opening and is movable between a closed position, in which said contacts electrically engage said end cap terminals and said opening is closed by said carrier, and an open position, in which said tubular fuse can be inserted into said fuse carrier,
said fuse carrier including structure defining an elongated fuse insertion region along a fuse axis for receiving said tubular fuse, said structure defining said fuse insertion region being inside said enclosed region and in said closed position, said structure including a blocking structure at one end of said fuse insertion region that is sized to receive a small diameter projection on the end of said tubular fuse but to block movement of a full diameter end of a fuse of the same diameter along said fuse axis into proper axial position on said carrier, said blocking structure being movable with respect to said contacts, said opening to said housing being sized to permit closure of said carrier with a tubular fuse having a small diameter projection at said proper axial position in said one end, but to block closure of said housing with a fuse having the same overall length but a full diameter end in said one end, whereby said fuse holder relies on said physical blocking to prevent electrical contact of the wrong fuse.

5,616,055
CONNECTING TERMINAL FOR A POLE SHAPED MEMBER
Johannes P. A. Heeren, Etten-Leur, Netherlands, assignor to White Products B.V., Oudenbosch, Netherlands
Filed Jun. 17, 1994, Ser. No. 262,079
Int. Cl.⁶ H01R *4/28*
U.S. Cl. 439—761 16 Claims



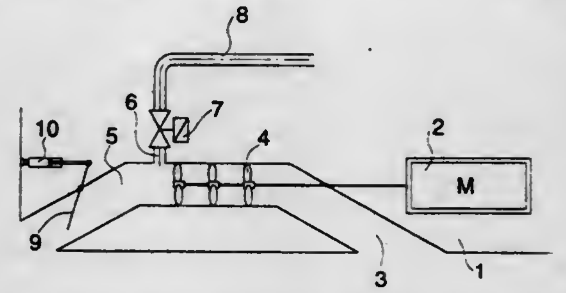
1. Connecting terminal comprising an essentially cylindrical casing provided with a longitudinal division and having at least one pair of jaws, each jaw having a camming surface, the camming surfaces being separated by the division, between which jaws is located an opening for acceptance of a bolt having, at an extremity, an attendant contrapiece with a corresponding camming surface which by exertion of pressure upon said camming surface of the jaws, causes the jaws to close, characterized in that both camming surfaces are camming continuously curved.

5,616,056
AUXILIARY PROPULSION SYSTEM FOR SEAGOING SHIPS
Hans-Michael Meissner, Bad Schwartau, Germany, assignor to Blohm + Voss GmbH, Hamburg, Germany
Filed Sep. 12, 1995, Ser. No. 529,483
Claims priority, application Germany, Sep. 13, 1994, 44 32 483.9
Int. Cl.⁶ B63H *21/20*
U.S. Cl. 440—3 20 Claims



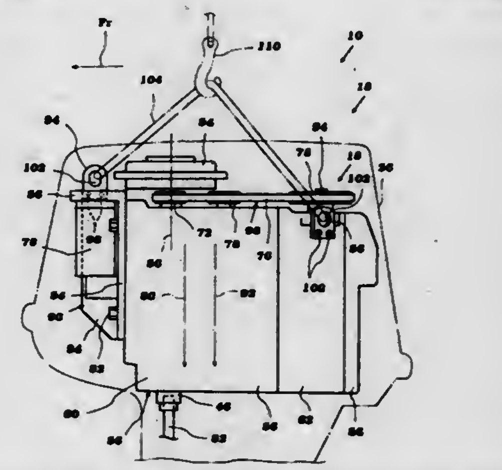
1. Auxiliary propulsion system for seagoing ships, whereby a diesel engine, which is the main engine, drives a propeller by means of a shaft system, wherein a retrofittable diesel engine with a generator which operates an electric motor can be coupled by means of a transmission with a flexible coupling and a clutch to the shaft system to increase the power of the main engine.

5,616,057
SHIP
Göran Sundholm, Ilmari Kiannon kuja 3, Fin-04310 Tuusula, Finland
PCT No. PCT/FI94/00170, § 371 Date Nov. 3, 1995, § 102(e) Date Nov. 3, 1995, PCT Pub. No. WO94/25341, PCT Pub. Date Nov. 10, 1994
PCT Filed May 4, 1994, Ser. No. 549,834
Claims priority, application Finland, May 5, 1993, 932036
Int. Cl.⁶ B63H *11/00*
U.S. Cl. 440—39 3 Claims



1. In a ship having water-ejecting means for driving the ship and spraying water, the improvement of the water-ejecting means for the spraying of the water, comprising:
means for the spraying of the water as a fog of droplets, whereby to cool the ship and protect the ship from radioactive fallout.

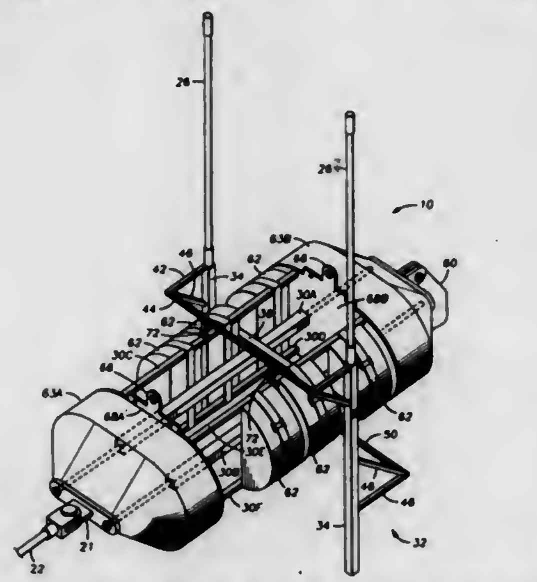
5,616,058
LIFT ARRANGEMENT FOR OUTBOARD MOTOR ENGINE
Hiroshi Nakai, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Shizuoka, Japan
Filed Jul. 26, 1995, Ser. No. 507,116
Claims priority, application Japan, Jul. 30, 1994, 6-197281
Int. Cl.⁶ B63H *5/12*
U.S. Cl. 440—53 20 Claims



1. An engine for a marine outboard drive comprising an engine block supporting a vertically oriented output shaft, a flywheel assembly coupled to said output shaft and positioned so as to cover a portion of an upper end of said engine block, a camshaft disposed on an end of the engine block opposite the end at which the output shaft is disposed, a timing belt operating upper ends of the output shaft and the camshaft, and first and second hangers positioned on opposite sides of said engine upper end with said flywheel assembly positioned between said hangers and positioned at opposite ends of the engine, said engine being arranged such that a center of gravity of said engine lies along a vertical axis which passes through said flywheel assembly, said first and second hanger being

arranged on said engine such that a line extending directly between said first and second hangers can be drawn across the timing belt and to intersect the vertical axis on which the center of gravity of the engine lies.

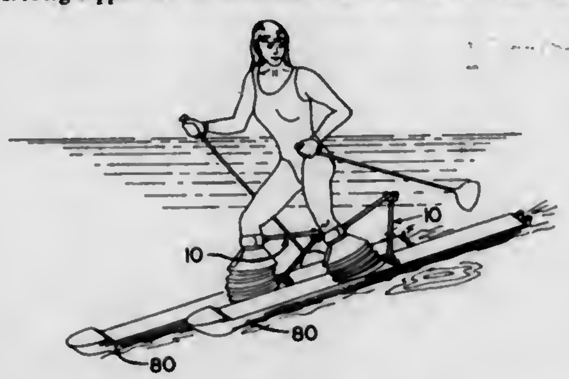
5,616,059
TAILBUOY WITH SELF-DEPLOYING MAST
Frank Solomon, Hillingdon, England, assignor to Western Atlas International, Inc., Houston, Tex.
Filed Dec. 5, 1995, Ser. No. 567,715
Int. Cl.⁶ B63B *22/00*
U.S. Cl. 441—11 **12 Claims**



7. A mast assembly for use on a buoy, wherein said mast assembly comprises:
a frame adapted to be pivotly coupled to said buoy along a pivot axis, wherein the weight of said frame is distributed with respect to the pivot axis so that a lower end of said frame extends into the water and a bottom end of said frame has a surface against which the water exerts a force to rotate said frame into a desired position; and
a stop member adapted to be attached to said buoy to maintain said frame in the desired position.

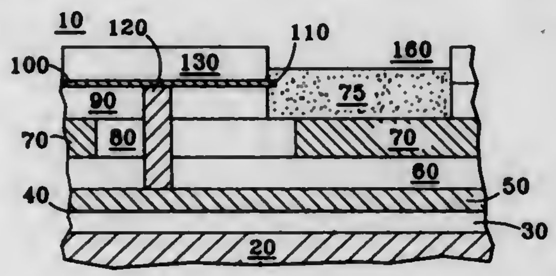
5,616,060
LEG SUPPORT FOR AQUATIC SKIS
Robert Morin, 676 Norvége, #5, Ste-Foy, Québec, Canada
Filed Nov. 23, 1993, Ser. No. 136,944
Int. Cl.⁶ B63B *35/83*
U.S. Cl. 441—76 **4 Claims**

1. A leg support for use on towless water skis, each of said water



skis comprising an elongated buoyant thick ski body defining top and bottom surfaces, an orifice on said ski body top surface leading to a foot cavity for receiving the foot of a user of said ski body on a footrest, said leg support comprising:
a) a loop band, to be releasably tightened around the calf and tibia of said ski body user;
b) elongated link means having an upper and a lower end;
c) first pivot means, adapted to pivotally connect the lower end of said link means to said ski body, said first pivot means defining a pivotal axis perpendicular to a plane parallel to the longitudinal axis of said ski body and perpendicular to said ski body footrest when connected to said ski body;
d) second pivot means, pivotally connecting said upper end of said link means to said loop band, said second pivot means defining a pivotal axis parallel to said first pivot means pivotal axis, wherein when said first pivot means is connected to said ski body, said loop band is movable over said ski body top surface exclusively about a translational plane perpendicular to the pivotal axes of said first and second pivot means; said link means including a lower and an upper link member each having a lower and an upper end, the lower end of said lower link member constituting the lower end of said link means and the upper end of said upper link member constituting the upper end of said link means, said leg support further including a third pivot means, pivotally connecting said lower link member to said upper link member, said third pivot means defining a pivotal axis parallel to the pivotal axes of said first and second pivot means, wherein both said upper and lower link members are pivotally movable exclusively in a common plane; wherein said lower link member is a V-shaped rod, said lower link member being adapted and correctly dimensioned to engage said user's leg like a yoke.

5,616,061
FABRICATION PROCESS FOR DIRECT ELECTRON INJECTION FIELD-EMISSION DISPLAY DEVICE
Michael D. Potter, Grand Isle, Vt., assignor to Advanced Vision Technologies, Inc., Rochester, N.Y.
Filed Jul. 5, 1995, Ser. No. 498,507
Int. Cl.⁶ H01J *1/53*
U.S. Cl. 445—24 **24 Claims**



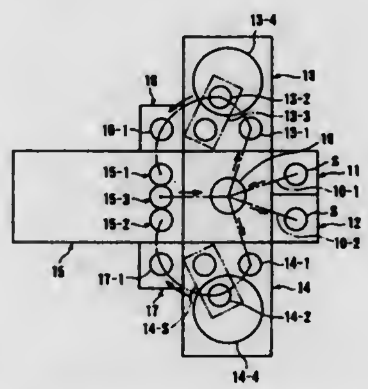
1. A method of fabricating a field emission device, comprising the steps of:
(a) providing a substrate;
(b) disposing a first insulating layer upon said substrate;
(c) disposing a first conductive layer upon said first insulating layer thus providing an anode layer, said anode layer having a first predetermined thickness and having a top major surface;
(d) disposing a second insulating layer upon said anode layer, said second insulating layer having a second predetermined thickness;
(e) disposing and patterning a second conductive layer having only a few hundred ångstroms thickness upon said second insulating layer so as to be substantially parallel to said substrate, thus providing a lateral emitter layer;
(f) providing an opening through said lateral emitter layer and through said second insulating layer, thus forming an emitting edge of said lateral emitter layer, said opening extending to said top major surface of said anode layer;

(g) disposing a phosphor into said opening and onto said top major surface of said anode layer while covering said emitting edge of said lateral emitter layer with said phosphor; and
(h) providing means for applying an electrical bias voltage to said lateral emitter layer and to said anode layer, said bias voltage to be applied being sufficient to cause cold-cathode emission current of electrons to flow from said emitting edge of said lateral emitter layer to said anode layer.

5,616,062

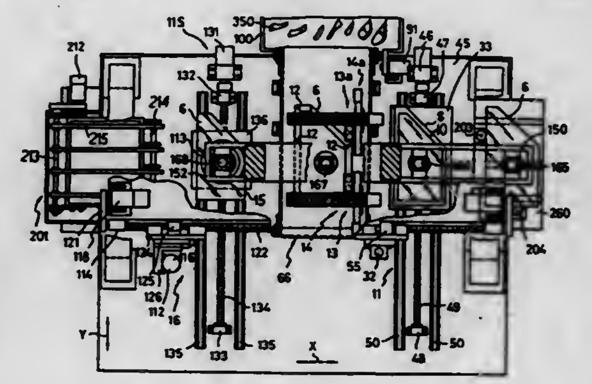
Patent Not Issued For This Number

5,616,063
POLISHING APPARATUS
Katsuya Okumura, Poughkeepsie, N.Y.; Riichirou Aoki, Tokyo; Hiromi Yajima, Kanagawa--ken; Masako Kodera, Kanagawa-ken; Shirou Mishima, Kanagawa-ken; Atsushi Shigeta, Kanagawa-ken; Masayoshi Hirose, Tokyo; Norio Kimura, Tokyo, and Seiji Ishikawa, Tokyo, all of Japan, assignors to Kabushiki Kaisya Toshiba, Kanagawa-ken, and Ebara Corporation, Tokyo, both of Japan
Filed Sep. 20, 1994, Ser. No. 309,193
Claims priority, application Japan, Sep. 21, 1993, 5-259396
Int. Cl.⁶ B24B *49/00;51/00*
U.S. Cl. 451—1 **16 Claims**



1. A unitary, composite apparatus for polishing and then washing a workpiece, said apparatus comprising:
a center robot;
a plurality of units disposed in a cluster arrangement around said center robot and including a loading unit for receipt of a workpiece to be polished, a polishing unit to polish the workpiece and form a polished workpiece, a washing unit to wash the polished workpiece and to form a washed and polished workpiece, and an unloading unit for receipt of the washed and polished workpiece;
said center robot including at least one first transfer mechanism for transferring the workpiece to be polished between said loading unit and said polishing unit and for transferring the washed and polished workpiece between said washing unit and said unloading unit; and
at least one second transfer mechanism, separate and discrete from said at least one first transfer mechanism, for transferring the polished workpiece between said polishing unit and said washing unit;
whereby handling of clean workpieces, including the workpiece to be polished and the washed and polished workpiece, is conducted by said at least one first transfer mechanism and is maintained separate and discrete from handling of dirty workpieces, including said polished workpiece, that is conducted by said at least one second transfer mechanism.

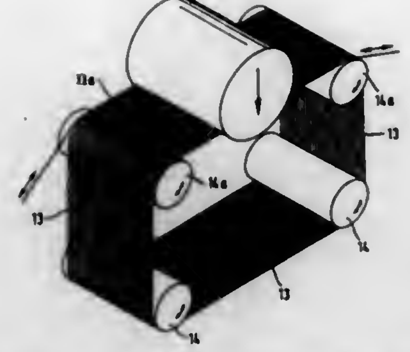
5,616,064
PLATE-LIKE GLASS MATERIAL, ETC., WORKING DEVICE
Shigeru Bando, Tokushima, Japan, assignor to Bando Kiko Co., Ltd., Tokushima, Japan
PCT No. PCT/JP93/00767, § 371 Date Jan. 21, 1994, § 102(e) Date Jan. 21, 1994, PCT Pub. No. WO93/25488, PCT Pub. Date Dec. 23, 1993
PCT Filed Jun. 8, 1993, Ser. No. 185,843
Claims priority, application Japan, Jun. 12, 1992, 4-179194
Int. Cl.⁶ B24B *1/00*
U.S. Cl. 451—5 **5 Claims**



1. A method for working a glass plate, comprising the steps of:
selecting a glass plate stock which has a minimum breaking-off margin with respect to a target glass plate;
reading out pre-stored shape data relating to a shape of said target glass plate;
displaying the shape of said target glass plate based on the read out shape data;
inputting data relating to a shape of a selected glass plate stock;
displaying the shape of the glass plate stock so as to surround the displayed shape of the target glass plate;
inputting data relating to standby positions of a cutting line and a pushing position based on the displayed shapes of the target glass plate and the glass plate stock;
displaying each standby position based on the input standby position data;
inputting data relating to an end cutting line position and data relating to a pushing position;
displaying the end cutting line and the pushing position based on the input data relating to the end cutting line position and the input data relating to the pushing position; and
pushing and breaking-off the selected glass plate stock based on the read out data relating to the shape of the target glass plate, and the data relating to the shape of glass plate stock, the data relating to the standby positions, the data relating to the end cutting line and the input data relating to the pushing position, respectively.

5,616,065
WIRE SAW AND METHOD FOR CUTTING WAFERS FROM A WORKPIECE
Karl Egglhuber, Hebertsfelden, Germany, assignor to Wacker Siltronic Gesellschaft für Halbleitermaterialien Aktiengesellschaft, Burghausen, Germany
Filed Feb. 21, 1996, Ser. No. 603,541
Claims priority, application Germany, Mar. 23, 1995, 195 10 625.3
Int. Cl.⁶ B24B *49/00*
U.S. Cl. 451—10 **24 Claims**

1. A wire saw for cutting wafers from a workpiece comprising
a machine frame;
a feed device, having a roller system combined to form a cutting head and comprising a plurality of wire guide rollers which are linked to bearing spindles and are rotatably mounted and of which at least one is driven, and having at least one wire



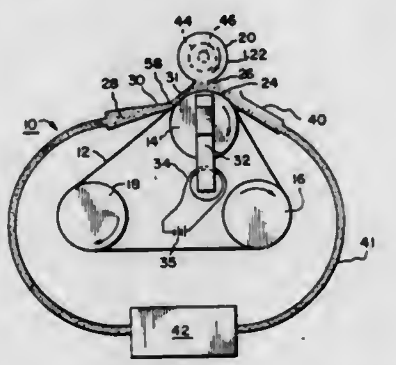
web used as sawing tool and comprising wire segments which are disposed in parallel between two wire guide rollers and which are moved perpendicularly to the axes of the wire guide rollers around the roller system and which work through the workpiece along intended cutting planes with the aid of the feed device, with eroding means being supplied and with the formation of a multiplicity of parallel sawing gaps;

a guidance system for the guidance of the wire segments into the intended cutting planes having at least one measuring device and at least one controlling device;

the measuring device detecting an incorrect position of the wire segments in relation to the intended cutting planes by measuring the distance from a measurement point whose spatial position is dependent on the incorrect position of the wire segments; and

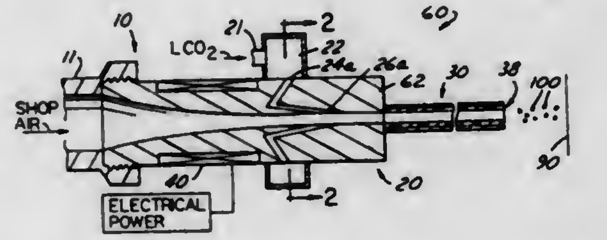
the controlling device effecting, if necessary, a compensating movement of the wire segments or of the workpiece by means of force transmission, which compensating movement brings the wire segments into the intended cutting planes.

5,616,066
MAGNETORHEOLOGICAL FINISHING OF EDGES OF OPTICAL ELEMENTS
Stephen D. Jacobs, Pittsford, N.Y., and Igor V. Prokhorov, Minsk, Belarus, assignors to The University of Rochester, Rochester, N.Y.
Continuation-in-part of Ser. No. 543,426, Oct. 16, 1995. This application Feb. 21, 1996, Ser. No. 603,528
Int. Cl.^{6} B24B *1/00*
U.S. Cl. 451—36 **31 Claims**



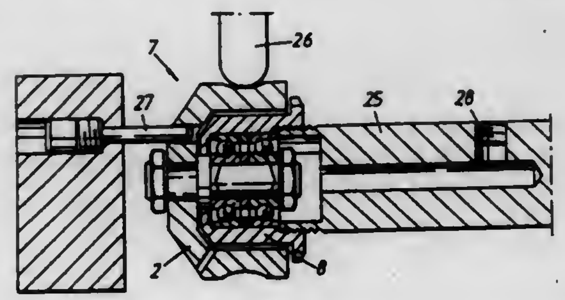
1. A method of finishing an edge of an optical element using magnetorheological fluid, comprising:
a) positioning an optical element near a carrier surface such that a converging gap is defined between an edge of said optical element and said carrier surface, said element being positioned to exclude definition of a converging gap between image-forming refractive and reflective surfaces of said element and said carrier surface;
b) applying a magnetic field substantially at said gap;
c) introducing a magnetorheological fluid onto said carrier surface near said gap, said fluid being stiffened in said magnetic field; and
d) providing first relative motion between said carrier surface and said edge to drive said field-stiffened magnetorheological fluid through said converging gap such that a work zone is created by the moving magnetorheological fluid to form a transient finishing tool for engaging and causing material removal at said edge of said optical element.

5,616,067
CO_2 NOZZLE AND METHOD FOR CLEANING PRESSURE-SENSITIVE SURFACES
Lakhi N. Goenka, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Jan. 16, 1996, Ser. No. 585,987
Int. Cl.^{6} B24C *5/04*
U.S. Cl. 451—39 **20 Claims**



15. A method for generating small CO_2 particles for abrasively cleaning a workpiece, comprising the steps of:
(a) accelerating a carrier gas from a converging section through a throat section and out a diverging section of a first nozzle, and
(b) injecting liquid CO_2 through a CO_2 nozzle generally adjacent to the throat section for at least partially converting liquid CO_2 into solid CO_2 particles, whereby the solid CO_2 particles are accelerated by the carrier gas through the diverging section for cleaning the workpiece.

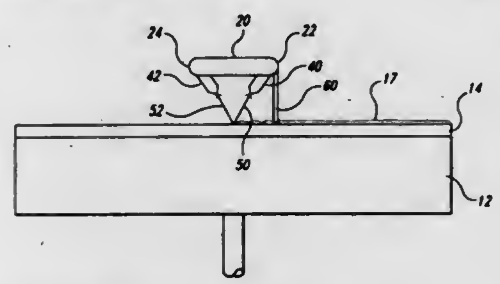
5,616,068
METHOD AND APPARATUS FOR GRINDING PERIPHERAL GROOVES IN ROLLING MILL GUIDE ROLLERS
Lennart Söderberg, Smedjebacken, Sweden, assignor to Morgardshammar AB, Smedjebaken, Sweden
PCT No. PCT/SE94/00554, § 371 Date Dec. 7, 1995, § 102(e) Date Dec. 7, 1995, PCT Pub. No. WO94/29076, PCT Pub. Date Dec. 22, 1994
PCT Filed Jun. 8, 1994, Ser. No. 549,807
Int. Cl.^{6} B24B *1/00*
U.S. Cl. 451—49 **10 Claims**



1. A method for grinding a circumferential groove in the periphery of a rolling mill guide roller, said method comprising:

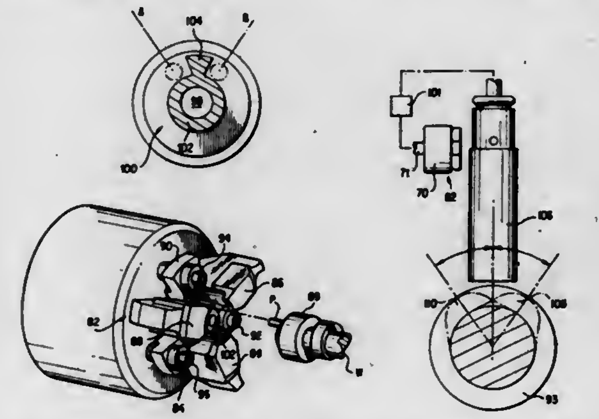
a. providing a unit consisting of guide roller and its operating bearing assembly, which as a unit can be readily attached to and removed from a rolling mill stand;
b. attaching said unit to a support of a grinding device that is separate from the rolling mill stand;
c. grinding a circumferential groove in the periphery of the guide roller of said unit, the guide roller being rotatably supported in its operating bearing assembly.

5,616,069
DIRECTIONAL SPRAY PAD SCRUBBER
Michael A. Walker, and Karl M. Robinson, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.
Filed Dec. 19, 1995, Ser. No. 574,678
Int. Cl.^{6} B24B *53/00*
U.S. Cl. 451—56 **15 Claims**



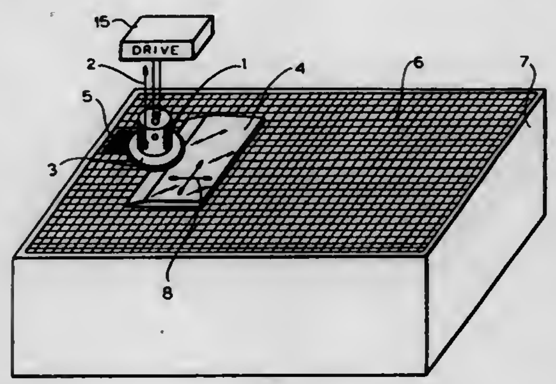
1. A polishing apparatus, comprising:
a moveable platen;
a pad positioned on the platen, the pad having a planarizing surface with a central region and a periphery;
a pad scrubber located proximate to the planarizing surface, the pad scrubber having a fluid manifold, a first set of spray nozzles attached to one side of the fluid manifold, and a second set of spray nozzles attached to another side of the manifold, the first and second sets of spray nozzles being canted generally toward the planarizing surface of the pad, each other, and the periphery of the pad.

5,616,070
WORK DRIVE ORIENTING SYSTEM FOR MACHINE TOOL
Dennis F. Rice, Chambersburg; Ricky L. Mowen, Greencastle, and Marshall W. Faith, Waynesboro, all of Pa., assignors to Western Atlas Incorporated, Paramus, N.J.
Filed Jul. 26, 1995, Ser. No. 507,083
Int. Cl.^{6} B24B *1/00*
U.S. Cl. 451—62 **14 Claims**



10. A method of angularly orienting a work drive within a machine tool to accept a workpiece,
said workpiece comprising at least a shaft, eccentric surfaces defined on said shaft, and a pin projecting axially from one end of said shaft,
said machine tool including a traverse carriage, a head stock, a spindle for said head stock, a tail stock, said head stock and said tail stock mounted for relative movement along said traverse carriage,
said machine tool further including a chuck located at the entrance to said head stock, locator means retained within said chuck, a tool for machining said workpiece, and work holder means located between said head stock and said tails stock,
said method of angularly orienting said work drive to accept said workpiece comprising the steps of:
a) sensing the location of the eccentric, surfaces on said workpiece to generate a signal representative of the predetermined location of said axial pin relative to said eccentric surfaces,
b) feeding said signal to said control means for angularly adjusting said chuck so that said axial pin clears said locator means,
c) introducing said workpiece into said machine tool,
d) advancing said tail stock so that the protruding axial pin on one end of the workpiece is driven into said chuck without contacting said locator means,
e) advancing said work holder means so that said work holder means frictionally engages said workpiece,
f) rotating said chuck so that said locator means contacts said axial pin and establishes a fixed relationship between said chuck and said workpiece,
g) closing said chuck about said workpiece, and
h) delivering power to said spindle so that said workpiece is rotated relative to said tool for machining same.

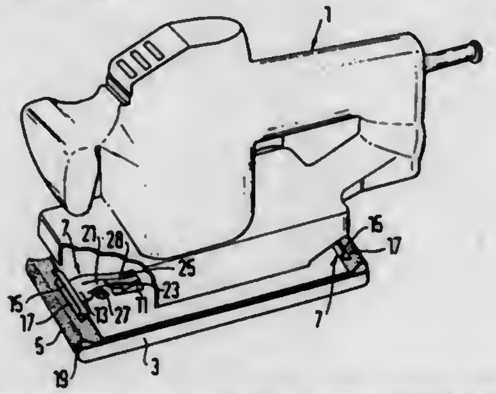
5,616,071
BEVEL GRINDER
Heinz Herrmann, Leipziger Strasse 105, D-47918 Tönisvorst, Germany
Filed May 5, 1995, Ser. No. 435,173
Claims priority, application Germany, May 6, 1994, 9407523 U; Mar. 22, 1995, 295 04 834.4
Int. Cl.^{6} B24B *7/00*
U.S. Cl. 451—259 **6 Claims**



1. A bevel grinder for an edge of a sheet workpiece of predetermined thickness, the grinder comprising:
a generally planar support on which the workpiece lies;
a head having a frustoconical grinding surface centered on an axis substantially perpendicular to the support and rotatable about the axis;
a spacer on the head projecting axially therefrom toward the support, having an end surface engageable axially with the support, and having an axial dimension smaller than the workpiece thickness; and
drive means connected to the head for rotating the head about the axis with the grinding surface engaging the sheet at the edge with the spacer end surface pressed axially against the

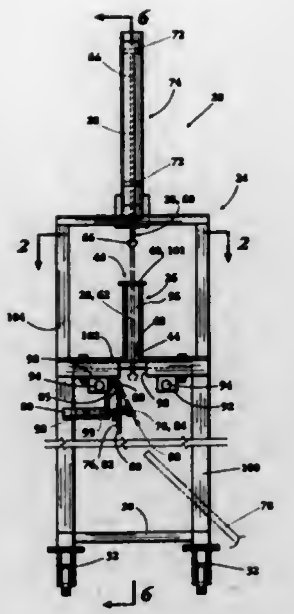
support but out of contact with the workpiece, said drive means for relatively displacing the head and workpiece such that the head moves along the edge, whereby a bevel is ground in the edge.

5,616,072
DEVICE FOR CLAMPING SANDPAPER ON A VIBRATING SANDER
Heinz Walz, Waldenbuch, and Vinzenz Härle, Neckartenzlingen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Continuation of Ser. No. 64,131, May 19, 1993, abandoned. This application Feb. 27, 1995, Ser. No. 394,846
Claims priority, application Germany, Nov. 23, 1990, 40 37 266.9
Int. Cl.⁶ B24B *23/00*
U.S. Cl. 451—356 **9 Claims**



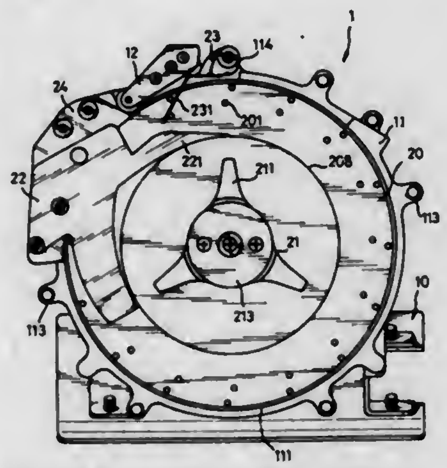
1. A clamping device in combination with a sanding plate of a vibration sander, comprising:
a sanding plate of a vibration sander; and a clamping device fastened to said sanding plate, wherein said clamping device comprises:
i) a resilient plate having two longitudinal sides interconnected by two ends, and also having two longitudinally extending openings which separate a central region of said plate from two lateral regions of said plate, wherein said central region is convex and said lateral regions are substantially planar;
ii) at least one stop positioned to contact said central region and change the direction of its convexity;
iii) a handle part located at a first end of said plate for bringing said central region into contact with said at least one stop;
with a second end of said resilient plate fastened to said sanding plate, such that said resilient plate snap swivels in response to direction of the convexity of said central region from a clamping position in which said first end of said resilient plate is proximate said sanding plate such that sandpaper can be clamped between said first end and said sanding plate, to a disengaged position in which said first end is remote from said sanding plate such that the sand paper can be removed from the sanding plate.

5,616,073
APPARATUS AND METHOD FOR PROCESSING HOG STOMACHS
Mark H. Curry, Rogers; Donald M. Zimmerman, Springdale, both of Ark., and John C. Haley, Pittsburg, Mo., assignors to Tyson Holding Company, Wilmington, Del.
Filed Oct. 27, 1995, Ser. No. 549,049
Int. Cl.⁶ A22B *5/18*
U.S. Cl. 452—123 **34 Claims**
1. Apparatus for processing hog stomachs, comprising:
a base;



an inversion member having a first end insertable through an opening in the stomach, a second end connected to the base, a first end opening in the first end, and a second end opening in the second end, the end openings coinciding with a passageway through the inversion member; and
a contact member movably connected to the base and movable between a stomach loading position adjacent the first end of the inversion member and a stomach inverting position in the passageway for inverting the stomach.

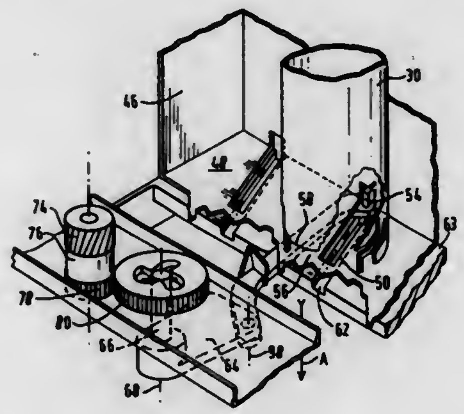
5,616,074
APPARATUS FOR COUNTING COINS
Chin-nan Chen, No. 132, Tinghsin Rd., Sanmin Dist., Kaohsiung, Taiwan
Filed Apr. 29, 1996, Ser. No. 638,798
Int. Cl.⁶ G07D *1/00*
U.S. Cl. 453—30 **4 Claims**



1. An apparatus for counting coins comprising:
a housing;
a holder obliquely mounted on the housing, said holder defining a plurality of mounting holes and having a shift lever mounted on an upper position and connected with a counter, said holder further comprising an extension extending from a sidewall near the lever of the holder;
a turntable disposed within a channel defined on the holder, the turntable defining a ring flange with a smaller diameter defined in concentrically with the table on a surface thereof

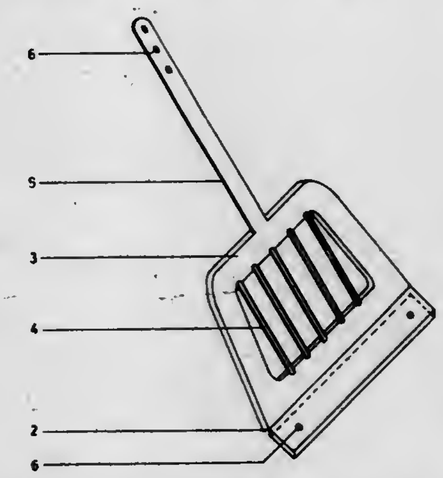
and a plurality of studs nonlinearly arranged in a radial form over a surface between the ring flange and a periphery of the turntable for retaining coins, said turntable further defining a plurality of blind holes on an undersurface thereof so that rolling elements can be disposed in the blind holes in order to assure smooth rotation of the turntable;
a rotor mounted to a center of the turntable, said rotor having a plurality of arms thereabound for shifting the coins;
a plate mounted to the extension of the holder, said plate having a pair of fingers integrally formed and extending outwardly in order to attach to the ring flange of the turntable;
a spout for containing the coins mounted to the holder through the mounting holes thereon, said spout having a movable baffle plate crossing thereover at an upper portion and a planar portion provided over the baffle plate; and
an actuating motor mounted behind the housing to drivingly rotate the turntable.

5,616,075
COIN DISPENSING APPARATUS
Nigel A. Winstanley; John A. Weston, and Colin A. G. Musto, all of Berkshire, United Kingdom, assignors to Mars Inc., McLean, Va.
PCT No. PCT/GB94/00049, § 371 Date Dec. 22, 1995, § 102(e) Date Dec. 22, 1995, PCT Pub. No. WO94/16411, PCT Pub. Date Jul. 21, 1994
PCT Filed Jan. 11, 1994, Ser. No. 481,454
Claims priority, application United Kingdom, Jan. 12, 1993, 9300505
Int. Cl.⁶ G07D *1/00*
U.S. Cl. 453—41 **22 Claims**



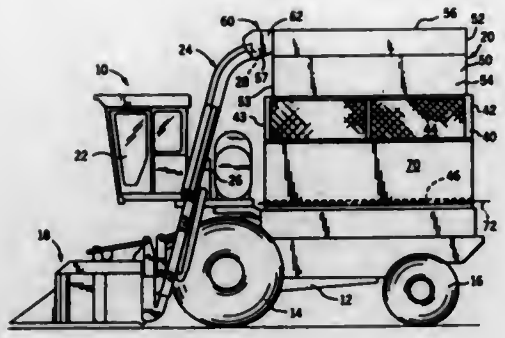
1. Coin dispensing apparatus comprising:
at least first and second coin stores each for storing a plurality of coins;
first and second dispensing members associated respectively with said first and second coin stores, each dispensing member being operable to execute a dispensing movement to dispense a coin from the respective store;
a dispensing actuator for driving the dispensing members, the actuator comprising a motor which can drive a shaft in either of first and second opposite directions and transmission means coupling the shaft to the dispensing members in such a way that rotation of the shaft in the first direction causes the first dispensing member to execute a dispensing movement and rotation of the shaft in the second direction causes the second dispensing member to execute a dispensing movement; and
control means for controlling the operation of the dispensing actuator;
wherein the control means is operable, when a coin is to be dispensed from the first store, to cause the motor to drive the shaft in the first direction, then briefly in the second direction and then again in the first direction, so as to tend to clear a jam which may be preventing correct dispensing from said first store, the rotation of the shaft in the second direction being insufficient to cause substantial movement of the second dispensing member.

5,616,076
NON-CLOGGING GUARD FOR HOUSEHOLD DRYER HOODED VENTS
Don E. Higgins, 1401 Daline St., Springdale, Ariz. 72762
Filed Apr. 13, 1995, Ser. No. 398,547
Int. Cl.⁶ F23L *17/02*
U.S. Cl. 454—367 **2 Claims**



1. A one piece, plastic vent guard for preventing the entrance of birds into a vent hood having a downwardly directed substantially rectangular outlet for the dishcharge of air from a clothes dryer, the vent hood being attached to the outer wall of a building, said vent comprising:
(a) a body section in the shape of the outlet of the vent hood having a central opening therein, said central opening having a plurality of parallel round bars in closely spaced relationship to prevent birds from entering therethrough;
(b) a substantially rectangular shaped base section secured to the lower edge of the body section via a living hinge, said base section having apertures therein for securing by fasteners to the wall of a building adjacent the vent hood outlet; and
(c) an elongated strap portion secured to the upper edge of the body section via a living hinge, said strap portion having apertures at the distal end thereof for securing by fasteners to the wall of a building above the vent hood; wherein when the base section and strap portion is secured to the wall, the central opening of the body section will be in juxtaposition with the vent hood outlet.

5,616,077
CONTROL SYSTEM FOR A COTTON HARVESTER
Michael J. Covington, LaGrange, Ill.; David M. Brandt, Council Bluff, Iowa, and James W. Robinson, Orion, Ill., assignors to Case Corporation, Racine, Wis.
Filed Jun. 23, 1995, Ser. No. 494,231
Int. Cl.⁶ A01D *46/10*
U.S. Cl. 460—119 **19 Claims**
5. A control system for a cotton harvester including a frame, harvesting structure arranged on the frame for removing cotton materials from plants, duct structure extending from the harvesting structure to a receptacle, said receptacle including a lower basket portion mounted on the frame, an upper basket portion that is elevationally positionable relative to the lower basket portion, and a hood assembly carried by the upper basket portion for generally horizontal movement between an extended position whereat the hood assembly is positioned to guide cotton materials exhausted



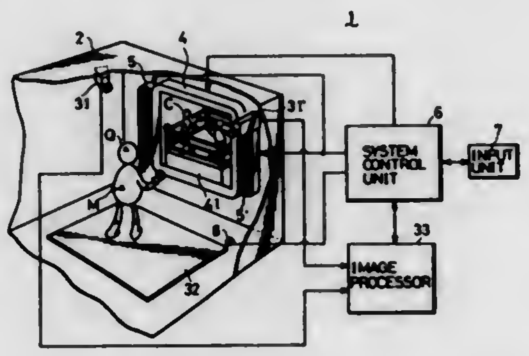
from the duct structure into the receptacle and a retracted position, said control system comprising:

a first actuator for elevationally positioning the upper basket portion relative to the lower basket portion;

a second actuator for positioning the hood assembly between extended and retracted positions relative to the duct structure, wherein said hood assembly is, in said extended position a portion of the hood assembly is arranged proximate to a distal end of said duct structure, and wherein when said hood assembly is in said retracted position the hood assembly is removed from the distal end of the duct structure; and

circuitry operably connected to said first and second actuators for moving said upper basket portion and said hood assembly in sequenced relation relative to each other.

5,616,078
MOTION-CONTROLLED VIDEO ENTERTAINMENT SYSTEM
Ketsu Oh, Kobe, Japan, assignor to Konami Co., Ltd., Hyogo-ken, Japan
Filed Dec. 27, 1994, Ser. No. 364,897
Claims priority, application Japan, Dec. 28, 1993, 5-335659
Int. Cl.⁶ A63F *9/22;* **G09G** *5/00*
U.S. Cl. 463—8 **17 Claims**



1. A motion-controlled video entertainment system controlled by body motions of a player, the entertainment system comprising:

markers to be attached to the player at predetermined locations on the player;

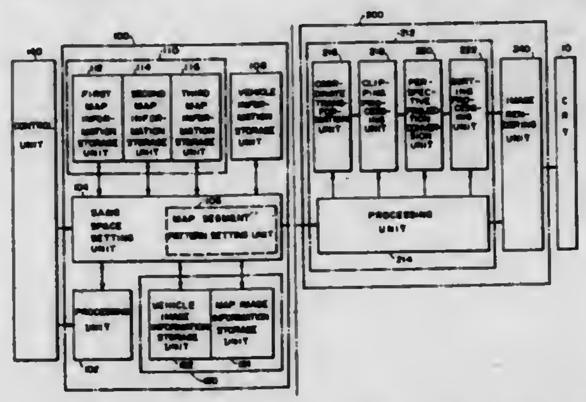
a detector means for detecting three dimensional positions of respective ones of said markers in a three dimensional coordinate system;

a calculator means for calculating posture parameters of the player based on the detected positions of the markers;

a game processor means for generating a game image in accordance with a predetermined game program and the calculated posture parameters of the player; and

a display means for displaying a generated game image generated by said game processor means.

5,616,079
THREE-DIMENSIONAL GAMES MACHINE
Takashi Iwase, Yokohama, Japan; Takashi Matsumoto, Mountain View, Calif.; Nobuyuki Aoshima; Norimasa Matsuura, both of Yokohama, Japan, and Takashi Goto, Sagamihara, Japan, assignors to Namco Ltd., Tokyo, Japan
PCT No. PCT/JP94/00972, § 371 Date Feb. 15, 1995, § 102(e) Date Feb. 15, 1995, PCT Pub. No. WO94/28989, PCT Pub. Date Dec. 22, 1994
PCT Filed Jun. 16, 1994, Ser. No. 381,992
Claims priority, application Japan, Jun. 16, 1993, 5-169667
Int. Cl.⁶ A63F *9/24*
U.S. Cl. 463—32 **20 Claims**



1. A 3D games machine which forms a game space such that a player is enabled to move in a predetermined vehicle within a virtual 3D space by operating an operating means, wherein said 3D games machine comprises:

a map information storage means in which at least position information and an object number of a segmented map formed by dividing a map of the game space into a predetermined number of segments are stored as segmented map information;

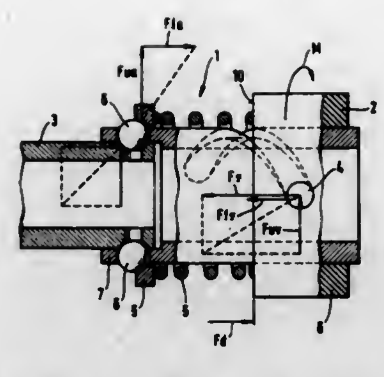
an object image information storage means in which object image information specified by said object number is stored; and

a game space setting means for reading said segmented map information from said map information storage means and for setting a game space by reading out said object image information from said object image information storage means on the basis of the thus read-out segmented map information; and wherein:

said map information storage means stores a plurality of types of said segmented map information, of different numbers of segments, and said game space setting means reads out segmented map information with a smaller number of segments as the distance between said vehicle operated by said player and said segmented map increases.

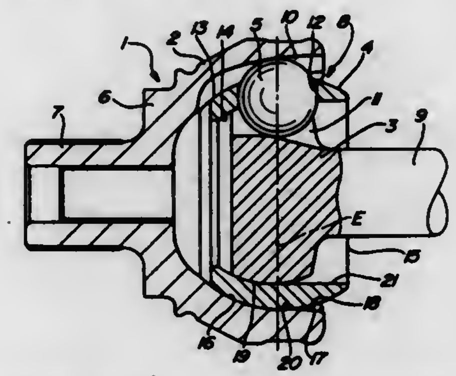
5,616,080
ADAPTABLE SAFETY CLUTCH
Stefan Miescher, Eschen, Liechtenstein, assignor to HiHi Aktiengesellschaft, Furstentum, Liechtenstein
Filed Jul. 13, 1995, Ser. No. 502,225
Claims priority, application Germany, Jul. 25, 1994, 44 26 305.8
Int. Cl.⁶ F16D *7/10*
U.S. Cl. 464—35 **7 Claims**

1. An overload clutch disposed in between a driving member and a driven element for transmitting torque comprising a clutch member which is loaded by a prestressed spring, one of said driving member and said driven element comprising two shaft parts arranged coaxially and being connected for rotation by said clutch member as long as the transmitted torque is below a threshold value, and being rotatable relative to one another when the torque instantaneously exceeds the threshold value, said driving



member comprising a drive element being connected for rotation with one of said two shaft parts and having an end face for supporting an end portion of said prestressed spring, another end portion of said prestressed spring pressing against said clutch member, said drive element being axially displaceable relative to said one shaft part as the torque transmitted by said drive element increases, thereby increasingly pressing said prestressed spring against said clutch member for raising the threshold value.

5,616,081
CONSTANT VELOCITY UNIVERSAL BALL JOINT WITH CO-AXIAL INSERTABLE INNER JOINT MEMBER
Werner Krude, Neunkirchen-Wolperath; Peter Harz, Hennef, both of Germany, and Bruno Feichter, Bruneck, Italy, assignors to GKN Automotive AG, Lohmar, Germany, and GKN Birfield SpA, Bruneck, Italy
Filed Dec. 16, 1994, Ser. No. 358,182
Claims priority, application Italy, Dec. 17, 1993, MI93A2661
Int. Cl.⁶ F16D *3/224*
U.S. Cl. 464—145 **13 Claims**



1. A constant velocity universal ball joint comprising:

an outer joint part with longitudinally extending, internally circumferentially distributed first ball tracks;

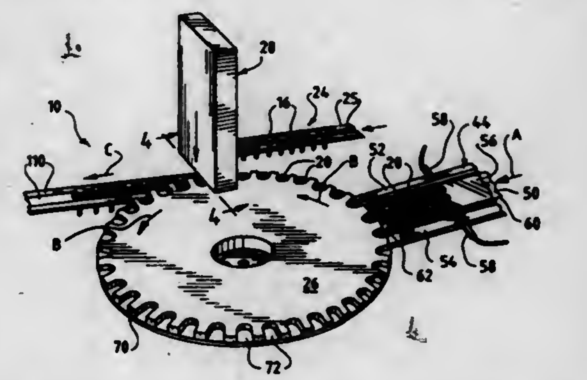
an inner joint part with longitudinally extending, externally circumferentially distributed second ball tracks, with one first ball track and one second ball track each arranged so as to be radially opposed;

an aperture, on at least one end of said outer joint part, said aperture providing clearance for a drive member connectable to the inner joint part;

torque transmitting balls each guided in said first and said second ball track;

an annular ball cage positioned in an annular chamber between the outer joint part and the inner joint part, said cage including circumferentially distributed cage windows each axially holding a respective one of the torque transmitting balls said ball cage holds all the torque transmitting balls in one common plane, and when the axes of the outer joint part and of the inner joint part are articulated, said cage guides said balls onto the angle-bisecting plane of said axes, and said cage includes an outer spherical cage face which is in guiding contact with guiding faces associated with the outer joint part, and an inner spherical cage face which is in guiding contact with a surface of the inner joint part, and centers of curvature of the outer spherical face and of the inner spherical face of the ball cage are axially offset relative to a central cage plane, defined by circumferentially extending center lines of the cage windows, with the center of curvature of the outer spherical face positioned towards the aperture in the outer joint part and the center of curvature of the inner spherical face being positioned towards the end of the outer joint part located axially opposite the aperture, and the inner diameter of the opening of the ball cage, which is closest to the aperture of the outer joint part, is greater than the greatest outer diameter of the surface of the inner joint part, so that the inner joint part can be coaxially assembled with the ball cage.

5,616,082
APPARATUS FOR ASSEMBLING A FASTENER TO A WASHER
Robert G. Kobetsky, Chicago, Ill., assignor to Illinois Tool Works Inc., Glenview, Ill.
Filed Mar. 27, 1995, Ser. No. 410,848
Int. Cl.⁶ B23P *19/08*
U.S. Cl. 470—49 **19 Claims**



1. Apparatus for assembling a fastener blank to a washer, comprising:

means for supplying a plurality of washers in a sequential manner from unoriented bulk to a desired oriented position;

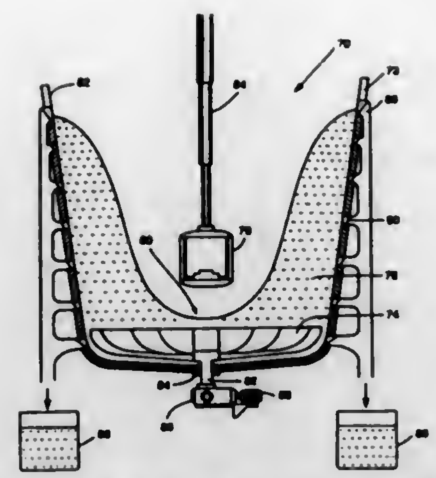
means for supplying a plurality of fastener blanks wherein each one of said plurality of fasteners has a head and a shank and is disposed at a desired oriented position; and

fastener driving means for gripping and supporting an individual one of said plurality of fastener blanks, disposed at said desired oriented position by said fastener supply means, by said shank, and for inserting said gripped and supported shank of said individual one of said fastener blanks within an aperture of a respective one of said washers disposed at said oriented position.

5,616,083
APPARATUS FOR GENERATING A DEEP, LAMINAR VORTEX
Ramesh B. Subbaraman, 207 N. Acacia, Apt. D, Fullerton, Calif. 92631, and Barry R. Brucker, 805 N. Roxbury St., Beverly Hills, Calif. 90210
Filed Jul. 27, 1995, Ser. No. 508,329
Int. Cl.⁶ A63H *23/08*
U.S. Cl. 472—67 **13 Claims**

1. An amusement ride where passengers may observe a liquid vortex, comprising:

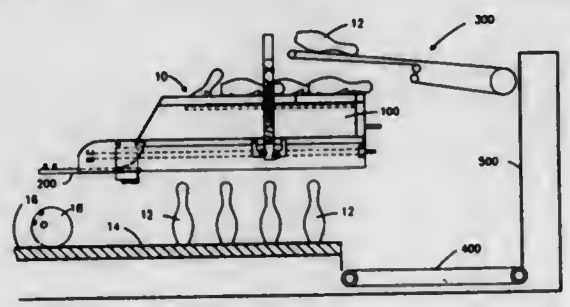
a vessel partially filled with liquid;



an observation platform sized to accommodate one or more observers; and

a liquid driver for effecting rotation of said liquid thereby generating a vortex within said liquid having an air well of sufficient size to completely surround said platform without the platform contacting the surface of the liquid.

5,616,084
SINGLE CYCLE PIN SETTING APPARATUS AND METHOD
Will Heddon, Lake Hamilton; Ralph E. Redman, Winter Haven; Lewis W. Slimak, Jr.; Sidney Tucker, both of Lake Wales, and Dean H. Truesdell, Winter Haven, all of Fla., assignors to Heddon Development Corp., Lake Hamilton, Fla.
Filed Oct. 17, 1995, Ser. No. 543,955
Int. Cl.⁶ A63D *5/08*
U.S. Cl. 473—73 **31 Claims**



1. A pin setting apparatus comprising:

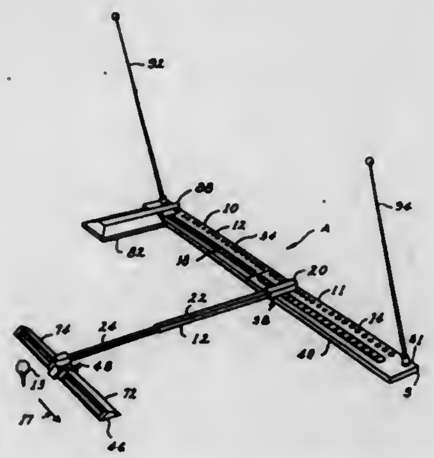
means for moving a first pin from a stored position above a lane to a standing position within a location on the lane, the moving means operable within a single continuous movement cycle, the cycle including a first portion operable from the first pin stored position to the first pin standing position, and a second portion operable from the first pin standing position returning to the first pin stored position;

means for detecting a second pin standing within the location, the detecting means operable within the moving means cycle first portion;

means for clearing the lane of all pins for placement of the first pin within the location, the clearing means operable within the moving means single cycle for clearing the lane of all pins after detection of the second standing pin; and

means cooperating with the moving and clearing means for synchronizing a simultaneous movement of the first pin from its stored position to within the standing position at the location, the clearing means removing the second pin from the lane during the moving of the first pin and prior to placing of the first pin at the standing position, thus replacing the second standing pin with the first pin after removing the second standing pin from the lane, the removing of the second pin from the lane and the placing of the first pin within the location being completed within the moving means single cycle.

5,616,085
GOLF SWING TRAINING DEVICE
James P. LaCoste, Jr., 103 Fontaine Dr., Greenville, S.C. 29607, and Joseph M. Ramseur, 18 Crescent Ave., Greenville, S.C. 29605
Filed Apr. 29, 1996, Ser. No. 638,727
Int. Cl.⁶ A63B *69/36*
U.S. Cl. 473—267 **28 Claims**



1. A golf swing training device for a golfer comprising:

an elongated stance positioning member generally exceeding the length of said golfer's stance for assisting said golfer in positioning the golfer's feet for striking a golf ball, said stance positioning member having a top surface and a base;

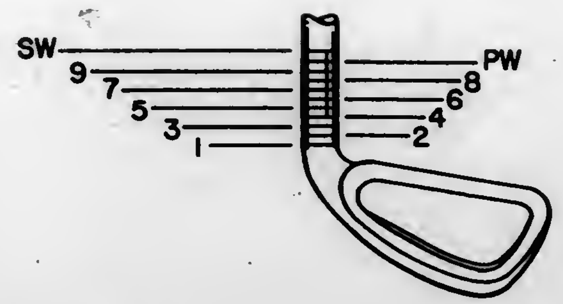
a plurality of discrete placement indicators spaced along said top surface of said stance positioning member for indicating the positioning of a golf ball;

said placement indicators having a width generally equal to the width of a golf ball;

a golf ball positioner attachable to said stance positioning member extending generally perpendicularly away from said stance positioning member when positioned at a respective placement indicator position for positioning a golf ball at a prescribed location within the golf stance of said golfer.

5,616,086
GOLF CLUB SET
Chris Chappell, Westminster, S.C., assignor to Dunlop Maxfli Sports Corporation, Greenville, S.C.
Continuation of Ser. No. 350,507, Dec. 6, 1994, abandoned, which is a continuation of Ser. No. 101,584, Aug. 3, 1994, abandoned, which is a continuation-in-part of Ser. No. 964,916, Oct. 22, 1992, Pat. No. 5,316,297. This application Jun. 7, 1995, Ser. No. 480,556
Int. Cl.⁶ A63B *69/36*
U.S. Cl. 473—290 **11 Claims**

1. A set of golf club irons, each of the golf club irons in the set having a head portion with a toe area and a heel area, and a hosel portion connecting the head portion to a shaft portion, the set comprising at least a first golf club iron and at least a second golf club iron, with the head portion of the first golf club iron having a loft less than a loft of the head portion of the second golf club iron, wherein the length of the hosel of the first golf club iron is less than the length of the hosel of the second golf club iron, and a location of a center of percussion is toward the toe area on the first golf club iron, and toward the heel area on the second golf club iron.



5,616,087
GOLF CLUB
Charles R. Bothwell, 1641 Alvarado Ave., Apt. 4, Walnut Creek, Calif. 94596
Filed Dec. 14, 1995, Ser. No. 572,637
Int. Cl.⁶ A63B *53/16*
U.S. Cl. 473—316 **8 Claims**

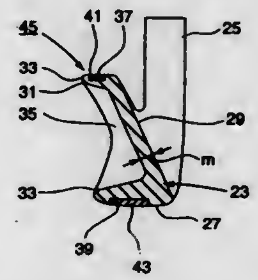
1. A golf club comprising, in combination:

a club head having a golf ball engaging surface;

a club shaft fixedly attached to said club head and extending upwardly from said club head, said club shaft including a substantially straight first club shaft segment extending, upwardly from said club head along a first imaginary line, a substantially straight second club shaft segment adjoining and connected to said first club shaft segment and extending upwardly and laterally relative to said first club shaft segment, and a substantially straight third club shaft segment adjoining and connected to said second club shaft segment at a location spaced from said first club shaft segment and extending upwardly from said second club shaft segment along a second imaginary line spaced from said first imaginary line; and

an elongated club handle connected to said third club shaft segment at a location spaced from said second club shaft segment, said club handle being offset relative to said first club shaft segment, and said first imaginary line intersecting the ground at a location closer to a golfer holding the golf club by said club handle and swinging the golf club to strike a golf ball than the location of intersection between said second imaginary line and the ground at the time of golf ball contact by said golf ball engaging surface said first, second and third club shaft segments being non-integral and said second club shaft segment being one of a plurality of inserts of differing sizes selectively alternatively connectable to said first and third club shaft segments to selectively vary the distance between said first imaginary line and said second imaginary line.

5,616,088
GOLF CLUB HEAD
Yuichi Aizawa, Hachioji, and Yasuto Imai, Higashimurayama, both of Japan, assignors to Daiwa Seiko, Inc., Tokyo, Japan
Filed Jul. 13, 1995, Ser. No. 502,207
Claims priority, application Japan, Jul. 14, 1994, 6-162249
Int. Cl.⁶ A63B *53/04*
U.S. Cl. 473—341 **10 Claims**



1. A golf club head comprising;

a head body having a face side for hitting a ball, a back side opposite from said face side, a sole side and a top side;

a flange formed on a peripheral portion of said back side of said head body projecting backwardly from said head body, said flange having;

an outer peripheral surface having a width defined by a distance from said front face to said back side, said outer peripheral surface having at least one recess;

an inner peripheral surface defining a cavity in said back side; and

a rear peripheral surface having a thickness defined by a distance from said outer peripheral surface to said inner peripheral surface, said width of said outer peripheral surface being greater than said thickness of said rear peripheral surface;

wherein at least one weight member having a specific weight and being made of a material larger in specific gravity than said head body, said at least one weight member being disposed in said at least one recess of said outer surface of said flange at a top and a sole side of said head body so as to distribute said weight over said outer peripheral surface of said flange.

5,616,089
METHOD OF PUTTING
Dale D. Miller, 4801 Indigo Dr., Wausau, Wis. 54401
Filed Mar. 29, 1996, Ser. No. 624,264
Int. Cl.⁶ A63B *53/00*
U.S. Cl. 473—409 **13 Claims**

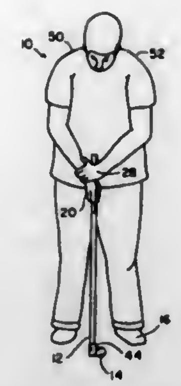
1. A method of gripping a putter comprising the steps:

gripping a putter grip with a dominant hand;

placing a non-dominant hand over an interior wrist portion of the dominant hand behind a thumb of the dominant hand;

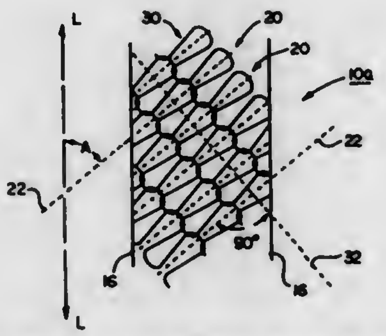
resting a middle finger of the non-dominant hand on the styloid process of the dominant hand;

pressing a ring finger and a little finger of the non-dominant hand against the back of the dominant hand;



pressing the palm of the non-dominant hand against a forward surface of the putter grip as the non-dominant hand squeezes the dominant hand.

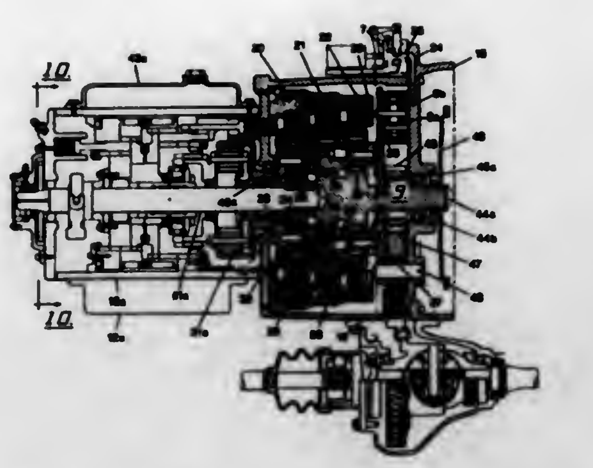
5,616,090
BIAS CUT, KNIT V-BELT COVER
James N. McGee, Jr., 500 Garden Loop, Pleasant Garden, N.C. 27313, and Darrel N. Wells, 204 Ridgeway Dr., Greensboro, N.C. 27403
Filed Sep. 18, 1995, Ser. No. 529,550
Int. Cl.⁶ F16G *1/04*
U.S. Cl. 474—267 **18 Claims**



1. A cover fabric for power transmission belts and other endless belts and hoses, comprising:
a) a strip of knit fabric including a plurality of stitch loops forming interconnected loop chains, said interconnected loop chains forming wales and courses, said strip having a longitudinal axis; and
b) said fabric strip being bias cut such that each of said wales are disposed at an angle with respect to said longitudinal axis.

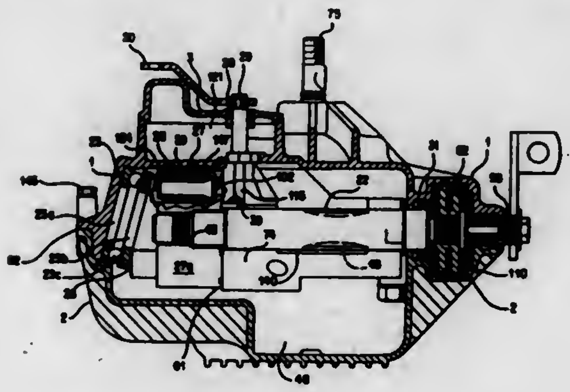
5,616,091
INTEGRATED HYDRO-MECHANICAL MULTIPLE LOCKUP TRANSMISSION
Walter S. Warren, 14 Chapman Road, Winnipeg, Manitoba, Canada
Continuation-in-part of Ser. No. 905,334, Jun. 23, 1992, abandoned, which is a continuation-in-part of Ser. No. 774,555, Oct. 10, 1991, Pat. No. 5,203,747. This application Feb. 13, 1995, Ser. No. 387,165
Int. Cl.⁶ F16H *47/04*
U.S. Cl. 475—72 **17 Claims**

1. An integrated hydro-mechanical lockup transmission for communicating power from a power source to a driven member comprising;
a hydro-mechanical transmission having an input shaft for receiving power from the power source at a variable input RPM, an output shaft for driving the driven member at a



variable output RPM, and hydrodynamically linked transmission means including a hydraulic pump, a hydraulic motor, and a sun and planetary gear set having an outer ring gear, a planet carrier, and a plurality of planet gears mounted on the planet carrier for engaging the outer ring gear, said hydraulic pump, said hydraulic motor, and said sun and planetary gear set being arranged to provide for continuously varying the output RPM relative to the input RPM from forward through zero to reverse;
a lockup transmission comprising:
a rotatable input means comprising a composite sun gear being bearing mounted at each of its ends and having at least one gear element arranged in series along its length, and wherein there is one gear for each operator selectable output to input ratio;
a first linking means comprising a spline coupling at one end of each of the composite sun gear and the input shaft arranged such that the composite sun gear and input shaft are fixed together at the spline coupled ends and such that the input shaft and the composite sun gear are fixed axially and are free to rotate about a common axis;
a rotatable output means comprising at least one planetary gear set each having an outer ring gear, a planet carrier, and a plurality of planet gears mounted on the planet carrier for engaging said outer ring gear, said at least one planetary gear set being arranged in series with the outer ring gear of the hydrodynamically linked transmission means at one end and the output shaft at the other end, and wherein there is one at least one planetary gear set for each operator selectable output to input ratio;
a second linking means comprising fixing means fixing one planet carrier of said at least one planetary gear set to the outer ring gear of the hydrodynamically linked transmission means arranged such that each successive planet carrier of said at least one planetary gear set, is fixed to the preceding one with the output shaft being fixed to the last planet carrier, and such that said outer ring gear of the hydrodynamically linked transmission means, the said planet carrier, and the output shaft form a single assembly, are fixed axially, and are free to rotate about a common axis;
and lockup means for selecting one of the at least one planetary gear set thus providing at least one operator selectable output to input ratio;
and control system means comprising manually operable means for selecting one of said output to input ratio of the lockup transmission, and means responsive to output RPM and input RPM for disengaging the hydrodynamically linked transmission means and engaging the lockup means when the output RPM relative to the input RPM is above a threshold value, and for disengaging the lockup means and engaging the hydrodynamically linked transmission means when said output RPM relative to the input RPM falls below a threshold value.

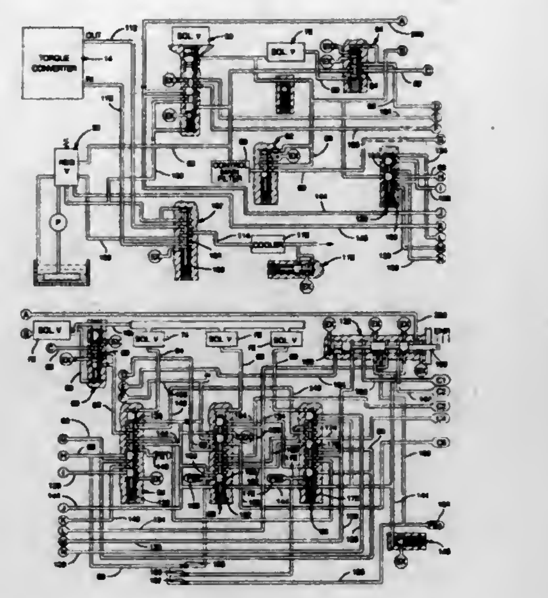
5,616,092
TRANSAXLE HAVING HYDROSTATIC TRANSMISSION WITH EXPANSION CHAMBER
Ray M. Hauser, Decatur, Ill., and Alan W. Johnson, Ames, Iowa, assignors to Hydro-Gear Limited Partnership, Sullivan, Ill.
Continuation of Ser. No. 260,807, Jun. 16, 1994, Pat. No. 5,501,640, which is a continuation of Ser. No. 25,272, Mar. 2, 1993, Pat. No. 5,330,394, which is a division of Ser. No. 917,858, Jul. 22, 1992, Pat. No. 5,314,387, which is a continuation-in-part of Ser. No. 727,463, Jul. 9, 1991, Pat. No. 5,201,692. This application Mar. 11, 1996, Ser. No. 613,371
Int. Cl.⁶ F16H *57/02;* **F16D** *31/02*
U.S. Cl. 425—83 **13 Claims**



1. An axle driving system comprising:
a housing;
a first chamber and a second chamber formed within said housing, wherein said first chamber and said second chamber are separated from each other;
hydraulic fluid disposed within said first chamber;
a hydraulic transmission disposed within said first chamber including a pump, a motor hydraulically connected to said pump, and a motor shaft driven by said motor; and
a pair of axle shafts disposed within said housing and drivingly connected to said motor shaft wherein at least one of said axle shafts is substantially disposed with said second chamber;
wherein said housing is adapted to form an outwardly extending expansion chamber sealed from the atmosphere and in fluid communication with said first chamber whereby said hydraulic fluid may freely flow between said expansion chamber and said first chamber.

5,616,093
ELECTRO-HYDRAULIC CONTROL SYSTEM IN A POWER TRANSMISSION
Charles F. Long, Pittsboro; Jeffrey J. Cole, Plainfield, and Phillip F. McCauley, Zionsville, all of Ind., assignors to General Motors Corporation, Detroit, Mich.
Filed Oct. 13, 1995, Ser. No. 542,572
Int. Cl.⁶ F16H *61/00*
U.S. Cl. 475—120 **2 Claims**

1. A power transmission and control comprising:
a gear mechanism for providing six forward speed ratios and a reverse speed ratio including a plurality of fluid operated selectively engageable friction devices for selectively establishing the speed ratios;
an electro-hydraulic control for controlling the selective engagement and disengagement of the friction devices comprising:
a source of pressure;



first, second and third shift valves each selectively movable to first and second position;
spring means for urging each shift valve to the respective first position;
first, second and third solenoid valves being energizable for selectively supplying pressurized fluid to the first, second and third shift valves respectively for urging the respective shift valves to the second position;
first and second proportional pressure valves for delivering controlled pressure fluid;
selector valve means for selectively distributing fluid to and from a first and second of said friction devices;
said first shift valve being operable to control pressure distribution from said pressure source to said selector valve, to connect a fourth of said friction devices with said second shift valve when positioned by said spring means being operable to distribute fluid from said source to said third shift valve for distribution of fluid to a third of the friction devices from said third shift valve when said first and third solenoid valves are energized, said second shift valve when positioned by said spring means being operable to control fluid distribution from said first proportional pressure valve to said first shift valve for selective distribution thereby to one of said third shift valve and said selector valve when positioned by said spring means and said second shift valve being operable when positioned by fluid pressure to control fluid for distribution to said first shift valve for selective distribution thereby to one of said fourth friction device and said third shift valve;
said third shift valve being operable when positioned by said spring means to distribute fluid pressure from said second proportional pressure valve to the third friction device, to the first shift valve for selective exhaust of the fourth friction device and from the pressure source to the second friction device via the selector valve when the first shift valve is positioned by pressure, and said third shift valve being operable when positioned by fluid pressure to distribute fluid from the second proportional pressure valve to and from the fifth friction device and to selectively distribute fluid pressure from said first proportional pressure valve to

said third friction device when said first and second shift valves are positioned by pressure.

5,616,094
HYDRAULIC CONTROL SYSTEM FOR AUTOMATIC TRANSMISSION

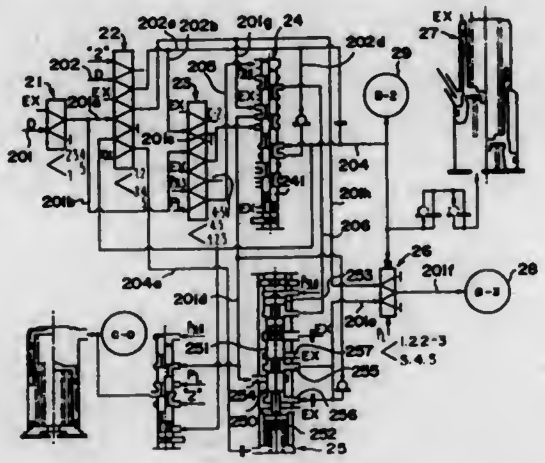
Kazumasa Tsukamoto, Toyota; Masahiko Ando, Okazaki; Akira Fukatsu; Toshiyuki Mae, both of Anjo; Motoyuki Sakai, Aichi-ken; Tetsuo Hamajima, Toyota; Masato Kaigawa, Toyota; Kagenori Fukumura, Toyota; Hidehiro Oba, Numazu; Yasuo Hojo, Nagoya; Atsushi Tabata, Okazaki, and Nobuaki Takahashi, Toyota, all of Japan, assignors to Aisin Aw Co., Ltd., and Toyota Jidosha Kabushiki Kaisha, both of Japan

Filed Nov. 24, 1995, Ser. No. 562,386

Claims priority, application Japan, Dec. 2, 1994, 6-329492; Dec. 2, 1994, 6-329494

Int. Cl.^{6} F16H *61/00*

U.S. Cl. 475—128 **6 Claims**



1. A hydraulic control system for an automatic transmission comprising: a frictional engagement element; a hydraulic servo for controlling the application/release of said frictional engagement element; an oil feed passage connected to said hydraulic servo for feeding/releasing an oil pressure to said hydraulic servo; a pressure regulator valve disposed in said oil feed passage; and signal pressure generating means for applying a signal pressure to said pressure regulator valve,

wherein said oil feed passage includes: a first oil passage for feeding oil pressure to said pressure regulator valve and a second oil passage for feeding oil pressure from said pressure regulator valve to said hydraulic servo,

wherein said pressure regulator valve includes: a valve member; an input port connected to said first oil passage; an output port connected to said second oil passage; and a drain port connected to a drain oil passage,

wherein said valve member has: a first pressure receiving area for receiving pressure from said second oil passage, as a feedback pressure for moving said valve member to a position providing communication between said output port and said drain port; a second pressure receiving area for receiving said signal pressure whereby said valve member is moved to a position providing communication between said output port and said drain-port; and a third pressure receiving area having an area different from that of said second pressure receiving area, and

wherein said signal pressure generating means feeds the signal pressure to said third pressure receiving area at all times and selectively feeds the signal pressure to said second pressure receiving area.

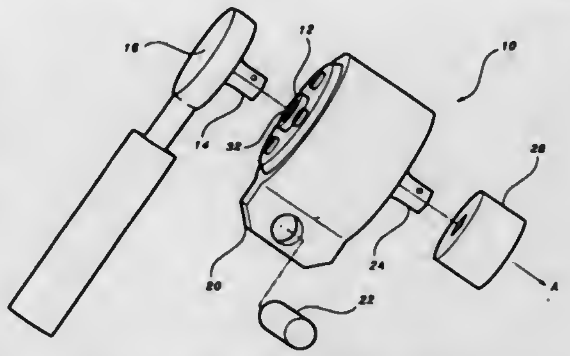
5,616,095
FORCE MULTIPLIER TOOL

Charles D. Pruitt, 2320 Pruitt La., Millstadt, Ill. 62260

Filed Jul. 10, 1995, Ser. No. 500,456

Int. Cl.^{6} F16H *1/32*

U.S. Cl. 475—178 **12 Claims**



1. A hand tool for multiplying force comprising:

a one stage planocentric hypocycloid gear assembly having a single eccentric input shaft, a first pinion having a first drive hole adapted to received a first drive pin, said first pinion being disposed on said eccentric input shaft, a ring gear disposed around said first pinion, a first drive pin, a plate having a second drive hole adapted to receive said drive pin, and an output shaft connected to said plate, wherein said plate communicates with said pinion by said drive pin disposed in said first and second drive holes, such that rotation of said eccentric input shaft drives said pinion in a planocentric hypocycloid motion which pinion in turn indirectly drives said plate, by driving said pin which drives said plate, and said output shaft; and

wherein said had tool is adapted for operation of said eccentric input shaft at less than 100 revolution per minute under load.

5,616,096
DIFFERENTIAL GEAR UNIT

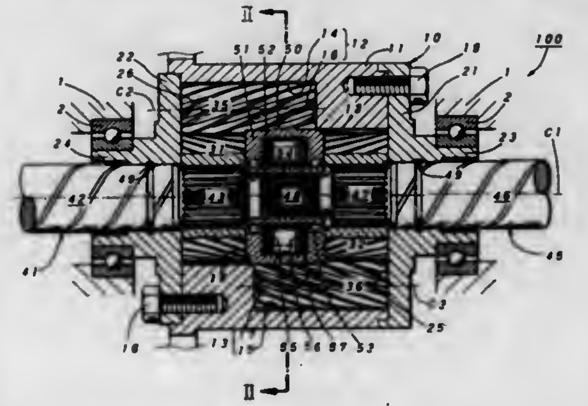
Makoto Hagiwara, Tochigi, Japan, assignor to Viscodrive Japan Ltd., Tochigi, Japan

Filed Aug. 17, 1995, Ser. No. 516,146

Claims priority, application Japan, Aug. 18, 1994, 6-194362

Int. Cl.^{6} F16H *1/42*

U.S. Cl. 475—249 **5 Claims**



1. A differential gear unit comprising:

a differential gear case rotationally driven on an axis of coaxially extending first and second output shafts;

first and second driven gears rotatably received in said differential gear case in such a manner as to be coaxial with said axis said first and second driven gears being rotated integrally with said first and second output shafts respectively;

first and second differential gears adapted to engage with one of said first and second driven gears and rotatably supported within an accommodation section of said differential gear case so as to be partially engaged with each other, said first and second differential gears being circularly movable integrally with said differential gear case;

a first transmission member rotatably received in said differential gear case in such a manner as to be coaxial with said axis said first transmission member having an outer periphery provided with cam means engaged, in the direction of rotation, with said first and second differential gears, said cam means for pressing and biasing said first and second differential gears against an inner wall surface of said accommodation section; and

a second transmission member being rotated integrally with said second output shaft and arranged relatively rotatably with respect to said first transmission member with an interposition of limited slip differential means for transmitting a torque in response to a difference in a rotational speed.

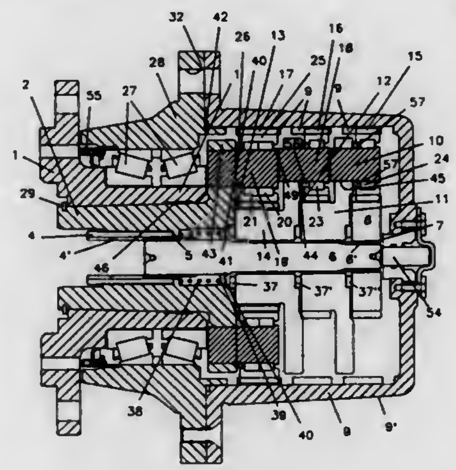
5,616,097
PRESS FIT CARRIER/SPINDLE FOR USE IN PLANETARY TRANSMISSION

James R. Dammon, W. Lafayette, Ind., assignor to Fairfield Manufacturing Co., Inc., Lafayette, Ind.

Filed Oct. 6, 1995, Ser. No. 540,353

Int. Cl.^{6} F16H *57/08*

U.S. Cl. 475—331 **5 Claims**



1. A transmission comprising: an input member, an output member, and a planetary gear train; said planetary gear train includes a stationary output carrier and a stationary spindle; said stationary output carrier includes a tapered outer surface and said stationary spindle includes a tapered inner surface; said tapered outer surface of said output carrier includes a variable outer diameter; said tapered inner surface of said spindle includes a variable inner diameter; said variable outer diameter of said tapered outer surface of said output carrier is larger than said variable inner diameter of said tapered inner surface of said spindle affixing said output carrier to said spindle; and, said planetary gear train effecting a speed reduction between said input member and said output member.

5,616,098
REDUCTION MECHANISM FOR MILL AND MILL HAVING THE SAME

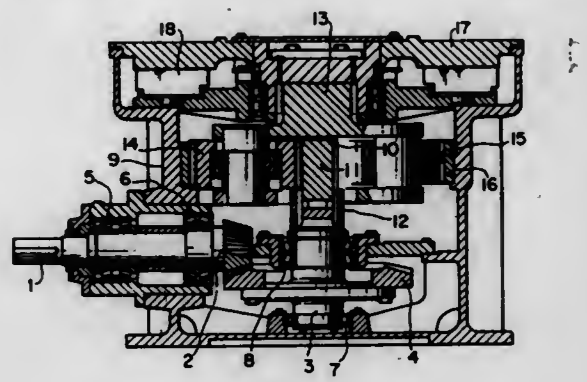
Masanori Katayama, Ibaraki-ken, and Hiroshi Agata, Ryugasaki, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 14, 1995, Ser. No. 514,737

Claims priority, application Japan, Sep. 20, 1994, 6-224772

Int. Cl.^{6} B02C *15/00*

U.S. Cl. 475—346 **3 Claims**



1. A reduction mechanism for mill comprising:

a planetary gear train comprising a sun gear, planet gears, an internal gear and a carrier for supporting said planet gears;

an input shaft for feeding power;

a sun gear shaft which rotates said sun gear mounted thereon;

an intermediate shaft interposed between said sun gear shaft and said input shaft;

an output table for transferring rotary power;

a thrust bearing for supporting said output table; and

a case for enveloping said planetary gear train and said thrust bearing,

wherein said thrust bearing comprises a tilting pad type bearing, the thrust supporting portion of said tilting pad type bearing being formed spherically, the center of the spherical surface being positioned between inside and outside diameters of a vertical portion of said case which receives a thrust force, and said internal gear is formed separately from the case and fixed thereto using fixing means, and wherein the internal gear is fixed to the case with pins.

5,616,099
LOCK-UP CONTROL SYSTEM FOR TORQUE CONVERTER

Hiromasa Sakai, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Kanagawa Pref., Japan

Filed Nov. 14, 1995, Ser. No. 557,537

Claims priority, application Japan, Nov. 14, 1994, 6-279241

Int. Cl.^{6} B60K *41/02*

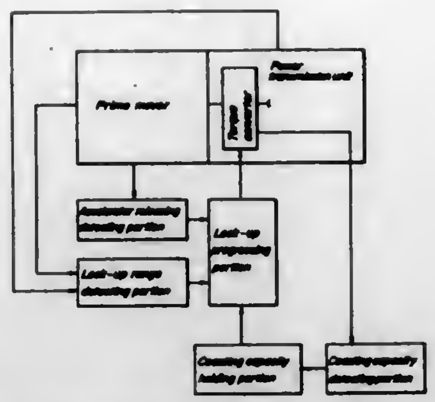
U.S. Cl. 477—169 **2 Claims**

1. A lock-up control system for a torque converter, in a vehicle transmitting a driving torque of a prime mover to wheels via a power transmission unit including the torque converter which can establish direct coupling between an input element and an output element, said lock-up control system comprising:

accelerator releasing detecting means for detecting releasing of an accelerator for operating the prime mover;

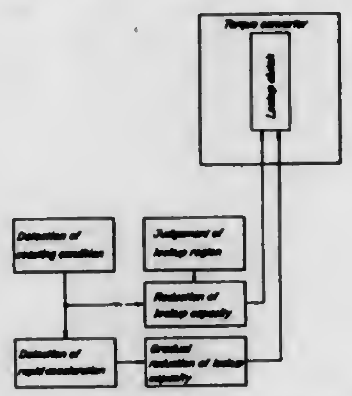
lock-up range detecting means for detecting a vehicle traveling condition falling detecting means for establishing direct coupling of said input and output elements of said torque converter by means of a lock-up clutch;

lock-up progressing means for progressing direct coupling between said input and output element of said torque converter by engagement of said lock-up clutch in response to said accelerator releasing detecting means and said lock-up



range detecting means, when the vehicle traveling condition enters into the lock-up range;
coasting capacity detecting means for detecting an engaging capacity of said lock-up clutch as progressing establishment of lock-up state, reaching a coasting capacity required for coasting of the vehicle; and
coasting capacity maintaining means for holding the engaging capacity of said lock-up clutch by interrupting progress of engagement of said lock-up clutch when the engaging capacity reaching said coasting capacity is detected.

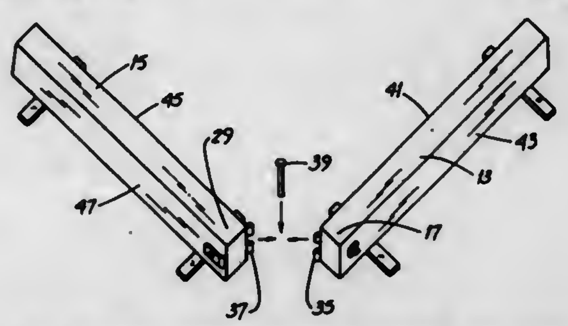
5,616,100
LOCKUP CONTROL SYSTEM FOR TORQUE CONVERTER
Hiromasa Sakai, Yokosuka, and Koichi Hayasaki, Ebina, both of Japan, assignors to Nissan Motor Co, Inc., Yokohama, Japan
Filed Dec. 27, 1995, Ser. No. 579,373
Claims priority, application Japan, Dec. 27, 1994, 6-325645
Int. Cl.[6] B60K *41/02*
U.S. Cl. 477—169 **5 Claims**



1. A lockup control system for a torque converter for an automotive vehicle, said torque converter including an input element, an output element and a lockup clutch, and being operative selectively in a converter region in which rotation of the input element is transferred to the output element via a working fluid within the torque converter, and in a lockup region in which the lockup clutch is engaged by a differential pressure across the clutch for directly coupling the input and output elements, wherein said control system comprises:
lockup region judging means for judging whether a current driving condition of the vehicle belongs to the lockup region or to the converter region;
coasting condition detecting means for detecting a coasting condition of the vehicle;
lockup capacity reducing means responsive to output signals from said lockup region judging means and said coasting condition detecting means, for reducing a fastening force of the lockup clutch and thereby lowering a lockup capacity thereof to a reduced capacity;
rapid acceleration detecting means for detecting whether the driving condition of the vehicle has switched from the coasting condition as detected by said coasting condition detecting means, into a rapid acceleration condition above a predetermined level; and
lockup capacity gradual reduction means operative when said rapid acceleration detecting means has detected that the driving condition of the vehicle has switched into the rapid acceleration condition, for further gradually reducing the lockup capacity of the lockup clutch from said reduced capacity.

5,616,101
Patent Not Issued For This Number

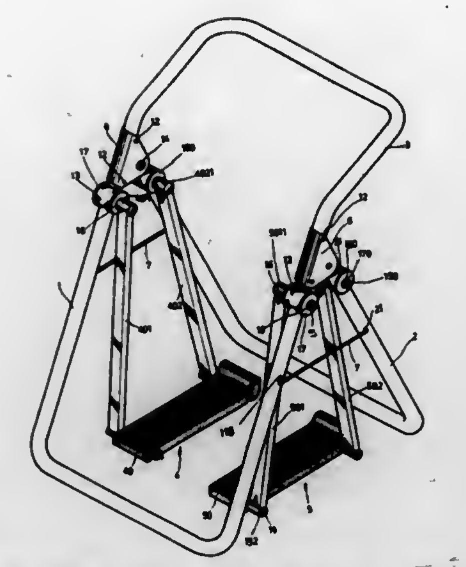
5,616,102
GYMNASTIC BALANCE BEAM WITH ARTICULATED BEAM PORTIONS
Gerald J. Lahmann, 11506 W. Clarke St., Wauwatosa, Wis. 53226
Filed Jun. 19, 1995, Ser. No. 492,374
Int. Cl.[6] A63B *4/00*
U.S. Cl. 482—34 **5 Claims**



1. In a gymnastic apparatus having an elongate beam member, the improvement wherein:
the beam member includes first and second beam portions attached together by a coupling mechanism;
the coupling mechanism has first and second mechanism components attached to the first and second beam portions, respectively;
the components are detachably joined to one another by a removable pin; and
each beam portion includes an undersurface and a pair of support devices attached to each undersurface of each beam portion for supporting a respective beam portion in spaced relationship above a floor,
whereby the beam portions may be separated from one another to permit simultaneous use of the apparatus by two gymnasts.

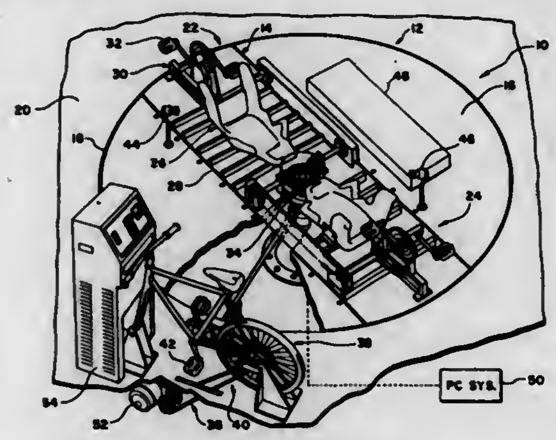
5,616,103
JOGGER EXERCISER
Kuo-Ron Lee, No. 61, Mei Chou Erh Road, Yi Lan City, Taiwan
Filed Aug. 3, 1995, Ser. No. 510,838
Int. Cl.[6] A63B *22/00*
U.S. Cl. 482—51 **11 Claims**

1. A jogger exerciser comprising:
a first support frame having a generally U-shape with a transverse lower portion and two upwardly extending vertical portions;



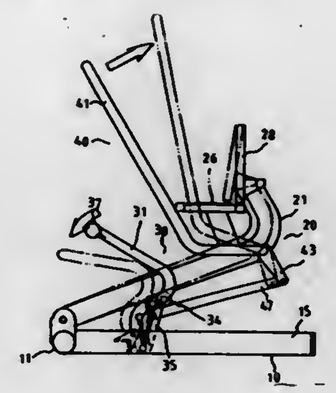
a second support frame having a generally U-shape with a transverse lower portion and two upwardly extending vertical portions;
a hand grip having an inverted U-shape with a transverse top portion and two downwardly extending vertical portions;
first and second swing members each including a tread, a first link and a second link respectively connected to a first and a second end of said tread, and
two unions for interconnecting said first support frame, said second support frame, and said hand grip together.

5,616,104
HUMAN POWERED CENTRIFUGE
Gerald M. Mulenburg, Mountain View, Calif., and Joan Vernikos, Alexandria, Va., assignors to The United States of America as Represented by the Administrator of the National Aeronautics and Space Administratiou, Washington, D.C.
Filed Aug. 10, 1995, Ser. No. 513,263
Int. Cl.[6] A63B *69/00*
U.S. Cl. 482—57 **15 Claims**



1. A human powered centrifuge comprising:
a rotatable platform mounted for rotation about an axis at a predetermined angular velocity, and having means for supporting at least one rider thereon;
at least one human driven rotatable power source coupled to the rotatable platform, and having a power output which varies in accordance with angular velocity and torque; and
control means for independently controlling the platform angular velocity and the power output of the power source.

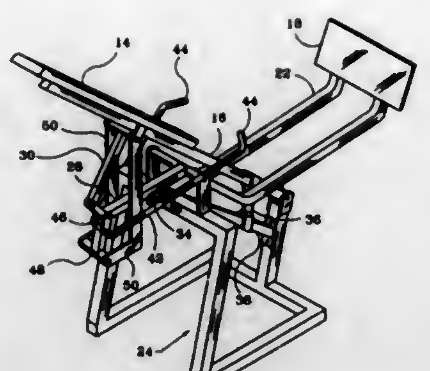
5,616,105
ROWING MACHINE
Leao Wang, and Peter Wu, both of Taichung Hsien, Taiwan, assignors to Greenmaster Industrial Corp., Taichung Hsien, Taiwan
Filed Jan. 29, 1996, Ser. No. 594,685
Int. Cl.[6] A63B *21/00*
U.S. Cl. 482—72 **2 Claims**



1. A rowing machine comprising:
a) a base frame including a front stem, a pair of support bars extending rearwardly of the front stem, a first lug means on the front stem, an angle bar disposed between the support bars and a second lug means on the angle bar;
b) a main frame including a main bar, a connecting tube at a front end of the main bar, the connecting tube being pivotally connected to the first lug means, a hole formed through the main bar, and a seat means mounted on the main bar;
c) a pedal means including a pair of curved stems, a pivot tube carried at a bottom portion of the curved stems, the pivot tube being pivotally connected to the second lug means, a pulley disposed intermediate the curved stems for sliding displacement along a bottom side of the main bar, a block provided at a rear side of each curved stem, each block including an upper positioning hole and a lower positioning hole, and a pedal bar joining the curved stems at a top portion thereof for engagement by the feet of a user;
d) a handle means including a curved arm having a middle section, the middle section being pivotally engaged through the hole of the main bar, a pair of links mounted on opposite sides of the middle section, a linking plate having a front end and a rear end, each link including a free end pivotally connected to the rear end of the linking plate, the front end of the linking plate being connected to the blocks for movement between the upper and lower positioning holes thereof; and
e) an adjusting means including a pair of arms pivotally connected to a bottom side of the linking plate, each arm including an inwardly directed front section, projection means carried by each front section for selective engagement within either the upper positioning holes or the lower positioning holes of the block for respectively permitting a user to impart a pulling action or a pushing action to the curved arm of the handle means.

5,616,106
EXERCISE DEVICE
Kevin Abelbeck, 1220 Venice Blvd. #205, Venice, Calif. 90291
Filed Sep. 19, 1995, Ser. No. 530,531
Int. Cl.[6] A63B *21/04;23/035*
U.S. Cl. 482—96 **9 Claims**

1. An exercise device comprising:
A. a base frame supporting a first pivot and a second pivot;
B. a longitudinal center frame with one end pivotally mounted to said first pivot and a pad secured to a portion of an upper side of the center frame adapted to support the back of a user;



C. a longitudinal pivot ann with the distal end positioned on one side of said second pivot of said base frame and the other end pivotally mounted to said second pivot of said base frame;
D. at least one link arm continuous with said pivot arm and supporting a third pivot on the distal end of the at least one link arm, the third pivot positioned away from said distal end of said pivot arm; and
E. at least one push bar with a first end and a second end, the first end pivotally mounted to said third pivot and the second end pivotally mounted to said center frame, whereby when the user lies with his/her back against said pad with his/her knees and hips in a flexed position and his/her feet positioned against said distal end of said pivot arm, the user can fully extend his/her legs, thereby rotating said pivot arm and said link arm to move the at least one, push bar, moving said center frame upwardly, raising the body of the user, thus doing work and exercising the muscles of the user while maintaining contact between the user's back and the pad, thereby supporting the user's back.

5,616,107

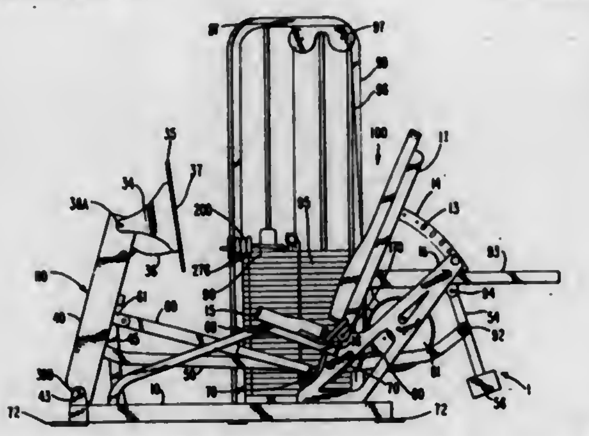
METHOD AND APPARATUS FOR LEG PRESS EXERCISE WITH COUNTERBALANCE

Roy Simonson, Colorado Springs, Colo., assignor to Cybex International, Inc., Ronkonkoma, N.Y.

Continuation-in-part of Ser. No. 396,670, Mar. 1, 1995. This application Mar. 9, 1995, Ser. No. 401,203

Int. Cl.⁶ A63B *21/062;23/04*

U.S. Cl. 482—97 **25 Claims**



1. An apparatus for performing a leg press with counterbalance comprising:
a frame;
a user support mounted to the frame;
a swing pivotally mounted to the frame distal to the user support;
a footplate mounted to the swing;
a first means for effecting a force on the swing operably engaged to the swing; and
a second means for effecting a force on the swing such that the second effecting force counterbalances the force of gravity on the swing as the swing pivots, wherein said second force effecting means comprises:
an arm pivotally mounted to the frame;
a beam pivotally mounted to the arm and pivotally mounted to the swing; and
a weight mounted to said arm.

5,616,108

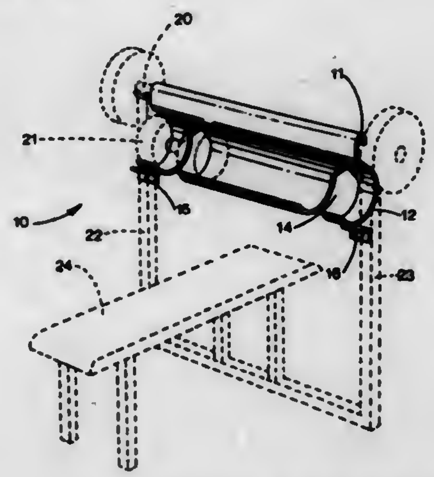
DUMBBELL SUPPORT ATTACHMENT FOR BARBELL CROSS BAR

Richard C. Hayden, 1576 Heathwood Dr., Decatur, Ga. 30033

Continuation-in-part of Ser. No. 620,702, Dec. 3, 1990, Pat. No. 5,411,459. This application Feb. 9, 1995, Ser. No. 385,773

Int. Cl.⁶ A63B *13/00*

U.S. Cl. 482—104 **5 Claims**



1. A support for a dumbbell having a pair of weights, the support being adapted for use with a weight lifting bench having two vertically-disposed columns on which a barbell can be supported with its cross bar in a horizontally-disposed position, comprising:
(a) an elongated holder defining at least three branches which are spaced apart longitudinally from each other, contiguous pairs of branches being separated from each other by a distance which is shorter than the dumbbell in length; and
(b) means for suspending the holder from the cross bar and between the two vertically-disposed columns, the holder and the suspending means defining a structure which, in transverse cross-section, has first and second portions disposed along two generally semicircular curves of diverse radii of curvature, the first portion having a substantially smaller radius of curvature than the second portion; an elongated hook slideably receivable by the cross bar defining the first portion, the holder defining the second portion, each branch forming an upwardly concave surface when the bolder is suspended from the cross bar, so that the weights of the dumbbell can rest on each contiguous pair of branches.

5,616,109

RESILIENT ABDOMINAL-ARM EXERCISE APPARATUS

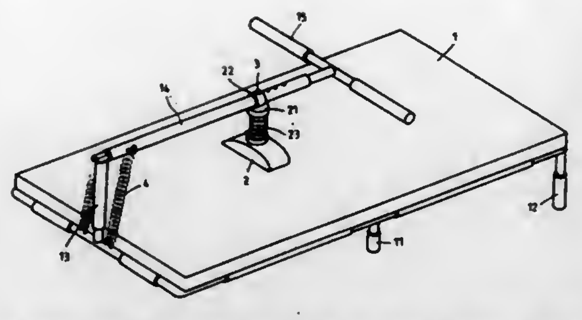
Huang Szu-Ming, No. 18, Lane 164, Hsin I Road, Tou Fen Chang, Miao Li Shien, Taiwan

Filed Mar. 12, 1996, Ser. No. 614,237

Int. Cl.⁶ A63B *21/04;21/02*

U.S. Cl. 482—123 **1 Claim**

1. A body-building apparatus, comprising:
a board having an upwardly extending fulcrum bar disposed on one end thereof;



a longitudinally extended lever arm having a first end pivotally connected to an upper end of said fulcrum bar and a second end disposed over said board, said second end of said lever arm having a transversely extending handle, said lever arm having a plurality of longitudinally spaced positioning holes formed therethrough;
a plurality of first springs coupled between said board and said lever arm, said plurality of first springs being coupled to said lever arm at a position located adjacent said first end thereof; and,
an abdominal press coupled to said lever arm by a bolt, said abdominal press including a press member, connecting means disposed above said press member and a second spring disposed intermediate said press member and said connecting means, said connecting means having a tubular portion formed on an upper end thereof, said tubular portion being adapted to receive said lever arm longitudinally therethrough, said tubular portion having an opening formed transverse said longitudinal direction adapted to receive said bolt therein, said opening being alignable with a selected one of said positioning holes for passage of said bolt through both said opening and said selected positioning hole to couple said abdominal press to said lever arm.

5,616,110

DEVICE FOR MUSCULAR ELONGATION, FLEXION AND PHYSIOTHERAPY

Isaías B. D. Nascimento, Rua Marechal Floriano, no. 319, Centro MG, Brazil

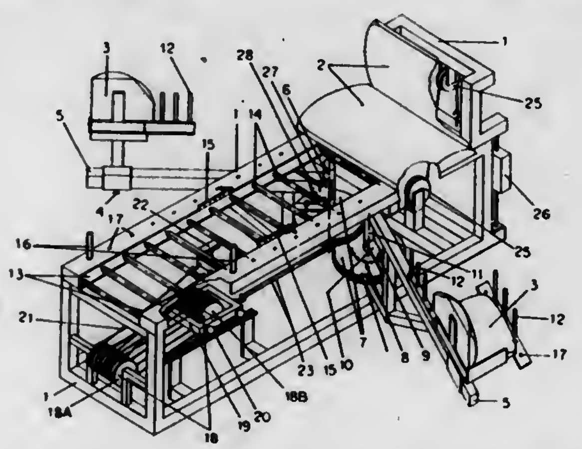
PCT No. PCT/BR93/00043, § 371 Date Jun. 28, 1995, § 102(e) Date Jun. 28, 1995, PCT Pub. No. WO94/14505, PCT Pub. Date Jul. 7, 1994

PCT Filed Nov. 30, 1993, Ser. No. 464,890

Claims priority, application Brazil, Dec. 29, 1992, 9205222

Int. Cl.⁶ A63B *21/00*

U.S. Cl. 482—131 **15 Claims**



1. Mechanical device for muscular elongation, muscular flexion and physiotherapy having a frame having a longitudinal direction, a seat fixedly associated with said frame and first and second lateral leg support means arranged on each side of said frame which respect to said longitudinal direction, each said leg support means being mounted to be swung outwardly from said frame in a substantially horizontal plane, away from an initial position of repose, characterised by comprising:
(a) a carriage mounted for movement on said frame in said longitudinal direction, towards and away from said seat;
(b) hand grips on said carriage to permit a user seated on said seat to pull the carriage towards said seat;
(c) force applying means for biasing said first and second leg support means towards said position of repose;
(d) mechanical non-motorised load reducing means for transmitting linear movement of said carriage from a force input to a load input, the force input being connected to said carriage,
(e) transformation means connected between said load input and said leg support means, for transforming said linear movement at said load input into swinging movement of said leg support means, whereby said load reducing means reduces the force required at said hand grips to move the carriage against a load represented by the combination of the force applying means and the resistance due to the legs of the user on said leg support means; and
(f) carriage blocking means for blocking the movement of said carriage in at least one selected position with respect to said frame.

5,616,111

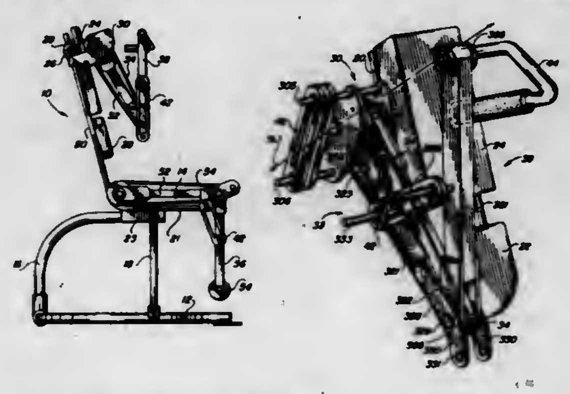
EXOSKELETAL EXERCISE SYSTEM

Lucian Randolph, 11456 Peachstone La., Orlando, Fla. 32675

Continuation-in-part of Ser. No. 56,845, Apr. 30, 1993, Pat. No. 5,486,150. This application Feb. 1, 1995, Ser. No. 383,476

Int. Cl.⁶ A63B *21/02;23/035*

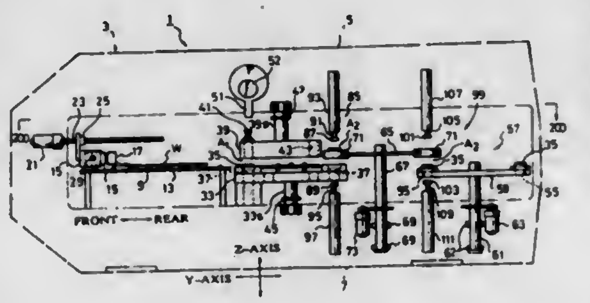
U.S. Cl. 482—133 **17 Claims**



1. An exercise apparatus comprising:
an exercise frame;
an exercise assembly having:
a proximal end coupled to the frame and a distal end;
a first pivot member rotatably connecting the exercise assembly proximal end to the frame, the first pivot member having an axis of rotation perpendicular to a frame side portion, the first pivot member permitting the exercise assembly to be radially offset from the frame side portion along the first pivot member axis;
a second pivot member rotatably connecting the exercise assembly proximal end to the first pivot member for rotation about a second pivot member axis perpendicular to the first pivot member axis, the second pivot member permitting the exercise assembly to be offset from the first pivot member axis;
a first arm segment having a proximal end forming a part of the exercise assembly proximal end and a distal end forming a part of the exercise assembly distal and;
a third pivot member rotatably connecting the first arm segment proximal end to the exercise assembly proximal third pivot member having an axis of rotation perpendicular to the second pivot member axis, the third pivot member permitting rotation of the first arm segment about the third

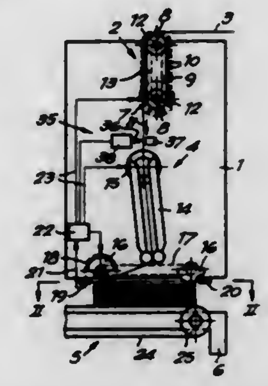
pivot member and within an exercise assembly plane of rotation defined by a combination of an angular position of the exercise assembly proximal end rotated about the first and second pivot members;
a second arm segment having proximal and distal ends;
a fourth pivot member rotatably connecting the second arm segment proximal end to the first arm segment distal end the fourth pivot member having an axis of rotation parallel to the third pivot member axis of rotation, the second arm segment thus rotatable about the fourth pivot axis within the exercise assembly plane;
a grip assembly; and
a fifth pivot member within the second arm segment distal end, the fifth pivot member having an axis of rotation parallel to the third and fourth axes of rotation, the fifth pivot member rotatably connecting the grip assembly to the second arm segment distal end for rotation of the grip assembly about the fifth pivot member and within the exercise assembly plane;
means for limiting movement of the assembly first and second arm segments within the exercise assembly plane; and
means for applying an exercise resistance to movement of the exercise assembly distal end about the proximal end, the movement within the exercise plane.

5,616,112
TURRET PUNCH PRESS WITH DIE EXCHANGING
Yoshiharu Seto, and Shunzo Hirose, both of La Mirada, Calif., assignors to Amada Mfg America Inc., La Mirada, Calif.
Filed Jul. 7, 1995, Ser. No. 499,682
Int. Cl.⁶ B23Q *3/155*
U.S. Cl. 483—29 **8 Claims**



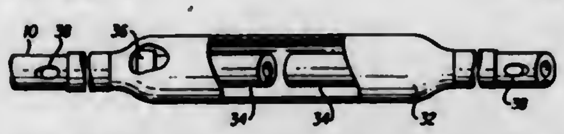
1. A turret punch press having a body frame (3) and a ram (51) for striking a punch (41) to punch out work (W) in cooperation with a die (35), comprising:
a disk-like upper turret (39) rotatably mounted on the body frame, a plurality of punches (41) being exchangeably arranged in punch mount holes (43) at appropriate angular intervals in circumferential direction thereof, any desired punch being selectively located at a punch area (A1);
a disk-like lower turret (33) also rotatably mounted on the body frame so as to be opposed to said upper turret, a plurality of dies (35) being exchangeably arranged in die mount holes (37) at appropriate angular intervals in circumferential direction thereof, any desired die mated with the desired punch being selectively located at the same punch area (A1);
said upper turret (39) being formed smaller in diameter than said lower turret (33), and further said upper turret (39) being eccentrically dislocated from said lower turret (33) toward the punch area (A1) to provide an open die exchange area (A2) over a part of said lower turret (33); and
first die delivering means (85) disposed on the body frame (3) and at the die exchange area (A2), for delivering a die (35) to and from the die mount hole (37) of said lower turret (33) in a vertical direction.

5,616,113
MACHINE FOR FOLDING A WEB IN A ZIGZAG MANNER
Marc Van Den Bergh, Waasmunster, Belgium, assignor to Web Converting Equipment, naamloze vennootschap, Belgium
PCT No. PCT/BE93/00049, § 371 Date Jan. 17, 1995, § 102(e) Date Jan. 17, 1995, PCT Pub. No. WO94/02403, PCT Pub. Date Feb. 3, 1994
PCT Filed Jul. 14, 1993, Ser. No. 367,354
Claims priority, application Belgium, Jul. 15, 1992, 09200661
Int. Cl.⁶ B31B *1/52*
U.S. Cl. 493—23 **17 Claims**



1. Machine for folding a web (3) in a zigzag manner to produce connected folded pages comprising a transport mechanism (2) for a web (3), a receiving device (5) at a bottom area of the machine for collecting the folded web, a folding mechanism (4) disposed between the transport mechanism (2) and the receiving device (5) and a detection means (19,20) to detect an improper fold disposed downstream from the folding mechanism (4) in the direction of forward web motion, means to move a web (3) backward in the folding mechanism (2) and a control device (22) connected to said means to move the web backward and the detection means (19,20), said control device arranged such that, at least upon the occurrence of a first detection of an improper fold by said detection means, the means for moving the web (3) backward in the folding mechanism (4) is actuated by said control device over such a distance that the improper fold is entirely unfolded and such that whereupon such unfolding the normal forward movement of the web (3) through the folding mechanism (4) is continued.

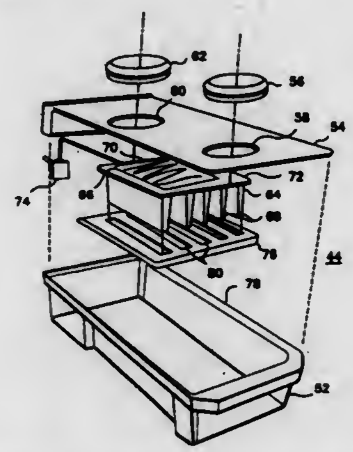
5,616,114
INTRAVASCULAR RADIOTHERAPY EMPLOYING A LIQUID-SUSPENDED SOURCE
Richard T. Thornton, League City; Anthony J. Bradshaw, Missouri City, and Wayne W. Snyder, Houston, all of Tex., assignors to Neocardia, LLC., Houston, Tex.
Filed Dec. 8, 1994, Ser. No. 352,318
Int. Cl.⁶ A61N *5/00*
U.S. Cl. 600—3 **24 Claims**



1. An apparatus for localized intravascular radiotherapy of a blood vessel, such as a coronary artery, comprising:
a catheter, said catheter comprising an elongate member having a proximal and a distal end, said elongate member being sized and of sufficient flexibility for introduction into a patient's body through a cardiovascular lumen until the distal end is disposed at a target area within the blood vessel, said target area comprising a wall of the blood vessel, said elongate member further including a longitudinal hole therethrough defining a fluid passage;

fluid expansible means connected to said elongate member in fluid communication with said passage for containing a fluid having a radioactive material therein; and
means for introducing said fluid into said fluid passage to expand the fluid expansible means toward said wall, the radioactive material in said fluid being substantially uniformly dispersed in said fluid expansible means such that the wall of the blood vessel is substantially uniformly exposed to radiation from said radioactive material for a given treatment time.

5,616,115
HEATED HUMIDIFIER FOR INCUBATOR
David A. Gloyd, Columbia; Emigdio A. Uribe, Marriotsville; Robert J. Koch, Ellicott City, and Harry E. Beisinger, Jr., Baltimore, all of Md., assignors to Ohmeda Inc., Liberty Corner, N.J.
Continuation of Ser. No. 259,829, Jun. 15, 1994, abandoned. This application Jan. 4, 1996, Ser. No. 583,203
Int. Cl.⁶ A61B *16/00*
U.S. Cl. 600—22 **2 Claims**

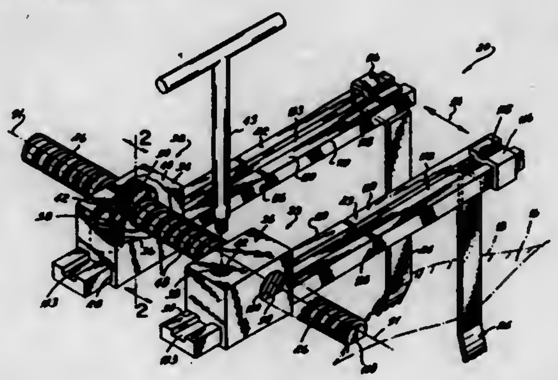


1. An incubator for containing an infant, said incubator comprising:
a base section having an infant support adapted to underlie and support the infant;
a hood mounted upon said base section and forming an infant compartment therein for containing the infant;
an air moving means in said base section adapted to move air from said base section into said infant compartment to reach the infant;
a heated humidifier for humidifying the air supplied by said air moving means from said base section to said infant compartment; said humidifier having a reservoir containing a quantity of water therein,
said humidifier further having an inlet for receiving air from said air moving means and an outlet for discharging humidified air, and having a passageway within said humidifier between said inlet and said outlet passing the air along the surface of the water,
heater means within said humidifier to provide localized heating of the water at or near the surface of the water to cause the formation of water vapor at the surface of the water, said heater means comprising a heat exchanger having an upper flat, planar surface located above and parallel to the surface of the water, said upper flat, planar surface having at least one fin extending downwardly from said upper flat, planar surface into and below the surface of the water and an active flat electric heater contacting said upper flat, planar surface of said heat exchanger to provide heat to said heat exchanger at said upper flat, planar surface of said heat exchanger above the surface of the water; and
ducting means directing at least a portion of the air passing from said base section to said infant compartment through said passageway of said humidifier to cause humidified air to enter said infant compartment to reach the infant.

5,616,116
STOMA PROTECTOR
Jerome G. Born, St. Paul, Minn., assignor to Lisa Willey, Des Moines, Iowa
Filed May 22, 1995, Ser. No. 447,216
Int. Cl.⁶ A61F *2/02*
U.S. Cl. 600—32 **15 Claims**

1. A stoma protector for use by a person having a stoma from a laryngectomy, comprising:
a curved plate having an aperture which is aligned to overlie a stoma, wherein said plate has forward and rearward surfaces;
spaced apart projections on the rearward surface of the plate to maintain the plate in position over the stoma;
a screen mounted on the rearward surface of the plate in covering relation to the aperture so as to allow breathing through the aperture; and
a chain attached to the plate, the chain having a length sufficient to extend around a person's neck so as to hold the plate in place over the stoma.

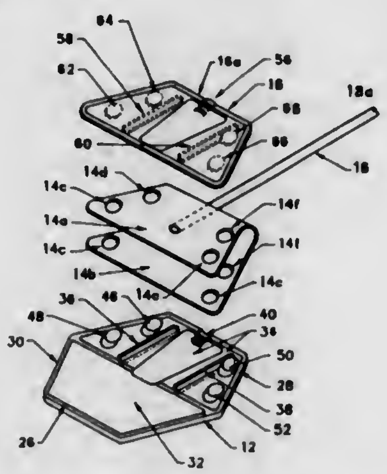
5,616,117
SELF LOCKING SURGICAL RETRACTOR
Charles Dinkler, and John M. Tew, Jr., both of Cincinnati, Ohio, assignors to Ohio Medical Instrument Company, Inc., Cincinnati, Ohio
Continuation of Ser. No. 510,691, Aug. 3, 1995, abandoned. This application Jan. 2, 1996, Ser. No. 581,770
Int. Cl.⁶ A61B *1/30;17/02*
U.S. Cl. 600—232 **17 Claims**



1. A medical retractor for holding open an incision in a body tissue comprising:
a support shaft having threads on an outer surface thereof;
a first retractor arm;
a first retractor arm drive supporting and moving the first retractor arm and including
a first worm gear rotatably mounted within the first retractor arm drive and having

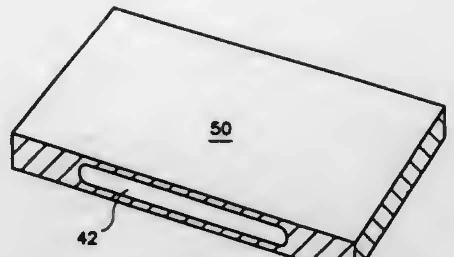
a bore with internal threads sized and shaped to receive and rotate on the threads on the support shaft, and
worm gear teeth around the first worm gear;
a first worm having threads and rotatably mounted within the first retractor arm drive with the threads on the first worm engaging the worm gear teeth, and
a second retractor arm mounted on the support shaft, whereby rotating the worm turns the worm gear, thereby moving the first retractor drive and the first retractor arm in an axial direction along the support shaft with respect to the second retractor arm.

5,616,118
UNIQUELY SHAPED OPHTHALMOLOGICAL DEVICE
Abdul M. Ahmed, 928 E. Juanita Ave., La Verne, Calif. 91750
Continuation-in-part of Ser. No. 786,734, Oct. 1, 1991, Pat. No. 5,411,473, which is a division of Ser. No. 478,655, Feb. 12, 1990, Pat. No. 5,071,408, which is a continuation-in-part of Ser. No. 255,070, Oct. 7, 1988, abandoned. This application Jul. 1, 1994, Ser. No. 269,839
Int. Cl.⁶ A61M *5/00*
U.S. Cl. 604—8 **16 Claims**



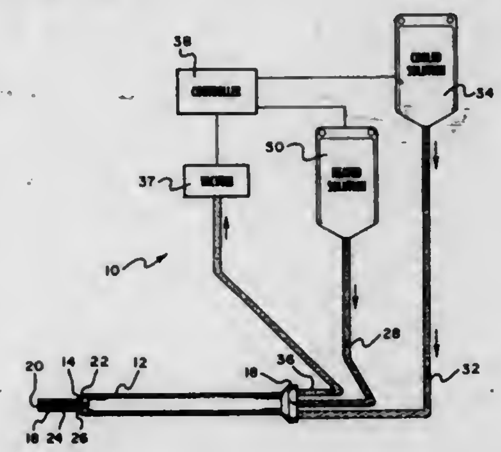
1. A medical valve including
a body member formed, at least in part, by a pair of plates, one of said plates having an enlarged surface that serves to collect fluid escaping from the opening, said body member holding a pair of overlying elastic membranes in tension to form therebetween a chamber,
said membranes providing an elongated, slit-like opening therebetween, and
an inlet tube in communication with the chamber at a point remote from the opening,
said chamber having a predetermined configuration so that its cross sectional area near the point where the inlet tube is in communication with the chamber is larger than the cross sectional area of the chamber near the opening.

5,616,119
MEDICATED POLYMERIC APPARATUS
William M. Davis, Tucson, Ariz., assignor to Lathrotec, Inc., Tucson, Ariz.
Continuation-in-part of Ser. No. 319,971, Oct. 7, 1994, Pat. No. 5,562,652. This application Jun. 2, 1995, Ser. No. 458,121
Int. Cl.⁶ A61N *1/30*
U.S. Cl. 604—19 **20 Claims**
1. Water vapor-activatible apparatus comprising:
a base member at least partially formed from a water vapor selectively permeable material and



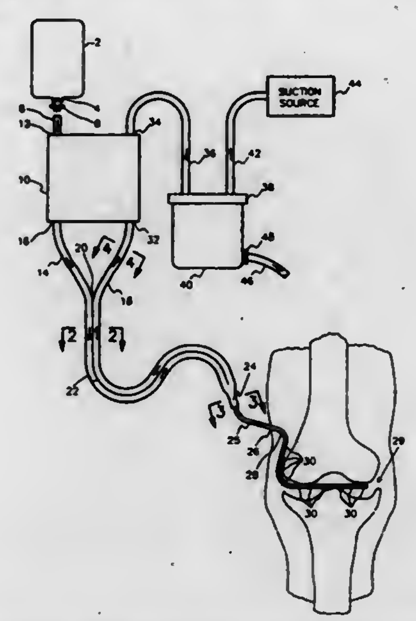
a water vapor-activatible medicinal agent which, prior to activation, does not significantly diffuse from said base member, said medicinal agent being positioned within said selectively permeable material along at least a portion of said base member;
wherein said said selectively permeable material when introduced into the human body and exposed to water vapor therein, diffuses water vapor toward and into contact with said water vapor-activatible medicinal agent and after activation by water vapor diffuses reaction product formed from said water vapor-activatible medicinal agent outwardly from said base member for treatment of an adjacent area in the patient's body.

5,616,120
METHOD AND APPARATUS FOR LENTICULAR LIQUEFACTION AND ASPIRATION
Mark S. Andrew, and Mylina Andrew, both of 314 Avondale Ave., Haddonfield, N.J. 08033
Filed Feb. 6, 1995, Ser. No. 384,655
Int. Cl.⁶ A61M *1/00*
U.S. Cl. 604—28 **6 Claims**



1. In a method for treating cataracts in vivo by liquefying a cataractous lens nucleus and aspirating the same from within a surrounding lens capsule comprising the steps of:
delivering a heated fluid directly into said lens nucleus in order to liquify the same;
irrigating said lens nucleus with a cooled solution so that said lens nucleus and said heated fluid are rapidly cooled, and aspirating said liquified lens nucleus while continuing to irrigate the same.

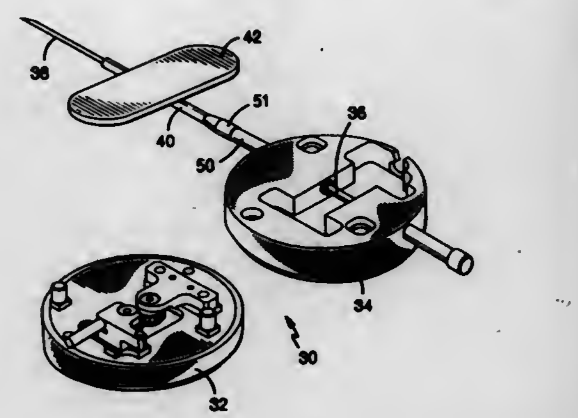
5,616,121
METHOD FOR ALLEVIATING PAIN IN A WOUND
Douglas W. McKay, 341 Moosa Blvd., Eunice, La. 70535
Division of Ser. No. 107,914, Aug. 17, 1993, abandoned. This application Jul. 14, 1994, Ser. No. 274,763
Int. Cl.⁶ A61M *1/00*
U.S. Cl. 604—35 **17 Claims**



1. A method of alleviating pain in a body joint subsequent to surgical invasion, which method comprises:
preparing a solution;
infusing the solution into the joint;
timing the interval of infusion;
interrupting infusion after the expiration of a preset timed infusion interval;
timing the interval of interruption;
suctioning the solution from the joint after the expiration of a preset timed interruption interval;
timing the interval of suctioning;
interrupting the suction after the expiration of a preset timed suctioning interval.

5,616,122
METHODS AND COMPOSITIONS FOR PREVENTING SECONDARY CATARACTS
Dominic M. Lam, and Peter J. Kelleher, both of The Woodlands, Tex., assignors to Baylor College of Medicine, Houston, Tex.
Continuation-in-part of Ser. No. 204,168, Jun. 8, 1988, Pat. No. 4,871,350, which is a continuation-in-part of Ser. No. 927,318, Nov. 4, 1986, abandoned. This application May 1, 1990, Ser. No. 517,364
Int. Cl.⁶ A61M *31/00*
U.S. Cl. 604—49 **11 Claims**
1. A method for inhibiting posterior lens capsule opacification after extracapsular cataract extraction from a host eye, said method comprising the step of:
introducing, in conjunction with said extracapsular cataract extraction, into at least one area of said eye selected from the group consisting of: the anterior chamber; the posterior chamber and the residual lens capsule in an amount sufficient to inhibit proliferation of lens epithelial cells, a cytotoxic agent capable of binding specifically to any lens epithelial cells preset in said area of the eye and killing the cells without additional agents, wherein said cytotoxic agent comprises a monoclonal antibody or fragment thereof conjugated to a toxin molecule or a cytotoxic moiety of a toxin molecule.

5,616,123
DELIVERY OF SOLID DRUG COMPOSITIONS
Roland C. Cheikh, Issy-Les-Moulineaux, France, assignor to Delab, Paris, France
Continuation of Ser. No. 300,713, Sep. 2, 1994. This application Jun. 2, 1995, Ser. No. 460,545
Int. Cl.⁶ A61M *31/00*
U.S. Cl. 604—60 **8 Claims**



1. An external, wearable device for the automatic, controlled administration of a solid drug composition to a patient comprising:
a housing;
a plunger located within said housing;
a dispensing tube attached to the outside of said housing, said tube being designed and sized to contain a solid drug composition consisting essentially of the drug and up to 50%, by weight, of a pharmaceutically acceptable carrier, wherein the solid drug has a diameter of less than about 0.8 millimeters;
an actuator arranged within said housing to move said plunger from said housing into said dispensing tube;
a controller that acts on said actuator to regulate the movement of said plunger through said housing and into said dispensing tube; and
a power source arranged to provide energy to said actuator and said controller;
wherein said plunger is capable of moving the solid drug composition out of said dispensing tube at a controlled rate.

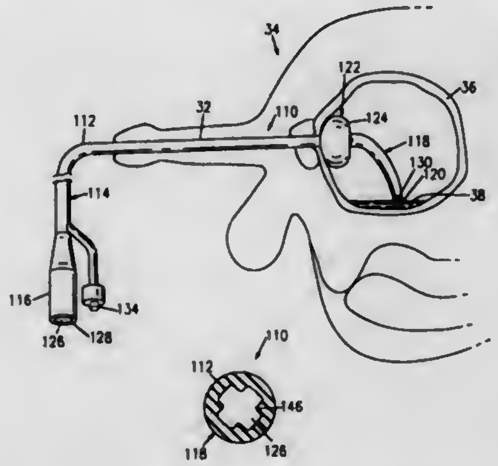
5,616,124
INFUSION SYSTEM WITH AIR-IN-LINE CLEAR FUNCTION
Clifford W. Hague, Canyon Country, and Paul A. Koenig, Valencia, both of Calif., assignors to IVAC Medical Systems, Inc., San Diego, Calif.
Division of Ser. No. 852,622, Mar. 13, 1992, Pat. No. 5,382,232. This application Jan. 13, 1995, Ser. No. 372,513
Int. Cl.⁶ A61M *31/00*
U.S. Cl. 604—65 **32 Claims**
1. A method of delivering a selected medical fluid to a patient, said method comprising the steps of:
delivering the medical fluid by a pump through a fluid line adapted for connection to the patient;
monitoring a short length of the line with a detection field of an air-in-line sensor to detect gas within the line;
responding to the air-in-line sensor upon detection of gas along the short length of the line within the sensor detection field to activate an alarm;
clearing the detected gas from the sensor detection field by operating the pump to deliver an output pulse of the medical fluid to the line to move the detected gas along the line to a position downstream of the sensor detection field; and,

infusing the cleared gas and the output pulse of medical fluid into the patient.

5,616,125
APPARATUS FOR SIMULTANEOUSLY PUMPING MILK FROM THE RIGHT AND LEFT BREAST OF A NURSING MOTHER
Casandra N. Jelks, 9969 Archdale, Detroit, Mich. 48227
Filed Aug. 28, 1995, Ser. No. 519,723
Int. Cl.⁶ A61M *1/06*
U.S. Cl. 604—74 **2 Claims**

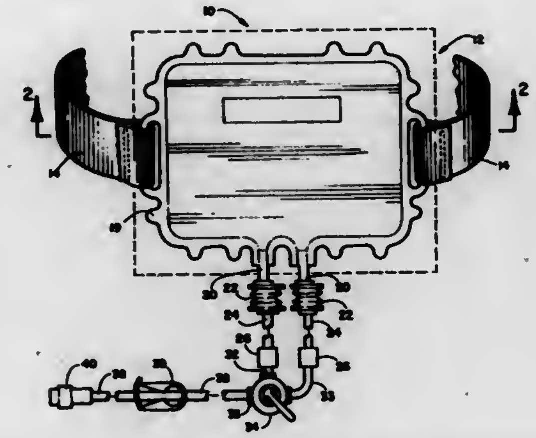
1. A new and improved apparatus for simultaneously pumping milk from the right and left breast of a nursing mother comprising, in combination:
a pair of nipple shields including a left shield and a right shield, each of the shields formed in a generally conical configuration with an exterior surface and an interior surface positionable over the nipple of a breast of a nursing mother, each of the shields having a centrally located aperture with a cylindrical coupling extension projecting from the exterior surface of the shield around the aperture;
a pair of independently operable pumps including a left pump and a right pump, each of the pumps having an input and an output;
a pair of flexible tubes including a left tube and a right tube, the left tube having an input end coupled to the conical extension of the left shield and an output end coupled to the input of the left pump, the right tube having an input end coupled to the conical extension of the right shield and an output end coupled to the input of the right pump;
a housing formed of a container with a separable cover, the container receiving the pair of pumps and the ends of the tubes adjacent to their output ends;
a baby bottle having an open top and positioned within the housing adjacent to the pair of pumps;
a lid removably positioned on the open top of the baby bottle with two large holes and one small hole, the small hole being for air exhaust;
a pair of supplemental tubes, one supplemental tube coupling the output of the left pump to one large hole and the other supplemental tube coupling the output of the right pump to the other large hole;
a pair of switches within the container including a left switch for activating the left pump to the exclusion of the right pump and a right switch for activating the right pump to the exclusion of the left pump;
a power source within the container with lines in parallel supplying power to the two pumps through the two switches; and
straps coupled to the container positionable about the shoulders of the user to releasably secure the container to the back of the user.

5,616,126
LOW RESIDUAL BLADDER CATHETER
Farshad Malekmehr, 1321 Orleans St. #2001, Detroit, Mich. 48207, and David A. Farah, 11105 McVine Ave., Sunland, Calif. 91040-2121
Filed Mar. 3, 1995, Ser. No. 397,975
Int. Cl.⁶ A61M *29/00*
U.S. Cl. 604—96 **11 Claims**



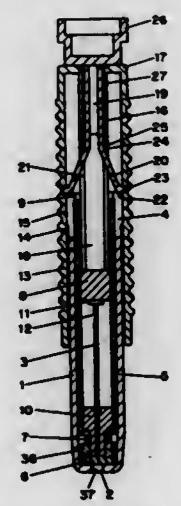
1. A bladder catheter, comprising:
an elongate tubular body having a proximal portion with a proximal end, a distal portion with a distal end, a retaining portion disposed between the proximal portion and the distal portion, a drainage lumen therethrough, and a support within the tubular body;
wherein the retaining portion has a retaining mechanism affixed to the tubular body;
wherein the proximal portion has a proximal port;
wherein the distal portion has an axial length;
wherein the distal portion has at least one opening therein;
wherein the drainage lumen extends from the proximal port in the proximal end to the at least one opening in the distal portion; and
wherein the support substantially prevents closure of the drainage lumen from axial bending of the distal portion.

5,616,127
EXPANDABLE LIQUID INFUSION DEVICE
Kevin Smith, 10949 Scripps Ranch Blvd., San Diego, Calif. 92131
Filed Nov. 14, 1994, Ser. No. 340,072
Int. Cl.⁶ A61M *37/00*
U.S. Cl. 604—118 **23 Claims**



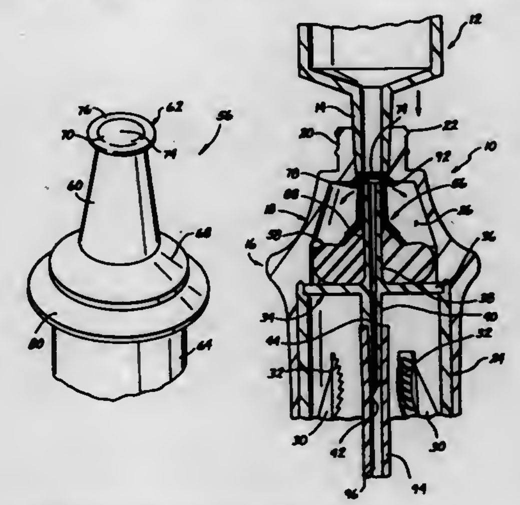
23. A temperature activated medication infusion pump comprising:
a first container having a central hollow portion containing a temperature expandable fluid, said expandable fluid being expandable through a selected range of temperatures;
a second container having a hollow central portion containing a liquid medication; and
a tube communicating with the hollow portion of said second container with a distal end extending therefrom, whereby when said first container expands pressure is applied to said second container and the liquid medication therein forcing liquid medication from said tube.

5,616,128
SELF-INJECTION DEVICE
Philippe Meyer, Grienbachstrasse, Switzerland, assignor to MED-Plastic AG, Switzerland
PCT No. PCT/EP93/00180, § 371 Date Nov. 7, 1994, § 102(e) Date Nov. 7, 1994, PCT Pub. No. WO94/16752, PCT Pub. Date Aug. 4, 1994
PCT Filed Jan. 27, 1993, Ser. No. 302,847
Int. Cl.⁶ A61M *5/20*
U.S. Cl. 604—139 **19 Claims**



1. A self-injection device comprising:
a tubular sleeve open at the posterior end thereof and partially closed at the anterior end thereof;
an ampule axially arranged within said tubular sleeve, said ampule being sealed at the posterior end thereof by a piston and sealed at the anterior end thereof by a membrane;
an injection needle axially arranged within said ampule, said needle having a terminal flange at its posterior end for contacting the piston and an anterior end for piercing the membrane;
a tubular actuating cap guided on the tubular sleeve having a piston rod emanating from the bottom of the cap for acting upon the piston, the actuating cap and the piston rod being traversed by a central bore having axially extending grooves;
means for preventing the tubular actuating cap from being removed from the posterior end of the tubular sleeve; and
a locking pin comprising radially projecting spring tongues, each tongue having a first segment extending in an axial direction on the periphery of the locking pin and a second segment bent at an obtuse angle, extending obliquely outward in a radial-axial direction through the axially extending grooves in the central bore for contacting the posterior end of the sleeve, wherein the locking pin is insertible into the central bore for preventing unintentional triggering of the injection needle.

5,616,129
NEEDLELESS INJECTION SITE
Bruno Franz P. Mayer, Santa Ana, Calif., assignor to NIMA Enterprises, Inc., Brea, Calif.
Continuation-in-part of Ser. No. 262,994, Jun. 20, 1994. This application Mar. 10, 1995, Ser. No. 401,854
Int. Cl.⁶ A61M *5/00;5/178*
U.S. Cl. 604—167 **39 Claims**



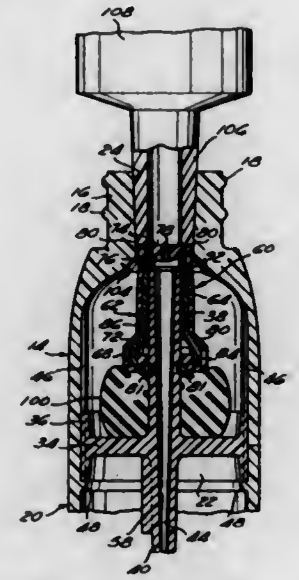
1. A needleless injection site, comprising:
a housing defining:
an interior chamber;
a central opening which communicates with the interior chamber;
an elongate, proximally extending dilator projection portion which is coaxially aligned with said central opening; and
an elongate, distally extending adapter portion, said dilator projection and adapter portions defining a continuous fluid passage;
a reseal member disposed within said central opening and said interior chamber, said reseal member having an elastically openable and closable aperture formed therein and normally residing in a first position within the housing wherein the aperture is in a closed configuration, the dilator projection portion of the housing extending into the reseal member;
said reseal member being deformable such that the application of distally directed pressure thereto will cause the reseal

member to distally advance within the housing to a second position wherein the aperture assumes an open configuration and communicates with the fluid passage, and the removal of the distally directed pressure therefrom will cause the reseal member to resiliently return to the first position wherein the aperture reassumes the closed configuration.

5,616,130
NEEDLELESS INJECTION SITE

Bruno Franz P. Mayer, Santa Ana, Calif., assignor to Nima Enterprises, Inc., Brea, Calif.

Continuation-in-part of Ser. No. 401,854, Mar. 10, 1995, which is a continuation-in-part of Ser. No. 262,994, Jun. 20, 1994, Pat. No. 5,470,319. This application Jun. 22, 1995, Ser. No. 493,744
Int. Cl.[6] A61M *5/178;5/00;25/00*
U.S. Cl. 604—167 29 Claims

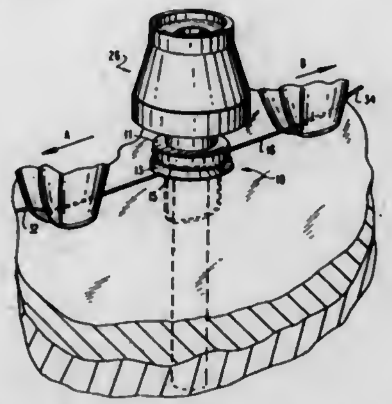


1. A needleless injection site, comprising:
a housing defining:
an interior chamber;
a central opening which communicates with the interior chamber;
an elongate, proximally extending dilator projection portion; and
an elongate, distally extending adapter portion, said dilator projection and adapter portions defining a continuous fluid passage;
a reseal member disposed within said central opening and said interior chamber, said reseal member comprising:
a resilient body having a distal end and a proximal end which defines inner and outer surfaces and includes an elastically openable and closable aperture extending therethrough between the inner and outer surfaces thereof;
a radial leaf spring disposed within said body and adapted to apply a radially inward biasing force to the proximal end which normally maintains the aperture in a closed configuration; and
an elongate doughnut spring having a first end which is abutted against the distal end of the body, a second end, and a bore extending longitudinally therethrough, said dilator projection portion being extended through the bore of the doughnut spring and into the radial leaf spring;
said reseal member being deformable such that the application of distally directed pressure to the outer surface of the proximal end will cause the radial leaf spring to be distally advanced over the dilator projection portion which facilitates the radial expansion of the aperture to an open configuration communicating with the fluid passage, and the removal of the distally directed pressure from the outer surface will cause the radial leaf spring to be proximally withdrawn from over the dilator projection portion which facilitates the resilient return of the aperture to the closed configuration.

5,616,131
APPARATUS AND METHOD FOR ANCHORING SURGICAL INSTRUMENTATION

Jude S. Sauer, Pittsford; Michael G. Oravecz, Rochester, and Roger J. Greenwald, Holley, all of N.Y., assignors to Laser-Surge, Inc., Rochester, N.Y.

Continuation of Ser. No. 950,429, Sep. 23, 1992, abandoned. This application Apr. 18, 1995, Ser. No. 425,035
Int. Cl.[6] A61M *5/32*
U.S. Cl. 604—174 10 Claims

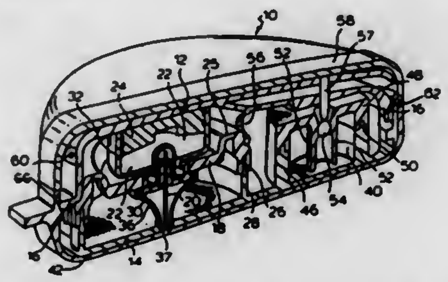


1. Apparatus for securing a surgical instrument disposed in tissue at an incision in a patient, comprising:
a collar member having an outer wall;
mounting means disposed on a portion of said collar member spaced from said outer wall for mounting said collar member to an outer surface of an instrument such that said mounting means is disposed around the instrument to permit selective longitudinal movement of the instrument relative to the apparatus; and
a suture receiving portion formed on said outer wall of said collar ember for releasably receiving a suture secured in said tissue to anchor the instrument in said tissue wherein said suture receiving portion is defined by a pair of disks separated by a predetermined distance, said disks forming a peripheral groove therebetween for receiving and retaining said suture.

5,616,132
INJECTION DEVICE

Duncan Newman, Toronto, Canada, assignor to Subot, Inc., Toronto, Canada

Filed Jun. 12, 1995, Ser. No. 489,455
Int. Cl.[6] A61M *5/178*
U.S. Cl. 604—185 6 Claims



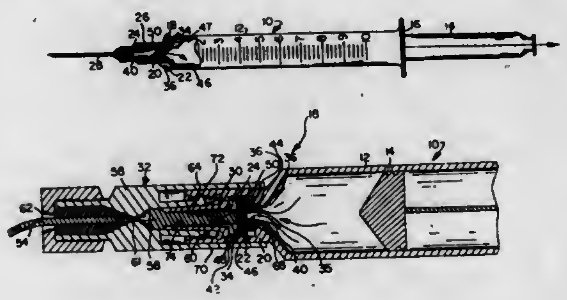
1. In a medicant injection device of the hypodermic needle type:
a housing;

a diaphragm mounted in the housing for movement between a normal position and an extended position;
a hypodermic needle mounted within the housing and operatively connected to the diaphragm for movement whereby the hypodermic needle is responsive to movement of the diaphragm from its normal position to move between a retracted position and an extended position with respect to the housing;
at least one chamber wall defining a compressible medicant chamber within the housing, said compressible medicant chamber being in medicant-communication, during use, with the hypodermic needle;
propellant means comprising a pressurized fluid source in said housing for both moving the diaphragm from its normal position to its extended position to thereby cause a responding movement of the hypodermic needle from its retracted position as aforesaid and for compressing the compressible medicant chamber to cause medicant to be delivered through the hypodermic needle;
release means for manually releasing pressurized fluid from the pressurized fluid source of the propellant means to move said diaphragm and compress said compressible medicant chamber as aforesaid;
said housing having a height and a lower face of dimensions to seat with stability on the skin surface of a patient, in use, with said hypodermic needle in its extended position extending from said lower face.

5,616,133
SYRINGE FOR EPIDURAL CATHETER

Juan M. Cardenas, 3109 Knob Ct., Owensboro, Ky. 42303

Filed Oct. 23, 1995, Ser. No. 547,063
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—187 6 Claims



1. A syringe, comprising:
a hollow cylinder having first and second ends;
a plunger in said hollow cylinder, said plunger extending out of said first end and being movable outwardly and inwardly relative to the cylinder;
a check valve in fluid communication with the second end of said cylinder, wherein said check valve permits liquid to enter the second end of the cylinder when the plunger is pulled outwardly but prevents liquid from leaving the cylinder when the plunger is pushed inwardly.

5,616,134
DISPOSABLE SELF-SHIELDING HYPODERMIC SYRINGE

John R. Firth, Portland, Oreg.; Anthony R. Perez, Alhambra, and Ronald A. Meyer, San Dimas, both of Calif., assignors to Safety Syringes, Inc., Arcadia, Calif.

Continuation of Ser. No. 581,734, Sep. 12, 1990, Pat. No. 5,108,378, which is a continuation-in-part of Ser. No. 521,243, May 9, 1990, abandoned. This application Apr. 28, 1992, Ser. No. 875,832

The portion of the term of this patent subsequent to Sep. 14, 2013, has been disclaimed.

Int. Cl.[6] A61M *5/32*
U.S. Cl. 604—192 11 Claims

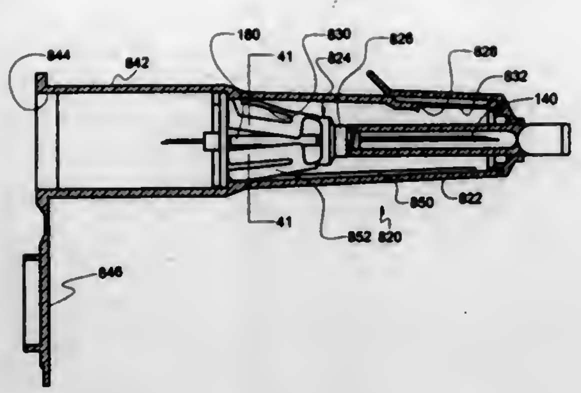
1. A medical fixture for collecting, holding and transferring fluid, including a needle, a body, and a protector case, wherein:
I. said body has:
A. a first end and a second end;
B. a needle mounted on said first end;
II. said protector case slidably contains said body,
THE IMPROVEMENT COMPRISING:
a. said body and said protector case mutually incorporating first and second detent means for holding said body within said protector case, in first and second positions, respectively, whereby:
1. said needle is:
A. extended for use in said first position; and
B. immovably retracted and wholly contained within said protector case in said second position;
b. said body having:
1. an external first rectangular cross-section thereto;
c. said protector case having:
1. an external second rectangular cross-section;
2. an internal third rectangular cross-section, complementary to said external first rectangular cross-section; and
3. a flexible section providing access to said needle in said first position.

5,616,135
SELF RETRACTING MEDICAL NEEDLE APPARATUS AND METHODS

Gale H. Thorne, Bountiful; David L. Thorne, Kaysville, and Charles V. Owen, Highland, all of Utah, assignors to Specialized Health Products, Inc., Bountiful, Utah

Continuation-in-part of Ser. No. 455,514, May 31, 1995, Pat. No. 5,549,708, which is a continuation of Ser. No. 370,728, Jan. 10, 1995, Pat. No. 5,480,385, Ser. No. 436,976, May 8, 1995, Pat. No. 5,487,734, and Ser. No. 484,533, Jun. 7, 1995, Pat. No. 5,542,927, each which is a continuation-in-part of Ser. No. 370,728, Jan. 10, 1995, Pat. No. 5,480,385. This application Dec. 1, 1995, Ser. No. 565,881
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—192 62 Claims

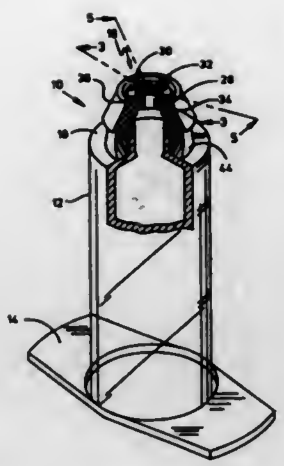
1. Apparatus for transporting and using and then safely retracting a medical needle directly from a patient into a container after use, said apparatus comprising:
the container comprising:
one end through which the medical needle passes when retracted;
another end which is moved apart from the medical needle to permit extension of said apparatus whereby the apparatus and the medical needle are configured for use in a medical procedure;
at least one container based catch for an associated latch whereby said apparatus is securely affixed in the extended configuration;



a portion of the container which is deformable such that a predetermined deformation of the container portion, in combination with a needle support catch, a releasable latch and trigger means, causes the needle to be released for safe retraction into the container;
a needle cover releasibly coupled to the container at the one end, the needle cover in combination with the container providing a protective barrier for contents of the cover and container prior to extending the apparatus;
a medical needle assembly disposed for transport and storage within said cover and container, said assembly comprising:
the medical needle comprising a sharpened point for entry into a patient and a pathway for flow of medical and physiological fluids;
connector hub means comprising:
a secure attachment to the medical needle;
the releasable latch which is integrally joined to the attachment and which is affixed to the needle support catch when the apparatus is extended to secure the medical needle for use in the medical procedure;
the trigger means for releasing the medical needle from being affixed by the needle support catch and releasable latch when acted upon via deformation of the container portion; and
a connecting hub which is integral with said attachment and which affixes said assembly to a linear motion energy storage member;
the needle support catch which is disposed in a predetermined position to thereat be engaged with the releasable latch when the apparatus is extended;
the linear motion energy storage member comprising a first end which is proximal to the connecting hub and a second end which is distal from the connecting hub, said member being attached to the connecting hub at the first end for storing medical needle retraction energy as the other end of the container and needle are moved apart as the apparatus is extended.

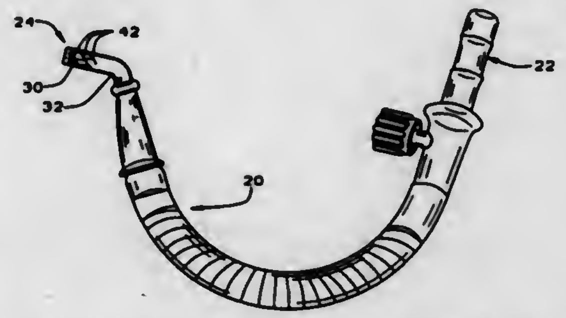
5,616,136
QUICK RELEASE NEEDLE REMOVAL APPARATUS
Richard A. Shillington, Leucadia; Kenneth R. McCord, Encinitas, and Gary H. Sanders, Margaratia, all of Calif., assignors to Med-Safe Systems, Inc., Oceanside, Calif.
Filed Jan. 9, 1995, Ser. No. 370,241
Int. Cl.⁶ A61M *5/00*
U.S. Cl. 604—240 **19 Claims**

1. A quick release needle holder for hypodermic needles comprising:
a tubular barrel having an end and a needle hub receiving socket on said end for receiving a needle hub:
a needle hub receiving socket having a segmented wall defining a plurality of inwardly directed annular jaws for receiving and gripping said needle hub;
means for normally biasing a jaws inwardly to an innermost position for gripping and mounting said needle hub; and



means for releasably biasing said jaws to a needle hub releasing position comprising cam means slidable axially along said jaws.

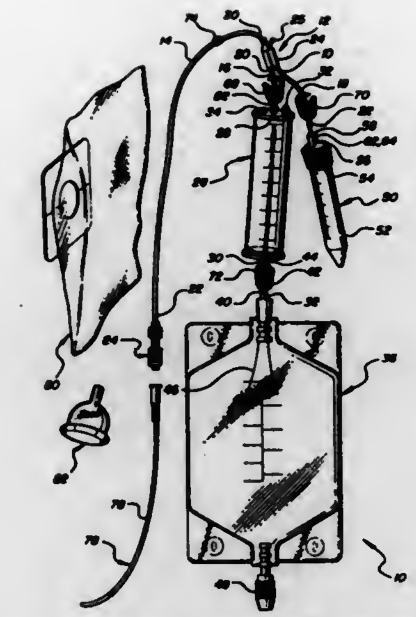
5,616,137
LOW VELOCITY AORTIC CANNULA
Erin J. Lindsay, Dexter, Mich., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Feb. 22, 1995, Ser. No. 392,075
Int. Cl.⁶ A61M *5/00*
U.S. Cl. 604—264 **21 Claims**



1. An improved aortic cannula having a sidewall with a proximal end and a distal end and a lumen therebetween for conducting fluid, the distal end adapted to be inserted into the aorta to deliver fluid to the aorta, the improvement comprising a plurality of helical slits through the sidewall of the distal end of the cannula that widen and narrow proportionally in response to pressure inside the cannula, widening in response to an increase in pressure to reduce fluid exit velocity.

5,616,138
URINE DRAINAGE AND COLLECTION DEVICE
Donald J. Propp, Dewitt, Mich., assignor to Tri State Hospital Supply Corporation, Howell, Mich.
Filed Aug. 29, 1995, Ser. No. 520,761
Int. Cl.⁶ A61M *1/00;* A61F *5/44;* A61B *5/00*
U.S. Cl. 604—317 **20 Claims**

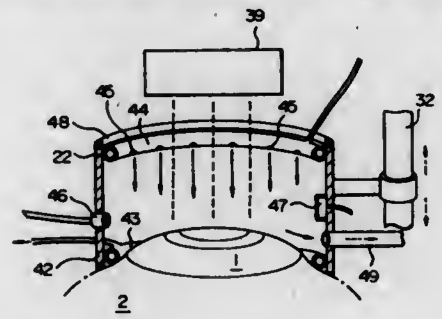
1. A urine drainage and collection device comprising:
a tubing set having first, second, and third tube portions, each tube portion having a first and second end, the first end of each tube portion being connected to and in communication with the first ends of the other two tube portions;
a fluid metering device including an inlet and an outlet, said inlet being connected to the second end of said second tube portion allowing introduction of fluid from said tubing set into said metering device;



a receptacle in serial fluid communication with said fluid metering device outlet receiving fluid from said metering device;
a vented sampling device in fluid communication with said second end of said third tube portion allowing collection of fluid from said tubing set allowing sampling;
a first flow control at an intermediate location of said second tube portion to control fluid flow through said second tube portion;
a second flow control at an intermediate location between said metering device and receptacle to control fluid outflow from said metering device; and
a third flow control at an intermediate location of said of third tube portion to control fluid flow through said third tube portion;
whereby through operation of said flow controls, gravity fluid flow is selectively controllable for metering, draining, and sampling fresh urine.

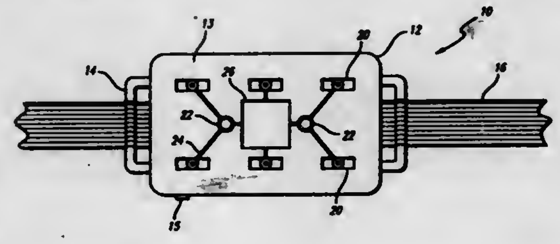
5,616,139
METHOD AND APPARATUS FOR OPERATING A CORNEA
Shinseiro Okamoto, 31-19, Ookayama 1-Chome, Meguro-ku, Tokyo 152, Japan
PCT No. PCT/JP93/01699, § 371 Date Jul. 20, 1994, § 102(e) Date Jul. 20, 1994, PCT Pub. No. WO94/12131, PCT Pub. Date Jun. 9, 1994
PCT Filed Nov. 19, 1993, Ser. No. 256,547
Claims priority, application Japan, Nov. 20, 1992, 4-333857; Dec. 10, 1992, 4-352194; Dec. 15, 1992, 4-353741; Feb. 3, 1993, 5-037277
Int. Cl.⁶ A61F *9/00;* A61N *5/00*
U.S. Cl. 606—4 **36 Claims**

1. A method of operating a cornea of an eye with an ultraviolet



laser beam, comprising the steps of:
cooling the cornea, which is to be ablated, to suppress a photochemical thermal effect of the laser beam and also to lower the activity of cells of the cornea;
sprinkling or spraying a liquid medicine, having such effects as cornea remedy, cure promotion and resolution, onto the cornea at predetermined times before and after and in between ablating the cornea with the laser beam;
separating an epithelium of the cornea; and
removing the excess liquid medicine on the cornea and applying the laser beam to ablate the cornea.

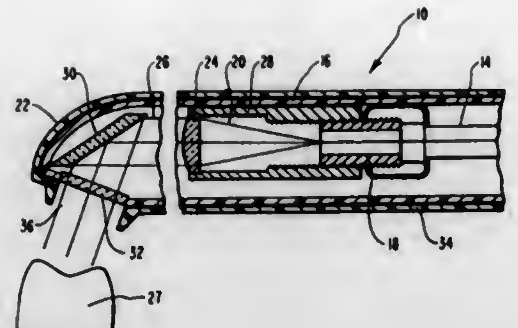
5,616,140
METHOD AND APPARATUS FOR THERAPEUTIC LASER TREATMENT
Marvin Prescott, 833 Moraga Dr., Suite 15, Los Angeles, Calif. 90049
Filed Mar. 21, 1994, Ser. No. 215,263
Int. Cl.⁶ A61N *5/06*
U.S. Cl. 606—10 **28 Claims**



1. A laser therapeutic device for treating a patient comprising:
a flexible bandage;
a power supply, disposed on said flexible bandage;
at least one laser diode disposed in said flexible bandage and operatively connected with said power supply, for generating a laser beam;
programmable control means, operatively connected with said power supply and said at least one laser diode, for selectively enabling said at least one laser diode for a predetermined period of time at a plurality of programmed intervals, said programmable control means including means for storing a treatment regimen for said laser therapeutic device; and
attachment means, connected with said flexible bandage, for attaching said laser therapeutic device to the patient to provide the patient with a laser treatment in accordance with the stored treatment regimen.

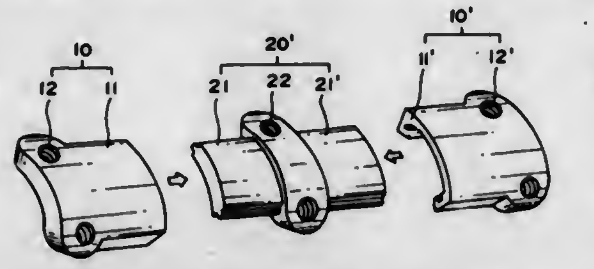
5,616,141
LASER SYSTEM FOR USE IN DENTAL PROCEDURES
Anthony J. Cipolla, Cogan Station, Pa., assignor to Ion Laser Technology, Salt Lake City, Utah
Continuation of Ser. No. 377,678, Jan. 24, 1995, abandoned, which is a continuation of Ser. No. 45,967, Apr. 9, 1993, abandoned. This application Jan. 11, 1996, Ser. No. 584,752
Int. Cl.⁶ A61H *5/06*
U.S. Cl. 606—15 **7 Claims**

1. A method for curing dental composite material having a light activated cure mechanism comprising the step of directing a beam of substantially collimated laser light toward said dental composite



material such that curing of said composite material is initiated, said laser light being selected such that it has a wavelength greater than 400 nm.

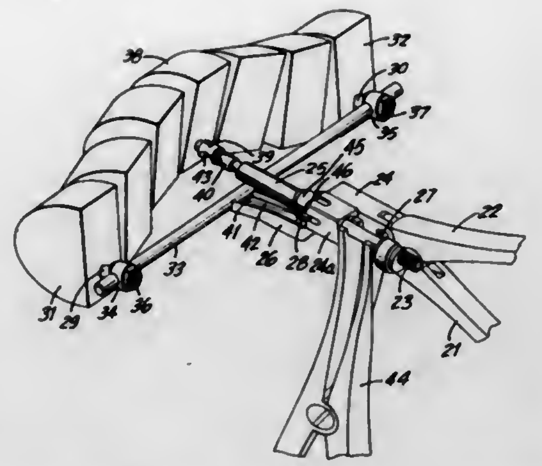
5,616,142
VERTEBRAL AUXILIARY FIXATION DEVICE
Hansen A. Yuan, 5066 Pine Valley Dr., Fayetteville, N.Y. 13064, and Chih-I Lin, 14292 Spring Vista La., Chino Hills, Calif. 91709
Filed Jul. 20, 1994, Ser. No. 277,764
Int. Cl.[6] A61B *17/70;17/80*
U.S. Cl. 606—61 **9 Claims**



1. A vertebral auxiliary fixation device comprising:
a receiving piece having two sliding grooves and a plurality of through holes adapted to engage with a plurality of fastening elements for fastening onto a vertebra intended to be fixed;
a sliding piece having a first tongue-shaped sliding portion slidably received in said sliding grooves of said receiving piece and having a plurality of through holes adapted to engage with a plurality of fastening elements for fastening onto a vertebra intended to be fixed, both said receiving piece and said sliding piece being made of an orthopedic material that is readily assimilated by tissues of a human body; and
a second receiving piece including a second receiving portion provided with two sliding grooves and a plurality of through holes spaced from said second receiving portion, said sliding piece actually including said first and a second tongue-shaped sliding portions which extend in opposite directions with said plurality of through holes being positioned between said first and second tongue-shaped sliding portions, each of said first and second tongue-shaped sliding portions being adapted to slidably receive a respective one of said receiving pieces.

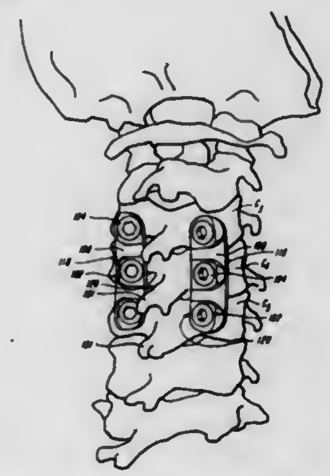
5,616,143
SURGICAL FORCEPS
Johannes F. Schlapfer, Leimen, CH-8750 Glarus, and Martin Hess, Schutzenstrasse 2, CH-4434 Holstein, both of Switzerland
Filed Feb. 6, 1995, Ser. No. 383,877
Int. Cl.[6] A61B *17/56*
U.S. Cl. 606—61 **5 Claims**

1. Surgical forceps for positioning spinal column implants relative to a support rod comprising two operational elements, each



comprising a handgrip and an operating end, pivot means connecting said operational elements to close said operating ends when said handgrips are closed, one of said operating ends comprising means for attachment to a support rod and the other operating end comprises means for connection to an implant whereby when said handgrips are being closed, an implant can be moved to a position on a support rod.

5,616,144
OSTEOSYNTHESIS PLATE SYSTEM
Ronald A. Yapp, Marshfield, and Charles B. Worrick, III, Hanson, both of Mass., assignors to Codman & Shurtleff, Inc., Randolph, Mass.
Continuation of Ser. No. 234,240, Apr. 28, 1994, abandoned, which is a division of Ser. No. 981,281, Nov. 25, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 468,635
Int. Cl.[6] A61B *17/70;17/80*
U.S. Cl. 606—61 **6 Claims**



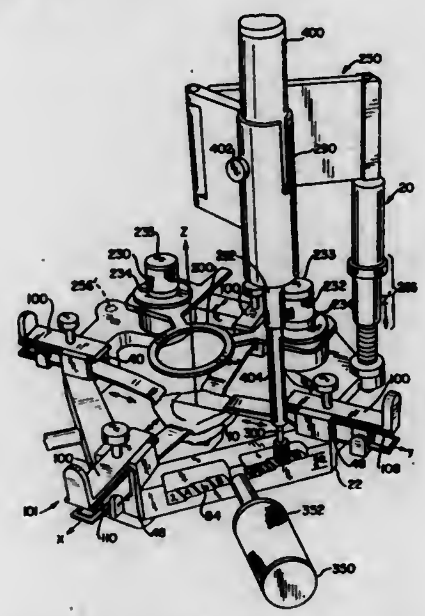
1. An osteosynthesis plate system, comprising
a rigid, elongate plate member adapted to mount upon the posterior surfaces of two or more vertebral bodies to bridge and immobilize adjacent vertebral bodies, the member having a first, bone contacting surface and a second, non-bone contacting surface and the member being curved such that the first surface is concave in the transverse axis of the member, with the apex of the concavity being in the direction of the second surface, and convex in the longitudinal axis of the member such that the first surface is capable of contacting two or more vertebral bodies upon which the plate member is mounted;

at least two screw holes having substantially spherical countersinks and each being adapted to receive a bone screw, the holes being in substantial alignment with one another about the longitudinal axis of the member and being oriented at an angle in the cephalad direction in the range of 15° to 25° and at an angle in the medial or lateral directions in the range of 10° to 20° relative to a thickness axis of the member running from the first surface to the second surface to ensure proper positioning of the bone screw within the hole at a desired cephalad angle and at a desired medial or lateral angle relative to the thickness axis of the member, angular orientation of the screw holes in the medial direction being achieved by a wedge-shaped protrusion integrally formed on the medial side of the plate adjacent each of the screw holes and angular orientation of the screw holes in the lateral direction being achieved by a wedge-shaped protrusion formed on the lateral side of the plate adjacent each of the screw holes; and
a plurality of bone penetrating projections disposed on the first surface of the member.

5,616,145

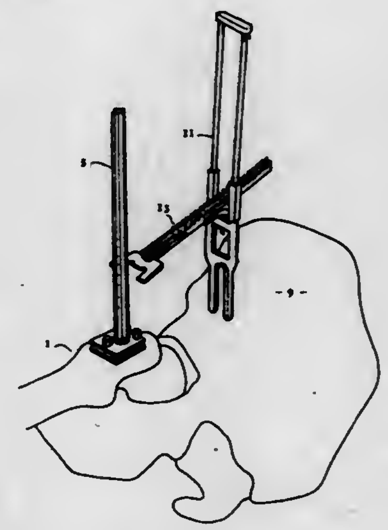
Patent Not Issued For This Number

5,616,146
METHOD AND APPARATUS FOR MACHINING BONE TO FIT AN ORTHOPEDIC SURGICAL IMPLANT
William M. Murray, 5020 Ritter Rd., Suite 211, Mechanicsburg, Pa. 17055-4837
Filed May 16, 1994, Ser. No. 243,508
Int. Cl.[6] A61B *17/56*
U.S. Cl. 606—80 **27 Claims**



1. An apparatus for retaining a bone site in a fixed position for machining the bone comprising:
a) a positioner frame for rigid attachment about the bone site, said positioner frame having a bone clamping mechanism;
b) a pedestal connected to said positioner frame, said pedestal having a contact surface adapted to have the bone site rest thereon, said bone clamping mechanism including a plurality of movable clamps spaced apart from said pedestal and adapted to contact the bone site and secure the bone site to the pedestal, wherein each said clamp is movable in a direction perpendicular to an axis perpendicular to the contact surface and incrementally adjustable in a direction parallel to said axis, and said clamps are adapted to be spaced about the bone site and permit incremental adjustment of the bone site's orientation about two orthogonal axes and moving the bone site in two orthogonal directions relative to said pedestal; and
c) a power tool mount attached to said positioner frame adapted to receive a power tool for machining the bone.

5,616,147
MEANS TO SAFELY DETERMINE THE MUTUAL POSITIONS OF A FEMUR AND AN ILIUM IN HIP SURGERY
Gustaf Gadelius, Stockholm, Sweden, assignor to Meduse Scandinavia AB, Stockholm, Sweden
PCT No. PCT/SE93/01020, § 371 Date Jun. 30, 1995, § 102(e) Date Jun. 30, 1995, PCT Pub. No. WO94/12109, PCT Pub. Date Jun. 9, 1994
PCT Filed Nov. 26, 1993, Ser. No. 446,625
Claims priority, application Sweden, Nov. 26, 1992, 9203579
Int. Cl.[6] A61B *17/58;17/60*
U.S. Cl. 606—102 **2 Claims**



1. Apparatus to determine the mutual positions of a femur head and a pelvis in the course of hip surgery in order to be able to make correct securement of prosthetic hip components, comprising elongated first and second orientation means, means for releasably securing each of said first and second elongated orientation means respectively to a femur head and to a hip pelvis, a gauge rod (13) extending between the two orientation means, means mounting the gauge rod for displacement along one of the orientation means, and means for releasably securing the gauge rod in any of a plurality of adjusted positions longitudinally of said one orientation means, in order to control the mutual parallelism and the distance between the two orientation means.

5,616,148

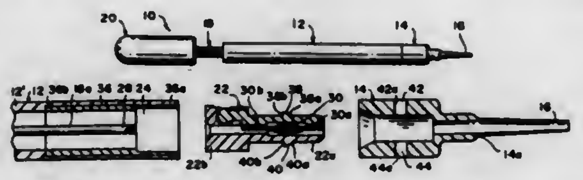
TRANSVERSE HINGED DEFORMABLE INTRAOCULAR LENS INJECTING APPARATUS

Daniel C. Eagles, Capistrano Beach; Vladimir Feingold, Laguna Niguel, and Thomas J. Chamber, Upland, all of Calif., assignors to Staar Surgical Company, Inc., Monrovia, Calif.

Continuation-in-part of Ser. No. 368,792, Jan. 4, 1995, and a continuation-in-part of Ser. No. 345,360, Nov. 18, 1994, and a continuation-in-part of Ser. No. 197,604, Feb. 17, 1994, Pat. No. 5,499,987, and a continuation-in-part of Ser. No. 196,855, Feb. 15, 1994, and a continuation-in-part of Ser. No. 953,251, Sep. 30, 1992, abandoned. This application Oct. 25, 1995, Ser. No. 547,908

Int. Cl.^{6} A61F *9/00*

U.S. Cl. 606—107 **16 Claims**



1. A surgical device for implantation of a deformable intraocular lens through a small incision in the eye, comprising:

a body portion including a lens cartridge receiver;

a lens holding portion connected to said body portion, said lens holding portion comprising a lens delivery passageway and a transverse hinge oriented transversely relative to said lens delivery passageway to allow the lens holding portion to be opened to receive the deformable intraocular lens and then closed for enclosing the lens readied for implantation, said lens holding portion being a lens cartridge configured to be received within said lens cartridge receiver of said body portion;

a nozzle portion connected to said lens holding portion, said nozzle portion comprising a passageway and a tip for insertion through the incision in the eye, said passageway through said lens holding portion extending to said passageway through said nozzle portion; and

a plunger slidably disposed within said body portion for forcing the deformable intraocular lens from the lens holding portion through the nozzle portion into the eye.

5,616,149

BALLOON CATHETER WITH CUTTING EDGE

Peter Barath, W. Hollywood, Calif., assignor to Cedars-Sinai Medical Center, Los Angeles, Calif.

Division of Ser. No. 757,847, Sep. 11, 1991, abandoned, which is a division of Ser. No. 547,957, Jul. 3, 1990, Pat. No. 5,196,024. This application Mar. 28, 1994, Ser. No. 219,997

Int. Cl.^{6} A61B *17/32;* **A61M** *25/10*

U.S. Cl. 606—159 **2 Claims**

1. A device for dilating or recanalizing a vessel comprising:

a catheter guidewire having a shaft, a proximal end and a distal end, and containing at least one groove at the distal end;

an inflatable balloon sitting within the guidewire groove;

a cutting edge mounted on the balloon and situated within the guidewire grove;

a system of lumens in the guidewire shaft connected to the balloon and serving to allow inflation of the balloon such that the cutting edge extends out beyond the guidewire and penetrates into the vessel wall; and

a conventional balloon catheter positioned over the guidewire proximal to the cutting edge such that it can be advanced to dilate the previously cut vessel.

5,616,150

ISATIN-CONTAINING FORMULATIONS FOR COLORING KERATIN-CONTAINING FIBERS

Hinrich Moeller, Monheim, and Horst Hoeffkes, Duesseldorf, both of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP94/01246, § 371 Date Oct. 30, 1995, § 102(e) Date Oct. 30, 1995, PCT Pub. No. WO94/24988, PCT Pub. Date Nov. 10, 1994

PCT Filed Apr. 21, 1994, Ser. No. 535,261

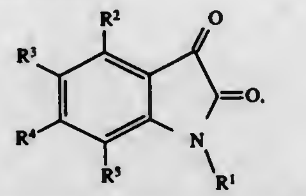
Claims priority, application Germany, Apr. 30, 1993, 43 14 317.2

Int. Cl.^{6} A61K *7/13*

U.S. Cl. 8—405 **20 Claims**

1. A composition for coloring keratin-containing fibers comprising:

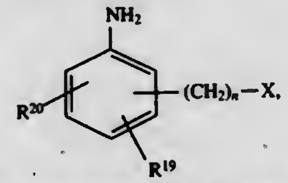
(a) from 0.3 to 65 mmoles of at least one isatin derivative corresponding to formula I:



(I)

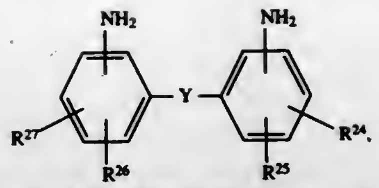
wherein R^1 represents hydrogen, a C_{1-4} alkyl group, a C_{2-4} hydroxyalkyl group, a C_{2-20} acyl group, a phenyl group, and a benzoyl group, and R^2, R^3, R^4 and R^5 independently of one another represent hydrogen, hydroxy, halogen, nitro groups, sulfo groups, carboxyl groups, C_{1-4} alkyl groups, C_{1-4} alkoxy groups or NR^6R^7 groups wherein R^6 and R^7 independently of one another represent hydrogen, C_{1-4} alkyl groups or C_{2-4} hydroxyalkyl groups, and wherein two adjacent groups R^3, R^4 and R^5 may also represent an alkylenedioxy group containing 1 to 4 carbon atoms,

(b) from 0.3 to 65 mmoles of at least one compound selected from the group consisting of: (i) primary aliphatic amines selected from the group consisting of 2-methoxyamine, 2-ethoxyethylamine, 2-(2-aminoethoxy) -ethanol, 2, 3-dihydroxypropylamine, 2-aminopropane-1,3-diol, 2-amino-2-methyl propane-1,3-diol, 2-amino-2-hydroxymethyl propane-1,3-diol, tetrahydroxy-pentylamines, pentahydroxyhexylamines, 1,2-diaminoethane, 1,2-diaminopropane, 1,3-diaminopropane, 1,3-diamino- 2-propanol, 2-(2-aminoethylamino) -ethylamine, 2- (2-aminoethylamino)-ethanol, 3-(2-aminoethylamino)-propylamine, 3-(2-aminoethylamino)-propanol, and mixtures thereof; (ii) indoline, indole, pyrrole, 1-methyl pyrrole, 2-methyl pyrrole, 3-methyl pyrrole, 2,5-ethyl pyrrole, pyrazole, 3-methyl pyrazole, imidazole, indoxyl acetate, tetrahydroquinoline, tetrahydroisoquinoline, 2-indole carboxylic acid, 3-indolyl acetic acid, 4-dimethylaminopyridine, 2,6-dihydroxy-3,4-dimethyl pyridine, pyrrole-2-carboxylic acid, 2-methyl resorcinol, and mixtures thereof; (iii) aromatic carboxylic and sulfonic acids with a primary amino group; (iv) aniline derivatives corresponding to formula III;



(III)

wherein n is an integer from 1 to 4, X is a hydroxy or amino group and R^{19} and R^{20} represent hydrogen, C_{1-4} alkyl groups, C_{2-4} hydroxyalkyl groups, C_{2-4}-(C_{1-4} alkoxy)-alkyl groups, $NR^{21}R^{22}$ groups or OR^{23} groups, wherein R^{21}, R^{22} and R^{23} independently of one another represent hydrogen, C_{1-4} alkyl groups, C_{2-4} hydroxyalkyl groups or C_{2-4}-(C_{1-4} alkoxy)-alkyl groups, with the proviso that at least one of the groups R^{19} and R^{20} is a group $NR^{21}R^{22}$ or OR^{23}; (v) dianiline derivatives corresponding to formula IV:



(IV)

wherein Y represents a direct bond, CO, SO, O, S or O—(CH_2—Z—CH_2—O)$_m$, wherein Z represents a direct bond, CH_2, CHOH or $CH_2OC_2H_4OCH_2$ and m is an integer from 1 to 4, a saturated alkylene group having 1–4 carbon atoms which may be substituted with an OH group, an unsaturated alkylene group having 1 to 4 carbon atoms which may be substituted with an OH group, and wherein R^{24}, R^{25}, R^{26} and R^{27} represent hydrogen, C_{1-4} alkyl groups, C_{2-4} hydroxyalkyl groups, C_{2-4}-(C_{1-4} alkoxy)-alkyl groups, $NR^{28}R^{29}$ groups or OR^{30} groups, wherein R^{28}, R^{29} and R^{30} independently of one another represent hydrogen, C_{1-4} alkyl groups, C_{2-4} hydroxyalkyl groups or C_{2-4}-(C_{1-4} alkoxy)-alkyl groups, with the proviso that at least one of the groups R^{24} and R^{25} and one of the groups R^{26} and R^{27} is a $NR^{28}R^{29}$ group or OR^{30} group; (vi) non-aromatic unsubstituted or amino-(C_{1-4})-alkyl-, hydroxy-(C_{1-4})-alkyl- or carboxyl-substituted heterocycles; and (vii) amino sugars, all amounts being based on 100 grams of said composition; and

(c) a water-containing carrier.

5,616,151

METHOD FOR ADJUSTING PH IN TEXTILE PROCESSING SOLUTIONS WITH UREA HYDROCHLORIDE SALT

R. Richard Sargent, Rome, and Jeffrey R. Alender, Marietta, both of Ga., assignors to Peach State Labs, Inc., Rome, Ga.

Continuation of Ser. No. 90,797, Jul. 12, 1993, abandoned, which is a division of Ser. No. 919,523, Jul. 24, 1992, Pat. No. 5,234,466. This application Apr. 11, 1995, Ser. No. 419,854

Int. Cl.^{6} D06P *1/00;* **D06M** *13/435*

U.S. Cl. 8—636 **8 Claims**

5. A method for lowering pH in a textile finishing solution comprising adding to the textile finishing solution a pH lowering effective amount of urea hydrochloride salt, having an equivalents ratio of urea to hydrochloric acid between 1:4 and 4:1, wherein the finishing solution contains at least one finishing chemical selected from the group consisting of stain blocking agents, fluorochemicals, fabric softeners, stabilizers, UV absorbers, optical brighteners, sewing assist agents, antistatic agents, waterproofing agents, durable resins, starches, and sizes.

5,616,152

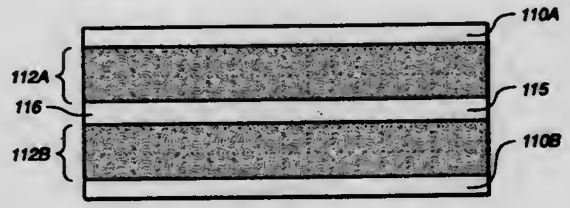
METHOD OF PREPARING ELECTRODES

David A. Velasquez, Fairfield, Calif.; Douglas B. Holmes, Lexington, and E. Lawrence Gogolin, Sudbury, both of Mass., assignors to Valence Technology, Inc., Henderson, Nev.

Filed Apr. 10, 1996, Ser. No. 631,715

Int. Cl.^{6} H01M *4/04*

U.S. Cl. 29—623.5 **14 Claims**



1. A method of fabricating electrodes suitable for use in electrochemical cells which comprises the steps of:

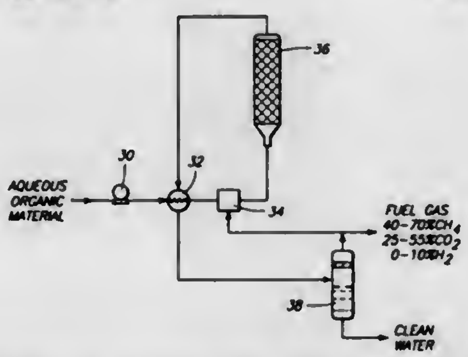
(a) providing an elongated metal sheet having two surfaces;

(b) perforating a portion of the metal sheet to form a partially perforated metal sheet having a solid, non-perforated border along its length;
(c) partially covering at least one surface of the partially perforated metal sheet with an electrode film;
(d) removing discrete sections from the solid, non-perforated border to form a plurality of electrode tabs; and
(e) cutting the partially perforated metal sheet to form a plurality of electrodes each having an electrode tab.

5,616,153
COPOLYMER DISPERSANTS VIA VINYL TERMINATED PROPENE POLYMERS
Carl A. Mike, Chesterfield; Joseph J. Valcho, Richmond, and Daniel Yuan-Fu Yu, Midlothian, all of Va., assignors to Ethyl Corporation, Richmond, Va.
Filed Oct. 3, 1995, Ser. No. 538,310
The portion of the term of this patent subsequent to Jun. 16, 2013, has been disclaimed.
Int. Cl.[6] C10L *1/18*
U.S. Cl. 44—331 **62 Claims**

1. A copolymer of an unsaturated acidic reactant and an atactic propene polymer, said propene polymer having a major amount of polymer chains containing terminal vinyl unsaturation, having a number average molecular weight of at least 500, and comprising at least 70 weight per cent propene and 0 to 30 weight per cent of at least one olefin selected from the group consisting of C_2 and C_4 to C_{10} olefins, and said unsaturated acidic reactant comprising at least one unsaturated C_4 to C_{10} carboxylic acid or anhydride or acid derivative.

5,616,154
METHOD FOR THE CATALYTIC CONVERSION OF ORGANIC MATERIALS INTO A PRODUCT GAS
Douglas C. Elliott; L. John Sealock, Jr., and Eddie G. Baker, all of Richland, Wash., assignors to Battelle Memorial Institute, Richland, Wash.
Continuation of Ser. No. 893,701, Jun. 5, 1992, abandoned. This application Apr. 15, 1994, Ser. No. 227,892
Int. Cl.[6] C10J *3/00*
U.S. Cl. 48—197 R **41 Claims**

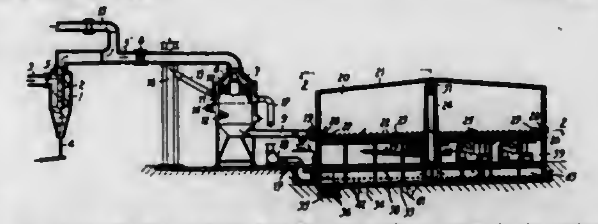


1. A method for converting organic material into a product gas comprising:
providing a liquid reactant mixture containing liquid water and liquid organic material within a pressure reactor;
providing a metal catalyst within the pressure reactor, the metal catalyst comprising a first catalyst, the first catalyst comprising a reduced metal selected from the group consisting of ruthenium, iridium, rhodium and mixtures thereof; and
maintaining the liquid reactant mixture and metal catalyst in the pressure reactor at temperature and pressure conditions of from about 300° C. to about 450° C. and at least 130 atmospheres for a period of time, the temperature and pressure conditions being effective to maintain the reactant mixture substantially as liquid for the period of time, the period of time as liquid being sufficient to allow the metal catalyst to catalyze a reaction of the liquid organic material to produce a product gas composed primarily of methane, carbon dioxide and hydrogen.

5,616,155
COATED FABRIC SUITABLE FOR PREPARING RELEASABLY ATTACHABLE ABRASIVE SHEET MATERIAL
Francis J. Kronzer, Marietta, Ga., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Division of Ser. No. 151,228, Nov. 12, 1993, abandoned. This application May 26, 1995, Ser. No. 452,460
Int. Cl.[6] B24B *1/00*
U.S. Cl. 51—295 **6 Claims**

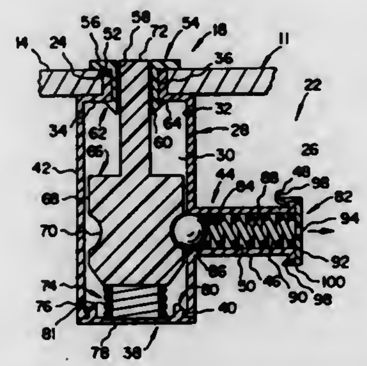
1. A releasably attachable abrasive sheet material which consists of:
a fabric having a first surface engagable by hooks and a second surface, wherein the first surface is engagable by hooks as a consequence of the construction of the fabric;
a continuous coating of a synthetic polymeric composition bonded to said second surface; and
a layer of abrasive particles bonded to said coating of synthetic polymeric composition.

5,616,156
DEVICE FOR THE CLEANSING OF THE FLUE GASES FROM WASTE INCINERATION INSTALLATIONS
Marc Keersmaekers, Dompel 19, 2200 Herentals, Belgium
Filed Apr. 7, 1995, Ser. No. 418,351
Claims priority, application Belgium, Apr. 11, 1994, 9400371
Int. Cl.[6] B01D *50/00*
U.S. Cl. 55—269 **13 Claims**



1. Device for the cleansing of flue gases from waste incineration installations, comprising:
(a) a cyclone separator connected to said incineration installation for the collection of a large portion of flyash from the flue gases to provide cleaned flue gases and having an extraction pipe,
(b) a heat exchanger connect to said cyclone separator for reduction of the temperature of the cleaned flue gases collected from the cyclone separator and the reheating of the cleaned flue gases,
(c) a gravitation chamber connected to said heat exchanger for reducing a speed of the incoming cleaned flue gases and for the gravitational separation and precipitation of the flyash from the cleaned flue gases,
(d) a scraper installed against a bottom of said gravitation chamber for scraping together and removing the flyash precipitated in the gravitation chamber,
(e) driving means for propelling said scraper,
(f) an extraction pipe provided in the bottom of said gravitation chamber for the removal of the flyash,
(g) an outlet with holes provided in said gravitation chamber for guiding rising flue gases out,
(h) a cooling chamber having an outlet pipe and provided with cooling elements connected to said gravitation chamber for the refrigeration of the incoming cleaned flue gases,
(i) heating elements provided in the cooling chamber for extracting a condensate from the refrigerated incoming cleaned flue gases,
(j) a catchment sump provided in a floor of the cooling chamber for the collection of the condensate,
(k) a pump for removing the condensate in the catchment sump to a water treatment installation, and
(l) an extractor connected to the cooling chamber and intended for the removal of the cleaned and cooled flue gases in the cooling chamber.

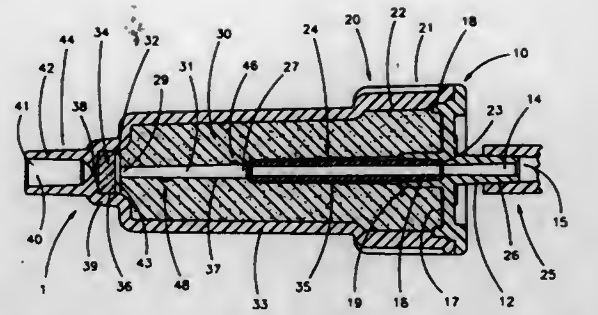
5,616,157
VISIBLE RESTRICTED FILTER INDICATOR
Donald R. Mead, and Deborah V. Beebe, both of Jupiter, Fla., assignors to Florida Pneumatic Manufacturing Co., Jupiter, Fla.
Filed Nov. 14, 1995, Ser. No. 557,274
Int. Cl.[6] B01D *46/00*
U.S. Cl. 55—274 **17 Claims**



1. An indicator for signalling restricted flow of air through an air filter mounted in a filter assembly comprising:
a housing including a central space, a side wall adjacent the central space, an end wall adjacent the central space, an end inlet in said end wall, and a side outlet in said side wall;
a mounting means for mounting said end inlet of said housing to a mounting aperture in the filter assembly located downstream of the filter whereby said housing is mounted inside the filter assembly with said housing exposed to a suction pressure in the filter assembly which moves air through the filter;
a pop-up member located in said central space of said housing, said pop-up member including a signal portion which extends adjacent said end inlet;
a moving means for moving said pop-up member in said housing between a non-signalling position where said signal member does not extend noticeably through said end inlet and a signalling position where said signal portion extends noticeably through said end inlet and is easily viewed;
a pressure responsive releasing means in said side outlet for initially holding said pop-up member in the non-signalling position and preventing movement by said moving means and for subsequently releasing said pop-up member when the suction pressure in the side outlet drops below a predetermined value relative to an ambient air pressure outside of the filter assembly.

5,616,158
MOISTURE ABSORBING MEDIA FILTER
Bruce S. Biendarra, West Bend, and Robert H. Ricciardelli, Waukesha, both of Wis., assignors to Pryon Corporation, Menomonee Falls, Wis.
Filed May 15, 1995, Ser. No. 440,943
Int. Cl.[6] B01D *35/143*
U.S. Cl. 55—275 **21 Claims**

8. A moisture absorbing media filter comprising:
a pellet filter;
a housing having a first end and a second end;



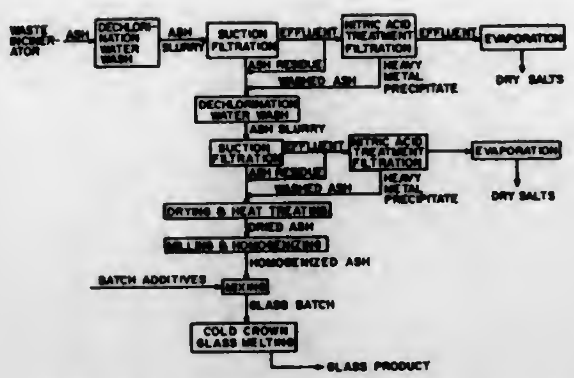
an outlet nozzle protruding from said second end of said housing, said housing having an opening at said second end which is sized to receive said pellet filter;
a moisture absorbing material which is inserted inside said housing, said moisture absorbing material having an opening through the length thereof;
an end cap having a first end and a second end, said end cap having an inlet nozzle protruding from said first end thereof, said second end of said end cap being structured to seal said first end of said housing; and
a predetermined amount of low vapor pressure, water soluble liquid, said low vapor pressure, water soluble liquid being applied to said opening in said moisture absorbing material, wherein said predetermined amount of low vapor pressure, water soluble liquid decreasing the amount of gases absorbed by said moisture absorbing material while still absorbing a sufficient amount of moisture.

5,616,159
METHOD OF FORMING HIGH PURITY FUSED SILICA HAVING HIGH RESISTANCE TO OPTICAL DAMAGE
Roger J. Araujo, Horseheads; Nicholas F. Borrelli, Elmira; Christine L. Hoaglin, Campbell, and Charlene Smith, Corning, all of N.Y., assignors to Corning Incorporated, Corning, N.Y.
Filed Apr. 14, 1995, Ser. No. 422,104
Int. Cl.[6] C03B *19/01*
U.S. Cl. 65—17.4 **11 Claims**

1. A method of forming an optical member or blank for use with light having a wavelength range shorter than about 300 nm, the method consisting essentially of:
forming a blank from high-purity synthetic silica glass containing OH groups in an amount no greater than 10 wt. ppm; and
doping the formed blank with molecular hydrogen to increase the resistance of the optical member to laser damage.

5,616,160
PROCESS FOR VITRIFYING INCINERATOR ASH
M. Grayson Alexander, Newfield; John L. Stempin, Beaver Dams, and Dale R. Wexell, Corning, all of N.Y., assignors to Corning Incorporated, Corning, N.Y.
Continuation of Ser. No. 66,989, May 24, 1993, abandoned. This application Jan. 27, 1995, Ser. No. 379,149
Int. Cl.[6] C03B *3/02*
U.S. Cl. 65—27 **19 Claims**

1. A method of converting halogen-containing incinerator ash into a stable homogeneous single-phase glass, said method comprising:
(a) pretreating the incinerator ash so that the resulting pretreated ash contains less than about 3% halogen and less than about 3% C, by weight;
(b) mixing the pretreated ash portion with any additives necessary to make up a vitrifiable batch mixture which, when melted and cooled, will form a stable homogeneous, single-phase glass body, wherein the glass body is comprised of, expressed in terms of weight percent, about 47–76% SiO_2,



0.8–29% Al_2O_3, 3.4–33.0% CaO; 0–25% R_2O, wherein R_2O is selected from the group consisting of Na_2O, Li_2O, and K_2O, 0–5% Fe_2, O_3, 0– 18% B_2O_3, 0–7% ZrO_2, 0–7% TiO_2, 0–10% MO, wherein MO is selected from the group consisting of MgO, BaO, ZnO or SrO, 0–8% of at least one member selected from the group consisting of PbO, CdO, Cr_2O_3, CuO and NiO, 0–4% SO_3 and 0–4% Cl+F;

c) melting the vitrifiable batch mixture; and,

d) cooling the vitrifiable mixture to form a stable homogeneous single-phase glass body.

5,616,161

MACHINING CHAMBER FOR A GLASS COMPRESSON MOLDING MACHINE

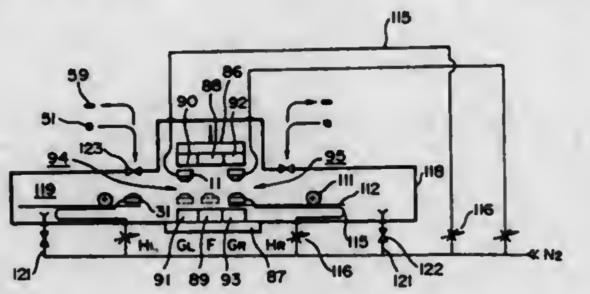
Nobuo Morikita, Chiba, Japan, assignor to Sumitomo Heavy Industries, Ltd., Japan

Division of Ser. No. 69,273, May 28, 1993. This application Jan. 31, 1995, Ser. No. 381,068

Claims priority, application Japan, Jun. 2, 1992, 4-141379; Jun. 2, 1992, 4-141380; May 14, 1993, 5-112753

Int. Cl.⁶ C03B *11/00*

U.S. Cl. 65—157 **2 Claims**



1. A machining chamber of a glass compression molding machine comprising:

(a) a molding die assembly composed of an upper molding die and a lower molding die for forming a molding from a preform, each of said upper and lower dies defining one of a mating pair of molding surfaces and at least one of said upper and lower molding dies having an annular nozzle surrounding its molding surface;

(b) a clamping/heating/compressing station for clamping and heating the dies and for compressing the preform to form the molding;

(c) a cooling station for gradually cooling the molding;

(d) a preform-injecting/molding-ejecting station for loading said preform onto said lower molding die and for ejecting a molding from said lower die;

(e) a sealed casing enclosing said clamping/heating/compressing station, said cooling station, said preform-injecting/molding-ejecting station and said molding die assembly;

(f) a shutter disposed in said sealed casing at a position corresponding to said preform-injecting/molding-ejecting station for selectively opening said sealed casing;

(g) first inactive-gas supply means for supplying inactive gas via said annular nozzle to a region between said upper molding die and said lower molding die to produce a region of low level oxygen; and

(h) second inactive-gas supply means for directly supplying inactive gas into said sealed casing, said casing containing a higher level of oxygen than said low level in areas other than said region.

5,616,162

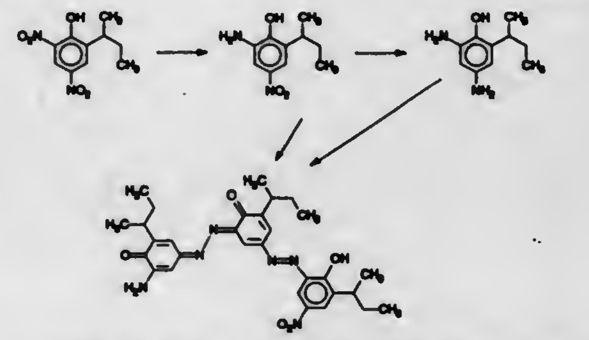
BIOLOGICAL SYSTEM FOR DEGRADING NITROAROMATICS IN WATER AND SOILS

Donald L. Crawford, Moscow, Id.; Todd O. Stevens, Richland, Wash., and Ronald L. Crawford, Moscow, Id., assignors to Idaho Research Foundation, Inc., Moscow, Id.

Continuation of Ser. No. 229,462, Apr. 18, 1994, abandoned, which is a continuation of Ser. No. 96,735, Jul. 23, 1993, Pat. No. 5,387,271, which is a continuation-in-part of Ser. No. 508,056, Apr. 11, 1990, abandoned. This application Oct. 20, 1995, Ser. No. 545,903

Int. Cl.⁶ C02F *11/08, 3/00;* **C05G** *3/00*

U.S. Cl. 71—9 **32 Claims**



1. A method for biodegrading a nitroaromatic compound present as a contaminant in a sample, comprising the steps of:

(a) providing a sample comprising a nitroaromatic compound;

(b) adding to the sample an inoculum comprising a nitroaromatic-degrading microorganism that degrades the nitroaromatic compound under anaerobic conditions, wherein the nitroaromatic-degrading microorganism is of a genus selected from the group consisting of Klebsiella, Enterobacter, Bacteroides, Fusobacterium, Desulfovibrio, Desulfuromonas, Clostridium, Desulfotomaculum, Sporosarcina, Lactobacillus, Bacillus, Pseudomonas, Veillonella, Acidaminococcus, Methanobacterium, Methanococcus, and Archaeoglobus;

(c) producing anaerobic conditions in the sample; and

(d) maintaining the anaerobic conditions in the sample for a time that is sufficient for the nitroaromatic-degrading microorganisms to degrade the nitroaromatic compound.

5,616,163

METHOD FOR PROCESSING ANIMAL EXCREMENT AND LIQUID MANURE

Georg Halfter, 7889 Grenzach-Wyhlen, Grenzach-Wyhlen, Germany

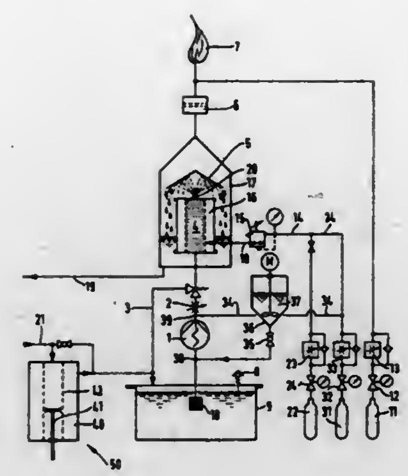
Continuation of Ser. No. 64,171, Aug. 23, 1993, abandoned. This application Apr. 12, 1995, Ser. No. 421,466

Claims priority, application Germany, Sep. 20, 1991, 41 31 296.1

Int. Cl.⁶ C05F *3/00*

U.S. Cl. 71—15 **8 Claims**

1. Method for producing chemically bound, nonfugitive fertilizer by processing liquid material consisting of animal excrement and liquid manure, said liquid material containing unbound or dissolved ammonia, and for themally degrading the remaining unreacted ammonia, residual methane, and gaseous odorous com-



pounds selected from skatoles and mercaptanes, said method comprising adding to said liquid material gypsum and carbon dioxide whereby said unbound and/or dissolved ammonia contained in the liquid materials is combined with said gypsum, thereby being transformed by a chemical reaction into a nitrogen fertilizer, and the liquid materials are stripped off from the ammonia traces and any volatile substances by passing said gaseous materials through oxygen and then combusting the stripping exhaust thermally, thermal-catalytically or with a fuel gas.

5,616,164

METHODS FOR MAKING METAL PARTICLE SPHERICAL AND REMOVING OXIDE FILM SOLDER PASTE AND SOLDERING METHOD

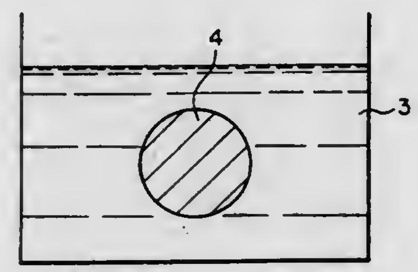
Masayuki Ochiai; Kaoru Hashimoto; Toshimi Kawahara, and Mayumi Ōsumi, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 34,125, Mar. 18, 1993, abandoned. This application Jan. 3, 1995, Ser. No. 367,775

Claims priority, application Japan, Mar. 19, 1992, 4-063031

Int. Cl.⁶ B22F *1/00;* **C23G** *5/00*

U.S. Cl. 75—342 **14 Claims**



4. A method for making a solder metal particle spherical, comprising immersing a solder metal particle having an oxide film on a surface thereof in a heating medium consisting essentially of a rosin, hardened castor oil and an organic solvent without any activator, the solder metal particle having a melting point and the organic solvent having a boiling point higher than the melting point of the solder metal particle, and then heating the solder metal particle in the heating medium to a temperature above the melting point of the solder metal particle, thereby removing the oxide film while substantially preventing melting together or unifying a plurality of said solder metal particles resting on the bottom of a tank containing the heating medium.

5,616,165

METHOD FOR MAKING GOLD POWDERS BY AEROSOL DECOMPOSITION

Howard D. Glicksman, Wilmington, Del.; Toivo T. Kodas, and Diptarka Majumdar, both of Albuquerque, N.M., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del., and University of New Mexico, Albuquerque, N.M.

Filed Aug. 25, 1995, Ser. No. 519,834

Int. Cl.⁶ B25F *9/24*

U.S. Cl. 75—369 **6 Claims**

1. A method for the manufacture of substantially fully densified, finely divided, particles of gold comprising the sequential steps:

A. Forming an unsaturated solution of a thermally decomposable gold containing compound in a thermally volatilizable solvent;

B. Forming an aerosol consisting essentially of finely divided droplets of the solution from step A dispersed in a carrier gas, the droplet concentration being below a concentration where collisions and subsequent coalescence of the droplets results in a 10% reduction in droplet concentration;

C. Heating the aerosol to an operating temperature of at least 500° C. but below the melting point of gold by which (1) the solvent is volatilized, (2) the gold containing compound is decomposed to form pure gold particles and (3) the gold particles are densified; and

D. Separating the particles of gold from the carrier gas, reaction by-products and solvent volatilization products.

5,616,166

TAPPING METHOD FOR BLAST FURNACE

Masao Fujita, and Osamu Iida, both of Kurashiki, Japan, assignors to Kawasaki Steel Corporation, Hyogo-ken, Japan

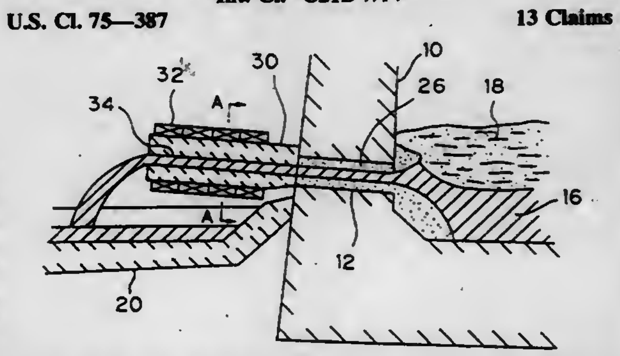
PCT No. PCT/JP94/02240, § 371 Date Jul. 26, 1995, § 102(e) Date Jul. 26, 1995, PCT Pub. No. WO95/18237, PCT Pub. Date Jul. 6, 1995

PCT Filed Dec. 27, 1994, Ser. No. 495,466

Claims priority, application Japan, Dec. 28, 1993, 5-336077; Dec. 28, 1993, 5-336078; Dec. 28, 1993, 5-336079

Int. Cl.⁶ C21B *7/14*

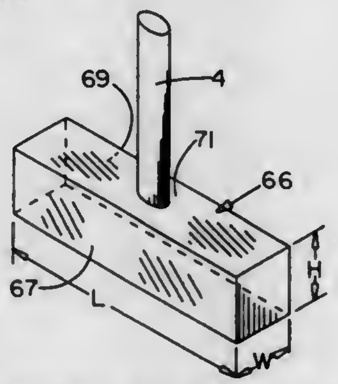
U.S. Cl. 75—387 **13 Claims**



1. A method for tapping a blast furnace comprising the steps of: providing an electromagnetic energy supply body around an outer periphery of a conducting pipe;

connecting said conducting pipe to an external side of a molten iron taphole of said blast furnace;
flowing molten iron and molten slag through said conducting pipe;
applying electromagnetic energy from said electromagnetic energy supply body to adjust the flow of said molten iron and of said molten slag; and
discharging said molten iron and said molten slag separately.

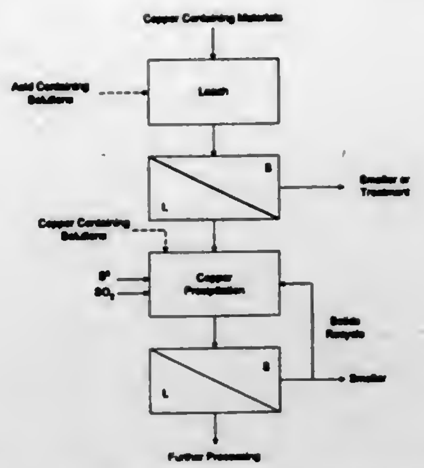
5,616,167
METHOD FOR FLUXING MOLTEN METAL
C. Edward Eckert, 260 Lynn Ann Dr., New Kensington, Pa. 15068
Continuation-in-part of Ser. No. 548,087, Oct. 25, 1995, which is a continuation-in-part of Ser. No. 317,539, Oct. 4, 1994, Pat. No. 5,462,581, which is a continuation-in-part of Ser. No. 91,608, Jul. 13, 1993, Pat. No. 5,364,450. This application Feb. 26, 1996, Ser. No. 605,522
The portion of the term of this patent subsequent to Nov. 15, 2011, has been disclaimed.
Int. Cl.[6] C22B *21/06*
U.S. Cl. 75—678 **22 Claims**



1. An improved method for processing a body of molten aluminum using an impeller, the method including increasing shear forces in the body of molten aluminum and reducing vortex formation, the method comprising the steps of:
(a) providing a body of molten aluminum;
(b) projecting an impeller on a shaft into said body, said impeller comprising a rectangular-shaped body having a first rectangular-shaped face and a second rectangular-shaped face disposed substantially opposite said first face, said faces substantially parallel to said shaft and defined by a length L and a height H wherein said length L is greater than said height H;
(c) processing said body by:
(i) rotating said impeller in one direction; and thereafter
(ii) reversing said direction of rotation of said impeller to a counter direction; and
(iii) the direction of rotation of said impeller being reversed periodically to provide increased shear forces in said body.

5,616,168
HYDROMETALLURGICAL PROCESSING OF IMPURITY STREAMS GENERATED DURING THE PYROMETALLURGY OF COPPER
Philip J. Gabb, Salt Lake City, Utah, and J. Philip Evans, Georgetown, Canada, assignors to Kennecott Utah Copper Corporation, Salt Lake City, Utah
Continuation-in-part of Ser. No. 202,819, Feb. 28, 1994, Pat. No. 5,443,622. This application Mar. 24, 1995, Ser. No. 409,661
Int. Cl.[6] C22B *3/08*
U.S. Cl. 75—718 **21 Claims**

1. A hydrometallurgical process for the recovery of primary metal values and the capture and conversion of metal impurities to



states that are acceptable for disposal to the environment from impurity streams generated during the pyrometallurgy of copper, the process comprising the steps of:
A. Acid leaching solids containing copper and at least one metal species selected from the group consisting of precious metals, bismuth, arsenic, iron and cadmium to produce an acid leach slurry of a first liquid component containing soluble metal species and a solid component depleted of the metal species;
B. Separating the acid leach slurry into a first liquid fraction comprising at least part of the first liquid component, and a residual fraction comprising the solids component;
C. Transferring the first liquid fraction to a copper precipitation stage, and admixing the first liquid fraction with a source of sulfur, a source of sulfur dioxide, and recycled copper sulfide, to form a slurry of precipitated copper sulfide and a second liquid component depleted of copper;
D. Separating the slurry of (C) into a second liquid fraction comprising a portion of the second liquid component, and a residual fraction comprising the precipitated copper sulfide and the remaining second liquid component; and
E. Recycling a portion of the precipitated copper sulfide to the copper precipitation stage.

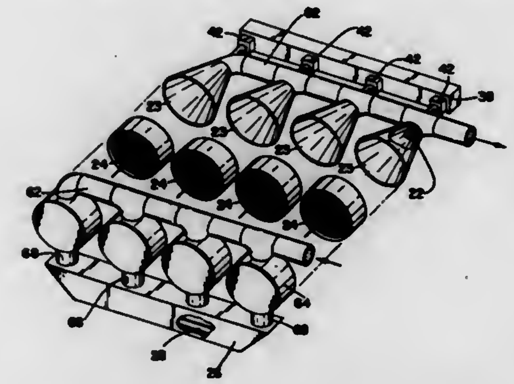
5,616,169
SEAL-FREE AND FRAME-FREE ODOR AND/OR POLLUTANT FILTER
Ernest de Ruiter, Höhenstrasse 57a, D-51381 Leverkusen, and Jonas Tornblom, Erkrath, both of Germany, assignors to Hasso von Blucher, Erkrath, and Ernest de Ruiter, Leverkusen, both of Germany
Filed Jun. 19, 1995, Ser. No. 491,631
Claims priority, application Germany, Jun. 17, 1994, 44 21 217.8; Mar. 31, 1995, 195 12 028.0
Int. Cl.[6] B01D *53/04*
U.S. Cl. 95—90 **34 Claims**

1. A process for filtering air in air supply duct, comprising the step of installing a self-supporting elastic adsorption filter bed under compression in the air supply duct in a seal-free and frame-free manner, the filter bed being made of a highly air-permeable substrate material, an adsorbent fixed to the substrate material in an amount of 50 to 400 g/l, and an adhesive mass for fixing the adsorbent to the substrate material, the substrate material having a compressibility of at least 2% under a pressure of 1 to 10N/cm^2.

5,616,170
ADSORPTIVE SEPARATION OF NITROGEN FROM OTHER GASES
Adeola F. Ojo, Chatham; Frank R. Fitch, Bedminister, and Martin Bülow, Basking Ridge, all of N.J., assignors to The BOC Group, Inc., New Providence, N.J.
Filed Aug. 11, 1995, Ser. No. 515,184
Int. Cl.[6] B01D *53/047*
U.S. Cl. 95—101 **25 Claims**

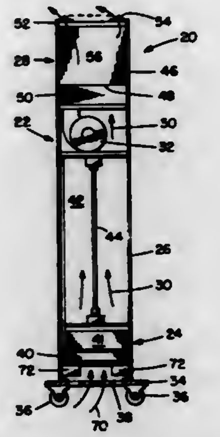
6. A method of separating nitrogen from a gas mixture comprising passing said gas mixture through at least one adsorption zone containing an adsorbent selected from chabazite, offretite, erionite, levyne, mordenite, gmelinite, zeolite A, zeolite T, EMC-2, ZSM 3, ZSM-18, ZK-5, zeolite L, beta zeolite, and mixtures of these whose cations comprise about 50 to about 95% lithium, about 4 to about 50% trivalent ions selected from aluminum, scandium, gallium, iron (III), chromium (III), indium, yttrium, single lanthanides, mixtures of two or more lanthanides, and mixtures of these, and 0 to about 15% of residual exchangeable ions selected from sodium, potassium, ammonium, calcium, strontium, magnesium, barium, zinc, copper II and mixtures of these, thereby preferentially adsorbing nitrogen from said gas mixture.

5,616,171
PULSE JET FILTER CLEANING SYSTEM
Marty A. Barris, Lakeville; Thomas M. Weik, Deephaven; Kelly C. Robertson, Rosemont; Donald R. Monson, W. St. Paul; Jim C. Rothman, Burnsville, and Pete A. Betts, Osakis, all of Minn., assignors to Donaldson Company, Inc., Minneapolis, Minn.
Continuation of Ser. No. 178,873, Jan. 7, 1994, abandoned. This application Oct. 30, 1995, Ser. No. 550,283
Int. Cl.[6] B01D *46/04*
U.S. Cl. 95—280 **15 Claims**



1. A method for cleaning at least two air filters, each filter having an associated horizontal duct portion, having air flow from above the filters and swept down, and through the filters in a substantially horizontal direction, comprising the steps of:
(a) producing a reverse pulse of air on an outlet side of the filters during continued air flow;
(b) directing the reverse pulse of air substantially horizontally onto the outlet side of two or more of the filters in a predetermined pattern; and
(c) sweeping loosened debris from an inlet side of the filter downward to a plurality of horizontal duct portions, and down through a single vertical duct from the plurality of horizontal duct portions and collecting the loosened debris.

5,616,172
AIR TREATMENT SYSTEM
Mark A. Tuckerman, Haddam; Russell P. Knuth, Killingworth, and William F. Carey, West Hartford, all of Conn., assignors to Nature's Quarters, Inc.
Filed Feb. 27, 1996, Ser. No. 607,725
Int. Cl.[6] B03C *3/016*
U.S. Cl. 96—16 **14 Claims**



14. A self contained air movement system for air purification and infection control comprising:
an elongated upright enclosed housing including a base module, sidewalls, and an upper module through which an air stream may be caused to flow sequentially;
fan means intermediate said base module and said upper module for drawing unclean air from the environment into said housing through said base module, then causing a purified air stream to be discharged from said upper module for return to the environment;
said base module including an extreme lowermost end defining an intake opening facing, and spaced from, the floor on which said system is supported and upstream filtration means disposed for trapping relatively large particulate matter from the entering air stream;
said housing having a germicidal chamber intermediate said upstream filtration means and said fan means;
elongated and longitudinally extending ultraviolet germicidal irradiation means disposed in the germicidal chamber; and
downstream filtration means intermediate said fan means and said upper module;
said upper module including angled louver means for guiding and re-directing the purified air stream into an inclined air stream, after exiting said downstream filtration means, causing the purified air stream to flow proximate to and along the ceiling of the room in which said air movement system is located;
said base module being remote from said upper module thereby minimizing undesirable mixing of unclean and purified air.

5,616,173
THICK FILM CONDUCTOR PASTE FOR AUTOMOTIVE GLASS
Kuninori Okamoto; Hideaki Kuno; Isamu Yaguchi; Jun Koishikawa, all of Kanagawa, and Yasuo Yamamoto, Tokyo, all of Japan, assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Oct. 17, 1995, Ser. No. 544,356
Int. Cl.[6] H01B *1/14*
U.S. Cl. 106—117 **2 Claims**

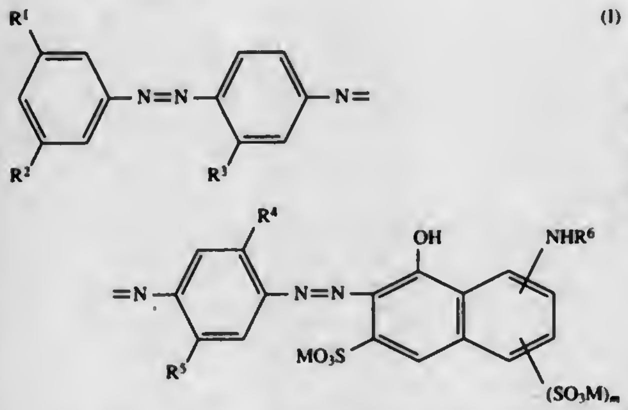
1. A thick film paste composition for applying conductive patterns, comprising
(a) spherical, non-coagulating fine particles of metallic silver having a surface area/weight ratio of at least 1.1 m^2/g and having a particle size of 1.0 μm or less, and having a critical pigment volume concentration of at least 56%, and

(b) fine particles of a glass frit having a softening point of 350° to 620° C. and contained in an amount of 2.1 weight parts or less per 100 weight parts of metallic silver,

wherein (a) and (b) are dispersed in (c) an organic medium.

5,616,174
INK COMPOSITION AND INK JET RECORDING METHOD USING THE SAME
Miharu Kanaya; Akio Owatari; Junko Takatsuna; Masahiro Yatake; Hiroko Hayashi, all of Suwa; Takashi Ono, Takatsuki; Yoshihiro Sawatari, Yawata, and Tatsuya Yagyu, Neyagawa, all of Japan, assignors to Seiko Epson Corporation, Tokyo-To, Japan
Filed Dec. 4, 1995, Ser. No. 566,834
Claims priority, application Japan, Dec. 5, 1994, 6-300695; Apr. 21, 1995, 7-097238
Int. Cl.⁶ C09D *11/02*
U.S. Cl. 106—22 K **10 Claims**

1. An ink composition comprising a dye represented by the following formula (I):



(I)

wherein M represents H, an alkali metal, an unsubstituted or substituted ammonium, morpholinium, or piperidinium;

R^1 represents H, NH_2, or COOM where M is as defined above;

R^2 represents COOM or $—P(=O)n—(OM)_2$ where M is as defined above and n is 0 or 1;

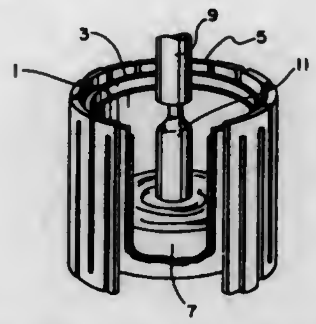
R^3 represents H, COOM, or SO_3M where M is as defined above;

R^4 and R^5 each independently represent H, an alkyl group having 1 to 6 carbon atoms, or an alkoxyl group having 1 to 6 carbon atoms;

R^6 represents H, a phenyl group which may be substituted, an alkylcarbonyl group, or an alkyl group which may be substituted with a hydroxyl or alkoxyl group; and

m is 0 or 1.

5,616,175
3-D CARBON-CARBON COMPOSITES FOR CRYSTAL PULLING FURNACE HARDWARE
Paul J. Walsh, Salt Lake City, Utah, assignor to Herecules Incorporated, Wilmington, Del.
Filed Jul. 22, 1994, Ser. No. 278,744
Int. Cl.⁶ C30B *35/00*
U.S. Cl. 117—14 **10 Claims**



1. A piece of crystal pulling furnace hardware, wherein said hardware is selected from the group consisting of crucible holder tops, crucible holder bottoms, heaters, and pedestals, and wherein said hardware comprises a three-dimensional carbon-carbon composite.

5,616,176
OXIDE GARNET SINGLE CRYSTAL
Satoru Fukuda; Masayuki Tanno, and Toshihiko Ryuo, all of Gunma-ken, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan
Filed Jun. 28, 1995, Ser. No. 495,934
Claims priority, application Japan, Jul. 1, 1994, 6-151111
Int. Cl.⁶ C30B *29/28*
U.S. Cl. 117—54 **3 Claims**

1. A single crystal of a rare earth-based oxide garnet having a chemical composition represented by the general formula

$$Gd_aHo_bEu_cBi_{3-a-b-c}Fe_{5-d}M_dO_{12},$$

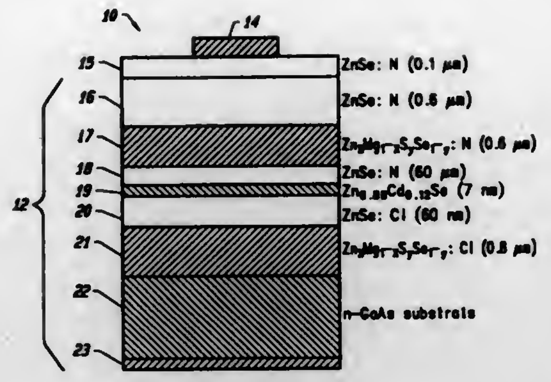
in which M is an element or a combination of elements selected from the group consisting of aluminum, scandium, gallium and indium, the subscript a is a positive number in the range from 1.1 to 2.1, the subscript b is a positive number in the range from 0.1 to 0.9, the subscript c is 0 or a positive number not exceeding 0.5 and the subscript d is zero or a positive number not exceeding 0.6 with the proviso that 3–a–b–d is in the range from 0.7 to 1.2.

5,616,177
GROUP II-VI SEMICONDUCTOR LASER AND METHOD FOR THE MANUFACTURE THEREOF
Norihide Yamada, Kokubunji, Japan, assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Feb. 22, 1995, Ser. No. 394,664
Claims priority, application Japan, Feb. 23, 1994, 6-49762
Int. Cl.⁶ C30B *25/14*
U.S. Cl. 117—102 **4 Claims**

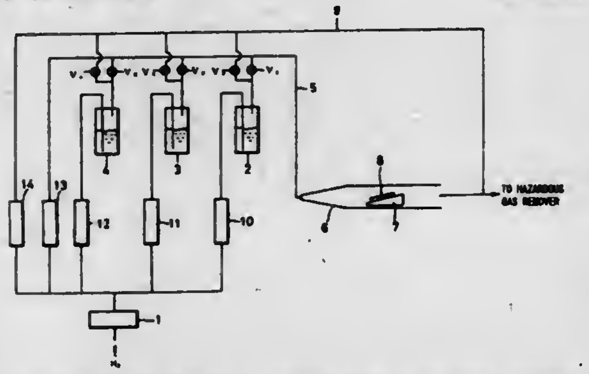
1. A method for manufacturing a Group II–VI semiconductor laser, in which adsorption layers are successively formed as crystals on a substrate, said method comprising the steps of:

using solid-source Molecular-Beam Epitaxy (MBE) to form a plurality of adsorption layers containing crystal structure elements and doping impurities on an n-type substrate, from an initial adsorption layer to a next-to-last layer; and

using either of gas-source MBE or Metal-Organic Vapor-Phase Epitaxy (MOVPE) to form a last p-type adsorption layer on the next-to-last layer.



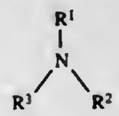
5,616,178
METHOD FOR GROWTH OF II-VI COMPOUND SEMICONDUCTORS
Atsushi Toda, and Daisuke Imanishi, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan
Filed May 31, 1995, Ser. No. 455,844
Claims priority, application Japan, May 31, 1994, 6-141236
Int. Cl.⁶ C30B *15/14*
U.S. Cl. 117—104 **10 Claims**



1. A method for making a p-doped II–VI compound semiconductor comprising:

providing a substrate having a surface; and

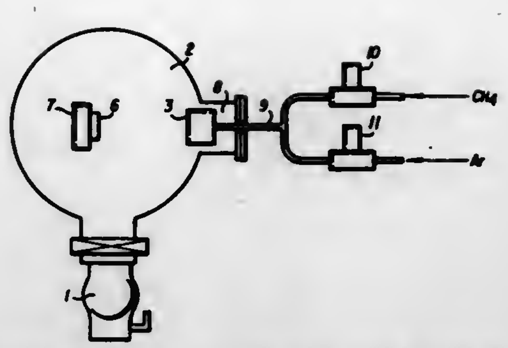
forming a p-doped II–VI compound semiconductor layer on said surface by vapor deposition using a vapor comprising: a material of a group II element, a material of a group VI element and a p-type dopant selected from the group consisting of secondary and tertiary amines having the formula:



wherein R^1 is hydrogen or R^2, and R^2 and R^3 are independently straight or branched chain alkyl groups each having a molecular weight of greater than 12.

5,616,179
PROCESS FOR DEPOSITION OF DIAMONDLIKE, ELECTRICALLY CONDUCTIVE AND ELECTRON-EMISSIVE CARBON-BASED FILMS
David A. Baldwin, Annandale, and Stephen L. Michel, Alexandria, both of Va., assignors to Commonwealth Scientific Corporation, Alexandria, Va.
Filed Dec. 21, 1993, Ser. No. 170,770
Int. Cl.⁶ C30B *29/04*
U.S. Cl. 117—108 **34 Claims**

1. A process for depositing a carbon containing film, such as, amorphous carbon (a-C), amorphous hydrogenated carbon (a-C:H),



or, diamondlike carbon (DLC) film on a substrate using an end-Hall ion source, comprising the steps of:

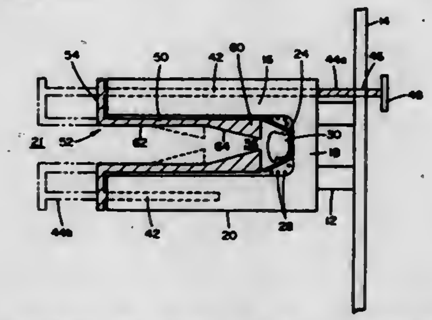
a. providing an end-Hall ion source in a vacuum chamber;

b. providing a substrate to be coated within said chamber; and

c. introducing a carbon containing gas into said end-Hall source and forming a carbon containing plasma;

d. controlling the ion energy of said carbon containing plasma and depositing onto said substrate a carbon containing film having electrically conductive and electron-emissive properties, or, high hardness, low electrical conductivity and optical transparent properties, or, a combination of both, depending on the ion energy utilized.

5,616,180
APPARATUS FOR VARYING THE FLUX OF A MOLECULAR BEAM
Myung B. Lee, Smithtown, N.Y., and Jari Vanhatalo, Beverly, Mass., assignors to Northrop Grumman Corporation, Los Angeles, Calif.
Filed Dec. 22, 1994, Ser. No. 361,961
Int. Cl.⁶ C30B *35/00*
U.S. Cl. 118—715 **6 Claims**

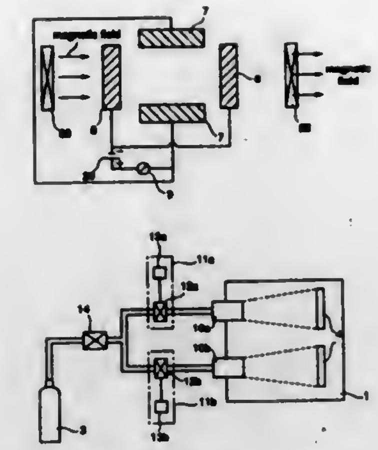


1. An apparatus for varying the flux of a molecular beam emanating from an effusion cell comprising: a hollow section having an orifice and means for adjusting the orifice to control the angular distribution of a molecular field effusing from a source material within the effusion cell.

5,616,181
MBE APPARATUS AND GAS BRANCH PIPING APPARATUS
Yoshitsugu Yamamoto, and Kaoru Kadoiwa, both of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 21, 1995, Ser. No. 561,455
Claims priority, application Japan, Nov. 24, 1994, 6-289495
Int. Cl.⁶ C23C *16/00*
U.S. Cl. 118—723 ER **8 Claims**

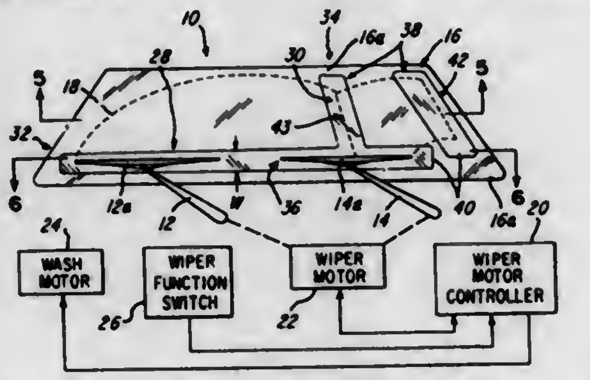
1. An MBE apparatus for growing crystals by molecular beam epitaxy comprising:

a reaction chamber in which a molecular beam of a gas irradiates a substrate for crystal growth on the substrate;



a gas bomb for containing the gas;
a regulator connected between the reaction chamber and the gas bomb for reducing the pressure of the gas flowing from the gas bomb;
a pressure control apparatus having at least one anode electrode and at least one cathode electrode for applying an electric field to gas supplied to the reaction chamber, a coil for generating a magnetic field applied to the supplied gas, and a controller for controlling the electric field between the anode electrode and the cathode electrode, the magnetic field generated by the coil, and the pressure of the gas supplied from the regulator to the pressure control apparatus; and
a molecular beam cell located in the reaction chamber for converting the gas supplied from the pressure control apparatus to the reaction chamber to a molecular beam for irradiating the substrate.

5,616,182
METHOD AND APPARATUS FOR WIPING A WINDSHIELD
Keith R. Cook, Beavercreek, Ohio, assignor to ITT Automotive Electrical Systems, Inc., Auburn Hills, Mich.
Filed Dec. 4, 1995, Ser. No. 566,836
Int. Cl.⁶ B60S *1/04*
U.S. Cl. 134—6 **22 Claims**

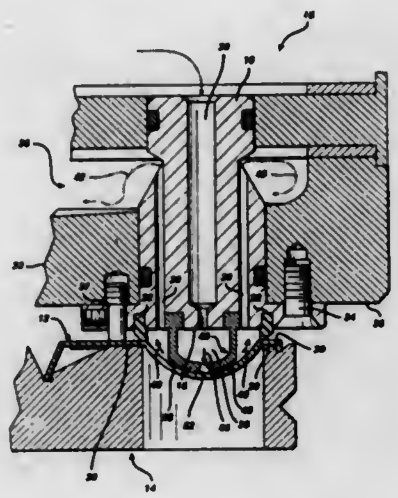


1. A wiper system for wiping a windshield comprising:
a windshield having at least one reversal area;
a wiper associated with said windshield for wiping said windshield, said wiper changing directions in said at least one reversal area; and
a wiper material situated on said windshield only in said at least one reversal area;
wherein said wiper comprises a blade and said wiper material comprises a friction material which is integral with said windshield and which facilitates causing said blade to flip from a first wipe side to a second wipe side when said blade is driven from a first wipe direction to a second wipe direction, respectively.

5,616,183
METHOD OF CLEANING TUBES OR CONDUITS
Jerry A. Dieter, Rochester, and Jeffery J. Firestone, Royal Oak, both of Mich., assignors to Grow Group, Inc., New York, N.Y.
Continuation of Ser. No. 165,442, Dec. 10, 1993, Pat. No. 5,423,919. This application May 11, 1995, Ser. No. 439,504
Int. Cl.⁶ B08B *9/00;9/06;* **C09D** *9/00;9/02*
U.S. Cl. 134—8 **11 Claims**

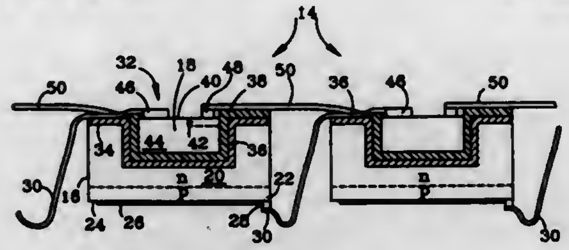
1. A method of cleaning tubes or conduits to facilitate the removal of adherent paint materials, comprising:
flushing the tube or conduit with a composition for a sufficient period of time to permit cleaning of the tube or conduit wherein the composition is comprised of:
a ceramic particulate matter, having a density ranging from 0.2 to about 1.1, spherical or conical in shape, in an amount of 1–20 wt % of the total composition; and
a liquid medium consisting essentially of a liquid organic solvent in an amount of 80–99 wt % of the total composition, wherein the ceramic particulate is dispersed within the liquid medium.

5,616,184
SOLUTION REMOVAL NOZZLE
Gregory S. Duncan; Olin W. Calvin; Mark E. Schlagel; Darren S. Keene, and Russell J. Edwards, all of Jacksonville, Fla., assignors to Johnson & Johnson Vision Products, Inc., Jacksonville, Fla.
Continuation-in-part of Ser. No. 999,234, Mar. 29, 1993, abandoned. This application Mar. 18, 1996, Ser. No. 617,304
Int. Cl.⁶ B08B *3/02*
U.S. Cl. 134—22.1 **20 Claims**



11. A method of removing a liquid from a container having a bowl portion and a flange portion, said bowl portion containing said liquid and a hydrophilic ophthalmic lens, said method comprising:
forming a sealed volume above said container bowl, said volume including a volume defined by said bowl,
resiliently biasing said ophthalmic lens into engagement with said bowl,
introducing purging fluid through an entrance passage into said sealed volume in a substantially symmetric manner about the center axis of the lens such that there is no migration of the lens, at a pressure and with a flow sufficient to remove substantially all of said liquid,
removing substantially all of said purging fluid and liquid from said sealed volume through an exit passage.

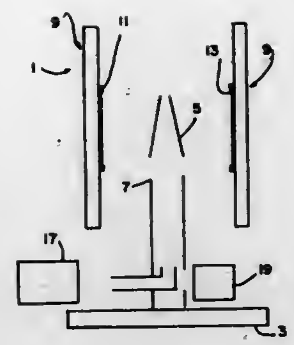
5,616,185
SOLAR CELL WITH INTEGRATED BYPASS DIODE AND METHOD
Jerry R. Kukulka, Santa Clarita, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.
Filed Oct. 10, 1995, Ser. No. 541,752
Int. Cl.⁶ H01L *31/05;31/18*
U.S. Cl. 136—244 **14 Claims**



1. A solar cell assembly, comprising:
a solar cell having a front surface, a back surface, a first contact on the front surface, a second contact on the back surface, and a recess in its back surface, said solar cell producing a voltage between said first and second contacts in response to illumination of its front surface; and
a discrete bypass diode that is positioned in said recess and is bonded to the solar cell, said bypass diode having third and fourth contacts adapted to be connected to said first and second contacts, respectively, in an anti-parallel configuration so that said bypass diode is reverse biased when said solar cell is illuminated and is otherwise forward biased to limit the reverse bias voltage across the solar cell and prevent it from breaking down.
11. A solar panel assembly, comprising:
a panel;
a plurality of solar cells having respective back surfaces, front surfaces, first contacts on their respective front surfaces, second contacts on their respective back surfaces, and recesses in their respective back surfaces, said solar cells producing respective voltages between their first and second contacts in response to illumination of their front surfaces; and
a plurality of discrete bypass diodes that are positioned in said respective recesses and are bonded to the respective solar cells, said bypass diodes having third and fourth contacts connected to said first and second contacts, respectively, in an anti-parallel configuration so that said bypass diodes are reverse biased when their respective solar cells are illuminated and are otherwise forward biased to limit the reverse bias voltage across the solar cells and prevent them from breaking down, said solar cell's back surfaces and said bypass diodes being bonded to said panel.

5,616,186
THERMOPHOTOVOLTAIC ELECTRIC GENERATOR USING LOW BANDGAP PHOTOVOLTAIC CELLS WITH A HYDROCARBON BURNER AND ENHANCED CATALYTIC INFRARED EMITTER
Lewis M. Fraas, Issaquah; Douglas J. Williams, Tacoma, and John E. Samaras, Seattle, all of Wash., assignors to JX Crystals Inc., Issaquah, Wash.
Filed Sep. 18, 1995, Ser. No. 529,734
Int. Cl.⁶ H01L *31/058;* **H02N** *6/00*
U.S. Cl. 136—253 **27 Claims**

1. A thermophotovoltaic generator apparatus comprising a burner for generating a hydrocarbon flame, a catalytic emitter positioned in the hydrocarbon flame for emitting infrared radiation when heated by the flame, and a receiver positioned around the catalytic emitter for receiving the infrared radiation and for converting the infrared radiation to DC electric power, the receiver further comprising low bandgap photovoltaic cells that are responsive to the infrared radiation emitted by the catalytic emitter, said catalytic emitter serving to catalyze combustion thereby increasing convertible IR energy intensity.

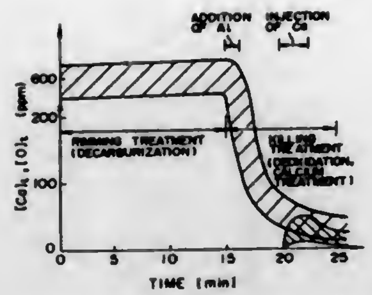


5,616,187
TOOL STEEL
Jerry L. Nelson, 42567 Eldon Ave., Clinton Township, Mich. 48038
Division of Ser. No. 264,135, Jun. 22, 1994, Pat. No. 5,505,798. This application Jan. 17, 1996, Ser. No. 587,587
Int. Cl.⁶ C22C *38/42;38/60*
U.S. Cl. 148—333 **15 Claims**

1. A metallic composition comprising iron (Fe), from about 0.40 to about 0.80 percent by weight carbon (C), from about 0.095 to about 1.70 percent by weight manganese (Mn), up to about 0.030 percent by weight phosphorus (P), from about 0.095 to about 0.200 percent by weight sulfur (S), from about 1.00 to about 2.00 percent by weight chromium (Cr), from about 0.30 to about 0.90 percent by weight silicon (Si), from about 0.10 to about 0.50 percent by weight nickel (Ni), up to about 0.010 percent by weight vanadium (V), up to about 0.20 percent by weight molybdenum (Mo), less than about 0.05 percent by weight cobalt (Co), less than about 0.03 percent by weight tungsten (W), less than about 0.001 percent by weight titanium (Ti) and from about 0.03 to about 0.30 percent by weight aluminum (Al), said composition having been subjected to a heat treating process which includes an austenization step and a tempering step.

5,616,188
METHOD OF PRODUCING MOLTEN ALUMINUM-KILLED STEEL FOR THIN STEEL SHEET
Yoshiei Kato, Chiba; Seiji Nabeshima, Okayama; Yoichi Ito, Okayama, and Kenichi Sorimachi, Okayama, all of Japan, assignors to Kawasaki Steel Corporation, Japan
Filed Oct. 11, 1995, Ser. No. 540,868
Claims priority, application Japan, Oct. 18, 1994, 6-252087
Int. Cl.⁶ C21C *7/076*
U.S. Cl. 148—508 **2 Claims**

1. A method of producing a molten aluminum-killed steel capable of forming a thin steel sheet, comprising the steps of:
producing molten steel in a converter;
tapping said molten steel from said converter to a vacuum degasser;
decarburizing said molten steel to produce a decarburized molten steel;
adding Al to said decarburized molten steel in said vacuum degasser to produce a deoxidized molten steel;



adding a material containing metallic Ca to said deoxidized molten steel so that the Ca content is about 0.0005 to 0.005 wt % and [%Ca]×[%S]≦ about 2×10^{-5} in said deoxidized molten steel; and

thereafter performing a degassing treatment on said deoxidized molten steel to produce said molten aluminum-killed steel.

5,616,189

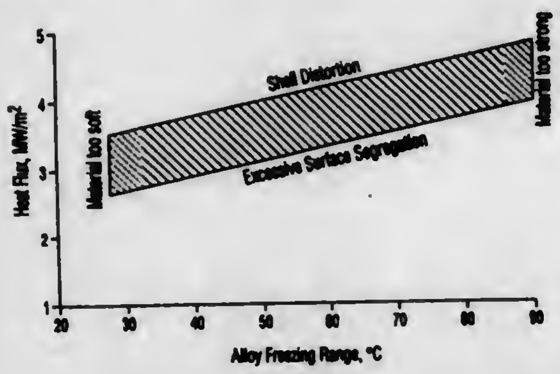
ALUMINUM ALLOYS AND PROCESS FOR MAKING ALUMINUM ALLOY SHEET

Iljoon Jin; John Fitzsimon, both of Kingston, Canada; Michael J. Bull, Brighton, Mich.; Pierre H. Marois, Kingston, Canada; Alok K. Gupta, Kingston, Canada, and David J. Lloyd, Kingston, Canada, assignors to Alcan International Limited, Montreal, Canada

Continuation-in-part of Ser. No. 97,840, Jul. 28, 1993, abandoned. This application Jul. 22, 1994, Ser. No. 279,214

Int. Cl.⁶ C22F *1/04*

U.S. Cl. 148—549 **29 Claims**



1. A process of producing a sheet of an alloy of aluminum containing magnesium, silicon, optionally copper, and optionally manganese in amounts in percent by weight falling within a range selected from the group consisting of:

(1) 0.4≦Mg≦0.8, 02≦Si 0.5, 0.3≦Cu≦3.5, Mn≦0.4;

(2) 0.8≦Mg≦1.4, 0.2≦Si≦0.5, Cu≦2.5, Mn≦0.4; and

(3) 0.4≦Mg≦1.0, 0.2 ≦Si≦1.4, Cu≦2.0, Mn≦0.4

wherein process comprises forming a cast sheet by subjecting the alloy to a twin belt casting process at a heat extraction rate within the range defined by the following equations:

Lower bound heat flux $(MW/m^2)=2.25+0.0183\Delta t_f$

Upper bound heat flux $(MW/M^2)=2.86+0.02222\Delta t_f$

Lower bound of alloy freezing range=30° C.

Upper bound of alloy freezing range=90° C.

wherein ΔT_f is given in degree Celsius, followed by subjecting the cast sheet to hot and cold rolling.

5,616,190

PROCESS FOR PRODUCING A THIN SHEET SUITABLE FOR MAKING UP CONSTITUENT ELEMENTS OF CANS

Jean-Marc Legresy, St. Egrève, and Guy-Michel Raynaud, Issoire, both of France, assignors to Pechiney Rhenalu, Courbevoie, France

PCT No. PCT/FR94/00861, § 371 Date Apr. 24, 1995, § 102(e) Date Apr. 24, 1995, PCT Pub. No. WO95/02708, PCT Pub. Date Jan. 26, 1995

PCT Filed Jul. 11, 1994, Ser. No. 397,067

Claims priority, application France, Jul. 16, 1993, 93 08987; Sep. 29, 1993, 93 11814

Int. Cl.⁶ C22F *1/04*

U.S. Cl. 148—551 **13 Claims**

1. A process for producing an aluminum alloy sheet suitable for can manufacture comprising the steps of:

casting an alloy consisting essentially of, by weight, 1 to 4% Mg, 0 to 1.6% Mn, optionally Cu, optionally Cr, and remainder, Al and impurities, between two rolls to form a strip having a thickness of no more than 4 mm,

performing at least one heat treatment on the strip as cast, at a temperature of 400° to 580° C. to effect at least partial recrystallization, and

cold rolling the at least partially recrystallized strip to a final thickness of less than 0.3 mm.

5,616,191

METHOD FOR MAKING A HIGH PURITY ALUMINUM CONDUCTOR USED AT ULTRA LOW TEMPERATURE

Akihiko Takahashi, Ryugasaki; Hitoshi Yasuda, Tsukuba, both of Japan; Karl T. Hartwig, College Station; Lacy C. McDonald, Bryan, and Hong Zou, College Station, all of Tex., assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan, and The Texas A & M University Systems, College Station, Tex.

Division of Ser. No. 88,032, Jul. 6, 1993. This application Jun. 7, 1995, Ser. No. 472,490

Int. Cl.⁶ C21D *8/06;8/12*

U.S. Cl. 148—690 **7 Claims**

1. A method of manufacturing a high purity aluminum conductor used at ultra low temperatures of 30° K. or lower, the aluminum conductor having a purity of 99.99 to 99.9999 weight percent and comprising a polycrystal consisting of crystal grains most of which have specific crystal axes of <111> or <100> or a mixture thereof, which are essentially oriented in the longitudinal direction of the aluminum conductor, the method comprising the steps of:

(a) working a high purity polycrystal aluminum material with a purity of 99.99 to 99.9999 weight percent by extrusion process in an area reduction ratio of 1/10 to 1/150 at a temperature range from 150° C. to 350° C. so that a crystal texture is provided to the worked aluminum material;

(b) optionally cooling the worked aluminum material to room temperature; and then

(c) heating the worked aluminum material to a temperature range from 250° C. to 530° C. and maintaining the worked aluminum material at the temperature for a time ranging from 10 minutes to 120 minutes.

5,616,192

COIL RETAINER FOR ENGINE VALVE AND PREPARATION OF THE SAME

Seiichi Nakagawa, Fujisawa, Japan, assignor to Fuji Oozx Inc., Kanagawa-ken, Japan

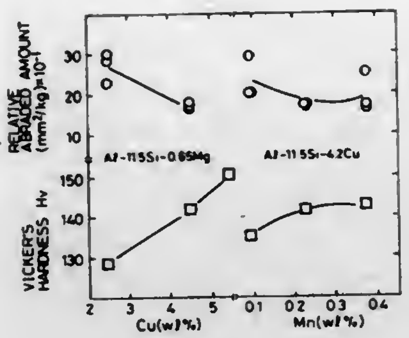
Continuation-in-part of Ser. No. 358,417, Dec. 19, 1994, abandoned. This application Dec. 28, 1995, Ser. No. 579,904

Claims priority, application Japan, Jul. 21, 1994, 6-169813

Int. Cl.⁶ F01L *3/10;* **C22F** *1/04*

U.S. Cl. 148—690 **4 Claims**

3. A coil retainer for an engine valve to be mounted therewithin,



said retainer prepared by forging of an aluminum-based alloy of the following composition; followed by special combined heat treatments of solution heat treatment and artificial aging, to convert into an alloy material having a dendrite arm spacing value less than 15 micrometer;

wherein the solution heat treatment is carried out at the temperature of 450° to 540° C. to melt partially and especially at the boundary of the grains in the alloy crystals, and then in the next step, .

maintaining the temperature at 150° to 200° C., for 30 minutes to six hours for the artificial aging, and further finish-working;

the composition consisting of

Silicon: 8 to 17 weight percent;

Copper: 2 to 5 weight percent;

Magnesium: 0.2 to 10 weight percent;

Manganese: 0.1 to 1.5 weight percent;

balancing aluminium and inevitable amount of impurities.

5,616,193

PNEUMATIC TIRES WITH COOPERATING TRACK

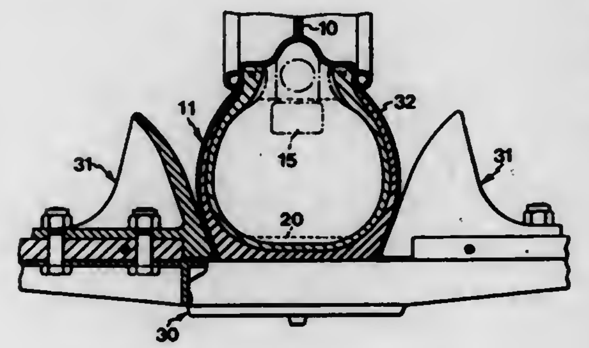
Erik G. S. Nordström, Trelleborg, and Carl-Gustav B. C. Victor, Höllviksnäs, both of Sweden, assignors to Trelleborg AB, Trelleborg, Sweden

Continuation of Ser. No. 892,033, Mar. 24, 1992, Pat. No. 5,388,624. This application Jul. 27, 1994, Ser. No. 281,013

Claims priority, application Sweden, Jun. 5, 1990, 9002014

Int. Cl.⁶ B60B *15/18;* **B60C** *13/00;1/00*

U.S. Cl. 152—185.1 **1 Claim**



1. A vehicle drive comprising rims (10), pneumatic tires (11) mounted on said rims, a track (30) which is engaged by and cooperates with the tires, tire-supporting elements (31) on said track for positioning the tires on the track; said tires, at least in surface areas which come into contact with the tire-supporting elements, having an outer rubber layer (32) which has a high wear resistance and low-friction properties and in which 50–100% of the rubber layer is butadiene rubber.

5,616,194

PNEUMATIC RADIAL TIRE HAVING A TREAD PATTERN

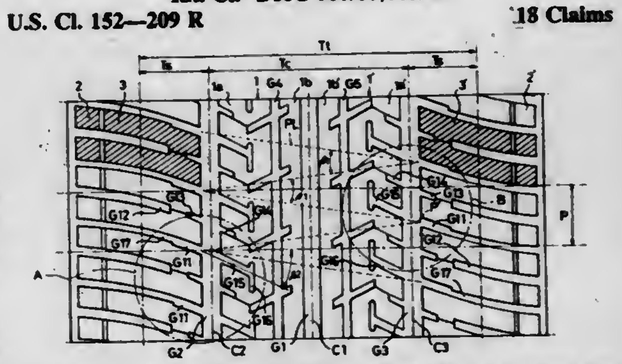
Nack-Hyun Lim; Young-Cheol Kim, and Bong-Wha Kim, all of Kwangju, Rep. of Korea, assignors to Kumho & Co., Inc., Seoul, Rep. of Korea

Filed Sep. 19, 1994, Ser. No. 305,936

Claims priority, application Rep. of Korea, Sep. 20, 1993, 18917; Sep. 20, 1993, 19051

Int. Cl.⁶ B60C *101/00;103/00*

U.S. Cl. 152—209 R **18 Claims**



1. A pneumatic generally axial tire having a tread pattern, the tread pattern comprising first, second, third and fourth ribs and first lugs and second lugs, an outer main circumferential groove between the first rib and the first lugs, a circumferential groove between the first rib and the third rib, a circumferential groove between the third rib and the fourth rib, a circumferential groove between the fourth rib and the second rib, an outer main circumferential groove between the second rib and the second lugs, several first generally axial grooves with a slant angle of β2 between the first lugs and several second generally axial grooves with a slant angle of β2 between the second lugs, the third and fourth ribs being inside of the first and second ribs, the pattern having a central ground contacting tread area, the central ground contacting tread area having an axial extent Tc which is between the outer circumferential grooves such that 0.3Tt≦Tc≦0.7Tt, where Tt is the total axial length of the ground contacting tread area of the tread pattern, the first and second lugs being biasely formed such that phantom lines extend between inner centers of adjacent ones of the first lugs and inner centers of adjacent ones of the second lugs, the phantom lines forming a zig-zag line and defining an intersecting angle β1 in the range of about 10°<β1<20°, in the middle of each of the first and second lugs first short generally axial grooves connected to the outer circumferential grooves and first long generally axial grooves running through a shoulder of the tread, the first and second ribs having second short generally axial grooves and second long generally axial grooves, the second short and second long grooves being formed alternately along the circumferential direction and extending at the slanted angle β2, the slanted β2 having a value in accordance with about 1.3β1<β2<2.0β1, and auxiliary grooves at each end of the second long generally axial grooves in the first and second ribs.

5,616,195

LOW ASPECT RATIO TRUCK TIRE

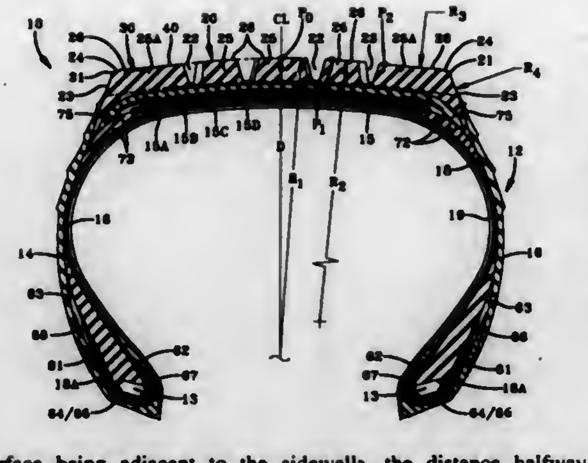
Michel E. J. Marquet, Bastogne, and Phuoc T. Le, Attert, both of Belgium, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Aug. 28, 1995, Ser. No. 520,220

Int. Cl.⁶ B60C *3/00;3/04;9/20;11/00*

U.S. Cl. 152—209 R **11 Claims**

1. A pneumatic radial ply truck tire with an aspect ratio below 0.70 having a tread, a casing including two sidewalls, one or more radial plies extending from and wrapped about two annular beads and a belt reinforcement structure located radially between the tread and the plies, the tread having a plurality of circumferentially extending continuous grooves delimiting a plurality of tread ribs, the radially outer surfaces of the plurality of tread ribs defining a radially outer tread surface, the axially outer edges of the tread



surface being adjacent to the sidewalls, the distance halfway between the tread edges defining the centerline of the tread:

in a cross section of the tread, the radially outer tread surface has a maximum diameter D at the tread centerline and, on each side of the centerline, three radii of curvature R_1, R_2, and R_3 wherein the first radius of curvature R_1, having its center C1 substantially on the equatorial plane, extends from a point P0 on the centerline of the tread to a point P1 located in the range of between 30% and 50% of half the treadwidth from P0 defining thereby a first radially outer convex tread surface;

the second radius of curvature R_2, having its center C2 substantially on a line passing through P1 and C1, extends from the point P1 to a point P2 located in the range of between 70% and 90% of half the treadwidth from P0 defining thereby a second radially outer convex tread surface;

the third radius of curvature R_3, having its center C3 external to the tire and substantially on a line passing through P2 and C2 and extending from the point P2 to the tread edge defining thereby a third radially outer concave tread surface.

5,616,196

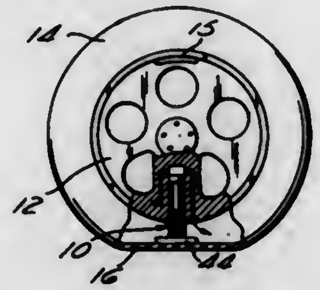
DEFORMATION-BASED TIRE INFLATION DEVICE

Richard T. Loewe, 12882 Olympia Way, Santa Ana, Calif. 92705

Filed Aug. 9, 1995, Ser. No. 512,773

Int. Cl.⁶ B60C *23/12*

U.S. Cl. 152—426 **8 Claims**



1. A device for maintaining desired inflation pressure within a tire mounted on a rotating wheel, said device utilizing deformation of said tire as it contacts the ground to pass air into the tire, the device comprising:

an air compressor formed in said wheel in fluid communication with the tire;

the compressor being of the reciprocating piston type, having a cylinder adapted to receive a sliding piston;

a plunger in contact with the inside of the tire and slidably connected to the piston; and

a spring disposed between said plunger and the piston; deformation of the tire causing said plunger to compress said spring, said spring then moving said piston inside the cylinder so as to produce a compression stroke.

5,616,197

TIRES WITH HIGH STRENGTH REINFORCEMENT

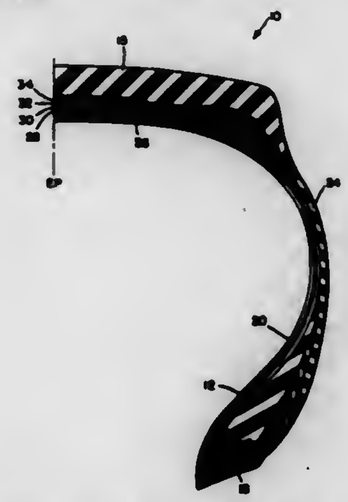
Farrel B. Helfer; Dong K. Kim, both of Akron; John G. Morgan; Robert M. Shemenski, both of North Canton; Italo M. Sinopoli, Canton, all of Ohio; Guy Jeanpierre, Bissen, Luxembourg, and Gia V. Nguyen, Arlon, Belgium, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

PCT No. PCT/US91/01906, § 371 Date Oct. 13, 1992, § 102(e) Date Oct. 13, 1992, PCT Pub. No. WO91/14573, PCT Pub. Date Oct. 3, 1991

Continuation-in-part of Ser. No. 496,759, Mar. 21, 1990. This PCT application Mar. 21, 1991, Ser. No. 937,864

Int. Cl.⁶ B60C *9/18;9/20*

U.S. Cl. 152—527 **4 Claims**



1. A pneumatic tire with a carcass having radial cords, two sidewalls spaced apart a distance, which in the axial direction, determines the width of the tire section, two beads each one of which around which are turned up, from the inside toward the outside, the ends of the cords of the carcass, a tread disposed on the crown of the carcass, and a belt structure that is circumferentially inextensible interposed between the tread and the carcass, the belt structure having a width that is substantially equal to that of the tread and having four radially overlapped layers of elastomeric fabric reinforced with metallic cords, the metallic cords being parallel to each other within each layer and inclined at an angle of between 19° and 66° with respect to the equatorial plane of the tire, comprising the belt structure having a cord for at least two of the belt layers, the cord having the U+T type structure with U filaments untwisted and parallel and T filaments twisted together as a group and then twisted with the U filaments with the same lay length and twist direction as that of the T group, the cord filaments being of super tensile steel, the cord end count of the at least two of the belt layers being 10 to 17.5 EPI, the cord filament diameter being 0.30 to 0.38 mm and the tire being a load range F or G tire.

5,616,198

PNEUMATIC TIRE WITH CARCASS PLY INCREASED IN THICKNESS PARTIALLY IN AT LEAST THE TIRE SHOULDER PORTIONS

Kazuya Suzuki, and Ryo Ono, both of Shirakawa, Japan, assignors to Sumitomo Rubber Industries, Ltd., Hyogo-ken, Japan

Filed Jan. 27, 1995, Ser. No. 379,789

Claims priority, application Japan, Feb. 9, 1994, 6-037872

Int. Cl.⁶ B29D *30/38;* **B60C** *9/04;9/08*

U.S. Cl. 152—556 **8 Claims**

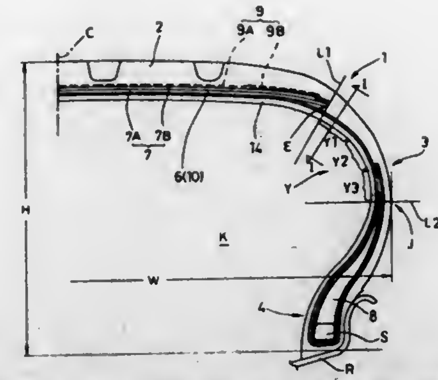
1. A pneumatic tire comprising

a tread portion,

a pair of axially spaced bead portions each with a bead core disposed therein,

a pair of sidewall portions extending therebetween,

a pair of tire shoulder portions,



a toroidal carcass ply composed of cords arranged radially at the same angle to the tire equator and extending continuously between the bead portions through the tread portion and sidewall portions, and

a belt disposed radially outside the carcass in the tread portion,

said carcass ply having a thickness being increased partially in at least the shoulder portions, radially outward from the bead portions to the shoulder portions, and axially outward from the tire equator to the shoulder portions, in said increased thickness carcass ply portions, said cords in the carcass ply including inner cords and outer cords each having a diameter, the inner cords being placed inside of the outer cords so that the distance between the centers of the inner cords and the centers of the outer cords is in the range of from 0.3 to 1.5 times the diameter, whereby the carcass ply thickness is increased.

5,616,199

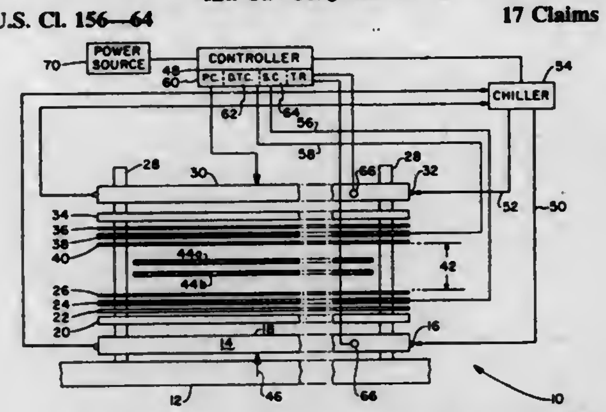
APPARATUS FOR ELECTRONICALLY SEAM FUSING SIMILAR AND DISSIMILAR POLYMERIC MATERIALS

Eran J. P. Jurrius, and Robert L. Karam, Jr., both of Akron, Ohio, assignors to Enclosure Technologies, Inc., Akron, Ohio

Continuation-in-part of Ser. No. 273,091, Jul. 8, 1994, Pat. No. 5,472,549. This application Jun. 5, 1995, Ser. No. 463,025

Int. Cl.⁶ C09J *5/00*

U.S. Cl. 156—64 **17 Claims**



1. A method for optimizing process parameters for electronically seam fusing polymeric materials which comprises the steps of:

setting preliminary process values for at least two process parameters for a plurality of polymeric materials;

estimating a range of preliminary process values for said plurality of polymeric materials, wherein each said range is defined by a high designation and a low designation, with each preliminary process value therebetween;

designing a test run employing said plurality of polymeric materials and said high and low designations;

performing said test run so as to obtain output data for each combination of said high and low designations with respect to each said process parameter;

analyzing statistically said output data with respect to said combinations of said high and low designations:

identifying optimum process parameters for said plurality of polymeric materials from said analyzing step; and

seam fusing said polymeric materials with said optimum process parameters.

5,616,200

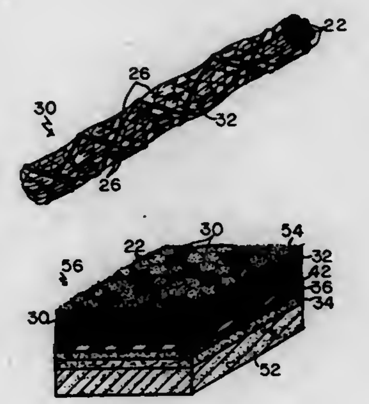
I-BOND METHOD FOR MAKING FUSION-BONDED CARPET

Wayne M. Hamilton, La Grange, and David K. Slosberg, Atlanta, both of Ga., assignors to Interface, Inc., LaGrange, Ga.

Continuation-in-part of Ser. No. 965,874, Oct. 23, 1992, abandoned. This application Nov. 17, 1993, Ser. No. 154,611

Int. Cl.⁶ B32B *31/12;* **D04H** *11/00*

U.S. Cl. 156—72 **23 Claims**



1. In an I-bond method for the manufacture of a fusion-bonded carpet having a fibrous wear face surface composed of selected yarn materials, which method comprises:

a) coating a layer of adhesive material onto a backing sheet material;

b) clamping and cutting yarn material to a defined height, the yarn material having a one and the other end, the yarn material selected to form the wear face surface of the carpet; and

c) implanting into the adhesive coating layer in a plane generally perpendicular to the backing sheet material, one end of the cut yarn material, and securing the cut and implanted yarn material in the adhesive coating layer to form a fusion-bonded carpet material having a wear face surface, wherein the improvement comprises:

i) forming rope forms, wherein each rope form comprises multiple strands composed of a plurality of yarn materials and wrapping a filament material about the exterior surface of each rope form to maintain its rope form integrity during subsequent clamping, cutting and implanting steps in the I-bond method of manufacturing of a fusion-bonded carpet;

ii) bundling a plurality of the rope forms together to form a plurality of rope form bundles wherein the yarn material of the rope forms or rope form bundles is yarn material having selected characteristics and wrapping a filament about the exterior surface of each rope form bundle;

iii) cutting the rope form bundles to form a plurality of cut rope form bundles having a one and the other end and having a selected height sufficient to form a fibrous wear face surface; and

iv) implanting the one end of a plurality of the cut rope form bundles into the adhesive coating layer and securing the one end to the coating layer to provide a fusion-bonded carpet having a selected pattern on the wear face surface.

5,616,201

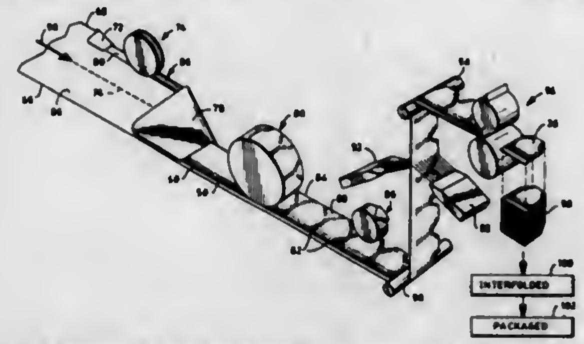
PROCESS FOR MAKING A CHILD'S MITT WIPE

Valerie V. Finch, Neenah; Frank S. Glaug, Appleton; Christopher P. Olson; Kathleen I. Ratliff, both of Neenah, and Donald A. Sheldon, Appleton, all of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Division of Ser. No. 344,263, Jan. 23, 1994. This application May 8, 1995, Ser. No. 437,006

Int. Cl.^{6} B32B *31/16*

U.S. Cl. 156—73.1 **4 Claims**



1. A process for making a mitt wipe, comprising:
continuously moving in a first direction a material comprising opposed sides,
providing a reinforcing cuff member along one of the sides of the material,
bonding the reinforcing cuff member to the material,
folding the material along a fold-line that is generally parallel to the first direction,
intermittently bonding the material in a direction that is angularly oriented to the first direction, and that overlaps the bonding of the reinforcing cuff member,
moving the material in a generally vertical direction,
applying a solution to the material, and
cutting the material at locations corresponding to the intermittent bonding.

5,616,202

ENHANCED ADHESION OF H-RESIN DERIVED SILICA TO GOLD

Robert C. Camilletti; Grish Chandra, and Keith W. Michael, all of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jun. 26, 1995, Ser. No. 494,746

Int. Cl.^{6} B32B *31/26;* B05D *5/12*

U.S. Cl. 156—89 **20 Claims**

1. A method of adhering silica to gold comprising:
joining a gold article and a silica ceramic, wherein the silica is formed by a process comprising heating hydrogen silsesquioxane resin to a temperature sufficient to form silica; and
annealing the joined gold article and silica ceramic in an oxidizing atmosphere at a temperature in the range of about 50°-500° C. for greater than about 1 hour.

5,616,203

METHOD OF MANUFACTURING A SPLIT RING AIRLESS ROTATABLE CONNECTOR

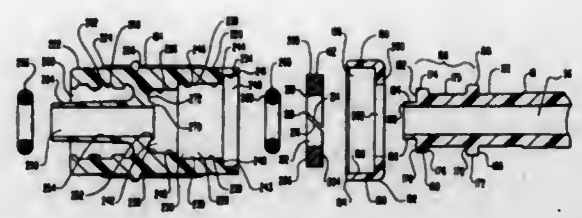
Brian Stevens, Pleasant Grove, Utah, assignor to Merit Medical, South Jordan, Utah

Filed Jul. 14, 1995, Ser. No. 502,754

Int. Cl.^{6} F16L *27/08*

U.S. Cl. 156—91 **26 Claims**

1. A method for manufacturing a rotatable connector for attachment to a medical device, the method comprising the steps of:
(a) obtaining a tubular body having a distal end, an exterior surface, and an interior surface defining a passage longitudinally extending therethrough, said tubular body having an



enlarged retaining flange with an outer diameter positioned at said distal end and extending radially outward from said exterior surface of said tubular body;
(b) advancing said distal end of said tubular body through an aperture in an annular cap until said cap is positioned proximal of said retaining flange, said aperture of said cap having an inner diameter larger than said outer diameter of said retaining flange;
(c) positioning an expandable, annular split ring around said tubular body between said annular cap and said retaining flange, said split ring having an interior surface encircling said tubular body and defining an opening having an inner diameter smaller than said outer diameter of said retaining flange, said split ring also having an outer diameter larger than said inner diameter of said aperture of said cap;
(d) receiving said distal end of said tubular body within an access chamber positioned at a proximal end of a tubular hub so as to place said distal end of the tubular body and said tubular hub in contact with one another and so as to rotatably fluid couple said passage of said tubular body with a transfer duct communicating with said access chamber thereby forming a continuous passageway with said passage and transfer duct; and
(e) securing said cap to said proximal end of said tubular hub so that said hub and cap are concurrently rotatable about said tubular body.

5,616,204

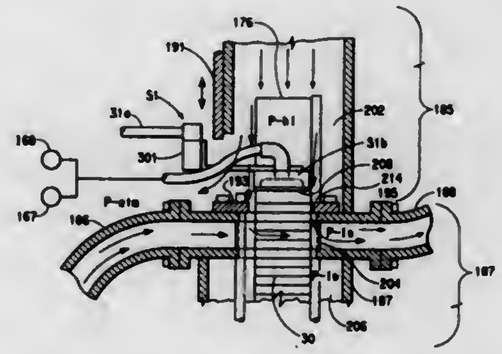
TRANSFER HEAD FOR HOLDING HALF-CELL STRUCTURE

Joseph J. Duffy, Newark; Birol Kirayoglu, Wilmington; Pui-Yan Lin; Robert A. Marin, both of Hockessin, all of Del., and Robert J. Santucci, West Chester, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 797,329, Nov. 25, 1991, Pat. No. 5,340,429. This application Mar. 31, 1994, Ser. No. 221,000

Int. Cl.^{6} B32B *31/00*

U.S. Cl. 156—156 **8 Claims**



1. A transfer head for holding at least one sheet of half-cell structure, the half-cell structure having a plurality of peaks and valleys and a diagonal surface between each consecutive peak and valley, comprising:

(a) a plurality of support bars for supporting the half-cell structure;
(b) at least one space formed between each support bar, wherein the width of each space is about the distance between adjacent valleys of the half-cell structure and the depth of the space is greater than the height of the peaks;
(c) an extension rod attached to the support bars; and
(d) a shift mechanism for moving the transfer head up and down and side to side relative to the rod.

5,616,205

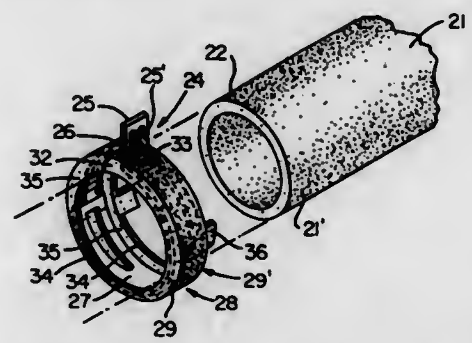
HOSE CONSTRUCTION AND METHOD OF MAKING THE SAME

Bobby J. Cogdill, Waynesville, and Richardson J. Trantham, Clyde, both of N.C., assignors to Dayco Products, Inc., Dayton, Ohio

Continuation of Ser. No. 114,594, Aug. 31, 1993, Pat. No. 5,456,784. This application May 26, 1995, Ser. No. 451,314

Int. Cl.^{6} B29C *65/48*

U.S. Cl. 156—229 **9 Claims**



1. In a method of making a hose construction comprising a tubular flexible hose having opposite ends, fastening means, and a clamping means fastened to one of said opposite ends of said hose by said fastening means for substantially circumferentially and radially inwardly clamping said one of said opposite ends of said hose onto a member that has been inserted into said one of said opposite ends of said hose, said fastening means comprising a tubular arrangement of elastic material disposed in stretched relation over and against part of said clamping means and having opposite annular side sections, the improvement comprising the steps of forming one of said side sections of said fastening means to have a plurality of spaced apart tabs disposed outboard of said clamping means, assembling said clipping means and said tubular arrangement of elastic material together as a unit, inserting said one of said opposite ends of said hose into said unit so as to be in a predetermined position relative to said tabs of said unit, and then securing said tabs of said tubular arrangement of elastic material to said hose while said one of said opposite ends of said hose is in said predetermined position thereof.

5,616,206

METHOD FOR ARRANGING CONDUCTIVE PARTICLES ON ELECTRODES OF SUBSTRATE

Tsutomu Sakatsu, Hadano, and Yoshihiro Yoshida, Yokohama, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

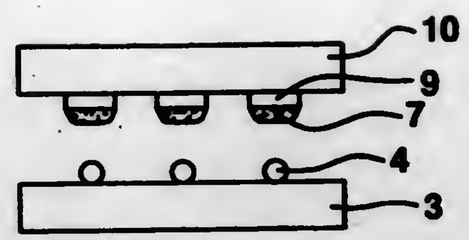
Filed Jun. 16, 1994, Ser. No. 260,844

Claims priority, application Japan, Jun. 15, 1993, 5-143153; Jul. 20, 1993, 5-200991

Int. Cl.^{6} B44C *1/165*

U.S. Cl. 156—230 **13 Claims**

13. A method for arranging conductive particles on electrodes of a substrate, which electrically connect with electrodes of an electrical part via said conductive particles, comprising the steps of:



arranging conductive particles on a transcription board in a predetermined pattern, said predetermined pattern being defined by a mask having openings formed thereon;
transferring said conductive particles from said transcription board to electrodes of a substrate, said electrodes having an adhesive layer formed thereon; and
fixing said conductive particles on said electrodes by said adhesive layer.

5,616,207

METHOD FOR MAKING UNCREPED THROUGHDRIED TOWELS AND WIPERS

Stephen J. Sudall, Wales, United Kingdom, and Steven A. Engel, Neenah, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Division of Ser. No. 65,822, May 21, 1993, Pat. No. 5,399,412. This application Nov. 21, 1994, Ser. No. 342,989

Int. Cl.^{6} B29C *47/00*

U.S. Cl. 156—246 **6 Claims**

1. A method for making an uncreped throughdried sheet comprising:
(a) depositing an aqueous suspension of papermaking fibers onto a foraminous forming fabric which retains the fibers and allows water to pass through to form a wet web;
(b) dewatering the web to a consistency of from about 10 to about 30 percent;
(c) transferring the dewatered web to a throughdrying fabric having a 3-dimensional surface contour such that the depth of the surface contour is substantially greater than the thickness of the wet web, and conforming the wet web to the surface contour of the throughdrying fabric; and
(d) throughdrying the web, wherein the Dry Caliper of the web is substantially independent of the basis weight of the web.

5,616,208

VACUUM PROCESSING APPARATUS, VACUUM PROCESSING METHOD, AND METHOD FOR CLEANING THE VACUUM PROCESSING APPARATUS

Hideki Lee, Nirasaki, Japan, assignor to Tokyo Electron Limited, Tokyo, Japan

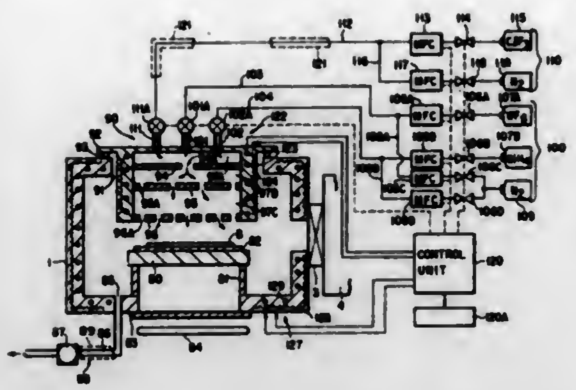
Filed Jun. 7, 1994, Ser. No. 255,950

Claims priority, application Japan, Sep. 17, 1993, 5-254680; Sep. 17, 1993, 5-254681; Sep. 17, 1993, 5-254682; Sep. 20, 1993, 5-256506; Sep. 20, 1993, 5-256507; Sep. 20, 1993, 5-256508; Nov. 1, 1993, 5-296148

Int. Cl.^{6} C23F *1/02;* C23C *16/00;14/56;* B08B *7/00*

U.S. Cl. 156—345 **7 Claims**

1. A processing apparatus comprising:
a plurality of vacuum processing chambers for processing a target object using a process gas;
a vacuum convey chamber, connected to said plurality of vacuum processing chambers, for loading and unloading the target object into and from said vacuum processing chambers;
opening means for opening an interior of said apparatus to atmospheric air;
cleaning gas supply means for supplying a cleaning gas containing ClF_3 into said processing chambers and said convey chamber;
exhaust means for exhausting the cleaning gas;



concentration detection means for detecting Cl and F concentrations in the gas after completion of cleaning using the cleaning gas; and

control means for outputting an opening command to said opening means when a detection value of said concentration detection means is smaller than a set value.

5,616,209

APPARATUS FOR THE MANUFACTURE OF A TIRE IN WHICH THE CARCASS REINFORCEMENT IS FORMED ON A CORE FROM A SINGLE THREAD

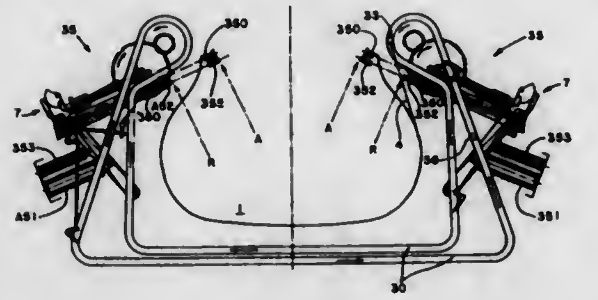
Daniel Laurent, Meylan, and Jean-Claude Mayet, Clermont-Ferrand, both of France, assignors to Sedepro, Paris, France

Division of Ser. No. 264,426, Jun. 23, 1994, Pat. No. 5,453,140, which is a continuation of Ser. No. 87,211, Jul. 2, 1993, abandoned. This application Jun. 2, 1995, Ser. No. 458,561

Claims priority, application France, Jul. 21, 1992, 92 09256

Int. Cl.[6] B29D *30/10*

U.S. Cl. 156—397 **16 Claims**



1. An apparatus for manufacturing a rubber tire in which a reinforcement thread is applied on a support, the surface of which has the shape of the inner surface of the tire, the reinforcement thread applied on the support being held on the support by adherence, comprising a guide means displaced in the space over the trace which the thread will have after it has been wound on the support for laying the reinforcement thread on the support, means for imparting to said guide means a movement permitting winding of the thread on the support from one side to the other of the support and then winding back, means for imparting relative circumferential displacement between the support and guide means from one winding to the next by an amount corresponding to the laying pitch of the thread on the support, means for pressing the thread against the support at each change in direction during the side-to-side movement to adhere the thread to the support and a common frame for accommodating the guide means and the pressing means so that the circumferential displacement is between the support on the one hand, and both the guide means and the pressing means, on the other hand.

5,616,210

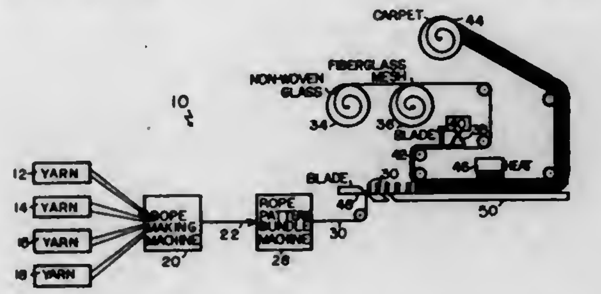
FUSION-BONDED CARPET SYSTEM

Wayne M. Hamilton, La Grange, and David K. Slosberg, Atlanta, both of Ga., assignors to Interface, Inc., LaGrange, Ga.

Division of Ser. No. 154,611, Nov. 17, 1993, which is a continuation-in-part of Ser. No. 965,874, Oct. 23, 1992, abandoned. This application May 1, 1995, Ser. No. 431,908

Int. Cl.[6] B32B *31/12*; D04H *11/00*

U.S. Cl. 156—435 **11 Claims**



1. A system for the manufacture of a fusion-bonded carpet, which system comprises:

a) a source of multiple strands composed of a plurality of yarn materials, the yarn material selected to have different characteristics;

b) rope forming means for receiving the multiple strands of yarn material from the source and for forming the multiple strands in rope form;

c) rope form wrapping means for wrapping a filament about the rope form to maintain the integrity of the rope form during subsequent processing steps;

d) rope bundling means for forming rope form bundles wherein each rope form bundle has an exterior surface and includes a plurality of filament-wrapped rope forms;

e) rope bundle wrapping means for wrapping a filament about the exterior surface of each of the rope form bundles to maintain the integrity of the rope form bundles during subsequent processing;

f) means for supplying a backing sheet material;

g) means for coating onto one surface of the backing sheet material an adhesive coating layer;

h) means for severing the rope bundles to a selected height and for forming severed rope bundles having a one end and an other end;

i) means for implanting the one end of the cut rope form bundles into the adhesive coating layer on the backing sheet material; and

j) means for heating the adhesive coating layer to fusion-bond the implanted one end of the severed rope form bundles to the adhesive coating layer and thereby form a fusion-bonded carpet having a wear face surface of the other end of the rope form bundles.

5,616,211

VENEERED PANEL CONTINUOUS LAMINATION MACHINE

Jesús Barberan Albiac, Barcelona, Spain, assignor to Barberan, S.A., Barcelona, Spain

Filed Apr. 11, 1995, Ser. No. 419,981

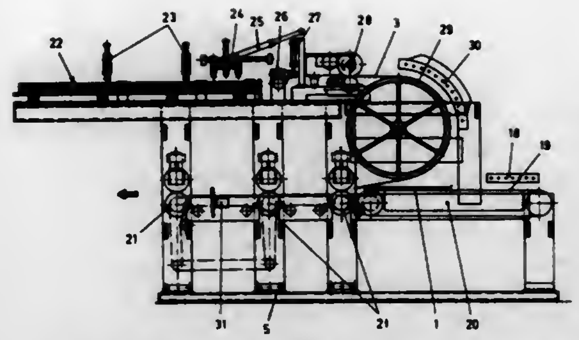
Int. Cl.[6] B32B *31/04*; B31F *5/00*

U.S. Cl. 156—552 **10 Claims**

1. A continuous lamination machine for applying veneer to a panel, comprising:

a first module including means for applying veneer on a lower surface of a panel, said first module further including an unwinding means for providing continuous veneer from a spool; and

a second module arranged consecutively with said first module, said second module including means for applying veneer on



an upper surface of said panel by applying veneer in cut sheets to said upper surface of said panel.

5,616,212

METHOD FOR POLISHING A WAFER BY SUPPLYING SURFACTANT TO THE REAR SURFACE OF THE WAFER

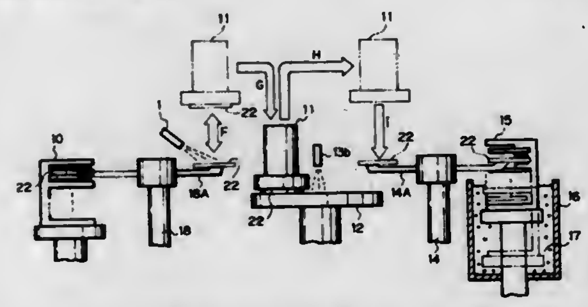
Akira Isobe, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Jan. 23, 1996, Ser. No. 590,124

Claims priority, application Japan, Jan. 25, 1995, 7-009835

Int. Cl.[6] H01L *21/306*

U.S. Cl. 438—693 **5 Claims**



1. A method of flattening an irregular front of a wafer which is a semiconductor substrate, comprising the steps of:

(a) attaching a rear of the wafer to a holder by causing the rear to closely contact a backing included in said holder;

(b) pressing the front of the wafer against a turn table to thereby polish and flatten the front; and

(c) wetting, prior to step (a), the rear of the wafer with a surfactant solution.

5,616,213

METHOD OF DRY ETCHING INALAS AND INGAAS LATTICE MATCHED TO INP

Timothy S. Henderson, Richardson, and Donald L. Plumton, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 333,124, Nov. 1, 1994, Pat. No. 5,474,652, which is a continuation of Ser. No. 103,608, Aug. 6, 1993, abandoned, which is a continuation of Ser. No. 668,008, Mar. 12, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 475,722

Int. Cl.[6] H01L *21/20*

U.S. Cl. 438—718 **10 Claims**

1. A method of removing portions of an indium-containing Group III-V semiconductor region, said method comprising the step of etching said semiconductor region in an atmosphere comprising:

a hydrocarbon; and

an etchant taken from the group consisting of a fluorocarbon and boron trichloride (BCl_3).

5,616,214

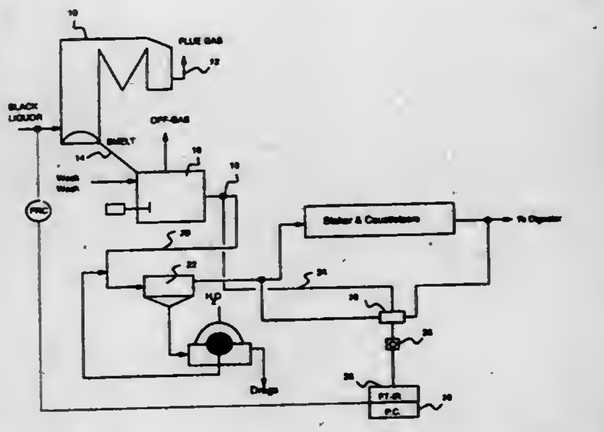
DETERMINATION OF SODIUM SULFIDE AND SULFIDITY IN GREEN LIQUORS AND SMELT SOLUTIONS

Denys F. Leclerc, Surrey, Canada, assignor to Pulp and Paper Research Institute of Canada, Pointe-Claire, Canada

Filed Sep. 12, 1995, Ser. No. 526,873

Int. Cl.[6] D21C *7/14*

U.S. Cl. 162—49 **20 Claims**



1. A method for determining a sulfur concentration parameter of sulfide-containing aqueous pulp green liquor comprising:

i) subjecting a sample of the aqueous pulp green liquor to near infrared radiation at a wavelength region of wave number of 5300 to 7800 cm^{-1} to produce a water absorbance peak value of said liquor, relative to a background spectrum

ii) comparing the peak value in i) with a calibration plot of corresponding peak values at said wavelength region, for a plurality of sulfide-containing aqueous pulp liquors of known sulfur concentration parameters, and

iii) evaluating the sulfur concentration parameter of the sample from the comparison in ii),

wherein said green liquor sample in i) is fed from a green liquor preparation unit of a pulp manufacture process, said unit including a recovery furnace for chemicals derived from the pulp manufacture process and in which the green liquor is derived from a smelt of inorganic chemicals from said recovery furnace, and including a step of:

iv) controlling operation of the recovery furnace in response to the evaluation of the sulfur concentration parameter in iii) to adjust the sulfur concentration parameter of the green liquor.

5,616,215

METHOD OF MAKING PAPER FROM PULP TREATED WITH LIPASE AND AN ALUMINUM SALT

Hans P. Heldt-Hansen, Virum, Denmark; Yuko Fujita, Tokyo, Japan; Haruo Awaji, Saitama-ken, Japan; Hidesato Shimoto, and Masaki Sharyou, both of Chiba-ken, Japan, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

Continuation of Ser. No. 888,414, May 22, 1992, abandoned, which is a continuation of Ser. No. 687,813, Apr. 19, 1991, abandoned. This application Nov. 10, 1994, Ser. No. 337,575

Int. Cl.[6] D21H *11/20*

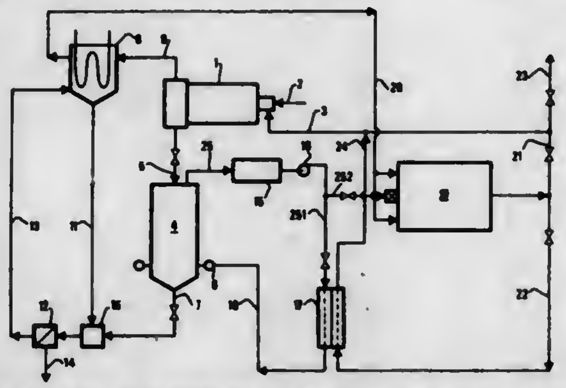
U.S. Cl. 162—72 **7 Claims**

1. A process for making paper, comprising

(a) treating a pulp which contains pitch with a lipase in the presence of an aluminum salt at a PH in the range of 3–7 to hydrolyze esters in the pitch, wherein the concentration of the aluminum salt is 1–50 mM, the activity of the lipase is 1–100 KLU/kg of dry matter and the amount of hydrolysis is greater than the amount of hydrolysis with the lipase alone, and

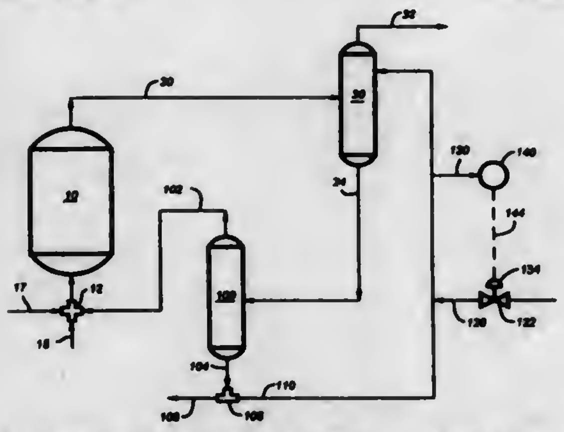
(b) making the paper from the treated pulp.

5,616,216
PROCESS AND DEVICE FOR TREATING WASTE BY DIRECT CONTACT
Gérard Martin, Rueil Malmaison, and Robert Gaulard, Sussy en Brie, both of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France
Continuation of Ser. No. 911,066, Jul. 9, 1992, Pat. No. 5,505,822. This application Jun. 2, 1995, Ser. No. 458,816
Claims priority, application France, Jul. 9, 1991, 91 08717
Int. Cl.⁶ C10B *39/04*
U.S. Cl. 201—25 **12 Claims**



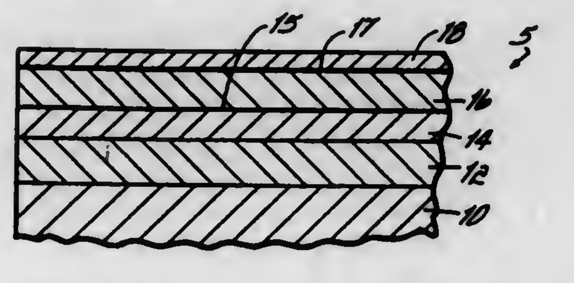
8. A plane for treating industrial and/or urban waste, notably comprising :
a means for the thermolysis of the waste, supplied at least partly by the thermolysis effluents or by effluents from the combustion of said thermolysis effluents, said means having separate outlets for the thermolysis solids and effluents,
a means for generating warm fumes,
a means for collecting and washing the solid products coming from thermolysis means,
wherein said thermolysis means comprises at least one inlet for the waste, at least one inlet and one outlet for warm thermolysis gases and wherein the waste and the warm gases are in direct contact in said thermolysis means.

5,616,217
CONTROLLED ALKALI TREATMENT IN THE RECOVERY OF METHYL TERTIARY BUTYL ETHER
Mark E. Taylor, Orange, Tex., assignor to Texaco Chemical Inc., White Plains, N.Y.
Filed Aug. 17, 1995, Ser. No. 516,030
Int. Cl.⁶ B01D *3/40;3/42;* **C07C** *41/00*
U.S. Cl. 203—97 **11 Claims**



1. An improved method for the manufacture of methyl tertiary butyl ether from tertiary butyl alcohol and methanol and for the removal of acidic by-products from the etherification reaction product which comprises:
a) charging the etherification reaction product to a first MTBE distillation column and also charging a recycle higher boiling water fraction containing sodium hydroxide to said first MTBE distillation column and fractionating said etherification reaction product and said higher boiling recycle fraction therein to provide a first lower boiling distillation fraction substantially free from acidic by-products comprising isobutylene, methyl tertiary butyl ether, and methanol and a first higher boiling distillation fraction comprising methanol, tertiary butyl alcohol, neutralized acidic by-products and water,
b) charging the first higher boiling distillation fraction to a recycle distillation column and fractionating it therein to provide a lower boiling recycle fraction comprising tertiary butyl alcohol and a higher boiling fraction comprising water and neutralized acidic by-products,
c) recycling the higher boiling water fraction to the MTBE distillation column at a charge point above the charge point for the etherification reaction product, and
d) adding aqueous sodium hydroxide to the recycled higher boiling water fraction in an amount sufficient to neutralize the acidic by-products charged to the MTBE distillation column.

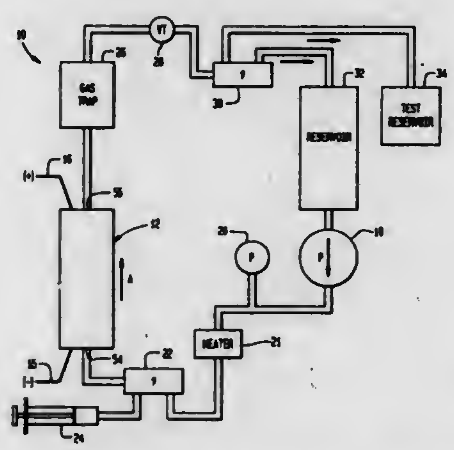
5,616,218
MODIFICATION AND SELECTION OF THE MAGNETIC PROPERTIES OF MAGNETIC RECORDING MEDIA THROUGH SELECTIVE CONTROL OF THE CRYSTAL TEXTURE OF THE RECORDING LAYER
Michael Alex, Milpitas, Calif., assignor to Materials Research Corporation, Orangeburg, N.Y., and Sony Corporation, Tokyo, Japan
Filed Sep. 12, 1994, Ser. No. 304,561
Int. Cl.⁶ C23C *14/34*
U.S. Cl. 204—192.15 **15 Claims**



1. A method of selectively choosing the magnetic properties of a sputter deposited recording layer of a non-tape recording medium comprising:
providing a substrate and a target of metal underlayer material facing the substrate and spaced from the substrate inside a sputter deposition chamber, the underlayer material having crystal structures with a variety of different, selectable crystal orientations;
sputtering the target into a plurality of sputter particles, the sputter particles striking the substrate to deposit a film of metal underlayer material upon the substrate;
maintaining the substrate generally stationary with respect to the target;
selectively collimating the sputter particles to vary the arrival energy and angular distribution of the sputter particles striking the generally stationary substrate to selectively establish the orientation of the crystals of the metal underlayer film deposited on the substrate;
collimating with a collimating structure having a plurality of collimating apertures with widths, depths and associated aspect ratios and selectively varying the aspect ratios of the collimating apertures to selectively establish the orientation of the crystals in the metal underlayer film;

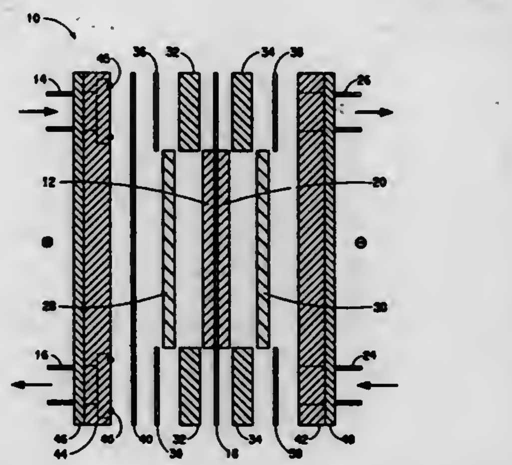
sputter depositing a magnetic metal film over the metal underlayer film to form a magnetic recording layer, the magnetic metal film having a different metallic composition than the underlayer film and comprising crystals whose orientations are affected by the crystal orientation of the crystals in the underlayer film such that the deposited magnetic metal film has a crystal texture dependent upon the crystal texture of the underlayer film;
whereby the magnetic properties of the magnetic recording layer are chosen by selectively collimating while sputter depositing the underlayer material.

5,616,219
SYSTEM AND METHOD FOR ELECTROLYSIS AND HEATING OF WATER
James A. Patterson, 2074 20th St., Sarasota, Fla. 34234
Filed Jun. 13, 1995, Ser. No. 489,894
Int. Cl.⁶ C25B *9/00*
U.S. Cl. 204—241 **22 Claims**



1. A system for electrolysis and heating of a liquid electrolyte within an electrolytic cell comprising:
said electrolytic cell including a non-conductive housing and an inlet and an outlet;
a first conductive foraminous grid positioned within said housing adjacent to said inlet;
a second conductive foraminous grid positioned within said housing spaced from said first conductive grid and adjacent to said outlet;
a plurality of conductive beads each having a conductive metallic surface which will combine with hydrogen or an isotope of hydrogen to form a metallic hydride, said conductive beads in electrical communication with said first conductive grid end electrically isolated from said second grid:
means for pumping said liquid electrolyte into said electrolytic cell through said inlet, said electrolyte having a conductive salt in solution with water;
means for heating said liquid electrolyte external to said electrolytic cell as said liquid electrolyte flows through said system;
an electric power source operably connected to said first and second grids
wherein each said conductive bead includes:
a conductive metal flash coating of uniform thickness formed by chemical combination with a cation exchange surface of a spherical cross-linked polymer microbead from a metal cation which has been chemically reduced with hydrazine;
a nickel layer of uniform thickness formed atop said flash coating;
a metallic hydride forming layer of uniform thickness formed atop said nickel layer;
a metallic support layer of uniform thickness formed atop said metallic hydride forming layer.

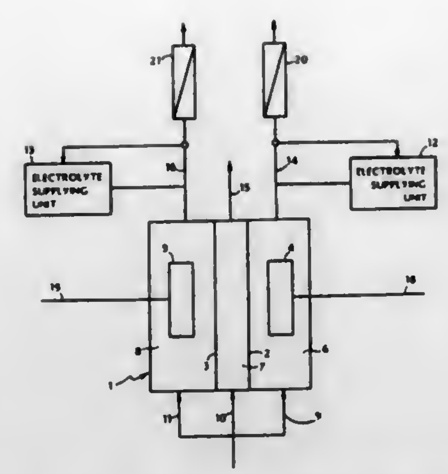
5,616,220
ELECTROCHEMICAL CELL HAVING A RESILIENT FLOW FIELD
Dennie T. Mah, Wilmington; James A. Trainham, III, Newark, both of Del.; John S. Newman, Kensington, Calif.; Douglas J. Eames, Chamblee, Ga., and Clarence G. Law, Jr., West Trenton, N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of Ser. No. 156,196, Nov. 22, 1993, Pat. No. 5,411,641, and Ser. No. 246,909, May 20, 1994, which is a continuation-in-part of Ser. No. 156,196. This application May 1, 1995, Ser. No. 431,589
Int. Cl.⁶ C25B *9/00*
U.S. Cl. 204—252 **28 Claims**



1. An electrochemical cell for directly producing essentially dry halogen gas from essentially anhydrous hydrogen halide, comprising:
(a) means for oxidizing molecules of essentially anhydrous hydrogen halide to produce essentially dry halogen gas and protons;
(b) cation-transporting means for transporting the protons therethrough;
(c) means for reducing the transported protons, wherein the cation-transporting means has one side disposed in contact with the oxidizing means, and another side disposed in contact with the reducing means;
(d) current conducting means disposed on the other side of the oxidizing means for conducting current to and from the oxidizing means, the cation-transporting means and the reducing means; and
(e) mass flow field means disposed between the oxidizing means and the current conducting means for providing uniform electrical contact between the oxidizing means and the current conducting means, wherein the mass flow field means comprises a resilient material.

5,616,221
ELECTROLYTIC IONIZED WATER PRODUCING APPARATUS
Hidemitsu Aoki, Tokyo; Koji Yamanaka, Saitama; Takashi Imaoka, Saitama; Takashi Futatsuki, Saitama, and Yukinari Yamashita, Saitama, all of Japan, assignors to NEC Corporation, and Organo Corporation, both of Tokyo, Japan
Filed Oct. 27, 1995, Ser. No. 549,570
Claims priority, application Japan, Oct. 28, 1994, 6-265812
Int. Cl.⁶ C02F *1/461*
U.S. Cl. 204—252 **14 Claims**

1. Electrolytic ionized water producing apparatus comprising:
(a) at least one anode and at least one cathode;
(b) an electrolyzer including an anode chamber housing the anode, a cathode chamber housing the cathode, and an intermediate chamber disposed between the anode chamber and



the cathode chamber, the intermediate chamber being partitioned via diaphragms from the anode chamber and the cathode chamber;
(c) a plurality of inlet lines for supplying influent water to the anode chamber, the cathode chamber and the intermediate chamber in the electrolyzer;
(d) a plurality of outlet lines for discharging electrolytic ionized water from the respective chambers in the electrolyzer; and
(e) at least one electrolyte supplying unit disposed on the outlet line connected to the anode chamber or the cathode chamber, the electrolyte supplying unit supplying electrolyte to the electrolytic ionized water.

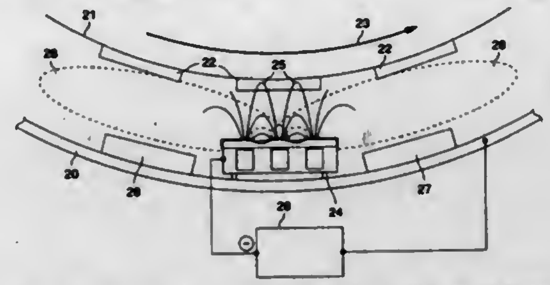
5,616,222
ELECTROCHEMICAL SENSORS PASTE
Thomas C. Maley, Medway; Paul A. D'Orazio, Mendon; Peter G. Edelman, Franklin, and John A. Zalenski, Mendon, all of Mass., assignors to Chiron Diagnostics Corporation, Medfield, Mass.
Division of Ser. No. 266,824, Jun. 27, 1994, Pat. No. 5,494,562. This application Sep. 15, 1995, Ser. No. 508,271
Int. Cl.⁶ C25B *11/12*
U.S. Cl. 204—294 **3 Claims**

1. A paste for an electrochemical electrode comprising,
(a) platinized carbon particles;
(b) albumin;
(c) binder resin; and
(d) an enzyme.

5,616,223
MIXED IONIC-ELECTRONIC CONDUCTING COMPOSITES FOR OXYGEN SEPARATION AND ELECTROCATALYSIS
Yousheng Shen; Ashok V. Joshi, both of Salt Lake City, Utah; Kevin Krist, Palatine, Ill.; Meilin Liu, Norcross, Ga., and Anil V. Virkar, Salt Lake City, Utah, assignors to Gas Research Institute, Chicago, Ill.
Continuation-in-part of Ser. No. 146,880, Nov. 1, 1993, Pat. No. 5,478,444, which is a continuation-in-part of Ser. No. 882,175, May 11, 1992, Pat. No. 5,273,628. This application Apr. 22, 1994, Ser. No. 231,616
Int. Cl.⁶ C25B *13/00*
U.S. Cl. 204—295 **26 Claims**

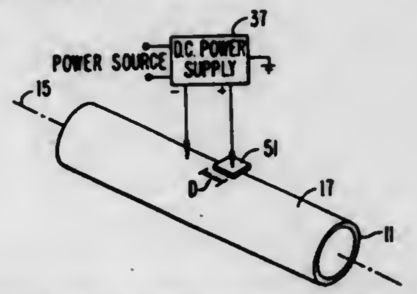
1. A gas impervious mixed ionic-electronic conducting composite ceramic body having a non-homogeneous mixed microstructure comprising about 30 to about 90 volume percent of a predominantly ionic conducting phase for ionic conduction across said body by pressure differential and about 10 to about 70 volume percent of a predominantly electronic conducting phase, each said phase being continuous.

5,616,224
APPARATUS FOR REDUCING THE INTENSITY AND FREQUENCY OF ARCS WHICH OCCUR DURING A SPUTTERING PROCESS
Norman L. Boling, Santa Rosa, Calif., assignor to Deposition Sciences, Inc., Santa Rosa, Calif.
Filed May 9, 1995, Ser. No. 437,816
Int. Cl.⁶ C23C *14/35;14/54*
U.S. Cl. 204—298.08 **14 Claims**



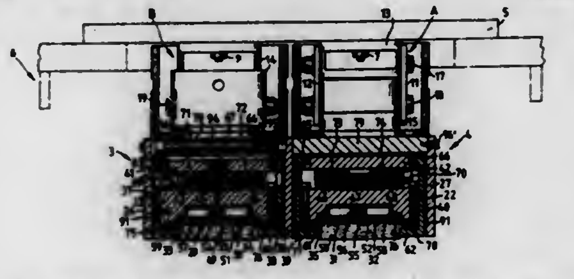
1. A sputter coating system comprising a vacuum chamber, a means within said chamber adapted for mounting substrates, at least one magnetron sputtering device positioned at a work station adjacent to the means for mounting substrates and adapted for developing a first plasma for sputtering at least a selected material onto said substrates, said magnetron sputter device being operatively connected to a DC power supply which employs a voltage interruption or reversal feature in order to reduce energy or frequency of arcing between said target and said chamber or first plasma and at least a second device positioned in the vicinity of said magnetron sputter device for the purpose of generating a second plasma which commingles with said first plasma acting as a source of current for discharging potential sites of arcing and bringing about further suppression of said arcing.

5,616,225
USE OF MULTIPLE ANODES IN A MAGNETRON FOR IMPROVING THE UNIFORMITY OF ITS PLASMA
Peter A. Sieck, Santa Rosa; Richard Newcomb, Rio Vista; Terry A. Trumbly, Pleasant Hill, and Stephen C. Schulz, Benicia, all of Calif., assignors to The BOC Group, Inc., Murray Hill, N.J.
Filed Mar. 23, 1994, Ser. No. 216,633
Int. Cl.⁶ C23C *14/54;14/34*
U.S. Cl. 204—298.14 **22 Claims**



1. Apparatus within a vacuum chamber for applying a thin film of a material onto a substrate that is being moved in a path therethrough, comprising:
a cylindrically shaped target that is rotatable about an elongated axis thereof which is oriented to extend transversely across said substrate path; including magnets therein facing said path, said target having a surface which is maintained at a negative voltage, thereby defining a deposition zone between the target and substrate path that extends along a length of the cylindrical target, and
means for adjusting a profile across said deposition zone of a rate of deposition of the material onto the substrate, said deposition rate profile adjusting means including at least one anode disposed adjacent the target surface, connected to a positive voltage from a power source, and having a dimension in a direction of the target surface elongated axis of eight centimeters or less.

5,616,226
CATHODE ASSEMBLY
Hans Kunz, Hasselroth; Andreas Sauer, Aschaffenburg; Manfred Schuhmacher, Alzenau; Joachim Szczyrbowski, Goldbach, and Dietmar Marquardt, Erlensee, all of Germany, assignors to Balzers und Leybold Deutschland Holding AG, Hanau am Main, Germany
Filed Nov. 7, 1995, Ser. No. 554,751
Claims priority, application Germany, Mar. 9, 1995, 195 08 406.3
Int. Cl.⁶ C23C *14/34*
U.S. Cl. 204—298.23 **6 Claims**

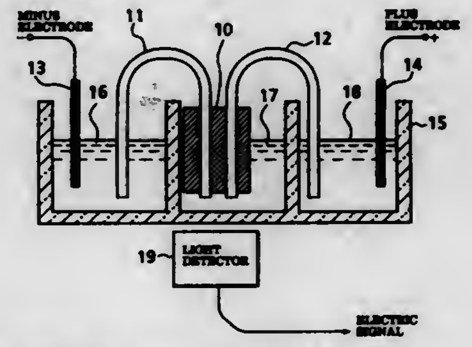


1. A cathode assembly for sputtering a target, said assembly comprising
magnetic yoke means,
target means on one side of said yoke means,
plate means on the other side of said yoke means,
clamping means effective to limit movement of said plate means away from said target means, and
wedge means between said yoke means and said plate means, said wedge means being expandable to move said plate means away from said yoke means, whereby said plate means and said target means can be fixed against said clamping means.

5,616,227
METHOD FOR EXTENDING THE LIFE OF ELECTROPHORETIC GELS
Randy M. McCormick, Santa Clara, Calif., assignor to Dionex Corporation, Sunnyvale, Calif.
Filed Jun. 26, 1995, Ser. No. 494,940
Int. Cl.⁶ C25B *15/00;* **G01N** *27/26*
U.S. Cl. 204—457 **10 Claims**

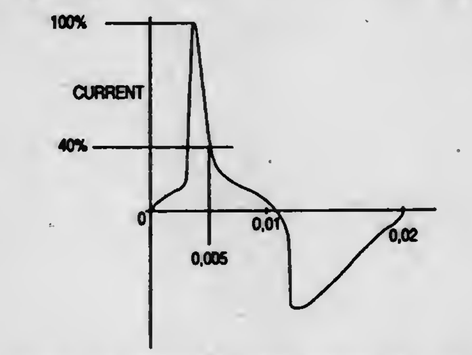
1. A method for gel electrophoresis in which a same gel is reused for the sequential separations of multiple samples and the useful life of the gel is extended by periodic reversal of the polarity of the applied electric field along the gel, said method comprising
(a) depositing a first sample at a first end of an electrophoretic gel having a gel flow path which has a first and second end,
(b) electrophoretically separating macromolecules in said first sample along said gel flow path by applying an electric field along said gel flow path,
(c) detecting said separated first sample macromolecules on line during step (a),
(d) eluting said separated first sample macromolecules from said gel flow path,
(e) applying an electric field along said gel flow path of opposite polarity to that applied in step (a),
(f) then, electrophoretically separating macromolecules in a second sample through said electrophoretic gel flow path by depositing said second sample at said first or second end while applying an electric field along said gel flow path of said gel, and
(g) detecting the macromolecules in said second sample on line during step (e).

5,616,228
CAPILLARY ELECTROPHORESIS APPARATUS FOR DETECTING EMITTED FLUORESCENCE FROM A SAMPLE WITHOUT EMPLOYING AN EXTERNAL LIGHT SOURCE DEVICE
Hisanori Nasu; Kenji Yamamoto, both of Yokohama, and Hitoshi Fujimiya, Mobara, all of Japan, assignors to Hitachi Software Engineering Co., Ltd., Kanagawa-ken, Japan
Filed Sep. 28, 1995, Ser. No. 535,955
Claims priority, application Japan, Sep. 29, 1994, 6-259079
Int. Cl.⁶ G01N *27/26*
U.S. Cl. 204—603 **12 Claims**



1. A capillary electrophoresis apparatus comprising:
a capillary having a hollow portion filled with a gel for use in electrophoresis;
a first buffer solution container for storing a buffer solution and for introducing a sample labelled with a fluorescent substance into an inlet of said capillary for separation of said sample by electrophoresis;
a second buffer solution container for storing a buffer solution containing a luminous solution, into which said sample is continually introduced from an outlet of said capillary after separation of said sample by electrophoresis;
electrophoresis means for subjecting said sample to electrophoresis by applying a voltage to said gel through which said sample is being transferred into said second buffer solution container; and
light receiving means disposed underneath the outlet of said capillary to read fluorescence emitted from the fluorescent substance labelling said sample from under the outlet of said capillary from which said sample is downwardly discharged.

5,616,229
PROCESS FOR COATING METALS
Victor Samsonov, and Misha Hiterer, both of Jerusalem, Israel, assignors to Almag AL, Jerusalem, Israel
Filed May 19, 1995, Ser. No. 445,106
Claims priority, application Israel, Jun. 1, 1994, 109857
Int. Cl.⁶ C25D *5/18;11/00*
U.S. Cl. 205—107 **8 Claims**



1. A process for forming a ceramic coating on a valve metal selected from the group consisting of aluminium, zirconium, titanium, hafnium and alloys of these metals, said process comprising:

(a) immersing said metal as an electrode in an electrolytic bath comprising an aqueous solution of an alkali metal hydroxide;
(b) providing an opposite electrode immersed in or containing the electrolytic bath;
(c) passing a modified shaped-wave alternating electric current from a high voltage source of at least 700 V through a surface of said metal to be coated and said opposite electrode, wherein said modified shaped-wave electric current rises from zero to its maximum height and falls to below 40% of its maximum height within less than a quarter of a full alternating cycle thereby causing dielectric breakdown, heating, melting, and thermal compacting of a hydroxide film formed on the surface of said metal to form and weld a ceramic coating to said metal, and
(d) changing the composition of said electrolyte while said ceramic coating is being formed, said change being effected by adding an oxyacid salt of an alkali metal.

5,616,230
METHOD FOR DIRECT-ELECTROPLATING AN ELECTRICALLY NONCONDUCTIVE SUBSTRATE
Kuniaki Otsuka, Osaka; Kazue Yamamoto, Sakai; Satoshi Konishi, Nishinomiya, and Shigeru Yamato, Osaka, all of Japan, assignors to Okuno Chemical Industries Co., Ltd., Osaka, Japan
PCT No. PCT/JP94/00826, § 371 Date Jan. 24, 1995, § 102(e) Date Jan. 24, 1995
PCT Filed May 24, 1994, Ser. No. 374,576
Claims priority, application Japan, May 24, 1993, 5-121311
Int. Cl.[6] C25D *5/02;5/54;5/56;5/34*
U.S. Cl. 205—125 **6 Claims**

1. A process for plating an electrically conductive substrate comprising the following steps:
(1) a step of treating an electrically nonconductive substrate with a solution containing a silane coupling agent;
(2) a step of treating the electrically nonconductive substrate from said step (1) with a solution containing an anionic surfactant;
(3) a step of treating the electrically nonconductive substrate from said step (2) with a solution containing a palladium compound and at least one nitrogen-containing sulfur compound selected from among thiourea and its derivatives;
(4) a step of treating the electrically nonconductive substrate from said step (3) with a reducing solution containing at least one member selected from among sodium borohydride, sodium hypophosphite, hydrazine, dimethlyaminoborane, hydroxylamine and glyoxylic acid; and
(5) a step of forming an electroplating layer on the electrically nonconductive substrate from said step (4).

5,616,231
ELECTROBRIGHTENING PROCESS FOR ALUMINUM ALLOYS
Albert L. Askin, Lower Burrell; Paul B. Schultz, Murrysville, and Daniel L. Serafin, Wexford, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.
Filed May 8, 1996, Ser. No. 646,460
Int. Cl.[6] C25F *3/20;* **C23F** *3/03*
U.S. Cl. 205—153 **17 Claims**

1. A process for polishing a surface of an aluminum alloy article, comprising electrobrightening said surface at a temperature of about 90°–150° F. and at a voltage of about 5–50 volts in an acidic solution made by mixing together phosphoric acid, water, and suspended mineral particles.

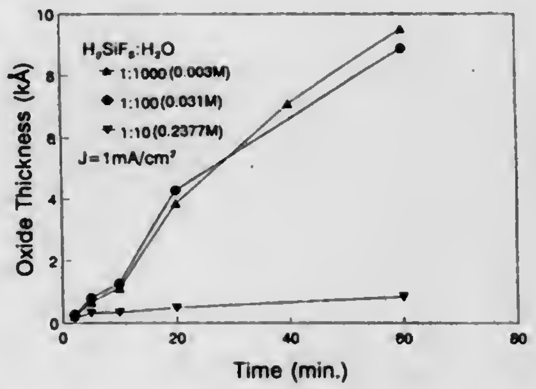
6. A process of claim 1 wherein said aluminum alloy article comprises a sheet having a thickness of about 0.010 to 0.072 inch.

9. A process for forming a highly reflective surface on an aluminum alloy article comprising:
a) cleaning a surface of said article,
b) polishing said surface in accordance with the electrobrightening process of claim 1,
c) desmutting said surface in an acid bath, and
d) applying a protective coating to said surface.

5,616,232
PROCESS FOR PRODUCING ZINC-CHROMIUM ALLOY-ELECTROPLATED STEEL PLATE
Makoto Nakazawa, Futtsu; Akira Takahashi, Kimitsu, and Kenichiro Matsumura, Tokai, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan
Filed Sep. 26, 1995, Ser. No. 534,144
Claims priority, application Japan, Sep. 28, 1994, 6-232685
Int. Cl.[6] C25D *3/56*
U.S. Cl. 205—155 **3 Claims**

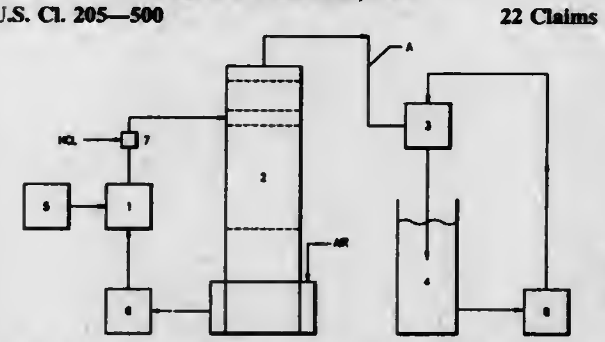
1. A process for producing a Zn—Cr alloy-electroplated steel plate, comprising immersing a steel plate in an acidic bath containing Zn^{+2} ions and Cr^{+3} ions and subjecting the steel plate to electroplating in the bath to from a Zn—Cr alloy-electroplated steel plate, wherein 0.01 g/l–20 g/l of an additive comprising a polyethyleneoxypbenol derivative with at least one of a sulfonic group (—SO_3H), sulfate group (—SO_4H), amino group (—NH_2), carboxyl group (—COOH), nitro group (—NO_2) or halogen (—F, —Cl, —Br or —I) as a substituent in the benzene ring is added to the bath to accelerate the Cr Codeposition and to improve the stability of the bath.

5,616,233
METHOD FOR MAKING A FLUORINATED SILICON DIOXIDE LAYER ON SILICON SUBSTRATE BY ANODIC OXIDATION AT ROOM TEMPERATURE
Hwu Jenn-Gwo, and Jeng Ming-Jer, both of Taipei, Taiwan, assignors to National Science Council, Taipei, Taiwan
Filed May 1, 1996, Ser. No. 640,476
Int. Cl.[6] C25D *7/12;11/32*
U.S. Cl. 205—157 **6 Claims**



1. A method for forming a fluorinated silicon dioxide layer on a silicon substrate by anodic oxidation at room temperature, said method comprising conducting an electrolytic reaction at a room temperature such that a silicon dioxide layer is formed on a silicon substrate acting as an anode, in which a hydrosilicofluoric acid solution consisting essentially of hexafluorosilicic acid and water in a volumetric ratio ranging between 1:10 and 1:2000 is used as an electrolyte, and said electrolytic reaction is carded out with a current density ranging between 0.05 and 100 mA/cm².

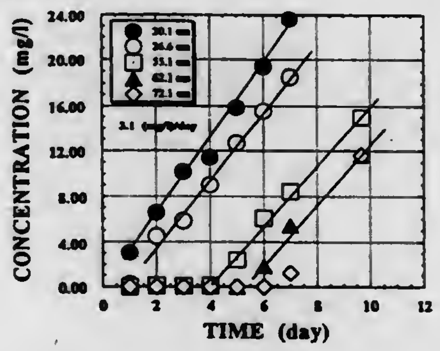
5,616,234
METHOD FOR PRODUCING CHLORINE OR HYPOCHLORITE PRODUCT
Raymond C. Rhees, Boulder City, Nev.; Ralph E. Behrens; Kathy J. Reid, both of Cedar City, Utah, and Lowell B. Morgan, Las Vegas, Nev., assignors to Pepcon Systems, Inc., Las Vegas, Nev.
Filed Oct. 31, 1995, Ser. No. 551,290
Int. Cl.[6] C25B *1/26;15/08*
U.S. Cl. 205—500 **22 Claims**



11. A process for the treatment of a substance by chlorine, comprising:
introducing an electrolyte into an electrolyzer, said electrolyzer having at least one anode and at least one cathode in contact with said electrolyte,
providing an electric current across said electrolyzer to cause formation of H_2 and Cl_2,
continuously removing said electrolyte from said electrolyzer to an air stream in a gas stripping column
removing said H_2 and Cl_2 from said electrolyte in said gas stripping column,
recycling said electrolyte from which H_2 and Cl_2 has been removed into said electrolyzer, and
contacting said Cl_2 removed from said electrolyte in said gas stripping column with a substance to be treated;
said electrolyte being maintained at a pH of 1 to 6, said electrolyte being an aqueous solution of a salt selected from the group consisting of a chloride of an alkali metal, a chloride of an alkaline earth metal, and mixtures thereof, wherein said salt is present in a concentration of 10 to 300 g/l.

12. The process according to claim 11 wherein said substance to be treated is an aqueous caustic solution which reacts with said Cl_2 to absorb and convert said Cl_2 to an alkali or alkaline earth hypochlorite product.

5,616,235
ELECTROCHEMICAL STABILIZATION OF SOILS AND OTHER POROUS MEDIA
Yalcin B. Acar, and Robert J. Gale, both of Baton Rouge, La., assignors to Board of Supervisors of Louisiana State University and Agricultural and Mechanical College, Baton Rouge, La.
Filed Jun. 3, 1996, Ser. No. 655,709
Int. Cl.[6] C25C *1/22*
U.S. Cl. 205—766 **9 Claims**



1. A process for strengthening a soil by the addition of a cementing agent comprising an anion and a cation, wherein the combination of the anion and cation in the soil forms a cementitious product, wherein said process comprises the steps of:
(a) applying an electric field in the soil between an anode and a cathode;
(b) supplying water to the soil near the anode;
(c) introducing the cation to the soil near the anode, whereby the cation migrates through the soil in the direction from the anode towards the cathode;
(d) introducing the anion to the soil near the cathode, whereby the anion migrates through the soil in the direction from the cathode towards the anode; and
(e) either introducing a base to the soil near the anode to neutralize protons generated by electrolysis of water at the anode; or introducing an acid to the soil near the cathode to neutralize hydroxide generated by electrolysis of water at the cathode; or both;
whereby the cation and the anion are dispersed through the soil between the anode and the cathode, and whereby the combination of the anion and cation in the soil forms a cementitious product.

5,616,236
METHOD FOR PROVIDING A TUBE HAVING COKE FORMATION AND CARBON MONOXIDE INHIBITING PROPERTIES WHEN USED FOR THE THERMAL CRACKING OF HYDROCARBONS
Ronald E. Brown; Larry E. Reed; Gil J. Greenwood; Timothy P. Harper, and Mark D. Scharre, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Division of Ser. No. 409,292, Mar. 23, 1995. This application May 31, 1996, Ser. No. 656,796
Int. Cl.[6] C10G *9/16*
U.S. Cl. 208—48 R **8 Claims**

1. A method for reducing a concentration of carbon monoxide present in a cracked gas stream produced by passing a hydrocarbon stream through a tube of a thermal cracking furnace, said method comprising:
treating said tube of said thermal cracking furnace by contacting said tube with a reducing gas containing a sulfur compound to thereby provide a treated tube baving carbon monoxide production inhibiting properties; and
subsequently passing said hydrocarbon stream through said treated tube while maintaining said treated tube under suitable cracking conditions thereby producing said cracked gas stream having a reduced concentration of carbon monoxide below said concentration.

5,616,237
SPLIT FEED INJECTION FLUID CATALYTIC CRACKING PROCESS
Ashok S. Krishna, Redondo Beach, Calif.; Robert C. Skocpol, Amersfoort, Netherlands, and Lewis A. Frederickson, Oakland, Calif., assignors to Chevron Research and Technology Company, A Division of Chevron U.S.A. Inc., San Francisco, Calif.
Continuation of Ser. No. 259,313, Jun. 13, 1994, abandoned. This application Apr. 1, 1996, Ser. No. 626,618
Int. Cl.[6] C10G *11/05*
U.S. Cl. 208—120 **14 Claims**

1. A process for the conversion of an unsegregated hydrocarbon feed of a full boiling range in an FCC riser reactor employing zeolitic catalyst there throughout which comprises:
(a) splitting the hydrocarbon feed and continuously injecting said hydrocarbon feed at a plurality of positions along the length of said FCC riser reactor, wherein about 25 to 75 volume percent of said feed is injected to the lowest injection position;
(b) apportioning throughput through said positions along said length of said FCC riser reactor;

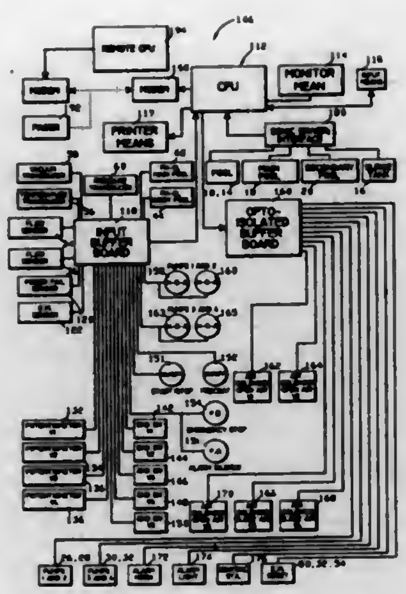
(c) adjusting the temperatures of the feed streams so as to make the temperatures of the upper injection feed streams at least about 200° F. less than the temperature of the lowest injection feed, to optimize octane numbers of the gasoline and/or minimize coke or gas make;
(d) recycling regenerated catalyst to the bottom of said FCC riser reactor; and
(e) lifting said regenerated catalyst up said FCC riser reactor to said lowest injection position of said hydrocarbon oil feed with a flow of gas.

5,616,238
SOLVENT EXTRACTION OF HYDROCARBON OILS PRODUCING AN INCREASED YIELD OF IMPROVED QUALITY RAFFINATE
Joseph P. Boyle, Baton Rouge, La., and Adrianus Welmers, Mendham, N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.
Continuation-in-part of Ser. No. 247,123, May 20, 1994, abandoned. This application Dec. 5, 1995, Ser. No. 567,646
Int. Cl.⁶ C10G *21/20*
U.S. Cl. 208—314 **7 Claims**

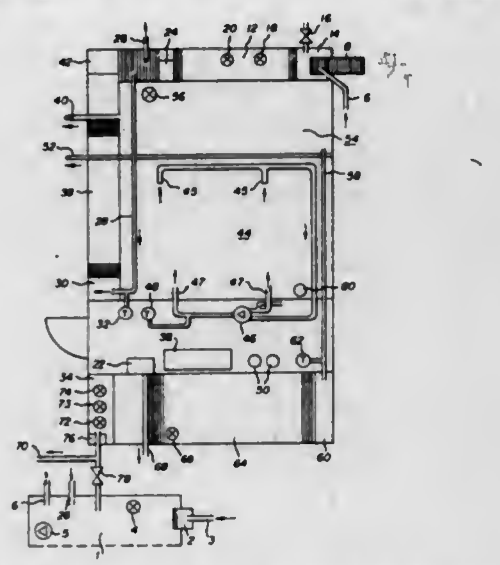
1. An improved method for the solvent extraction of hydrocarbon feed streams comprising mixtures of aromatic and non-aromatic hydrocarbons using an aromatics selective extracting solvent wherein the hydrocarbon feed is contacted with the selective solvent in an extraction zone to produce an aromatics lean raffinate product stream and an aromatics rich solvent extract solution stream wherein the improvement comprises subjecting the aromatics rich solvent extract stream to a water injection step in the absence of external cooling to produce a phase separation resulting in the generation of a hydrocarbon rich pseudo-raffinate phase, recycling the pseudo-raffinate phase to the extraction zone for re-extraction therein in combination with fresh feed without any increase in the solvent treat to charge ratio thereby producing increased volumes of raffinate product having a quality higher than that produced under the same conditions at the same extraction solvent treat rate but without pseudo raffinate recycle, the water injection step using from 0.1 to 5.0 LV % water based on the amount of extract solution being processed.

5,616,239
SWIMMING POOL CONTROL SYSTEM HAVING CENTRAL PROCESSING UNIT AND REMOTE COMMUNICATION
Kenneth Wendell, 107 Lodge Ave., Huntington, N.Y. 11746, and Sven Faret, 30-A Main Pkwy., Plainview, N.Y. 11803
Filed Mar. 10, 1995, Ser. No. 402,104
Int. Cl.⁶ B01D *17/12;35/027*
U.S. Cl. 210—86 **26 Claims**

1. A control system for controlling water flow in a swimming pool system, said pool system including a swimming pool and at least one filter tank means, said control system comprising:
control circuit means for controlling at least a first valve assembly and a second valve assembly, said first valve assembly being operable to control pool water flow from a swimming pool to at least one filter tank means of said pool system, and said second valve assembly being operable to control pool water flow from said at least one filter tank means to said swimming pool when at least one sensor located at said swimming pool and electrically coupled to said control circuit means senses a decrease of a prescribed water level, said control circuit means being adapted to maintain water levels in said at least one filter tank means and said swimming pool at said prescribed water level; a programmable central processing unit and means for transmitting information from said central processing unit to a location remote from said central processing unit.



5,616,240
DEVICE FOR SEWAGE CLARIFICATION
Uwe Sonnenrein, Paulusstrasse 10, D-4795 Delbrück, Germany
Division of Ser. No. 167,632, Dec. 14, 1993, Pat. No. 5,505,862. This application Dec. 29, 1995, Ser. No. 581,434
Claims priority, application Germany, Jun. 14, 1991, 41 19 718.6; Nov. 25, 1991, 41 38 695.7; Dec. 11, 1991, 41 40 877.2; Apr. 23, 1992, 9205523 U
Int. Cl.⁶ C02F *3/30*
U.S. Cl. 210—104 **26 Claims**

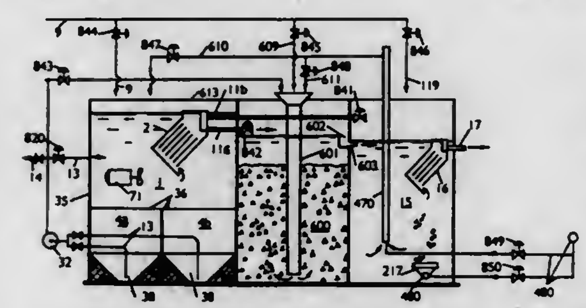


1. A device for clarifying any sewage containing decomposable solid matter, comprising:
a reservoir, a clarified water discharge basin, and a clarified water recirculating line leading from said clarified water discharge basin to said reservoir;
physical processing stages connected to said reservoir for continuously treating sewage, said physical processing stages having assigned solid matter separators including a coarse-matter separator, a fine-matter separator and a heavy medium separator;
gas-water mixers bypassing said clarified water recirculating line and developing solid-matter-foam;

flotation-stages being disposed downstream of said physical processing stages and being connected to said gas-water mixers for separating the solid-matter-foam;
an aerobic biological clearing stage connected downstream of said flotation-stages, an anaerobic biological clearing stage connected downstream of said aerobic biological clearing stage, and bypasses connected to said clearing stages for repeated precisely controlled industrial process circulation, said bypass connected to said aerobic biological clearing stage being connected to one of said gas-water mixers for suctioning off sewage water from said aerobic biological clearing stage and leading the sewage water back into said aerobic biological clearing stage together with a mixture of clear water and commercial oxygen from said gas-water mixer;
sensors for monitoring the sewage flow through said treatment stages and determining values; and
a process control unit connected to said sensors for receiving and processing the values for flow control.

19. A device for aerating sewage water, comprising:
a closed vessel having an upper inlet for light medium, a lower inlet for a fluidic mixture, a feed pipe for sewage water, and a cylindrical nozzle body communicating with the light medium,
said nozzle body having a nozzle base, a nozzle trunk connected to said nozzle base, an axial through bore in said nozzle base leading into a nozzle outlet chamber in said nozzle trunk, and a nozzle tip being disposed on said nozzle trunk and defining an annular impact chamber between said nozzle tip and said nozzle trunk leading into an annular nozzle, said annular nozzle having a nozzle gap in the shape of a truncated envelope of a cone being adjustable in width and leading into said nozzle outlet chamber.

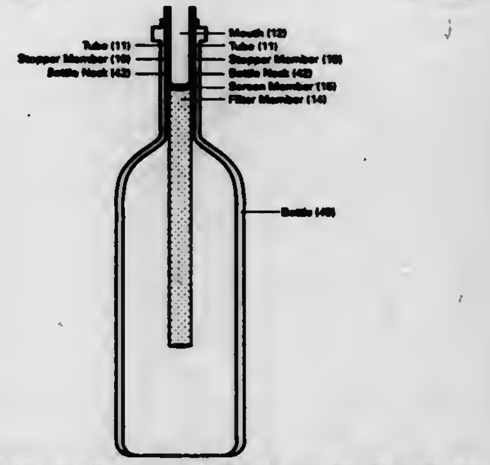
5,616,241
TREATMENT OF WASTEWATER AND SLUDGES
Boris M. Khudenko, 744 Moores Mill Rd., Atlanta, Ga. 30327
PCT No. PCT/US94/03374, § 371 Date Oct. 12, 1995, § 102(e) Date Oct. 12, 1995, PCT Pub. No. WO94/24056, PCT Pub. Date Oct. 27, 1994
PCT Filed Mar. 28, 1994, Ser. No. 532,606
Int. Cl.⁶ C02F *3/30;11/04*
U.S. Cl. 210—151 **18 Claims**



1. Apparatus for treatment of wastewater comprising a sludge conditioner, an anaerobic reactor disposed above said sludge conditioner and adjacent thereto, means for feeding wastewater into said anaerobic reactor, means for transferring conditioned sludge from said conditioner to said anaerobic reactor, and means for mixing said conditioned sludge with said wastewater.

15. Apparatus for treatment of wastewater, said apparatus including at least two consecutive stages for treatment, each stage comprising: inlet means for wastewater influent, a reaction means for contacting wastewater and biomass to promote biochemical conversion of the constituents of wastewater and growth of biomass, separator means in communication with said reaction means for receiving at least a portion of the flow of said reaction means and separating sludge and water, means for feeding the separated water downstream and means for feeding the separated sludge upstream; and, discharge means for discharging effluent from the last stage.

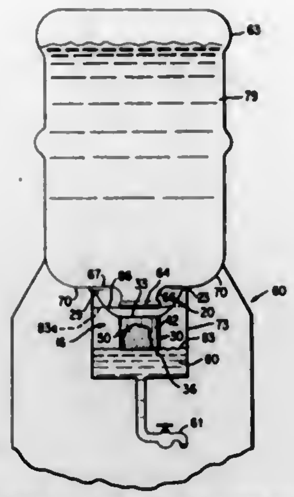
5,616,242
TWO STAGE BOTTLE FILTER FOR THE REMOVAL OF SEDIMENT
Mary D. Mandola, 8860 Cedarspur, Houston, Tex. 77055
Filed May 26, 1995, Ser. No. 451,646
Int. Cl.⁶ B01D *35/02;* **B65D** *25/48*
U.S. Cl. 210—238 **7 Claims**



1. An apparatus to fit into a mouth of a bottle for filtering sediment from ports or fine wines, said apparatus comprising:
a stopper member having a central aperture;
a tube disposed through said central aperture of said stopper member, said tube having an interior and an exterior and a first end and a second end wherein the second end defines a mouth;
a first filter member supported at or about said first end of said tube, forming a junction with said first end of said tube, said first filter member being of a fine mesh for straining solids and sediment and said first filter member having an exterior and an interior; and
a second filter member interposed at or about said junction of said first filter member and said first end of said tube such that both of said filter members are located at or about said first end of said tube, said second filter member being of a finer mesh than said mesh of said first filter member and said second filter member being in series with said first filter member.

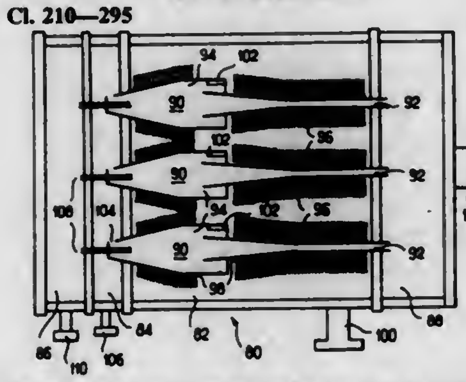
5,616,243
FILTER FOR INVERTED BOTTLE TYPE WATER DISPENSER
Ehud Levy, 5933 Peachtree Industrial Blvd. Building B, Norcross, Ga. 30092
Continuation-in-part of Ser. No. 478,863, Jun. 7, 1995, which is a continuation-in-part of Ser. No. 261,998, Jun. 17, 1994, Pat. No. 5,538,746. This application Feb. 12, 1996, Ser. No. 599,925
Int. Cl.⁶ B01D *24/02*
U.S. Cl. 210—282 **19 Claims**

1. A filter basket for an inverted bottle type water dispenser comprising:
a top section and a bottom section,
said top section comprising a top end, a bottom end, a passage and a wall,
said top end comprising a first opening,
said bottom end comprising a second opening,
said passage connecting said first opening and said second opening,
said passage providing water discharged from an inverted bottle of said water dispenser a downwardly directed flow path to said second opening,
said wall circumscribing said passage and connecting said top end and said bottom end,
said bottom end attached to said bottom section,
said bottom section comprising a top side, a bottom side, a compartment, a further wall and a filtration media,



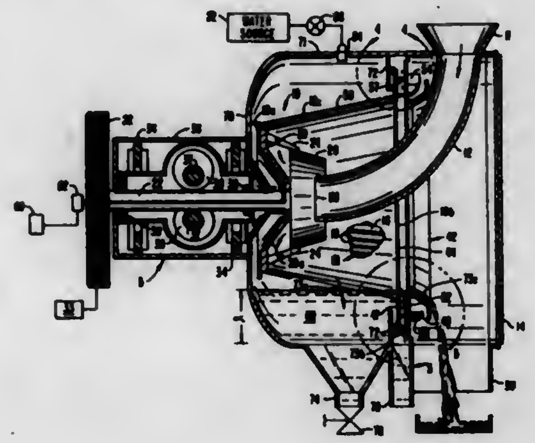
said bottom section disposed in a water reservoir of said inverted bottle type water dispenser,
said top side disposed below an opening of said bottle of said inverted bottle type water dispenser,
said top side comprising a area approximately equal, in size and shape, to said area of said second opening whereby said downwardly directed flow path of said gravity-fed water is substantially obstruction-free between said second opening and said top side,
said top side comprising a first plate,
said first plate comprising means for downwardly directed flow through said top side of said gravity-fed water from said bottle directly into said compartment,
said compartment disposed below said top side,
said further wall circumscribing said compartment and connecting said top side and said bottom side,
said filtration media disposed within said compartment and submerged in said water,
said filtration media comprising means for filtering said water from said bottle of said inverted bottle type dispenser,
said bottom side comprising a second plate,
said second plate comprising means for downwardly directed flow of said gravity-fed water through said bottom side directly into said reservoir.

5,616,244
CYCLONE SEPARATOR HAVING AN INCORPORATED COALESCER
Jacques Seureau, Aulon, France, and Mark Hoyack, Fremont, Calif., assignors to Elf Aquitaine Production, France
Filed Mar. 18, 1996, Ser. No. 617,444
Claims priority, application France, Mar. 31, 1995, 95 03825
Int. Cl.^{6} B01D *21/26*
U.S. Cl. 210—295 **7 Claims**



7. Separator assembly comprising a plurality of cyclone separators, each cyclone separator comprising a body formed by a cylindrical part and a converging substantially conical part, at least one inlet mounted on the cylindrical part, a tubular element mounted on the body and in hydraulic communication therewith and a coalescer arranged around the tubular element and adapted to receive liquid to be separated prior to its entry in the cyclone, the separators being arranged in a common chamber adapted to receive an emulsion to be treated, which is in hydraulic communication with the inlets of the separators.

5,616,245
HIGH GRAVITY SEPARATOR
Michael C. Albrecht, Concord, Calif., assignor to HJS Clem AG, Liechtenstein, Germany
Continuation-in-part of Ser. No. 255,030, Jun. 7, 1994, abandoned. This application May 19, 1995, Ser. No. 444,800
Int. Cl.^{6} B04B *3/00;3/06*
U.S. Cl. 210—371 **14 Claims**



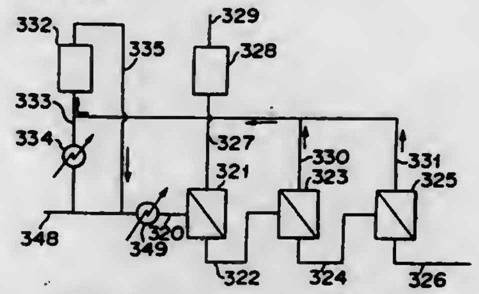
1 A material separator comprising:
a housing;
a basket rotatably mounted in the housing, the basket having an upstream end portion, a downstream open end portion and a tubular portion disposed therebetween, the tubular portion including a screen;
a drive coupled to the basket for rotating the basket in the housing;
a feed line having an inlet adapted for coupling to a source of material and an outlet arranged to the tubular portion of the basket for delivering material from the source of material to the tubular portion;
a circular weir member having a body for damming the downstream open end portion and having a top for permitting fluid to flow thereover;
means for moving the circular weir member between a first position where the circular weir member dams the downstream open end portion and a second position where the circular weir member is spaced from the downstream open end portion to permit material to pass between the circular weir member and the downstream open end portion of the basket;
a first, second and third fluid paths for discharge of materials that are in fluid communication with the basket;
the first fluid path passing through the tubular screen of the rotating basket and into the housing and out a first outlet;
the second fluid path passing between the circular weir member and the basket when the circular weir member is in the second position to a second outlet; and,
the third fluid path passing over the top of the circular weir member to a third outlet.

5,616,246
HYDROPHILIC MEMBRANES FOR ELECTROCHEMICAL DEVICES AND METHOD FOR PREPARING SAME
David R. Gagnon, St. Paul; Harlan L. Krinke, May Township, Washington County, and Corazon C. Brizuela, Woodbury, all of Minn., assignors to Minnestoa Mining & Manufacturing Company, St. Paul, Minn.
Division of Ser. No. 122,807, Sep. 16, 1993, Pat. No. 5,443,727, which is a continuation of Ser. No. 775,969, Nov. 8, 1991, abandoned, which is a continuation-in-part of Ser. No. 605,834, Oct. 30, 1990, abandoned, Ser. No. 605,754, Oct. 30, 1990, abandoned, Ser. No. 605,948, Oct. 30, 1990, abandoned, Ser. No. 605,921, Oct. 30, 1990, abandoned, Ser. No. 605,828, Oct. 30, 1990, abandoned, and Ser. No. 605,757, Oct. 30, 1990, abandoned. This application Jun. 1, 1995, Ser. No. 456,583
Int. Cl.^{6} B01D *71/38*
U.S. Cl. 210—490 **16 Claims**

1 μm

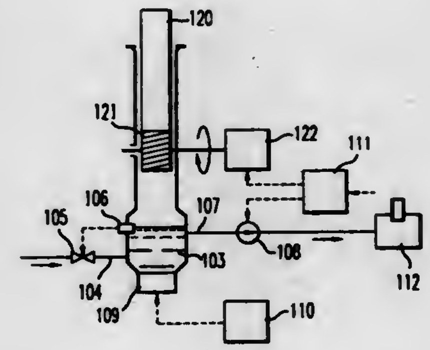
1. An electroplating residue barrier, comprising: a polymeric membrane having a complex geometric configuration of surfaces with pores therein and an extremely thin, self-interlocking, tactic, hydrophilic poly(vinyl alcohol) shell enveloping said surfaces while substantially retaining said complex geometric configuration.

5,616,247
METHOD FOR SEPARATING A LIQUID MIXTURE USING A PERVAPORATION MEMBRANE MODULE UNIT
Masaaki Mita; Kenji Sugimoto, and Haruo Katsumata, all of Kitakyushu, Japan, assignors to Mitsubishi Chemical Corporation, and Mitsubishi Kasei Engineering Company, both of Tokyo, Japan
Division of Ser. No. 201,033, Feb. 24, 1994, Pat. No. 5,556,539. This application May 23, 1995, Ser. No. 448,024
Claims priority, application Japan, Feb. 26, 1993, 5-38524; Feb. 26, 1993, 5-38525; Mar. 4, 1993, 5-43954; Mar. 10, 1993, 5-76270; Mar. 11, 1993, 5-77648; Mar. 19, 1993, 5-77647
Int. Cl.^{6} B01D *61/36*
U.S. Cl. 210—640 **2 Claims**



1. A liquid separating method, which comprises:
separating a liquid to be treated into a permeated fluid and a non-permeated liquid,
connecting a supply line to at least one pervaporation membrane module unit and supplying the liquid to be treated to the at least one pervaporation membrane module unit,
withdrawing the permeated fluid and non-permeated liquid from the at least one pervaporation membrane module unit,
providing said supply line with a pressure pump transporting the liquid and with a heater, and
providing a final withdrawing line for the non-permeated liquid with a pressure regulating valve, wherein said at least one pervaporation membrane module unit comprises a plurality of pervaporation membrane module units which are connected so that the non-permeated liquid of a first stage pervaporation membrane module unit is supplied to a second stage pervaporation membrane module unit, and the non-permeated liquid of an n−1 stage pervaporation membrane module unit is supplied to an n stage pervaporation-membrane module unit, wherein the fluid permeating through the first stage pervaporation membrane module unit comprises steam; the steam permeated through the first stage pervaporation membrane module unit is condensed by a condenser with a refrigerant temperature of at least 0° C.; and steam permeated through at least one of the second and subsequent stage pervaporation membrane module units is, after incorporating an organic solvent compatible with water, condensed by a condenser with a refrigerant temperature of at most 0° C.

5,616,248
METHOD FOR THE PREPARATION OF HEMODIALYSIS FLUIDS CONTAINING BICARBONATE
Wilfried Schal, Tannenwaldweg 27, 61350, Bad Homburg, Germany
Continuation-in-part of Ser. No. 43,309, Apr. 6, 1993, abandoned. This application Jul. 8, 1993, Ser. No. 88,734
Claims priority, application Germany, Apr. 6, 1992, 42 11 455.1; Feb. 19, 1993, 43 05 101.4
Int. Cl.^{6} A61K *9/00;33/00;33/10;* **B01D** *61/30*
U.S. Cl. 210—647 **14 Claims**



1. A method for preparing a bicarbonate hemodialysis fluid adapted to the individual physiological requirements of a patient in need of dialysis, comprising the steps:
i) providing a primary concentrate (a) of fixed concentration and not tailored to the individual physiological requirements of the patient,
ii) providing a plurality of additional concentrates (b) having differing compositions,
iii) selecting a concentrate (b) according to the individual physiological requirements of the patient, and
iv) diluting concentrate (a) and the selected concentrate (b) with water to obtain said hemodialysis fluid; wherein
primary concentrate (a) supplies sodium ions between 120 and 135 mmol/liter based on the hemodialysis fluid, 100% of the bicarbonate and has a molar ratio of bicarbonate/sodium of 0.3 or less; and
concentrate (b) is a 120 to 250-fold liquid concentrate that supplies additional sodium in an amount up to 25 mmol/l, 0–5 mmol/l potassium, 0.3–2.5 mmol/l calcium and 0–1.2 mmol/l magnesium ions, all concentrations based on said hemodialysis fluid, representing the total quantities of calcium and magnesium ions in the hemodialysis fluid.

5,616,249

NANOFILTRATION APPARATUS AND PROCESSES

Russell B. Hodgdon, Sudbury, Mass., assignor to Ionics, Incorporated, Watertown, Mass.

Continuation of Ser. No. 304,031, Sep. 9, 1994, abandoned, which is a continuation of Ser. No. 63,799, May 20, 1993, abandoned. This application Jun. 18, 1996, Ser. No. 665,585

Int. Cl.^{6} B01D *61/00*

U.S. Cl. 210—651 **12 Claims**

1. A process for separating an aqueous mixture into less permeable and more permeable fractions, comprising the steps of:

a) contacting said aqueous mixture under pressure with a nanofiltration membrane comprising a barrier layer consisting essentially of a polymerizate of one or more first aliphatic monomers having as a molar average A+2 substituents selected from the group consisting of primary and secondary amines with one or more second aliphatic monomers having as a molar average C+2 substituents combinable with primary or secondary amines, A and C being real numbers greater than or equal to zero, the sum of A and C being at least about 0.1 and thus A and C not both being equal to zero simultaneously, said membrane having a steady state flux "a" of at least about 2 gallons per square foot per day when the membrane is challenged at about room temperature and about 225 pounds per square inch trans-membrane pressure difference with fresh, natural, sweet, cheddar cheese whey, said steady state flux "a" determined by fitting the flux "GFD" in gallons per square foot per day through said membrane versus the cumulative volume of liquid "GF" in gallons per square foot passed through said membrane, by a least squares method, to the relationship:

$$GFD = a + b \exp(-cGF)$$

where "a" is the steady state flux in gallons per square foot per day, "a+b" is the extrapolated initial flux rate in gallons per square foot per day, "c" is the exponential degradation rate per cumulative gallons per square foot permeate, and "GF" is the cumulative volume of liquid passed through said membrane in gallons per square foot; and

b) recovering the liquid passing through the membrane.

5,616,250

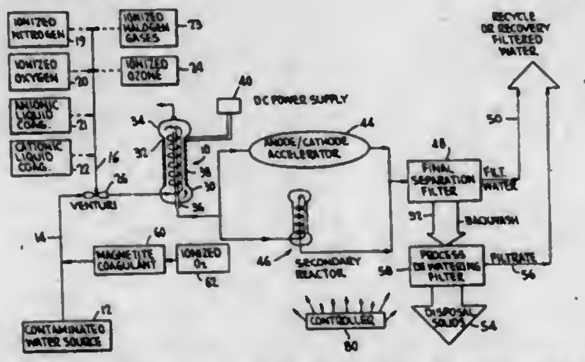
METHOD FOR MIXING COAGULATING AGENTS INTO A CONTAMINATED WATER FLOW, AND FOR REMOVING CONTAMINANTS THEREFROM

Dennis E. J. Johnson, Colorado Springs, and Clifford F. Frith, Boulder, both of Colo., assignors to Aqua-Ion Systems, Littleton, Colo.

Continuation-in-part of Ser. No. 200,749, Feb. 23, 1994, Pat. No. 5,443,719. This application Jun. 7, 1995, Ser. No. 481,994

Int. Cl.^{6} C02F *1/48*

U.S. Cl. 210—695 **12 Claims**



1. A method of mixing a stream of liquid to be treated with a stream of a treatment gas or liquid, comprising the steps of:

admitting said stream of liquid to be treated to a vertically elongated vessel comprising a first lower mixing chamber, an intermediate elongated tubular portion, and a second upper mixing chamber, a first one of said first lower and second upper mixing chambers having an inlet for receiving said stream of said liquid to be treated,

admitting said stream of a treatment gas or liquid to said first one of said mixing chambers so as to become entrained with said stream of liquid to be treated near said inlet,

wherein said inlet at which said stream of said liquid to be treated is admitted to said first one of said mixing chambers is located such that said stream of said liquid to be treated having had said stream of treatment liquid or gas entrained therein flows tangentially around the said first mixing chamber and thence in a generally spiral pattern along said intermediate elongated tubular portion, reaching the second of said mixing chambers,

a fluid exit tube extending vertically through said vertically elongated vessel from an open end disposed in the second of said mixing chambers to a discharge end, such that liquid from said second mixing chamber flows through said fluid exit tube, said fluid exit tube being located generally concentrically within said intermediate elongated tubular portion of said vessel such that said generally spiral flow pattern of said stream of said liquid to be treated having had said stream of treatment liquid or gas entrained therein continues around said fluid exit tube, and

applying an electromagnetic field to said stream of said liquid to be treated having had said stream of treatment liquid or gas entrained therein, at least during flow of said stream in said intermediate elongated tubular portion of said vessel,

whereby said treatment fluid or gas is intimately mixed with said stream of liquid to be treated during flow through said vessel, said treatment fluid or gas being selected to coagulate materials in said stream to be treated.

5,616,251

METHODS TO PREVENT AND TREAT ACID MINE DRAINAGE AND TO REMOVE METALS AND NON-METALS FROM AQUEOUS SOURCES

Kareem I. Batarseh, Morgantown, W. Va., assignor to Kareem Batarseh, Morgantown, W. Va., and Farid N. Ghadry, McLean, Va.

Filed Nov. 20, 1995, Ser. No. 561,182

Int. Cl.^{6} C02F *1/62*

U.S. Cl. 210—725 **42 Claims**

1. A method of removing an amount of at least one metal or non-metal ion from acid mine drainage waters comprising the steps of a) mixing or contacting acid mine drainage waters with an effective amount of an aqueous composition comprising a compound having a Lewis base group attached to a hydrophobic group, wherein said Lewis base group is capable of donating at least one lone pair of electrons to a metal and b) forming a gel material containing said amount of at least one metal or non-metal ion.

5,616,252

WATER TREATMENT PROCESS FOR NITRATE REMOVAL

Andrew P. Murphy, Littleton, and Charles D. Moody, Morrison, both of Colo., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Jun. 14, 1995, Ser. No. 490,261

Int. Cl.^{6} C02F *1/58*

U.S. Cl. 210—728 **7 Claims**

1. A method of precipitating a nitrate containing solid from waste brine containing sodium nitrate and chloride ions comprising reacting said waste brine with a sufficient quantity of acid and urea to form a urea-HNO_3 precipitate.

5,616,253

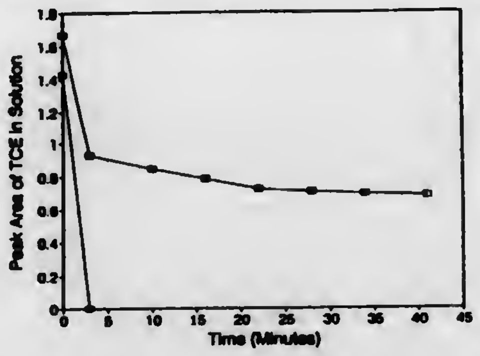
DECHLORINATION OF TCE WITH PALLADIZED IRON

Quintus Fernando; Rosy Muftikian, both of Tucson, Ariz., and Nic Korte, Grand Junction, Colo., assignors to Research Corporation Technologies, Inc., Tucson, Ariz.

Continuation-in-part of Ser. No. 363,125, Dec. 23, 1994. This application Mar. 25, 1996, Ser. No. 622,544

Int. Cl.^{6} C02F *1/70; 1/20*

U.S. Cl. 210—747 **55 Claims**



1. A method of dechlorinating a chlorinated organic compound present in a gaseous or vaporized effluent comprising contacting said gaseous or vaporous effluent with a palladized iron bimetallic system under conditions sufficient to dechlorinate said chlorinated organic compound, wherein said palladized iron bimetallic system consists essentially of palladium deposited on iron metal.

5,616,254

SYSTEM AND METHOD FOR PROCESSING BIOLOGICAL FLUID

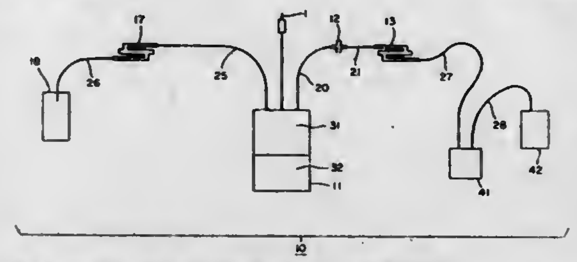
David B. Pall, Roslyn Estates; Thomas C. Gsell; Vlado I. Matkovich, both of Glen Cove, and Thomas Bormann, Melville, all of N.Y., assignors to Pall Corporation, East Hills, N.Y.

Continuation of Ser. No. 71,495, Jun. 4, 1993, which is a continuation of Ser. No. 788,787, Nov. 6, 1991, Pat. No. 5,217,627, which is a continuation-in-part of Ser. No. 609,654, Nov. 6, 1990, Pat. No. 5,100,564. This application May 26, 1995, Ser. No. 451,494

The portion of the term of this patent subsequent to Mar. 31, 2009, has been disclaimed.

Int. Cl.^{6} B01D *37/00; 21/26; 39/00;* **A61M** *1/00*

U.S. Cl. 210—806 **64 Claims**



38. A method for processing blood comprising:

collecting human whole blood in a container; and, within about 8 hours of collecting the blood:

centrifuging the whole blood to form a supernatant layer and a sediment layer;

passing the supernatant layer of the centrifuged blood through a first porous medium, the first porous medium comprising at least one of a leucocyte depletion medium, a red cell barrier medium, and a combined leucocyte depletion red cell barrier medium; and

passing the sediment layer of the centrifuged blood through a second porous medium, the second porous medium comprising a leucocyte depletion medium.

5,616,255

SOLUTION AND PROCESS FOR CHEMICALLY RESHARPENING SMOOTHING TOOLS, FORMING TOOLS, AND CUTTING TOOLS

Anthony J. Tumminaro, Jr., R.R. 2, Box 177, Devils Lake, N. Dak. 58301-9802

Continuation-in-part of Ser. No. 133,995, Oct. 12, 1993, Pat. No. 5,382,319. This application Dec. 15, 1994, Ser. No. 369,592

Int. Cl.^{6} B44C *1/22;* **C23F** *1/00*

U.S. Cl. 216—11 **4 Claims**

1. A process for chemically resharpening forming tools, smoothing tools, and cutting tools which comprises the steps of:

providing a solution comprising 1% to 99% by volume of at least one acid and further introducing at least one whetting agent into said solution to enhance resharpening characteristics of said solution;

immersing a tool in said solution; and

subsequently removing said tool from said solution.

5,616,256

PRINTED WIRING BOARD AND PROCESS FOR PRODUCING THEREOF

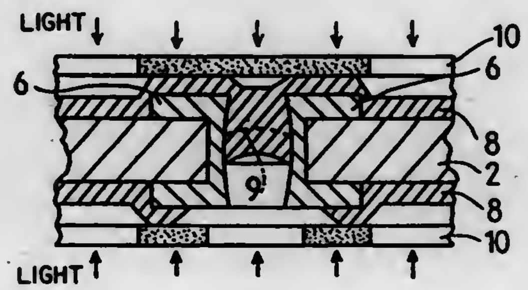
Akihiro Demura, Ogaki, Japan, assignor to Ibiden Co., Inc., Japan

Continuation-in-part of Ser. No. 344,669, Nov. 22, 1994, Pat. No. 5,493,077. This application Sep. 14, 1995, Ser. No. 527,871

Claims priority, application Japan, Nov. 22, 1993, 5-315902; Feb. 23, 1994, 6-51149

Int. Cl.^{6} B44C *1/22*

U.S. Cl. 216—18 **6 Claims**



1. A process for producing a printed wiring board having a board, a penetration hole formed in the board and a through hole in which a conductive layer is formed on an inner wall of the penetration hole and on both an upper and a lower peripheries of the penetration hole, the process comprising steps of:

forming the penetration hole in the board;

forming the conductive layer on the inner wall of the penetration hole and on both the upper and the lower peripheries of the penetration hole to produce the through hole;

coating liquid composition including photosensitive resin on one side of the printed wiring board thereby covering the through hole with the liquid composition so that the liquid composition partially flows into the through hole; and

partially photocuring the liquid composition in the through hole by irradiating light on at least the other side of the printed wiring board; and

removing the liquid composition in a non-cured state from the printed wiring board, wherein a film mainly composed of photosensitive resin is formed in the through hole so as to blind the through hole.

5,616,257

WIRE BONDING METHOD AND APPARATUS

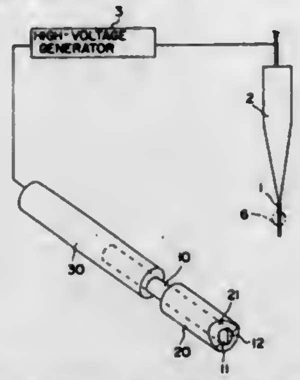
Koichi Harada, Iruma; Kuniyuki Takahashi, and Iwao Takahashi, both of Musashimurayama, all of Japan, assignors to Kabushiki Kaisha Shinkawa, Tokyo, Japan

Filed Mar. 20, 1995, Ser. No. 407,139

Claims priority, application Japan, Mar. 18, 1994, 6-072943

Int. Cl.⁶ B23K *31/00*

U.S. Cl. 219—56.21 **5 Claims**



1. A wire bonding apparatus wherein a ball is formed at a tip end of a bonding wire by applying only a high voltage across said tip end of said wire and an electrode so that a discharge takes place, said apparatus being characterized in that said electrode is a cylindrical rod having tip and rear ends and said tip end of said cylindrical rod is cut perpendicularly to a cylindrical axis of said cylindrical rod and obliquely toward a rear end thereof so that an end surface of said tip end is formed in a semicircular shape, said semicircular shaped end surface having a peripheral facing upward so as to be used as an electric discharge part.

5,616,258

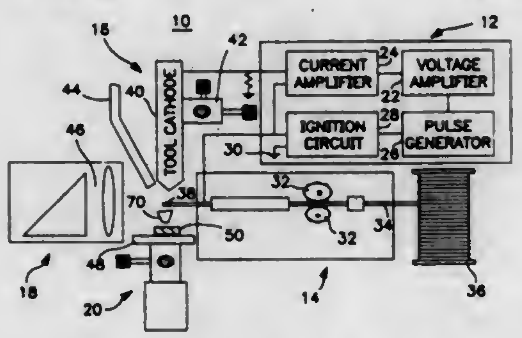
PROCESS AND APPARATUS FOR MICRO-ARC WELDING

Edward L. Dreizin, Yardley, Pa., and William Felder, Lawrenceville, N.J., assignors to Aerochem Research Laboratories Inc., Princeton, N.J.

Filed Apr. 16, 1995, Ser. No. 515,946

Int. Cl.⁶ B23K *9/00*

U.S. Cl. 219—56.22 **10 Claims**



1. A process for welding small metal parts and components, which comprises the steps of:

a) Positioning a wire proximate said small metal parts and components to be welded, said wire being formed of a filler material;

b) positioning a cathode proximate said wire a distance of from about 1.0 to 5.5 wire diameters from a free end thereof;

c) generating a micro-arc discharge between said cathode and said wire to heat such filler material to a temperature above its melting point no form a drop of said filler material of a diameter of from about 50 to 100 μm; and

d) effecting deposition of said drop on said small metal parts and components.

5,616,259

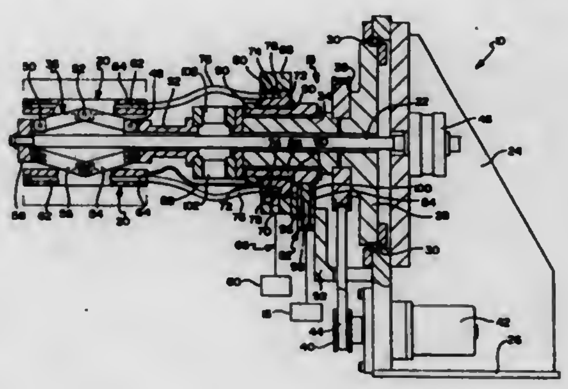
APPARATUS FOR PREPARING A SURFACE OF A CYLINDER BORE BY ELECTRICAL DISCHARGE MACHINING

Michael J. Habel, Ann Arbor, and Larry A. Peterson, Grosse Ile, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 27, 1994, Ser. No. 364,151

Int. Cl.⁶ B23H *1/00;9/00*

U.S. Cl. 219—69.2 **12 Claims**



1. An apparatus for preparing a surface of a cylinder bore by electrical discharge machining comprising:

a rotatable spindle;

a plurality of electrodes rotatably supported upon said spindle and an electrical coupling operatively interconnected between a power source and said electrodes and including a fixed connection member electrically connected to the power source and a moveable connection member rotatably carried on said spindle and in electrical contact with said fixed connection member and each of said electrodes, said electrodes being moveable radially relative to the surface of the cylinder bore between a first retracted position such that said electrodes are positioned within the cylinder bore prior to preparing the surface and a second position spaced from said first position adjacent the surface of the cylinder bore for preparing the surface; and

means for rotating said spindle about its longitudinal axis relative to the surface of the cylinder bore and applying electrical power to said electrodes to remove material from the surface of the cylinder bore by electrical discharge machining as said electrodes rotate with said spindle.

5,616,260

WIRE PREPARATION FOR WIRE CUTTING ELECTRO-EROSION

Roland Mascioveterе, Belp, and Stefano Angelella, Losone, both of Switzerland, assignors to AG Für Industrielle Elektronik, Losone, Switzerland

Filed Jun. 16, 1993, Ser. No. 78,370

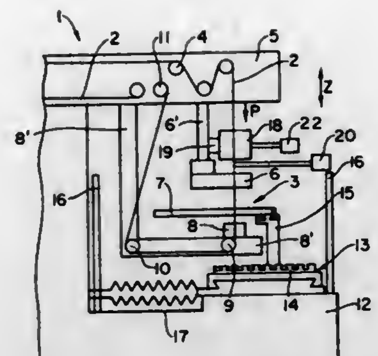
Claims priority, application Switzerland, Jun. 16, 1992, 4219712

Int. Cl.⁶ B23H *7/02*

U.S. Cl. 219—69.12 **23 Claims**

1. An apparatus for electrical-discharge machining of a workpiece, including a wire electrode guide and power delivery circuit, comprising

a wire electrode having at least one protective coating;



a wire-preparation section positioned upstream of the workpiece; and

wherein the wire preparation section accommodates at least one of a means for thermal removal, chemical removal and thermal diffusion of the at least one protective coating.

5,616,261

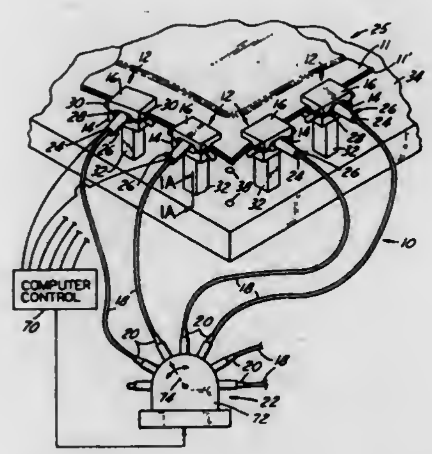
LASER WELDING SYSTEM

Mariana G. Forrest, Troy, Mich., assignor to Chrysler Corporation, Auburn Hills, Mich.

Filed Jun. 7, 1995, Ser. No. 474,565

Int. Cl.⁶ B23K *26/00*

U.S. Cl. 219—121.63 **30 Claims**



1. A laser welding system for welding sheets of material together, said system comprising:

at least one clamp having a lower plate and an upper plate moveable relative to said lower plate for squeezing together associated sheets of material positioned therebetween;

a fiber optic cable for each said clamp, said cable having a first end adapted to be coupled to a laser beam source and a second end coupled to said clamp for transmitting a laser beam from the laser beam source to said clamp; and

a focusing head secured to said clamp for coupling said cable second end to said clamp and for focusing said laser beam onto the material to be welded;

wherein each said clamp includes a slot extending through said clamp and said slot is positioned horizontally between said upper and lower plates, to thereby allow vertically disposed edge portions of associated upper and lower clamped sheets to be laser welded together.

5,616,262

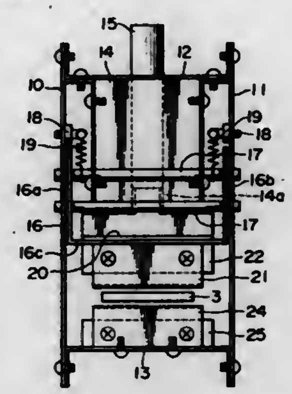
IMAGE ERASING APPARATUS HAVING AN ASSEMBLY FOR MOVING HEAT APPLICATORS

Kouichi Itoda, Ohizumimachi, and Yoshio Sutoh, Kiryu, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Division of Ser. No. 312,625, Sep. 27, 1994, Pat. No. 5,538,822. This application Apr. 14, 1995, Ser. No. 422,173

Int. Cl.⁶ H05B *3/06*

U.S. Cl. 219—216 **15 Claims**



8. An apparatus for erasing images recorded in an image recording medium comprising:

first and second heat application means for respectively applying heat to a front image bearing side and a back side of an image recording medium for erasing images, with said image recording medium interposed between said first and second heat application means;

a fixed frame assembly including first and second side walls, each of said first and second side walls including a first slot;

a movable member; and

a first guide bar connected to said movable member, said first guide bar extending into said first slot of each of said first and second side walls;

wherein one of said first and second heating means is mounted on said movable member; and

the apparatus further including an actuator having an opening therein, and a protrusion mounted on said movable member, said protrusion extending into said opening of said actuator;

wherein said first and second side walls each further include a second slot, and wherein a second guide bar is connected to said movable member and extends into the second slot of said first side wall and the second slot of said second side wall.

5,616,263

CERAMIC HEATER ROLLER

Bruce E. Hyllberg, Gurnee, Ill., assignor to American Roller Company, Union Grove, Wis.

Division of Ser. No. 3,156, Jan. 12, 1993, abandoned, and a continuation-in-part of Ser. No. 973,447, Nov. 9, 1992, abandoned. This application Oct. 10, 1995, Ser. No. 541,569

Int. Cl.⁶ H05B *1/02;* **F28F** *5/02*

U.S. Cl. 219—469 **10 Claims**

1. A three-layer thermal conduction roller for use in industrial applications in which a voltage is applied to the roller to cause heating within a heating layer, the roller comprising:

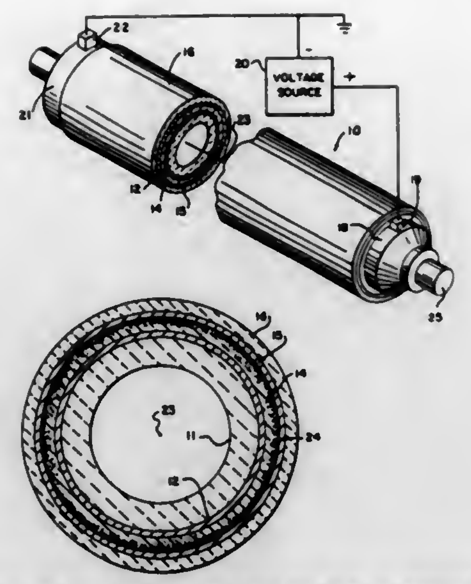
a cylindrical roller core;

a first layer of an insulating material disposed around the cylindrical roller core;

a second layer of a semiconductive heating ceramic disposed around the insulating layer and the cylindrical roller core; and

an outermost layer, which forms the outer surface of the roller, the outermost layer being disposed around and over the layer of semiconductive heating ceramic for conducting and carrying heat to a work object, the outermost layer being electrically insulative;

wherein the second layer is formed of at least one plasma-sprayed coating of ceramic material; and



wherein the electrical resistance of the layer of semiconductive heating ceramic varies longitudinally along the roller according to the manner in which the semiconductive heating ceramic is plasma sprayed longitudinally along the roller.

5,616,264

METHOD AND APPARATUS FOR CONTROLLING TEMPERATURE IN RAPID HEAT TREATMENT SYSTEM

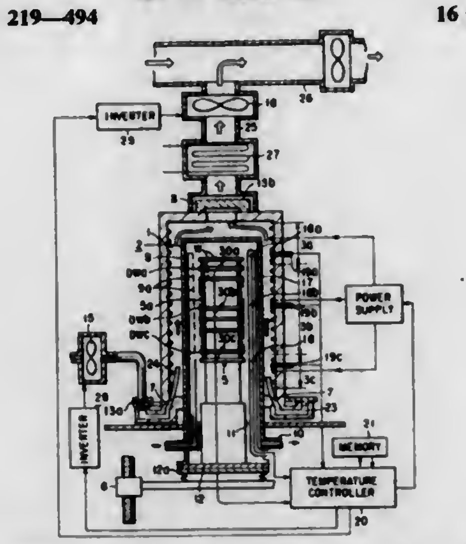
Katsuo Nishi, Tokyo; Kazuo Terada, Kumamoto-ken; Wataru Ohkase, and Kenichi Yamaga, both of Sagamihara, all of Japan, assignors to Tokyo Electron Limited, and Tokyo Electron Tohoku Limited, both of Japan

Filed Jun. 13, 1994, Ser. No. 259,180

Claims priority, application Japan, Jun. 15, 1993, 5-168615; Jun. 15, 1993, 5-168616; Jun. 28, 1993, 5-178482; Jun. 30, 1993, 5-186772; Jul. 9, 1993, 5-193996; Jul. 19, 1993, 5-200059; Sep. 9, 1993, 5-250029

Int. Cl.[6] H05B ***1/02***

U.S. Cl. 219—494 **16 Claims**



1. A temperature control method in a rapid heat treatment apparatus to rapidly and uniformly heat-process a plurality of substrates comprising:

heating dummy substrates in a process tube by plural heater means and previously detecting by temperature detector means a substrate temperature rising pattern obtained in each of a plurality of zones until the dummy substrates reach an intended temperature, a heater temperature rising pattern obtained in each of the zones until heat generating portions of said heater means reach the intended temperature, and also an internal atmosphere temperature rising pattern obtained in each of the zones until an atmosphere in the process tube reaches the intended temperature;

arranging substrates to be processed in the process tube;

detecting a temperature of each of the zones in the process tube and temperature of the heat generating portion of each heater means by the temperature detector means, upon heating the substrates; and

controlling each of the heater means on the basis of the detected temperatures, said substrate temperature rising pattern, said heater temperature rising pattern and said internal atmosphere temperature rising pattern by a control means to rapidly and uniformly raise the temperature of each substrate until the temperature of the substrates in each of the zones reaches the intended one and becomes stable.

5,616,265

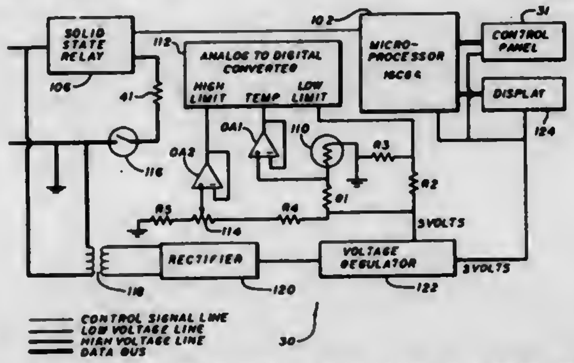
STEAM GENERATING APPARATUS AND METHOD OF CONTROLLING THE SAME

Mitchell Altman, 5276 Orrville Ave., Woodland Hills, Calif. 91367

Filed Aug. 8, 1994, Ser. No. 286,936

Int. Cl.[6] H05B ***1/02***

U.S. Cl. 219—497 **17 Claims**



1. A method for controlling the temperature in a steam bath where the steam is generated by a boiler having an electrical heating element and a control system is operable to vary the power to the heating element, said method comprising the steps of:

1) accepting and storing a user selected desired temperature;
2) applying a predetermined start-up power level to the heating element;
3) sensing the actual temperature in the steam bath;
4) reporting actual sensed temperature to the control system;
5) comparing the actual temperature to the user desired temperature to create an error signal;
6) regulating the effective power level delivered to the heating element, in response to said error signal, so as to tend to null said error signal;
7) periodically repeating steps 3 through 6 until an effective power level is reached which causes the error signal to be substantially nulled; and
8) maintaining the effective power level determined in Step 7 to thereby generally maintain the bath at the desired temperature.

5,616,266

RESISTANCE HEATING ELEMENT WITH LARGE AREA, THIN FILM AND METHOD

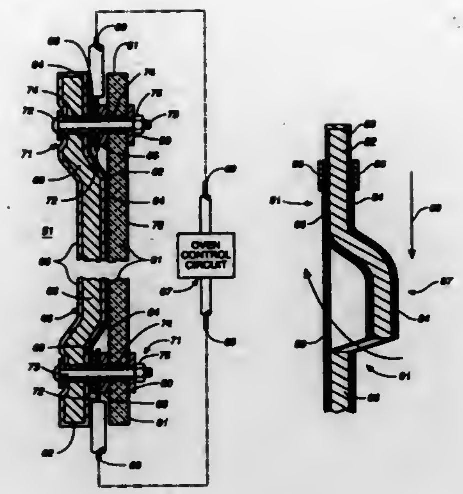
Richard P. Cooper, Whitefish, Mont., assignor to Thermal Dynamics U.S.A. Ltd. Co.

Filed Jul. 29, 1994, Ser. No. 283,211

Int. Cl.[6] F27D ***11/02;*** **H05B** ***3/16;3/66;3/20***

U.S. Cl. 219—543 **4 Claims**

1. A resistance heating element comprising:



a relatively rigid sheet of substrate material capable of being self-supporting at maximum operating temperatures in excess of 100° F., said sheet of substrate material having a nonconductive surface formed with discontinuities therein in the form of at least one of a plurality of openings therein and a plurality of protrusions therefrom;

an electrically conductive, thin film deposited on said surface and electrically isolated from ground to provide an electrical resistance heating element upon coupling to a source of electricity;

a pair of electrical terminals electrically coupled to said thin film in spaced apart relation for the flow of electrical current therebetween; and

said thin film having a continuous path across said surface between said terminals.

5,616,267

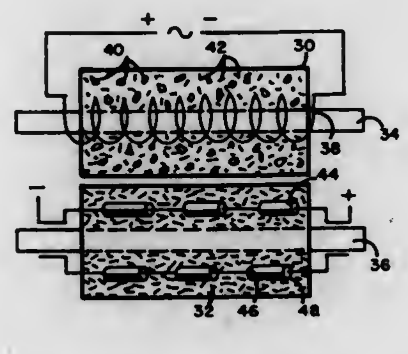
HIGH-TEMPERATURE ROLL MILL

Gregory R. Brotz, P. O. Box 1322, Sheboygan, Wis. 53081

Continuation-in-part of Ser. No. 204,858, Mar. 2, 1994, which is a continuation of Ser. No. 821,687, Jan. 16, 1992, Pat. No. 5,294,766, which is a continuation-in-part of Ser. No. 437,072, Nov. 15, 1989, Pat. No. 5,101,087. This application Feb. 1, 1995, Ser. No. 382,134

Int. Cl.[6] H05B ***6/14***

U.S. Cl. 219—619 **10 Claims**



2. A roll mill comprising:

a pair of solid rollers made of compressed refractory particles and conduction particles sintered together; and

means to heat said rollers to a temperature in the range of 500 degrees C. to 4000 degrees C.

5,616,268

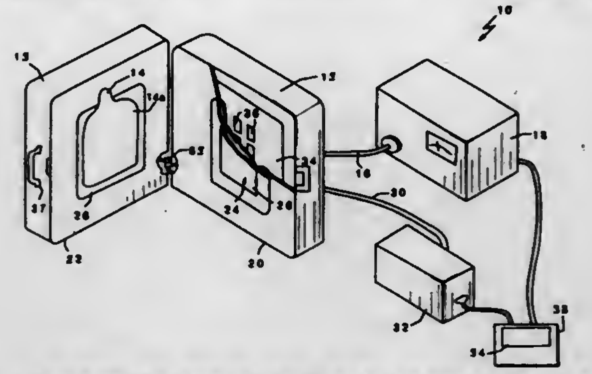
MICROWAVE BLOOD THAWING WITH FEEDBACK CONTROL

Kenneth L. Carr, Harvard, Mass., assignor to Microwave Medical Systems, Littleton, Mass.

Filed Jul. 7, 1994, Ser. No. 271,852

Int. Cl.[6] H05B ***6/80;6/68***

U.S. Cl. 219—687 **14 Claims**



1. Apparatus for thawing blood product stored within a container, said apparatus comprising:

a housing having a cavity configured to receive said container of said blood product;

a microwave energy source which produces warming energy at a selected frequency to thaw the blood product within the container;

a plurality of antennas coupled to said microwave energy source, said antennas being disposed within said housing adjacent to said cavity and positioned to transmit said energy from said microwave energy source into the cavity and to respectively different regions of said blood product within the container, one of said antennas being configured to receive electromagnetic energy corresponding to an emissivity of said blood product at a frequency different than said selected frequency; and

a control circuit for changing levels of said warming energy transmitted by different ones of said plurality of antennas by selectively different amounts in response to said electromagnetic energy received by said one of said antennas.

5,616,269

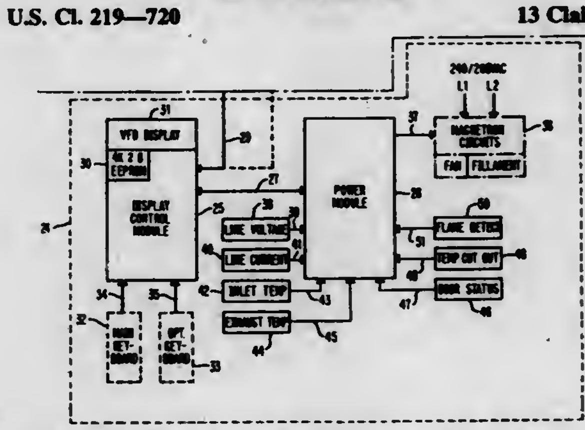
CONTROL SYSTEM FOR A MICROWAVE OVEN AND METHOD OF MAKING THE SAME

Daniel L. Fowler, Kentwood; Greg R. Pattok, Holland, and Bruce E. Tanis, Hudsonville, all of Mich., assignors to Robertshaw Controls Company, Richmond, Va.

Filed Sep. 7, 1994, Ser. No. 301,592

Int. Cl.[6] H05B ***6/68***

U.S. Cl. 219—720 **13 Claims**



1. A control system for a microwave oven, comprising:

a display control module, said display control module substantially controlling all user input and output;

- a power module, said power module substantially controlling all power functions;
- a first bidirectional communication bus, connecting said display control module and said power module and allowing said display control module and said power module to communicate in a master-master configuration;
- a third module comprising a local operating network; and
- a second bidirectional communication bus connecting said third module and said display control module and allowing said third module and, said display control module to communicate in a master-master configuration.

5,616,270

MICROWAVE OVEN HAVING A LAMP AND DOOR-OPERATED SWITCH MOUNTED ON A CIRCUIT BOARD

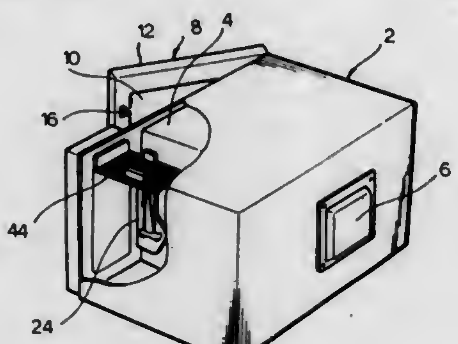
Byeng-Jun Park, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Feb. 24, 1995, Ser. No. 393,810

Claims priority, application Rep. of Korea, Feb. 25, 1994, 94-3497

Int. Cl.^{6} H05B *6/68*

U.S. Cl. 219—722 **3 Claims**



1. A microwave oven comprising:
- a housing forming a cooking chamber;
- a door mounted on the housing for opening and closing the cooking chamber;
- a high frequency generator mounted in the housing for generating high frequency cooking waves directed to the cooking chamber;
- a control mechanism for controlling operation of the generator, including
  - a circuit board having a switch mounted thereon in electrical connection with a circuit path thereof, and being electrically connected to the generator for preventing operation thereof while the door is open, the circuit board being oriented substantially horizontally at an upper portion of the housing, and
  - a switch actuating mechanism including a first portion mounted on the door, and a second portion mounted on the housing, the second portion arranged to be operated by the first portion in response to closing of the door, and positioned to actuate the switch when operated by the first portion; and
- a lamp for illuminating the cooking chamber, the lamp being mounted on the circuit board in electrical connection with the circuit path thereof,

wherein the switch constitutes a first switch, the control mechanism further including a second switch mounted on the bottom surface of the circuit board in electrical connection with the circuit path thereof, the first and second switches arranged for being turned off when the door is open to prevent the generation of high frequency waves, and for being turned on when the door is closed to permit the generation of high frequency waves; the control mechanism further comprising a monitor switch arranged for being turned on when the door is opened to prevent the generation of high frequency waves, and for being turned off when the door is closed to permit the generation of high frequency waves, the monitor switch being mounted on the bottom surface of the circuit board in electrical connection with the circuit path thereof, the switch actuating mechanism being disposed beneath the circuit board, wherein the first portion of the switch actuating mechanism comprises upper and lower latches; the second portion of the switch actuating mechanism comprising first, second and third cams and first, second and third levers arranged to be displaced linearly in response to rotation of the first, second and third cams, respectively, for turning on or turning off the first switch, the second switch and the monitor switch, respectively; the first cam being rotatable by the upper latch; and the second and third cams being rotatable by the lower latch.

5,616,271

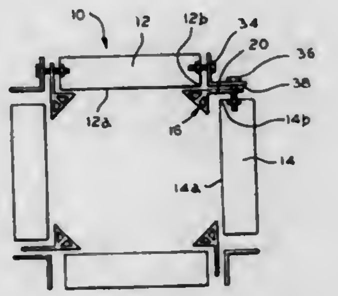
CONCRETE FORMING CHAMFER STRIP

Charles V. Podgurski, New Braunfels, Tex., assignor to Symons Corporation, Des Plaines, Ill.

Continuation of Ser. No. 271,059, Jul. 5, 1994, abandoned. This application May 29, 1996, Ser. No. 654,722

Int. Cl.^{6} B28B *7/00;* **E04G** *13/02*

U.S. Cl. 249—48 **16 Claims**



16. A chamfer strip for forming a chamfer on an outside corner of a poured concrete structure in conjunction with a pair of form panels of a concrete forming system, comprising:
- a substantially hollow body portion having a tail portion and three continuous sides arranged so as to form a closed, generally triangular shape with two of said three continuous sides each respectively being adapted to contact an inwardly facing surface of one of said form panels, said tail portion comprising an elongated continuation of one of said contacting continuous sides wherein said tail portion is adapted to extend between adjacent side edges of said form panels, means to permit flexing of said chamfer strip to create a seal with said form panels, and means internally of said closed, generally triangular shape defined by said three continuous sides of said hollow body portion of said chamfer strip for reinforcement thereof.

5,616,272

RE-BAR ALIGNMENT AND SUPPORT CLIP

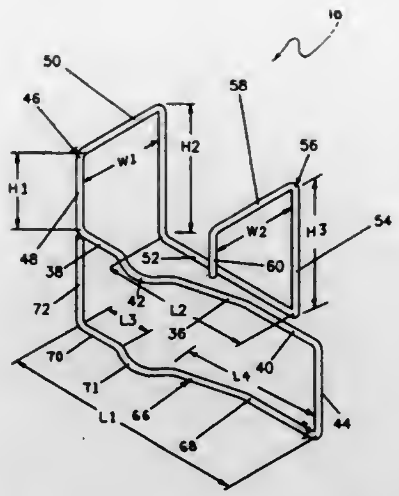
Philip J. McCrystal, 1257 Tobias Dr., Chula Vista, Calif. 91911

Filed Apr. 21, 1995, Ser. No. 427,221

Int. Cl.^{6} E04G *17/00;* **E04B** *1/41*

U.S. Cl. 249—207 **11 Claims**

1. A re-bar alignment and support clip device for positioning and holding securely an L-shaped re-bar member having a vertical leg and a horizontal leg; said device being detachably secured to a horizontally oriented 2×4 having a front wall, a rear wall, and a top wall; said 2×4 being secured to a pair of laterally spaced stakes extending upwardly from a ditch into which a concrete footing is to be poured and upon which a wall of concrete blocks would be built; the bottom surface of the 2×4 defines the top surface of the concrete footing that is to be poured; said device comprising:



- at least one elongated spring arm portion that would extend along and contact the front wall of the 2×4; said spring arm having a front end, a rear end and a predetermined length L1;
- an inverted U-shaped primary retainer portion oriented transversely to said spring arm portion and having laterally spaced downwardly extending first and second leg members each having a top end and a bottom end; a first cross member having a front end and a rear end and these respective ends are connected to the respective top ends of said downwardly extending leg members; the bottom end of said first leg member being connected to the rear end of said elongated spring arm portion at a predetermined angle A; said first leg would extend upwardly along the front wall of the 2×4; said second leg would extend downwardly along the rear wall of the 2×4 and said first cross member would extend across the top wall of the 2×4; a third leg member having a front end and a rear end, said rear end being transversely oriented to and connected the bottom end of said second leg member at a predetermined angle B; said third leg member having a predetermined length L2 extending along the rear wall of the 2×4 in the same general direction as that of the front end of said elongated spring arm portion; and

said spring arm portion has a rear section having a length L3 and a front section having a length L4 and interconnecting said front and rear sections is an outwardly curved recess that mates with the round curvature of the vertical leg of an L-shaped re-bar member.

5,616,273

SYNERGISTIC SURFACTANT COMPOSITIONS AND FIRE FIGHTING CONCENTRATES THEREOF

Kirtland P. Clark, Bethel, Conn., and Eduard K. Kleiner, Pound Ridge, N.Y., assignors to Dynax Corporation, Elmsford, N.Y.

Filed Aug. 11, 1994, Ser. No. 289,060

Int. Cl.^{6} A62D *1/00*

U.S. Cl. 252—2 **28 Claims**

1. A fluorochemical surfactant composition providing a surface tension in water of 20 dynes/cm or below said composition comprising (i) from 5 to 95% by weight of a fluoroaliphatic amphoteric surfactant having a solubility of less than 0.01% in water at 25° C. and (ii) from 5 to 95% by weight of a water soluble, anionic surfactant.

5,616,274

ION-CONDUCTIVE POLYMER ELECTROLYTE AND ELECTROLYTIC CAPACITOR USING THE SAME

Teruhisa Kanbara, Ikeda; Yuichiro Tsubaki, Uji, and Kenichi Takeyama, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 18, 1994, Ser. No. 324,521

Claims priority, application Japan, Oct. 19, 1993, 5-260993

Int. Cl.^{6} H01G *9/028;9/035*

U.S. Cl. 252—62.2 **11 Claims**

1. An ion-conductive electrolyte comprising:
- a polymer polymerized from a prepolymer which has a polyol skeletal structure including at least three polyalkylene oxide units and is represented by the general formula (1):

$$R_4-\underset{\displaystyle CH_2-R_3-X}{\overset{\displaystyle CH_2-R_1-X}{\underset{|}{\overset{|}{C}}}}-CH_2-R_2-X \qquad (1)$$

wherein R_1=—O—{$(C_2H_4O)_{l_1}$—$(C_3H_6O)_{m_1}$}$_{n_1}$—, R_2=—O—{$(C_2H_4O)_{l_2}$—$(C_3H_6O)_{m_2}$}$_{n_2}$—, R_3=—O—{$(C_2H_4O)_{l_3}$—$(C_3H_6O)_{m_3}$}$_{n_3}$—, R_4=—CH_2—O—{$(C_2H_4O)_{l_4}$—$(C_3H_6O)_{m_4}$}$_{n_4}$X and l_1, m_1, n_1, l_2, m_2, n_2, l_3, m_3, n_3, l_4, m_4 and n_4 are integers of 1 or larger, and X represents a terminal group having at least one double bond at which polymerization of the prepolymer is initiated,
- at least one ammonium salt or quaternary ammonium salt, and
- at least one organic solvent.

5,616,275

AZEOTROPE(LIKE) MIXTURES OF TWO HEXAFLUOROPROPANE STEREOISOMERS

Tuneen E. C. Chisolm, Newark, Del., and Barbara H. Minor, Elkton, Md., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 215,436, Mar. 21, 1994, Pat. No. 5,538,659, which is a continuation-in-part of Ser. No. 39,563, Mar. 29, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 476,820

Int. Cl.^{6} C09K *5/04;* **C11D** *7/30;7/50*

U.S. Cl. 252—67 **6 Claims**

1. An azeotropic or azeotrope-like composition consisting essentially of (i) about 1–99 weight percent 1,1,2,2,3,3-hexafluoropropane and about 99-1 weight percent 1,1,1,3,3,3-hexafluoropropane wherein when the temperature has been adjusted to about 25° C., said composition has a vapor pressure between about 25.4 and about 39.5 psia; (ii) about 1–99 weight percent 1,1,1,2,2,3-hexafluoropropane and about 1–99 weight percent 1,1,2,3,3,3-hexafluoropropane wherein when the temperature has been adjusted to about 25° C., said composition has a vapor pressure between about 27.6 and about 33.5 psia; (iii) about 1–99 weight percent 1,1,1,2,2,3-hexafluoropropane and about 99-1 weight percent 1,1,1,3,3,3-hexafluoropropane wherein when the temperature has been adjusted to about 25° C., said composition has a vapor pressure between about 33.8 and about 41.7 psia; and (iv) about 1–99 weight percent 1,1,2,3,3,3-hexafluoropropane and about 1–99 weight percent 1,1,1,3,3,3-hexafluoropropane, wherein when the temperature has been adjusted to about 25° C., said composition has a vapor pressure of between about 30.1 and about 41.4, wherein the change in vapor pressure of the original composition and the composition remaining after 50 percent has been removed, is less than ten percent.

5,616,276

AZEOTROPE-LIKE REFRIGERANTS WITH CHLORODIFLUOROMETHANE, PENTAFLUOROETHANE, AND C_2-C_4 HYDROCARBON

Donald B. Bivens, Kennett Square, Pa.; Mark B. Shiflett, Newark, and Akimichi Yokozeki, Wilmington, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 293,784, Aug. 22, 1994, abandoned, which is a continuation of Ser. No. 893,065, Jun. 3, 1992, abandoned, which is a division of Ser. No. 681,565, Apr. 5, 1991, abandoned, which is a continuation-in-part of Ser. No. 558,346, Jul. 26, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 484,419

Int. Cl.[6] C09K *5/04;* **C11D** *7/30*

U.S. Cl. 252—67 **9 Claims**

1. A near-azeotropic composition consisting essentially of about 26.6 to 63.7 percent by weight chlorodifluoromethane, about 2 percent by weight propane, and about 33.6 to 70.6 percent by weight pentafluoroethane, wherein said composition has a vapor pressure of about 174.8 to 198.9 psia at room temperature and, wherein when 30 weight percent of the composition leaks out as vapor at room temperature, the vapor pressure of the composition changes less than 10 percent.

5,616,277

INCORPORATING NONIONIC SURFACTANT INTO SILICATE FOR GRANULAR AUTOMATIC DISHWASHING DETERGENT COMPOSITION

Mary E. Raleigh, Mason, and Jeffrey D. Painter, Loveland, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 52,860, Apr. 26, 1993, abandoned, which is a continuation of Ser. No. 744,610, Aug. 13, 1991, abandoned. This application Jun. 25, 1996, Ser. No. 668,393

Int. Cl.[6] C11D *3/08;7/14;11/02*

U.S. Cl. 510—220 **26 Claims**

1. A process for making a granular automatic dishwashing detergent composition, comprising:

(a) incorporating by spraying or contact mixing powder or granular alkali metal silicate particles with from about 5% to about 30%, by weight of the silicate, of low foaming nonionic surfactant with a melting point between about 77° F. (25° C.) and about 140° F. (60° C.), said nonionic surfactant being in a substantially liquid form;

(b) forming base granules which are substantially free of alkali metal silicate, wherein said base granules are formed by agglomerating, said base granules comprising from about 20% to about 80%, by weight of the base granules, of detergency builder, and from about 10% to about 70%, by weight of the base granules, of a water-soluble polymer liquid binder; and

(c) admixing said silicate particles of step (a) with said base granules of step (b) in a weight ratio of between about 1:20 and about 10:1.

5,616,278

INHIBITION OF SCALE AND CORROSION IN AQUEOUS SYSTEMS

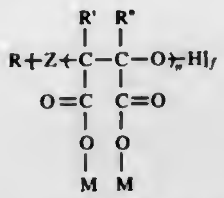
William S. Carey, Ridley Park; Andrew Solov, Holland; Libardo A. Perez, Morrisville, and Donald T. Freese, Glenside, all of Pa., assignors to BetzDearborn Inc., Trevose, Pa.

Continuation-in-part of Ser. No. 534,364, Sep. 27, 1995, which is a continuation-in-part of Ser. No. 106,452, Aug. 13, 1993, abandoned. This application Apr. 19, 1996, Ser. No. 635,123

Int. Cl.[6] C02F *5/14*

U.S. Cl. 252—180 **15 Claims**

1. A method for controlling the formation and deposition of scale forming salts including barium scale in an aqueous system comprising introducing into said aqueous system a sufficient amount for the purpose of a treatment comprising a compound of the general formula:



wherein R is alkyl, C_4-C_9 aryl, substituted alkyl or C_4-C_9 substituted aryl; R' and R" are each independently hydrogen, C_{1-4} alkyl or C_{1-4} substituted alkyl; Z is NH, NR, O or S; n is a positive integer greater than 1; f is a positive integer; and M is H, a water soluble cation or a C_{1-3} alkyl group.

5,616,279

RUBBER VULCANIZATION COMPOSITION CONTAINING TETRABENZYLTHIURAM DISULFIDE, A BISMALEIMIDE, A SULFENAMIDE COMPOUND AND SULFUR, A SULFUR DONOR OR MIXTURES THEREOF

Richard M. D'Sidocky, Ravenna, and Neil A. Maly, Tallmadge, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 863,891, Apr. 6, 1992. This application May 31, 1995, Ser. No. 454,779

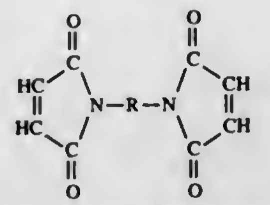
Int. Cl.[6] C08K *5/40;5/34*

U.S. Cl. 252—182.17 **5 Claims**

1. A rubber vulcanization composition comprising:

(a) from about 2 to about 15 weight percent of tetrabenzylthiuram disulfide;

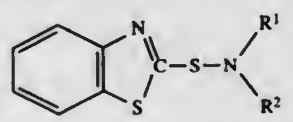
(b) from about 15 to about 50 weight percent of a bismaleimide compound of the general formula:



(I)

wherein R is divalent and is selected from the group consisting of acyclic aliphatic groups having from about 2 to 16 carbon atoms, cyclic aliphatic groups having from about 5 to 20 carbon atoms, aromatic group having from about 6 to 18 carbon atoms, and alkylaromatic groups having from about 7 to 24 carbon atoms;

(c) from about 15 to about 45 weight percent of a sulfenamide compound of the general formula:



wherein R^1 is selected from the group consisting of hydrogen, acyclic aliphatic groups having from about 1 to 10 carbon atoms, and cyclic aliphatic groups having from about 5 to 10 carbon atoms; and R^2 is selected from the group consisting of cyclic aliphatic groups having from about 5 to 10 carbon atoms; and

(d) from about 20 to about 55 weight percent of sulfur.

5,616,280

BLEACHING COMPOSITION

Samuel B. Moore, Burlington; James F. Leuck, Gibsonville, and Edwin T. Turner, Greensboro, all of N.C., assignors to Burlington Chemical Co., Inc., Burlington, N.C.

Continuation-in-part of Ser. No. 112,582, Aug. 25, 1993, Pat. No. 5,464,563. This application Nov. 6, 1995, Ser. No. 553,886

Int. Cl.[6] D06L *3/02*

U.S. Cl. 252—186.29 **12 Claims**

1. A liquid, silicate-free bleach composition for use in bleaching cellulosic materials including paper pulp, cotton and cotton blends, said composition comprising:

(a) between about 35 to 50 wt % of hydrogen peroxide;

(b) between about 0.05 to 1.0 wt % of a magnesium salt;

(c) between about 0.01 to 0.1 wt % an aminoalkylphosphonic acid; and

(d) the balance water.

5,616,281

ACYLATED CITRATE ESTERS AS PERACID PRECURSORS

Frederick E. Hardy; Alan D. Willey, both of Newcastle upon Tyne, Great Britain, and Stefano Scialla, Rome, Italy, assignors to The Procter & Gamble Company, Cincinnati, Ohio

PCT No. PCT/US92/10455, § 371 Date Nov. 9, 1994, § 102(e) Date Nov. 9, 1994, PCT Pub. No. WO93/12067, PCT Pub. Date Jun. 24, 1993

PCT Filed Dec. 4, 1992, Ser. No. 244,470

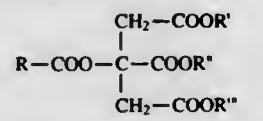
Claims priority, application European Pat. Off., Dec. 13, 1991, 91870207

Int. Cl.[6] C09K *3/00;* **C11D** *3/395*

U.S. Cl. 252—186.38 **19 Claims**

1. A method for bleaching or disinfecting fabric, said method comprising the step of contacting fabric in need of bleaching or disinfection with an aqueous solution comprising:

a) a peracid precursor having the formula:



wherein R is selected from the group consisting of C_1–C_9 alkyl, C_1–C_9 alkenyl, phenyl, sulpho-substituted phenyl, alkylphenyl, alkenylphenyl, and mixtures thereof; R' is selected from the group consisting of hydrogen, C_1–C_{18} alkyl, C_1–C_{18} alkenyl, phenyl, sulpho-substituted phenyl, alkylphenyl, alkenylphenyl, and mixtures thereof; R" is selected from the group consisting of hydrogen, C_1–C_{18} alkyl, C_1–C_{18} alkenyl, phenyl, sulpho-substituted phenyl, alkylphenyl, alkenylphenyl, and mixtures thereof; R"' is selected from the group consisting of hydrogen, C_1–C_{18} alkyl, C_1 –C_{18} alkenyl, phenyl, sulpho-substituted phenyl, alkylphenyl, alkenylphenyl, and mixtures thereof; provided that R', R", and R"' are not all hydrogen; and mixture of said peracid precursor; and

b) a source of hydrogen peroxide selected from the group consisting of hydrogen peroxide, a hydrogen peroxide generating compound, and minutes thereof;

and wherein said peracid precursor and said source of hydrogen peroxide are individually employed in an amount sufficient to react together to form an effective amount of peracid to bleach or disinfect the fabric.

5,616,282

AMIDO PEROXYCARBOXYLIC ACID ENHANCED BLEACHING THROUGH COMBINATION WITH A FATTY AMIDE SUBSTITUTED SUGAR

Bijan Harichian, South Orange, and Janet L. Coope, Hackensack, both of N.J., assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Filed May 11, 1995, Ser. No. 439,044

Int. Cl.[6] C01B *15/00;* **D06L** *3/02*

U.S. Cl. 252—186.42 **3 Claims**

1. A bleach composition comprising:

(i) from about 0.1 to about 40% by weight of an amido peroxycarboxylic acid having the structure:

$$MOO\overset{O}{\overset{\|}{C}}R^1(R^2N)_{n'}\overset{O}{\overset{\|}{C}}(NR^3)_{n''}-R^4-(R^3N)_{m''}\overset{O}{\overset{\|}{C}}(NR^2)_{m'}R^1\overset{O}{\overset{\|}{C}}OOM$$

wherein:

R^1 is selected from the group consisting of C_1–C_{12} alkylene, C_5–C_{12} cycloalkylene, C_6–C_{12} arylene and radical combinations thereof;

R^2 is selected from the group consisting of hydrogen, C_1–C_{16} alkyl and C_6–C_{12} aryl radicals and a carbonyl radical that can form a ring together with R^4;

R^3 is selected from the group consisting of hydrogen, C_1–C_{12} alkyl and C_6–C_{12} ring together with R^4;

R^4 is selected from the group consisting of C_1–C_{12} alkylene, C_5–C_{12} cycloalkylene and C_6–C_{12} arylene radicals;

n' and n" each are an integer chosen such that the sum thereof is 1;

m' and m" each are an integer chosen such that the sum thereof is 1;

M is selected from the group consisting of hydrogen, alkali metal, alkaline earth metal, ammonium and alkanolammonium cations and radicals; and

(ii) from about 0.1 to about 50% of a C_8–C_{22} lactobionamide.

5,616,283

HIGH SOLIDS LIME AS A CAUSTIC REPLACEMENT

Fred R. Huege, Colleyville, and Timothy L. Salter, Fort Worth, both of Tex., assignors to Chemical Lime Company, Fort Worth, Tex.

Filed Aug. 25, 1995, Ser. No. 519,292

Int. Cl.[6] C09K *3/00;* **B01J** *13/00*

U.S. Cl. 252—192 **42 Claims**

1. A method of forming a lime slurry adapted for use as an alkaline neutralizing agent, the method comprising the steps of:

mixing lime and a dispersing agent in water to form an aqueous slurry, the amount of lime being between about 35 to 55% by weight of the slurry and the amount of the dispersing agent being between about 0.1 to 3% by weight of the lime; and then

admixing an alkali metal hydroxide to the slurry in an amount between about 0.1 to 1.5% by weight of lime after mixing the lime and dispersing agent.

29. A lime slurry composition adapted for use as an alkaline neutralizing agent, comprising:

water;

lime in an amount between about 35 to 55% by weight;

a dispersing agent in an amount of between 0.1 to 3% by weight of the lime; and

an alkali metal hydroxide in an amount of between about 0.1 to 1.5% by weight of the lime which is added after the lime and dispersing agent have been added to and mixed with the water.

5,616,284

LIQUID-CRYSTALLINE MEDIUM

Reinhard Hittich, Modautal, Germany; Bernhard Rieger, Yokohama, Japan; Volker Reiffenrath, Rossdorf, Germany; David Coates, Wimborne, Great Britain, and Herbert Plach, Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

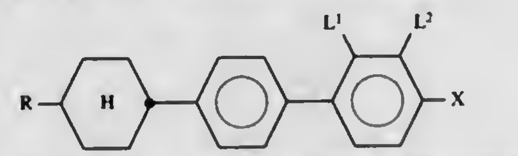
Continuation of Ser. No. 188,353, Jan. 28, 1994, abandoned, which is a continuation of Ser. No. 688,519, Jun. 10, 1991, abandoned. This application May 30, 1995, Ser. No. 453,355

Claims priority, application Germany, Apr. 13, 1990, 40 12 014.7

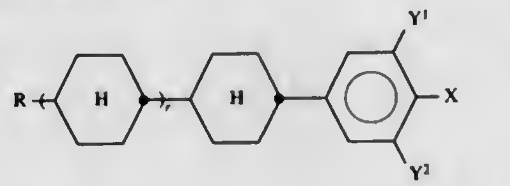
Int. Cl.^{6} C09K *19/30;19/52;* **G02F** *1/13*

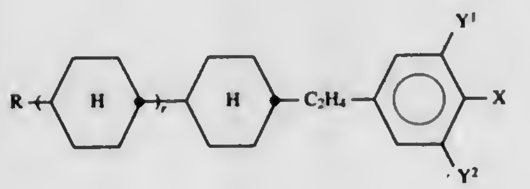
U.S. Cl. 252—299.63 **7 Claims**

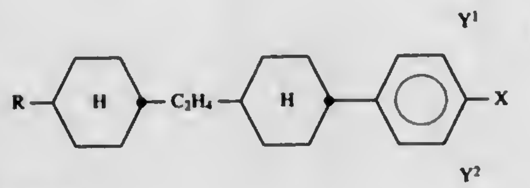
1. A liquid crystalline medium based on a mixture of polar compounds having positive dielectric anisotropy, comprising 10 to 50% by weight of at least one compound of formula I


I

and additionally at least 30 to 70% by weight of one compound of formula II, III or IV:


II


III


IV

in which

X is F, CF_3, OCF_3 or $OCHF_2$,

L^1 and L^2 are each independently H or F, and if one of the radicals L^1 and L^2 is F, the other radical L^1 or L^2 is H,

R is alkyl, oxaalkyl, fluoroalkyl or alkenyl, in each case having up to 7 carbon atoms,

Y^1 and Y^2 in each case are F, and

r is 0 or 1,

with the proviso that the weight ratio of compounds of formula I/compounds of formulae II, II and IV is 1:4 to 1:1.

5,616,285

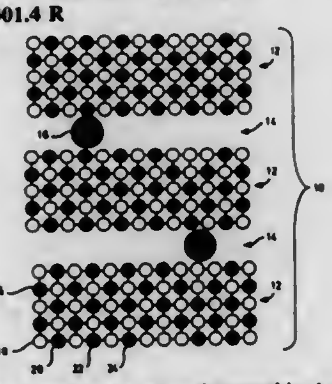
PHOSPHOR AND METHOD OF MAKING SAME

Yan Zhang, Sayre, Pa., assignor to Osram Sylvania Inc., Danvers, Mass.

Continuation-in-part of Ser. No. 444,476, May 9, 1995, Pat. No. 5,531,928, which is a division of Ser. No. 189,012, Jan. 28, 1994, abandoned, which is a continuation-in-part of Ser. No. 999,637, Dec. 31, 1992, abandoned. This application May 21, 1996, Ser. No. 646,781

Int. Cl.^{6} C09K *11/67*

U.S. Cl. 252—301.4 R **3 Claims**



1. A phosphor comprising a layered perovskite having the general formula $KLaNb_2O_7$ activated with bismuth.

5,616,286

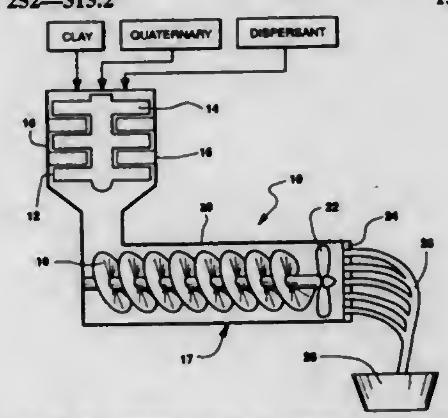
PROCESS FOR THE MANUFACTURE OF ORGANOPHILIC CLAY

Frank W. Jordan, Clarkston, Mich., assignor to T.O.W. Inc., Clarkston, Mich.

Filed Sep. 12, 1995, Ser. No. 527,024

Int. Cl.^{6} B01J *13/00;* **C04B** *14/10;33/04*

U.S. Cl. 252—315.2 **15 Claims**



1. A method for manufacturing an organically substituted clay comprising the steps of:

providing a substantially non-slurried volume of a clay having an exchangeable cationic species;

providing a volume of a cationic organic material;

subjecting said non-slurried clay and said cationic material to a first stage reaction process wherein said clay and said cationic material are subjected to a confining pressure of at least 3,000 psi while being mixed so that at least some of the exchangeable cationic species in the clay are substituted by said cationic material so as to provide a non-slurried first stage reaction mixture, which comprises an organically substituted clay which has some residual, exchangeable cationic species therein and some residual cationic material in a free form; and

subjecting said non-slurried first stage reaction mixture to a second stage reaction process wherein said mixture is subjected to a confining pressure of at least 8,000 psi while being mixed so that at least some of the residual, exchangeable cationic species in the clay are substituted by said residual, cationic material.

5,616,287

ANTISTATIC AND ELECTRICALLY CONDUCTING COMPOSITION

Jürgen Finter, Freiburg, Germany; Bruno Hilti, Basle, Switzerland; Carl W. Mayer, Riehen, Switzerland, and Ernst Minder, Sissach, Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Division of Ser. No. 212,522, Mar. 11, 1994, Pat. No. 5,424,372, which is a division of Ser. No. 991,678, Dec. 16, 1992, Pat. No. 5,324,791, which is a division of Ser. No. 411,950, Sep. 25, 1989, Pat. No. 5,200,113. This application Mar. 28, 1995, Ser. No. 412,041

Claims priority, application Switzerland, Sep. 30, 1988, 3639/88

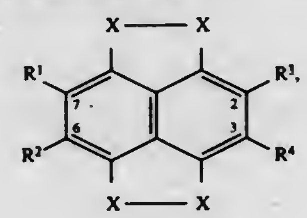
Int. Cl.^{6} C08F *8/00*

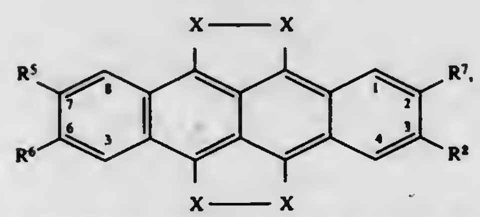
U.S. Cl. 252—518 **9 Claims**

1. A shaped article, film, coating or composite produced from a composition which comprises

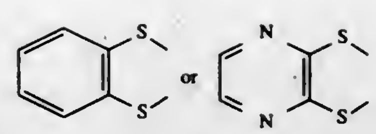
a) a thermoplastic polymer soluble in an inert organic solvent selected from the group consisting of polymers, polyesteramides, polyurethanes, polyamides, polycarbonates and polyimides derived from monomers containing hydroxyl groups, saponified and unsubstituted or hydroxyalkylated polymers of vinyl esters and ethers, hydroxylated polybutadiene and polyisoprene, polyacrylates and polymethacrylates containing hydroxyalkyl radicals in the ester group, polyacrylic and polymethacrylic acids, and reduced polyketones and copolymers thereof, as well as copolymers of unsubstituted or hydroxyalkylated vinyl alcohol, acrylates and methacrylates, acrylic acids and methacrylic acids and diolefins with comonomers acrylonitrile, olefins, diolefins, vinyl chloride, vinylidene chloride, vinyl fluoride, vinylidene fluoride, styrene, α-methylstyrene, maleic anhydride, maleimide, vinyl ethers and vinyl esters, and polyadducts of unsubstituted or hydroxyalkylated epoxy compounds containing an average of more than one epoxy group per molecule, with diols, primary monoamines, disecondary diamines, disecondary linear or cyclic dicarboxylic acid diamides or dicarboxylic acids, which thermoplastic polymer contains aliphatic or cycloaliphatic side groups bonded to a polymer backbone via a group —O—, —O—OR^{22}—OCO— or —CO—O—, said side groups containing at least one Cl, Br or I atom in the α-, β-, γ- or ω-position, R^{22} being C_2–C_{12}alkylene, C_4–C_{12}cycloalkylene, C_4–C_{12}cycloalkylene-CH_2—, C_4—C_{12}cycloalkylene-(CH_2)—$_2$, benzylene or xylylene which is unsubstituted or substituted by OH, Cl, Br or phenyl, and, suspended therein, in the form of a needle network of crystal needles

b) 0.01 to 20% by weight, based on polymer a), of a charge transfer complex formed of chlorine, bromine or iodine and a compound of formula I or Ia


(I)


(Ia)

or mixtures thereof, wherein X is S, Se or Te, R^1, R^2, R^3 and R^4 are each independently of the others a hydrogen atom or Cl, or R^1 and R^2 and/or R^3 and R^4, together are each



or R^1, R^2, R^3 and R^4 are each phenylthio, 4-methylphenylthio, 4-methoxy-phenylthio or pyrid-4-ylthio, and R^5, R^6, R^7 R^8 are independently of the others H or F, or R^5 is CH_3 and R^6, R^7R^8 are H, or R^5, R^6, R^7 and R^8 are CH_3, or R^5 and R^6 are CH_3 or Cl and R^7 and R^8 are H, or R^5 and R^6 are H, R^7 is —COR^9 and R^8 is H or —COR^9, R^5 and R^6 are H and R^7 and R^8 together are —CO—O—CO— or —CO—NR^{10}—CO—, wherein R^9 is halogen, —OH, —NH_2, the radical of an alcohol or of a primary or secondary amine, or —OM, M being a cation, and R^{10} is H or the radical of a primary amine from which the NH_2 group has been removed.

5,616,288

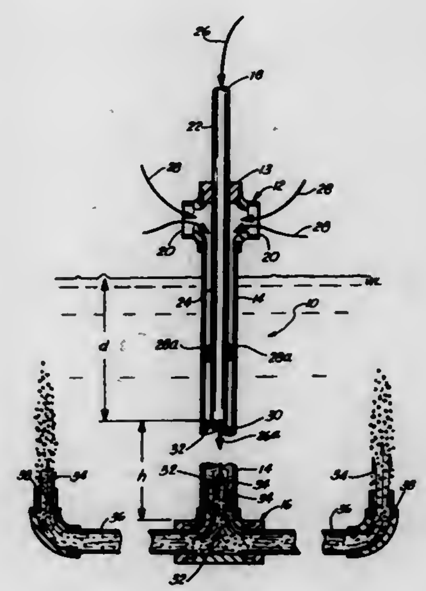
AERATION APPARATUS AND METHOD OF AERATING LIQUIDS

Stephen J. McDonald, 7001 Creek Stone, Milton, Fla. 32570

Continuation-in-part of Ser. No. 40,722, Jun. 26, 1995, Pat. No. Des. 375,540. This application Jul. 17, 1995, Ser. No. 503,440

Int. Cl.^{6} B01F *3/04*

U.S. Cl. 261—76 **12 Claims**



1. An aerator for aerating a first body of liquid comprising:

(a) a supply region positioned above said first liquid level comprising second liquid inlet means and air inlet means for the separate supply of a second liquid and air thereinto;

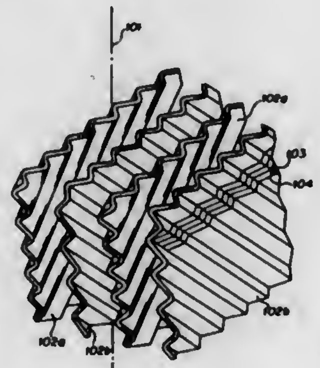
(b) an outer elongated tube having its upper end secured to said supply region, said outer tube depending downwardly and into said body of first liquid;

(c) an inner elongated tube secured to said supply region and having its upper portion terminating at said second liquid inlet means and extending concentrically downwardly within said outer elongated tube and terminating short of the terminus of said outer tube, the annular space between said inner and said outer tubes defining an annular passageway in fluid communication with said air inlet means;

(d) a mixing zone, positioned in the lower portion of said outer tube below the terminus of said inner tube, for mixing said second liquid and said air therein; and,

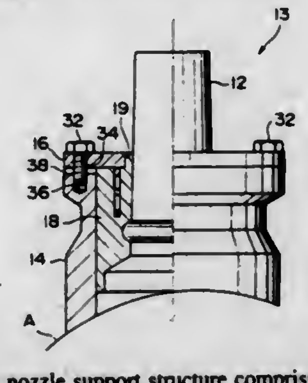
(e) diffuser means secured at its proximate end to the lower end portion of said outer tube, thereby being positioned submerged within said body of first liquid, said diffuser means being in fluid communication with said mixing zone for the passage of said mixture of said second liquid and said air therethrough and upwardly into said body of first liquid, said diffuser means comprising a pair of oppositely extending horizontal tubes having vertically positioned exit ports through which said mixture passes upwardly into said body of first fluid.

5,616,289
SUBSTANCE AND/OR HEAT EXCHANGING TOWER
Yutaka Maeda, Yokohama, Japan, assignor to Mitsubishi Corporation, Tokyo, Japan
Continuation of Ser. No. 408,372, Mar. 22, 1995, abandoned, which is a continuation-in-part of Ser. No. 180,655, Jan. 12, 1994, Pat. No. 5,454,988. This application Aug. 5, 1996, Ser. No. 692,506
Int. Cl.⁶ B01F *3/04*
U.S. Cl. 261—112.2 **6 Claims**



1. A substance and/or heat exchanging tower where a liquid is supplied from an upper part thereof, and an exchange of heat and/or substances between the liquid and the gas is effected by contact between the gas and the liquid in the inside of the tower, which comprises a tower housing (1) and a packing (4) accommodated in the tower, wherein the packing comprises:
a plurality of sheet-like bases (102), each of said sheet-like bases being placed along a longitudinal axis of the tower and corrugated to form folds therein which are inclined relative the longitudinal axis of the tower, said sheet-like bases being arranged adjacent to one another such that the folds of each sheet-like base cross the folds of another adjacent sheet-like base;
and means forming plural continuous adjacent concave/convex channels on the surface of said corrugated folds, said channels extending generally in a direction perpendicular to the longitudinal axis of the tower;
at least one of a lower surface of the concave channels and an upper surface of the convex channels being in a meandering form; and
wherein the sheet-like bases are formed such that, when the bases are installed in the tower, a wall surface (107) of a concave channel above a crest (105) of the meander of an adjacent convex channel of the sheet-like base is located on an upper side along the longitudinal axis of the tower at a position higher than a wall surface (108) of the convex channel below a trough (106) of the meander of the convex channel.

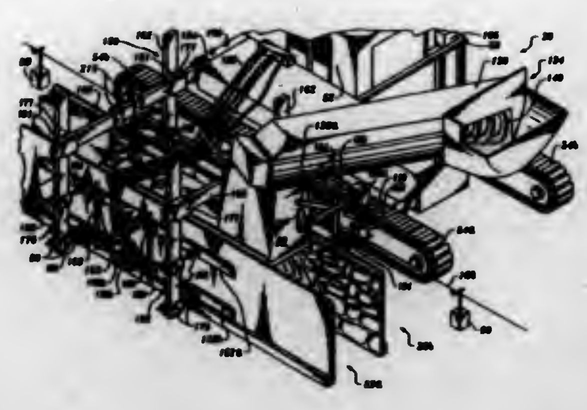
5,616,290
GAS-LIQUID CONTACTING APPARATUS
Makiichi Ishihara; Takakazu Sunada, both of Tokyo; Shigeo Hasegawa, Hiroshima; Naohiko Ukawa, Hiroshima; Toru Takashina, Hiroshima; Yukio Kita; Kouichiro Iwashita, both of Tokyo; Kousuke Yamashita, Hiroshima; Junji Ozaki, and Kaname Kaneshige, both of Hofu, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, and Ohji Rubber & Chemicals Co., Ltd., Hofu, both of Japan
Division of Ser. No. 413,722, Mar. 31, 1995. This application May 20, 1996, Ser. No. 650,710
Claims priority, application Japan, Apr. 11, 1994, 6-072047; Dec. 13, 1994, 6-308680
Int. Cl.⁶ B05B *1/00*
U.S. Cl. 261—115 **1 Claim**



1. A ceramic nozzle support structure comprising:
(A) a ceramic nozzle having a ridge portion on the outer peripheral surface of a nozzle body;
(B) a tightening flange including a flange body having an aperture larger than the outside shape of said nozzle body and a central cylindrical portion extending substantially concentrically with said nozzle body from lower surface of said flange body, said tightening flange having through holes in the wall of central cylindrical portion thereof; and
(C) a support nozzle consisting of a cylindrical body having an inside diameter larger than said central cylindrical portion of tightening flange and connected to said tightening flange by bolting via said flange body at the upper portion of said cylindrical body,
(D) an elastomeric resin filled in a space between said nozzle and said support nozzle so that the outside and inside of said central cylindrical portion of tightening flange are integrated via said through holes.

5,616,291
METHOD FOR FORMING CONCRETE BARRIERS
John F. Belarde, Renton, Wash., assignor to John-Wayne Construction Company, Inc., Woodinville, Wash.
Division of Ser. No. 203,630, Feb. 28, 1994, Pat. No. 5,533,888, which is a continuation-in-part of Ser. No. 900,704, Jun. 17, 1992, Pat. No. 5,290,492, which is a division of Ser. No. 571,458, Aug. 21, 1990, Pat. No. 5,173,309. This application Jun. 7, 1995, Ser. No. 472,874
Int. Cl.⁶ E04B *1/16*
U.S. Cl. 264—34 **3 Claims**

1. A method of slip forming a concrete structure along a substantially horizontal surface, the concrete structure extending in a first substantially horizontal direction and having a predetermined cross-sectional configuration such that an outer surface of each side of the structure includes a three-dimensional pattern having portions which extend other than in the first substantially horizontal direction, the method comprising:
providing first and second forms, each of the first and second forms having an inner surface including a pattern consisting of a reverse image of the three-dimensional pattern to be formed on the outer surface of the corresponding side of the concrete structure, the first and second forms each comprising a rigid wall designed to support a side of the concrete structure during slip forming;

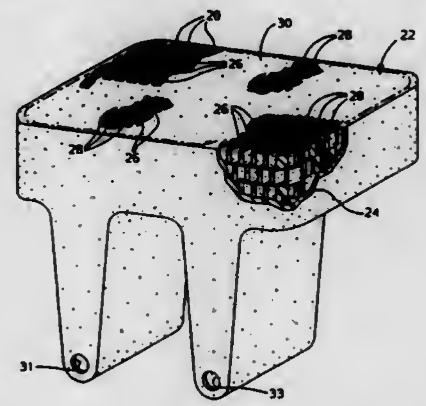


installing the first and second forms along the substantially horizontal surface so that they extend in the first substantially horizontal direction enclosing an area having a cross-sectional configuration corresponding to the predetermined cross-sectional configuration of the concrete structure;
providing an automated slip former that is separate from the forms and that comprises a frame coupled to a support means, drive means coupled with the frame for causing the frame and the support means to move along a path extending in the first substantially horizontal direction, and a hopper assembly for delivering concrete to the area enclosed by the first and second forms, the support means designed to support the first and second forms as the frame moves along the path and prevent the first and second forms from moving in a second substantially horizontal direction that is substantially transverse to the first direction, the support means contacting only a portion of the rigid wall of each form, so as to permit the first and second forms to coact with one another so as to enclose the area having the cross-sectional configuration corresponding to the predetermined cross-sectional configuration of the concrete structure;
supplying concrete to the hopper and operating the hopper so that the concrete is delivered to the area enclosed by the first and second forms as the forms are supported by the support means, which area defines the predetermined cross-sectional configuration of the concrete structure; and
operating the drive means so as to cause the frame and support means to move along the path extending in the first substantially horizontal direction and along the first and second forms while the support means prevents the first and second forms from moving in the second substantially horizontal direction, thus slip forming the concrete structure having the predetermined cross-sectional configuration and the three-dimensional pattern on each side thereof.

5,616,292
PROCESS OF MAKING PAN FIBERS
Kenneth Wilkinson, 1010 Glenwood Blvd., Waynesboro, Va. 22980
Continuation-in-part of Ser. No. 330,680, Oct. 28, 1994, Pat. No. 5,523,366, which is a division of Ser. No. 57,470, May 6, 1993, Pat. No. 5,364,581. This application Jun. 6, 1995, Ser. No. 470,492
Int. Cl.⁶ D01D *5/06;* **D01F** *6/18*
U.S. Cl. 264—182 **4 Claims**

1. A process for preparing acrylonitrile fibers comprising:
maintaining in a reaction zone a solvent system consisting essentially of water and a co-solvent which is a member selected from the group consisting of sodium thiocyanate and zinc chloride,
adding to the reaction zone a vinyl sulfonic acid comonomer-free feedstock comprising a major amount of acrylonitrile monomer and a minor amount of a vinyl carboxylic acid comonomer,
adding to the reaction zone an initiator system comprising a peroxide, a low molecular weight organic mercaptan and a catalytic amount of metal ion,
polymerizing the acrylonitrile monomer and vinyl carboxylic acid monomer under suitable precipitation polymerization conditions of temperature and pressure to obtain an acrylonitrile copolymer,
stripping of water and excess monomer and comonomer to obtain a spinnable solution of acrylonitrile copolymer, and
wet spinning the solution to produce round fibers.

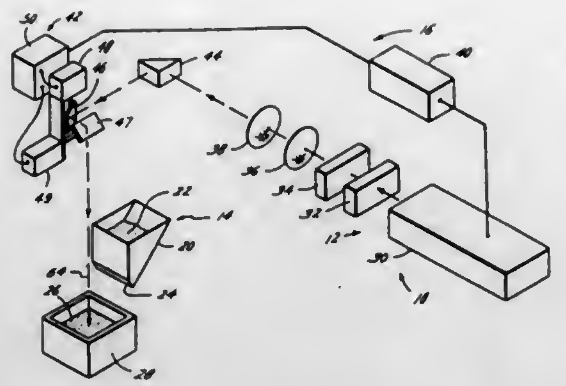
5,616,293
RAPID MAKING OF A PROTOTYPE PART OR MOLD USING STEREOLITHOGRAPHY MODEL
Mansour Ashtiani-Zarandi, Birmingham, and David G. Hlavaty, Northville, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Mar. 3, 1995, Ser. No. 399,350
The portion of the term of this patent subsequent to Mar. 3, 2015, has been disclaimed.
Int. Cl.⁶ B29C *33/40;35/08;41/02*
U.S. Cl. 264—401 **8 Claims**



1. Method of making a structural component part comprising the steps of:
a. creating a cured resin model of the part having a network of interconnected supporting members defining the shape of the part and leaving voids between the supporting members to drain away uncured resin;
b. infiltrating a hardenable structural material into the voids; and
c. curing the hardenable structural material so that the model is reinforced to provide a structural component part.

5,616,294
METHOD FOR PRODUCING PARTS BY INFILTRATION OF POROUS INTERMEDIATE PARTS
Carl R. Deckard, Austin, Tex., assignor to Board of Regents, The University of Texas System, Austin, Tex.
Continuation of Ser. No. 251,609, May 31, 1994, which is a continuation of Ser. No. 911,879, Jul. 10, 1992, Pat. No. 5,316,580, which is a division of Ser. No. 541,788, Jun. 21, 1990, Pat. No. 5,132,143, which is a division of Ser. No. 105,316, Oct. 5, 1987, abandoned, which is a continuation-in-part of Ser. No. 920,580, Oct. 17, 1986, Pat. No. 4,863,538. This application Jun. 7, 1995, Ser. No. 478,272
Int. Cl.⁶ D04H *1/20*
U.S. Cl. 264—413 **9 Claims**

1. A method of producing a part from a powder, comprising the steps of:
depositing a first layer of the powder at a target surface;
directing energy at selected locations of said first layer of powder corresponding to a first cross-section of the part to fuse the powder thereat;
depositing a second layer of powder over said first layer of powder after said directing step;



directing energy at selected locations of said second layer of powder corresponding to a second cross-section of the part to fuse the powder thereat, and so that fused powder at one of said selected locations of said second layer of powder fuses to fused powder in said first layer;

repeating said depositing and directing steps to form a porous intermediate part in layerwise fashion; and

infiltrating the porous intermediate part with an epoxy to produce the part.

5,616,295

FLOATING FURNACE

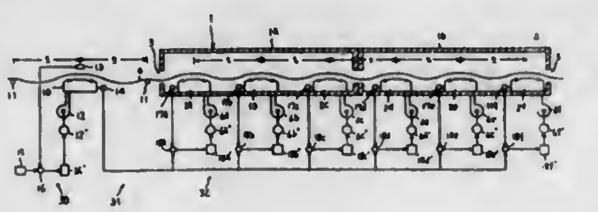
Hiroshi Tawara, Nagoya; Mineyuki Hiramatsu, Mie-ken, and Jun Maeda, Nagoya, all of Japan, assignors to Daidotokushuko Kabushikikaisha, Japan

Filed Jan. 11, 1996, Ser. No. 587,113

Claims priority, application Japan, Jan. 13, 1995, 7-21227

Int. Cl.⁶ C21D *1/74*

U.S. Cl. 266—92 **5 Claims**



1. A floating furnace comprising:
(a) a furnace; and
(b) a plurality of in-furnace floaters arranged in the furnace in series in a direction along a strip transfer pathway in which a metal strip is to be transferred; wherein the strip is transferred through the furnace floating on the gas coming out of the in-furnace floaters;
further comprising:
(c) a test floater disposed along the strip transfer pathway;
(d) a setter for setting a predetermined height of a floated strip above said floaters;
(e) a float sensor to detect the height of the strip floating by a gas blown from the test floater;
(f) a comparator to compare the detected height from said float sensor and the height set by said setter; and
(g) gas pressure matching means to make the gas pressures of the in-furnace floaters match the gas pressure of the test floater when the test floater floats the strip at said predetermined height.

5,616,296

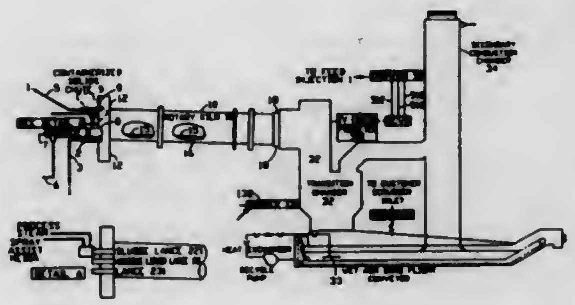
WASTE MANAGEMENT FACILITY

Herman J. Hittner, Lower Burrell; R. Lee Byers, Upper St. Clair, both of Pa.; John N. Lees, Jr., Brookfield, Wis.; David W. Rierson, Elm Grove, Wis., and Ludmila Dinter-Brown, South Milwaukee, Wis., assignors to Aluminum Company of America, Pittsburgh, Pa.

Division of Ser. No. 84,896, Jun. 29, 1993, Pat. No. 5,479,990. This application Feb. 21, 1995, Ser. No. 391,894

Int. Cl.⁶ C21B *7/22*

U.S. Cl. 266—145 **1 Claim**



1. An industrial waste management facility for treating and disposing of spent potlining, comprising:
(a) a co-current gas-fired rotary kiln for containing a molten pool of spent potlining;
(b) an ash quencher and cooler for receiving molten residue from the discharge end of said rotary kiln;
(c) a secondary combustion chamber for maintaining the residue molten at the discharge end of said rotary kiln;
(d) a down draft transition chamber for channeling discharge gases from the rotary kiln to said secondary combustion chamber while accommodating differential expansion and sealing for said rotary kiln;
(e) pneumatic slinger pipe feeder means for feeding and distributing spent potlining into the inlet end of the rotary kiln;
(f) discharge dam means for providing an average depth of molten material in the rotary kiln throughout its length;
(g) a radiative-optical kiln bath temperature measurement system;
(h) means for comminuting and blending materials prior to injection through said pneumatic slinger pipe feeder means and means for adjusting and controlling the blended ratio of materials in response to signals received from said radiative-optical kiln bath temperature measurement system;
(i) means for recovering fluoride from discharge gases exiting the discharge end of said rotary kiln and recycling said fluoride to the molten bath or pool of said rotary kiln; and
(j) means for collecting and withdrawing glass frit residue from said ash quencher and cooler.

5,616,297

ANNEALING BASE FOR HOOD-TYPE ANNEALING FURNACES

Peter H. Ebner, Bergham 168, and Heribert Lochner, Burgwallstrasse 19, both of A-4060 Leonding, Austria

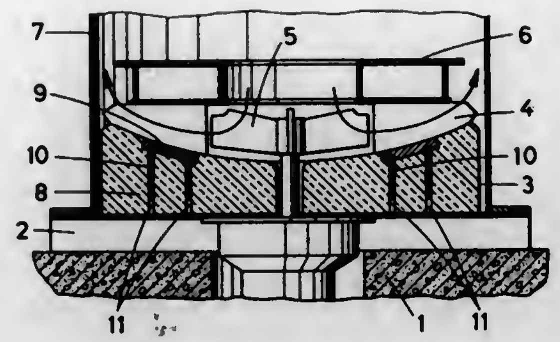
Filed Feb. 22, 1996, Ser. No. 604,056

Claims priority, application Austria, Feb. 24, 1995, 337/95

Int. Cl.⁶ C21D *1/00*

U.S. Cl. 266—263 **2 Claims**

1. An annealing base for an annealing furnace, the annealing base being covered by a hood and comprising
(a) a frame member supported on a foundation and supporting the hood,
(b) a central fan comprising a vertical shaft and a distributor, the distributor having a bottom surface,



(c) a support for goods to be annealed, the support being positioned on the distributor,
(d) a filling member arranged between the distributor and the frame member, the filling member comprising
(1) a thermally insulating wool surrounding the vertical shaft of the central fan and gas-tightly encapsulated in sheet metal, and
(e) a load-transmitting supporting structure between the distributor and the frame member, the supporting structure comprising
(1) a shaped ring inserted directly below the distributor in the sheet metal gas-tightly encapsulating the thermally insulating material, the shaped ring conforming in shape to the bottom surface of the distributor and being of a much greater thickness than the sheet metal, and
(2) two concentric sheet metal cylinders connecting the shaped ring to the frame member.

5,616,298

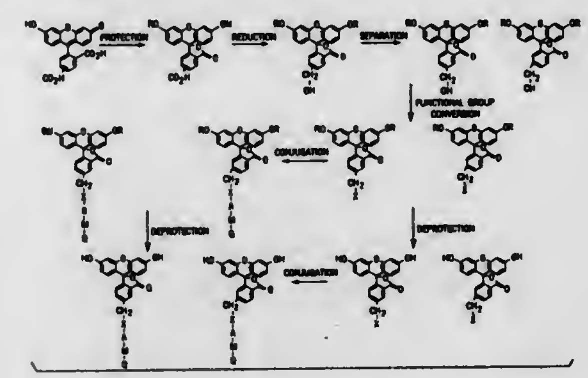
5(6)-METHYL SUBSTITUTED FLUORESCEIN DERIVATIVES

Phillip G. Mattingly, Grayslake, Ill., assignor to Abbott Laboratories, Abbott Park, Ill.

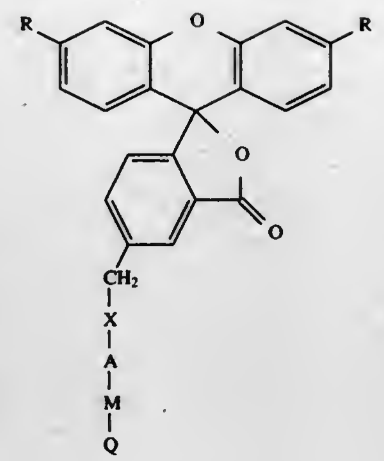
Division of Ser. No. 421,143, Apr. 13, 1995, Pat. No. 5,496,925, which is a continuation of Ser. No. 260,578, Jun. 16, 1994, abandoned, which is a division of Ser. No. 859,775, Mar. 30, 1992, Pat. No. 5,352,803. This application May 22, 1995, Ser. No. 445,962

Int. Cl.⁶ A61K *35/14;* **C07K** *14/00;* **C07D** *311/82;* **G01N** *33/53*

U.S. Cl. 422—61 **1 Claim**

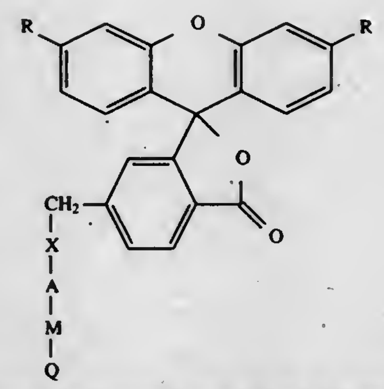


1. A test kit for detecting the presence of at least one analyte in a test sample which comprises a container containing an indicator reagent comprising a compound of formula XIX or XX:



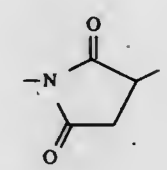
FORMULA XIX

or



FORMULA XX

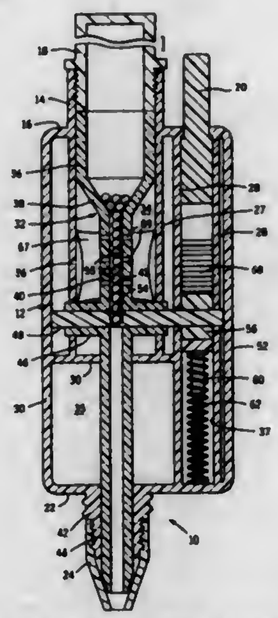
wherein R is selected from the group consisting of hydroxy and protected hydroxy, and X is chosen from the group consisting of —N(H)n—, —O—, —S—;
wherein n=0 or 1, to satisfy the nitrogen valency;
wherein A is a spacer group consisting of from 0 to 50 carbon atoms and heteroatoms, including not more than ten heteroatoms, arranged in a straight or branched chain, saturated or unsaturated, with the provisos that:
(a) not more than two heteroatoms may be directly linked in the sequence —XAMQ;
(b) the sequence —XAMQ cannot contain —O—O—, and
(c) in the sequence —XAMQ when X=N(H)n—, when n=0, then N—A taken together may comprise a ring of not more than 6 atoms: and
(d) that branchings may occur only on carbon atoms; and
wherein M is a linking group selected from >C(=O), —NH—, —O—C(=O), —N(H)—C(=O)—, —N(H)—C(=S)—, —S—, —P(=O)(O—)—and



and

wherein Q is a conjugation partner.

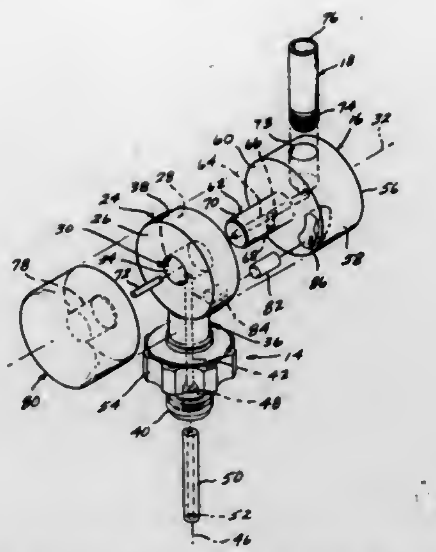
5,616,299
DISPENSER FOR DRIED BIOLOGICAL REAGENT SPHERES
David W. Walker, Milwaukee; Brent A. Burdick, Brookfield; James F. Jolly, Glendale, and Daniel D. Zender, Muskego, all of Wis., assignors to Pharmacia Biotech, Inc., Milwaukee, Wis.
Filed Jun. 6, 1995, Ser. No. 469,050
Int. Cl.⁶ B01L *11/00;* **B65G** *29/00*
U.S. Cl. 422—99 **20 Claims**



1. An apparatus for dispensing reagent spheres from a vial, said apparatus comprising:
a body formed of electrically conductive material having an inlet to which the vial can be coupled, an outlet and a passageway extending from the inlet to the outlet;
a metering shaft across the passageway to divide the passageway into two portions and having a depression for conveying one reagent sphere at a time between the two portions of the passageway upon rotation of said metering shaft;
a plunger slidably mounted on said body; and
a transmission coupling said plunger to said metering shaft wherein sliding movement of the plunger within said body causes rotation of said metering shaft.

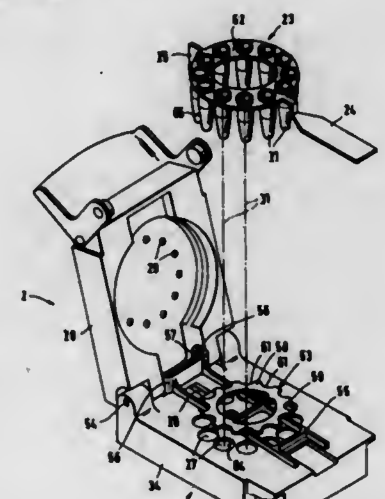
5,616,300
PRIMING AND INJECTION VALVE FOR ANALYTICAL INSTRUMENTS
Douglas W. Ford, West Linn; Robert W. Todd; Quinn E. Trammell, both of Gresham, and Dennis A. Higley, Oregon City, all of Oreg., assignors to Optimize Technologies, Inc., Portland, Oreg.
Continuation of Ser. No. 69,713, Jun. 1, 1993, abandoned. This application May 24, 1995, Ser. No. 448,669
Int. Cl.⁶ G01N *35/10*
U.S. Cl. 422—103 **13 Claims**

1. A valve for use in controlling fluid flow between an inlet of an analytical instrument and a syringe, the valve comprising:
a valve body including a first fitting portion that can be coupled to the analytical instrument inlet, the valve body defining a cylindrical valve seat surface and a first passage extending from an inlet port opening onto the valve seat surface to an outlet port opening through a distal end of the first fitting portion; and
a valve rotor including an engagement portion for rotatably engaging with the valve body and a second fitting portion, the engagement portion defining a cylindrical valve sealing surface that mates with the cylindrical valve seat surface of the valve body in a male-female arrangement, the second fitting



portion projecting radially from the valve rotor, the valve rotor further defining a second passage extending from an inlet port defined by the second fitting portion to an outlet port opening onto the cylindrical valve sealing surface, the second fitting portion of the valve rotor sized to engage a distal fitting of a syringe, the syringe acting as a lever for rotation of the valve rotor when the syringe is engaged with the valve rotor to rotate the valve rotor about an axis of rotation between an off position, in which the outlet port of the valve rotor is nonaligned with the inlet port of the valve body to prevent fluid flow through the valve, and an on position, in which the outlet port of the valve rotor is aligned with the inlet port of the valve body to permit fluid flow from the syringe through the valve to the instrument inlet.

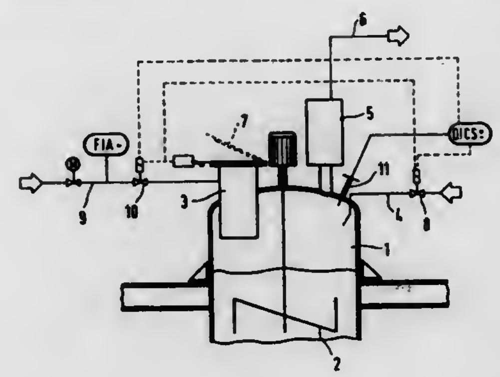
5,616,301
THERMAL CYCLER
Rolf Moser, Vitznau, and Lukas Birrer, Lucerne, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.
Filed Sep. 7, 1994, Ser. No. 301,932
Claims priority, application Switzerland, Sep. 10, 1993, 2717/93
Int. Cl.⁶ B01L *9/00*
U.S. Cl. 422—104 **11 Claims**



1. A device for automatic performance of temperature cycles on a number of test tubes that are closed by piercable closures and contain a predetermined volume of a liquid reaction mixture, which comprises:

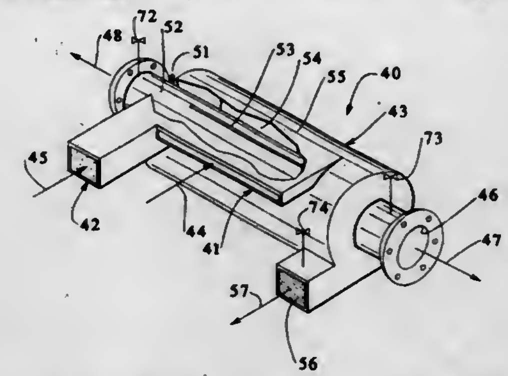
(a) a holder formed of a thermally conductive material and having an upper surface, a lower surface and a cylindrical outer wall, the holder having an array of chambers for holding test tubes equipped with piercable closures, the chambers being disposed along an arc with each chamber having an opening located in the upper surface of the holder, each chamber being configured and dimensioned to receive one test tube equipped with a piercable closure, the holder being configured and dimensioned so that when test tubes having piercable closures are held in the array of chambers, the piercable closures of the test tubes can be accessed by a pipetting needle;
(b) a computer-regulated automatic control system;
(c) means actuated by the automatic control system for cyclic alteration of the temperature of the holder;
(d) a hinged lid having a heating element for heating closed test tubes having piercable closures when such test tubes are held in the array of chambers, the lid having an opening for each chamber so that a pipetting needle can traverse the opening to pierce a closure of a closed test tube having a piercable closure when such test tube is held in a chamber; and
(e) a lifting-out device for facilitating removal of test tubes from the chambers in the holder, the lifting-out device comprising an ejection lever having one end connected to the hinge of the lid and the other end free.

5,616,302
PROCESS FOR RENDERING REACTORS INERT
Ulrich Lenhard-Lubeseder, Krefeld; Joerg Loehning, Duisburg, and Franz Luerken, Kempen, all of Germany, assignors to Messer Griesheim GmbH, Germany
Filed Apr. 12, 1995, Ser. No. 420,863
Claims priority, application Germany, Apr. 15, 1994, 44 13 074.0
Int. Cl.⁶ G05B *9/05;* **G05D** *7/00;* **B65D** *90/44*
U.S. Cl. 422—117 **5 Claims**



1. A process for rendering reactors to be inert, wherein the reactors contain flammable substances and are open at least temporarily by an inert gas fed to the reactor in the open state via an inert gas lock, with simultaneous removal of headspace gas, which comprises providing a reactor containing flammable substances and having an inert gas lock, establishing and maintaining a predetermined difference between inert gas flowrate and headspace gas flowrate removed from the reactor, maintaining the difference without use of an instrumental determination of the oxygen content in the reactor, and with the difference being determined in advance.

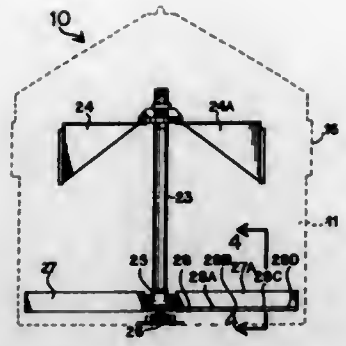
5,616,303
CENTRIFUGAL BED REACTOR
Leo A. Smolensky, Concord; S. Ronald Wysk, Stow, and Zhen W. Lin, Acton, all of Mass., assignors to Gas Research Institute, Chicago, Ill.
Filed Oct. 11, 1994, Ser. No. 321,339
Int. Cl.⁶ F27B *15/08;* **B01J** *8/00*
U.S. Cl. 422—147 **26 Claims**



1. A reactor combining a reaction chamber and a gas/solids separator, the reactor comprising:
a reaction chamber having generally cylindrical configuration with two opposing ends,
means for separating solid particles from a flow of gas, the means for separating being disposed along an axis within the reaction chamber, the means for separating including at least one opening for permitting gas to flow therethrough and out of the reaction chamber, the means for separating precluding solid particles from flowing through the opening,
a passageway between the means for separating and an inside surface of an outer wall of the reaction chamber, the passageway extending around the means for separating to provide a generally circular path about the means for separating,
an inlet to the reaction chamber, the inlet for tangentially introducing a flow of a gas/solids mixture into the passageway,
a first outlet deposed along the axis of the reaction chamber for permitting gas flowing through the opening to exit the reaction chamber,
a second outlet passing through the inside surface of the outer wall of the reaction chamber for permitting solid particles to exit the chamber, the second outlet being aligned tangentially to the inside surface of the outer wall, the second outlet being disposed radially outward from the first outlet, the inlet disposed adjacent to one of said opposing ends, the second outlet being disposed adjacent to the other of said opposing ends,
the gas/solids mixture flowing through the inlet initially following the passageway upon entry into the reaction chamber, the first outlet providing an outlet for gas flowing through the means for separating, the second outlet providing an outlet for solid particles carried along the inside surface of the outer wall of the reaction chamber.

5,616,304
SLURRY REACTOR
Keith E. Stormo, Moscow, Id., assignor to Innovative BioSystems, Inc., Moscow, Id.
Filed Apr. 21, 1995, Ser. No. 426,566
Int. Cl.⁶ B01F *13/02;7/20;* **C12M** *1/06*
U.S. Cl. 422—227 **18 Claims**

4. A slurry reactor comprising:
a vessel for containing a liquid slurry or suspension of solid particles or a settled bed of solid particles in a fluid;
a conduit extending into the interior of said vessel, said conduit being constructed to receive fluid directed to the interior of said vessel;
a stirrer blade within said vessel, said blade being in fluid and rotatable connection with said conduit, said stirrer blade having a first end, a hollow inside, and a second end, there being



a fluid inlet to the hollow inside of the blade at its first end, and said stirrer blade having a leading side and a dissimilar trailing side, there being a fluid outlet opening at or near the leading side of the blade, so that, when a fluid is directed to the interior of said vessel through said conduit, said fluid flows into said stirrer blade and out from it through said opening and said stirrer blade fluidizes the slurry particles near the leading side of the blade as a result of the flow of said fluid through said opening; moves more easily through said settled bed, and provides agitation of said solid particles within said vessel.

5,616,305

FLEXIBLE MEDICAL HEMODIALYSIS PACKAGING UNIT FOR THE PRODUCTION OF CONCENTRATED DIALYSIS SOLUTION INCLUDING A DEVICE FOR THE SAME

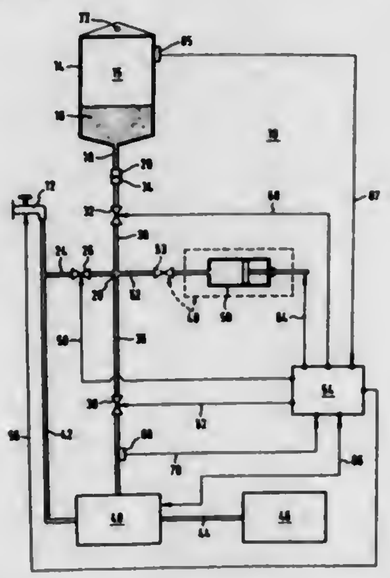
Bernd Mathieu, Spiesen, Germany, assignor to Fresenius AG, Bad Homburg v.d.H., Germany

Filed Jun. 14, 1995, Ser. No. 490,217

Claims priority, application Germany, Jun. 24, 1994, 44 22 100.2

Int. Cl.^{6} B01D *11/02*

U.S. Cl. 422—261 **17 Claims**



1. A flexible medical packaging unit for hemodialysis for the production of a hemodialysis solution concentrate, comprising a flexible container providing a single connector and a cavity charged with a powdered salt concentrate of a quantity sufficient for one hemodialysis treatment, and wherein the volume of the cavity of the container is so designed that the powdered salt concentrate is only partially dissolved when completely charged with water.

5,616,306

METHOD FOR REMOVAL OF HYDROGEN SULFIDE FROM GASES

Akhmet M. Mazgarov; Akhmatfail M. Fakhriev; Rais N. Khafizov; Leonid A. Kashevarov, and Mikhail P. Alimov, all of Kazan, Russian Federation, assignors to Chevron U.S.A. Inc., San Francisco, Calif.

Continuation-in-part of Ser. No. 313,637, Sep. 27, 1994, abandoned. This application Jun. 2, 1995, Ser. No. 460,369

Int. Cl.^{6} C01B *17/16*

U.S. Cl. 423—228 **16 Claims**

1. A process for the removal of hydrogen sulfide from a hydrogen sulfide-containing gas comprising contacting said gas with an aqueous solution comprising chelated iron, an organic amine, an alkali metal hydroxide or carbonate, and an alkali metal or ammonium phosphate.

5,616,307

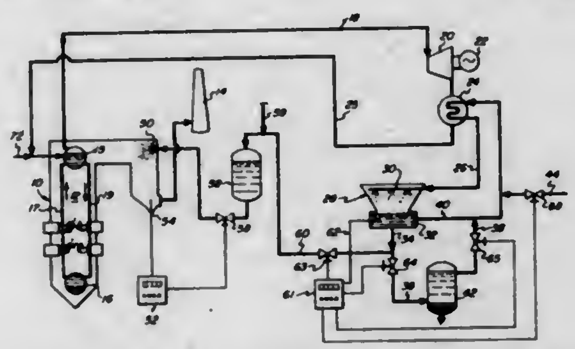
BOILER OPERATION WITH DECREASED NO_X AND WASTE WATER DISCHARGE

Leonard Dubin, Skokie; Vincent M. Albanese, Naperville, and Roy A. Johnson, Glen Ellyn, all of Ill., assignors to Nalco Fuel Tech, Naperville, Ill.

Continuation of Ser. No. 466,066, Jun. 6, 1995, abandoned, which is a continuation of Ser. No. 919,281, Jul. 24, 1992, abandoned, which is a continuation-in-part of Ser. No. 770,857, Oct. 3, 1991, Pat. No. 5,441,713, which is a continuation-in-part of Ser. No. 576,424, Nov. 27, 1990, abandoned, which is a continuation-in-part of Ser. No. 187,943, Apr. 29, 1988, abandoned. This application Mar. 11, 1996, Ser. No. 614,955

Int. Cl.^{6} C01B *21/00*

U.S. Cl. 423—235 **21 Claims**



1. An improvement in a process for controlling emissions which conserves water usage and reduces waste water discharge, the process including burning fuel with air to produce heat and utilizes water as a heat transfer medium, the process resulting in the production of waste water and combustion gases containing NO_x, and introducing an aqueous solution of NO_x-reducing agent into the combustion gases under conditions effective to reduce the NO_x concentration thereof, the improvement comprising:

recovering the waste water at the site of combustion;

mixing a NO_x-reducing agent with the waste water and a hardness-suppressing composition in sufficient quantities to provide an aqueous solution of the NO_x-reducing agent effective for reducing the NO_x concentration of the combustion gases while moderating the tendency for precipitation of hardness factors;

wherein the aqueous solution of NO_x-reducing agent is prepared by admixing said waste water, an effective NH-containing composition, and a hardness-suppressing composition comprising at least one member selected from the group consisting of water-soluble or water-dispersible polymers, phosphonates, chelants, phosphates and mixtures thereof, of a composition and in an amount effective to moderate the tendency for precipitation of hardness factors comprising at least calcium; and

wherein the NO_x-reducing agent comprises an NH-containing composition comprising a member selected from the group consisting of ammonia, urea, urea hydrolysis products, carbamates, ammonium carbonate, ammonium bicarbonate, cyanurates, ammonium salts, and mixtures of two or more of these;

following mixing of the NO_x-reducing agent with the waste water and a hardness-suppressing composition, contacting the combustion gases with the aqueous solution of NO_x-reducing agent under conditions effective to achieve selective gas phase reaction of the NO_x-reducing agent with the NO_x.

5,616,308

PROCESS FOR PRODUCING AN OXYGEN-FREE OR LOW-OXYGEN, HIGH-TEMPERATURE RESISTANT SHAPED ARTICLE OF SILICON CARBIDE

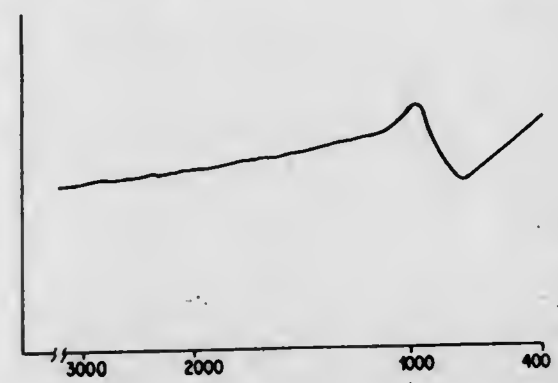
Robin Richter, Hilbersdorf; Hans-Peter Martin; Gerhard Roewer, both of Freiberg; Eberhard Mueller, Jena; Hans Kraemer, Hilbersdorf; Peter Sartori, Rheinberg; Andreas Oelschlaeger; Wolfgang Habel, both of Ruhr, and Bernhard Harnack, Duisburg, all of Germany, assignors to Solvay Deutschland GmbH, Hanover, Germany

Filed Feb. 22, 1995, Ser. No. 393,618

Claims priority, application Germany, Feb. 22, 1994, 44 05 603.6

Int. Cl.^{6} C01B *31/36*

U.S. Cl. 423—345 **20 Claims**



1. A process for producing an oxygen-free or low-oxygen formed article of silicon carbide comprising the steps of:

forming under inert conditions a material consisting essentially of a polymeric organo-silicon compound with chemically reactive centers comprising an unsaturated group adjacent a silicon atom which carries a halogen atom into a formed article having a desired shape, said formed article consisting essentially of said organo-silicon compound with chemically reactive centers;

stabilizing the shape of the formed article consisting essentially of said organo-silicon compound with chemically reactive centers by a treatment selected from the group consisting of a) reacting the polymeric organo-silicon compound with a gaseous cross-linking agent selected from the group consisting of ammonia, primary amines and hydrogen sulfide; and

b) subjecting the polymeric organo-silicon compound to a thermal cross-linking treatment at a temperature below the softening temperature of the polymeric compound; and

thereafter pyrolyzing the stabilized article at a temperature greater than 1000° C. in an inert atmosphere under anaerobic conditions.

5,616,309

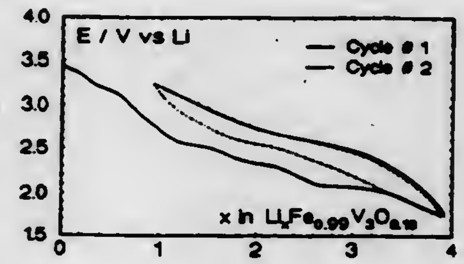
VANADIUM OXIDE-BASED CATHODE ACTIVE MATERIAL AND METHOD OF MAKING SAME

Birgit Zachau-Christiansen, Espergaerde, and Keld West, Hellerup, both of Denmark, assignors to Valence Technology, Inc., Henderson, Nev.

Filed Dec. 1, 1995, Ser. No. 566,232

Int. Cl.^{6} C01B *13/14*

U.S. Cl. 423—592 **21 Claims**



1. A process for preparing an oxide of vanadium comprising the steps of:

a) preparing a mixture comprising a liquid, metallic iron particles and vanadium pentoxide containing vanadium in the V(5) state;

b) reacting the metallic iron with the vanadium pentoxide in the presence of oxygen to change at least a portion of the V(5) to a V(4) state and to form a gel containing said vanadium in the V(4) state; and

c) separating the liquid from the oxide-based gel to provide a solid material comprising iron (Fe), vanadium (V), and oxygen (O), while maintaining at least a portion of said vanadium in the V(4) state.

5,616,310

ALUMINOSILICATES

Richard B. Edwards, and Peter Graham, both of Wirral, Great Britain, assignors to Crosfield Limited, Warrington, United Kingdom

PCT No. PCT/EP94/03390, § 371 Date Jul. 9, 1996, § 102(e) Date Jul. 9, 1996, PCT Pub. No. WO95/12546, PCT Pub. Date May 11, 1995

PCT Filed Oct. 13, 1994, Ser. No. 637,768

Claims priority, application United Kingdom, Nov. 2, 1993, 9322529

Int. Cl.^{6} C01B *39/02*

U.S. Cl. 423—700 **4 Claims**

1. Process for manufacturing an alkali metal aluminosilicate of zeolite P type having the oxide formula

$$M_{2/n}O,\ Al_2O_3,\ 2.0\text{–}2.66\ SiO_2,\ y\ H_2O$$

y being the water content, wherein sodium silicate solution, sodium aluminate solution and sodium hydroxide are mixed together in a first reacting zone, to produce a mixture having the general formula:

$$2.5\text{–}7.5\ Na_2O,\ 2.0\text{–}3.0\ SiO_2,\ Al_2O_3,\ 80\text{–}250\ H_2O$$

the mixture reacting to form amorphous aluminosilicate and supersaturated mother liquor and being then transferred from this first reacting zone to a second reacting zone, the transferred mixture having a degree of crystallinity below 30%, the mixture being afterwards allowed to fully convert into P type zeolite, the resulting product being eventually filtered, washed and dried.

5,616,311
NON-CROSSLINKED PROTEIN PARTICLES FOR THERAPEUTIC AND DIAGNOSTIC USE

Richard C. K. Yen, Glendora, Calif., assignor to Hemosphere, Inc., Irvine, Calif.

Continuation-in-part of Ser. No. 69,831, Jun. 1, 1993, abandoned, and Ser. No. 959,560, Oct. 13, 1992, Pat. No. 5,308,620, which is a continuation-in-part of Ser. No. 641,720, Jan. 15, 1991, abandoned. This application Mar. 14, 1994, Ser. No. 212,546

Int. Cl.^{6} A61K *51/08;9/50;* **B01J** *13/08;* **C12N** *11/02*

U.S. Cl. 424—1.33 **26 Claims**

1. A suspension of particles of non-crosslinked and non-denatured albumin in a first aqueous medium, said particles being monodisperse in said suspension, and having a size range of from about 50 to about 5000 nanometers in diameter, said particles further containing hemoglobin in an amount sufficient to prevent said particles from dissolving upon dilution of said suspension with a second aqueous medium which is alcohol-free, to a volume increase of at least about 50%.

26. A suspension of particles in accordance with claim 1 in which said particles further comprise technetium distributed within said particles.

5,616,312
THIOL LIGANDS AND COMPLEXES FOR X-RAY IMAGING

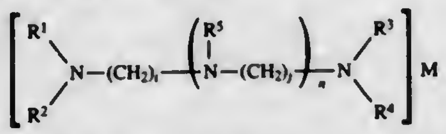
Leonard O. Rosik, Troy, Mo., assignor to Mallinckrodt Medical, Inc., St. Louis, Mo.

Filed Mar. 10, 1995, Ser. No. 402,423

Int. Cl.^{6} A61B *5/055;* **C07F** *9/94*

U.S. Cl. 424—9.364 **7 Claims**

1. A method of imaging comprising administering to a patient a compound of the general formula:



Wherein R^1, R^2, R^3, R^4, and R^5 are the same or different and are $—CO—(CH_2)_y—SH$, $—(CH_2)_2—SH$, $(CH_2)_3—SH$ —, $(CH_2)_q—COOH$, and $—(CH_2)_v—CONR^6R^7$, provided at least one of R^1, R^2, R^3, R^4 and R^5 is a sulfur containing moiety; n is 0 to about 10; i is 2 to about 5; J is 2 to about 5; y is 1 to about 5; z is 1 to about 6; t is 1 to about 5; q is 1 to about 5; v is 1 to about 5; R^6 is H, alkyl, hydroxyalkyl, polyhydroxyalkyl, arylalkyl or alkoxyalkyl; R^7 is H, alkyl, hydroxyalkyl, polyhydroxyalkyl, arylalkyl or alkoxyalkyl; and R^7 can be polyamine when R^6 is H; and M is lead, bismuth, gadolinium, dysprosium, holmium, tungsten, or praseodymium.

5,616,313
METHOD FOR TREATING GINGIVAL AND PERIODONTAL TISSUES

David R. Williams, Monroe; Christine W. Ryles, Milford, and Stephen R. Barrow, Trumbull, all of Conn., assignors to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.

Division of Ser. No. 269,429, Jun. 30, 1994. This application Apr. 11, 1995, Ser. No. 419,790

Int. Cl.^{6} A61K *7/16;7/18;7/20;33/40*

U.S. Cl. 424—49 **24 Claims**

1. A method for inhibiting gingival bleeding and improving the texture and consistency of gingival and periodontal tissues which comprises:

(i) extruding a first toothpaste or gel composition onto a toothbrush, the first composition comprising from about 0.1 to about 10% by weight of zinc salt and from about 0.1 to about 10% by weight of a peroxygen compound in a pharmaceutically acceptable carrier;

(ii) extruding a second toothpaste or gel composition onto the toothbrush comprising from about 1 to about 80% by weight of a bicarbonate salt in a pharmaceutically acceptable carrier;

(iii) brushing gingival and periodontal surfaces surrounding the teeth simultaneously with a combination of the first and second toothpaste or gel compositions.

5,616,314
QUATERNARY AMMONIUM ANTIBACTERIAL DENTIFRICES WITH SELECTED CALCIUM ABRASIVES

Andrew R. Gallopo, Garfield; Nader I. Ibrahim, Hackettstown, and Salvatore Mazzanobile, Haworth, all of N.J., assignors to SmithKline Beecham Corporation, Philadelphia, Pa.

Continuation of Ser. No. 129,191, Mar. 14, 1994, abandoned, which is a continuation of Ser. No. 683,149, Apr. 10, 1991, Pat. No. 5,176,901. This application May 17, 1995, Ser. No. 443,138

Int. Cl.^{6} A61K *7/16*

U.S. Cl. 424—49 **4 Claims**

1. A process for thickening a dentifrice formulation which comprises an alkali pyrophosphate, a cationic antibacterial agent, and a calcium salt, the improvement comprising combining, in water, a soluble or sparingly soluble alkali metal pyrophosphate with an insoluble or essentially insoluble calcium salt in situ, which thickens said dentifrice formulation, without adding a thickening agent.

5,616,315
PARTICLES INCLUDING DEGRADABLE MATERIAL AND ANTI-MICROBIAL AGENT

Thomas C. Masterman, and Jean L. Spencer, both of Boston, Mass., assignors to Gillette Canada Inc., Kirkland, Canada

Filed Oct. 13, 1994, Ser. No. 322,926

Int. Cl.^{6} A61K *7/22*

U.S. Cl. 424—54 **15 Claims**

1. A method for inhibiting bacteria in the mouth of a patient, comprising:

placing a particle comprising a degradable material, a water-stable exterior comprising a material different from said degradable material, and an anti-microbial agent in the mouth of a patient,

said degradable material, after said particle is placed in said mouth, degrading to cause release of said anti-microbial agent, thereby inhibiting bacteria in said mouth of said patient.

5,616,316
DENTIFRICE-COMPATIBLE SILICA PARTICULATES

Jacques Persello, Montluel, France, assignor to Rhone-Poulenc Chimie, Courbevoie Cedex, France

Division of Ser. No. 141,337, Oct. 26, 1993, and Ser. No. 901,078, Jun. 19, 1992, Pat. No. 5,286,478, which is a continuation-in-part of Ser. No. 261,935, Oct. 25, 1988, Ser. No. 261,936, Oct. 25, 1988, Ser. No. 518,764, May 3, 1990, and Ser. No. 518,765, May 3, 1990. This application Jun. 7, 1995, Ser. No. 477,554

Claims priority, application France, Nov. 4, 1987, 87 15275; Nov. 4, 1987, 87 15276; May 3, 1989, 89 05869; May 3, 1989, 89 05868

Int. Cl.^{6} A61K *7/16;7/18;* **C01B** *33/12;* **C04B** *14/04*

U.S. Cl. 424—57 **11 Claims**

1. A process for the preparation of silica particulates adapted for formulation into dentifrice compositions, having a surface chemistry such that the number of OH^- functions thereof, expressed in OH^-/nm^2, is equal to or less than 10, a zero charge point (ZCP) ranging from 3 to 6.5 and also a pH, in aqueous suspension, which varies as a function of the electrical conductivity thereof according to the following equation (I):

$$pH=b-a \log (D) \tag{I}$$

in which a is a constant equal to or less than 0.6; b is a constant equal to or less than 8.5; and (D) represents the electrical conductivity of such aqueous silica suspensions expressed in microsiemens·cm^{-1}, comprising reacting a silicate with an acid to form a suspension or gel of silica, aging such suspension or gel at a pH of from 6 to 8.5, then again aging such suspension or gel at a pH of 5 or less, separating the silica from such suspension or gel and next washing it with hot water to provide an aqueous suspension thereof, the pH of which, measured on a 20% by weight SiO_2 suspension, is according to the following equation:

$$pH=d-c \log (D) \tag{II}$$

wherein c is a constant equal to or less than 1.0, d is a constant equal to or less than 8.5, and (D) represents the electrical conductivity of the aqueous silica suspension, expressed in microsiemens·cm^{-1}, and then drying such aqueous suspension.

5,616,317
POLYCATIONIC POLYMER AND POLYCATIONIC MICROBICIDAL AND ALGAECIDAL AGENT

Yu Nagase, Sagamihara; Takao Aoyagi, Nagareyama; Tomoko Akimoto, Zama; Kazunori Tanaka, Shizuoka; Kouichi Iwabuchi, Shizuoka, and Yoshihiro Konagai, Shizuoka, all of Japan, assignors to Sagami Chemical Research Center, Tokyo, and K·I Chemical Industry Co., Ltd., Shizuoka, both of Japan

PCT No. PCT/JP93/01847, § 371 Date Jun. 14, 1995, § 102(e) Date Jun. 14, 1995, PCT Pub. No. WO94/14872, PCT Pub. Date Jul. 7, 1994

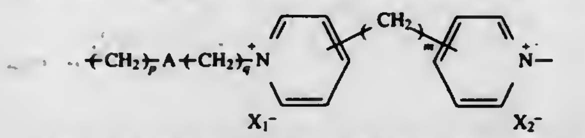
PCT Filed Dec. 21, 1993, Ser. No. 454,152

Claims priority, application Japan, Dec. 22, 1995, 4-356485; Dec. 22, 1995, 4-356486

Int. Cl.^{6} C08G *73/00;* **A01N** *33/12;43/40;55/00*

U.S. Cl. 424—78.3 **6 Claims**

1. A polycationic microbicidal and algaecidal agent containing a microbicidally or algaecidally acceptable vehicle and, as an active ingredient, a microbicidal or algaecidal effective amount of a polymer comprising repeating units of the following formula



(I)

(wherein A is a single bond, an oxygen atom, a phenylene group, a dioxyethylene group or a tetramethyldisiloxane group, X_1^- and X_2^- may be the same or different and are counter anions in quaternary salts, p and q may be the same or different and are integers of from 1 to 6, and m is an integer of from 0 to 6, provided that A, X_1^-, X_2^-, p, q and m may be the same or optionally different for every repeating unit) and having a number average molecular weight of at least 1,000.

5,616,318
USE OF *XENORHABDOUS NEMATOPHILUS* IM/1 AND 19061/1 FOR FIRE ANT CONTROL

Ralph A. Dudney, 10803 W. Hidden Lakes La., Richmond, Tex. 77469

Filed Jun. 9, 1995, Ser. No. 488,820

Int. Cl.^{6} A01N *63/00*

U.S. Cl. 424—93.1 **14 Claims**

1. A method for treating fire ants of the species SOLENOPSIS INVICTA with a bacteriological agent comprising the steps of:

preparing a liquid culture of bacteria of the genus XENORHABDOUS species NEMATOPHILUS strain 19061/1 by inoculating a culture medium of LB broth with a stock culture of said strain and incubating for a period of up to 24 hours; and

applying an insecticidally effective amount of said liquid culture of bacteria onto a mound of ants.

5,616,319
BACILLUS THURINGIENSIS CRYET5 GENE AND RELATED PLASMIDS, BACTERIA AND INSECTICIDES

William P. Donovan, Levittown; Yuping Tan, Falls Township; Christine S. Jany, Doylestown, all of Pa., and José M. González, Jr., Ewing Township, N.J., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 100,709, Jul. 29, 1993, Pat. No. 5,322,687. This application Dec. 30, 1993, Ser. No. 176,865

Int. Cl.^{6} A01N *63/00;* **C12N** *15/32;1/21;15/63*

U.S. Cl. 424—93.2 **7 Claims**

1. An isolated cryET5 gene having a nucleotide base sequence coding for the amino acid sequence shown in FIG. 2 and listed in SEQ ID NO:4.

5,616,320
USE OF ANTIBIOTICS 10381B TO PROMOTE GROWTH

Alexander D. Argoudelis, deceased, late of Portage; Franklin B. Shilliday, Kalamazoo; Alice L. Laborde, Augusta; Scott E. Truesdell, Portage, and Oldrich K. Sebek, Kalamazoo, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 214,089, Mar. 16, 1994, abandoned, which is a continuation of Ser. No. 861,337, Mar. 30, 1992, abandoned, which is a continuation of Ser. No. 346,900, Feb. 27, 1989, abandoned, which is a continuation-in-part of Ser. No. 35,678, Dec. 3, 1986, abandoned, Ser. No. 882,075, Jul. 3, 1986, abandoned, and Ser. No. 718,919, Apr. 2, 1985, abandoned. This application Sep. 26, 1994, Ser. No. 312,016

Int. Cl.^{6} A61K *35/00*

U.S. Cl. 424—71.3 **2 Claims**

1. A method for promoting growth in chickens which comprises: administering to the chickens an amount of antibiotics 10381b effective to promote growth, by adding the antibiotics to the feed of the chickens in an amount from about 0.5 to about 11 mg per kilogram of the chickens' feed.

2. A method for promoting growth in swine which comprises: administering to the swine an amount of antibiotics 10381b effective to promote growth, by adding the antibiotics to the feed of the swine in an amount from about 10 to about 55 mg per kilogram of the swine's feed.

5,616,321
METHOD OF TREATING BACTERIAL MENINGITIS WITH ANTI-TUMOR NECROSIS FACTOR ANTIBODY

Richard F. Hector, Dublin, Calif., and Michael S. Collins, Madison, Conn., assignors to Bayer Corporation, Berkeley, Calif.

Continuation of Ser. No. 246,929, May 20, 1994, abandoned, which is a continuation of Ser. No. 937,939, Aug. 28, 1992, abandoned. This application Mar. 23, 1995, Ser. No. 410,006

Int. Cl.^{6} A61K *39/395;49/00;* **C07K** *16/24;16/28*

U.S. Cl. 424—145.1 **14 Claims**

1. A method of treating a bacterial meningitis infection in a mammal comprising intravenously administering to the mammal a therapeutically effective amount of a monoclonal antibody which binds to tumor necrosis factor, wherein said antibody is administered up to five hours after onset of the infection and being in addition to the administration of an antibiotic.

5,616,322

SPERM ANTIGEN CORRESPONDING TO A SPERM ZONA BINDING PROTEIN AUTOANTIGENIC EPITOPE

Michael G. O'Rand; Esther E. Widgren; Richard T. Richardson, and Isabel A. Lea, all of Chapel Hill, N.C., assignors to The University of North Carolina at Chapel Hill, Chapel Hill, N.C.

Division of Ser. No. 166,195, Dec. 10, 1993. This application May 8, 1995, Ser. No. 436,793

Int. Cl.^{6} A61K *39/00*

U.S. Cl. 424—192.1 **5 Claims**

1. An immunocontraceptive method, comprising administering to a subject a protein or peptide encoded by a DNA in an amount effective to reduce the fertility of said subject, said DNA encoding an Sp 17 protein selected from the group consisting of:

(a) isolated DNA having the nucleotide sequence given herein as SEQ ID NO:1 which encodes the human Sp 17 protein having the amino acid sequence given herein as SEQ ID NO:2;

(b) isolated DNA which hybridizes to isolated DNA of (a) above under conditions represented by a wash stringency of 0.3M NaCl, 0.03M sodium citrate, and 0.1% SDS at 60° C., and which encodes a human Sp 17 protein; and

(c) isolated DNA differing from the isolated DNAs of (a) and (b) above in nucleotide sequence due to the degeneracy of the genetic code, and which encodes a human Sp 17 protein.

5,616,323

CUCUMIS MELO PROTEIN EXTRACT WITH ANTIOXIDANT ACTIVITY AND PROCESS FOR PREPARING IT, COSMETIC OR PHARMACEUTICAL COMPOSITION OR FOOD COMPOSITION CONTAINING SUCH AN EXTRACT

Jean-Paul Ginoux, Eyragues; Alain Dreyer, Chateauneuf de Gadagne; Philippe Roch, Eyragues; Jean-Claude Baccou, Montpellier, and Dominique Lacan, St Beauzilles de Putois, all of France, assignors to Bio-Obtention SC, Montferrier-sur-Lez, France

Filed Mar. 3, 1995, Ser. No. 398,940

Claims priority, application France, Mar. 3, 1994, 94 02459

Int. Cl.^{6} A61K *35/74;* **C12N** *5/00*

U.S. Cl. 424—195.1 **13 Claims**

1. Soluble protein extract, obtained from Cucumis melo line 95LS444 or a hybrid line obtained from 95LS444, and having a superoxide dismutase enzyme activity greater than 30 U/mg of proteins.

5,616,324

PRO-INFLAMMATORY COMPOSITION COMPRISING AT LEAST TWO MEMBERS OF THE GROUP CONSISTING OF DL. PHENYLALANINE, RUTA GRAVEOLANS AND CORYDALIS BULBOSDA

Antoinette Foster, 10 Chambers Road, Bunyip, Victoria, 3815, Australia, and Don Foster, "Glen Luce", Brookdale Avenue, Emerald, Victoria 3782, Australia

Filed May 31, 1995, Ser. No. 456,091

Int. Cl.^{6} A61K *35/78*

U.S. Cl. 424—195.1 **9 Claims**

1. A composition having a pro-inflammatory effect which accelerates the healing process of inflammation, comprising:

a mixture containing at least two ingredients selected from the group consisting of DL.phenylalanine, ruta graveolans and corydalis bulbosa; and,

a carrier for said mixture.

5,616,325

STIMULATOR OF VASCULAR ENDOTHELIAL CELLS AND USE THEREOF

Rui J. Xiu, Fatburs Brunnsg., 11 S-118 28 Stockholm, Sweden

Continuation of Ser. No. 862,744, Jun. 22, 1992, abandoned. This application Oct. 6, 1993, Ser. No. 132,221

Claims priority, application Sweden, Dec. 22, 1989, 8904353

Int. Cl.^{6} A61K *35/78*

U.S. Cl. 424—195.1 **10 Claims**

1. A method for treating an individual with a disease which disturbs microcirculation comprising maintaining the permeability of the microvascular wall in the individual by administering a therapeutically effective amount of an aqueous extract of *Tremella fuciformis* (Berk) to the individual.

5,616,326

RECOMBINANT CANINE ADENOVIRUS 2 (CAV-2)

Norman Spibey, Glasgow, Scotland, assignor to The University Court of the University of Glasgow, Glasgow, Scotland

Continuation of Ser. No. 915,688, Aug. 19, 1992, abandoned. This application May 23, 1994, Ser. No. 247,296

Claims priority, application United Kingdom, Jan. 25, 1990, 900176

Int. Cl.^{6} A61K *39/235;39/205;39/21;* **C12N** *7/01;15/47;15/48;15/49*

U.S. Cl. 424—199.1 **9 Claims**

1. A recombinant adenovirus for producing, in carnivora, antibodies or cell mediated immunity to an infectious organism selected from the group consisting of feline leukaemia virus, rabies virus, and feline immunodeficiency virus, which comprises a live non-pathogenic immunogenic viable canine adenovirus which is canine adenovirus 2 (CAV-2) modified so as to contain a gene coding for an antigen which induces said antibodies or induces said cell mediated immunity, in association with an effective promoter for said gene formed and arranged for expression of said antigen in immunogenic non-pathogenic quantities; said gene selected from the group consisting of the envelope glycoprotein gene of feline leukaemia virus, the envelope glycoprotein gene of rabies virus, and the envelope glycoprotein gene of feline immunodeficiency virus; the promoter-gene sequence introduced into a region of the CAV-2 inverted terminal repeat (ITR) at the 3' end of the viral genome, said region extending from the SmaI site closest to the end of the inverted terminal repeat (ITR) to the 3' end of the ITR.

7. A vaccine formulation which comprises the recombinant adenovirus according to claim 1 together with an acceptable carrier therefor.

5,616,327

M-PROTEIN PEPTIDES OF INFLUENZA VIRUS AS ANTIVIRAL AGENTS

Amrit K. Judd, Belmont, Calif., and Doris J. Bucher, New York, N.Y., assignors to SRI International, Menlo Park, Calif., and New York Medical College, Valhalla, N.Y.

Continuation of Ser. No. 821,031, Jan. 16, 1992, abandoned, which is a continuation-in-part of Ser. No. 717,429, Jun. 19, 1991, abandoned. This application Nov. 7, 1994, Ser. No. 335,303

Int. Cl.^{6} A61K *39/385;38/10;9/127;* **C07K** *17/02*

U.S. Cl. 424—206.1 **14 Claims**

1. A peptide having antiviral activity against influenza viruses by

reason of its ability to inhibit influenza transcription, said peptide having the amino acid sequence

CATCEQIADSQHRSHRQMV (SEQ. ID. No. 1).

5,616,328

GRAM-NEGATIVE BACTERIAL VACCINES

David S. Roberts; Donald A. Dearwester, and Leroy A. Swearingin, all of Lincoln, Nebr., assignors to Pfizer Inc., New York, N.Y.

PCT No. PCT/US92/09944, § 371 Date Jul. 11, 1994, § 102(e) Date Jul. 11, 1994, PCT Pub. No. WO93/10216, PCT Pub. Date May 27, 1993

Continuation-in-part of Ser. No. 792,488, Nov. 15, 1991, abandoned. This PCT application Nov. 13, 1992, Ser. No. 240,649

Int. Cl.^{6} A61K *39/112;39/108;39/10;* **C07K** *1/00*

U.S. Cl. 424—257.1 **8 Claims**

1. A method of preparing a Gram-negative bacterial vaccine, comprising:

(a) providing a concentrated Gram-negative bacterial antigenic preparation which comprises antigen, and free endotoxin in an amount sufficient to induce endotoxic shock when administered to an animal;

(b) adding to the antigenic preparation of (a) a concentration of mineral carrier in an amount effective to reduce the free endotoxin to a level that will not trigger endotoxic shock, but in which the antigen remains sufficiently available to trigger an immunological response;

(c) diluting the preparation of (b) so that the concentration of mineral carrier is less than 5% (v/v), but the free endotoxin remains at a level that will not trigger endotoxic shock, and the concentration of available antigen is sufficient to trigger an immunological response; and

(d) recovering the diluted preparation of (c) for administration as a vaccine.

5,616,329

SPRAY-DRIED ANTIGENIC PRODUCTS

Stephen G. Newman, and William W. Kay, both of Victoria, Canada, assignors to Microtek Research and Development Ltd., Saanichton, Canada

Continuation of Ser. No. 621,836, Dec. 4, 1990, abandoned. This application Jul. 5, 1994, Ser. No. 270,526

Int. Cl.^{6} A61K *39/106;39/02;9/14;* **A01N** *63/00*

U.S. Cl. 424—261.1 **10 Claims**

1. A method of preparing a vaccine from a suspension of pathogenic bacteria possessing lipopolysaccharide, the method comprising:

providing a culture of the bacteria;

inactivating the bacteria;

spray drying the inactivated bacteria at a temperature sufficient to denature substantially all heat-labile components of the bacterial culture; and

harvesting a dried vaccine product.

5,616,330

STABLE OIL-IN-WATER EMULSIONS INCORPORATING A TAXINE (TAXOL) AND METHOD OF MAKING SAME

Robert J. Kaufman; Thomas J. Richard, both of University City, and Ralph W. Fuhrhop, St. Louis, all of Mo., assignors to HemaGen/PFC, St. Louis, Mo.

Filed Jul. 19, 1994, Ser. No. 276,899

Int. Cl.^{6} A61K *9/107;31/235;* **B01J** *13/00*

U.S. Cl. 424—400 **35 Claims**

1. A composition for intravenous administration of taxine in a stable oil-in-water emulsion comprising:

a taxine;

a triglyceride;

water; and

a surfactant, wherein said taxine is solubilized in said triglyceride in an effective pharmaceutical amount for intravenous administration, said taxine and triglyceride forming a stable dispersed phase in the water, said stable dispersed phase having a mean particle size of about 0.2 to about 0.4 μm upon aging said emulsion over a period of about six weeks at 40° C. as a measure of stability.

5,616,331

STORAGE-STABLE, ULTRAFINE OIL-IN-WATER EMULSION NANOPIGMENTED SUNSCREEN/COSMETIC COMPOSITIONS

Delphine Allard, Colombes; Jean-Marc Ascione, and Isabelle Hansenne, both of Paris, all of France, assignors to L'Oreal, Paris, France

Filed Feb. 9, 1995, Ser. No. 386,092

Claims priority, application France, Feb. 9, 1994, 94 01455

Int. Cl.^{6} A61K *7/06;7/44;7/48*

U.S. Cl. 424—401 **34 Claims**

1. A topically applicable sunscreen/cosmetic composition adopted for the photoprotection of human skin and/or hair, comprising a storage-stable, ultrafine oil-in-water emulsion of a photoprotecting effective amount of homogeneously and finely dispersed particulates of at least one inorganic nanopigment which comprises a metal oxide.

5,616,332

COSMETIC SKIN-RENEWAL-STIMULATING COMPOSITION WITH LONG-TERM IRRITATION CONTROL

Morris Herstein, P.O. Box 209, Scarsdale, N.Y. 10583

Continuation of Ser. No. 97,380, Jul. 23, 1993, abandoned. This application Mar. 27, 1995, Ser. No. 410,387

Int. Cl.^{6} A61K *7/00;7/48*

U.S. Cl. 424—401 **4 Claims**

1. A method of controlling long-term irritation induced by at least daily application of a composition comprising a skin cell renewal acid after at least about four weeks topical application of said composition wherein said skin cell renewal acid comprises an acid selected from the group consisting of retinoic acid, hydroxy benzoic acid and an alpha hydroxy acid selected from the group consisting of glycolic acid, lactic acid, malic acid, tartaric acid, citric acid and ascorbic acid, and wherein said composition has a pH of 2.5 to 6.2, the method comprising adding to the composition 0.001 to 5 percent of sphingosine to provide a sphingosine-containing composition and at least daily topical application of the sphingosine-containing composition.

5,616,333
SHARK REPELLANT PATCH
Justin Hayes, 89 Bridle Path Rd., North Andover, Mass. 01845
Continuation of Ser. No. 177,432, Jan. 5, 1994, Pat. No. 5,407,679. This application Apr. 14, 1995, Ser. No. 422,038
Int. Cl.⁶ A62B *37/00;* **A01N** *25/00;25/34*
U.S. Cl. 424—402 **6 Claims**

1. A shark repellant patch adapted to be secured to curved and undulating surfaces, comprising;
- a floppy base comprised of an elastomer having a first and second side;
- a shark repellant proximate said first side of said floppy base; and
- a floppy, impermeable sealing membrane secured to said base and enveloping said shark repellant;

said floppy base being conformable to said curved and undulating surfaces without releasing said shark repellant from said floppy, impermeable sealing membrane.

5,616,334
LOW TOXICITY DRUG-LIPID SYSTEMS
Andrew S. Janoff, Yardley, Pa.; Lawrence Boni, Monmouth Junction, N.J.; Thomas D. Madden; Pieter R. Cullis, both of Vancouver, Canada; Robert P. Lenk, Lambertville; John J. Kearns, Princeton, both of N.J.; Anthony G. Durning, Yardley, Pa.; Robert Klimchak, Flemington, N.J., and Joel Portnoff, Richboro, Pa., assignors to The Liposome Company, Inc., Princeton, N.J.
Continuation of Ser. No. 876,121, Apr. 29, 1992, abandoned, and a continuation-in-part of Ser. No. 164,580, Mar. 7, 1988, abandoned, and a continuation-in-part of Ser. No. 225,327, Jul. 28, 1988, abandoned, which is a continuation of Ser. No. 79,309, Jul. 29, 1987, abandoned, said Ser. No. 876,121is a continuation of Ser. No. 236,700, Aug. 25, 1988, abandoned, which is a continuation-in-part of Ser. No. 136,267, Dec. 22, 1987, Pat. No. 4,963,297, said Ser. No. 164,580is a continuation-in-part of Ser. No. 69,908, Jul. 6, 1987, abandoned, which is a continuation-in-part of Ser. No. 22,157, Mar. 5, 1987, abandoned. This application Apr. 28, 1995, Ser. No. 430,699
Int. Cl.⁶ A01N *25/32;57/26;* **A61K** *31/685*
U.S. Cl. 424—404 **23 Claims**

1. A composition comprising a bioactive agent-lipid complex ("HDLC"), wherein the HDLC is a non-liposomal structure having no captured volume, the lipid comprises a phospholipid, and the concentration of the bioactive agent in the complex is at least about 6 mole percent, the bioactive agent is a polyene antifungal antibiotic, the complex is substantially free of liposomes and The toxicity of the bioactive agent in the complex is less than the toxicity of the free form of the bioactive agent.

5,616,335
STABLE THICKENED DISINFECTING AQUEOUS COMPOSITION CONTAINING AN ORGANIC PEROXY ACID INTENDED FOR HUMAN OR ANIMAL USE
Remy Nicolle, Meudon; Daniel Le Rouzic, Ermont; Pascal Crisinel, Versailles; Gerard DeClerck, Saint Gratien, and Henry Ledon, Versailles, all of France, assignors to Chemoxal S.A., Paris Cedex, France
PCT No. PCT/FR94/00517, § 371 Date Jan. 10, 1995, § 102(e) Date Jan. 10, 1995, PCT Pub. No. WO94/24863, PCT Pub. Date Nov. 10, 1994
PCT Filed May 4, 1994, Ser. No. 351,254
Claims priority, application France, May 5, 1993, 93 05376
Int. Cl.⁶ A01N *25/02;* **A61K** *47/32;31/19*
U.S. Cl. 424—405 **48 Claims**

1. Aqueous composition which is stable with time, wherein said composition comprises:
- water;
- an organic peroxy acid in a concentration less than 0.09% by weight; and
- at least one thickening agent having the formula:

$$A\begin{cases}[(C_3H_6O)\,(C_2H_4O)]_{(g,h)}-R\\[2ex][(C_3H_6O)\,(C_2H_4O)]_{(g',h')}-R'\end{cases}$$

in which: $[(C_3H_6O)\ (C_2H_4O)]_{(gi,hi)}$ with (g_i,h_i) denoting (g,h) or (g',h'), represents a statistical polymer of propylene oxide and ethylene oxide containing h_i moles of ethylene oxide and g_i moles of propylene oxide, distributed randomly within the polymer chain;
- A denotes an aliphatic, cycloaliphatic or aromatic diisocyanate residue;
- R and R', which may be identical or different, denote a C_8–C_{30} alkyl or alkenyl radical;
- g_i and h_i, which are identical or different, are such that g_i+h_i is a number between 20 and 200;
- the h_i/g_i molar ratio is between 30/70 and 90/10,
- said thickening agent being in a concentration such that the viscosity of the composition is greater than 100 mPa.s as measured using Brookfield LVT at 20° C.

5,616,336
METHOD OF COMBATTING INSECT EGGS AND OVICIDAL COMPOSITIONS
Hafez M. Ayad, Cary, N.C., assignor to Rhone-Poulenc Inc., Research Triangle Park, N.C.
Continuation of Ser. No. 207,903, Mar. 7, 1994, abandoned, which is a continuation of Ser. No. 891,848, Jun. 1, 1992, abandoned. This application May 8, 1995, Ser. No. 436,835
Int. Cl.⁶ A01N *25/04*
U.S. Cl. 424—405 **2 Claims**

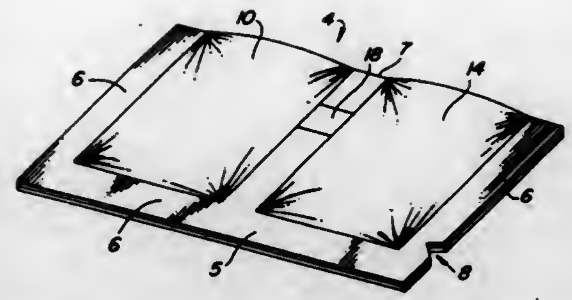
1. An ovicidal composition for killing the eggs of tobacco bud worm, Mexican bean beetle or Colorado potato beetle comprising
- a) an ovicidally effective amount of a compound or salt of the formula:

$$R_1-X-\underset{R_2}{N}-\underset{R_3}{C}=Z-R_4$$

wherein:
R_1 is halopyridyl or 6-halopyrid-3-yl;
R_2 and R_3 are hydrogen or C_1–C_5 alkyl;
R_4 is cyano;
X is CH_2; and
Z is N;
- b) a compatible surface active agent to aid in the coating of the ovicidal composition on said insect eggs; and
- c) an agriculturally acceptable carrier for delivering said ovicidal composition to said eggs wherein the composition comprises a mixture of acetone/surfactant/dimethylformamide which is diluted with water.

5,616,337
UNIT DOSE SKIN CARE PACKAGE
Elizabeth J. M. Kasianovitz, San Diego; Lisa A. Bellm, Beverly Hills, and Kameron W. Maxwell, Calma, all of Calif., assignors to Genta Incorporated, San Diego, Calif.
Filed Jan. 30, 1995, Ser. No. 380,740
Int. Cl.⁶ A01N *25/34;* **B65D** *25/08*
U.S. Cl. 424—414 **13 Claims**

1. A unit dose package comprising:
- a web having two compartments separated by a frangible seal;
- a liquid contained within the first compartment; and



- an applicator contained within the second compartment and separate from the web.

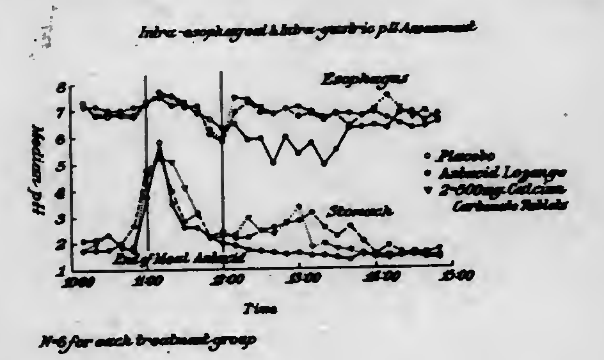
5,616,338
INFECTION-RESISTANT COMPOSITIONS, MEDICAL DEVICES AND SURFACES AND METHODS FOR PREPARING AND USING SAME
Charles L. Fox, Jr., New York, N.Y.; Shanta M. Modak, River Edge, N.J., and Lester A. Sampath, Nyack, N.Y., assignors to Trustees of Columbia University in The City of New York, New York, N.Y.
Continuation of Ser. No. 258,189, Oct. 14, 1988, Pat. No. 5,019,096, which is a continuation-in-part of Ser. No. 254,920, Feb. 11, 1988, abandoned. This application Apr. 19, 1991, Ser. No. 687,844
Int. Cl.⁶ A61F *2/02*
U.S. Cl. 424—423 **2 Claims**

1. A method for preparing a medical article comprising forming a layer of a polymeric material containing an antiinfective agent selected from the group consisting of a biguanide and silver sulfadiazine bulk distributed therein onto a surface of a preformed hydrophilic polymeric article.

5,616,339
CHITOSAN-BASED NUTRIENT OR MEDICINAL COMPOSITIONS FOR ADMINISTRATION TO RUMINANTS
Christian Prud'Homme, Lyon, and Jean-Francois Rostaing, Chuzelles, both of France, assignors to Rhone-Poulenc Nutrition Animale, Antony, France
Continuation-in-part of Ser. No. 123,090, Sep. 17, 1993, abandoned. This application Mar. 31, 1995, Ser. No. 414,322
Claims priority, application France, Sep. 18, 1992, 92 11129
Int. Cl.⁶ A23K *1/18*
U.S. Cl. 424—438 **45 Claims**

1. A composition for administration to ruminants, comprising a biologically active substance coated with a coating composition which comprises:
- (a) a chitosan salt, said salt being present in said coating composition in an amount greater than 0% by weight of said coating composition, expressed in chitosan equivalents, and not greater than 10% by weight of said coating composition, expressed in chitosan equivalents; and
- (b) a fat or a mixture of fats which has a melting point of more than 45° C., wherein at least 80% of the biologically active substance in said composition is retained in the rumen without degradation for at least six hours and wherein at least 50% of the biologically active substance is released in the abomasum and/or intestine in less than six hours.

5,616,340
PROCESS FOR MAKING A HARD-CANDY BASED ORAL PHARMACEUTICAL LOZENGE CONTAINING AN ANTACID
Thomas S. Ells, Ft. Washington, and Joseph R. Luber, Quakertown, both of Pa., assignors to McNeill-PPC, Inc., Fort Washington, Pa.
Division of Ser. No. 69,133, May 28, 1993, Pat. No. 5,399,354. This application Dec. 2, 1994, Ser. No. 349,035
Int. Cl.⁶ A61K *9/20*
U.S. Cl. 424—440 **17 Claims**



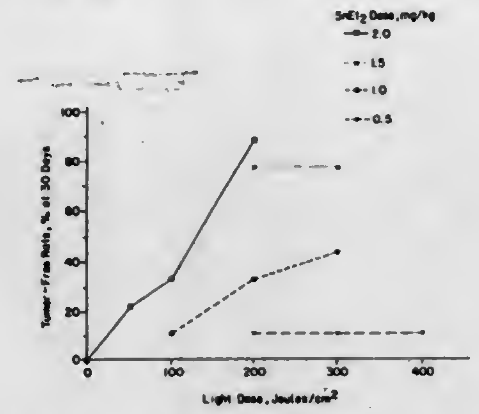
1. A hard-candy lozenge containing an antacid, which is manufactured by a process which comprises mixing liquid sucrose, corn syrup, and a carbonate antacid into a mixture, heating the mixture to a first temperature by a cooking means, transferring the mixture to a second cooking chamber and heating the mixture to a second temperature, exposing said mixture to a vacuum, transferring the mixture to an in-line mixer, mixing the mixture in the in-line mixer and adding a cold-flow enhancer, favoring, and optionally coloring, and forming the mixture into lozenges.

5,616,341
HIGH DRUG:LIPID FORMULATIONS OF LIPOSOMAL ANTINEOPLASTIC AGENTS
Lawrence D. Mayer; Marcel B. Bally; Pieter R. Cullis, all of Vancouver, Canada; Richard S. Ginsberg, Jamesburg, and George N. Mitilenes, Washington, both of N.J., assignors to The Liposome Company, Inc., Princeton, N.J.
Continuation of Ser. No. 636,015, Jan. 4, 1991, abandoned, which is a continuation of Ser. No. 164,557, Mar. 7, 1988, abandoned, which is a continuation-in-part of Ser. No. 22,154, Mar. 5, 1987, abandoned. This application Aug. 26, 1993, Ser. No. 112,875
Int. Cl.⁶ A61K *9/127;9/133*
U.S. Cl. 424—450 **16 Claims**

1. A composition comprising:
- (i) liposomes which comprise an ionizable antineoplastic agent selected from the group consisting of doxorubicin and daunorubicin, a release-inhibiting aqueous buffer comprising citric acid and a bilayer comprising a lipid which comprises a phospholipid; and
- (ii) an aqueous solution external to the liposomes which is basic with respect to the release-inhibiting buffer, wherein

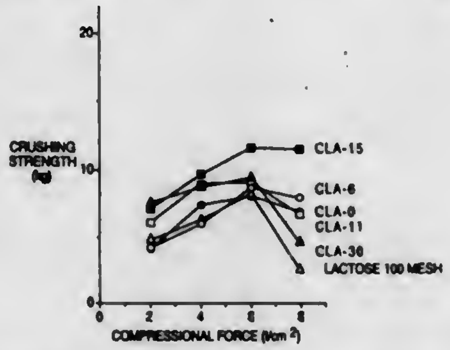
the weight ratio of antineoplastic agent to lipid in the liposomes is from at least about 0.1:1 to about 3:1.

5,616,342
EMULSIOIN SUITABLE FOR ADMINISTERING A POORLY WATER-SOLUBLE PHOTOSENSITIZING COMPOUND AND USE THEREOF
Robert T. Lyons, Cary, N.C., assignor to PDT, Inc., Santa Barbara, Calif., and Pharmacia & Upjohn AB, Stockholm, Sweden
Filed Apr. 11, 1995, Ser. No. 419,911
Int. Cl.⁶ A61K *9/127;31/40*
U.S. Cl. 424—450 **31 Claims**



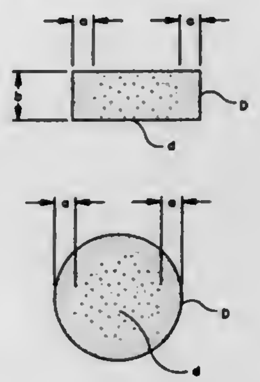
1. An emulsion for administering a poorly water-soluble, pharmacologically active, photosensitizing pyrrole-based macrocyclic compound to a patient comprising a pharmacologically acceptable lipid as a hydrophobic phase dispersed in a hydrophilic phase, an effective amount of said photosensitizing pyrrole-based macrocyclic compound, a phospholipids stabilizer, and as a costabilizer, a pharmaceutically acceptable salt of a bile acid selected from the group consisting of cholic acid, deoxycholic acid, glycocholic acid; and mixtures thereof, and wherein the concentration of said pharmaceutically acceptable salt is about 0.01 to about 1.0 g/100 ml of the emulsion.

5,616,343
CROSS-LINKED AMYLOSE AS A BINDER/DISINTEGRANT IN TABLETS
Louis Cartilier, Beaconsfield; Mircea A. Mateescu, Verdun; Yves Dumoulin, Ste-Julie, all of Canada, and Vincent Lenaerts, Paris, France, assignors to Labopharm, Inc., Quebec, Canada
Filed Mar. 25, 1993, Ser. No. 37,119
Int. Cl.⁶ A61K *9/20*
U.S. Cl. 424—464 **20 Claims**



1. A tablet obtained by direct compression of a mixture consisting essentially of an active ingredient and cross-linked amylose as a binder/disintegrant, wherein the cross-linking has been carried out with from about 6 to about 30 grams of cross-linking agent per 100 grams of amylose, and wherein the cross-linked amylose is present in the tablet in an amount not exceeding 35% by weight.

5,616,344
APPARATUS AND PROCESS FOR STRENGTHENING LOW DENSITY COMPRESSION DOSAGE UNITS AND PRODUCT THEREFROM
Gerald E. Battist, Reston; B. Arlie Bogue, Broad Run, and Garry L. Myers, Reston, all of Va., assignors to Fuisz Technologies Ltd., Chantilly, Va.
Continuation-in-part of Ser. No. 259,496, Jun. 14, 1994, and Ser. No. 259,258, Jun. 14, 1994. This application Jul. 18, 1994, Ser. No. 276,244
Int. Cl.⁶ A61K *9/20*
U.S. Cl. 424—486 **12 Claims**



1. A process of forming a low density compression dosage unit to provide increased strength, comprising:

compacting a continuous volume of tabletting-feedstock material under a bi-level compacting pressure to provide a continuous-volume dosage unit having a first volume defining an edge portion of said unit with a density which is greater than a density of a second volume defining a non-edge portion of said unit.

5,616,345
CONTROLLED ABSORPTION DILTIAZEN FORMULATION FOR ONCE-DAILY ADMINISTRATION
Edward J. Geoghegan, Athlone, Ireland; Seamus Mulligan, Gainesville, Ga., and Donald E. Panoz, Tuckerstown, Bermuda, assignors to Elan Corporation PLC, Athlone, Ireland
Division of Ser. No. 921,459, Jul. 28, 1992, Pat. No. 5,364,620, which is a continuation of Ser. No. 455,544, Dec. 29, 1989, abandoned, which is a continuation of Ser. No. 121,225, Nov. 16, 1987, Pat. No. 4,894,240, which is a continuation-in-part of Ser. No. 684,661, Dec. 20, 1984, Pat. No. 4,721,619. This application Nov. 4, 1994, Ser. No. 334,864
Claims priority, application Ireland, Dec. 22, 1983, 3057/83
Int. Cl.⁶ A61K *9/16*
U.S. Cl. 424—497 **12 Claims**

1. A process for the production of a diltiazem pellet formulation for oral administration comprising:

a) forming a core of diltiazem or a pharmaceutically acceptable salt thereof and an organic acid having a diltiazem to organic ratio of from 20:1 to 1:1;

b) enclosing the core in a membrane containing a major proportion of a pharmaceutically acceptable film-forming, water insoluble synthetic polymer and a minor proportion of a pharmaceutically acceptable film-forming, water soluble synthetic polymer, having a release of said diltiazem from said pellet formulation at a rate allowing controlled absorption thereof over a 24-hour period following oral administration, said rate being measured in vitro in a type 2 dissolution apparatus (paddle) according to U.S. Pharmacopoeia XXI in 0.05M KCl at a pH 7.0 and at 100 r.p.m. and substantially corresponding to the following dissolution pattern:

1) from 0 to 35% of the total diltiazem is released after 2 hours of measurement in said apparatus;

2) from 5 to 45% of the total diltiazem is released after 4 hours of measurement in said apparatus;

3) from 30 to 75% of the total diltiazem is released after a total of 8 hours of measurement in said apparatus;

4) from 60 to 95% of the total diltiazem is released after 13 hours of measurement in said apparatus; and

5) not less than 85% of the total diltiazem is released after 24 hours of measurement in said apparatus.

5,616,346
NON-AQUEOUS COLONIC PURGATIVE FORMULATIONS
Craig A. Aronchick, 903 Bryn Mawr Ave., Penn Valley, Pa. 19072
Continuation of Ser. No. 411,350, Mar. 31, 1995, abandoned, which is a continuation of Ser. No. 64,640, May 18, 1993, abandoned. This application Jun. 26, 1996, Ser. No. 669,834
Int. Cl.⁶ A61K *33/42*
U.S. Cl. 424—606 **19 Claims**

1. An orally administrable composition capable of dispersal in the stomach for inducing purgation of the colon in humans consisting essentially of an effective colonic purgative amount of at least one sodium phosphate salt wherein said composition is in a non-aqueous form selected from the group consisting of tablets and gelatin capsules and wherein one or more additives selected from the group consisting of buffering agents, dispersal agents and binding agents are optionally present.

5,616,347
CHLORINE DIOXIDE SKIN MEDICATING COMPOSITIONS FOR PREVENTING IRRITATION
Howard Alliger, 10 Ponderosa Dr., Melville, N.Y. 11747, and Habib Roozdar, 9 Rolling Hills Dr., Nesconset, N.Y. 11767
Filed Feb. 14, 1995, Ser. No. 388,622
Int. Cl.⁶ A01N *59/00;* **A61K** *33/20;33/40*
U.S. Cl. 424—665 **21 Claims**

1. A method of producing chlorine dioxide on mammalian skin comprising:

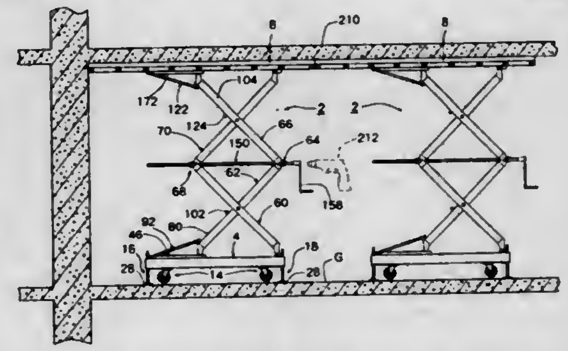
(a) combining in an aqueous solution an aqueous soluble chlorite salt and an aqueous soluble acid, said chlorite salt and said acid being included in said solution in concentrations effective to produce chlorine dioxide in a concentration of at least about 1 part per million after a period of no greater than about fifteen minutes, said solution having an initial pH ranging from about 2.75 to about 4.5 and further including at least one irritation reducing compound selected from the group consisting of aloe vera, allantoin, glycerins and mixtures thereof in an amount effective to substantially reduce skin irritation associated with the exposure of mammalian skin to said solution; and

(b) applying said solution from step (a) to mammalian skin.

5,616,348
GERMICIDAL DETERGENT-IODINE COMPOSITIONS INCLUDING POLYVINYL PYRROLIDONE AND COMPATIBLE NONIONIC SURFACTANT COMPLEXORS
Murray W. Winicov, Kansas City, Mo., assignor to West Agro, Inc., Kansas City, Mo.
Continuation-in-part of Ser. No. 163,596, Dec. 6, 1993, Pat. No. 5,368,868, which is a continuation of Ser. No. 947,041, Sep. 18, 1992, abandoned. This application Nov. 25, 1994, Ser. No. 344,925
Int. Cl.⁶ A61K *33/36;31/76*
U.S. Cl. 424—667 **43 Claims**

1. An aqueous, stable, complexor-iodine germicidal composition comprising an amount of average available iodine on a nominal basis, and from about 2 to about 4.5 parts of complexing agent per part of average available iodine, said complexing agent comprising individual amounts of polyvinyl pyrrolidone and a compatible nonionic surfactant complexor, said composition having a sufficient quantity of said complexing agent to remain homogeneous after one week's storage at temperatures of 2° C. and 40° C.

5,616,349
MOVABLE SLAB FORM UNIT
Mitsuo Sasaki, 3-11-12 Yamato-higashi, Yamato-shi, Kanagawa-ken, Japan
Filed Jan. 12, 1995, Ser. No. 371,869
Claims priority, application Japan, Jan. 20, 1994, 6-018783; Aug. 17, 1994, 6-214313
Int. Cl.⁶ E04G *11/38;11/48*
U.S. Cl. 425—62 **3 Claims**



1. A movable slab form unit that comprises a base plate which is movable along a surface on which it is placed, a slab form means, and an elevation motion means for connecting said slab form means to said base plate while maintaining a freedom of being raised and lowered;

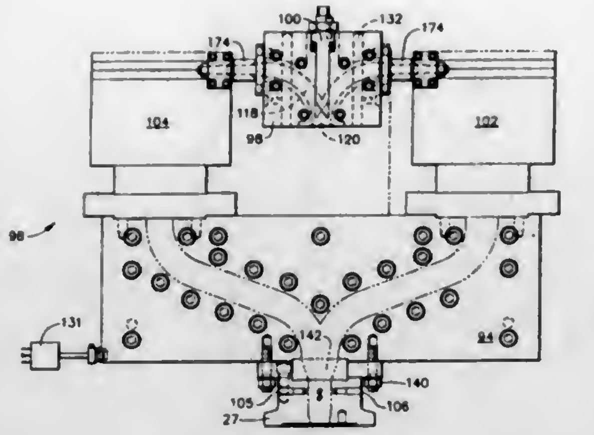
wherein said slab form means includes a main frame body which has a substantially rectangular shape and a substantially flat upper surface, and auxiliary frame bodies which are disposed by side portions of said main frame body neighboring thereto and which have a substantially rectangular shape and a substantially flat upper surface;

wherein first side portions of said auxiliary frame bodies are pivotably coupled to the side portions of said main frame body via hinge means, so that said auxiliary frame bodies are selectively brought to a use state in which the upper surfaces thereof are positioned to be substantially flush with the upper surface of said main frame body and to a non-use state in which the upper surfaces thereof hang down from the side portions of said main frame body; and

wherein first ends of support rod means of which the length is adjustable are pivotably supported at both ends on second side portions of said auxiliary frame bodies opposite said first side portions, and downwardly extending support members are provided at both ends on said side portions of said main frame body, corresponding to the support rod means, and engaging portions are provided at lower end portions of said support members so as to come into detachable engagement with second ends of said rod support means, and a state where said auxiliary frame bodies are in use is defined by an engagement of the second ends of said support rod means with the engaging portions of the corresponding support members.

5,616,350
DUAL FLOW DIVIDER WITH DIVERTER VALVE
Siegfried R. Wissmann, Cincinnati, and Herschel Reaves, Loveland, both of Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio
Filed Apr. 10, 1995, Ser. No. 419,306
Int. Cl.⁶ B29C *47/10;47/26*
U.S. Cl. 425—133.1 **5 Claims**

1. Apparatus for simultaneous coextrusion of two separate profiles comprising:



(a) a first flow divider for receiving a melt stream of core material from a first extruder and separating the core melt stream into two flow channels,
(b) a second flow divider for receiving a melt stream of skin material from a second extruder and separating the melt stream into two flow channels,
(c) a diverter valve in at least one of the flow dividers for varying the relative flow resistance in the flow channels, wherein the diverter valve comprises:
(i) an elongated cylindrical body received within the flow divider and adapted for rotation therein;
(ii) a diverter end connected to the elongated cylindrical body and extending into the melt stream where the melt enters the flow divider and begins to separate into the flow channels, the diverter end being configured to cause resistance to the melt stream entering the respective flow channels; and
(iii) an actuator end extending out of the flow divider and having means for rotating the elongated cylindrical body, such that rotation of the body changes the orientation of the diverter end in the melt stream and varies the relative flow resistance in the respective flow channels,
(d) a first extrusion die for receiving core material from one of the flow channels of the first flow divider and skin material from one of the channels of the second flow divider, and combining the two materials to form a single profile, and
(e) a second extrusion die for receiving core material from the other of the flow channels of the first flow divider and skin material from the other of the flow channels of the second flow divider, and combining the two materials to form a single profile.

5,616,351

COMPACTION HEAD OF A PRODUCTION MACHINE FOR REINFORCED CONCRETE PIPES

Gerhard Wensauer, Aschaffenburg, Germany, assignor to Wensauer Betonwerk GmbH, Stockstadt, Germany

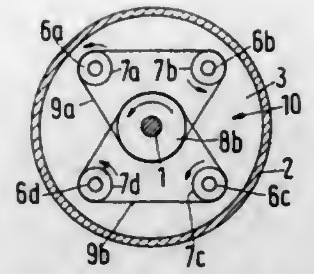
Continuation of Ser. No. 454,633, May 31, 1995, abandoned. This application Jan. 3, 1996, Ser. No. 582,659

Claims priority, application Germany, Jun. 30, 1994, 44 22 891.0

Int. Cl.⁶ B28B *21/12;21/24*

U.S. Cl. 425—262 **4 Claims**

1. A compaction head of a production machine for reinforced concrete pipes, said compaction head comprising:
a drive shaft having an axis;
a smoothing cylinder non-rotatably mounted on said drive shaft, said smoothing cylinder having means for smoothing the inside of a concrete mixture that has been filled into a vertical mold;
a covering wall being mounted separately from the smoothing cylinder and being connected to the smoothing cylinder by a drive mechanism; and



a plurality of rolls, for the radial compaction of the concrete mixture, being rotatably mounted on said drive mechanism with respect to the covering wall and each of said plurality of rolls having an axis that is substantially parallel to the axis of the drive shaft, said plurality of rolls together with said covering wall being driven at a predetermined orbital speed about the axis of said drive shaft, and the rotation of each of said rolls about its own axis being such that the direction of rotation of each of said rolls about its own axis is opposite to the direction of rotation of the covering wall about the axis of the drive shaft, said covering wall being mounted on said drive shaft so that the covering wall rotates relative to the smoothing cylinder, each of the plurality of rolls being driven to rotate about its own axis by being connected to said drive shaft via a transmission, which has a transmission ratio such that the circumferential speed of each of said rolls about its own axis is substantially the same as its orbital speed.

5,616,352

PROCESS FOR THE PRODUCTION OF FAT- AND CHOLESTEROL-REDUCED POWERED PRODUCTS BASED ON EGGS WHICH ARE CHARACTERIZED BY A HIGH PHOSPHOLIPID CONTENT

Jürgen Heidlas, Trostberg; Heinz-Rüdiger Vollbrecht, Altenmarkt, and Jan Cully, Garching, all of Germany, assignors to SKW Trostberg Aktiengesellschaft, Trostberg, Germany

Filed Sep. 18, 1995, Ser. No. 529,752

Claims priority, application Germany, Sep. 19, 1994, 44 33 274.2

Int. Cl.⁶ A23L *1/32*

U.S. Cl. 426—312 **8 Claims**

1. A process for producing an egg-based product in powder form having a reduced fat and cholesterol derivative content, comprising extracting fat and cholesterol derivatives from a powdered egg based product with a solvent mixture comprising propane and carbon dioxide in a ratio of from 95:5% to 5:95% by weight at a pressure of <300 bar and a temperature of <70° C.

5,616,353

METHOD FOR EXTENDING SHELF LIFE OF CITRUS JUICE

Robert V. Wright, Arden, and Ann Marie Chuprevich, Horse Shoe, both of N.C., assignors to Champion International Corporation, Stamford, Conn.

Division of Ser. No. 927,034, Aug. 10, 1992, Pat. No. 5,324,528, which is a continuation-in-part of Ser. No. 775,017, Oct. 11, 1991, Pat. No. 5,175,036. This application Jan. 24, 1994, Ser. No. 185,283

Int. Cl.⁶ A23L *3/34;* **B65B** *55/00*

U.S. Cl. 426—324 **6 Claims**

1. A method for preserving the antimicrobial properties present in a citrus juice that is stored in a paperboard carton formed from a laminate comprised of a plurality of layers having an innermost layer that contacts the juice, the method including the step of preventing the migration of an antimicrobial agent comprising D-limonene present in the juice into the plurality of layers of the carton by making the innermost layer of the carton of a material that is impervious to the antimicrobial agent comprising D-liminone wherein said carton is formed from a barrier laminate comprising:
1. a paperboard substrate having an interior surface and an exterior surface;
2. a heat sealable layer of a heat sealable low density polyethylene coated on said exterior surface of said paperboard substrate;
3. a heat sealable layer of a heat sealable low density polyethylene on the said interior surface of said paperboard substrate;
4. a tie layer of modified low density polyethylene based resin on said heat sealable layer of low density polyethylene on the said interior surface of said substrate; and
5. a skin coat layer applied directly onto said tie layer, said skin coat layer comprising a polymer selected from the group consisting of polyamides and copolyamides.

5,616,354

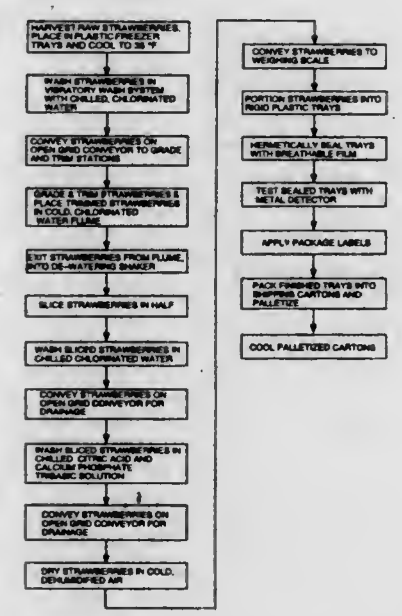
METHOD FOR PROCESSING FRESH STRAWBERRIES FOR EXTENDED SHELF LIFE

Nicholas J. Tompkins, 193 Oak Grove La.; Tim T. Murphy, 1560 Ewing Ave., both of Arroyo Grande, Calif. 93420, and Andrew T. Furukawa, 1213 Cobblestone La., Santa Maria, Calif. 93454

Filed Oct. 12, 1995, Ser. No. 542,415

Int. Cl.⁶ A23B *7/00*

U.S. Cl. 426—324 **10 Claims**



1. A method for processing raw, fresh strawberries, comprising the steps of:
(a). cooling the strawberries to a temperature of about 34° F.;
(b). washing the strawberries in a first chilled chlorine bath;
(c). slicing the strawberries to provide sliced strawberries;
(d). washing the sliced strawberries in a second chilled chlorine bath;
(e). draining the sliced strawberries to remove moisture therefrom;
(f). washing the sliced strawberries in a bath that comprises a citric acid and tribasic calcium solution;
(g). drying the sliced berries with de-humidified air;
(h). placing a selected weight of the strawberries into each one of a plurality of gas-impermeable containers; and
(i). sealing the containers with a breathable film.

5,616,355

LYOPHILIZED HEALTH FOOD PRODUCTS AND METHODS OF MAKING SAME

William E. Haast, and Nancy G. Harrell, both of 34879 Washington Loop Rd., Punta Gorda, Fla. 33982

Continuation-in-part of Ser. No. 185,046, Jan. 24, 1994, abandoned. This application Jun. 5, 1995, Ser. No. 463,882

Int. Cl.⁶ A23L *3/44*

U.S. Cl. 426—384 **14 Claims**

1. A method of making a substantially solid nutritional food product rich in dietary fiber and having improved organoleptic characteristics when consumed as a solid food product, consisting of the steps of:
contacting a dietary fiber component with a flavor component capable of being concentrated by lyophilization, the flavor component being absorbed into or adsorbed on the fiber, the dietary fiber component being additional to any dietary fiber present in the flavor component;
reducing the temperature of the combination of the dietary fiber and flavor component to a temperature immediately above the freezing point of the combination;
reducing pressure imposed on the combination to cause volumetric expansion of the combination;
maintaining the pressure on the combination at the reduced level while lowering the temperature of the combination to cause the combination to freeze; and,
subjecting the frozen combination to lyophilization to remove moisture therein to render the state of the product substantially solid when at normal environmental temperatures.

5,616,356

PROCESS FOR MILLING, DEHYDRATING AND DEODORIZING PLANT FIBER RESIDUES

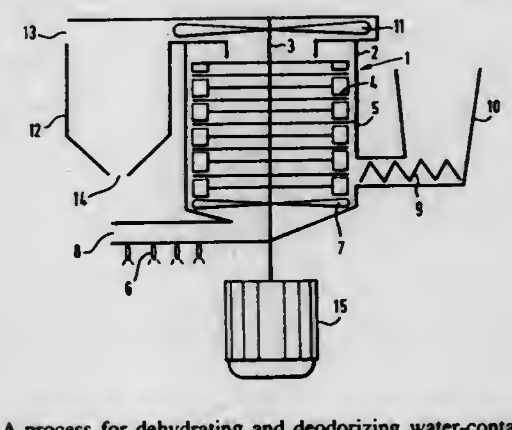
Marcel Buhler, Tolochenaz; Thang Ho Dac, Le Mont S/Lausanne, and Ulrich Zurcher, Yverdon, all of Switzerland, assignors to Nestec S.A., Vevey, Switzerland

Filed Nov. 29, 1995, Ser. No. 563,946

Claims priority, application European Pat. Off., Dec. 21, 1994, 94810743

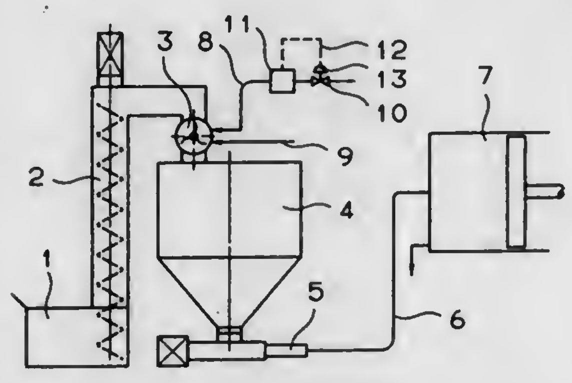
Int. Cl.⁶ A23L *1/015*

U.S. Cl. 426—443 **20 Claims**



1. A process for dehydrating and deodorizing water-containing food product fibers selected from the group consisting of fiber residues resultant from extraction of juice from fruit and vegetable substances, fiber residues resultant from extraction of coffee and of sugar from beet and fiber residues resultant from hydrolysis of plant substances comprising: projecting the fiber residues in a direction towards a wall surface to obtain projected fiber residues for attrition milling; and simultaneously, propelling air heated to a temperature of from 200° C. to 400° C. towards the projected fiber residues so that (i) the projected fiber residues are projected against the wall surface for obtaining attrited fiber and (ii) the heated air is propelled towards the projected fiber residues and attrited fiber for dehydrating and deodorizing the projected fiber residues and for entraining dehydrated, deodorized attrited fiber for collection.

5,616,357
PROCESS AND APPARATUS FOR SEPARATING SOLID AND LIQUID PORTIONS OF CRUSHED FRUITS
Eduard Hartmann, Schneisingen, Switzerland, assignor to Bucher-Guyer AG Maschinenfabrik, Niederweningen, Switzerland
PCT No. PCT/CH94/00052, § 371 Date Nov. 8, 1994, § 102(e) Date Nov. 8, 1994, PCT Pub. No. WO94/22332, PCT Pub. Date Oct. 13, 1994
PCT Filed Mar. 11, 1994, Ser. No. 335,770
Claims priority, application Switzerland, Apr. 2, 1993, 01013/93
Int. Cl.⁶ A23L *2/04*
U.S. Cl. 426—478 **5 Claims**



1. A process for the separation of soluble substances from insoluble solid portions in an agglomeration of partially crushed cells of fruit, comprising the steps of: crushing in a mill a fruit from which juice is to be obtained to form an agglomeration of at least partially crushed cells of the fruit; supplying a solvent to the mill to at least the agglomeration of the partially crushed cells of fruit to increase the yield of juice separated from he insoluble solid portions of the crushed fruit, to the order of 90% by weight of the amount of supplied cell agglomerations, the solvent comprising a liquid selected from the group consisting of water, alcohol or hydrochloric acid; and passing the mixture of partially crushed cell agglomeration and solvent through one of a press, centrifuge or decanter to separate the liquid portion of the mixture from the solid portions therein.

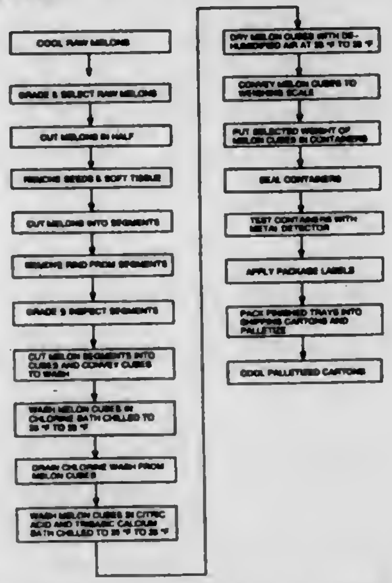
5,616,358
STABLE BEVERAGES CONTAINING EMULSION WITH UNWEIGHTED OIL AND PROCESS OF MAKING
Matthew J. Taylor; Paul R. Bunke, both of Cincinnati, and Phillip F. Pflaumer, Hamilton, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Jul. 19, 1995, Ser. No. 504,166
Int. Cl.⁶ A23L *1/0522;2/02;2/62*
U.S. Cl. 426—590 **20 Claims**

1. Stable beverage products comprising:
(a) an oil-in-water beverage emulsion comprising an unweighted oil, water and a food-grade stabilizer comprising modified starch, wherein the ratio of the stabilizer to the oil within the emulsion is at least about 0.5:1.0, wherein the mean particle size of the oil droplets within the emulsion ranges from about 0.10 to about 0.30 microns, and wherein the particle size distribution of the oil droplets in the emulsion is such that less than about 3% (volume percent basis) of the particles have a particle size greater than about 0.39 microns and less than about 9% (volume percent basis) of the particles have a particle size of greater than about 0.34 microns; and
(b) a fruit juice and/or fruit or other flavor;
wherein the beverage products are stable for at least 1 month at temperatures ranging from about 32° to about 38° C.

5,616,359
PROCESS FOR THE PRODUCTION OF EGG-BASED PRODUCTS IN A POWDER FORM WITH A REDUCED FAT AND CHOLESTEROL CONTENT
Jürgen Heidlas, Trostberg; Jan Cully, Garching, and Heinz-Rüdiger Vollbrecht, Altenmarkt, all of Germany, assignors to SKW Trostberg Aktiengesellschaft, Trostberg, Germany
Continuation of Ser. No. 213,659, Mar. 15, 1994, abandoned. This application Aug. 31, 1995, Ser. No. 524,159
Claims priority, application Germany, Mar. 15, 1993, 43 07 979.2
Int. Cl.⁶ A23L *1/32*
U.S. Cl. 426—614 **8 Claims**

1. A process for producing an egg-based product in powder form having a reduced fat and cholesterol derivative content, but not a substantially reduced phospholipid content consisting essentially of extracting fat and cholesterol derivatives from a powdered egg based product with liquid propane at a pressure of ≦200 bar and a temperature of ≦70° C.

5,616,360
METHOD FOR PROCESSING FRESH MELONS
Nicholas J. Tompkins, 193 Oak Grove La.; Tim T. Murphy, 1560 Ewing Ave., both of Arroyo Grande, Calif. 93420, and Andrew T. Furukawa, 1213 Cobblestone La., Santa Maria, Calif. 93454
Filed Oct. 12, 1995, Ser. No. 542,178
Int. Cl.⁶ A23B *7/00*
U.S. Cl. 426—615 **7 Claims**



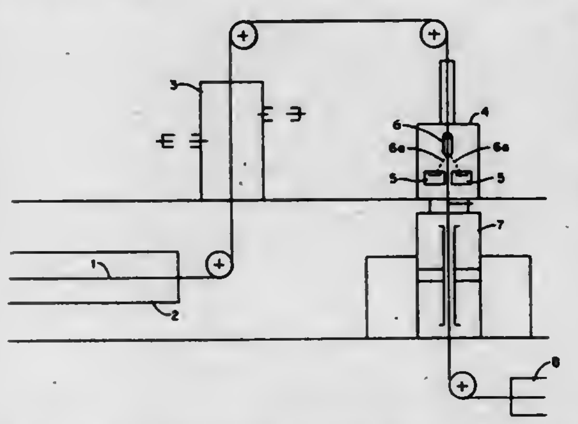
1. A method for processing fresh melons, comprising the steps of:
(a) cooling the melons to a temperature of approximately 36 degrees F.;
(b) grading and selecting the melons for further processing;
(c) forming melon halves by cutting each of the melons in half approximately through its apex;
(d) removing seeds and soft tissue from the melon halves;
(e) cutting the melons halves into melon segments;
(f) removing rinds from the melon segments;
(g) washing the peeled melon segments in a chilled chlorine bath;
(h) inspecting and grading the melon segments;
(i) cutting the melon segments to form melon cubes;
(j) washing the melon cubes in a chilled chlorinated water bath;
(k) draining the melon cubes to remove chlorinated water therefrom;
(l) washing the melon cubes in a chilled citric acid and tribasic calcium phosphate bath;
(m) draining the melon cubes to remove moisture therefrom;

(n) drying the melon cubes with dehumidified air;
(o) placing a selected weight of the melon cubes into each one of a plurality of gas-impermeable container; and
(p) sealing the container with a breathable film.

5,616,361
PROCESS FOR THE PRODUCTION OF A XYLITOL-BASED BINDING AND DILUTING AGENT
Jouko Virtanen, and Matti Mäkelä, both of Kantvik, Finland, assignors to Cultor Ltd., Helsinki, Finland
Continuation of Ser. No. 79,794, Mar. 20, 1991, Pat. No. 5,536,526, which is a continuation of Ser. No. 314,766, Feb. 23, 1989, abandoned. This application Mar. 15, 1996, Ser. No. 616,182
Claims priority, application Finland, Feb. 25, 1988, 88092
Int. Cl.⁶ A23G *3/00*
U.S. Cl. 426—658 **5 Claims**

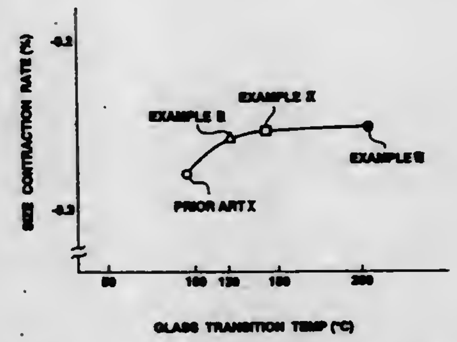
1. A method for the production of a free flowing, compressible granulate which comprises the steps of
agglomerating crystalline xylitol, ground to a reduced particle size, with a physiologically acceptable polyol based syrup, wherein said physiologically acceptable polyol will not contribute appreciable moisture to said granulate or appreciably negatively affect the taste profile of xylitol,
to obtain granules,
and wherein said granules comprise 94% to 98% by weight of xylitol and 1% to 5% by weight of said physiologically acceptable polyol; and
drying said granules so that the water content is less than 1% by weight.

5,616,362
PROCESS AND APPARATUS FOR THE COATING OF METAL
Gerhard Goldschmied, and Gerhard Priesch, both of Vienna, Austria, assignors to Andritz-Patentverwaltungs-Gesellschaft m.b.H., Graz, Austria
Division of Ser. No. 250,367, May 27, 1994, abandoned. This application Jul. 21, 1995, Ser. No. 505,481
Claims priority, application Austria, Jun. 2, 1993, 1070/93
Int. Cl.⁶ B05D *3/02*
U.S. Cl. 427—328 **16 Claims**



1. Process for coating metal substrates with a coating layer, including cleaning and degreasing followed by activation of the substrate in a vacuum and application of the coating layer in a vacuum, wherein the improvement comprises a step that after activation and prior to application of the coating layer selected from the group consisting of zinc and zinc alloy, a bonding agent layer of aluminum is applied under vacuum to the activated substrate, wherein the substrate is Selected from the group consisting of steel sheet, non-ferrous heavy metal sheet and aluminum sheet.

5,616,363
LAMINATE, GLASS FIBER NON-WOVEN FABRIC THEREFOR AND A METHOD OF PRODUCING GLASS FIBER NON-WOVEN FABRIC
Masayuki Ushida, Anzyo; Masayuki Noda, Hikone, and Masaru Ogata, Shiga-ken, all of Japan, assignors to Shin-Kobe Electric Machinery Co., Ltd., Tokyo, Japan
Filed Aug. 11, 1994, Ser. No. 289,243
Int. Cl.⁶ B05D *3/02;* **B32B** *27/00;27/04*
U.S. Cl. 427—372.2 **5 Claims**



1. A method of producing a laminate including a non-woven fabric formed of glass fibers and impregnated with a thermosetting resin, said thermosetting resin having a softening temperature and being heated to at least its softening temperature during the formation of the laminate, comprising the steps of forming a binder for said glass fibers by reacting epoxy resin and aliphatic amine having an acid added thereto, selecting said epoxy resin to provide said binder with a glass transition temperature of at least 120° C. and greater than the softening temperature of said thermosetting resin, applying said binder to said glass fibers and curing said binder to bind said glass fibers to each other prior to impregnation with said thermosetting resin, impregnating said fabric with said thermosetting resin, shaping said impregnated fabric with heating of said thermosetting resin to at least its softening temperature, and curing said thermosetting resin to form said laminate, whereby said binder tends to resist movement of said glass fibers as the softened resin is shaped and to restrain contraction of the cured laminate.

5,616,364
AQUEOUS COMPOSITIONS USEFUL AS PRINTING VEHICLES
Brenda A. Cleary, Sellersville, and Steven P. Boucher, Hatfield, both of Pa., assignors to Henkel Corporation, Plymouth Meeting, Pa.
Continuation-in-part of Ser. No. 126,281, Sep. 24, 1993, abandoned. This application Mar. 2, 1994, Ser. No. 206,556
Int. Cl.⁶ B05D *3/02*
U.S. Cl. 427—389.9 **17 Claims**

1. A method of coating a substrate comprising:
(i) contacting a surface of a substrate with a composition comprising a polymer prepared by polymerizing a blend of monomers, said blend consisting essentially of:
(i) a plasticizing amount of from about 40 to about 60% by weight of the monomer blend, of a monomer selected from the group consisting of plasticizing alkyl acrylate monomers and mixtures thereof,
(ii) a hardening amount of from about 35 to about 55% by weight of the monomer blend, of a monomer selected from the group consisting of hardening alkyl (meth) acrylate monomers and mixtures thereof, and
(iii) a crosslinking amount of from about 0.01 to less than about 5% by weight of the monomer blend, of a monomer selected from the group consisting of multi-ethylenically unsaturated monomers and mixtures thereof,
in an aqueous medium comprising a polymer component consisting essentially of a water-soluble, acrylic polymer having carboxylate functionality, and

(ii) drying said surface to form a film of said polymer in contact with said surface.

5,616,365

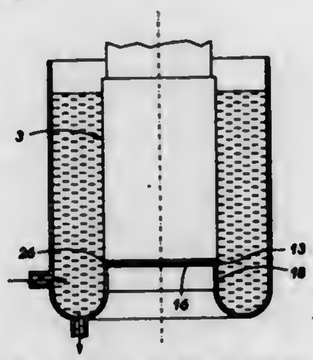
COATING METHOD USING AN INCLINED SURFACE

Richard H. Nealey, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 10, 1996, Ser. No. 660,720

Int. Cl.⁶ B05D *1/18*

U.S. Cl. 427—430.1 **11 Claims**



1. A method for coating a substrate having an end region comprising:

(a) positioning the substrate within a coating vessel to define a space between the vessel and the substrate and providing a downwardly inclined surface contiguous to the outer surface at the end region of the substrate;

(b) filling at least a portion of the space with a coating solution; and

(c) withdrawing the coating solution from the space, thereby depositing a layer of the coating solution on the substrate.

5,616,366

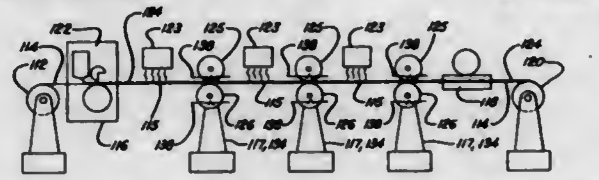
METHOD FOR PRODUCING LOW POROSITY ELECTRODE

Ib I. Olsen, and Gert L. Jensen, both of San Jose, Calif., assignors to Valence Technology, Inc., Henderson, Nev.

Continuation of Ser. No. 230,171, Apr. 20, 1994, abandoned. This application Jan. 23, 1996, Ser. No. 589,995

Int. Cl.⁶ C08F *2/48;* **B05D** *5/12;3/12;* **H01M** *6/18*

U.S. Cl. 427—508 **20 Claims**



1. A process for making electrode and electrolyte cell assemblies comprising the steps of:

a) forming a first mixture having a total parts by weight of 100 with at least 20 parts by weight and up to 70 parts by weight of a first volatilizable solvent, and a first electrode composition present in an amount of up to 80 parts by weight; said first electrode composition comprising a first aprotic polar solvent, which is less volatile than said first volatilizable solvent, an anode intercalation carbon active material, and first monomers or prepolymers characterized by an ability to form a crosslinked network, said amount of up to 80 parts by weight of said first electrode composition comprising 25 to 85 percent by weight of said anode intercalation carbon active material;

b) forming a second mixture having a total parts by weight of 100 with at least 20 parts by weight and up to 70 parts by weight of a second volatilizable solvent which is the same as or different from said first volatilizable solvent, and a second electrode composition present in an amount of up to 80 parts by weight; said second electrode composition comprising a second aprotic polar solvent which is the same as or different from said first aprotic polar solvent, and which is less volatile than said second volatilizable solvent, a vanadium oxide cathode intercalation active material, a conductive filler, and second monomers or prepolymers characterized by an ability to form a crosslinked network and being the same as or different from said first monomers or prepolymers, said amount of up to 80 parts by weight of said second electrode composition comprising 25 to 85 percent by weight of said vanadium oxide cathode intercalation active material represented by the formula V_6O_{13};

c) applying a coating of one of said first and second mixtures onto a first substrate to provide a first applied coating;

d) removing at least a portion of the volatilizable solvent from said first applied coating of step (c);

e) compacting said first applied coating of step (d) to reduce porosity of said first applied coating;

f) exposing said compacted first applied coating of step (e) to heat, light, or other initiating means to at least partially crosslink the monomers or prepolymers;

g) applying a coating of the other one of said first and second mixtures onto a second substrate to provide a second applied coating;

h) removing at least a portion of the volatilizable solvent from said second applied coating of step (g);

i) compacting said second applied coating of step (h) to reduce porosity of said second applied coating;

j) exposing said compacted second applied coating of step (i) to heat, or other initiating means to at least partially crosslink the monomers or prepolymers; and

k) further including after step (e), the further steps of applying an electrolyte composition to said first or said second applied coating, said electrolyte composition comprising third monomers or prepolymers, and exposing said third monomer or prepolymers to heat, light, or other initiating means to at least partially crosslink the third monomers or prepolymers.

5,616,367

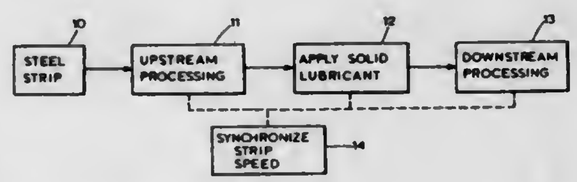
IN-LINE APPLICATION OF SOLID LUBRICANT TO STEEL STRIP

Elliott Y. Spearin, Crown Point, Ind., and James C. Carney, Middletown, Ohio, assignors to Inland Steel Company, Chicago, Ill.

Continuation of Ser. No. 234,541, Apr. 28, 1994, abandoned. This application Nov. 15, 1995, Ser. No. 559,729

Int. Cl.⁶ B05D *3/00;1/00*

U.S. Cl. 427—532 **41 Claims**



1. The combination of (a) a multi-step method for processing a continuous steel strip in a line and (b) a solid lubricant application procedure incorporated in-line with said strip processing method between steps thereof, for applying, to said steel strip, as alternatives, either a wax or polymer material, each of which forms a transparent film of solid lubricant on the steel strip, wherein said strip-processing method comprises the steps of:

performing at least one processing step at an upstream location;

performing at least one processing step downstream of the location of said upstream processing step;

said strip having a strip speed in the upstream processing step and a strip speed in the downstream processing step;

moving said steel strip in a downstream direction during said processing steps;

and synchronizing the speed of the moving steel strip in said downstream processing step with the strip speed employed in said upstream processing step;

said strip having a strip temperature as it undergoes processing;

said combination comprising performing said lubricant application procedure in-line with said strip-processing method, between said upstream and downstream processing steps;

said lubricant application procedure comprising the steps of:

providing said line with both (a) a capability for applying a film-forming wax material, as a liquid, and (b) a capability for applying a film-forming polymer material, as a liquid;

applying one of said film forming materials, as a liquid, to said moving steel strip while the other material remains unapplied;

said material-applying step being capable of applying, as alternatives, either said wax material or said polymer material;

providing said line with a capability for adjusting the temperature of said moving steel strip upstream of said material-applying step;

said upstream temperature-adjusting capability constituting (i) a non-emission heating technique or (ii) a chilling technique employing a refrigerated cooling medium, or the capability of employing techniques (i) and (ii) alternatively;

providing said line with a capability for adjusting the temperature of said strip dollstream of said material-applying step, using a non-emission heating technique;

providing said line with a capability for adjusting the temperature of said strip downstream of said material-applying step, using a chilling technique employing a refrigerated cooling medium;

sensing the temperature of said moving steel strip upstream of said material-applying step;

employing said upstream temperature-adjusting capability selectively (1) in response to the particular film-forming material that is applied or (2) in response to said upstream temperature sensing step or (3) in response to a combination of (1) and (2) to subject said strip to (a) heating or (b) cooling or (c) neither (a) nor

sensing the temperature of said moving steel strip downstream of said material-applying step;

adjusting the temperature of said moving steel strip downstream of said material-applying step either (a) by using said non-emission heating technique while said chilling technique remains unemployed or (b) by using said chilling technique while said non-emission heating technique remains unemployed;

synchronizing the speed of said moving steel strip during said lubricant application procedure with the strip speed employed in said strip-processing steps without substantially diminishing the speed normally attained in said strip-processing steps in the absence of performance of said lubricant application procedure, said normally-attained speed being at least 200 ft./min. (61 m/min.);

taking time to perform said material-applying and temperature-adjusting steps;

limiting the time available for performing said material-applying and temperature-adjusting steps, as a result of said speed-synchronizing step;

and constraining the performance of said material-applying and temperature-adjusting steps to accommodate to the time limitations imposed by said speed-synchronizing step;

the performance of said temperature-adjusting steps being constrained by the employment of one or more of said non-emission heating technique and said chilling technique.

41. A method as recited in claim 1 wherein:

said downstream processing step comprises inspecting the strip for defects;

and said normally attained processing speed is in the range 200–1,000 ft./min. (61–305 m/min.).

5,616,368

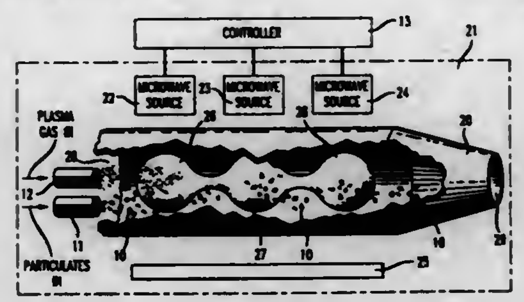
FIELD EMISSION DEVICES EMPLOYING ACTIVATED DIAMOND PARTICLE EMITTERS AND METHODS FOR MAKING SAME

Sungho Jin, Millington; Gregory P. Kochanski, Dunellen, and Wei Zhu, North Plainfield, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jan. 31, 1995, Ser. No. 381,375

Int. Cl.⁶ B05D *5/00;* **H05H** *1/00;* **B01J** *3/06*

U.S. Cl. 427—535 **13 Claims**



1. A method for making an electron field emission device comprising a substrate having a conductive portion, particulate electron emitters comprising diamonds and an electrode adjacent said emitters but spaced apart therefrom for exciting electron emission from said emitters upon application of voltage, said method comprising the steps of:

providing said particulate emitters comprising diamonds, said diamonds predominantly having maximum dimensions in the range of 5–10,000 nm;

prior to applying said particulate emitters to said substrate, exposing said emitters to a plasma containing hydrogen at a temperature in excess of 300° C. while moving said particulate emitters to increase emitter surface exposed and to reduce agglomeration of the emitters as compared with stationary emitters;

adhering said emitters to said substrate conductive portion by applying said emitters to said substrate conductive portion and baking said emitters on said portion at a temperature of less than 500° C. in an inert or reducing atmosphere; and

disposing said electrode adjacent said emitters but spaced apart therefrom.

5,616,369

PROCESS FOR BARRIER COATING OF PLASTIC OBJECTS

Joel L. Williams, Cary; Susan L. Burkett, Hillsborough, both of N.C., and Shel McGuire, Omaha, Nebr., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Continuation-in-part of Ser. No. 125,704, Sep. 23, 1993, Pat. No. 5,364,666. This application Jun. 24, 1994, Ser. No. 265,173

Int. Cl.⁶ H05H *1/00*

U.S. Cl. 427—536 **20 Claims**

1. A method of sequentially depositing a silicon oxide based film on a plastic substrate in a previously evacuated chamber by glow discharge comprising:

(a) placing a plastic substrate into a chamber;

(b) evacuating said chamber;

(c) controllably flowing oxygen into said chamber;

(d) establishing a glow discharge plasma in the chamber from said oxygen component;

(e) depositing a plasma of oxygen onto said plastic substrate;

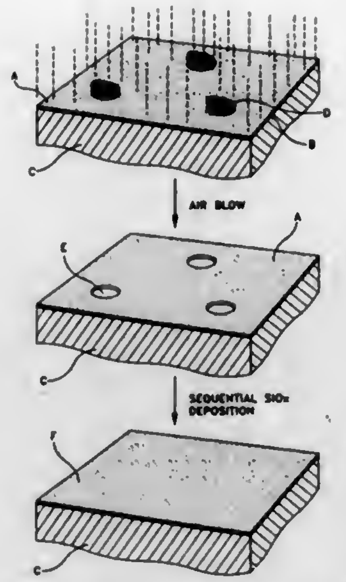
(f) shutting down said chamber and evacuating;

(g) vaporizing an organosilicon component and admixing the volatilized organosilicon component with an oxidizer component and an inert gas component to form a gas stream exterior the chamber;

(h) controllably flowing the gas stream into the plasma;

(i) establishing a glow discharge plasma in the chamber from said gas stream;

(j) depositing a coating of silicon oxide on said plastic substrate;



(k) removing and/or redistributing foreign surface particles from said plastic substrate; and
(l) repeating steps g through j above, thereby depositing another coating of silicon oxide on said plastic substrate.

5,616,370

ARTIFICIAL MULTILAYER AND METHOD OF MANUFACTURING THE SAME

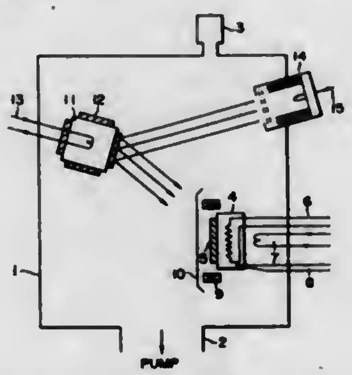
Shiho Okuno, Kawasaki; Susumu Hashimoto, Ebina; Keiichiro Yusu, Kawasaki, and Koichiro Inomata, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 424,082, Apr. 19, 1995, Pat. No. 5,534,355, which is a continuation of Ser. No. 120,236, Sep. 14, 1993, abandoned, which is a continuation of Ser. No. 786,727, Nov. 1, 1991, abandoned. This application Apr. 23, 1996, Ser. No. 636,460

Claims priority, application Japan, Nov. 1, 1990, 2-293566; Mar. 27, 1991, 3-063527

Int. Cl.[6] G11B *5/852*

U.S. Cl. 427—547 **9 Claims**



1. A method of manufacturing a multilayer constituting a magnetoresistance device comprising the steps of:
depositing ferromagnetic and nonmagnetic layers alternately on a substrate having a non-singlecrystalline surface, each of said ferromagnetic layers having a thickness between 0.5 nm and 20 nm; and
introducing a uniaxial magnetic anisotropy into said ferromagnetic layers by applying a magnetic field that is parallel to the major surface of said ferromagnetic layers during the formation thereof or by annealing in a magnetic field that is parallel to the major surface of said ferromagnetic layers after the formation thereof, thus forming a multilayer structure; and
coupling a means to said multilayer structure for measuring resistivity of the multilayer structure along a direction which is parallel to the layers of the multilayer structure.

5,616,371

Patent Not Issued For This Number

5,616,372

METHOD OF APPLYING A WEAR-RESISTANT DIAMOND COATING TO A SUBSTRATE

James G. Conley, Glencoe, Ill., and Jerome H. Lemelson, Incline Village, Nev., assignors to Syndia Corporation, Chicago, Ill.

Filed Jun. 7, 1995, Ser. No. 475,874

Int. Cl.[6] B05D *3/06*

U.S. Cl. 427—554 **1 Claim**

1. A process for applying a wear-resistant diamond coating to a substrate comprising:
a. depositing over said substrate an outer diamond layer;
b. applying a thin layer of graphite over said diamond layer; and
c. treating said layer of graphite after its deposition by laser radiation to partially ablate said graphite to create partially-exposed sp^3 diamond particles in a matrix of graphite or amorphous carbon, thereby leaving an outer diamond/graphite layer having superior lubrication and wear resistance in comparison with a diamond layer alone.

5,616,373

PLASMA CVD METHOD FOR PRODUCING A DIAMOND COATING

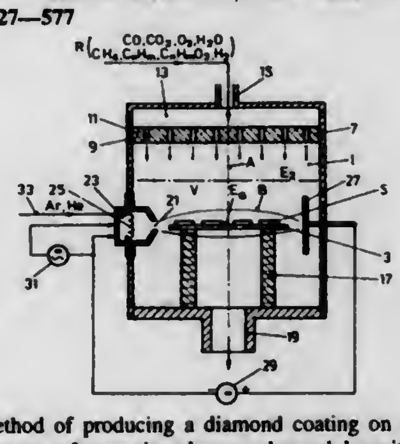
Johann Karner, Feldkirch, Australia; Erich Bergmann, Mels, and Helmut Daxinger, Wangs, both of Switzerland, assignors to Balzers Aktiengesellschaft, Furstentum, Liechtenstein

Continuation of Ser. No. 757,694, Sep. 11, 1991, abandoned. This application Mar. 18, 1994, Ser. No. 215,965

Claims priority, application Germany, Sep. 14, 1990, 40 29 270.3

Int. Cl.[6] B05D *3/06;* **C23C** *16/26*

U.S. Cl. 427—577 **24 Claims**



1. A method of producing a diamond coating on at least one object by means of a reactive plasma enhanced deposition process, wherein said plasma is generated as a low voltage arc discharge and with the aid of a carbon donor gas, comprising the steps of:
(a) introducing said gas into a vacuum chamber;
(b) generating said low voltage arc discharge in said vacuum chamber by applying DC voltage energy from a first independent energy source to electrodes defining an anode/cathode discharge space and introducing electrically charged carriers generated by a second independent energy source into said discharge space;
(c) establishing in said discharge space a gas pressure p in a range of

$$5\ Pa<p<1000\ Pa$$

(d) generating said discharge with a discharge current I per unit surface area aligned along a plane perpendicular to a line extending between the electrodes defining said anode/cathode discharge space as follows:

$$0.8\ kA/m^2 \leqq I,$$

(e) generating said plasma discharge with a substantially uniform plasma density along planes perpendicular to said line by introducing said electrically charged carriers into said discharge space through a multitude of openings distributed in a plate arranged perpendicular to said line; and
(f) arranging said at least one object to be coated on a plane perpendicular to said line and within said discharge space.

5,616,374

METHOD FOR DEPOSITION OF AMORPHOUS HARD CARBON FILMS

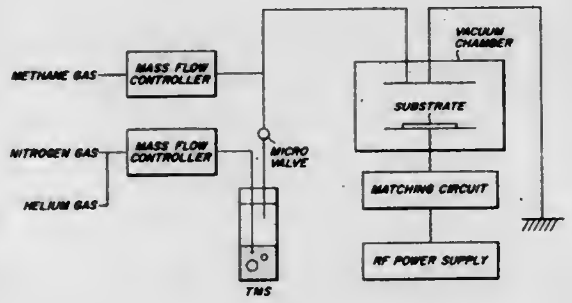
Kentaro Sho, Higashimatsuyama, Japan, assignor to Zexel Corporation, Tokyo, Japan

Continuation of Ser. No. 257,042, Jun. 8, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 486,571

Claims priority, application Japan, Jun. 11, 1993, 5-166439

Int. Cl.[6] B05D *3/06;* **C23C** *16/30*

U.S. Cl. 427—577 **8 Claims**



1. A method for deposition of an amorphous hard carbon film comprising silicon and nitrogen on a substrate, which method comprises introducing a carbon source, a silicon source and a nitrogen source to a deposition chamber in which the substrate is placed, and depositing a hard carbon film comprising between about 20 and about 35 atom % of silicon and between about 0.1 and about 10 atom % of nitrogen from said carbon source, said silicon source and said nitrogen source on said substrate.

5,616,375

AIR BAG

Kazuo Yamamoto, Yokohama, Japan, assignor to NSK, Ltd., Japan

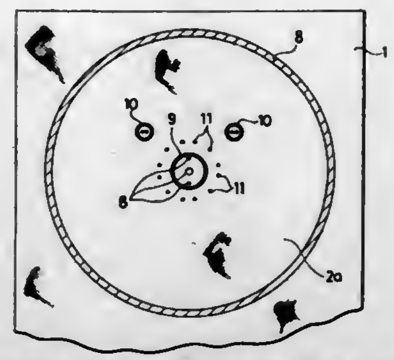
Continuation of Ser. No. 963,667, Oct. 20, 1992, abandoned. This application Mar. 13, 1995, Ser. No. 403,140

Claims priority, application Japan, Oct. 24, 1991, 3-303839.

Int. Cl.[6] A45B *19/00;* **B29D** *22/00;* **B32B** *7/04;31/06*

U.S. Cl. 428—12 **3 Claims**

1. In an air bag composed of a bag-shaped body formed by sewing at least two cut fabric pieces along at least one sewing line, said cut fabric pieces having been prepared by cutting a woven fabric formed of warp yarns and weft yarns in a predetermined pattern, the improvement wherein the warp yarns and the weft yarns in a portion of each of the cut fabric pieces are fusion bonded into an integrated solid structure at a predetermined width, said



portion being located only in the vicinity of each cut part in the corresponding cut fabric piece.

5,616,376

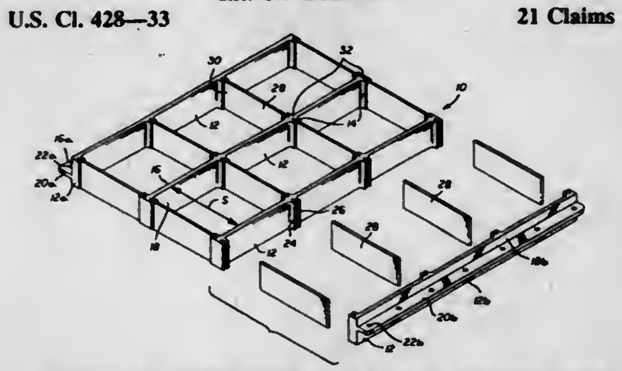
RETICULATED STRUCTURAL ELEMENT

James J. Lockshaw; Stephen Kelly; Randall Walker, and John Kaiser, Jr., all of 18341 Jamboree Rd., Irvine, Calif. 92715-1073

Continuation-in-part of Ser. No. 173,611, Dec. 27, 1993, Pat. No. 5,487,930, which is a continuation-in-part of Ser. No. 771,009, Oct. 3, 1991, Pat. No. 5,273,806, and Ser. No. 332,516, Oct. 31, 1994. This application May 15, 1995, Ser. No. 440,623

Int. Cl.[6] B32B *3/00*

U.S. Cl. 428—33 **21 Claims**



1. Structural element comprising a series of generally planar, longitudinally extended structures laterally disposed relative to each other at a predetermined spacing, said structures defining longitudinally distributed series of opposed pairs of transverse ribbing, longitudinally distributed series of generally planar, laterally disposed rib segments joining said structures across said predetermined spacing at said ribbing pairs in laterally and longitudinally extended, closed figure pattern defining relation.

5,616,377

ARTICLE FORMING SYSTEM

Donald E. Weder; Erin H. Weder, both of Highland, Ill.; R. E. Jack Dunn, St. Louis, and Franklin J. Craig, Valley Park, both of Mo., assignors to Southpac Trust International, Inc., Okla. City, Okla.

Continuation of Ser. No. 108,093, Aug. 17, 1993, Pat. No. 5,472,752, which is a continuation of Ser. No. 24,573, Mar. 1, 1993, abandoned, which is a continuation of Ser. No. 464,694, Jan. 16, 1990, Pat. No. 5,208,027, which is a continuation of Ser. No. 219,083, Jul. 13, 1988, Pat. No. 4,897,031, which is a continuation of Ser. No. 4,275, Jan. 5, 1987, Pat. No. 4,773,182, which is a continuation of Ser. No. 613,080, May 22, 1984, abandoned. This application May 4, 1995, Ser. No. 434,608

Int. Cl.[6] B29D *22/00*

U.S. Cl. 428—35.7 **30 Claims**

1. An article comprising:

a basket liner made by forming at least one sheet of material into a predetermined shape for both lining a basket and receiving an object, wherein the basket liner comprises:

a base having a closed lower end and an open, upper end with an object opening extending therethrough,

wherein folds are formed in the sheet whereby the formed basket liner is flexible and may be substantially flattened and then unflattened to assume the original shape of the formed basket liner without substantial loss of the preformed shape thereby providing the flexible yet shape-sustaining nature of the formed basket liner, and

wherein the forming of the liner is accomplished by forming a portion of the sheet into a plurality of folds to form the base of the basket liner and for cooperating to retain the basket liner in both the flexible and formed shape wherein the base is able to stand upright on the closed lower end thereof.

5,616,378
ARTICLE FORMING SYSTEM

Donald E. Weder; E. H. Weder, both of Highland, Ill.; R. E. Jack Dunn, St. Louis, and Franklin J. Craig, Valley Park, both of Mo., assignors to Southpac Trust International, Inc., Oklahoma City, Okla.

Continuation of Ser. No. 108,093, Aug. 17, 1993, Pat. No. 5,472,752, which is a continuation of Ser. No. 24,573, Mar. 1, 1993, abandoned, which is a continuation of Ser. No. 464,694, Jan. 16, 1990, Pat. No. 5,208,027, which is a continuation of Ser. No. 219,083, Jul. 13, 1988, Pat. No. 4,897,031, which is a continuation of Ser. No. 4,275, Jan. 5, 1987, Pat. No. 4,773,182, which is a continuation of Ser. No. 613,080, May 22, 1984, abandoned. This application May 30, 1995, Ser. No. 452,764

Int. Cl.[6] B29D *22/00*

U.S. Cl. 428—35.7 **51 Claims**

1. A tray made by forming at least one sheet of material into a predetermined shape for receiving an object, wherein the tray comprises a shallow base having a closed lower end and an open upper end with an object opening extending therethrough, wherein the sheet of material is a polymer film which normally is flexible and substantially non-shape-sustaining, wherein the formed tray is flexible and may be substantially flattened and unflattened to assume the original shape of the formed tray without substantial loss of the preformed shape thereby providing the flexible yet shape-sustaining nature of the formed tray, wherein the forming of the sheet of material is accomplished by substantially permanently fixing a portion of the sheet of material into a plurality of folds to form the base of the tray and for cooperating to retain the tray in the formed shape.

5,616,379
ARTICLE FORMING SYSTEM

Donald E. Weder; E. H. Weder, both of Highland, Ill.; R. E. Jack Dunn, St. Louis, and Franklin J. Craig, Valley Park, both of Mo., assignors to Southpac Trust International, Inc., Oklahoma City, Okla.

Continuation of Ser. No. 108,093, Aug. 17, 1993, Pat. No. 5,472,752, which is a continuation of Ser. No. 24,573, Mar. 1, 1993, abandoned, which is a continuation of Ser. No. 464,694, Jan. 16, 1990, Pat. No. 5,208,027, which is a continuation of Ser. No. 219,083, Jul. 13, 1988, Pat. No. 4,897,031, which is a continuation of Ser. No. 4,275, Jan. 5, 1987, Pat. No. 4,773,182, which is a continuation of Ser. No. 613,080, May 22, 1984, abandoned. This application May 30, 1995, Ser. No. 452,768

Int. Cl.[6] B29D *22/00*

U.S. Cl. 428—35.7 **51 Claims**

1. A potting tray made by forming at least one sheet of material into a predetermined shape for receiving an object, wherein the potting tray comprises a base having a closed lower end and an open upper end with an object opening extending therethrough, wherein the sheet of material is a polymer film which normally is flexible and substantially non-shape-sustaining, wherein the formed potting tray is flexible and may be substantially flattened and unflattened to assume the original shape of the formed potting tray without substantial loss of the preformed shape thereby providing the flexible yet shape-sustaining nature of the formed potting tray, wherein the forming of the sheet of material is accomplished by substantially permanently fixing a portion of the sheet of material into a plurality of folds to form the base of the potting tray and for cooperating to retain the potting tray in the formed shape.

5,616,380
ARTICLE FORMING SYSTEM

Donald E. Weder; E. H. Weder, both of Highland, Ill.; R. E. Jack Dunn, St. Louis, and Franklin J. Craig, Valley Park, both of Mo., assignors to Southpac Trust International, Inc., Oklahoma City, Okla.

Continuation of Ser. No. 108,093, Aug. 17, 1993, Pat. No. 5,472,752, which is a continuation of Ser. No. 24,573, Mar. 1, 1993, abandoned, which is a continuation of Ser. No. 464,694, Jan. 16, 1990, Pat. No. 5,208,027, which is a continuation of Ser. No. 219,083, Jul. 13, 1988, Pat. No. 4,897,031, which is a continuation of Ser. No. 4,275, Jan. 5, 1987, Pat. No. 4,773,182, which is a continuation of Ser. No. 613,080, May 22, 1984, abandoned. This application May 30, 1995, Ser. No. 452,801

Int. Cl.[6] B29D *22/00*

U.S. Cl. 428—35.7 **51 Claims**

1. A rose stem box made by forming at least one sheet of material into a predetermined shape for receiving an object, wherein the rose stem box comprises a base having a closed lower end and an open upper end with an object opening extending therethrough, wherein the sheet of material is a polymer film which normally is flexible and substantially non-shape-sustaining, wherein the formed rose stem box is flexible and may be substantially flattened and unflattened to assume the original shape of the formed rose stem box without substantial loss of the preformed shape thereby providing the flexible yet shape-sustaining nature of the formed rose stem box, wherein the forming of the sheet of material is accomplished by substantially permanently fixing a portion of the sheet of material into a plurality of folds to form the base of the rose stem box and for cooperating to retain the rose stem box in the formed shape.

5,616,381
ARTICLE FORMING SYSTEM

Donald E. Weder; E. H. Weder, both of Highland, Ill.; R. E. Jack Dunn, St. Louis, and Franklin J. Craig, Valley Park, both of Mo., assignors to Southpac Trust International, Inc., Oklahoma City, Okla.

Continuation of Ser. No. 108,093, Aug. 17, 1993, Pat. No. 5,472,752, which is a continuation of Ser. No. 24,573, Mar. 1, 1993, abandoned, which is a continuation of Ser. No. 464,694, Jan. 16, 1990, Pat. No. 5,208,027, which is a continuation of Ser. No. 219,083, Jul. 13, 1988, Pat. No. 4,897,031, which is a continuation of Ser. No. 4,275, Jan. 5, 1987, Pat. No. 4,773,182, which is a continuation of Ser. No. 613,080, May 22, 1984, abandoned. This application May 30, 1995, Ser. No. 452,910

Int. Cl.[6] B29D *22/00*

U.S. Cl. 428—35.7 **51 Claims**

1. A corsage container made by forming at least one sheet of material into a predetermined shape for receiving an object, wherein the corsage container comprises a base having a closed lower end and an open upper end with an object opening extending therethrough, wherein the sheet of material is a polymer film which normally is flexible and substantially non-shape-sustaining, wherein the formed corsage container is flexible and may be substantially flattened and unflattened to assume the original shape of the formed corsage container without substantial loss of the preformed shape thereby providing the flexible yet shape-sustaining nature of the formed corsage container, wherein the forming of the sheet of material is accomplished by substantially permanently fixing a portion of the sheet of material into a plurality of folds to form the base of the corsage container and for cooperating to retain the corsage container in the formed shape.

5,616,382
ARTICLE FORMING SYSTEM

Donald E. Weder; E. H. Weder, both of Highland, Ill.; R. E. Jack Dunn, St. Louis, and Franklin J. Craig, Valley Park, both of Mo., assignors to Southpac Trust International, Inc., Oklahoma City, Okla.

Continuation of Ser. No. 108,093, Aug. 17, 1993, Pat. No. 5,472,752, which is a continuation of Ser. No. 24,573, Mar. 1, 1993, abandoned, which is a continuation of Ser. No. 464,694, Jan. 16, 1990, Pat. No. 5,208,027, which is a continuation of Ser. No. 219,083, Jul. 13, 1988, Pat. No. 4,897,031, which is a continuation of Ser. No. 4,275, Jan. 5, 1987, Pat. No. 4,773,182, which is a continuation of Ser. No. 613,080, May 22, 1984, abandoned. This application May 30, 1995, Ser. No. 452,924

Int. Cl.[6] B29D *22/00*

U.S. Cl. 428—35.7 **51 Claims**

1. A microwave oven container made by forming at least one sheet of material into a predetermined shape for receiving an object, wherein the microwave oven container comprises a base having a closed lower end and an open upper end with an object opening extending therethrough, wherein the sheet of material is a polymer film which normally is flexible and substantially non-shape-sustaining, wherein the formed microwave oven container is flexible and may be substantially flattened and unflattened to assume the original shape of the formed microwave oven container without substantial loss of the preformed shape thereby providing the flexible yet shape-sustaining nature of the formed microwave oven container, wherein the forming of the sheet of material is accomplished by substantially permanently fixing a portion of the sheet of material into a plurality of folds to form the base of the microwave oven container and for cooperating to retain the microwave oven container in the formed shape.

5,616,383
BASKET LINER HAVING A BONDING MATERIAL THEREON AND METHOD

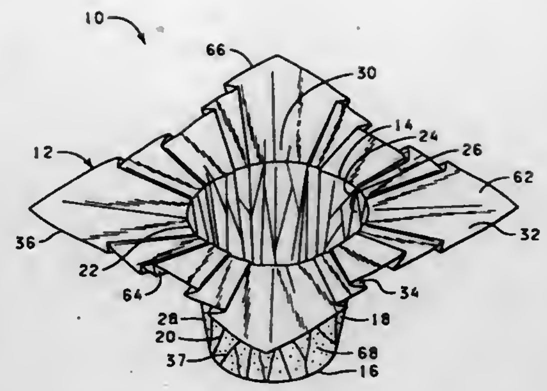
Donald E. Weder, Highland, Ill., assignor to Southpac Trust International, Inc., Oklahoma City, Okla.

Division of Ser. No. 113,873, Aug. 27, 1993, abandoned, and a continuation-in-part of Ser. No. 24,573, Mar. 1, 1993, abandoned, and Ser. No. 781,040, Oct. 21, 1993, abandoned, which is a continuation-in-part of Ser. No. 649,379, Jan. 31, 1991, Pat. No. 5,111,638, which is a continuation of Ser. No. 249,761, Sep. 26, 1988, abandoned, which is a continuation-in-part of Ser. No. 219,083, Jul. 13, 1988, Pat. No. 4,897,031, which is a continuation of Ser. No. 4,275, Jan. 5, 1987, Pat. No. 4,773,182, which is a continuation of Ser. No. 613,080, May 22, 1984, abandoned, said Ser. No. 24,573is a continuation of Ser. No. 464,644, Jan. 16, 1990, Pat. No. 5,208,027, which is a continuation of Ser. No. 219,083, Jul. 13, 1988, Pat. No. 4,897,031, which is a continuation of Ser. No. 4,275, Jan. 5, 1987, Pat. No. 4,773,182, which is a continuation of Ser. No. 613,080, May 22, 1984, abandoned, said Ser. No. 113,873is a continuation-in-part of Ser. No. 968,798, Oct. 30, 1992, Pat. No. 5,369,934, which is a continuation of Ser. No. 865,563, Apr. 9, 1992, Pat. No. 5,245,814, which is a continuation of Ser. No. 649,379, Jan. 31, 1991, Pat. No. 5,111,638, which is a division of Ser. No. 249,761, Sep. 26, 1988, abandoned, which is a continuation-in-part of Ser. No. 219,083, Jul. 13, 1988, Pat. No. 4,897,031, which is a continuation of Ser. No. 4,275, Jan. 5, 1987, Pat. No. 4,773,182, which is a continuation of Ser. No. 613,080, May 22, 1984, abandoned. This application Jun. 5, 1995, Ser. No. 463,907

Int. Cl.[6] B29D *22/00*

U.S. Cl. 428—35.7 **54 Claims**

1. An article comprising:



a basket liner, made by forming at least one sheet of material into a predetermined shape for both lining a basket and receiving an object, wherein the basket liner comprises:

a base having a closed lower end and an open upper end and an outer periphery forming an outer surface, the open upper end intersected by an object opening extending therethrough, said object opening forming an inner surface, a bonding material disposed upon a portion of the outer surface,

wherein the sheet of material is flexible,

wherein folds are formed in the sheet of material such that both the outer surface of the basket liner and the inner surface of the basket liner contain folds, whereby the formed basket liner is flexible and may be substantially flattened and then unflattened to assume the original shape of the formed basket liner without substantial loss of the preformed shape thereby providing the flexible yet shape-sustaining nature of the formed basket liner,

wherein the forming of the basket liner is accomplished by forming a portion of the sheet of material into a plurality of folds to form the base of the basket liner, said folds cooperating to retain the basket liner in the formed shape, and

wherein the base is able to stand upright on the closed lower end thereof.

5,616,384
RECYCLABLE POLYMERIC LABEL PAPER

James A. Goettmann, North East, Pa.; Stephen H. Monroe, Germantown, Tenn.; Peter J. Angelini, Central Valley, N.Y., and John R. Boylan, Newtown, Pa., assignors to International Paper Company, Purchase, N.Y.

Continuation of Ser. No. 823,525, Jan. 21, 1992, abandoned, which is a continuation-in-part of Ser. No. 489,427, Mar. 5, 1990, Pat. No. 5,133,835. This application Dec. 2, 1993, Ser. No. 161,358

Int. Cl.[6] B29D *23/00*

U.S. Cl. 428—36.1 **9 Claims**

1. In a labeled plastic container comprising a blow-molded container made of polyethylene and having an outer surface and a non-film polymeric label attached to said outer surface of said blow-molded container, the improvement wherein said label consists of a nonwoven web of wet-laid fibers bonded to said outer surface of said blow-molded container, said fibers comprising polyethylene pulp and none of said fibers being made of cellulosic material, said web having a continuous coating of pigmented binder formed on at least one surface thereof which provides a printable surface, said polyethylene pulp being bonded by said pigmented binder without substantial thermal fusion of said polyethylene pulp by curing said binder at temperatures below the melting temperature of said polyethylene.

5,616,385

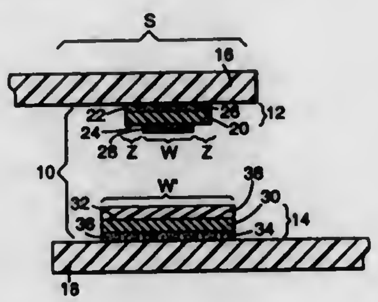
MULTI-CYCLE REFASTENABLE TAPE CLOSURE SYSTEMS

Robert J. Rothrum, Coon Rapids; Linda C. Chaffee, Little Canada, and Kelly T. McGurran, North Oaks, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 58,439, May 7, 1993, abandoned, which is a continuation-in-part of Ser. No. 788,255, Nov. 5, 1991, abandoned. This application Oct. 6, 1994, Ser. No. 320,106

Int. Cl.^{6} A61F *13/15*

U.S. Cl. 428—40.1 **21 Claims**



1. A multi-cycle refastenable tape closure system, comprising a fastener tape component and a release tape component,

said fastener tape component comprising

(a) a first field of a first pressure sensitive adhesive coated on a first surface of a first backing and having an exposed surface for firmly adhering to a first edge of a body covering, wherein the first pressure sensitive adhesive field has a first fastening width, and

(b) a second field of a second pressure sensitive adhesive, the second pressure sensitive adhesive having the same or substantially similar pressure sensitive adhesive formulations as the first pressure sensitive adhesive, coated on a second surface of said first backing or coated on a second backing adhesively laminated to said second surface of said first backing and having an exposed surface for releasably adhering to a second body covering or along a second edge of the body covering opposing the first edge of the first body covering wherein the second pressure sensitive adhesive field has a second fastening width;

wherein the first fastening width is wider than the second fastening width and wherein said second field of pressure sensitive adhesive occupies a center zone along said fastener tape component and non-adhesive zones border said center

wherein surface area of said first pressure sensitive adhesive field exposed for adhesive contact to the first edge of the body covering is larger than surface area of said second pressure sensitive adhesive field exposed for contact to the second body covering or the second edge of the body covering; and

wherein said first field of pressure sensitive adhesive exposed for adhesive contact can firmly adhere along the first edge of a body covering and second pressure sensitive adhesive field exposed for contact can releasably adhere to the second body covering or along a second edge of the body covering opposing the first edge of the first body covering in a multi-cycle, refastenable manner to contact opposing body coverings or to close the opposing first and second edges of the body covering to form an overlapping, low profile seam which has a high dynamic shear force against unintended reopening but a low peel force for intended reopening in the axis of the seam.

5,616,386

CLEANING SHEET FOR A PAPER FEEDING DEVICE

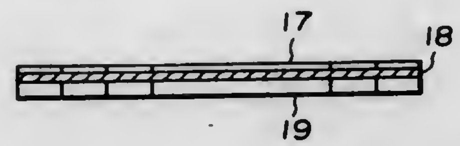
Tomohiko Okada, Yamatokooriyama; Fumio Shiozaki, Tenri; Toshio Takehara, Nabari; Seiichi Kizu, and Kazuhiko Ashiya, both of Yamatokooriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 180,389, Jan. 12, 1994, abandoned. This application Dec. 22, 1995, Ser. No. 576,856

Claims priority, application Japan, Feb. 19, 1993, 5-055169

Int. Cl.^{6} G03G *21/00*

U.S. Cl. 428—40.1 **6 Claims**



1. A cleaning sheet for a paper feeding device including a cassette member having a claw formed thereon for maintaining copy paper within the cassette, said cleaning sheet comprising:

a base sheet;

a layer of cleaning adhesive coated on said base sheet; and

a releasable cover sheet laid on said layer of cleaning adhesive, said base sheet having a stiffness so as to maintain engagement with the claw of the cassette member and allowing only the releasable cover sheet to be discharged from the cassette member upon exhaustion of copy paper from the cassette member,

wherein only said base sheet and said releasable cover sheet are perforated in a superposed relationship so that the cleaning sheet may be used plural times by peeling off a perforated section of the releasable cover sheet exclusive of said layer of cleaning adhesive and said base sheet by a size necessary for cleaning a picker roller and subsequently cutting off a used part of the base sheet including the layer of cleaning adhesive thereon.

5,616,387

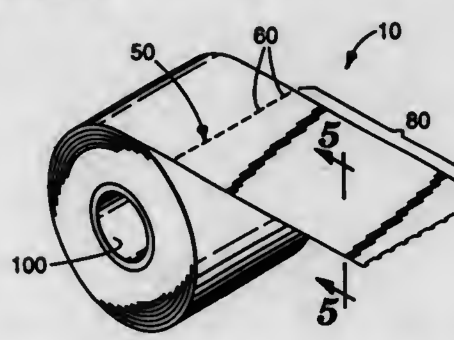
PERFORATED ROLL OF ELASTIC WRAP

George W. Augst, Forest Lake; Margo A. Liberda, Stillwater, and John E. Riedel, Hugo, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 259,613, Jun. 14, 1995, abandoned, which is a continuation-in-part of Ser. No. 114,912, Aug. 31, 1993, abandoned. This application Oct. 16, 1995, Ser. No. 543,511

Int. Cl.^{6} C09J *7/02*

U.S. Cl. 428—43 **23 Claims**



1. Elastic wrap comprising an elastic substrate which can be longitudinally elongated between about 7 to 280 percent, the substrate having a longitudinal axis and a lateral axis having a plurality of longitudinally spaced, laterally extending, perforated separation lines defined by a series of about 0.2 to 5 mm perforations separated by about 0.1 to 1 mm connecting segments of wrap and a ratio of perforation length to connecting segment length of about 1:1 to 10:1, said elastic substrate selected from the group consisting of foam, woven fabric and nonwoven web, wherein the perforated wrap exhibits longitudinal stretch and recovery across said perforations.

5,616,388

WATER REPELLENT COATING

Tadayoshi Tatsuno, Hiratsuka; Mitsuo Wakimoto, Isehara, and Seiji Kashiwada, Fujisawa, all of Japan, assignors to Kansai Paint Company, Ltd., Amagasaki, Japan

Filed May 12, 1995, Ser. No. 440,372

Int. Cl.^{6} B32B *27/00*

U.S. Cl. 428—421 **12 Claims**

7. A metal substrate bearing a thermosetting undercoat and a topcoat co-cured with the undercoat, the topcoat comprising the cured reaction product of (a) at least one fluorine-containing thermosetting resin composition in which the fluorine atom content is at least about 10% by weight and (b) at least one granular compound of up to about 5 microns in mean particle size in an amount of about 40–200 parts by weight based on 100 parts by weight of the fluorine containing thermosetting resin composition, the interface between the undercoat and the substrate being substantially free from chromate residue.

5,616,389

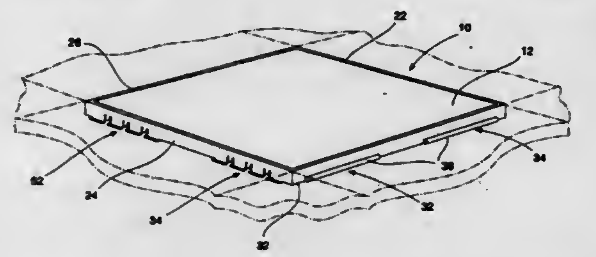
SURFACE COVERING TILE

Warren J. Blatz, No. 40 Bedford Circle N.E., Calgary, Alberta T3K 1L1, Canada

Filed Oct. 30, 1995, Ser. No. 550,236

Int. Cl.^{6} B32B *3/06*

U.S. Cl. 428—45 **14 Claims**



1. An integrally molded plastic tile having means for detachable securement to a like adjacent tile for covering a selected surface area, said tile comprising:

a top surface, an undersurface and a plurality of sides, at least one of the sides of said tile having at least one longitudinally bar-like bead adjacent a bottom edge thereof, said bead extending outwardly of said one side;

at least another side of said tile having a plurality of recess means spaced longitudinally along a bottom edge thereof, said recess means extending outwardly and upwardly and adapted to receive a bar-like bead of another like confronting tile, said another side further including tongue means interspersed with said recess means and cooperating with said bar-like bead and recess means for detachably locking a bar-like bead of an adjacent tile in said recess means of said tile.

5,616,390

OPTICAL RECORDING MEDIUM PERMITTING DETECTION OF IDENTIFICATION SIGNALS IN LAND AREAS AND GROOVE AREAS, OPTICAL INFORMATION RECORDING/REPRODUCING APPARATUS AND APPARATUS FOR PRODUCING AN ORIGINAL DISK FOR FORMING A DISK SUBSTRATE

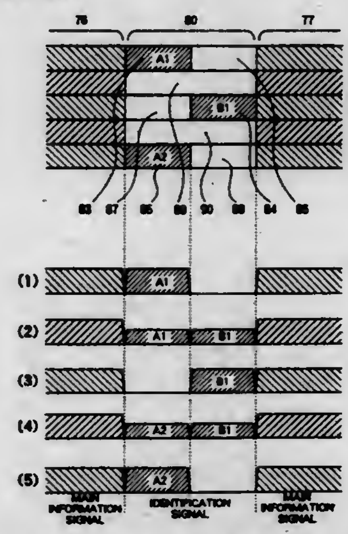
Naoyasu Miyagawa, Suita, and Yasuhiro Gotoh, Kadoma, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 120,216, Sep. 13, 1993, Pat. No. 5,452,284. This application Jul. 18, 1995, Ser. No. 503,846

Claims priority, application Japan, Sep. 14, 1992, 4-244388; Dec. 2, 1992, 4-322971; Apr. 15, 1993, 5-088418

Int. Cl.^{6} B32B *3/00*

U.S. Cl. 428—64.1 **67 Claims**



1. An optical information recording medium in which grooves and lands formed spirally or concentrically on a disk substrate are used as recording tracks, said optical information recording medium comprising:

identification signal areas in which identification signals including information concerning positions on said optical information recording medium are formed in advance by changes in physical shape of said disk substrate; and

information signal areas which are formed separately from said identification signal areas and in which information signals are recorded by irradiation with a light beam;

wherein said identification signals are formed on said grooves and said lands interdependently of each other so that each identification signal is formed to be shared by a groove and land pair, the respective groove and land being adjacent to each other.

5,616,391

COMPOSITE MATERIAL AND A COMPOSITE STRUCTURE BASED ON A THREE-DIMENSIONAL TEXTILE STRUCTURE

Willem Amesz, St. Martens; Joris K. M. Van Raemdonck, Bazel; Willy De Meyer, Gent, and Ignace H. J. M. Verpoest, Kessel-Lo, all of Belgium, assignors to K.U. Leuven Research & Development, Belgium

PCT No. PCT/BE93/00048, § 371 Date Jul. 10, 1995, § 102(e) Date Jul. 10, 1995, PCT Pub. No. WO94/01272, PCT Pub. Date Jan. 20, 1994

PCT Filed Jul. 13, 1993, Ser. No. 373,191

Claims priority, application Belgium, Jul. 13, 1992, 9200649

Int. Cl.^{6} B32B *1/02;1/06;5/22;5/28*

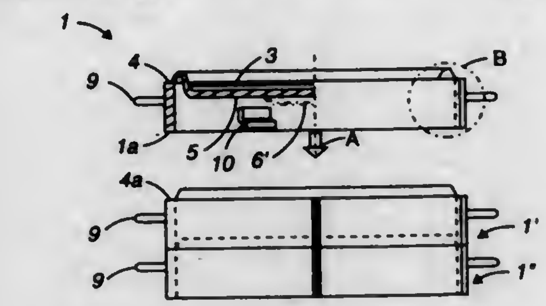
U.S. Cl. 428—71 **20 Claims**

1. A composite material comprising a three-dimensional textile structure which comprises at least two textile layers which are located at a mutual distance and which are mutually connected by

looped-round pile-threads, wherein at least one of the textile layers is embedded in a matrix and at least one of the textile layers is vapor/moisture-permeable.

6. A composite material as claimed in claim 1, wherein a space located between the two textile layers is at least partially filled with a filler material.

5,616,392
BUFFET PLATTER
Georg Treutwein, Säulingstrasse 12, 86825 Bad Wörishofen, Germany
Filed Mar. 13, 1995, Ser. No. 403,504
Claims priority, application Germany, Aug. 18, 1994, 9413334 U
Int. Cl.⁶ B32B *3/02;* **B65D** *1/34*
U.S. Cl. 428—80 **20 Claims**



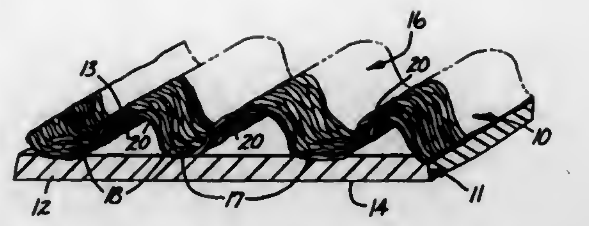
1. A buffet platter comprising:
a one-piece thin-walled unitary plastic frame including a base surface, an outer edge, and an outer periphery extending downwardly from said outer edge and terminating in a bottom edge, said frame being torsionally stiff whereby said frame is sufficiently rigid to be self supporting during use, said frame being profiled at said outer edge to engage with a bottom edge of a buffet platter of the same design that may be stacked thereon, in order to prevent sideways slipping of such a buffet platter of the same design; and
a separate reflective food-carrying plate supported on said base surface.

5,616,393

Patent Not Issued For This Number

5,616,394
SHEET OF LOOP MATERIAL, AND GARMENTS HAVING SUCH LOOP MATERIAL INCORPORATED THEREIN
Michael R. Gorman; Dennis L. Becker; Donald W. Folske; William L. Melbye; Susan K. Nestegard, and Ronald L. Ott, all of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Division of Ser. No. 142,190, Oct. 26, 1993, abandoned, and a continuation-in-part of Ser. No. 517,409, Apr. 27, 1990, abandoned, Continuation of Ser. No. 193,832, May 13, 1988, abandoned. This application Jun. 1, 1995, Ser. No. 456,354
Int. Cl.⁶ B32B *3/06*
U.S. Cl. 428—99 **19 Claims**

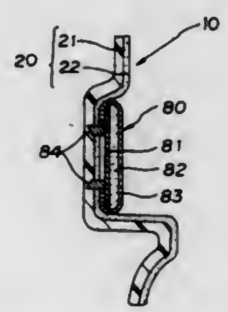
1. A sheet of loop material adapted to be cut into pieces to form loop portions for fasteners comprising releasably engageable hook and loop portions, said sheet of loop material comprising:
a backing comprising a thermoplastic backing layer with generally uniform morphology and having front and rear major surfaces; and
a sheet of longitudinally oriented fibers having generally non-deformed anchor portions bonded in the thermoplastic backing layer at bonding locations spaced along the backing layer, and arcuate portions projecting from the front surface of the backing between the bonding locations, the lengths of some of said fibers in said sheet being disposed in various different directions with respect to each other.



5,616,395
PROCESS FOR THE PRODUCTION OF TWO-LAYER TEXTILE REINFORCEMENT ADAPTED FOR THE PRODUCTION OF BITUMINOUS SEALING SHEETS FOR ROOFING AND REINFORCEMENT THUS OBTAINED
Jean Baravian, Sundhoffen; Ulrich Jahn, Labaroche; Robert Groten, Sundhoffen, and Jean-Jacques Beck, Colmar, all of France, assignors to Freudenberg Spunweb S.A., Colmar, France
Filed Feb. 9, 1995, Ser. No. 386,081
Claims priority, application France, Feb. 10, 1994, 94 01671
Int. Cl.⁶ B32B *5/06;5/26;* **D06N** *5/00;* **E04D** *5/02*
U.S. Cl. 428—102 **16 Claims**

1. A two-layer composite sheet having utility as a reinforcement for bituminous roofing comprising:
a first nonwoven base sheet layer which has been mechanically or hydraulically consolidated, heat-set and, through the agency of an applied adhesive and not through fusion of a component fiber of the nonwoven base sheet, adhered to a second layer selected from the group consisting of a scrim, grid, and cloth of mineral fibers, providing that when the second layer is in the form of a grid or cloth, the consolidated and heat set nonwoven base sheet is also needle-bonded or stitch-knitted to the second layer.

5,616,396
AUTOMOTIVE DOOR TRIM WITH ATTACHMENT JOINED DURING MOLDING
Katsuji Ueki, and Toyokazu Endo, both of Kanagawa-ken, Japan, assignors to Kasai Kogyo Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 119,901, Sep. 13, 1993, abandoned, which is a continuation of Ser. No. 796,668, Nov. 25, 1991, abandoned. This application Dec. 23, 1994, Ser. No. 363,584
Int. Cl.⁶ B32B *3/24*
U.S. Cl. 428—139 **9 Claims**



1. An automotive interior component, comprising:
a main body integrally combining a resin core member and a surface skin member;

said surface skin member having an outer surface having a mounting area defined on a portion thereof, said surface skin member defining a plurality of openings extending therethrough, said plurality of openings being located within said mounting area;
an attachment member having an outer surface having a mounting side outer surface portion and an exterior side surface portion, said mounting side outer surface portion being in direct contact with said mounting area;
said resin core member having a plurality of integral connecting parts corresponding in number to the plurality of openings in said surface skin member and extending therethrough, each of said integral connecting parts extending outwardly from said resin core member and having an end portion in secure engagement with said mounting side of said attachment member;
wherein said attachment member is contacted with each of said connecting parts while said respective connecting part is in a semi-molten state and the attachment of said attachment member to said main body is achieved by the solidification of said respective connecting part.

5,616,397

Patent Not Issued For This Number

5,616,398
MAGNETIC RECORDING MEDIUM
Shigeo Kurose; Yoshihiro Honjo, and Akira Somiya, all of Nagano, Japan, assignors to TDK Corporation, Tokyo, Japan
Filed May 10, 1994, Ser. No. 240,475
Claims priority, application Japan, May 14, 1993, 5-136687; Apr. 21, 1994, 6-106017
Int. Cl.⁶ G11B *5/66;5/702*
U.S. Cl. 428—141 **9 Claims**

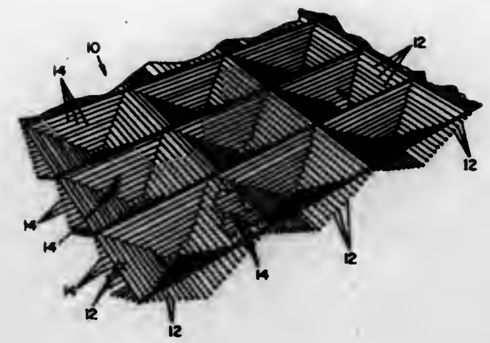
1. A magnetic recording medium including a non-magnetic base film, and a magnetic layer on one surface thereof and a back coat layer on the other surface thereof, wherein said back coat layer contains two carbon blacks differing in the average particle diameter, and a binder,
said binder containing a vinyl chloride-alkylcarboxylic acid vinyl ester-vinyl alcohol copolymer A having an average polymerization degree of 300 to 600 and a vinyl chloride-alkylcarboxylic acid vinyl ester-vinyl alcohol copolymer B containing an amino group, and having an average polymerization degree of 200 to 800,
wherein the surface roughnesses Rmax and Ra of said back coat layer conform to:

$$Ra \leq 20 \text{ nm}$$

$$350 \text{ nm} \geq Rmax - Ra \geq 50 \text{ nm}.$$

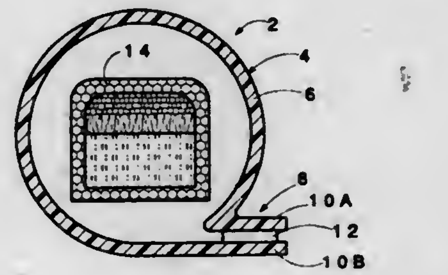
5,616,399
GEOTEXTILE FABRIC WOVEN IN A WAFFLE OR HONEYCOMB WEAVE PATTERN AND HAVING A CUSPATED PROFILE AFTER HEATING
Marc S. Theisen, Signal Mountain, Tenn., assignor to Synthetic Industries, Inc., Chickamauga, Ga.
Continuation of Ser. No. 145,461, Oct. 29, 1993, abandoned. This application May 19, 1995, Ser. No. 444,740
Int. Cl.⁶ D03D *3/08*
U.S. Cl. 428—175 **3 Claims**

1. A geotextile fabric for soil retention and stabilization and vegetative reinforcement, woven in a waffle or honeycomb weave pattern and having a cuspated profile after heating, comprising:



two sets of monofilaments interwoven in a substantially perpendicular direction to each other, each said monofilament of each set being arranged within the waffle or honeycomb weave pattern of the woven fabric so as to shrink upon heating to a pre-determined level dependent upon the position of said filament in the woven fabric, thereby forming a single-layer, three-dimensional, cuspated profile;
said fabric having a tensile strength of at least about 3200 pounds/foot in the warp direction and at least about 2400 pounds/foot in the filling direction, a modulus at 10 percent elongation of at least about 12500 pounds/foot in the warp direction and at least about 11000 pounds/foot in the filling direction, and a thickness of at least about 500 mils.

5,616,400
COLD SEAL ADHESIVES, COLD SEALABLE FILMS AND PACKAGES FORMED THEREWITH
Tianhong Zhang, Columbus, Ohio, assignor to Century International Adhesives & Coating Corporation, Ohio
Filed Nov. 20, 1995, Ser. No. 559,844
Int. Cl.⁶ C09J *7/02*
U.S. Cl. 428—195 **5 Claims**



1. Sheet material for packaging of comestibles and pharmaceuticals comprising a continuous flexible plastic film having a first surface with energy level above 36 dynes/cm and a second surface with energy level below 32 dynes/cm with said first surface bearing a geometric pattern coating of dry cold seal adhesive consisting essentially of a polyurethane ionomer reaction product of 50–80% polyester polyol, 15–25% aliphatic diisocyanate and 3–6% dimethylol propionic acid neutralized with a base, said reaction product possessing a T_g of between about −20° to 5° C.

5,616,401

OXYNITRIDE FILM AND ITS FORMATION METHOD, AND METHOD FOR FORMING AN ELEMENT ISOLATION OXIDE FILM USING THE OXYNITRIDE FILM

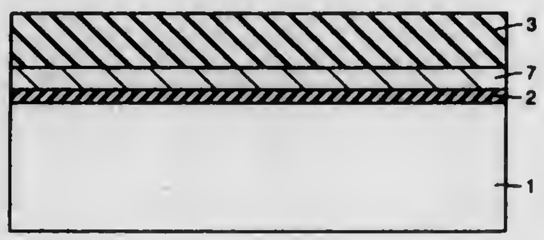
Maiko Kobayashi, and Takashi Kuroi, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 20, 1995, Ser. No. 559,874

Claims priority, application Japan, Jan. 31, 1995, 7-013674

Int. Cl.^{6} H01L *21/76*

U.S. Cl. 428—212 **24 Claims**



1. An oxynitride film comprising oxygen and nitrogen present in given amounts, respectively, wherein a compositional ratio of said oxygen and said nitrogen varies in a thickness direction of said oxynitride film.

5,616,402

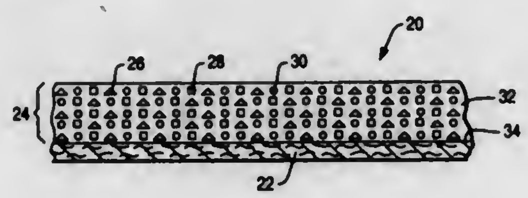
PRINTING RIBBON FOR PRINTING RED SCANNABLE BAR CODES

Joseph D. Roth; Richard D. Puckett, both of Miamisburg, and Michael W. Olmstead, Centerville, all of Ohio, assignors to NCR Corporation, Dayton, Ohio

Continuation of Ser. No. 35,133, Mar. 19, 1993, abandoned. This application May 28, 1996, Ser. No. 653,986

Int. Cl.^{6} B41M *5/26*

U.S. Cl. 428—212 **17 Claims**



1. A printing ribbon for printing a red scannable bar code image readable by a bar code scanning system using a laser emitting light in the visible red wavelength region, said printing ribbon comprising:

a backing element having a top surface;

a binder adhered to said top surface of said backing element;

said binder having an interspersed distribution of

red coloring agents which appear red under broad spectrum light;

red absorbing agents which appear dark under broad spectrum light; and

fluorescent pigments which fluoresce and mask the appearance of red absorbing agents so that the ribbon has an overall red appearance in broad spectrum light and which are inactive in light having wavelengths in the visible red region so that said red scannable bar code image is scannable by said bar code scanning system.

5,616,403

FLUOROSILICONE COATINGS

Richard P. Eckberg, Saratoga Springs; Edwin R. Evans, and Melvin R. Toub, both of Clifton Park, all of N.Y., assignors to General Electric Company, Waterford, N.Y.

Filed Jul. 11, 1994, Ser. No. 273,515

Int. Cl.^{6} B32B *25/20;* **C08G** *77/20;77/24*

U.S. Cl. 428—215 **14 Claims**

1. A curable fluorosilicone composition, consisting essentially of vinyl-containing fluorosilicone polymer;

hydrogen-containing siloxane;

a platinum group hydrosilation catalyst; and

a peroxide catalyst wherein said fluorosilicone polymer has more than 80 mole percent fluorosilicone content.

5,616,404

ORIENTABLE, HEAT SETABLE SEMI-CRYSTALLINE COPOLYESTERS

Bobby J. Sublett, Kingsport, Tenn., assignor to Eastman Chemical Company, Kingsport, Tenn.

Filed Oct. 10, 1995, Ser. No. 541,746

Int. Cl.^{6} B32B *7/02;* **C08G** *63/18*

U.S. Cl. 428—221 **4 Claims**

1. Orientable, heat-setable copolyesters having a melting point greater than about 200° C., a Tg of greater than 70° C. and an I.V. of about 0.5 to 1.1, being semi-crystalline with a ΔHg of greater than 0.1 cal/g, and said copolyesters consisting essentially of repeat units from a glycol component of about 100 mol % 1,4-cyclohexane-dimethanol with a cis isomer ratio of 0–100 % and an acid component of about 1 to less than 90 mol % terephthalic acid and than 10 to 99 mol % napbthalene dicarboxylic acid.

5,616,405

CLOTH PREPREG, PROCESS FOR PRODUCING THE SAME AND REINFORCING FABRIC

Hajime Kishi; Nobuyuki Odagiri; Tokuo Tazaki; Hideo Nagata; Takeshi Terashita; Akira Nishimura, all of Iyo-gun, and Hiroyasu Kato, Otsu, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Division of Ser. No. 88,635, Jul. 9, 1993, Pat. No. 5,447,785, which is a continuation-in-part of Ser. No. 24,957, Mar. 2, 1993, abandoned. This application Jan. 4, 1995, Ser. No. 368,671

Claims priority, application Japan, Mar. 2, 1992, 4-80522

Int. Cl.^{6} B32B *5/16*

U.S. Cl. 442—60 **16 Claims**

1. A cloth prepreg comprising:

(a) a thixotropic resin composition, said resin composition comprising an epoxy resin, a curing agent and a solid elastomer; and

(b) a woven fabric made of reinforcing fibers, the meshes of said woven fabric having been flattened to increase the cover factor of the fabric such that said prepreg has a cover factor K_p of 97–99.9%

wherein said solid elastomer is either not cross-linked or only lightly cross-linked such that the elastomer is swollen by the epoxy resin.

5,616,406

SLIDING MEMBER

Takashi Nakamaru, Kanagawa-ken; Sumihide Yanase, Ebina, and Akihiko Okimura, Yokohama, all of Japan, assignors to Oiles Corporation, Japan

Filed Aug. 18, 1995, Ser. No. 516,775

Claims priority, application Japan, Aug. 23, 1994, 6-221065

Int. Cl.^{6} C08J *5/16;* **C08K** *3/30*

U.S. Cl. 442—19 **12 Claims**

1. A sliding member comprising a metal mesh and a resin composition is filled and covered in the mesh and on the surface of the metal mesh, wherein the resin composition comprises 5 to 30% by weight of at least one reinforcing filler selected from the group consisting of glass fibers and wollastonite, 1 to 15% by weight of at least one phosphate selected from the group consisting of calcium pyrophosphate and calcium hydrogen phosphate, 1 to 20% by weight of barium sulfate and the balance of polytetrafluoroethylene,

the total content of the reinforcing filler, phosphate and barium sulfate being not more than 60% by weight.

5,616,407

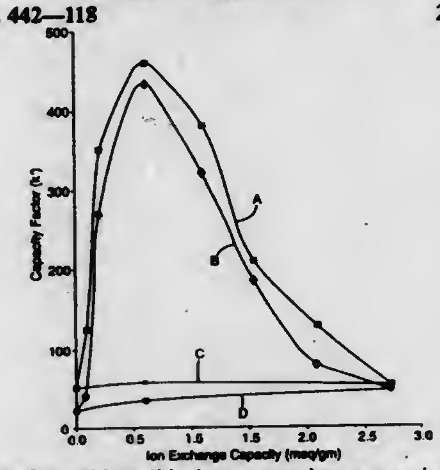
SELF-WETTABLE SOLID PHASE EXTRACTION MEDIUM

James S. Fritz, Ames, Iowa; Donald F. Hagen, Woodbury, and Craig G. Markell, White Bear Township, Ramsey County, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 238,364, May 5, 1994. This application May 30, 1995, Ser. No. 453,843

Int. Cl.^{6} B01D *15/04*

U.S. Cl. 442—118 **26 Claims**



1. A self-wettable solid phase extraction or reaction medium comprising

(a) a fibrous matrix, and

(b) sorptive particles enmeshed in said matrix comprising

(1) in the range of more than 20 to 100 weight percent, based on total particles, of functionalized poly(styrene divinylbenzene) particles comprising at least one ionic functional group selected from the group consisting of a sulfonate group, carboxylate group, quaternary ammonium groups $N^+(R)_3$ wherein each R independently is selected from C_1 to C_4 alkyl groups and aminated groups $N(R^1)_2$ wherein each R^1 is independently selected from the group consisting of hydrogen, C_1 to C_4 alkyl groups, and C_1 to C_4 alkanol groups covalently bonded thereto, the functionalized particles having sorptive capability towards an analyte in solid phase extraction, the functional group being present in a concentration range of 0.1 to 2.5 milliequivalents per gram of functionalized poly(styrene divinylbenzene), and

(2) in the range of 0 to less than 80 weight percent, based on total particles, of porous, organic-coated or uncoated, inorganic particles,

the ratio of sorptive particles to fibrous matrix in said solid phase extraction or reaction medium being in the range of 40:1 to 1:4 by weight, said medium comprising optimum wettability in the specified concentration range.

5,616,408

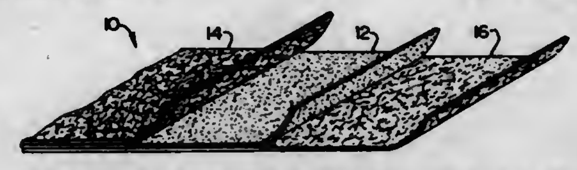
MELTBLOWN POLYETHYLENE FABRICS AND PROCESSES OF MAKING SAME

Andrew R. Oleszczuk, Simpsonville, S.C., and Scott L. Gessner, Encinitas, Calif., assignors to Fiberweb North America, Inc., Simpsonville, S.C.

Filed Dec. 22, 1995, Ser. No. 577,900

Int. Cl.^{6} B32B *27/00*

U.S. Cl. 442—346 **24 Claims**



1. A meltblown web which is particularly useful as a barrier layer in a composite laminate fabric, said meltblown web comprising a plurality of thermoplastic microfine meltblown fibers formed of a composition comprising polyethylene as a dominant portion thereof and at least one polyethylene processing stabilizing component as a minor portion thereof.

5,616,409

INK JET RECORDING MEDIUM AND RECORDING METHOD

Tsukasa Matsuda; Kiyoshi Hosoi, both of Ebina, and Ken Hashimoto, Minami-ashigara, all of Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Mar. 2, 1993, Ser. No. 24,756

Claims priority, application Japan, Mar. 11, 1992, 4-052589

Int. Cl.^{6} B41M *5/00*

U.S. Cl. 428—323 **9 Claims**

1. An ink jet recording medium, comprising a surface coating on at least one surface of a substrate, said substrate having an apparent density of 0.60 to less than 0.75 g/cm^3 and a Steckigt sizing degree of 2 to 18 seconds and said coating being formed by applying a coating agent containing a white pigment at a rate in the range of 2 to 10 g/m^2, said white pigment present in said coating agent having a BET specific surface of from 200 to 350 m^2/g.

5,616,410

MAGNETIC RECORDING MEDIUM

Hiroshi Umezaki; Yoshiaki Takeuchi, and Shoji Sugimoto, all of Niihama, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation of Ser. No. 805,935, Dec. 12, 1991, abandoned. This application Dec. 9, 1994, Ser. No. 355,230

Claims priority, application Japan, Dec. 20, 1990, 2-404439

Int. Cl.^{6} G11B *5/66;* **B32B** *5/16*

U.S. Cl. 428—323 **23 Claims**

1. A magnetic recording medium comprising:

a non-magnetic substrate, and

a magnetic layer disposed on said substrate, said magnetic layer containing magnetic fine powder, a binder, and oxide-containing alumina powder, wherein the oxide-containing alumina powder has an average particle size of at most 1 μm and contains at least one oxide of an element selected from the group consisting Ge, P, Sn, Nb, Ta, Mo and W in an amount of 0.1 to 10 parts by weight per 100 parts by weight of alumina, and the oxide-containing alumina powder is in a state in which said oxide in the alumina powder is in a solid solution form in the alumina crystal, or a state in which said oxide or a double oxide consisting of said oxide and alumina

is dispersed and crystallized in the alumina crystal, wherein said alumina powder is obtained by one of the following methods (A), (B) or (C):

(A) mixing a component which forms at least one oxide of an element selected from the group consisting of Ge, P, Sn, Nb, Ta, Mo and W after calcination with a solution containing an aluminum salt homogeneously; recovering an aluminum compound by a neutralization process, a recrystallization process or a process in which a carbonate salt is precipitated through the addition of a carbonic acid-containing material; and calcining the aluminum compound at a temperature of about 1100° to 1400° C.

(B) mixing a component which forms at least one oxide of an element selected from the group consisting of Ge, P, Sn, Nb, Ta, Mo and W after calcination with a solution containing an organic aluminum compound homogeneously, recovering an aluminum compound by hydrolysis, and calcining the aluminum compound at a temperature of about 1100° to 1400° C.; or

(C) dry or wet mixing at least one oxide of metal selected from the group consisting of Ge, P, Sn, Nb, Ta, Mo and W or a compound of said metal which forms the metal oxide after calcination with an aluminum compound prepared by a neutralization process, a recrystallization process, a process in which a carbonate salt is precipitated through the addition of ammonium hydrogencarbonate from an aluminum salt, or an aluminum compound prepared by hydrolysis or pyrolysis of an organic aluminum compound; and calcining the mixture at a temperature of about 1100° to 1400° C.

5,616,411

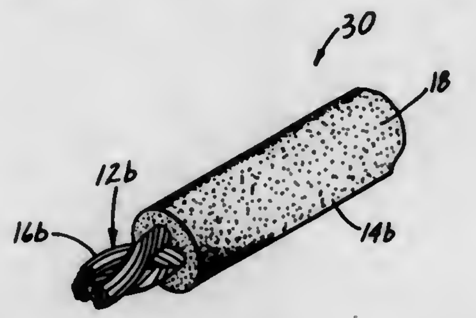
COMPOSITE ABRASIVE FILAMENTS, METHODS OF MAKING SAME, ARTICLES INCORPORATING SAME, AND METHODS OF USING SAID ARTICLES

Loren L. Barber, Jr., Lake Elmo, Wash.; Dennis G. Welygan, Woodbury, and Richard M. Pihl, Cottage Grove, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 853,799, Mar. 19, 1992, abandoned. This application May 25, 1993, Ser. No. 67,053

Int. Cl.⁶ D02G *3/00;* **C09K** *3/14*

U.S. Cl. 428—373 **16 Claims**



1. An abrasive article comprising at least one composite abarsive filament, the composite abrasive filament comprising at least one performed core at least partially coated with a hardened composition comprising a thermoplastic elastomer having abrasive particles dispersed and adhered therein, with the proviso that if there is more than one composite abarsive filament, the composite abrasive filaments can be the same or different.

5,616,412

PROCESS FOR PREPARING LOW DENIER FILAMENTS WITH HIGH ELONGATION AND THOSE FILAMENTS

Perry H. Lin, Hixson, Tenn., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 11, 1996, Ser. No. 661,510

Int. Cl.⁶ D07G *3/00*

U.S. Cl. 428—373 **1 Claim**

1. A filament comprising an intimate blend of 90 to 98 weight percent polypropylene having a melt flow index of 15 to 25 dgrams per minute and 2 to 10 weight percent polystyrene having a melt flow index of 1 to 20 dgrams per minute wherein the filament has a denier of 2 to 4 and an elongation of greater than 700%.

5,616,413

EXPANDABLE STYRENE RESIN BEADS AND SUSPENSION-POLYMERIZATION PROCESS FOR PRODUCING THE SAME

Hiroki Shinozaki; Masayuki Tanaka, and Yonezo Ueda, all of Mie, Japan, assignors to Mitsubishi Chemical BASF Company Limited, Yokkaichi, Japan

Filed Apr. 13, 1995, Ser. No. 421,244

Claims priority, application Japan, Apr. 28, 1994, 6-091559

Int. Cl.⁶ B32B *5/16*

U.S. Cl. 428—402 **2 Claims**

1. Expandable styrene resin beads which, when expanded to a bulk density of 20 g/l, give pre-expanded beads in which the number of cells present along those surface parts of radii which range from the bead surface to a depth of 0.2 mm from the surface is from 3 to 20 per mm and the number of cells present along those inner parts of the radii which range from a depth of 1 mm from the bead surface to the bead center is 10 or larger per mm, the number of cells present along said surface parts being smaller than the number of cells present along said inner parts.

5,616,414

HEXAGONAL MAGNETIC FERRITE PIGMENT FOR HIGH DENSITY MAGNETIC RECORDING APPLICATIONS

David M. Hopstock, Roseville; John S. Roden; Gunther H. Dierssen, both of White Bear Lake, and Ronald S. Sapieszko, Woodbury, all of Minn., assignors to Imation Corp., St. Paul, Minn.

Division of Ser. No. 174,136, Dec. 28, 1993. This application Jun. 1, 1995, Ser. No. 457,667

Int. Cl.⁶ G11B *5/66;* **B32B** *5/16*

U.S. Cl. 428—402 **10 Claims**

1. A magnetic pigment, wherein the magnetic pigment comprises hexagonal, platelet-shaped magnetic ferrite particles having a modified magnetoplumbite structure and having the formula

$$B(II)\ M(II)_u M(III)_v M(IV)_x M(V)_y M(VI)_z Fe(III)_w O_p$$

wherein

B(II) is at least one metal ion selected from the group consisting of Ba, Sr, Pb, and Ca;

M(II) is at least one divalent metal ion other than Ba, Sr, Pb, Fe (II), and Ca;

M(III) is at least one trivalent metal ion other than Fe(III);

M(IV) is at least one tetravalent metal ion;

M(V) is at least one pentavalent metal ion;

M(VI) is at least one hexavalent metal ion;

Fe(III) is trivalent iron ion;

p is $19+4u-4x-8y-12z$;

u satisfies the relationships $0.5+x+2y+3z \leqq u \leqq 2+x+2y+3z$ and $u>0.5v+2x+3.5y+5z$;

v is 0 to 0.1;

x is 0 to 0.7;

y is 0 to 0.7;

z is 0 to 0.7;

w is greater than 12 and is 90% to 115% of the value given by $12+2u-v-4x-7y-10z$; and

$0 \leqq x+y+z \leqq 0.7$.

5,616,415

INSULATED ASSEMBLY INCORPORATING A THERMOPLASTIC BARRIER MEMBER

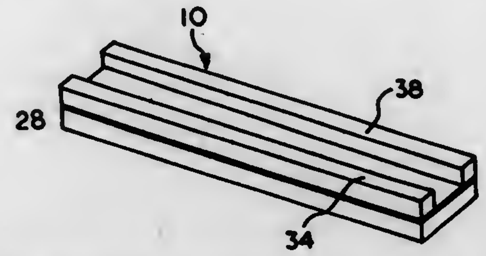
Luc Lafond, 23 Woodvalley Drive, Etobicoke, Ontario, Canada

Continuation-in-part of Ser. No. 871,016, Apr. 20, 1992, Pat. No. 5,441,779. This application Jun. 7, 1995, Ser. No. 477,950

Claims priority, application Canada, Apr. 22, 1991, 2040636

Int. Cl.⁶ B32B *9/04;* **C03C** *27/00;* **E06B** *7/12*

U.S. Cl. 428—411.1 **14 Claims**



1. In a sealant strip adapted for use between a pair of opposed surfaces including a continuous length of sealant means having substrate engaging surfaces and a pair of opposed surfaces, the improvement wherein:

said sealant means comprises a non-desiccated sealant means having continuous desiccant receiving means extending inwardly of one of said opposed surfaces;

a continuous self supporting integral layer extending between said substrate engaging surfaces and in contact with said desiccant receiving means; and

desiccant means positioned in said desiccant receiving means.

5,616,416

METHOD AND DISPLAY PANEL FOR DISPLAYING COLOR IMAGE

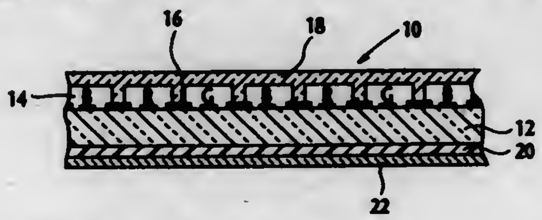
Chiseki Yamaguchi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 17, 1995, Ser. No. 544,205

Claims priority, application Japan, Oct. 17, 1994, 6-250854

Int. Cl.⁶ B32B *9/04*

U.S. Cl. 428—411.1 **13 Claims**



1. An image display panel, comprising:

a transparent substrate;

a colored pattern layer formed on one side of the substrate having a plurality of transparent pixel areas which are divided into at least two separate sets of pixel areas, each set including differently colored transparent pixel areas which are arranged in a repetitive pattern, said plurality of transparent pixel areas being separated from each other by a set of regularly arranged opaque areas; and

a thermal recording layer formed on a side of the substrate that is opposite to the side upon which said colored pattern layer is located, said thermal recording layer being formed of a thermal recording material which exhibits reversible changes in transmittance with temperature.

5,616,417

LEAD-FREE GLASS FRITS FOR CERAMIC ENAMELS

Joseph W. Ryan, Washington, Pa., assignor to Cerdec Corporation, Washington, Pa.

Division of Ser. No. 447,055, May 22, 1995, Pat. No. 5,559,059. This application Jun. 12, 1996, Ser. No. 661,894

Int. Cl.⁶ B32B *17/06;9/04;* **C03C** *8/04;3/066*

U.S. Cl. 428—428 **6 Claims**

1. A glass substrate having fired thereon a ceramic enamel composition which comprises a lead-free glass frit consisting of the following composition:

Component	Weight Percent
ZnO	25–35
SiO_2	0–2
Al_2O_3	0–4
Na_2O	8–12
B_2O_3	20–30
Bi_2O_3	6–25
F^{-1}	1–5

and a vehicle therefor.

5,616,418

THERMOPLASTIC ELASTOMER POLYBLENDS COMPRISING POLYAMIDES/MODIFIED POLYOLEFINS AND SHAPED ARTICLES PRODUCED THEREFROM

Thierry Vasselin, Evreux, and Michel Vauchet, Bron, both of France, assignors to Atochem, Puteaux, France

Division of Ser. No. 139,090, Oct. 21, 1993, abandoned, which is a continuation of Ser. No. 998,651, Dec. 30, 1992, abandoned, which is a continuation of Ser. No. 709,210, Jun. 3, 1991, abandoned. This application Dec. 28, 1994, Ser. No. 373,884

Claims priority, application France, Jun. 1, 1990, 90 06869

Int. Cl.⁶ B32B *27/08;27/32;27/34*

U.S. Cl. 428—474.7 **5 Claims**

1. A multilayer film comprising (a) a layer including a polyamide, a thermoplastic elastomer based upon a polyamide, a copolymer of ethylene and vinyl alcohol, or a mixture thereof; and (b) a layer including a mixture of a polyamide-based thermoplastic elastomer (b1) and a modified polyolefin (b2) containing olefins in a proportion of at least 50% by weight of the total weight of b2, said mixture having a weight ratio b1/(b1+b2) greater than 0.5.

5,616,419
METHOD OF PRODUCING COATING ON RECONSTITUTED WOOD SUBSTRATE

Oscar Hsien-Hsiang Hsu, Lansdale, Pa.; Gerard M. Currier, High Point, N.C., and Philip H. Moes, Brandon, Miss., assignors to Rohm and Haas Company, Philadelphia, Pa., and Akzo Nobel Inc., Louisville, Ky.

Division of Ser. No. 474,834, Jun. 7, 1995. This application Apr. 19, 1996, Ser. No. 635,134

Int. Cl.^{6} B32B *21/02*

U.S. Cl. 428—512 **7 Claims**

1. A reconstituted wood substrate coated with a coating produced in accordance with a method comprising:

foaming a polymerized latex emulsion comprising:

polymer particles of a polymer of an ethylenically unsaturated monomer, said polymer having T_g in the range of 10° C. to 100° C., and

a foaming agent;

applying a layer of said foamed polymerized latex emulsion on the surface of said reconstituted wood substrate;

drying said foamed layer into a hardened layer;

crushing said hardened layer; and

curing said crushed layer to form said coating on said reconstituted wood substrate.

5,616,420
LAMINATE FILM

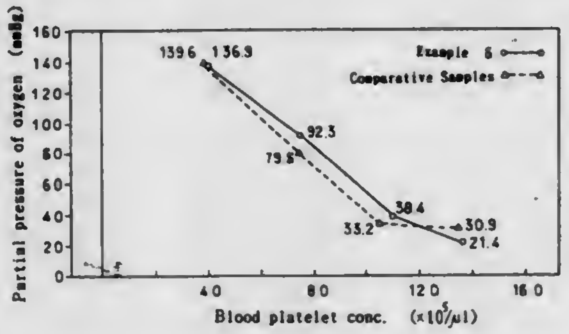
Ryuso Yamaoka; Yoshinori Ishii, both of Kusatsu; Kunio Kondo, Moriyama; Kazuto Wakita, Fujisawa, and Iwao Tsurutani, Chiba, all of Japan, assignors to Gunze Limited, Ayabe, and Ube Industries, Ltd., Ube, both of Japan

Filed Aug. 31, 1994, Ser. No. 297,925

Claims priority, application Japan, Sep. 6, 1993, 5-220938

Int. Cl.^{6} B32B *27/08*

U.S. Cl. 428—515 **4 Claims**



1. A laminate film having at least three layers, the three layers being (A) an intermediate layer and (B) two outer layers, the intermediate layer (A) being composed of a resin composition comprising 20 to 100% by weight of an amorphous polyolefin copolymer of at least 50% by weight of at least one of a propylene and butene-1 and 80 to 0% by weight of a crystalline polypropylene, and the two outer layers (B) being composed of a resin composition comprising 30–50% of a ethylene-propylene random copolymer and 70–50% of a thermoplastic styrene elastomeric copolymer of styrene and at least one of butadiene and isoprene.

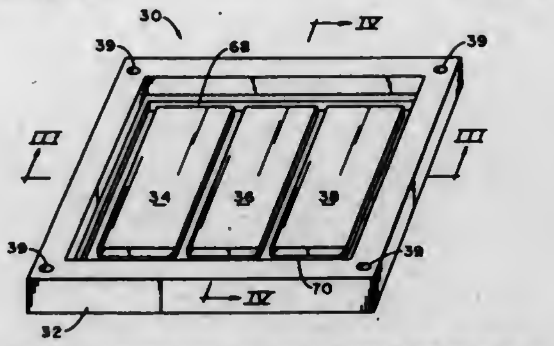
5,616,421
METAL MATRIX COMPOSITES CONTAINING ELECTRICAL INSULATORS

Ralph R. Sawtell; Mosur K. Premkumar, both of Monroeville, and David I. Yun, Murrysville, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Division of Ser. No. 235,018, Apr. 28, 1994, which is a continuation-in-part of Ser. No. 111,993, Aug. 25, 1993, abandoned, which is a division of Ser. No. 682,513, Apr. 8, 1991, Pat. No. 5,259,436. This application May 18, 1995, Ser. No. 444,171

Int. Cl.^{6} B32B *15/04; 3/14*

U.S. Cl. 428—614 **21 Claims**



1. A metal matrix composite possessing regions that are electrically isolated from one another, said metal matrix composite formed by a method comprising:

(a) placing an insulating substrate in a forming chamber, said insulating substrate being adjacent at least one porous ceramic preform;

(b) evacuating said forming chamber;

(c) infiltrating said forming chamber with liquid-phase metal so that said metal fills pores in said preform;

(d) solidifying said liquid-phase metal to form a metal matrix composite around said insulating substrate and a metal layer adjacent said composite; and

(e) forming at least one groove extending inwardly through said metal layer and said metal matrix composite to said insulating substrate so as to electrically isolate at least one region on a surface of said metal matrix composite from another region on said surface.

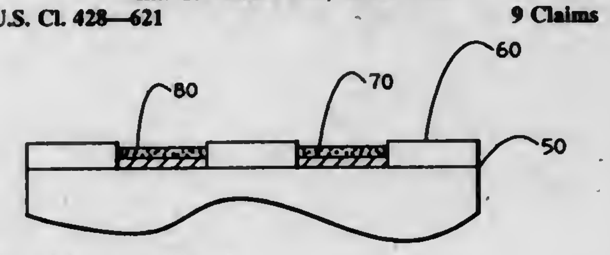
5,616,422
METALLIZED SUBSTRATE

Gerald L. Ballard, and John G. Gaudiello, both of Apalachin, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 202,536, Feb. 28, 1994. This application May 9, 1995, Ser. No. 437,753

Int. Cl.^{6} H05K *1/09;* **B32B** *15/20*

U.S. Cl. 428—621 **9 Claims**



1. A device, comprising:

an electrically insulating substrate;

a first metallic layer overlying said substrate;

an electrolessly deposited, second metallic layer overlying said first metallic layer, a composition of said second layer consisting of about 97 atomic percent or more of a first metal and about 0.22 to about 3.0 atomic percent of a second metal substantially uniformly distributed throughout said first metal, said second metal being chosen from the group consisting of palladium, platinum, silver, ruthenium, iridium, osmium and rhodium, said second metallic layer including trace amounts of phosphorus or boron.

5,616,423
CERAMIC SUBSTRATE HAVING A MULTILAYERED METALLIC THIN FILM

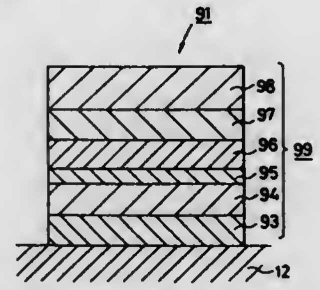
Akira Sanjyou, Nara pref.; Yasuo Nakatsuka; Yasuyuki Morita, both of Hyogo pref., and Koichi Uno, Aichi pref., all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Jul. 6, 1994, Ser. No. 267,892

Claims priority, application Japan, May 19, 1994, 6-105570

Int. Cl.^{6} B32B *15/04*

U.S. Cl. 428—632 **2 Claims**



1. A ceramic substrate having a five-layered metallic film thereon, wherein:

the first layer on the ceramic substrate has a thickness of 0.05–0.20 μm and comprises at least one metal selected from the group consisting of Ti, Zr, Cr and W;

the second layer has a thickness of 0.10–0.20 μm and comprises at least one metal selected from the group consisting of Ni and Mo;

the third layer has a thickness of 0.01–0.02 μm and comprises at least one metal selected from the group consisting of the elements of group Ib in the periodic table;

the fourth layer has a thickness of 0.01–0.30 μm and comprises the same metals as the second layer; and

the fifth layer has a thickness of 0.20–0.50 μm and comprises the same metals as the third layer.

5,616,424
CORROSION-RESISTANT COATED METAL STRIP

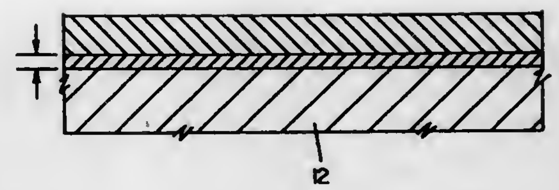
Jay F. Carey, II, Follansbee, W. Va., and Mehrooz Zamanzadeh, Pittsburgh, Pa., assignors to The Louis Berkman Company, Steubenville, Ohio

Division of Ser. No. 402,925, Mar. 13, 1995, Pat. No. 5,491,036, which is a continuation-in-part of Ser. No. 380,372, Jan. 30, 1995, Pat. No. 5,480,731, Ser. No. 175,523, Dec. 30, 1993, Pat. No. 5,401,586, and Ser. No. 165,085, Dec. 10, 1993, Pat. No. 5,397,652, which is a continuation-in-part of Ser. No. 101, Jan. 4, 1993, abandoned, which is a continuation-in-part of Ser. No. 858,662, Mar. 27, 1992, Pat. No. 5,314,758, said Ser. No. 380,372is a continuation of Ser. No. 153,026, Nov. 17, 1993, Pat. No. 5,395,703, which is a division of Ser. No. 858,662, said Ser. No. 175,523is a continuation-in-part of Ser. No. 154,376, Nov. 17, 1993, abandoned, which is a continuation of Ser. No. 426,649, Apr. 5, 1993, abandoned. This application Nov. 1, 1995, Ser. No. 551,456

Int. Cl.^{6} B32B *15/18*

U.S. Cl. 428—647 **126 Claims**

1. A coated metal strip made of a metal selected from the group consisting of carbon steel, stainless steel, copper, nickel alloys, tin, bronze and titanium, said metal strip having a thickness of up to about 0.2 inch and supplied from a coil of metal strip and coating said metal strip by continuously passing said metal strip in a longitudinal direction at a speed through a molten bath of a corrosion-resistant alloy having a temperature of at least about 449° F. such that the residence time of said metal strip in said molten bath is at least about 0.083 minute to deposit a substantially uninterrupted layer of said corrosion-resistant alloy on the surface of said metal strip and forming an intermetallic layer between said metal strip surface and said layer of corrosion-resistant alloy, said layer having a substantially uniform thickness of at least 0.0001 inch along the longitudinal length of said metal strip, said intermetallic layer having a thickness of at least about 1 micron and comprising a heat created interface alloy created from a mixture of said metal strip and corrosion-resistant alloy, said corrosion-resistant alloy comprising at least about 75 weight percent tin, up to about 0.5 weight percent lead and a metal additive selected from the group consisting of a metal stabilizer, a coloring agent, a corrosion-resistant agent and mixtures thereof, said metal stabilizer including at least an effective amount of metal selected from the group consisting of antimony, copper and mixtures thereof, said corrosion-resistant agent including at least an effective amount of metal selected from the group consisting of antimony, copper, magnesium, titanium and mixtures thereof, and said coloring agent including at least an effective amount of copper.



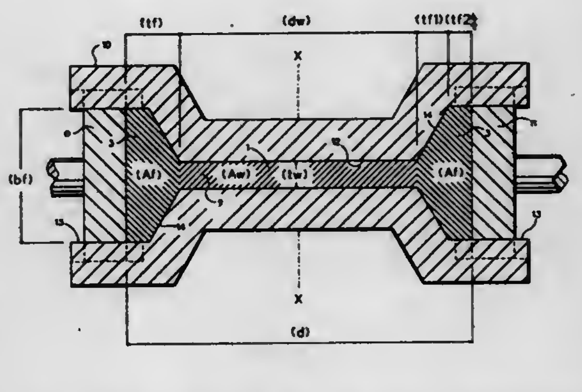
5,616,425
BEAM BLANKS FOR DIRECT ROLLING AS-CAST INTO FINISHED PRODUCTS

William J. Wilde, Bath, Pa., assignor to Bethlehem Steel Corporation

Division of Ser. No. 86,074, Jul. 1, 1993, Pat. No. 5,386,869. This application Sep. 29, 1994, Ser. No. 315,159

Int. Cl.^{6} E04C *3/06*

U.S. Cl. 428—682 **18 Claims**



1. An in-process structural shape being direct finisbed rolled from an as cast blank, comprising:

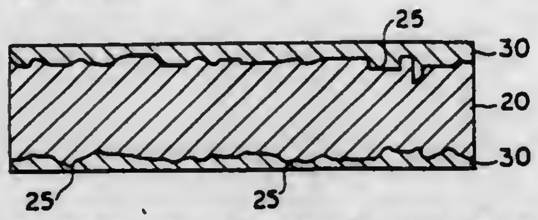
a) a structural shape member having a first finished section and a second blank section;

b) each of said sections has a flange portion with a cross sectional area Af;

c) each of said sections has a web portion with a cross-sectional area Aw; and

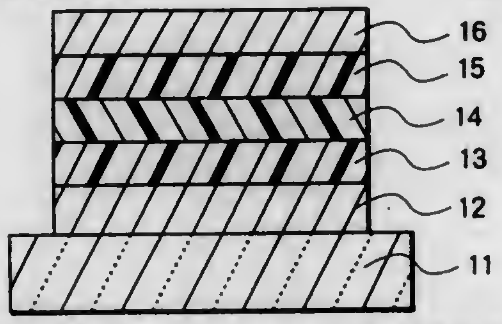
d) the ratio Aw/Af resulting from the web portion cross sectional area Aw being divided by the flange portion cross-sectional area Af is equal for each of said sections.

5,616,426
CERAMIC SUBSTRATE WITH SILICON CARBIDE SMOOTHING LAYER
Michael A. Tenhover, East Amherst, and Irving B. Ruppel, Kenmore, both of N.Y., assignors to The Carborundum Company, Worcester, Mass.
Division of Ser. No. 288,386, Aug. 10, 1994, Pat. No. 5,480,695. This application Sep. 29, 1995, Ser. No. 536,716
Int. Cl.⁶ B32B *9/00*
U.S. Cl. 428—688 **7 Claims**



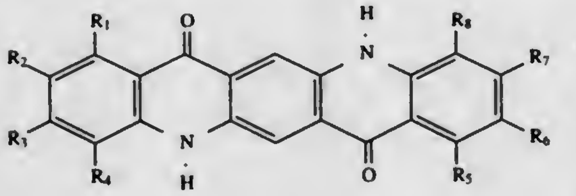
1. A substrate comprising a non-oxide ceramic base and a substantially amorphous smoothing layer comprised of silicon carbide corresponding to the formula SiC_x wherein x is the molar ratio of carbon to silicon and is greater than 1, the non-oxide ceramic having a density of at least about 90 percent of theoretical density and a coefficient of thermal expansion of from about 2 to about 7 ppm/°C., the smoothing layer having an inner surface contacting at least one surface of the ceramic base and an outer surface with a surface roughness of about 25 Å Ra or less.

5,616,427
ORGANIC THIN FILM EL DEVICE HAVING LONG LIFETIME
Hiroshi Tada, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Jun. 5, 1996, Ser. No. 658,660
Claims priority, application Japan, Jun. 5, 1995, 7-137677
Int. Cl.⁶ H05B *33/00*
U.S. Cl. 428—690 **2 Claims**



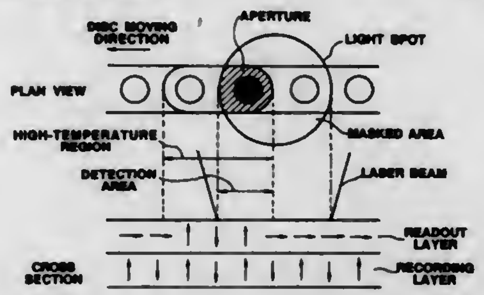
1. An organic thin film EL device comprising an anode layer, a cathode layer, and a complex layer including hole injection material and luminescent material and formed between said anode layer and said cathode layer, at least one of said anode layer and said cathode layer being made from transparent material, said device further comprising:

an anode interfacial layer formed between said anode layer and said complex layer so as to contact with said anode layer, said anode interfacial layer including quinacridone derivative which is represented by the following general formula given by:



where each of R1 through R8 represents a hydrogen atom, a halogen atom, an alkyl group, a cycloalkyl group, an alkoxy group, an aralkyl group, a cyano group, an amide group, an alkoxycarbonyl group, an acyl group, a nitro group, a siloxy group, a hydroxyl group, displacement or non-displacement amino group, an alkenyl group, an allyl group, displacement or non-displacement aromatic hydrocarbon ring, and displacement or non-displacement aromatic heterocyclic, or where each pair composed of R1 and R2; R2 and R3; R3 and R4; R5 and R6; R6 and R7; and R7 and R8 is bonded to to provide the displacement or the non-displacement aromatic hydrocarbon ring or the displacement or the non-displacement aromatic heterocyclic.

5,616,428
MAGNETOOPTICAL RECORDING MEDIUM AND INFORMATION RECORDING AND REPRODUCING METHODS USING THE RECORDING MEDIUM
Naoki Nishimura, Tokyo; Hiroshi Omata, Kawasaki, and Kazuoki Honguu, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 111,974, Aug. 26, 1993, abandoned. This application May 7, 1996, Ser. No. 643,833
Claims priority, application Japan, Aug. 28, 1992, 4-230265; Aug. 28, 1992, 4-230266; Aug. 28, 1992, 4-230277; Feb. 26, 1993, 5-038137; Feb. 26, 1993, 5-038138; Mar. 4, 1993, 5-043786; Mar. 25, 1993, 5-066656; Apr. 23, 1993, 5-098025; Jul. 29, 1993, 5-188400; Jul. 29, 1993, 5-188438
Int. Cl.⁶ G11B *5/66*
U.S. Cl. 428—694 ML **10 Claims**



1. A magnetooptical recording medium, comprising:

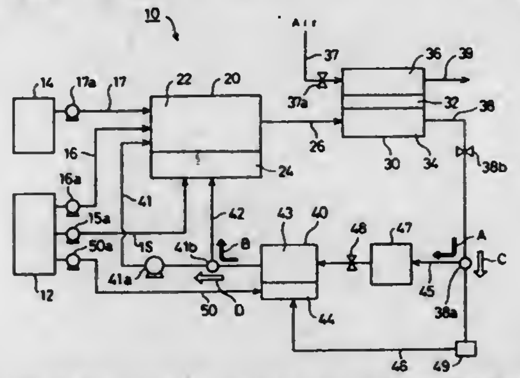
a first magnetic layer, said first magnetic layer being composed of a film that is perpendicularly magnetizable at both room temperature and a raised temperature, the raised temperature being some temperature above room temperature, permitting information to be stored in said first magnetic layer; and

a second magnetic layer, said second magnetic layer being composed of $Gd_x(Fe_{100-y}Co_y)_{100-x}$, where $27 \leqq x \leqq 31$ and $28 \leqq y \leqq 50$, and being in-plane magnetizable at room temperature, but perpendicularly magnetizable at said raised temperature.

5,616,429
ALKALI METAL ELECTROCHEMICAL CELL EXHIBITING REDUCED VOLTAGE DELAY AND METHOD OF MANUFACTURE
Thomas W. Klementowski, Amherst, N.Y., assignor to Wilson Greatbatch Ltd., Clarence, N.Y.
Filed May 24, 1995, Ser. No. 448,987
Int. Cl.⁶ H01M *14/00;10/44;10/50;6/14*
U.S. Cl. 429—3 **24 Claims**

1. A pulse dischargeable electrochemical cell comprising anode and cathode electrodes and an activating electrolyte, the improvement comprising: the cell characterized as having an ionically conductive solid-electrolyte interphase provided at the interface of the electrodes and the electrolyte as a result of the cell having been exposed to an elevated temperature of at least about 75° C. for an extended period of time longer than 7 days prior to pulse discharge so that the cell is pulse dischargeable under current pulse applications at a high pulse rate without exhibiting voltage delay.

5,616,430
REFORMER AND FUEL CELL SYSTEM USING THE SAME
Satoshi Aoyama, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan
Filed Aug. 15, 1995, Ser. No. 518,402
Claims priority, application Japan, Aug. 30, 1994, 6-230635
Int. Cl.⁶ H01M *8/04;8/18*
U.S. Cl. 429—17 **21 Claims**



1. A reformer comprising reformer means for reforming hydrocarbon to generate a hydrogen rich gas;

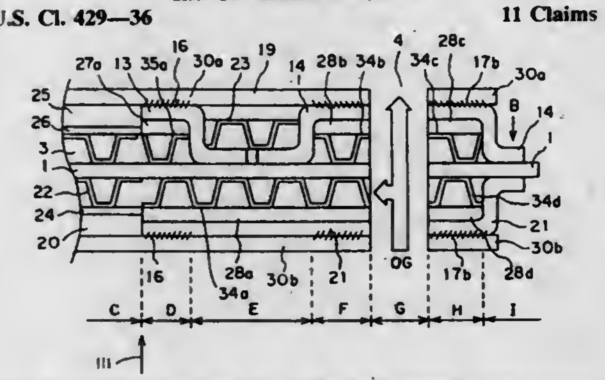
gas feeding means for feeding a carbon dioxide-containing gas;

carbon dioxide absorption means for absorbing and retaining carbon dioxide in said carbon dioxide-containing gas under a first condition and releasing the absorbed and retained carbon dioxide under a second condition;

carbon dioxide release means for keeping said carbon dioxide absorption means under said second condition to release the absorbed and retained carbon dioxide from said carbon dioxide absorption means; and

replacement means for supplying the carbon dioxide released by said carbon dioxide release means to said reformer means to replace said hydrocarbon with said carbon dioxide.

5,616,431
FUEL CELL AND ITS BIPOLAR PLATE
Akira Kusunoki; Jitsuji Otsuki; Yasuhira Kikuoka, all of Osaka; Tatsunori Okada, Hyogo; Mitsuie Matsumura, Hyogo; Toshio Shinoki, Hyogo; Masahiro Mukai, Hyogo, and Tetsuya Yagi, Hyogo, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 25, 1995, Ser. No. 379,319
Claims priority, application Japan, Jan. 27, 1994, 6-007516
Int. Cl.⁶ H01M *2/08;8/02*
U.S. Cl. 429—36 **11 Claims**



1. In a molten carbonate fuel cell of an internal manifold type comprising:

a stack composed by laminating plural cells through a bipolar plate, each of said cells putting an electrolyte matrix between an anode electrode disposed on an anode electrode side of the bipolar plate and a cathode electrode disposed on a cathode electrode side of the bipolar plate and generating by flowing fuel gas and oxidant gas through a fuel gas channel opposed to said anode electrode and an oxidant gas channel opposed to said cathode electrode respectively;

a fuel gas supplying or exhausting manifold and an oxidant gas supplying or exhausting manifold for supplying or exhausting fuel gas or oxidant gas to said fuel gas channel or said oxidant gas channel respectively, said fuel gas supplying or exhausting manifold and said oxidant gas supplying or exhausting manifold being composed of a hole opened to an adjoining cell in said stack respectively; and

gas seals supplied around said electrodes and said manifolds between each layer;

the improvement wherein said bipolar plate is designed to provide said gas seal around said anode electrode and said gas seal around said fuel gas manifold on the same plane and to separate said gas seal around said cathode electrode and said gas seal around said oxidant gas manifold with a hollowed part on said anode electrode side, and to provide said gas seal around said cathode electrode and said gas seal around said oxidant gas manifold on the same plane and to separate said gas seal around said anode and said gas seal around said fuel gas manifold with a hollowed part on said cathode electrode side.

5,616,432
ELECTROCHEMICAL HYDROGEN STORAGE ALLOYS AND BATTERIES FABRICATED FROM MG CONTAINING BASE ALLOYS
Stanford R. Ovshinsky, Bloomfield Hills; Michael A. Fetcenko, Rochester Hills; Benjamin Reichman, West Bloomfield; Kwo Young; Benjamin Chao, both of Troy, and Jun Im, Sterling Heights, all of Mich., assignors to Ovonic Battery Company, Inc., Troy, Mich.
Continuation-in-part of Ser. No. 259,793, Jun. 14, 1994, Pat. No. 5,506,069, and a continuation-in-part of Ser. No. 423,072, Apr. 17, 1995, Pat. No. 5,536,591. This application May 8, 1995, Ser. No. 436,673
Int. Cl.⁶ H01M *4/38*
U.S. Cl. 429—59 **65 Claims**

1. A disordered multicomponent MgNi based electrochemical hydrogen storage material comprising:

$$(\text{Base Alloy})_a M_b$$

where,

Base Alloy is an alloy of Mg and Ni in a ratio of from about 1:2 to about 2:1;

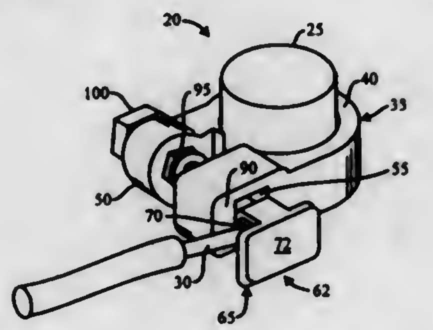
M represents at least one modifier element chosen from the group consisting of Co, Mn, Al, Fe, Cu, Mo, W, Cr, V, Ti, Zr, Sn, Th, Si, Zn, Li, Cd, Na, Pb, La, Ce, Pr, Nd, Mm, Pd, Pt, and Ca;

b is greater than 0.5 atomic percent and less than 30 atomic percent; and

a+b=100 atomic percent; and

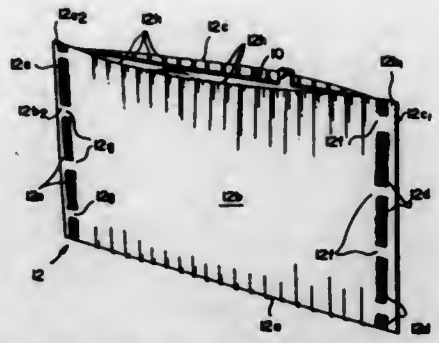
wherein at least 25% of the microstructure of said disordered MgNi based electrochemical hydrogen storage material exhibits intermediate range order.

5,616,433
ELECTRICAL CONNECTOR FOR STORAGE BATTERIES
Pui K. Kau, Alameda, Calif., assignor to Asian International Trades Company, Oakland, Calif.
Filed Jul. 10, 1996, Ser. No. 678,635
Int. Cl.⁶ H01M *2/20;* **H01R** *11/26*
U.S. Cl. 429—121 **19 Claims**



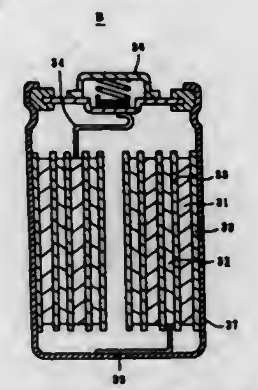
1. An electrical connector for connecting a battery post to a wire, the electrical connector comprising:
(a) a U-shaped clamp having (i) a concave portion sized to fit the battery post, and (ii) opposing first and second legs extending from the concave portion, the first leg having a first hole therethrough, and the second leg having a second hole therethrough, the second hole being substantially aligned with the first hole; and
(b) unitary compression means extending through the first and second holes of the U-shaped clamp, the unitary compression means provided for (i) compressing a wire against the U-shaped clamp, and (ii) compression fitting the U-shaped clamp about the battery post, and the unitary compression means comprising:
(1) a wire holding compression stud extending through the first and second holes of the U-shaped clamp, the compression stud comprising (i) a wire housing sized to fit into the first hole, (ii) a compression plate at one end of the wire housing, the compression plate having an area sized larger than the first hole, and (iii) a post attached to the other end of the wire housing, the post sized to extend through the second hole; and
(2) fastening means capable of tightening the wire holding compression stud on the U-shaped clamp so that the compression plate of the stud (i) forces the first and second legs of the U-shaped clamp toward one another causing the concave portion of the U-shaped clamp to compression fit the battery post, and (ii) compresses a wire in the wire housing between the compression plate and the first leg of the U-shaped clamp.

5,616,434
BATTERY PLATE SEPARATOR ENVELOPE AND METHOD OF FORMING BATTERY PLATE ASSEMBLIES INCLUDING THE SAME
Galen Redden, Gypsum, Kans., and Rex E. Luzader, Wyomissing, Pa., assignors to Exide Corporation, Reading, Pa.
Filed Jul. 14, 1995, Ser. No. 502,866
Int. Cl.⁶ H01M *2/18*
U.S. Cl. 429—136 **12 Claims**
1. A battery plate envelope comprising:
a sheet of porous film material having a folded bottom edge and overlapped lateral edges which form a pocket for receiving a battery plate;



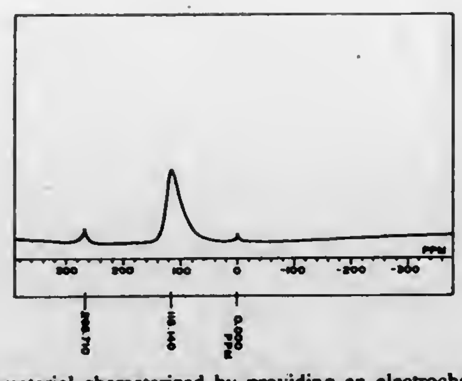
said overlapped lateral edges being joined to one another by an extended series of discontinuous nonwelded but mechanically joined regions with adjacent ones of the joined regions being separated by respective unsealed regions which establish a lateral channel through which fluid may pass.

5,616,435
HYDROGEN-ABSORBING ALLOY ELECTRODE FOR METAL HYDRIDE ALKALINE BATTERY
Yoshinori Matsuura; Yasushi Kuroda; Nobuyuki Higashiyama; Mamoru Kimoto; Mitsuzou Nogami; Koji Nishio, all of Osaka, and Toshihiko Saito, Mihara-gun, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan
Filed Jul. 20, 1995, Ser. No. 504,550
Claims priority, application Japan, Jul. 22, 1994, 6-191981
Int. Cl.⁶ H01M *4/02*
U.S. Cl. 429—218 **6 Claims**



1. A hydrogen-absorbing alloy electrode for metal hydride alkaline batteries, obtained by coating or filling a collector with a hydrogen-absorbing alloy powder consisting essentially of spherical particles and/or spherically shaped particles and then sintering the powder, said powder having an average particle diameter of 30 to 70 μm and containing 5 to 30% by volume of particles having a diameter of at least times the average diameter and 10 to 40% by volume of particles having a diameter of not more than ½ of the average diameter.

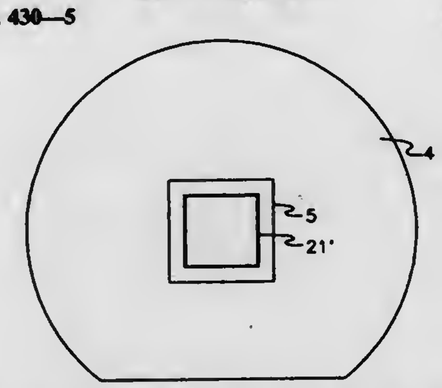
5,616,436
CARBONACEOUS ELECTRODE MATERIAL FOR SECONDARY BATTERY AND PROCESS FOR PRODUCTION THEREOF
Naohiro Sonobe; Minoru Ishikawa, and Takao Iwasaki, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 23, 1995, Ser. No. 518,306
Claims priority, application Japan, Aug. 23, 1995, 6-219637
Int. Cl.⁶ H01M *4/04;4/36;4/58*
U.S. Cl. 429—218 **10 Claims**
1. A carbonaceous electrode material for a secondary battery, using a non-aqueous electrolyte solution comprising a carbon-



aceous material characterized by providing an electrochemically lithium-doped product showing a main resonance peak which is shifted by 80–200 ppm to a lower magnetic field side from a resonance line of LiCl as a reference substance when subjected to ^{7}Li-NMR spectroscopy analysis.

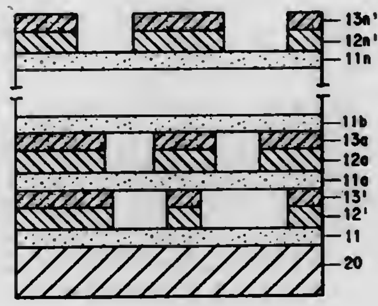
5,616,437
CONDUCTIVE METAL OXIDE COATED CURRENT COLLECTOR FOR IMPROVED ADHESION TO COMPOSITE ELECTRODE
Feng Gao, Henderson, Nev., assignor to Valence Technology, Inc., Henderson, Nev.
Filed Jun. 14, 1996, Ser. No. 663,759
Int. Cl.⁶ H01M *4/66*
U.S. Cl. 429—245 **20 Claims**
1. An electrode/current collector comprising:
a current collector having a layer of electrically conductive metal oxide on at least one surface of the current collector and a composite electrode selected from the group consisting of composite cathode and composite anode, wherein the composite electrode comprises a polymeric binder, wherein the layer of metal oxide is positioned between the current collector and the composite electrode and wherein the composite electrode is attached to the metal oxide layer.

5,616,438
RETICLE AND A METHOD FOR MEASURING BLIND SETTING ACCURACY USING THE SAME
Joon Hwang, Bubaleub, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Rep. of Korea
Filed Apr. 3, 1995, Ser. No. 415,720
Claims priority, application Rep. of Korea, Apr. 1, 1994, 1994-6957
Int. Cl.⁶ G03F *9/00*
U.S. Cl. 430—5 **6 Claims**



1. A method for measuring the setting error of a blind of a stepper, said blind having a shape, comprising the steps of:
providing said blind and a reticle having a linear pattern, said linear pattern having the same shape as is formed by said blind;
setting the reticle and the blind to expose a photoresist layer so that one of a first case and a second case occur, said first case occurring when a first pattern formed by the blind and a second pattern formed by the reticle are apparent when the photoresist is developed, said second case occurring when light passing through the blind overexposes the photoresist and the second pattern is not shown the photoresist is developed;
observing the photoresist when developed to distinguish which of the first and second cases has occurred and in the first case, measuring the setting error of said blind from any difference in size between said first pattern and said second pattern to obtain blind setting error.

5,616,439
IMAGED ELEMENT UTILIZING A TRANSFER PROCESS AND A NON-PHOTOSENSITIVE/PHOTOSENSITIVE COMBINATION FOR FORMING THE COLORED IMAGE
Gregory A. Bodager, Monroeton, Pa., and Phillip L. Beighle, Colts Neck, N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Division of Ser. No. 315,739, Sep. 30, 1994. This application May 18, 1995, Ser. No. 443,501
Int. Cl.⁶ G03C *3/00*
U.S. Cl. 430—15 **7 Claims**

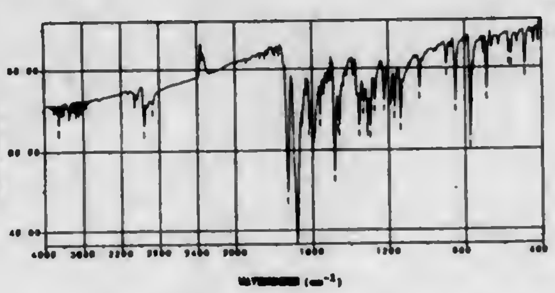


1. An imaged element, comprising, in order:
(1) a carrier element having a release surface, said carrier element being resistant to aqueous development;
(2) a first adhesive layer;
(3) a first colored pattern, resulting from the imagewise exposure and washout development of a first unpigmented, photosensitive layer comprising an aqueous liquid developable photosensitive composition and at least one overlying aqueous permeable colorant-containing composition, wherein the aqueous liquid developable photosensitive composition is adjacent the first adhesive layer, and wherein the colorant-containing composition is present as a separate layer or absorbed into the first unpigmented, photosensitive layer; and
(4) a transfer element having a release surface; wherein the adhesion force between the release surface of said carrier element and said adhesive layer has a value of F1, the adhesion force between the adhesive layer and the first colored pattern has a value of F2, and the adhesion force between the first colored pattern and said release surface of said transfer element has a value of F3 and wherein
each of F2 and F3 is greater than F1, and F2 is greater than F3.

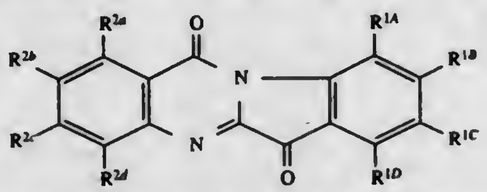
5,616,440
PHOTOSENSITIVE MEMBER, ELECTROPHOTOGRAPHIC APPARATUS USING THE PHOTOSENSITIVE MEMBER, AND PROCESS FOR PRODUCING THE PHOTOSENSITIVE MEMBER
Toru Takahashi; Tsuneo Watanuki; Fumio Takei; Norio Sawatari, and Yasushige Nakamura, all of Kawasaki, Japan, assignors to Fujitsu, Ltd., Kanagawa, Japan
Continuation of Ser. No. 186,605, Jan. 26, 1994, abandoned.
This application Mar. 28, 1995, Ser. No. 411,850
Claims priority, application Japan, Mar. 18, 1993, 5-059057
Int. Cl.⁶ G03G *5/10*
U.S. Cl. 430—63 **19 Claims**

1. A photosensitive member comprising:
a transparent substrate having a first surface and a second surface opposite to said first surface;
a transparent conductor layer formed on said first surface of said transparent substrate, said transparent conductor layer containing SnO_2 formed by thermally decomposing a dried solution of an organotin compound; and
a photosensitive layer formed on said conductor layer;
wherein said transparent conductor layer has a thickness which enables exposure of said photosensitive layer through said second surface of said transparent substrate to form an electrostatic latent image on said photosensitive member.

5,616,441
TRYPTOANTHORINE DERIVATIVE CONTAINED IN ELECTROPHOTOSENSITIVE MATERIAL
Hirofumi Kawaguchi; Yasufumi Mizuta; Syunichi Matsumoto; Nobuko Akiba; Toshiyuki Fukami; Ichiro Yamazato; Hisakazu Uegaito, and Yuji Tanaka, all of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan
Filed Sep. 13, 1995, Ser. No. 527,776
Claims priority, application Japan, Sep. 20, 1994, 6-225184; Feb. 28, 1995, 7-039639; Feb. 28, 1995, 7-039642
Int. Cl.⁶ G03G *5/06*
U.S. Cl. 430—78 **8 Claims**



1. An electrophotosensitive material comprising a conductive substrate and an organic photosensitive layer provided on the conductive substrate, the organic photosensitive layer containing tryptoanthorine or a derivative thereof represented by the formula:



(3)

wherein R^{1A}, R^{1B}, R^{1C}, R^{1D}, R^{2a}, R^{2b}, R^{2c}, and R^{2d} are the same or different and indicate a hydrogen atom, an alkyl group or a halogenated alkyl group.

5,616,442
ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER AND ELECTROPHOTOGRAPHIC APPARATUS USING SAME
Tetsuro Kanemaru, Tokyo; Toshihiro Kikuchi, Yokohama; Akihiro Senoo, Tokyo, and Kouichi Nakata, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 266,520, Jun. 28, 1994, abandoned.
This application Apr. 10, 1996, Ser. No. 631,610
Claims priority, application Japan, Jun. 30, 1993, 5-183185
Int. Cl.⁶ G03G *5/06*
U.S. Cl. 430—83 **18 Claims**

1. An electrophotographic photosensitive member, comprising: a support and a photosensitive layer disposed on the support,
wherein said photosensitive layer contains a triphenylamine compound having at least two phenyl groups each substituted with two alkyl groups including at least one alkyl group located in meta-position in conjunction with nitrogen atom.

5,616,443
SUBSTRATE HAVING A MUTABLE COLORED COMPOSITION THEREON
Ronald S. Nohr, Roswell; John G. MacDonald, Decatur, both of Ga.; Vincent D. McGinniss, Sunbury, and Robert S. Whitmore, Jr., Columbus, both of Ohio, assignors to Kimberly-Clark Corporation, Neenah, Wis.
Continuation of Ser. No. 393,089, Feb. 22, 1995, which is a continuation of Ser. No. 103,503, Aug. 5, 1993, abandoned.
This application Jun. 1, 1995, Ser. No. 456,784
Int. Cl.⁶ G03G *9/09*
U.S. Cl. 430—106 **16 Claims**

1. A substrate having an electrophotographic toner thereon, the electrophotographic toner comprising a mutable colorant, an ultraviolet radiation transorber, and a carrier for the colorant and the ultraviolet radiation transorber, the carrier comprising a polymer and the ultraviolet radiation transorber being adapted, upon exposure to ultraviolet radiation, to interact with the mutable colorant to irreversibly mutate the mutable colorant from an initial absorption maximum to a new absorption maximum different from the initial absorption maximum.

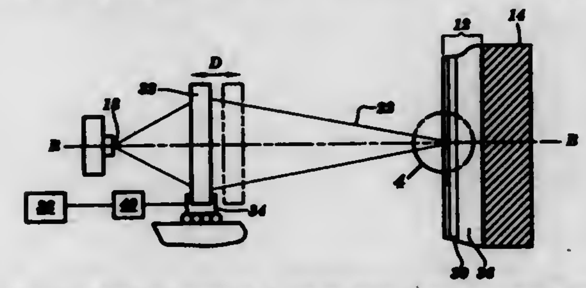
5,616,444
TONERS AND DEVELOPERS CONTAINING BIS(AMMONIUM) TETRAHALOCUPRATE SALTS AS CHARGE-CONTROL AGENTS
John C. Wilson, Rochester, and Dinesh Tyagi, Fairport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Dec. 7, 1994, Ser. No. 350,604
Int. Cl.⁶ G03G *9/097*
U.S. Cl. 430—110 **5 Claims**

1. A dry, particulate electrostatographic toner composition comprising a polymeric binder and a charge-control agent comprising an bis(ammonium) tetrahalocuprate salt having the structure:

$$\left[\begin{array}{c} R \\ | \\ R^3-\overset{\oplus}{N}-R^1 \\ | \\ R^2 \end{array}\right]_2 \ (-2)\ CuX_4$$

wherein
R, R^1, R^2 and R^3 represent hydrogen; an unsubstituted alkyl group having from 1 to 24 carbon atoms; a substituted alkyl group having from 1 to 24 carbon atoms substituted with one or more hydroxy-, carboxy-, alkoxy-, carboalkoxy-, acyloxy-, nitro-, cyano-, keto- or halo-groups; a cycloalkyl group having from 3 to 7 carbon atoms; an unsubstituted aryl group having from 6 to 14 carbon atoms; a substituted aryl group having from 6 to 14 carbon atoms substituted with one or more hydroxy-, carboxy-, alkoxy-, carboalkoxy-, acyloxy-, amino-, nitro-, cyano-, keto- or halo-groups; an alkaryl group having from 1 to 20 carbon atoms in the alkyl group and 6 to 14 carbon atoms in the aryl group; an aralkyl group having from 1 to 4 carbon atoms in the alkyl group and 6 to 14 carbon atoms in the aryl group wherein the aryl group is unsubstituted or substituted with one or more alkyl-, hydroxy-, carboxy-, alkoxy-, carboalkoxy-, acyloxy-, amino-, nitro-, cyano-, keto- or halo-groups; or wherein any two or more of R, R^1, R^2 or R^3 are interconnected to one another to form a 5 to 14 membered saturated or unsaturated ring system, and
X represents fluorine, chlorine, bromine or iodine.

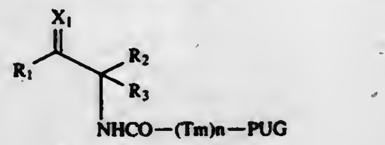
5,616,445
METHOD FOR OBTAINING A LITHOGRAPHIC PLATE
Henry A. Kelley, Woburn, Mass.; Jos Alfons Vaes, and Johan H. Van Hunsel, both of Mortsel, Belgium, assignors to Agfa Division, Bayer Corporation, Wilmington, Mass.
Filed Jan. 17, 1995, Ser. No. 373,664
Int. Cl.⁶ G03C *7/07;8/34;* **B41C** *1/10*
U.S. Cl. 430—204 **1 Claim**



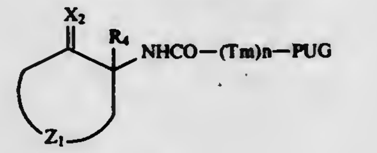
1. A method for making a lithographic printing plate having improved lithographic printing properties such as good ink acceptance and high printing endurance, comprising the steps of:
image-wise exposing by means of a high intensity short time scanning exposure an imaging element comprising at least a support layer, a silver halide emulsion layer and a development nuclei layer, said step of image-wise exposing includes focusing the high intensity short time scanning exposure substantially within the silver halide emulsion layer of the imaging element: and
developing a resulting image-wise exposed imaging element in a developing agent to result in said lithographic printing plate, wherein said step of focusing the high intensity short time scanning exposure substantially within the silver halide emulsion layer of the imaging element includes changing the focus of said high intensity short time scanning exposure for different imaging elements that have different nominal thicknesses, to ensure said focus of said high intensity short time scanning exposure is within said silver halide emulsion layer according to said nominal thicknesses of different imaging elements, resulting in said improved lithographic printing properties of said printing plate.

5,616,446
SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL
Norio Miura; Tawara Komamura; Seiji Hidaka, and Takeo Arai, all of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan
Filed Sep. 26, 1995, Ser. No. 534,859
Claims priority, application Japan, Sep. 29, 1994, 6-235480; Mar. 27, 1995, 7-067935
Int. Cl.⁶ G03C *7/305;1/43*
U.S. Cl. 430—219 **8 Claims**

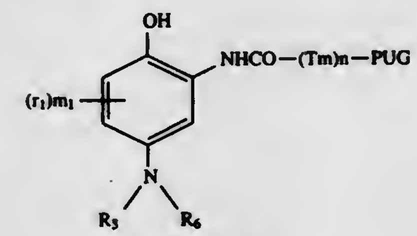
1. A silver halide photographic light-sensitive material comprising a support having on one side thereof hydrophilic colloid layers including a silver halide emulsion layer, wherein at least one of the hydrophilic colloid layers contains a redox compound having at least one carbonyl group, being selected from the group consisting of Formulae 1A through 6A:



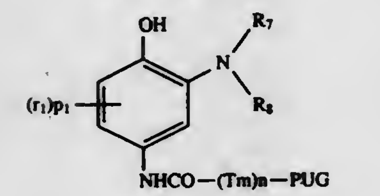
Formula 1A



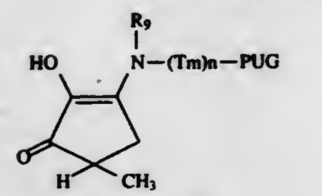
Formula 2A



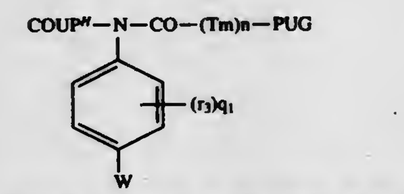
Formula 3A



Formula 4A



Formula 5A



Formula 6A

wherein R_1 represents an alkyl group, an aryl group or a heterocyclic group; R_2 and R_3 each represents a hydrogen atom, an acyl group, a carbamoyl group, a cyano group, a nitro group, a sulfonyl group, an aryl group, an oxalyl group, a heterocyclic group, an alkoxycarbonyl group or an aryloxycarbonyl group; R_4 represents a hydrogen atom; R_5 through R_9 each represents a hydrogen atom, an alkyl group, an aryl group or a heterocyclic group; r^1, r^2 and r^3 each represents a substituent capable of substituting with a benzene ring; X_1 and X_2 each represents O or NH; Z_1 represents an atom group necessary to form a 5- or 6-membered heterocyclic group; W represents $N(R_{10})R_{11}$ or OH; R_{10} and R_{11} each represents a hydrogen atom, an alkyl group, an aryl group or a heterocyclic group; COUP represents a coupler residue capable of causing a coupling reaction with an oxidized product of an aromatic primary amine developing agent; H represents a coupling position of a coupler; Tm represents a timing group; m_1 and p_1 each represents an integer of 0 to 3; q_1 represents an integer of 0 to 3; n represents an integer of 0 or 1; and PUG represents a development inhibitor, and
wherein said redox compound is capable of being oxidized with an oxidized product of a developing agent in a photographic

processing so as to release a development inhibitor, and wherein said redox compound satisfies the following Formulae 1 through 3:

Formula 1
a development inhibitor releasing rate (%) under a condition (A)≧4.5,

Formula 2
a development inhibitor releasing rate (%) under a condition (B)<15.0,

Formula 3
a development inhibitor releasing rate (%) under a condition (A)>a development inhibitor releasing rate (%) under condition (B),

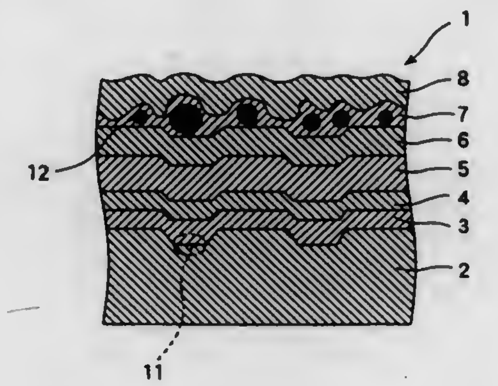
Condition (A): Under a constant temperature of 35° C., 5 parts of a 50 μM methanol - acetonitrile (1:1) solution of said redox compound capable of releasing the development inhibitor and 1 part of an aqueous 100 mM hydrogen peroxide solution are mixed, and, to the mixture, 2 parts of carbonate buffer of pH of 10.2 is added, and then, after 30 seconds, 1 part of methanol solution of a 100 mM acetic acid is added,

Condition (B): Under a constant temperature of 35° C., 5 parts of a 50 μM methanol - acetonitrile (1:1) solution of said redox compound capable of releasing the development inhibitor and 1 part of distilled water are mixed and, to the mixture 2 parts of carbonate buffer of pH of 10.2 is added, and then, after 30 seconds, 1 part of methanol solution of a 100 mM acetic acid is added, and

the development inhibitor releasing rate (%) in Formula 1, 2 or 3 are defined as the following Formula A,

Formula A
the development inhibitor releasing rate (%)=(a concentration of the development inhibitor measured/a concentration of the development inhibitor when released 100%)×100.

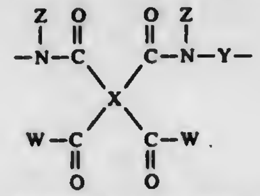
5,616,447
OPTICAL DISC HAVING PRINTABLE LABEL LAYER
Hiroyuki Arioka, Nagano, Japan, assignor to TDK Corporation, Tokyo, Japan
Filed Aug. 4, 1995, Ser. No. 511,440
Claims priority, application Japan, Sep. 8, 1994, 6-240625
Int. Cl.[6] G11B *7/24*
U.S. Cl. 430—270.11 **9 Claims**



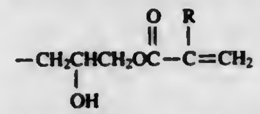
1. An optical disc comprising
an optical disc body,
a protective coat on the disc body,
a first cover layer on the protective coat comprising a filler and a binder, and
a second cover layer on the first cover layer comprising at least 80% by weight of vinyl pyrrolidone polymer having a weight average molecular weight Mw of at least 30,000, said second cover layer having a thickness of at least 0.1 μm and being printable with water-based ink.

5,616,448
PHOTOSENSITIVE RESIN COMPOSITION AND A PROCESS FOR FORMING A PATTERNED POLYIMIDE FILM USING THE SAME
Hideto Kato, Takasaki, Japan, assignor to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan
Filed Jan. 26, 1996, Ser. No. 592,536
Claims priority, application Japan, Jan. 27, 1995, 7-031605
Int. Cl.[6] G03F *7/38*
U.S. Cl. 430—283.1 **7 Claims**

1. A photosensitive resin composition comprising:
(A) a polyimide precursor having an average molecular weight of at least 10,000 comprised of a structural unit represented by the following general formula (1):


(1)

wherein X is a tetravalent organic group having an aromatic ring, Y is an aromatic ring-containing divalent organic group or a siloxane bond-containing divalent organic group, the two Z, are each independently a hydrogen atom or an acryloxy group- or methacryloxy group-containing monovalent organic group represented by the following general formula (2):


(2)

wherein R is a hydrogen atom or a methyl group, and the two are each, independently a hydroxyl group or an acryloxy group- or methacryloxy group-containing amino group represented by the following general formula (3):

$$-NH-CH_2CH_2OCO-C(R')=CH_2 \quad (3)$$

wherein R' is a hydrogen atom or a methyl group, provided that the content of the monovalent organic group represented by said general formula (2) accounts for at least 30 mol % of the total Z contained in the polyimide precursor and the content of the amino group represented by the general formula (3) accounts for 10 to 50 mol % of the total W contained in the polyimide precursor; and
(B) one member selected from the group consisting of a sensitizer, a photopolymerization initiator, and a combination thereof.

5,616,449
LITHOGRAPHIC PRINTING PLATES WITH DISPERSED RUBBER ADDITIVES
Chieh-Min Cheng, Arlington; Anthony C. Gludice, Wakefield; Rong-Chang Liang, Newton; William C. Schwarzel, Billerica, and Leonard C. Wan, Chestnut Hill, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.
Continuation-in-part of Ser. No. 146,479, Nov. 1, 1993, abandoned. This application Sep. 21, 1995, Ser. No. 531,486
Int. Cl.[6] G03F *7/30*
U.S. Cl. 430—302 **11 Claims**

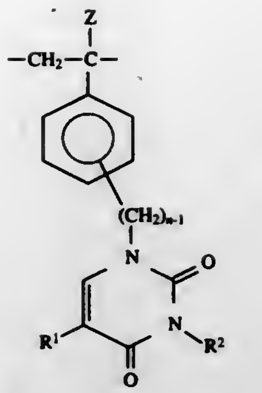
1. A method for lithographically printing images on a receiving medium, the method utilizing a printing press, the printing press provided with fountain and ink solutions, the method comprising the steps of
incorporating a particulate rubber and a dispersing agent into a photoresist composition, the photoresist composition comprising in an organic solvent at least a hydrophobic macromolecular organic binder and a photopolymerizable monomer, the particulate rubber being incorporated into the photoresist composition as a stable dispersion, the dispersing agent being a surfactant having a concentration and an HLB value effective for stably dispersing the particulate rubber in the photoresist composition;
depositing the photoresist composition onto a lithographic printing plate substrate to provide a photoresist thereon, the photoresist capable of being photohardened upon imagewise exposure to actinic radiation, the particulate rubber being dispersed in the photoresist;
imagewise exposing the photoresist to actinic radiation to cause the photopolymerizable monomer in exposed areas to polymerize and thereby cause exposed areas of the photoresist to imagewise photoharden;
treating the photoresist with fountain and ink solutions in a printing press, wherein the fountain and ink solutions penetrate into the photoresist through the dispersed particulate rubber causing removal of unexposed areas of the photoresist and correspondingly baring the underlying substrate, whereby ink becomes imagewise localized in either unremoved photoresist or bared substrate to form an imagewise distribution of ink transferable to a receiving medium.

5,616,450
METHOD FOR FABRICATING AN OPTICAL INFORMATION MEDIUM
Yuji Arai; Takanobu Matumoto; Yuaki Shin, and Takashi Ishiguro, all of Tokyo, Japan, assignors to Taiyo Yuden Co., Ltd., Tokyo, Japan
Division of Ser. No. 223,465, Apr. 5, 1994, Pat. No. 5,470,691. This application May 9, 1995, Ser. No. 437,394
Claims priority, application Japan, Apr. 10, 1993, 5-107617; Apr. 24, 1993, 5-120996; Apr. 24, 1993, 5-120999
Int. Cl.[6] G11B *7/26*
U.S. Cl. 430—321 **2 Claims**

1. In a method for fabricating an optical information medium capable of reproducing optically readable information by means of a laser beam, said optical information medium comprising a plate-shaped, optically transparent substrate, a resin protective layer formed above the substrate and an intermediate layer formed between the protective layer and the optically transparent substrate, the improvement comprising the additional steps of:
forming an aqueous printing ink-fixable, hydrophilic resin film on a main surface of the protective layer before the activity thereof is lost; and
affixing an aqueous printing ink on a surface of the hydrophilic resin film.

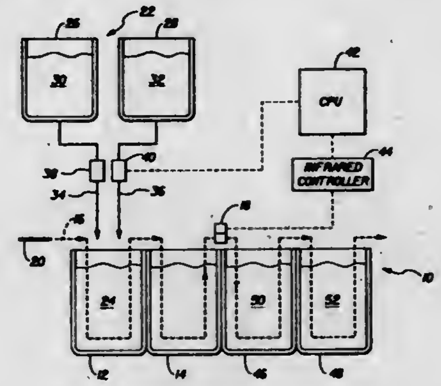
5,616,451
METHOD OF IMAGING USING A POLYMERIC PHOTORESIST HAVING PENDANT VINYLBENZYL THYMINE GROUPS
J. Michael Grasshoff, Hudson; Lloyd D. Taylor, Lexington, and John C. Warner, Norwood, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.
Division of Ser. No. 242,253, May 13, 1994, Pat. No. 5,455,349. This application May 24, 1995, Ser. No. 449,017
Int. Cl.[6] G03F *7/30*
U.S. Cl. 430—325 **9 Claims**

1. A method of forming an image in photo-cross-linked polymer comprising the steps of
subjecting imagewise to actinic radiation, an article comprising a support carrying a layer of photosensitive polymer having repeating units of the formula



wherein each of R^1 and R^2 is hydrogen or alkyl; Z is hydrogen or methyl; and n is an integer 1 or 2; said layer being photo-cross-linkable in areas subjected to said actinic radiation;
and removing from said support areas of said layer not subjected to said radiation.

5,616,452
PHOTOGRAPHIC PROCESSOR AND METHOD FOR REPLENISHING
Ronald A. Gogle, Rochester, and William S. Lane, Honeoye Falls, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 30, 1995, Ser. No. 413,321
Int. Cl.[6] G03C *5/395;7/44*
U.S. Cl. 430—398 **3 Claims**



1. A method of replenishing a processing solution in a processor for processing photosensitive material, said processor having at least one processing tank containing a process solution for processing said photosensitive material and a two part replenishment system for replenishing the processing solution, said two part processing replenishment system comprising a first part and a second part, the ratio of the volume of said first part to the volume of said second part to be added to the tank being equal to or greater than 10 to 1, said first and second parts each having independent usage rates, comprising the steps of:
measuring a parameter of said photosensitive material being processed by said at least one processing tank, said parameter being representative of the extend of usage of said first and second parts of said processing solution; and
supplying said first and second parts independently in accordance with said parameter.

5,616,453
SILVER HALIDE LIGHT-SENSITIVE COLOR PHOTOGRAPHIC MATERIAL
Tadanobu Sekiya, and Hideaki Haraga, both of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan
Filed Aug. 25, 1995, Ser. No. 519,343
Claims priority, application Japan, Aug. 30, 1994, 6-205597
Int. Cl.[6] G03C *1/46*
U.S. Cl. 430—504 **9 Claims**

1. A silver halide color photographic light sensitive material comprising a support having thereon a cyan dye-forming red-sensitive silver halide emulsion layer, a magenta dye-forming green-sensitive silver halide emulsion layer and a yellow dye-forming blue-sensitive silver halide emulsion layer, wherein parameter μ as defined below satisfies the following relation (1), when said photographic material is processed after being subjected to treatment (a) or (b) as specified below:

$$\mu \leq 0.05 \quad (1)$$

Treatment (a)
1) prior to exposure, a photographic material is aged for 3 weeks under the condition of a temperature of 45° C. and a relative humidity of 40%;
2) exposed, for 1/200 second and through an optical wedge, to light source having a clor temperature of 5500K; and
3) aged for 4 weeks under the condition of a temperature of 40° C. and a relative humidity of 20%;

Treatment (b)
1) the photographic material is exposed, for 1/200 seconds and through an optical wedge, to light source having a color temperature of 5500K;

Definition of parameter μ
1) based on each of yellow, magenta and cyan color density characteristic curves (D-log E) of the photographic material processed after being subjected to treatment (b), are determined yellow, magenta and cyan minimum densities, Dmin (Y), Dmin (M) and Dmin (C);
2) in a range from an exposure amount of log E_0 which gives a density of the minimum density+0.15 on each of the characteristic curves to an exposure amount of log E_5, exposure amounts of log Ei (i=0, 1, 2, 3, 4 and 5) taken by an increment of 0.5 log E unit are determined for each of yellow, magenta and cyan characteristic curves;
3) densities D_{ai} (Y), D_{ai} (M) and D_{ai} (C), which are densities corresponding to the exposure amount of log E_i on each of yellow, magenta and cyan color density characteristic curves of the color photographic material processed after being subjected to treatment (a) and densities D_{bi} (Y), D_{bi} (M) and D_{bi} (C), which are densities corresponding to the exposure amount of log E_i on each of yellow, magenta and cyan color density characteristic curves of the color photographic material processed after being subjected to treatment (b) are respectively determined;
4) a difference between D_{ai} and D_{bi} is determined with respect to each of yellow, magenta and cyan, and a three dimentional vector t(i) having the diference as a component is expressed as t(i),

$$t(i)=\{D_{ai}(Y)-D_{bi}(Y),\ D_{ai}(M)-D_{bi}(M),\ D_{ai}(C)-D_{bi}(C)\}$$

$$(i=0, 1, 2, 3, 4, 5)$$

5) a difference between t(i) and t(i+1) is expressed as μ(i),

$$\mu(i)=t(i+1)-t(i)$$

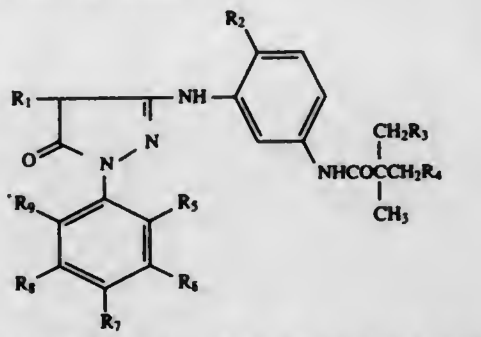
$$(i=0, 1, 2, 3, 4)$$

and among these μ(i)s, a vector having a maximum magnitude is expressed as μ(i)max, the magnitude of which is defined as μand wherein at least one of said red-sensitive layer, green-sensitive layer, and blue-sensitive layer comprises at least two silver halide emulsion layers; one of said two silver halide emulsion layers contains internally reduction-sentized silver halide grains and another silver halide emulsion layer contains substantially no internally reduction-sensitized silver halide grains.

5,616,454
SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL
Manabu Kaneko; Shinri Tanaka, and Michiko Nagato, all of Hino, Japan, assignors to Konica Corporation, Japan
Filed Dec. 1, 1995, Ser. No. 565,824
Claims priority, application Japan, Dec. 12, 1994, 6-307644
Int. Cl.[6] G03C *7/38*
U.S. Cl. 430—554 **3 Claims**

1. A silver halide color photographic light-sensitive material comprising a support, provided thereon, a blue-sensitive silver halide emulsion layer, a green-sensitive silver halide emulsion layer and a red-sensitive silver halide emulsion layer, in which said green-sensitive emulsion layer contains a coupler represented by the following Formula I;

Formula I



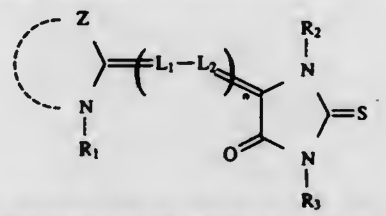
wherein R_1 is a hydrogen atom or a group capable of being released upon reaction with the oxidation product of a color developing agent; R_2 is a chlorine atom or an alkoxyl group; R_3 and R_4 are each independently a hydrogen atom, an alkyl group, an aryl group, an alkoxyl group, an aryloxy group, an acyloxy group, a halogen atom, a hydroxyl group, an amino group, an alkylamino group, an acylamino group or a sulfonamido group, R_3 and R_4 may be linked with together to form a ring, provided that at least one of R_3 and R_4 is a group represented by $—OR_{10}$ or $—OOCR_{11}$ in which R_{10} is a hydrogen atom, an alkyl group, or an aryl group, and R_{11} is an alkyl group or an aryl group; and R_5, R_6, R_7, R_8 and R_9 are each a halogen atom.

5,616,455
METHOD OF PREPARATION OF A MONODISPERSED TABULAR SILVER HALIDE GRAIN EMULSION
Martin D. Murphy, Savona, Italy, assignor to Imation Corp., Woodbury, Minn.
Filed Feb. 22, 1996, Ser. No. 605,574
Claims priority, application European Pat. Off., Mar. 29, 1995, 95104630
Int. Cl.[6] G03C *1/015*
U.S. Cl. 430—569 **9 Claims**

1. Method for the preparation of a tabular silver halide grain emulsion, wherein said silver halide emulsion comprises tabular grains having a thickness lower than 0.5 μm and an average aspect ratio of at least 2:1 accounting for at least 50% of the total projected area, and shows a coefficient of variation lower than 30%, said method comprising the following steps:
(a) forming silver halide nuclei by adding from 5% to 15% by weight of total silver nitrate to a reaction vessel comprising a dispersing medium and bromide aqueous solution at a pBr ranging from 0 to 2 and a pH ranging from 2 to 5
(b) performing a first addition of a silver halide solvent after at least 50% by weight of silver nitrate used during nucleation has been added
(c) ripening the silver halide nuclei
(d) growing said silver halide nuclei by double jet addition of a soluble silver salt and a soluble bromide salt aqueous solutions at pBr between 1 and 2 to obtain tabular silver halide grains
(e) adjusting the pBr to a value ranging from 4.5 to 7 by single jet addition of a soluble silver salt aqueous solution
(f) performing a second addition of silver halide solvent
(g) thickening said tabular silver halide grains by double jet addition of a soluble silver salt and a soluble bromide salt aqueous solutions at pBr between 1.0 and 3.0.

5,616,456
SILVER HALIDE PHOTOGRAPHIC MATERIAL
Toyohisa Oya, and Takahiro Goto, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Feb. 21, 1996, Ser. No. 604,480
Claims priority, application Japan, Feb. 22, 1995, 7-034029
Int. Cl.[6] G03C *1/22*
U.S. Cl. 430—581 **5 Claims**

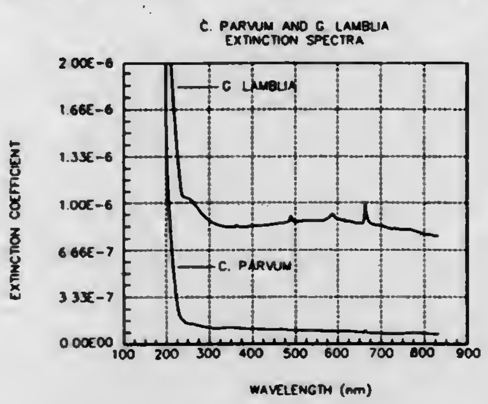
1. A silver halide photographic material comprising at least one of compounds represented by general formula (I):



(I)

wherein Z represents a group of atoms necessary to form a five- or six-membered nitrogen-containing heterocyclic ring; R_1 represents an alkyl group; R_2 represents a hydrogen atom, an alkyl group, an alkenyl group, an aryl group, or a heterocyclic group; R_3 represents a pyrazinyl group; L_1 and L_2 each represents a methine group; and n represents 0 or an integer of 1 to 3.

5,616,457
METHOD AND APPARATUS FOR THE DETECTION AND CLASSIFICATION OF MICROORGANISMS IN WATER
Luis H. García-Rubio, Temple Terrace, Fla., assignor to University of South Florida, Tampa, Fla.
Filed Feb. 8, 1995, Ser. No. 385,539
Int. Cl.[6] C12Q *1/00;1/04;1/02;* **G01N** *31/00*
U.S. Cl. 435—4 **8 Claims**



1. A method for detecting the presence of an microorganism in a sample of liquid, the method comprising the steps of:
collecting an extinction spectrum over a predetermined range of wavelengths of the sample of liquid;
deconvoluting the spectrum to obtain a particle size distribution for the sample;
comparing the spectrum and the particle size distribution with, respectively, a control spectrum and a control particle size distribution for the microorganism; and
determining from the comparisons whether the microorganism to be detected is present in the sample.

5,616,458
***TRIPTERYGIUM WILFORDII* HOOK F EXTRACTS AND COMPONENTS, AND USES THEREOF**
Peter E. Lipsky; Xue-Lian Tao; Jian Cai, all of Dallas, Tex.; William J. Kovacs, and Nancy J. Olsen, both of Nashville, Tenn., assignors to Board of Regents, University of TX System, Austin, Tex.
Continuation-in-part of Ser. No. 168,980, Dec. 17, 1993, which is a continuation-in-part of Ser. No. 862,836, Apr. 3, 1992, Pat. No. 5,294,443, which is a continuation-in-part of Ser. No. 494,113, Mar. 14, 1990, abandoned. This application May 31, 1995, Ser. No. 455,906
Int. Cl.[6] C12Q *1/00;* **G01N** *33/53;* **A61K** *31/74;35/78*
U.S. Cl. 435—4 **6 Claims**

1. A method of screening for a candidate substance having binding affinity for a glucocorticoid receptor comprising:
admixing a candidate substance with a glucocorticoid receptor in the presence of TwHF preparation or a glucocorticoid receptor binding component thereof; and
determining binding of the candidate substance to the glucocorticoid receptor.

5,616,459
SELECTION OF RIBOZYMES THAT EFFICIENTLY CLEAVE TARGET RNA
Fred R. Kramer, Riverdale; David Dubnau; Karl A. Drlica, both of New York, and Abraham Pinter, Brooklyn, all of N.Y., assignors to The Public Health Research Institute of the City of New York, Inc., New York, N.Y.
Continuation of Ser. No. 553,729, Jul. 16, 1990, abandoned. This application Aug. 18, 1992, Ser. No. 931,560
Int. Cl.[6] C12Q *1/70;1/68;* **C07H** *21/02*
U.S. Cl. 435—5 **55 Claims**

1. A method for screening hammerhead or hairpin ribozymes for effectiveness in cleaving RNA comprising
a) creating a plurality of vectors encoding ribozymes specific for a single target RNA sequence and having differing catalytic domain sequences, which ribozymes are to be screened for effectiveness in cleaving RNA containing the target RNA sequence;
b) providing bacterial cells that possess RNA containing the target RNA sequence and that, when the RNA is cleaved in sufficient quantity by one of the ribozymes, survive in a preselected culture medium;
c) transforming the cells with the vectors;
d) culturing the cells in the preselected culture medium under conditions wherein the ribozymes are expressed; and
e) selecting cells which survive.

5,616,460
BUFFER COMPOSITION FOR REAGENTS FOR IMMUNOASSAY
Steve D. Figard, Zion, Ill., assignor to Abbott Laboratories, Abbott Park, Ill.
Filed Jun. 7, 1995, Ser. No. 482,710
Int. Cl.[6] C12Q *1/70;* **G01N** *33/53;33/543;33/544*
U.S. Cl. 435—5 **24 Claims**

1. An aqueous composition suitable for stabilizing the immunoreactivity of hepatitis C virus antigens of the NS3 region of the viral genome under heat stress conditions, said composition comprising:

at least one biological buffer in a concentration sufficient to maintain the pH at a level below about 7.2;

dithiothreitol in a concentration sufficient to protect sulfhydryl groups of said hepatitis C virus antigens of the NS3 region of the viral genome under heat stress conditions; and

ethylene glycol in a concentration sufficient to preserve the binding capacity of antibodies to said hepatitis C virus antigens of the NS3 region of the viral genome under heat stress condition; wherein said composition has a pH of below about 7.2.

5,616,461

ASSAY FOR ANTIVIRAL ACTIVITY USING COMPLEX OF HERPESVIRUS ORIGIN OF REPLICATION AND CELLULAR PROTEIN

Priscilla A. Schaffer, Holliston, and Christine E. Dabrowski Amaral, Plymouth, both of Mass., assignors to Dana-Farber Cancer Institute, Boston, Mass.

Filed May 14, 1992, Ser. No. 882,838

Int. Cl.[6] C12Q *1/68;1/70*

U.S. Cl. 435—6 **2 Claims**

SITE I GCGTTCGCACTTCGTCCCAAT

SITE II GTGCTCGCACTTCGCCCTAAT

SITE III GCGTTCTCACTTCTTTTACCC

1. A method of screening a candidate compound for antiviral activity, said method comprising

combining in the presence or absence of a candidate compound a DNA comprising a herpesvirus origin of DNA replication and a cell extract comprising a cellular protein capable of binding to SEQ ID NO:49 under conditions sufficient to form an M-like complex, provided that said cellular protein is not a DNA polymerase; and

determining whether the level of formation of said M-like complex is lower in the presence of said candidate compound than in the absence of said candidate compound, a lower level in the presence of said candidate compound being an indication that said candidate compound possesses antiviral activity.

5,616,462

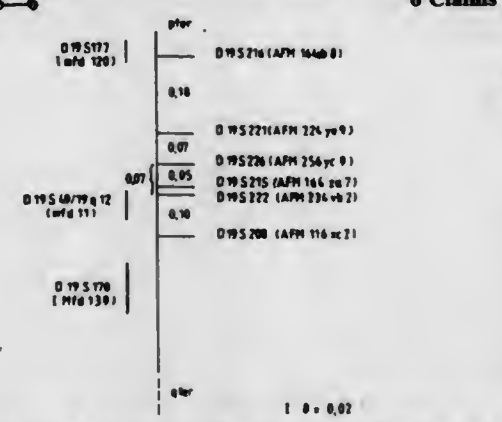
METHOD FOR THE DIAGNOSIS OF CADASIL

Anne M. G. Joutel; Marie-Germaine M. Bousser, and Elisabeth A. Tournier-Lasserve, all of Paris, France, assignors to L'Assistance Publique—Hospitaux de Paris, Paris, France

Filed Feb. 28, 1994, Ser. No. 202,920

Int. Cl.[6] C12Q *1/68;* **C12P** *19/34;* **C07H** *21/02;21/04*

U.S. Cl. 435—6 **6 Claims**



1. Method for the genotypic diagnosis of the presence of a mutated gene causing cerebral autosomal dominant arteriopathy with subcortical infarcts and leukoencephalopathy (CADASIL) in symptomatic or at risk individuals or feruses belonging to a family suspected of carrying said mutated gene comprising:

a) detecting the presence or absence of DNA polymorphisms genetically linked to the mutated gene causing CADASIL wherein said polymorphisms are located in the genetic interval of chromosome 19 flanked by and including the polymorphic microsatellite markers D19S221 and D19S215;

b) determining the risk to the individual or fetus of carrying said mutated gene based on the presence or absence of said polymorphisms thereby providing a genotypic diagnosis for CADASIL.

5,616,463

METHODS FOR DETERMINING THE PRESENCE OF FUNCTIONAL P53 IN MAMMALIAN CELLS

Albert J. Fornace, Jr., Bethesda, and Michael B. Kastan, Owings Mill, both of Md., assignors to The United States of America as represented by the Secretary Department of Health and Human Services, Washington, D.C., and Johns Hopkins University, Baltimore, Md.

Continuation of Ser. No. 974,960, Nov. 12, 1992, abandoned. This application Aug. 10, 1994, Ser. No. 288,872

Int. Cl.[6] C12Q *1/68;* **C07H** *21/02*

U.S. Cl. 435—6 **12 Claims**

1. A method for determining the presence of functional p53 in mammalian cells by measuring GADD45 mRNA expression, said method comprising the steps of

(a) stimulating the mammalian cells with ionizing radiation or with a radiomimetic compound to increase GADD45 mRNA expression; and

(b) comparing the level of GADD45 mRNA in said stimulated cells to the level of GADD45 mRNA in unstimulated cells.

5,616,464

NUCLEIC ACID SEQUENCE DETECTION EMPLOYING AMPLIFICATION PROBES

David Albagli, Palo Alto; Reuel VanAtta, Mountain View, and Michael Wood, Palo Alto, all of Calif., assignors to NAXCOR, Menlo Park, Calif.

Filed Dec. 27, 1994, Ser. No. 364,339

Int. Cl.[6] C12Q *1/68;* **C12P** *19/34;* **C07H** *21/04;* **C12N** *15/00*

U.S. Cl. 435—6 **22 Claims**

1. A method for detecting a target nucleic acid sequence in a sample, said method employing at least one pair of probes characterized by having sequences homologous to adjacent portions of said target nucleic acid sequence and having nucleic acid side chains which non-covalently bind to form a stem upon base pairing of said probes to said target nucleic acid sequence, at least one of said side chains having a photoactivatable group bonded to a difunctional molecule other than a nucleotide in said nucleic acid side chain which photoactivatable group upon photoactivation during stem formation forms a covalent cross-link with the other side chain member of said stem, said method comprising:

combining said sample with said pair of probes under conditions of base pairing between said probes and said target nucleic acid, whereby probes binding to said target nucleic acid form said stem;

photoactivating said photoactivatable group, whereby a covalent cross-link occurs between said side chain members of said stem;

amplifying the amount of cross-linked probes by performing the following steps 1–3 at least once:

(1) melting double stranded nucleic acid;

(2) incubating for sufficient time under hybridization conditions for base pairing between homologous sequences to occur; and

(3) photoactivating said photoactivatable group, whereby a cross-link occurs between said side chain members of said stem; and

detecting the presence of cross-linked pairs of probes as indicative of the presence of said target sequence in said sample.

5,616,465

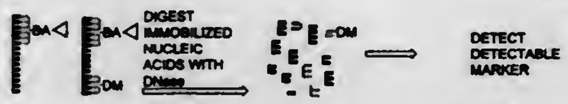
DETECTION AND ISOLATION OF NUCLEIC ACID SEQUENCES USING COMPETITIVE HYBRIDIZATION PROBES

Joe N. Lucas, San Ramon; Tore Straume, Tracy, and Kenneth T. Bogen, Walnut Creek, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Aug. 9, 1995, Ser. No. 512,897

Int. Cl.[6] C12Q *1/68;1/70;* **C12P** *19/34;* **C07H** *21/04*

U.S. Cl. 435—6 **12 Claims**



1. A method for detecting a target nucleic acid sequence in a sample, the method comprising:

hybridizing a target nucleic acid sequence to a first hybridization probe which is sufficiently complementary to specifically hybridize to a first portion of the target sequence and a second hybridization probe which is sufficiently complementary to specifically hybridize to a second portion of the target sequence, the first portion including at least one nucleotide of the second portion, the first hybridization probe including a first complexing agent capable of forming a binding pair with a second complexing agent and the second hybridization probe including a detectable marker;

contacting the first complexing agent attached to the first hybridization probe with a second complexing agent, the second complexing agent being attached to a solid support such that when the first and second complexing agents are attached, target nucleic acid sequences hybridized to the first hybridization probe become immobilized on to the solid support;

separating the immobilized target nucleic acids from non-immobilized target nucleic acids; and

detecting the immobilized target nucleic acids by detecting the detectable marker attached to the second hybridization probe.

5,616,466

RIBOZYME-MEDIATED INHIBITION OF BOVINE LEUKEMIA VIRUS

Glenn H. Cantor, NW. 517 Sunset, and Guy H. Palmer, NW. 815 Fisk, both of Pullman, Wash. 99163

Continuation of Ser. No. 148,208, Nov. 5, 1993, abandoned. This application Aug. 28, 1995, Ser. No. 520,226

Int. Cl.[6] C12Q *1/68;* **C12N** *15/85;* **C07H** *21/04;* **A61K** *48/00*

U.S. Cl. 435—6 **6 Claims**

1. A nucleic acid encoding a ribozyme wherein the nucleic acid has a sequence as set forth in SEQ ID No. 2.

5,616,467

METHOD AND KIT FOR ANALYTE DETECTION EMPLOYING GOLD-SOL BOUND ANTIBODIES

Egil Olsen, Strommen, and Ørjan Olsvik, Oslo, both of Norway, assignors to Nycomed AS, Norway

Division of Ser. No. 895,244, Jun. 5, 1992, which is a continuation of Ser. No. 536,609. This application Jun. 2, 1995, Ser. No. 458,115

Claims priority, application United Kingdom, Jan. 13, 1988, 8800702

Int. Cl.[6] G01N *33/53;33/567;33/543;33/552*

U.S. Cl. 435—7.2 **11 Claims**

1. A method for the qualitative or quantitative determination of an analyte in a test sample wherein a reagent comprising a gold sol bound to a substance capable of specifically binding to said analyte or to a specific binding partner therefor, is caused to be immobilized in bound form on a membrane support to provide an indication of the presence or quantity of the analyte in the sample by detection of the presence of intensity of color of immobilized gold sol, wherein an absorbent pad is located on said membrane support, a liquid impermeable sheet is located on the face of said absorbent pad remote from said membrane support, and a liquid impermeable sheet having one or more holes therein is located on the face of said membrane support remote from said absorbent pad, whereby the test sample and reagent are applied successively to one of said holes and are caused to diffuse transversely through said membrane support by absorption into said absorbent pad, and at least 75% by weight of the gold particles of the gold sol have a mean diameter of less than 5 nanometers and not less than 3 nanometers with the provision that the analyte and the substance capable of specifically binding to the analyte are an antigen/antibody or hapten/antibody pair.

5,616,468

COMPOSITIONS AND DIAGNOSTIC METHODS USING MONOCLONAL ANTIBODIES AGAINST CD44V6

Marko Salmi, Vähä-Hämeenkatu 12 aB 30, 20500 Turku, and Sirpa Jalkanen, Rauvolantie 112, 20760 Piispanristi, both of Finland

Continuation of Ser. No. 78,063, Jun. 18, 1993, abandoned. This application May 30, 1995, Ser. No. 453,378

Int. Cl.[6] G01N *33/574*

U.S. Cl. 435—7.23 **14 Claims**

1. A monoclonal antibody which binds to a peptide having the amino acid sequence STTEETATQKEQWFGN (SEQ ID No: 10) and to human CD44v6, but does not bind to the 90 kilodalton standard lymphocyte form of human CD44.

4. A method of screening for malignant transformation of cells in a human tissue sample, said method comprising:

a) obtaining said tissue sample to be assayed;

b) determining the levels of CD44v6 present in said tissue sample by reacting said tissue sample with said monoclonal antibody of either of claims 1 or 3;

c) comparing the results obtained in step b) with the results from similar reactions carded out using reference samples wherein said reference samples are of the same tissue type as said tissue sample but are known to be normal; and

d) identifying said malignant transformation of said cells in said tissue by detecting a statistically significant difference between the CD44v6 levels in said

tissue sample and the reference samples.

5,616,469

METHOD FOR ESTIMATING THE BIOLOGICAL POTENTIAL OF A SELECTED CARCINOMA IN A PATIENT

Michael K. Brawer, Mercer Island, Wash., assignor to University of Washington, Seattle, Wash.

Continuation of Ser. No. 351,724, Dec. 7, 1994, which is a continuation of Ser. No. 821,120, Jan. 15, 1992, abandoned. This application Jun. 5, 1995, Ser. No. 462,791

Int. Cl.[6] G01N *33/53;33/574*

U.S. Cl. 435—7.23 **13 Claims**

1. A method for estimating the biologic potential of prostate carcinoma in a patient, comprising:

obtaining a tissue sample of prostate carcinoma from a patient; and

quantifying the vascularity of said tissue sample, and therefrom estimating the biologic potential of said prostate carcinoma.

2. A method according to claim 1 wherein said tissue sample comprises a plurality of needle biopsy specimens.

5,616,470

MONOCLONAL ANTIBODIES TO WHITE PINE BLISTER RUST FUNGUS *CRONARTIUM RIBICOLA*

Abul K. M. Ekramoddoullah, and Douglas Taylor, both of Victoria, Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of Natural Resources Canadian Forest Service, Ottawa, Canada

Filed Jan. 30, 1996, Ser. No. 594,034

Int. Cl.[6] G01N *33/53;33/569*

U.S. Cl. 435—7.31 **3 Claims**

1. A hybridoma which produces a monoclonal antibody which reacts specifically with *Cronartium ribicola* wherein the hybridoma is ATCC HB-12029 or ATCC HB-12030.

5,616,471

EFFECTS OF GROWTH FACTORS ON HAIR FOLLICLE CELL PROLIFERATION AND RELEASE OF COLLAGENOLYTIC FACTORS

Stuart H. Yuspa, Bethesda, Md., assignor to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation-in-part of Ser. No. 48,537, May 6, 1987. This application Feb. 4, 1991, Ser. No. 650,572

Int. Cl.[6] A01N *1/02;* C12N *5/00;* A61K *38/00;* C07K *1/00*

U.S. Cl. 435—29 **27 Claims**

1. A method for determining hair follicle cell proliferation in response to a chemical agent comprising the steps of:

i) isolating hair follicles from dermis;

ii) plating a layer of semi-solid medium on a support;

iii) mixing said follicles with a semi-solid medium, and plating said mixture over the layer of step (ii), thereby creating a three-dimensional culture system;

iv) adding a chemical agent to a liquid medium placed over the semi-solid medium of step (iii);

v) pulsing said three-dimensional culture system with a radio-labeled compound or reagent which can detect DNA synthesis;

vi) releasing cells from said follicles from the layer in which they are embedded, by enzymatic digestion; and

vii) measuring the amount of cellular proliferation by determining the amount of said radio-labeled compound or reagent incorporated into the DNA of said cells.

5,616,472

PROCESS FOR PRODUCING MONOCLONAL ANTIBODIES AGAINST HUMAN T CELL RECEPTOR ELEMENTS USING RECOMBINANT DNA VECTORS, AND CELLS TRANSFECTED THEREBY

Yongwon Choi; John Kappler, and Philippa Marrack, all of Denver, Colo., assignors to National Jewish Center for Immunology and Respiratory Medicine, Denver, Colo.

Continuation of Ser. No. 565,439, Aug. 9, 1990, abandoned. This application Jul. 21, 1994, Ser. No. 278,629

Int. Cl.[6] C12P *21/04;21/06;* C12N *15/00;5/00*

U.S. Cl. 435—69.1 **8 Claims**

1. A process for producing a monoclonal antibody which specifically binds to a human T cell Vβ element, comprising:

(i) transfecting a T cell hybridoma cell, said cell not expressing the T cell receptor β-chain, with a chimeric DNA molecule, said DNA molecule comprising a nucleic acid sequence encoding a human Vβ element and non-human nucleic acid sequences coding for the remaining elements of the T cell receptor β chain, wherein said transfected cell expresses a chimeric T cell receptor;

(ii) immunizing a non-human animal with the transfected cell, under conditions favoring production of antibodies to said transformed cell, said non-human animal being the same species as said non-human nucleic acid sequences of said DNA molecule;

(iii) isolating antibody producing cells from said animal;

(iv) fusing said antibody producing cells with an agent to produce immortal, antibody-producing cells; and

(v) screening said immortal, antibody-producing cells to isolate antibodies specific to said human T cell Vβ element.

5,616,473

CLONING AND EXPRESSION OF LIGNINASES

Roberta L. Farrell, Danvers; Paul Gelep, Boston, both of Mass.; Algis Anilionis, Pittsford, N.Y.; Kashayar Javaherian, Lexington, Mass.; Theodore E. Malone, Concord, Mass.; James Rusche, Worcester, Mass.; Bruce A. Sadownick, Waltham, Mass., and Jennifer A. Jackson, Reading, Mass., assignors to Clariant Finance (BVI) Limited, Tortola, Virgin Islands (Br.)

Continuation of Ser. No. 132,618, Oct. 6, 1993, abandoned, which is a continuation of Ser. No. 7,442, Jan. 22, 1993, abandoned, which is a continuation of Ser. No. 838,641, Feb. 20, 1992, abandoned, which is a continuation of Ser. No. 578,964, Sep. 26, 1990, abandoned, which is a continuation of Ser. No. 48,202, May 11, 1987, abandoned, which is a continuation-in-part of Ser. No. 906,853, Sep. 12, 1986, abandoned. This application Aug. 8, 1994, Ser. No. 287,022

Int. Cl.[6] C07H *21/04;* C12N *15/31;15/52;15/81*

U.S. Cl. 435—69.1 **16 Claims**

1. An isolated DNA molecule coding for ligninase protein comprising the following amino acid sequence:

		ALA	THR	CYS	SER	ASN
GLY	LYS	THR	VAL	GLY	ASP	ALA
SER	CYS	CYS	ALA	TRP	PHE	ASP
VAL	LEU	ASP	ASP	ILE	GLN	GLN
ASN	LEU	PHE	HIS	GLY	GLY	GLN
CYS	GLY	ALA	GLU	ALA	HIS	GLU
SER	ILE	ARG	LEU	VAL	PHE	HIS
ASP	SER	ILE	ALA	ILE	SER	PRO
ALA	MET	GLU	ALA	GLN	GLY	LYS
PHE	GLY	GLY	GLY	GLY	ALA	ASP
GLY	SER	ILE	MET	ILE	PHE	ASP
ASP	ILE	GLU	THR	ALA	PHE	HIS
PRO	ASN	ILE	GLY	LEU	ASP	GLU
ILE	VAL	LYS	LEU	GLN	LYS	PRO
PHE	VAL	GLN	LYS	HIS	GLY	VAL
THR	PRO	GLY	ASP	PHE	ILE	ALA
PHE	ALA	GLY	ALA	VAL	ALA	LEU
SER	ASN	CYS	PRO	GLY	ALA	PRO
GLN	MET	ASN	PHE	PHE	THR	GLY
ARG	ALA	PRO	ALA	THR	GLN	PRO
ALA	PRO	ASP	GLY	LEU	VAL	PRO
GLU	PRO	PHE	HIS	THR	VAL	ASP
GLN	ILE	ILE	ASN	ARG	VAL	ASN
ASP	ALA	GLY	GLU	PHE	ASP	GLU
LEU	GLU	LEU	VAL	TRP	MET	LEU
SER	ALA	HIS	SER	VAL	ALA	ALA
VAL	ASN	ASP	VAL	ASP	PRO	THR
VAL	GLN	GLY	LEU	PRO	PHE	ASP
SER	THR	PRO	GLY	ILE	PHE	ASP
SER	GLN	PHE	PHE	VAL	GLU	THR
GLN	LEU	ARG	GLY	THR	ALA	PHE
PRO	GLY	SER	GLY	GLY	ASN	GLN
GLY	GLU	VAL	GLU	SER	PRO	LEU
PRO	GLY	GLU	ILE	ARG	ILE	GLN
SER	ASP	HIS	THR	ILE	ALA	ARG
ASP	SER	ARG	THR	ALA	CYS	GLU
TRP	GLN	SER	PHE	VAL	ASN	ASN
GLN	SER	LYS	LEU	VAL	ASP	ASP
PHE	GLN	PHE	ILE	PHE	LEU	ALA
LEU	THR	GLN	LEU	GLY	GLN	ASP
PRO	ASN	ALA	MET	THR	ASP	CYS
SER	ASP	VAL	ILE	PRO	GLN	SER
LYS	PRO	ILE	PRO	GLY	ASN	LEU
PRO	PHE	SER	PHE	PHE	PRO	ALA
GLY	LYS	THR	ILE	LYS	ASP	VAL
GLU	GLN	ALA.	CYS	ALA	GLU	THR
PRO	PHE	PRO	THR	LEU	THR	THR
LEU	PRO	GLY	PRO	GLU	THR	SER
VAL	GLN	ARG	ILE	PRO	PRO	PRO
PRO	GLY	ALA.				

5,616,474

***K. LACTIS* TRANSALDOLASE GENE PROMOTER AND USE THEREOF**

Monique Bolotin, Gif-sur-Yvette, and Sandrine Menart, Les Ulis, both of France, assignors to Rhone-Poulenc Rorer S.A., Antony, France

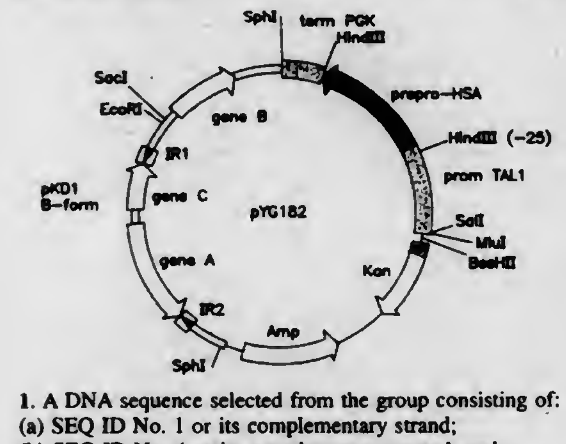
PCT No. PCT/FR93/00771, § 371 Date Feb. 1, 1995, § 102(e) Date Feb. 1, 1995, PCT Pub. No. WO94/03618, PCT Pub. Date Feb. 17, 1994

PCT Filed Jul. 28, 1993, Ser. No. 374,686

Claims priority, application France, Jul. 30, 1992, 92 09432

Int. Cl.[6] C12P *21/00;* C07H *21/04;* C12N *15/63;15/67*

U.S. Cl. 435—69.1 **19 Claims**



1. A DNA sequence selected from the group consisting of:

(a) SEQ ID No. 1 or its complementary strand;

(b) SEQ ID No. 4 or its complementary strand; and

(c) a fragment of (a) or (b); wherein said DNA sequence possesses transcriptional promoter activity.

5,616,475

HUMAN T-CELL LEUKEMIA VIRUS TRANSCRIPTION MODULATORS AND SCREENING ASSAYS

William Wachsman, Encinitas; Tracy Martin, Coronado, and Wolfgang Klump, Del Mar, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Feb. 3, 1995, Ser. No. 383,761

Int. Cl.[6] C12P *21/06;* C12N *1/00;5/10;15/12*

U.S. Cl. 435—69.1 **17 Claims**

1. An isolated nucleic acid encoding at least one polypeptide selected from the group consisting of a small nuclear factor (SNF) exon 1 translation product (SEQ ID NO:3), exon 2 translation product (SEQ ID NO:5), exon 2b translation product (SEQ ID NO:7), exon 3 translation product (SEQ ID NO:9), and exon 4 translation product (SEQ ID NO:11).

5,616,476

SYNTHETIC ISOHIRUDINS WITH IMPROVED STABILITY

Peter Crause, Offenbach am Main; Paul Habermann, Eppstein am Taunus; Dominique Tripier, Eppstein am Taunus; Wolfgang Ulmer, Eppstein am Taunus, and Gerhard Schmid, Müchen, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Continuation of Ser. No. 155,753, Nov. 22, 1993, abandoned, which is a division of Ser. No. 99,053, Jul. 29, 1993, Pat. No. 5,316,947, which is a division of Ser. No. 985,110, Dec. 3, 1992, Pat. No. 5,286,714. This application May 30, 1995, Ser. No. 452,829

Claims priority, application Germany, Dec. 7, 1991, 41 40 381.9

Int. Cl.[6] C12P *21/06;* A61K *38/00;* C07H *19/00;* C12N *5/00*

U.S. Cl. 435—69.1 **2 Claims**

1. A process for the preparation of isohirudins with the following amino acids

Glu at position 33

Gln, Glu, Asn or Asp at position 52

Glu at position 53

Gly or Ala at position 54

Asp or Glu at position 55 (SEQ ID NO. 3),

which comprises separating proteins of a host cell by acid precipitation at a pH ≦4 of a culture solution in the presence of cellular matter, after which the product is prepared with high purity by a successive chromatographic purification which comprises at least one cation exchange chromatography and one reverse-phase chromatography.

5,616,477

FUSION PROTEINS COMPRISING GM-CSF AND ANTIGENS AND THEIR EXPRESSION IN YEAST

Virginia L. Price, Seattle, Wash., assignor to Immunex Corporation, Seattle, Wash.

Continuation of Ser. No. 271,875, Jul. 7, 1994, abandoned. This application May 2, 1996, Ser. No. 641,704

Int. Cl.[6] C12N *1/19;15/27;15/62*

U.S. Cl. 435—69.5 **23 Claims**

1. A DNA encoding a fusion protein that has the biological activity of both GM-CSF and an antigen selected from the group consisting of a tumor antigen, a microbial protein, a viral protein, and a parasite protein, comprising a DNA encoding mature GM-CSF fused to a DNA encoding the antigen, wherein the 3′-end of said GM-CSF DNA is fused to the 5′-end of said antigen DNA.

5,616,478

METHOD FOR AMPLIFICATION OF NUCLEIC ACIDS IN SOLID MEDIA

Alexander B. Chetverin, and Helena V. Chetverina, both of Moskovskaya oblast, Puschino, mikroraion AB, 24, kv.238, Russian Federation

Filed Oct. 26, 1992, Ser. No. 966,713

Int. Cl.[6] C12P *19/34;* C12Q *1/60*

U.S. Cl. 435—91.2 **38 Claims**

1. A method of exponential nucleic acid amplification to form detectable colonies of nucleic acids comprising the steps of

(a) providing an immobilized medium, said medium including

(i) an aqueous liquid phase that includes a cell-free, enzymatic, exponential nucleic acid amplification system; and

(i) a solid, water-insoluble matrix having an average pore size ranging from 100 μm to 5 nm, completely entrapping said liquid phase, and

(b) distributing in said aqueous liquid phase nucleic acid molecules, at least one of which may comprise a template for said amplification system; and

(c) incubating said immobilized medium containing said distributed molecules under conditions promoting synthesis of an exponentially amplified nucleic acid product by said amplification system from said at least one template,

wherein said matrix is stable under said conditions, and wherein said step of distributing separates individual templates, resulting in nucleic acid amplification to form at least one separate, detectable colony of said nucleic acid product in said medium.

5,616,479

METHOD OF PRODUCTION OF SOPHOROSIDES BY FERMENTATION WITH FED BATCH SUPPLY OF FATTY ACID ESTERS OR OILS

Remy Marchal, Chatou; Jeannine Lemal, and Caroline Sulzer, both of Rueil Malmaison, all of France, assignors to Institut Francais du Petrole, Rueil Malmaison, France

PCT No. PCT/FR91/01027, § 371 Date Aug. 19, 1992, § 102(e) Date Aug. 19, 1992, PCT Pub. No. WO92/11381, PCT Pub. Date Jul. 9, 1992

PCT Filed Dec. 17, 1991, Ser. No. 920,575

Claims priority, application France, Dec. 20, 1990, 90 16211

Int. Cl.[6] C12P *19/12;7/42;1/02*

U.S. Cl. 435—100 **23 Claims**

1. In a process for the fed batch production of a composition of sophorosides, comprising culturing a single strain of *Candida bombicola* or *Candida apicola* in a culture medium containing a nitrogen source and a substrate under aerated culturing conditions in a reaction zone, the improvement comprising:

(a) continuously feeding said substrate to the strain in the reaction zone at a flow rate of between 0.01 and 4 grams of substrate per hour and per liter of initial reaction volume, and maintaining the residual concentration of said substrate in the reaction zone at a concentration not exceeding 18 gram per liter of initial reaction volume while said substrate is being continuously fed to the reaction zone,

(b) recovering the resultant composition of sophorosides,

wherein said substrate is at least one of an animal oil, a vegetable oil, or an ester of said animal or vegetable oil, said animal or vegetable oil or said ester comprising an aliphatic, straight chain with 10 to 24 carbon atoms.

5,616,480

TEMPERATURE SENSITIVE PLASMID

Masakazu Sugimoto; Hiroyuki Kojima; Akiko Tanaka; Hiroshi Matsui; Katsuaki Sato, and Tsuyoshi Nakamatsu, all of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Continuation of Ser. No. 182,361, Jan. 18, 1994, abandoned, which is a continuation of Ser. No. 774,846, Oct. 11, 1991, abandoned. This application Mar. 22, 1995, Ser. No. 408,188

Claims priority, application Japan, Oct. 15, 1990, 2-273348; Jun. 19, 1991, 3-245291

Int. Cl.[6] C12N *15/77;15/63;1/20;* **C12P** *13/08*

U.S. Cl. 435—172.3 **10 Claims**

1. A method for integrating a desired genetic fragment into a chromosome of coryneform bacteria by homologous recombination, which comprises:

transforming said coryneform bacteria with a plasmid having a temperature-sensitive replication origin derived from plasmid pHSC4, pHSC22 or pHSC23 and the following properties:

a) capable of autonomous replication in said coryneform bacteria and being retained in said coryneform bacteria,

b) when a cell containing said plasmid is cultured at 31° to 34° C., replication of the plasmid is inhibited and the plasmid is expelled from the cell,

c) said plasmid has a genetic fragment homologous to a genetic sequence present on the chromosome of Corynebacterium;

wherein said transforming is performed under conditions which allow said plasmid to be retained in said coryneform bacteria; culturing at 31° to 34° C.; and selecting a strain from which said plasmid has been removed thereby; thereby integrating into the chromosome a genetic fragment homologous to a genetic sequence present on the chromosome of said coryneform bacteria.

5,616,481

KAINATE-BINDING HUMAN CNS RECEPTORS OF THE EAA1 FAMILY

Rajender Kamboj, Mississauga; Stephen L. Nutt, Etobicoke; Lee Shekter, Toronto, and Michael A. Wosnick, Thornhill, all of Canada, assignors to Allelix Biopharmaceuticals Inc., Mississauga, Canada

Continuation of Ser. No. 91,441, Jul. 15, 1993, abandoned, which is a division of Ser. No. 750,090, Aug. 26, 1991, abandoned. This application Apr. 3, 1995, Ser. No. 416,523

Int. Cl.[6] C07K *14/705;* **C12N** *5/10;15/09;15/12*

U.S. Cl. 435—172.3 **15 Claims**

1. A method of assaying a candidate ligand compound for binding affinity to a human EAA receptor, which comprises the steps of incubating a labelled form of said compound with a cell or with a membrane preparation derived from a cell, said cell having incorporated expressibly therein a heterologous DNA molecule that encodes a human EAA1 receptor selected from the group consisting of:

an EAA1a receptor having the amino acid sequence of residues 1-936 of SEQ ID NO: 2 with a valine residue at amino acid position 508;

an EAA1b receptor having the amino acid sequence of residues 1-936 of SEQ ID NO: 2;

an EAA1c receptor wherein the polynucleotide coding therefor includes nucleotides 216 to 3023 of of SEQ ID NO: 1, or degenerate codon equivalents thereof, in which nucleotides 1427–1450 are deleted and the codon at position 1713 encodes isoleucine; and

an EAA1d receptor, wherein the olynucleotide coding therefor includes nucleotides 216–3023 of SEQ ID NO: 1, or degenerate codon equivalents thereof, in which nucleotides 1412–1460 are replaced by SEQ ID NO: 13;

washing unbound ligand compound from the incubation mixture, and then determining the presence of membrane-bound ligand compound.

5,616,482

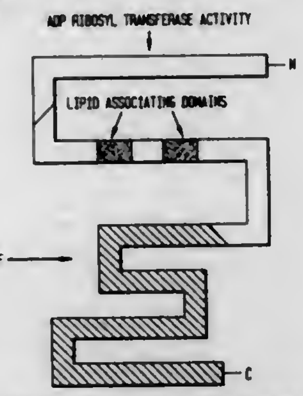
CHIMERIC TOXINS

Diane Williams, 22 Danforth Way, Franklin, Mass. 02038

Continuation of Ser. No. 886,715, May 21, 1992, abandoned, which is a continuation of Ser. No. 537,430, Jun. 13, 1990, abandoned, which is a continuation-in-part of Ser. No. 488,608, Mar. 2, 1990, abandoned. This application Apr. 22, 1994, Ser. No. 231,397

Int. Cl.[6] C12N *9/12;* **C07K** *14/34;14/52*

U.S. Cl. 435—194 **33 Claims**



1. A chimeric toxin which binds selectively to a predetermined class of cells, comprising protein fragments joined together by peptide bonds, said chimeric toxin comprising, sequentially from N-terminus to C-terminus,

(a) a first fragment which is the enzymatically active fragment A of native diphtheria toxin and the 1_1 cleavage domain of native diphtheria toxin;

(b) a second fragment comprising at least a portion of the hydrophobic transmembrane region of native diphtheria toxin effective to deliver said fragment A into the cytosol of the predetermined class of cells;

(c) a third fragment comprising the sequence of native diphtheria toxin fragment B amino acids C-terminal to the hydrophobic transmembrane region of native diphtheria toxin which is amino acids 372–535, minus the generalized eucaryotic binding domain of native diphtheria toxin which is amino acids 486–535, and minus the 1_2 cleavage domain of native diphtheria toxin which are amino acids 461–471, and further minus at least 50 native diphtheria toxin amino acids between amino acid residue 386 of native diphtheria toxin and the generalized eucaryotic binding site of native diphtheria toxin, provided that the 1_2 domain and the at least 50 amino acids deleted total no more than 99 amino acids; and

(d) a fourth fragment comprising at least a portion of the binding domain of a cell-specific polypeptide ligand effective to cause said chimeric toxin to bind selectively to the predetermined class of cells which bear a receptor to the ligand;

wherein said chimeric toxin possesses greater toxicity to the predetermined class of cells than that of a toxin comprising DAB_{486} fused to said fourth fragment.

5,616,483

GENOMIC DNA SEQUENCES ENCODING HUMAN BSSL/CEL

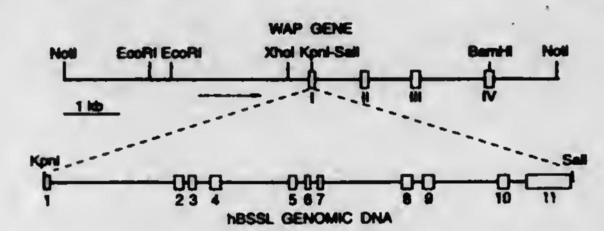
Karl G. Bjursell, Partille; Peter N. I. Carlsson, Göteborg; Curt S. M. Enerbäck, Mölndal; Stig L. Hansson, Umeå ; Ulf F. P. Lidberg; Jeanette A. Nilsson, both of Göteborg, and Jan B. F. Törnell, Västra Frölunda, all of Sweden, assignors to Aktiebolaget Astra, Sodertalje, Sweden

Filed May 27, 1993, Ser. No. 68,945

Claims priority, application Sweden, Jun. 11, 1992, 9201809; Jun. 12, 1992, 9201826; Jul. 3, 1992, 9202088; Mar. 19, 1993, 9300902

Int. Cl.[6] C12N *5/10;15/55;15/63;* **C12P** *21/00*

U.S. Cl. 435—198 **7 Claims**



1. An isolated genomic DNA molecule encoding for biologically functional human bile salt stimulated lipase/carboxylic ester lipase (BSSL/CEL).

5,616,484

CLONING AND EXPRESSION OF THE APALI RESTRICTION ENDONUCLEASE

Shuang-yong Xu, Lexington, Mass., assignor to New England Biolabs, Inc., Beverly, Mass.

Filed May 24, 1995, Ser. No. 448,744

Int. Cl.[6] C12N *9/22;15/55*

U.S. Cl. 435—199 **7 Claims**

1. Isolated DNA coding for the ApaLI restriction endonuclease, wherein the isolated DNA is obtainable from *Acetobacter pasteurianus.*

5,616,485

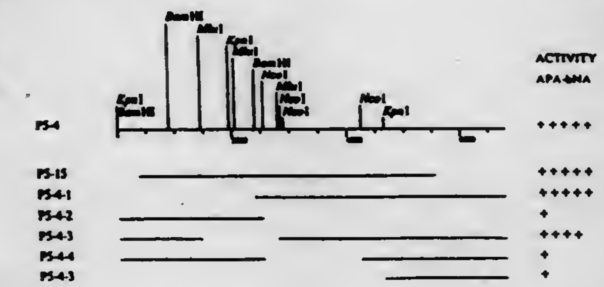
STREPTOMYCES PROTEASES AND IMPROVED STREPTOMYCES STRAINS FOR EXPRESSION OF PEPTIDES AND POLYPEPTIDES

Dany Hadary, Richmond Hill; Daniel Bartfeld, North York; Michael J. Butler, Beeton; David Jenish, Mississauga; Timothy Krieger, Brampton; Lawrence T. Malek, Brampton; Gisela Soostmeyer, Kleinburg, and Eva Walcyzk, Mississauga, all of Canada, assignors to Cangene Corporation, Mississauga, Canada

Filed Dec. 23, 1993, Ser. No. 173,508

Int. Cl.[6] C12N *9/52;15/31;15/57;15/76*

U.S. Cl. 435—220 **9 Claims**



3. An isolated mutated nucleotide molecule encoding an inactivated protease, wherein said mutated nucleotide molecule has a mutation that inactivates a protease encoded by a nucleotide sequence selected from the group consisting of SEQ ID NO:1, SEQ ID NO:3, SEQ ID NO:5, and SEQ ID NO:7, and wherein said mutation is selected from the group consisting of one or more nucleotide substitutions, one or more nucleotide deletions and both one or more nucleotide substitutions and one or more nucleotide deletions.

5,616,486

TISSUE PLASMINOGEN ACTIVATOR HAVING ZYMOGENIC OR FIBRIN SPECIFIC PROPERTIES

Stephen Anderson, Princeton, N.J.; William F. Bennett, San Mateo; David Botstein, Belmont; Deborah L. Higgins, San Mateo; Nicholas F. Paoni, Moraga, and Mark J. Zoller, San Francisco, all of Calif., assignors to Genentech, Inc., San Francisco, Calif.

Division of Ser. No. 179,059, Jan. 7, 1994, Pat. No. 5,411,871, which is a continuation of Ser. No. 88,451, Jul. 6, 1993, Pat. No. 5,520,913, which is a division of Ser. No. 770,510, Oct. 3, 1991, Pat. No. 5,262,170, which is a continuation of Ser. No. 384,608, Jul. 24, 1989, Pat. No. 5,108,901, which is a continuation-in-part of Ser. No. 240,856, Sep. 2, 1988, abandoned. This application Apr. 14, 1995, Ser. No. 422,736

Int. Cl.[6] C12N *1/21;5/10;9/64;15/55*

U.S. Cl. 435—226 **11 Claims**

1. An isolated DNA molecule encoding a human tissue plasminogen activator (t-PA) variant having an alanine substituted at each of amino acid positions 296, 297, 298 and 299 of native human t-PA, having an N-linked glycosylation within its growth factor domain that is not present in native human t-PA, and substituted at a known glycosylation site of native human t-PA to eliminate said glycosylation site, said variant having increased fibrin-specificity or plasma clot specificity as compared to native human t-PA.

5,616,487

STABILIZED RETROVIRUS COMPOSITIONS

Bernhard O. Palsson, and Timothy M. Eisfeld, both of Ann Arbor, Mich., assignors to Aastrom Biosciences, Inc., Ann Arbor, Mich.

Filed Sep. 15, 1994, Ser. No. 307,862

Int. Cl.[6] C12N *7/01;5/10*

U.S. Cl. 435—235.1 **15 Claims**

1. A stabilized retrovirus composition comprising a retrovirus and an α-hydro-ω-hydroxypoly(oxyethylene)poly(oxypropylene)poly(oxyethylene) block copolymer.

5,616,488

IL-5 TARGETED RIBOZYMES

Sean Sullivan, Alameda, Calif.; Kenneth G. Draper, Boulder, Colo.; James McSwiggen, Boulder, Colo., and Dan T. Stinchcomb, Boulder, Colo., assignors to Ribozyme Pharmaceuticals, Inc., Boulder, Colo.

Continuation-in-part of Ser. No. 989,849, Dec. 7, 1992, abandoned, and Ser. No. 8,895, Jan. 19, 1993, abandoned. This application Oct. 7, 1994, Ser. No. 319,492

Int. Cl.[6] C12N *15/05;* **C12Q** *1/68;* **A61K** *48/00*

U.S. Cl. 435—366 **22 Claims**

1. An enzymatic RNA molecule which specifically cleaves IL-5 mRNA.

9. A mammalian cell including an enzymatic RNA molecule of any of claims 1–8 in vitro.

10. The cell of claim 9, wherein said cell is a human cell.

5,616,489

DNA SEQUENCE WHICH BINDS TRANSCRIPTIONAL REGULATORY PROTEINS ACTIVATED IN RESPONSE TO VARIOUS CYTOKINES AND USES THEREOF

David E. Levy, New York, N.Y., assignor to New York University, New York, N.Y.

Continuation of Ser. No. 121,931, Sep. 15, 1993, abandoned. This application Feb. 24, 1995, Ser. No. 394,191

Int. Cl.[6] C07H *21/04*

U.S. Cl. 435—325 **17 Claims**

1. An oligonucleotide having between 11 and about 150 nucleotides which binds to transcriptional regulatory protein p91, or which binds to a protein to which p91 is bound, which oligonucleotide comprises the nucleotide sequence TTTCCNGGAAA (SEQ ID NO:1), with the proviso that, when said oligonucleotide is single stranded, said oligonucleotide is not GTTCGAGAGACTTTTCCAGGAAAGACTGC.

5,616,490

RIBOZYMES TARGETED TO TNF-α RNA

Sean M. Sullivan, and Kenneth G. Draper, both of Boulder, Colo., assignors to Ribozyme Pharmaceuticals, Inc., Boulder, Colo.

Continuation of Ser. No. 8,895, Jan. 19, 1993, abandoned, which is a continuation-in-part of Ser. No. 989,849, Dec. 7, 1992, abandoned. This application May 4, 1995, Ser. No. 434,503

Int. Cl.[6] C07H *21/04;* **A61K** *48/00;* **C12N** *15/85*

U.S. Cl. 435—366 **8 Claims**

1. An enzymatic RNA molecule which specifically cleaves mRNA produced from the gene encoding tumor necrosis factor-α.

6. A mammalian cell in vitro including an enzymatic RNA molecule of claim 1.

7. The cell of claim 6, wherein said cell is a human cell.

5,616,491

KNOCKOUT MICE

Tak W. Mak, Toronto, Canada, and Craig B. Thompson, 1375 E. 57th St., Chicago, Ill. 60637, assignors to Ontario Cancer Institute, Toronto, Canada, and Craig B. Thompson, Chicago, Ill.

Continuation of Ser. No. 67,767, May 26, 1993, abandoned. This application Sep. 14, 1995, Ser. No. 528,363

Int. Cl.[6] C12N *5/00;15/00*

U.S. Cl. 435—354 **3 Claims**

1. A DNA construct comprising intron 1 and exon 2 of a mouse CD28 gene into which a marker sequence has been inserted.

5,616,492

MONOCLONAL ANTIBODIES DIFFERENTIALLY REACTIVE WITH NATIVE AND REDUCTIVELY MODIFIED BOWMAN-BIRK PROTEASE INHIBITOR

Ann R. Kennedy, Wynnewood; Cameron J. Koch, Aldan, both of Pa.; Edith M. Lord, Rochester, N.Y., and Xingsheng Wan, Upper Darby, Pa., assignors to Trustees of the University of Pennsylvania, Philadelphia, Pa., and University of Rochester, Rochester, N.Y.

Division of Ser. No. 358,265, Dec. 19, 1994. This application Jun. 2, 1995, Ser. No. 458,353

Int. Cl.[6] C07K *16/00;* **C12N** *5/12*

U.S. Cl. 435—341 **4 Claims**

1. A monoclonal antibody which is selected from a group consisting of 3E3, 4H8 and 5G2, and is capable of detecting metabolites of Bowman-Birk protease inhibitor in a body fluid or tissue, said antibodies produced by hybidoma cell lines with ATCC designation number HB-12180, HB-12179, and HB-12178, respectively.

5,616,493

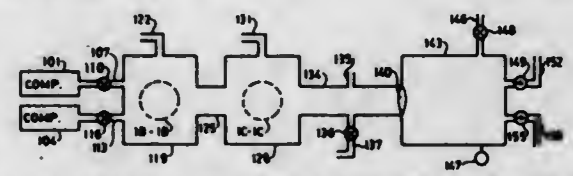
METHOD FOR FOAM BIOPROCESS

Richard S. Cahoon, 68 Spring Run Rd., Freeville, N.Y. 13068

Filed Apr. 21, 1995, Ser. No. 426,193

Int. Cl.[6] C12N *1/00*

U.S. Cl. 435—246 **21 Claims**



1. A biological process, which involves cell metabolic activity, cell growth, or product formation, comprising:

producing a substantially continuous foam comprising bubbles of a gas in a liquid capable of undergoing a biological process utilizing biological cells;

introducing said cells into said foam after said producing; and

maintaining said cells in said foam under conditions effective to carry out said biological process.

5,616,494

***THERMUS AQUATICUS* DNA POLYMERASE LACKING THE N-TERMINAL 235 AMINO ACIDS OF TAQ DNA POLYMERASE**

Wayne M. Barnes, Chesterfield, Mo

Continuation of Ser. No. 62,712, May 17, 1993, abandoned, which is a continuation of Ser. No. 594,637, Oct. 5, 1990, abandoned. This application Jul. 11, 1994, Ser. No. 274,205

Int. Cl.[6] C12N *1/21;9/12*

U.S. Cl. 435—252.3 **6 Claims**

1. A vector comprising a nucleic acid molecule encoding a DNA polymerase having the amino acid sequence of the Taq DNA

polymerase of *Thermus aquaticus* lacking the N-terminal 235 amino acids of Taq DNA polymerase.

5,616,495

***BACILLUS THURINGIENSIS* GENE ENCODING HYMENOPTERAN-ACTIVE TOXINS**

Jewel M. Payne, San Diego, Calif.; M. Keith Kennedy, Racine, Wis.; John B. Randall, Racine, Wis.; Henry Meier, Racine, Wis.; Heidi J. Uick, Racine, Wis.; Luis Foncerrada; Harry E. Schnepf, both of San Diego, Calif., and George E. Schwab, Encinitas, Calif., assignors to Mycogen Corporation, San Diego, Calif.

Continuation of Ser. No. 887,980, May 22, 1992, abandoned, which is a continuation-in-part of Ser. No. 703,977, May 22, 1991, Pat. No. 5,260,058, and a continuation-in-part of Ser. No. 797,645, Nov. 25, 1991, Pat. No. 5,268,297. This application Sep. 12, 1994, Ser. No. 304,626

Int. Cl.[6] C12N *1/21;15/32*

U.S. Cl. 435—252.3 **4 Claims**

1. A host transformed to express a nucleotide sequence encoding a toxin having activity against ant pests and having the amino acid sequence shown in SEQ ID NO. 8.

5,616,496

BACTERIAL CELL TRANFORMANTS FOR PRODUCTION OF CIS, CIS-MUCONIC ACID AND CATECHOL

John W. Frost, and Karen M. Draths, both of West Lafayette, Ind., assignors to Purdue Research Foundation, West Lafayette, Ind.

Division of Ser. No. 122,920, Sep. 16, 1993, Pat. No. 5,487,987. This application Jun. 6, 1995, Ser. No. 470,640

Int. Cl.[6] C12N *1/20*

U.S. Cl. 435—252.3 **6 Claims**

1. A bacterial cell transformed with heterologous structural genes from *Klebsiella pneumoniae*, which express the enzymes 3-dehydroshikimate dehydratase and protocatechuate decarboxylase, and from *Acinetobacter calcoaceticus*, which expresses the enzyme catechol 1,2-dioxygenase, wherein a culture of said bacterial cell biocatalytically converts 56 mM glucose to 17 mM cis, cis-muconic acid within 48 hours.

5,616,497

METHOD OF CHELATING A METAL ION TO FORM A CHELATE AND BIODEGRADING THE CHELATE

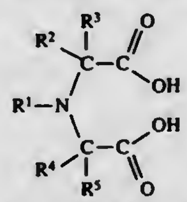
Alan D. Strickland, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 281,054, Jul. 27, 1994. This application May 22, 1995, Ser. No. 443,571

Int. Cl.[6] C08J *11/00*

U.S. Cl. 435—262 **10 Claims**

1. A method of chelating a metal ion to form a chelate and biodegrading the chelate comprising step (a) contacting the metal ion with at least one chelant of Formula 1b



Formula Ib

wherein each of R^1, R^2, R^3, R^4, and R^5 is independently hydrogen or an alkyl containing 1 to 15 carbon atoms, or an aryl, alkaryl, or aralkyl group containing from 5 to 15 carbon atoms wherein the alkyl, aryl, alkalkyl may be substituted with a hydroxyl, carboxyl, sulfoxyl, phospboryl, amino, imide, or amino group, and wherein the distance between the carboxyl carbon atoms is designated "Distance A", the distance between carboxyl double bonded oxygen atoms is designated "Distance B", and the distance between carboxyl hydroxyl groups is designated "Distance C", and in at least one energetically feasible conformation of the chelant of Formula 1b Distance A is at least about 3.8×10^{-10} m but less than or equal to about 4.6×10^{-10} m; Distance B is at least about 5.1×10^{-10} m but less than or equal to about 5.9×10^{-10} and Distance C is at least about 4.3×10^{-10} m but less than or equal to about 6.7×10^{-10} m; to form a chelate and (b) contacting the resultant chelate or mixture of chelate and chelant with an activated sludge according to ASTM 2667-89 or ISO 5815 under conditions and for a time sufficient for biodegradation wherein either (i) the chelate formed in step (a) is formed in a process of cleaning or washing; removing deposits, scale, or rust; controlling metal initiated or catalyzed oxidation or deterioration including spoilage, discoloration, or rancidification; textile treatment; paper making; stabilization of polymers or phosphates; or petroleum drilling, production or recovery; or (ii) the chelate formed in step (a) is used as a redox catalyst in a process of photographic bleaching, bleach-fixing or developing; in electroless deposition or plating; in removing acid or oxide gases including H_2S, NO_x, SO_x, CO and CO_2; or in providing agricultural nutrients.

5,616,498

BIOLOGICAL REMOVAL OF DIHALOCARBOXYLIC ACID IRRITANTS

Olivier Favre-Bulle, and Jean-Marc Ricca, both of Lyons, France, assignors to Rhone-Poulenc Chimie, Courbevoie Cedex, France

Filed Jul. 27, 1995, Ser. No. 508,171

Claims priority, application France, Jul. 27, 1994, 94 09287

Int. Cl.[6] D06M *16/00*

U.S. Cl. 435—264 **14 Claims**

1. A method for removing trace amounts of dihalocarboxylic acids or salts thereof from aqueous solutions which comprise less than 1,000 ppm thereof and at least 20% by weight of amino acids or amino acid derivatives, comprising directly contacting such aqueous solution with either (a) about 1 to 100 ppm of a microorganism producing an enzyme specific for the decomposition of said dihalocarboxylic acids or salts thereof, or (b) about 0.1 to 10 ppm of such enzyme, per se.

5,616,499

CULTURE AND TRANSFER DEVICE FOR ENHANCED RECOVERY AND ISOLATION OF MICROORGANISMS

Karl F. Eckner; Elliot T. Ryser, both of Park Forest, Ill., and Richard B. Smittle, Stouchsburg, Pa., assignors to Silliker Laboratories Group, Inc., Chicago Heights, Ill.

Division of Ser. No. 990,572, Dec. 14, 1992, abandoned. This application Oct. 19, 1994, Ser. No. 326,181

Int. Cl.[6] C12M *1/00*

U.S. Cl. 435—309.1 **32 Claims**

1. Apparatus for enhancing the recovery and isolation of microorganisms in samples or specimens comprising:

a. inoculating means for transferring an inoculum from one medium to another medium;

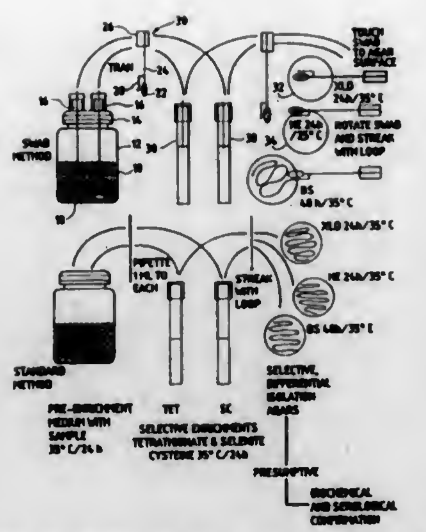
b. container means for maintaining an enrichment medium and a sample free from outside contaminants, the container means having a top and bottom portion;

c. positioning means for positioning the inoculating means in a predetermined position relative to the bottom portion of the container means;

d. first aperture means disposed on the top portion of the container means for introducing a sample and the enrichment medium into the container means;

e. second aperture means disposed adjacent the first aperture means for introducing the inoculating means into the container means and for securing the positioning means so that the inoculating means is disposed in a predetermined position relative to the bottom portion of the container means; and,

f. sealing means for sealing the sample, the enrichment medium, and the inoculating means from the outside environment to



maintain the sample, the enrichment medium, and the inoculating means in an environment free from outside contaminants.

5,616,500
TRICHOHYALIN AND TRANSGLUTAMINASE-3 AND METHODS OF USING SAME

Peter M. Steinert; In-Gyu Kim; Soo-Il Chung, all of Rockville, Md., and Sang-chul Park, Seoul, Rep. of Korea, assignors to The United States of America as represented by the Department of Health & Human Services, Washington, D.C.

Filed Apr. 30, 1993, Ser. No. 56,200

Int. Cl.[6] C12N *15/00;* **C12P** *21/06;* **C12H** *9/10;* **C07H** *19/00*

U.S. Cl. 435—320.1 **12 Claims**

1. A purified molecule of DNA comprising the sequence of SEQ ID NO:109.

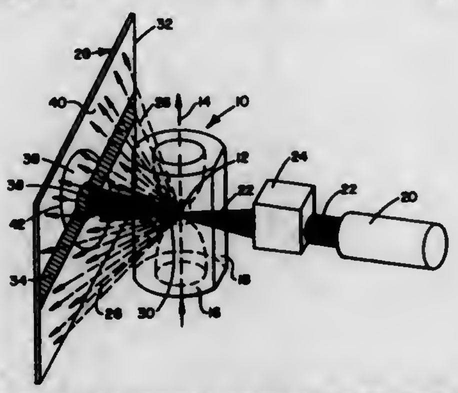
5,616,501
RETICULOCYTE ANALYZING METHOD AND APPARATUS UTILIZING LIGHT SCATTER TECHNIQUES

Carlos M. Rodriguez, Miami, and Stephen L. Ledis, Hialeah, both of Fla., assignors to Coulter Corporation, Miami, Fla.

Division of Ser. No. 306,346, Sep. 15, 1994, Pat. No. 5,492,833, which is a continuation of Ser. No. 62,857, May 14, 1993, abandoned. This application Nov. 17, 1995, Ser. No. 560,423

Int. Cl.[6] G01N *33/48*

U.S. Cl. 436—63 **24 Claims**



1. A method of determining a percent of reticulocytes to the total number of erythrocytes in at least a portion of a whole blood sample in a cytometric flow cell, comprising:

a. combining a portion of a whole blood sample, including a plurality of cells, with a RNA precipitating first dye, said first dye being used to delineate reticulocytes for light scatter detection of said reticulocytes;

b. combining said portion of a whole blood sample including a plurality of cells with a red blood cell ghosting reagent which removes hemoglobin from said red blood cells;

c. passing an aliquot of said combined whole blood sample, RNA precipitating first dye and ghosting reagent through a cytometric flow cell, including passing said cells substantially one at a time through a sensing zone in said cytometric flow cell and concurrently passing at least a beam of light through said sensing zone to intersect said cells;

d. detecting light scattered caused by each cell as each cell intersects said beam of light; and

e. analyzing upper median angle light scatter (UMALS) of said light scattered by each cell to obtain a determination of the percentage of reticulocytes to the total number of erythrocytes in said whole blood sample.

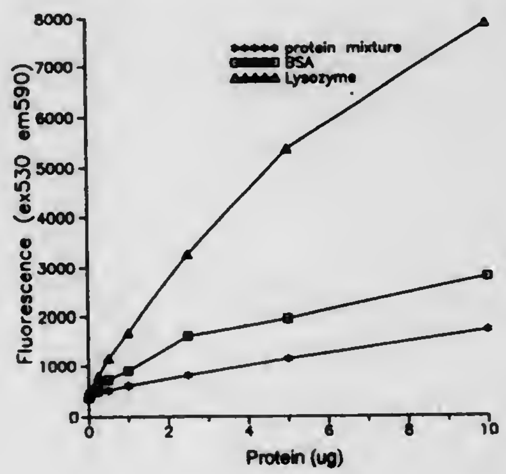
5,616,502
NON-SPECIFIC PROTEIN STAINING USING MEROCYANINE DYES

Richard P. Haugland; Victoria L. Singer, both of Eugene; Laurie J. Jones, Monroe, and Thomas H. Steinberg, Eugene, all of Oreg., assignors to Molecular Probes, Inc., Eugene, Oreg.

Filed May 19, 1995, Ser. No. 444,895

Int. Cl.[6] G01N *33/48;33/52;33/68*

U.S. Cl. 436—86 **38 Claims**

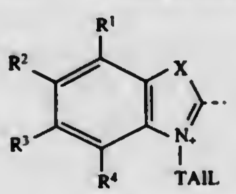


1. A method of detecting a poly(amino acid), comprising the steps of:

a) combining a sample mixture that is thought to contain a poly(amino acid) with a staining mixture that contains one or more merocyanine dyes to form a combined mixture; wherein each merocyanine dye independently has the formula

Q-B-M

where Q is a nitrogen heterocycle of the formula



(Q1)

or

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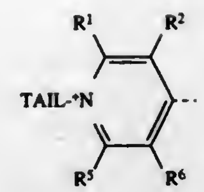
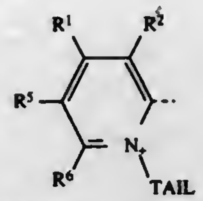


(Q2)

or



(Q3)

where

R^1, R^2, R^3 and R^4 are optionally and independently H, Cl, F, C_1–C_6 alkyl, C_1–C_6 perfluoroalkyl, C_1–C_6 alkoxy, amino, or amino substituted by 1–2 C_1–C_6 alkyls:

R^5 and R^6 are optionally and independently H, Cl, F, C_1–C_6 alkyl, C_1–C_6 perfluoroalkyl, C_1–C_6 alkoxy, amino, or amino substituted by 1–2 C_1–C_6 alkyls: or R^5 and R^6 taken in combination form a fused 6-membered aromatic ring that is optionally and independently substituted one or more times by Cl, F, C_1–C_6 alkyl, C_1–C_6 perfluoroalkyl, C_1–C_6 alkoxy, amino, amino substituted by 1–2 C_1–C_6 alkyls, or said fused 6-membered aromatic ring is optionally substituted by an additional fused 6-membered aromatic ring that is optionally and independently substituted by Cl, F, C_1–C_6 alkyl, C_1–C_6 perfluoroalkyl, C_1–C_6 alkoxy, amino, amino substituted by 1–2 C_1–C_6 alkyls;

X is —S—, —O—, —NR^7—, or —CR^7R^8—, wherein R^7 and R^8 are optionally and independently H, Cl, F, phenyl, C_1–C_6 alkyl.; or R^7 and R^8 taken in combination complete a 5- or 6-membered saturated fine:

TAIL is attached to Q through a carbon atom and contains 1–22 non-hydrogen atoms, wherein said non-hydrogen atoms are selected from the group consisting of C, O, N and S, such that each heteroatom is separated from any adjacent heteroatoms by at least two carbon atoms: and further such that TAIL is composed of carbon-carbon bonds (C—C), ether bonds (C—O—C), thioether bonds (C—S—C) or amine bonds (C—NR^9—C); where any carbon atom in TAIL is optionally further substituted by hydroxy, carboxy, sulfo, amino or ammonium; and where any amine bond, amino or ammonium in TAIL is optionally substituted by an R^9 that is a C_2–C_6 alkyl that is optionally further substituted by hydroxy, carboxy, sulfo, amino, amino substituted by 1–2 C_1–C_6 alkyls, or ammnonium substituted by 1–3 C_1–C_6 alkyls, or said N atoms form either one or two saturated 5- or 6-membered rings in combination with additional C or N atoms in TAIL;

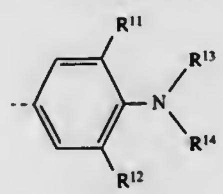
B is a covalent bridge having the formula

$$—(CR^7{=}CR^8)_n—$$

where R^7 and R^8 are as defined previously;

n=1, 2 or 3;

and M is an electron pair-donating moiety of the formula



(M1)

or

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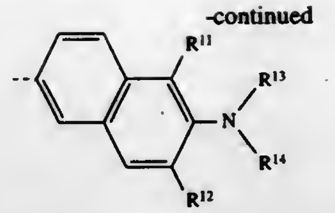


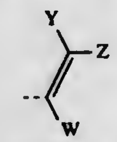
(M2)

where

R^{11} and R^{12} are independently H, F, Cl, or —CH_3;

R^{13} and R^{14} are independently C_1–C_{18} alkyl that is linear, branched, saturated or unsaturated, and is optionally substituted one or more times by F, hydroxy or C_1–C_6 alkoxy; or R^{13} and R^{14} taken in combination form a 5- or 6-membered saturated ring containing 0 or 1 oxygen heteroatoms; or R^{13} taken in combination with R^{11} and R^{14} taken in combination with R^{12} independently are —(CH $_2)_2$— or —$(CH_2)_3$—;

or M is of the formula



(M3)

where Y is —OH, —SH, —O^- or —S^-;

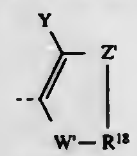
Z is —OR^{15}, —SR^{15}, —$N(R^{15})^2$;

W is CN, —(C=O)—R^{16}, or —(C=S)—R^{16};

R^{15} is H or C_1–C_6 alkyl;

R^{16} is —OR^{15}, —SR^{15}, —$N(R^{15})_2$;

or M is of the formula



(M4)

where Y is as defined previously;

Z' is —O—, —S—, or —NR^{17}—;

W' is —O—, —S—, —NR^{17}—, —(C=O)—, —(C=S)—, or —(C=NR^{17})—;

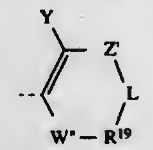
R^{17} is H, C_1–C_6 alkyl, C_1–C_6 carboxyalkyl, phenyl or phenyl substituted by sulfo;

R^{18} is —O—, —S—, —NR^{17}—, —(C=O)—, —(C=S)—, or —(C=NR^{17})—;

or W' and R^{18} taken in combination are —CR^{17}=N—;

or Z' and R^{18} taken in combination are —CR^{17}=N—;

or M is of the formula



(M5)

where Y and Z' are as defined previously;

W" is —(C=O)—, —(C=S)—, or —(C=NR^{17})—;

L is —(C=O)—, or —(C=S)—;

R^{19} is —O—, —S—, —NR^{17}—;

or W" and R^{19} taken in combination are —CR^{17}=N—;

such that the resulting heterocycle does not include any O—O, S—S, O—S, or N—N—N bonds;

b) heating tile sample mixture prior to combining with the staining mixture, or heating the combined mixture:

c) incubating the combined mixture for a time sufficient for the dye in the staining mixture to associate with the poly(amino acid) in the sample mixture to form a dye-poly(amino acid) complex that gives a detectable optical response upon illumination;

d) illuminating said dye-poly(amino acid) complex; and

e) observing said detectable optical response.

5,616,503

DETERMINATION OF HAPTENS

Colin H. Self, Little Callerton, 87 Runnymede Road, Ponteland, Northumbrie NE., Great Britain

PCT No. PCT/GB93/00100, § 371 Date Jul. 15, 1994, § 102(e) Date Jul. 15, 1994, PCT Pub. No. WO93/14404, PCT Pub. Date Jul. 22, 1993

PCT Filed Jan. 15, 1993, Ser. No. 256,525

Claims priority, application United Kingdom, Jan. 17, 1992, 9200957; May 26, 1992, 9211158

Int. Cl.⁶ G01N *33/543*

U.S. Cl. 436—518 **8 Claims**

1. A method of determining a hapten in a sample which comprises:

(1) contacting the sample which contains or may contain the hapten with a first binding partner which binds the hapten; (2) separating the hapten bound to the first binding partner from material which is not bound by the first binding partner; (3) thereafter contacting the hapten bound to the first binding partner with a second binding partner which binds the hapten with release of the first binding partner from the hapten; and (4) assaying the hapten bound to the second binding partner.

5,616,504

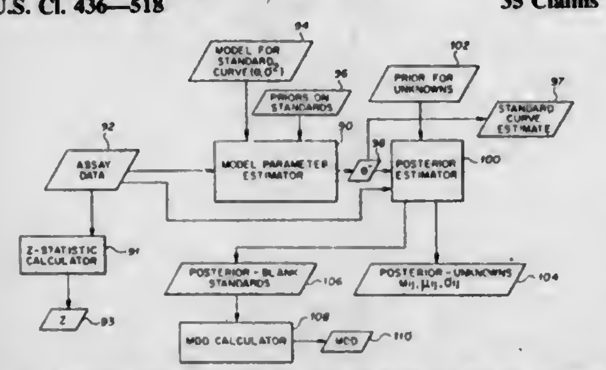
METHOD AND SYSTEM FOR CALIBRATION OF IMMUNOASSAY SYSTEMS THROUGH APPLICATION OF BAYESIAN ANALYSIS

Emery N. Brown, Brookline, and Steven J. Skates, Cambridge, both of Mass., assignors to The General Hospital Corporation, Boston, Mass.

Continuation of Ser. No. 21,323, Feb. 23, 1993, abandoned. This application Jan. 9, 1995, Ser. No. 370,480

Int. Cl.⁶ G01N *33/543*

U.S. Cl. 436—518 **35 Claims**



1. A method for measuring a concentration of an analyte in a sample having an unknown concentration of the analyte using a binding assay in which a labelled binding partner for the analyte is allowed to react with the analyte to form a labeled complex in an assayed sample, wherein the labeled binding partner includes a tag which emits an experimental indicator and wherein the assayed sample emits in a predetermined period of time an amount of the experimental indicator, which amount is a response emitted by the assayed sample, the method comprising the steps of:

assaying a plurality of known samples using the binding assay, wherein each known sample has a known concentration of the analyte and is allowed to react with the labeled binding partner for the analyte to form a first labeled complex and the first labeled complex is detected to obtain a response emitted by each assayed known sample;

assaying the unknown sample using the binding assay, wherein each unknown sample is allowed to react with the labeled binding partner for the analyte to form a second labeled complex and the second labeled complex is detected to obtain a response emitted by the assayed unknown sample;

supplying a prior probability density for the unknown concentration and a probability model which specifies a standard curve relating an expected response to a concentration of the analyte;

generating a posterior density for the unknown concentration based on the supplied prior density, the supplied probability model, and the responses for the assayed known samples and the assayed unknown sample, by applying Bayes' rule; and

providing a characteristic of the posterior density as a measure of the concentration of the analyte in the unknown sample.

5,616,505

HAPTENS TRACERS, IMMUNOGENS AND ANTIBODIES FOR 3-PHENYL-1-ADAMANTANEACETIC ACIDS

Philip G. Mattingly, Grayslake, Ill., assignor to Abbott Laboratories, Abbott Park, Ill.

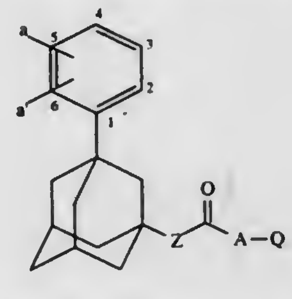
Division of Ser. No. 49,888, Apr. 21, 1993, Pat. No. 5,424,414, which is a continuation-in-part of Ser. No. 808,508, Mar. 27, 1992, abandoned. This application Mar. 24, 1995, Ser. No. 410,161

Int. Cl.⁶ G01N *33/536;33/577;* **C07K** *16/44*

U.S. Cl. 436—531 **3 Claims**

1. A kit comprising:

a. at least one conjugate compound having the following structure:



wherein

a and a' are independently selected from the group consisting of: hydrogen, C_1–C_{10}-alkyl, C_1–C_{10}-alkoxy, C_1–C_{10}-alkylthio, halo-C_1–C_{10}-alkyl, C_1–C_{10}-alkylamino, di-(C_1–C_{10}-alkyl)amino, aryl-C_1–C_{10}-alkyl, optionally substituted aryl, halogen, amino, carboxy, carboxamido, hydroxy, mercapto, nitro, nitroso, sulfo, phospho and protected forms thereof, or alternatively a and a' when taken together with the carbons to which they are joined form a fused ring,

Z is alkylene of from 1 to about 10 atoms,

A is a linking moiety consisting of from 1 to about 50 atoms, and

Q is an immunogenicity conferring carrier molecule, a detectable label, an oligonucleotide or a solid support; and

b. an antibody reactive with said conjugate compound, said antibody being attached to a solid support or a detectable label, or being adapted for attachment to a solid support or a detectable label.

5,616,506

SEMICONDUCTOR DEVICE HAVING A CRYSTALLIZED SILICON THIN FILM IN WHICH THE CRYSTALLIZATION DIRECTION IS ORIENTED EITHER VERTICALLY OR HORIZONTALLY TO THE CURRENT FLOW DIRECTION

Yasuhiko Takemura, Kanagawa, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Division of Ser. No. 294,740, Aug. 23, 1994, Pat. No. 5,534,716. This application Dec. 21, 1994, Ser. No. 360,599

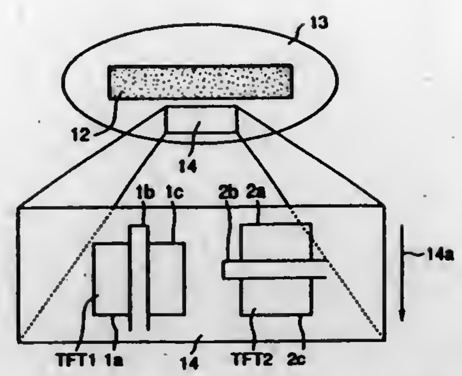
Claims priority, application Japan, Aug. 27, 1993, 5-235461

Int. Cl.⁶ H01L *21/336;21/20*

U.S. Cl. 438—150 **18 Claims**

1. A method for manufacturing a semiconductor device comprising the steps of:

forming a silicon film having an amorphous on a substrate;



preparing an element which promotes crystallization before or after formation of the silicon film, to introduce the element into a region of the silicon film;

crystallizing the silicon film, wherein the silicon film is crystal-grown from the region in a crystal growth direction parallel to the substrate;

oxidizing the silicon film, to form a silicon oxide layer on the silicon film; and

forming a plurality of thin film transistors using the silicon film, wherein at least one of the thin film transistors has a first angle formed between a carrier moving direction and the crystal growth direction and at least another one of the thin film transistors has a second angle which is different from the first angle and formed between the carrier moving direction and the crystal growth direction.

5,616,507

METHOD OF MANUFACTURING SUBSTRATE HAVING SEMICONDUCTOR ON INSULATOR

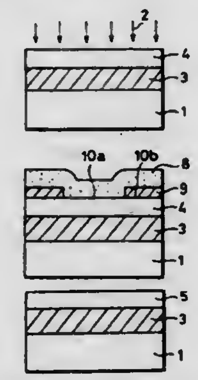
Tetsuya Nakai, Saitama-ken; Yasuo Yamaguchi, and Tadashi Nishimura, both of Hyogo-ken, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, and Mitsubishi Materials Corporation, both of Tokyo, Japan

Division of Ser. No. 17,257, Feb. 12, 1993, Pat. No. 5,441,899. This application May 19, 1995, Ser. No. 444,590

Claims priority, application Japan, Feb. 18, 1992, 4-030606; Dec. 11, 1992, 4-331426

Int. Cl.⁶ H01L *21/76*

U.S. Cl. 438—480 **1 Claim**



1. A method of manufacturing an SOI substrate, comprising the steps of:

forming a silicon oxide layer at a position in a prescribed depth from said main surface by implanting oxygen ions into said silicon substrate from the main surface of silicon substrate having an element formation region and an element isolation region;

forming a silicon oxide film on said element isolation region;

forming a polycrystalline silicon layer on said element formation region and said silicon oxide film;

performing a heat treatment to a region of said silicon substrate between said silicon oxide layer and said polycrystalline silicon layer;

after said heat treatment, exposing a surface of said silicon oxide film and removing said polycrystalline silicon layer so as to leave the polycrystalline silicon layer on the element formation region;

removing said silicon oxide film; and

removing said polycrystalline silicon layer by etching.

5,616,508

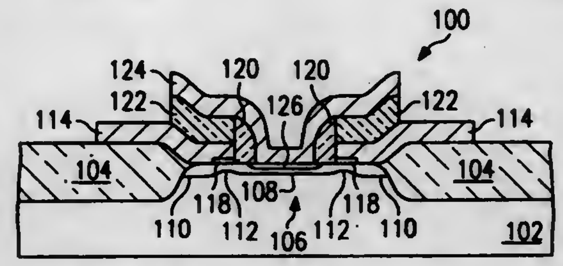
HIGH SPEED BIPOLAR TRANSISTOR USING A PATTERNED ETCH STOP AND DIFFUSION SOURCE

F. Scott Johnson, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 9, 1995, Ser. No. 370,137

Int. Cl.⁶ H01L *21/265*

U.S. Cl. 438—350 **14 Claims**



1. A method for forming a bipolar transistor, comprising the steps of:

forming a collector region;

forming a base-link diffusion source layer over a portion of said collector region;

forming a base electrode overlying at least one end portion of said base-link diffusion source layer;

removing said base-link diffusion source layer except for said at least one end portion;

diffusing an extrinsic base region from said base electrode and a base link-up region from said at least one end portion of said base link layer; and

implanting an intrinsic base region into said portion of said collector region except for said at least one end portion.

5,616,509

METHOD FOR FABRICATING A SEMICONDUCTOR DEVICE

Shigeru Hayashi, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Sep. 28, 1995, Ser. No. 534,944

Claims priority, application Japan, Sep. 28, 1994, 6-258936

Int. Cl.⁶ H01L *21/265*

U.S. Cl. 438—234 **10 Claims**

1. A method for fabricating a semiconductor device, comprising the steps of:

providing a semiconductor substrate of a first conductivity type;

forming a buried layer of a second conductivity type, which is of opposite conductivity type to said first conductivity type, on said semiconductor substrate,

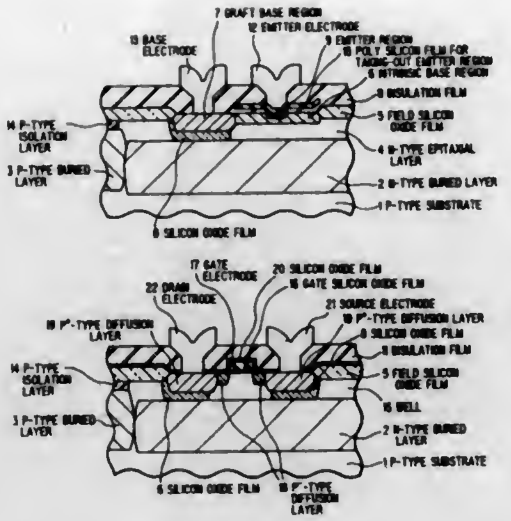
growing an epitaxial layer of said second conductivity type atop said buried layer of second conductivity type on said semiconductor substrate,

forming a silicon oxide film over selected portions of a surface of said epitaxial layer, said silicon dioxide film having at least one opening,

forming at least one first region of said first conductivity type over a portion of said at least one opening in said silicon oxide film,

forming a mask, which is patterned via photolithography, which exposes a predetermined portion of said first region,

introducing impurity ions of said first conductivity type through at least one opening in said mask into said predetermined portion of said first region,



introducing oxygen ions through said at least one opening in said mask into said predetermined portion of said first region, and

thermally activating said semiconductor substrate to convert said predetermined portion into at least one second region of said first conductivity type which has a higher impurity concentration than that of said first region and which contacts said first region and to concurrently form an insulation film therebeneath.

5,616,510

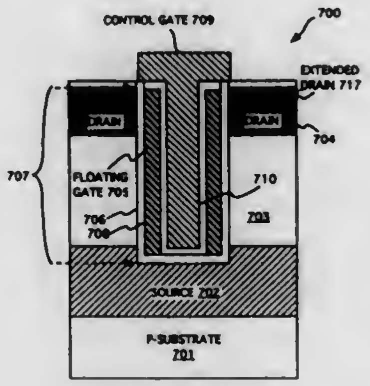
METHOD FOR MAKING MULTIMEDIA STORAGE SYSTEM WITH HIGHLY COMPACT MEMORY CELLS

Chun C. D. Wong, 4260 Newberry Ct., Palo Alto, Calif. 94306

Division of Ser. No. 336,361, Nov. 8, 1994, which is a continuation of Ser. No. 970,728, Nov. 2, 1992, Pat. No. 5,386,132. This application Jun. 6, 1995, Ser. No. 472,942

Int. Cl.^{6} H01L *21/8247*

U.S. Cl. 438—259 **16 Claims**



1. A method of forming a vertical memory cell comprising the steps of:

doping a substrate to form a source region;

forming a channel region on said source region;

forming a drain region on said channel region, wherein said drain region includes an extended drain region to provide a tunneling electrical field enhancement effect;

forming a trench through said drain region and said channel region;

forming a floating gate in said trench; and

forming a control gate in operative relation to said floating gate.

5,616,511

METHOD OF FABRICATING A MICRO-TRENCH STORAGE CAPACITOR

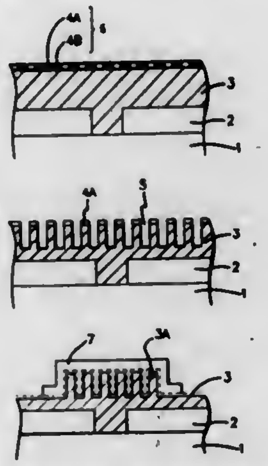
Toshiyuki Hirota, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 27, 1994, Ser. No. 280,933

Claims priority, application Japan, Jul. 27, 1993, 5-184557

Int. Cl.^{6} H01L *21/70;27/00*

U.S. Cl. 438—396 **26 Claims**



1. A method for fabricating a storage capacitor comprising the steps of:

forming a bottom semiconductor film having an electrical conductivity;

depositing a phase splitting glass film on said bottom semiconductor film by a chemical vapor deposition method;

subjecting said phase splitting glass film to a heat treatment to allow said phase splitting glass film to be split into at least two different glass films which have different components;

subjecting said phase splitting glass film to an etching in which one of said at least two different glass films has a higher etching rate than an etching rate of another of said at least two different glass films so that one of said at least two different glass films having the higher etching rate only is removed, while said another of said at least two different glass films remains thereby a mask pattern comprising the remaining another of said at least two different glass films is formed;

subjecting said bottom semiconductor film to a dry etching using said mask pattern to form trench grooves and trench pillars in said bottom semiconductor film;

forming a dielectric film on surfaces of said trench grooves and trench pillars; and

forming a top semiconductor film having an electrical conductivity on said dielectric film.

5,616,512

POWER SEMICONDUCTOR DEVICES

Cesare Ronsisvalle, Catania, Italy, assignor to Consorzio per la Ricerca sulla Microelettronica nel Mezzogiorno, Catania, Italy

Filed Dec. 21, 1994, Ser. No. 360,944

Claims priority, application European Pat. Off., Dec. 29, 1993, 93830529

Int. Cl.^{6} H01L *21/76*

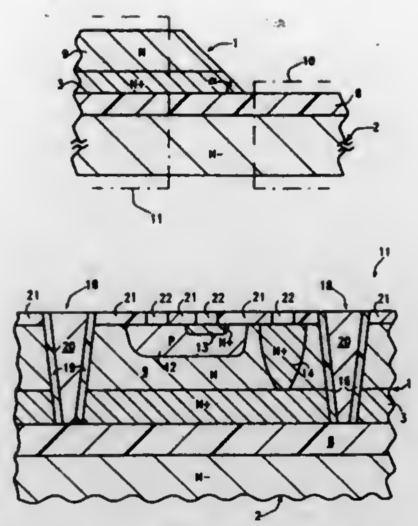
U.S. Cl. 438—406 **19 Claims**

1. A method of manufacturing integrated circuits, comprising the steps of:

forming an oxide layer on at least one surface of two respective semiconductor material wafers;

obtaining a single semiconductor material wafer with a first layer and a second layer of semiconductor material and a buried oxide layer interposed therebetween starting from the two semiconductor material wafers by direct bonding together the oxide layers;

submitting the single wafer to a controlled reduction of a thickness of the first layer of semiconductor material;



lapping a top surface of the first layer of semiconductor material;

selectively etching the first layer of semiconductor material down to the buried oxide layer to obtain selected portions of the single wafer wherein the buried oxide layer is uncovered;

selectively introducing first dopant impurities into selected regions of the second layer of semiconductor material without introducing the first dopant impurities into the first layer of semiconductor material;

selectively introducing second dopant impurities into selected regions of the first layer of semiconductor material to form integrated components;

forming an insulating material layer over the top surface of the first layer of semiconductor material;

selectively etching the insulating material layer and the first layer of semiconductor material down to the buried oxide layer to form trenches laterally delimiting respective portions of the first layer of semiconductor material such that each integrated component is electrically isolated;

coating the walls of the trenches with an insulating material; and filling the trenches with amorphous silicon.

5,616,513

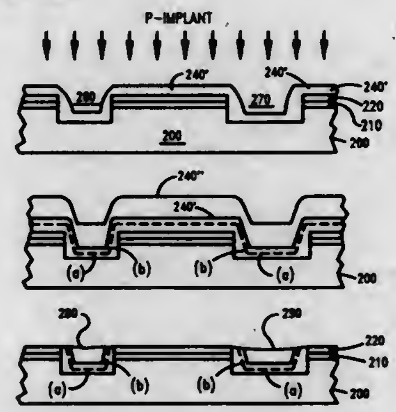
SHALLOW TRENCH ISOLATION WITH SELF ALIGNED PSG LAYER

Joseph F. Shepard, Hopewell Junction, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 1, 1995, Ser. No. 457,084

Int. Cl.^{6} H01L *21/76*

U.S. Cl. 438—402 **7 Claims**



1. A method of forming a trench isolation in a silicon substrate having a frontside and a backside, said trench isolation consisting of plurality of trenches with silicon dioxide plugs, comprising the steps of:

etching said plurality of trenches on the frontside in said silicon substrate;

depositing a layer of silicon dioxide in contact with said frontside and to fill said plurality of trenches;

forming a layer of phosphorus impurities beneath the surface of said silicon dioxide layer; and,

removing the silicon dioxide layer, from the frontside of the silicon substrate, outside of said plurality of trenches, thereby forming said trenches with silicon dioxide plugs containing a buried layer of phosphorus impurities.

5,616,514

METHOD OF FABRICATING A MICROMECHANICAL SENSOR

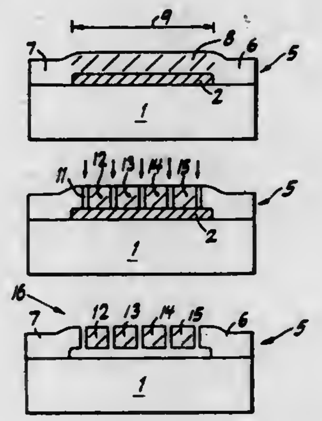
Joerg Muchow; Horst Muenzel, both of Reutlingen; Michael Offenberg, Tuebingen, and Winfried Waldvogel, Kirchentellinsfurt, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Continuation-in-part of Ser. No. 253,883, Jun. 3, 1994, abandoned. This application Jun. 6, 1995, Ser. No. 470,373

Claims priority, application Germany, Jun. 3, 1993, 43 18 466.9

Int. Cl.^{6} H01L *21/20*

U.S. Cl. 438—50 **16 Claims**



9. A method of manufacturing a micromechanical structure, comprising the steps of:

providing a silicon substrate support;

applying an etching-layer onto the silicon substrate support;

depositing a layer of polysilicon on the etching layer via an epitaxial process; and

etching the etching-layer during an etching process.

5,616,515

SILICON OXIDE GERMANIUM RESONANT TUNNELING

Yasutoshi Okuno, Tsukuba, Japan, assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 286,067, Aug. 4, 1994, Pat. No. 5,466,949. This application Jun. 7, 1995, Ser. No. 484,464

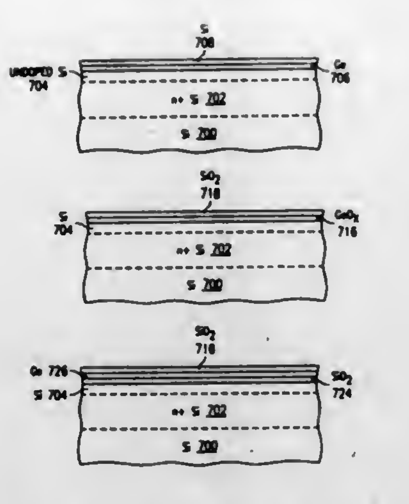
Int. Cl.^{6} H01L *21/31*

U.S. Cl. 438—478 **6 Claims**

1. A method of fabrication of a silicon dioxide layer, comprising the steps of:

(a) providing a germanium layer on a first silicon layer and a second silicon layer on said germanium layer;

(b) at least partially oxidizing said germanium layer and said second silicon layer without oxidizing said first silicon layer; and



(c) migrating oxygen from said germanium layer to oxidize said first silicon layer and thereby form a silicon dioxide layer.

5,616,516

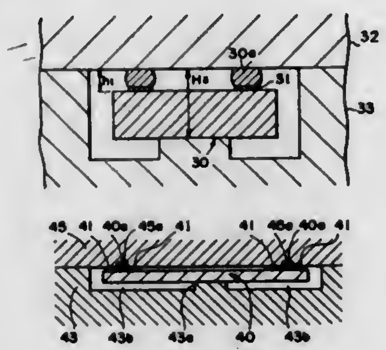
METHOD OF MAKING RESIN ENCAPSULATED SEMICONDUCTOR DEVICE WITH BUMP ELECTRODES

Yoshiharu Takahashi; Jiro Oseto; Teru Hirata; Shunichi Abe; Seizo Ohmae, and Eiji Kobayashi, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 252,777, Jun. 2, 1994, abandoned. This application May 17, 1995, Ser. No. 443,025

Int. Cl.⁶ H01L *21/56*

U.S. Cl. 438—127 **7 Claims**



1. A method of producing a semiconductor device comprising:

placing a semiconductor chip having a bump electrode and a total thickness including a thickness of said semiconductor chip and a height of said bump electrode in a cavity between a plurality of dies, the cavity having, between said dies, a height smaller than the total thickness of said semiconductor chip and said bump electrode, said semiconductor chip and said bump electrode contacting respective inner surfaces of said dies; and

injecting a molten resin into the cavity and curing said resin to encapsulate said semiconductor chip with said bump electrode exposed at and not covered by said resin.

5,616,517

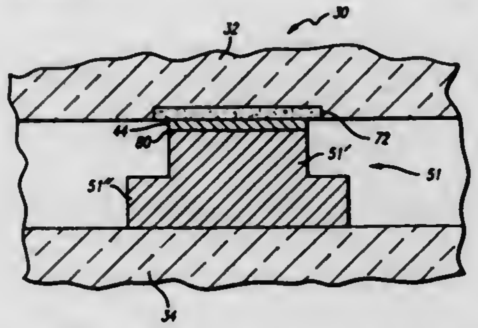
FLIP CHIP HIGH POWER MONOLITHIC INTEGRATED CIRCUIT THERMAL BUMPS AND FABRICATION METHOD

Cheng P. Wen, Mission Viejo; Wah S. Wong, Montebello, and William D. Gray, Redondo Beach, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Division of Ser. No. 326,292, Oct. 20, 1994, abandoned. This application Mar. 15, 1996, Ser. No. 616,414

Int. Cl.⁶ H01L *21/44*

U.S. Cl. 437—125 **10 Claims**



1. A multi-layer, multi-exposure method of manufacturing a thermally conductive bump which has one end which is in close proximity to and in thermal communication with a flip-chip microwave monolithic integrated circuit (MMIC) and which has a second end which is in close proximity to and in thermal communication with a host substrate, the bump being substantially "T"-shaped with a narrower cross-section at the MMIC and a wider cross-section at the host substrate, the method comprising the steps of:

forming a plating membrane on the connection pad of the MMIC, said plating membrane having a surface;

applying a first layer of negative photoresist to the surface of the plating membrane;

exposing the first layer of negative photoresist with a first masked pattern of light, said first masked pattern of light leaving a first rectangular unexposed portion of negative photoresist;

applying a second layer of negative photoresist on top of the first layer of photoresist;

exposing the second layer of negative photoresist with a second masked pattern of light, said second masked pattern of light leaving a second rectangular unexposed portion of negative photoresist, said second unexposed portion of photoresist being wider than said first unexposed portion of photoresist;

developing the first and second layers of photoresist with a photoresist developer, thereby leaving a substantially "T"-shaped via in said photoresist; and

plating an electrically and thermally conductive metal onto said plating membrane and into the substantially "T"-shaped via to form a substantially "T"-shaped bump.

5,616,518

PROCESS FOR FABRICATING INTEGRATING CIRCUITS

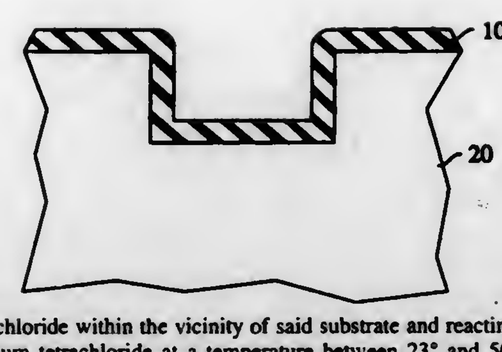
Pang-Dow Foo, Berkeley Heights, and Chien-Shing Pai, Bridgewater, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 121,954, Sep. 15, 1993, abandoned, which is a continuation of Ser. No. 808,950, Dec. 13, 1991, abandoned, which is a continuation of Ser. No. 589,466, Sep. 27, 1990, abandoned. This application Nov. 3, 1994, Ser. No. 333,900

Int. Cl.⁶ H01L *21/441*

U.S. Cl. 438—680 **9 Claims**

1. A process of fabricating a device comprising the steps of forming an opening in a material layer overlying a substrate and forming titanium nitride in said opening characterized in that said forming of said titanium nitride comprises introducing titanium



tetrachloride within the vicinity of said substrate and reacting said titanium tetrachloride at a temperature between 23° and 500° C. with a mole excess of atomic nitrogen produced in a plasma formed by an electron cyclotron resonator or a helical resonator, and with hydrogen whereby said titanium nitride is essentially devoid of chlorine.

5,616,519

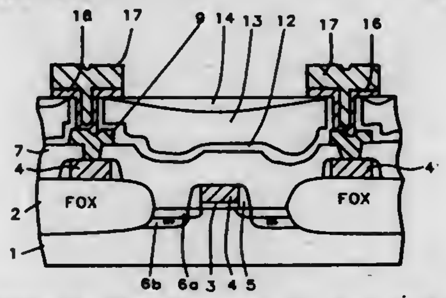
NON-ETCH BACK SOG PROCESS FOR HOT ALUMINUM METALLIZATIONS

Teong S. Ping, Singapore, Singapore, assignor to Chartered Semiconductor Manufacturing Pte Ltd., Singapore, Singapore

Filed Nov. 2, 1995, Ser. No. 552,244

Int. Cl.⁶ H01L *21/44;21/48*

U.S. Cl. 438—626 **25 Claims**



1. A method for fabricating a MOSFET device on a semiconductor substrate, using a spin on glass insulator, with metal filled via holes and metal interconnects, comprising the steps of:

providing the elements of said MOSFET device;

depositing a first insulator layer on said semiconductor substrate, including on said elements of said MOSFET device;

opening a first via hole in said first insulator layer, to expose a top surface of one of said elements of said MOSFET device;

depositing a first metallization layer, in said first via hole, including depositing on the exposed top surface, of said element of said MOSFET device, and on a surface of said first insulator layer;

patterning said first metallization layer to form a first level metal structure, and providing a contact to said element of said MOSFET device;

applying a photoresist layer covering said first level metal structure;

patterning a said photoresist layer to form photoresist plugs on a top surface of said first level metal structures;

heat treating said photoresist plugs;

depositing of a first interlevel dielectric layer on exposed surfaces of the photoresist plugs, as well as on exposed surfaces of said first level metal structure, and on said first insulator layer;

applying a spin on glass layer on said first interlevel dielectric layer, partially filling spaces between said photoresist plugs;

heat treating said spin on glass layer;

curing said spin on glass layer;

depositing of a second interlevel dielectric layer on said spin on glass layer, completely filling said spaces between said photoresist plugs;

chemical mechanical polishing to expose the top surface of said photoresist plugs, and smoothing a surface of exposed said first interlevel dielectric layer, a surface of exposed said spin on glass layer, and a surface of exposed said second interlevel dielectric layer, in spaces between said photoresist plugs;

removing said photoresist plugs, resulting in formation of a second via hole, in said first interlevel dielectric layer, exposing the top surface of said first level metal structure;

depositing a contact and barrier metallization in said second via hole, including on the exposed top surface of said first level metal structure, and on the exposed surface of said first interlevel dielectric layer, on the exposed surface of said spin on glass layer, and on the exposed surface of said second interlevel dielectric layer;

depositing a second metallization layer on said contact and barrier metallization;

depositing an anti-reflective coating on said second metallization layer; and

patterning said second metallization layer, and said contact and barrier layer, to form a second level metal structure.

5,616,520

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE AND FABRICATION METHOD THEREOF

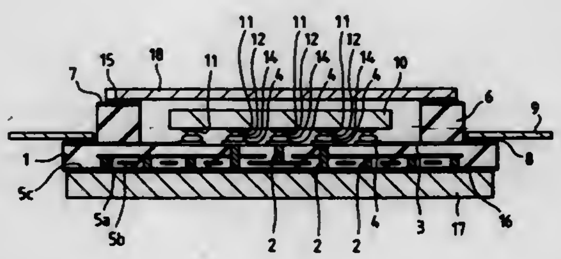
Masahiko Nishiuma, Ohme; Norio Nakazato, Chiba; Hiroyuki Takahashi, Tachikawa; Chiyoshi Kamada, Kokubunji, and Motoo Suwa, Koganei, all of Japan, assignors to Hitachi, Ltd., Chiyoda-Ku, and Hitachi VLSI Engineering Corp., Kodaira, both of Japan

Continuation-in-part of Ser. No. 226,597, Apr. 12, 1994, abandoned, which is a continuation-in-part of Ser. No. 36,577, Mar. 24, 1993, abandoned. This application Dec. 30, 1994, Ser. No. 367,490

Claims priority, application Japan, Mar. 30, 1992, 4-71767; May 19, 1993, 5-116266

Int. Cl.⁶ H01L *21/60*

U.S. Cl. 438—125 **21 Claims**



1. A method of fabricating a semiconductor integrated circuit device comprising the steps of:

providing a semiconductor chip having a main surface, an integrated circuit and a plurality of electrode pads formed on said main surface;

providing a substrate having a main surface, a plurality of wiring electrodes and a plurality of wirings formed on said main surface, one end of each of the wirings electrically connected to the respective wiring electrodes, said substrate having a plurality of leads, each of which is electrically connected to one of other ends of said wirings;

forming first gold balls on said electrode pads of said semiconductor chip by a thermo-compression ball-bonding method;

forming second gold balls on said wiring electrodes of said substrate by said thermo-compression ball-bonding method;

simultaneously flattening said second gold balls formed on said substrate by pressing said gold balls with a flat surface to form gold wiring lands; and

bonding said first gold balls formed on said main surface of said chip to said wiring lands.

5,616,521

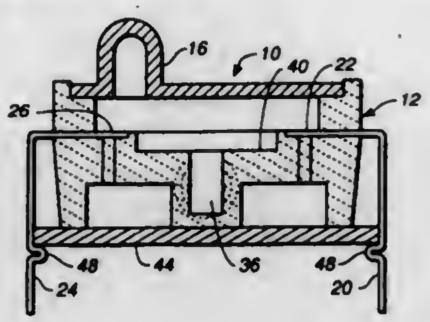
SIDE PORT PACKAGE FOR MICROMACHINED FLUID SENSOR

James T. Cook, Sr., Antioch; David D. Arnold, Saratoga, and Christos Cartsonas, Menlo Park, all of Calif., assignors to Sensym, Incorporated, Milpitas, Calif.

Division of Ser. No. 418,330, Apr. 7, 1995. This application Jun. 6, 1995, Ser. No. 485,186

Int. Cl.⁶ H01L *21/60*

U.S. Cl. 438—51 **2 Claims**



1. A method of mounting a sensor on a circuit board, comprising the steps of:

fixing the sensor in a housing, the housing having a lid and a body, each defining a port connecting an interior of the housing to an exterior of the housing;

mounting the housing on the circuit board with the sensor fixed inside the housing;

temporarily sealing at least the port in the body of the housing;

cleaning the circuit board with the housing mounted thereon, after the step of temporarily sealing; and

then, after the step of cleaning, unsealing the sealed port.

5,616,522

METHOD OF MAKING A MARK ON A WAFER SUCH AS A SEMICONDUCTOR WAFER INCORPORATING A BURIED STRUCTURE

Franck Mallecot, Montrouge; Claude Artigue, Bourg la Reine; Denis LeClerc, Igny; Lionel Legouezigou, Le Val St Germain; Francis Poingt, Ste Genevieve des-Bois, and Frédéric Pommereau, Bretigny sur Orge, all of France, assignors to Alcatel N.V., Rijiswijk, Netherlands

Filed Aug. 23, 1995, Ser. No. 518,274

Claims priority, application France, Aug. 26, 1994, 94 10326

Int. Cl.⁶ H01L *21/027*

U.S. Cl. 438—42 **2 Claims**

1. Method of making an etched mark on a wafer such as a semiconductor wafer including a buried flank, said mark having the shape of an etched flank and defining the transverse position of at least one other etched flank formed in said wafer and constituting said buried flank, said mark and said buried flank being respectively formed within a mark area and an area to be buried and respectively comprising the edges of a mark recess and a recess to be buried etched in said area,

in which method

a) a protection layer is deposited in said mark area and a register layer is deposited on said protection layer, these two layers being of different composition,

b) a photosensitive resin is deposited on said register layer and on said area to be buried,

c) said photosensitive resin is eliminated photolithographically in the areas of said mark recess and said recess to be buried to define future positions of said mark and said flank to be buried,

d) said wafer is etched to eliminate the part of said register layer that is not protected by said photosensitive resin, this etch sparing said resin, said protection layer and the material of said wafer, the position of said mark being then defined by an edge of said register layer,

e) said wafer is etched to recess said flank to be buried, this etch sparing said photosensitive resin, said protection layer and said register layer,

f) said photosensitive resin is eliminated,

g) a burying material such as a semiconductor material is deposited, for example grown epitaxially, to bury said flank to be buried,

h) said material of said wafer is protected in said area to be buried, and

i) said wafer is etched to eliminate the part of said protection layer that is not protected by said register layer, this etch sparing said register layer and said protected material of said wafer and etching the material of said wafer that is not protected to form said mark recess.

5,616,523

METHOD OF MANUFACTURING SENSOR

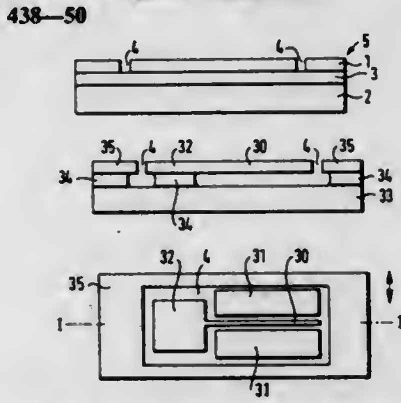
Gerhard Benz, Boeblingen; Jiri Marek, Reutlingen; Frank Bantien, Ditzingen; Horst Muenzel, Reutlingen; Franz Laermer, Stuttgart; Michael Offenberg, Tuebingen, and Andrea Schilp, Schwaebisch Gmuend, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Continuation of Ser. No. 238,548, May 5, 1994, abandoned. This application Apr. 2, 1996, Ser. No. 627,819

Claims priority, application Germany, May 6, 1993, 43 15 012.8

Int. Cl.⁶ H01L *21/306*

U.S. Cl. 438—50 **4 Claims**



1. A method for manufacturing a sensor in a plate of monocrystalline silicon, comprising the steps of:

forming a multilayer plate in which an etching layer is arranged between an upper layer and a lower layer, the upper and lower layers being made of monocrystalline silicon and the etching layer being made of an insulating material selected from the group including silicon oxide, silicon nitride, and glass, wherein the step of forming the multilayer plate includes the steps of

joining two plates together, with at least one of the plates having, on a surface by which it is joined to the other plate, a layer of material the same as that of the etching layer, and

reducing the thickness of the upper silicon layer;

after forming the multilayer plate, forming a structure in the upper layer by introducing troughs that extend through the upper layer to the etching layers, wherein the structure includes

a bending member,

a mount attached to the bending member, and

at least two counterelectrodes; and

after forming the structure in the upper layer, removing a first portion of the etching layer by etching, a second portion of the etching layer remaining beneath the mount and the at least two counterelectrodes and anchoring the mount and the at least two counterelectrodes to the lower layer, the first portion of the etching layer being removed beneath the bending member, wherein the bending member is movable with respect to the mount in a direction parallel to a surface of the lower layer and between the at least two counterelectrodes in response to an acceleration only after the first portion of the etching layer is removed beneath the bending member, a distance between the bending member and the at least two counterelectrodes changing as a function of movement of the bending member.

5,616,524

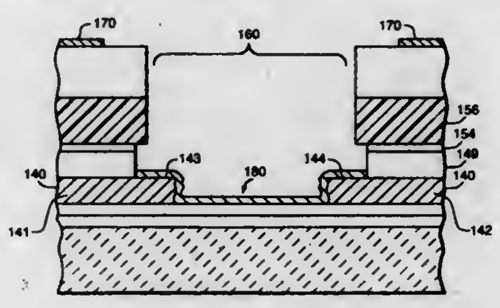
REPAIR METHOD FOR LOW NOISE METAL LINES IN THIN FILM IMAGER DEVICES

Ching Y. Wei, Niskayuna; Jianqiang Liu, Clifton Park; Roger S. Salisbury, Niskayuna; Robert F. Kwasnick, Schenectady; George E. Possin, Niskayuna, and Douglas Albagli, Clifotn Park, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 22, 1995, Ser. No. 580,094

Int. Cl.⁶ H01L *21/465*

U.S. Cl. 438—4 **14 Claims**



1. A method of repairing an open circuit defect in a damaged first conductive component disposed at a first level in a thin film electronic imager device with at least one dielectric material disposed over said defect, the method comprising the steps of:

forming a repair area on said device, said repair area being disposed so as to expose said open-circuit defect in said damaged first conductive component and selected adjoining portions of said first conductive component; and

depositing a conductive material to form a second conductive component and to coincidentally form a repair shunt in said selected repair area disposed in electrical contact with said damaged first conductive component so as to electrically bridge said defect in said damaged first conductive component;

the step of forming said repair area comprising the steps of 1) ablating a portion of the dielectric material disposed over said first conductive component in said repair area, and 2) etching said repair area so as to remove remaining dielectric material in said repair area and to expose said first conductive component in said repair area, the exposed surfaces of said first conductive component being uncontaminated.

5,616,525

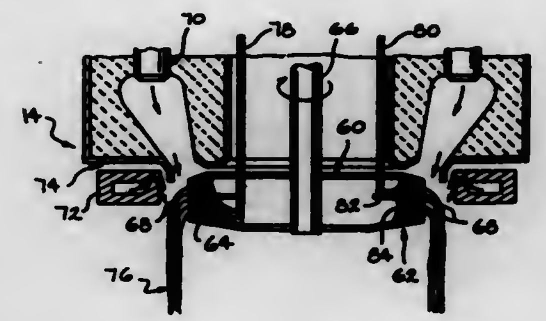
IRREGULARLY SHAPED GLASS FIBERS AND INSULATION THEREFROM

Charles F. Rapp, Newark, and Russell M. Potter, Hebron, both of Ohio, assignors to Owens-Corning Fiberglas Technology, Inc., Summit, Ill.

Continuation-in-part of Ser. No. 434,699, May 4, 1995, abandoned. This application Apr. 29, 1996, Ser. No. 639,643

Int. Cl.⁶ C03C *13/06;3/085;3/093*

U.S. Cl. 501—35 **16 Claims**



1. An irregularly shaped glass fiber suitable for insulation, comprising two distinct glasses, each glass having a different coefficient of thermal expansion (CTE) wherein the CTE's differ by at least 4.0 ppm/C, each glass having a different glass composition, each glass composition having a temperature for a log viscosity of 3 ranging from 1600 to 2050 F. (871 to 1121 C.) and a liquidus temperature at least 150 F. (66 C.) below the log viscosity of 3 temperature, each glass composition consisting essentially of SiO_2, Al_2O_3 and Na_2O, and including from 1.0 to 20.0 mole percent of at least one of BaO, SrO, K_2O, Li_2O, ZnO, TiO_2 and Fe_2O_3.

5,616,526

WHISKER-REINFORCED CERAMIC MATERIAL

Mats Andersson, Huddinge, and Marianne Collin, Enskede, both of Sweden, assignors to Sandvik AB, Sandviken, Sweden

Filed Jun. 20, 1995, Ser. No. 492,521

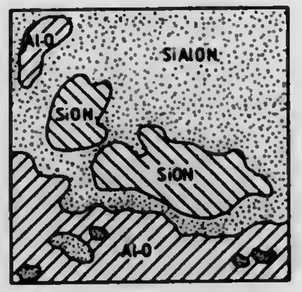
Claims priority, application Sweden, Jul. 15, 1994, 9402513-7

Int. Cl.⁶ C04B *35/119;35/577;35/58*

U.S. Cl. 501—89 **6 Claims**

1. A ceramic material comprising alumina, 10–50% by volume of silicon carbide whiskers, 5–20% by volume of zirconia and 1–20% by volume of a titanium compound-containing cubic phase, said cubic phase having a lattice spacing of 4.29 to 4.40 Å and a zirconium content in said cubic phase of 3–65 weight %, based upon the cubit phase.

5,616,527
COMPOSITE CERAMIC
Hideki Kita, and Wenjea J. Tseng, both of Fujisawa, Japan, assignors to Isuzu Motors Limited, Tokyo, Japan
Continuation of Ser. No. 297,556, Aug. 26, 1994, abandoned.
This application Jan. 30, 1996, Ser. No. 593,282
Claims priority, application Japan, Sep. 13, 1993, 5-249718; Oct. 29, 1993, 5-292525
Int. Cl.[6] C04B *35/596*
U.S. Cl. 501—97 **9 Claims**



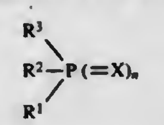
1. A composite ceramic having a porosity of at least 10% and comprising all of elements Si, O and N, and at least one element selected from the group consisting of Al , Ti, Zr, Li, Mg and P;
wherein said elements in part form a matrix phase of Si_3N_4 having an average grain size of at most 3 μm,
wherein said elements further in part form disperse phases in said matrix phase, said disperse phases containing multiple subphase structures constituted of subphases adjoining each other,
wherein said disperse phases contain at least one selected from the group consisting of $Al_6Si_2O_{13}$, SiAlON, TiON, SiON and A_2TiO_5, and
said composite ceramic further comprises at least one reinforcing material selected from the group consisting of coarse Si_3N_4 grains and ceramic fibers dispersed in said matrix phase.

5,616,528
DIELECTRIC CERAMIC COMPOSITION, MULTILAYER RESONATOR MADE OF SAID COMPOSITION AND MULTILAYER FILTER USING SAID RESONATOR
Hirofumi Toda; Shinjiro Shimo; Nobuyoshi Fujikawa; Shinji Isoyama, and Kouichi Maruta, all of Kokubu, Japan, assignors to Kyocera Corporation, Kyoto, Japan
Filed Nov. 29, 1995, Ser. No. 564,816
Claims priority, application Japan, Nov. 29, 1994, 6-294258; Mar. 30, 1995, 7-073275; May 30, 1995, 7-132092
Int. Cl.[6] C04B *35/465*
U.S. Cl. 501—136 **11 Claims**

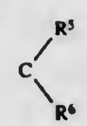
1. A dielectric ceramic composition comprising, as main components, oxides of metal elements Mg, Ca and Ti and represented by a composition formula on the weight basis,
$aMgO \cdot bCaO \cdot cTiO_2$
where a, b and c satisfy the following relationships:
$25 \leqq a \leqq 35$,
$0.3 \leqq b \leqq 7$,
$60 \leqq c \leqq 70$, and
$a+b+c=100$,
blended with boron-containing compound selected from the group consisting of metal boron, boron oxide, colemanite and calcium borate in an amount by weight equivalent to a boron content of from 3 to 20 parts by weight of B_2O_3 per 100 parts by weight of the main components, and an alkali metal-containing compound selected from the group consisting of oxide of lithium, oxide of sodium, oxide of potassium, lithium carbonate, sodium carbonate and potassium carbonate in an amount by weight equivalent to an alkali metal content of from 1 to 12 parts by weight of an alkali metal carbonate per 100 parts by weight of the main components.

5,616,529
PROCESS FOR THE PREPARATION OF BRANCHED LOW-PRESSURE POLYETHYLENE, NEW LOW-PRESSURE POLYETHYLENES, AND PREFORMED BIFUNCTIONAL CATALYSTS
Karl-Heinz A. Ostoja-Starzewski, Bad Vilbel; Josef Witte, Cologne; Herbert Bartl, Odenthal; Karl-Heinz Reichert, and Georgios Vasiliou, both of Berlin, all of Germany, assignors to Bayer AG, Leverkusen, Germany
Continuation of Ser. No. 357,157, Dec. 15, 1994, abandoned, which is a continuation of Ser. No. 162,788, Dec. 6, 1993, abandoned, which is a division of Ser. No. 852,916, Mar. 13, 1992, abandoned, which is a continuation of Ser. No. 332,292, Mar. 31, 1989, abandoned, which is a continuation of Ser. No. 63,026, Jun. 17, 1987, abandoned. This application Feb. 27, 1996, Ser. No. 607,651
Claims priority, application Germany, Jun. 28, 1986, 36 21 763.8
Int. Cl.[6] C08F *4/24;4/26;210/02*
U.S. Cl. 502—154 **2 Claims**

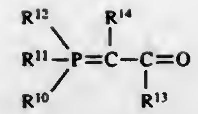
1. A preformed bifunctional catalyst obtained by bonding in an inert reaction medium:
i. a first catalyst comprising a chromium compound on a silica or aluminum oxide support, wherein the quantity of chromium compound, based on the quantity of the support, is from 0.1 to 3.5% by weight, the chromium compound being in the form of a coordinatively unsaturated chromium (II) and/or chromium (III) compound which is obtained by treating the support with an aqueous solution of a chromium (VI) compound, separating the solution from the impregnated support, drying the impregnated support and heating it at temperatures above 500° C. in an oxygen stream for ½ to 3 hours and subsequently reducing the chromium (VI) compound with a gaseous reducing agent at 250° to 500° C. to yield a coordinatively unsaturated chromium (II) compound; with
ii) a second catalyst comprising a nickel compound selected from the group consisting of:
a) a nickel compound produced by reaction of a nickel(O) compound, or a nickel compound which can be converted into a nickel(O) compound in situ, with an adduct or a mixture of a quinoid compound and a tertiary phosphine and with a compound of the formula (I)


(I)

in which
R^1, R^2 and R^3, independently 9 of one another, denote optionally halogen-, hydroxyl-, C_1–C_{20}-alkoxy-, nitro- or C_6–C_{12}-aryloxy-substituted C_1–C_{20}-alkyl, C_2–C_{20}-alkenyl, C_6–C_{12}-aryl or C_3–C_8-cycloalkyl, or denote C_6–C_{12}-aryl-C_1–C_{20}-alkyl, C_1–C_{20}-alkyl-C_6–C_{12}-aryl, C_6–C_{12}-aryl-C_2–C_{20}-alkenyl, C_1–C_{20}-alkyl-C_3–C_8-cycloalkyl and C_6–C_{12}-aryl-C_3–C_8-cycloalkyl, di-C_1–C_4-alkylamino, phenoxy, or alkoxy,
X denotes O, NR^4 or



R^4, R^5 and R^6, independently of one another, denote hydrogen, acyl, silyl, halogen, cyano, nitrophenyl or R^1, and n denotes zero or 1; and
b) a nickel compound obtained by reacting a nickel (O) compound or a compound which can be converted into a nickel (O) compound in situ with compounds of the formulae (I) as defined above and (III)


(III)

in which
R^{10}–R^{14} represent, independently of one another, optionally halogen-, hydroxyl, C_1–C_{20}-alkoxy-, or C_6–C_{12}-aryloxy-substituted C_1–C_{20}-alkyl, C_6–C_{12}-aryl, C_2–C_{30}-alkenyl or C_3–C_8-cycloalkyl, C_6–C_{12}-aryl-C_1–C_{20}-alkyl, C_1–C_{20}-alkyl-C_6–C_{12}-aryl, halogen, hydroxyl, C_1–C_{20}-alkoxy, or C_6–C_{12}-aryloxy, in addition to which
R^{13} may be hydrogen, and
R^{14} may be hydrogen, acyl or sulphonate.

5,616,530
HYDROCONVERSION PROCESS EMPLOYING CATALYST WITH SPECIFIED PORE SIZE DISTRIBUTION
David E. Sherwood, Jr., Beaumont; Pei-Shing E. Dai, Port Arthur, and Charles N. Campbell, II, Austin, all of Tex., assignors to Texaco Inc., White Plains, N.Y.
Division of Ser. No. 130,472, Oct. 1, 1993, Pat. No. 5,514,273.
This application Nov. 29, 1995, Ser. No. 564,769
Int. Cl.[6] B01J *27/18*
U.S. Cl. 502—210 **8 Claims**

1. A catalyst composition consisting essentially of a porous alumina support bearing 2.5–6 wt % of a non-cobalt Group VIII metal oxide, 14.5–24 wt % of a Group VI-B oxide selected from an oxide of tungsten and molybdenum, and 0–4 wt % of a phosphorus oxide, said catalyst having a Total Surface Area of 240–320 m^2/g, Pore Volume of 0.65–0.90 cc/g, and a Pore Diameter Distribution whereby 50–62.8% of the Total Pore Volume is present as micropores of diameter 55–115 Å, 27.5–37% of the Total Pore Volume is present in large pores of a diameter greater than 160 Å, and 20–30.5% of the Total Pore Volume is present as macropores of diameter greater than 250 Å.

5,616,531
NICKEL/SILICA CATALYST FOR HYDROTREATING UNSATURATED ORGANIC COMPOUNDS
Brigitte Feldhauser, Werl-Hilbeck; Wicher T. Koetsler, Emmerich, both of Germany, and Cornelis M. Lok, Heswall, Wirrall, Great Britain, assignors to Unichema Chemie B.V., Gouda, Netherlands
PCT No. PCT/EP93/02385, § 371 Date Jun. 12, 1995, § 102(e) Date Jun. 12, 1995, PCT Pub. No. WO94/06557, PCT Pub. Date Mar. 31, 1994
PCT Filed Sep. 2, 1993, Ser. No. 403,831
Claims priority, application European Pat. Off., Sep. 21, 1992, 92202888
Int. Cl.[6] B01J *21/12*
U.S. Cl. 502—253 **15 Claims**

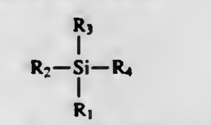
1. A nickel/silica catalyst having a molar ratio Ni/SiO_2 of 10 to 2.5 for hydrotreating unsaturated organic compounds, characterized in that the catalyst comprises zinc in an amount of at least 500 parts by weight per million parts of nickel and maximally in a molar ratio Zn/SiO_2 of 1.

5,616,532
PHOTOCATALYST-BINDER COMPOSITIONS
Adam Heller; Michael V. Pishko, both of Austin, Tex., and Ephraim Heller, Oakland, Calif., assignors to E. Heller & Company, Alameda, Calif.
Continuation-in-part of Ser. No. 216,731, Mar. 22, 1994, abandoned, which is a continuation-in-part of Ser. No. 143,286, Oct. 26, 1993, abandoned, and Ser. No. 143,301, Oct. 26, 1993, abandoned, which is a continuation-in-part of Ser. No. 629,664, Dec. 14, 1990, Pat. No. 5,256,616, said Ser. No. 143,286is a continuation-in-part of Ser. No. 629,664. This application Oct. 21, 1994, Ser. No. 327,016
Int. Cl.[6] B01J *21/06;21/08*
U.S. Cl. 502—242 **49 Claims**

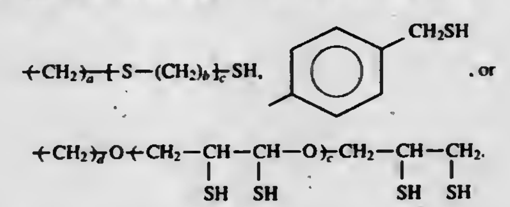
1. A self-cleaning composition comprising:
particles of a photocatalyst responsive to ultraviolet light, said particles having a diameter of about 1–100 nm, said photocatalyst capable of catalyzing oxidation or reduction reactions to degrade organic compounds that contact the composition;
a binder for adhering said particles to a surface, said binder consisting essentially of a substantially non-oxidizable polymer having a backbone sequence of 12 or more atoms, where no more than one in six backbone atoms is carbon, the binder consisting of less than 20 wt % oxidizable carbon and hydrogen atoms;
wherein the particles are dispersed throughout said binder, and wherein the composition forms an abrasion-resistant, thermostable and adherent film when applied to a surface, the binder transmitting a substantial portion of incident ultraviolet light to activate the photocatalyst particles to produce cleaning effects.

5,616,533
CHEMICALLY ACTIVE CERAMIC COMPOSITIONS WITH A THIOL AND/OR AMINE MOIETY
Lawrence L. Tavlarides, Fayetteville, and Nandu Deorkar, Syracuse, both of N.Y., assignors to Syracuse University, Syracuse, N.Y.
Filed Sep. 27, 1994, Ser. No. 313,349
Int. Cl.[6] B01J *20/10;* **C02F** *1/42*
U.S. Cl. 502—407 **21 Claims**

1. A composite material suitable for removing heavy metal ions from waste streams, having the formula


(I)

wherein at least one of R_1-R_3 is SUPPORT—O— and other of R_1-R_3 are the same or different and are unsubstituted or halosubstituted alkyl groups having 1–5 carbon atoms and R_4 is

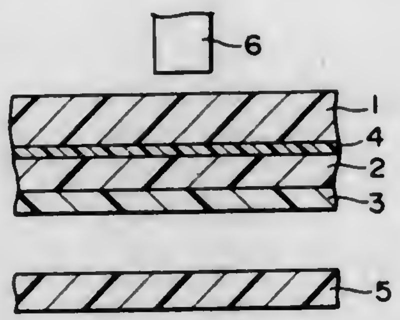


wherein
a is an integer from 1–20, b is an integer from 2–8, c is an integer from 0–5, and d is an integer from 1–5.
10. The composite material according to claim 8, wherein said R_{41}, R_{42} and R_{43} are SUPPORT—O— and R_{44} is —$(CH_2)_3$—SH, and $R_{41'}$, $R_{42'}$ and $R_{43'}$ are SUPPORT—O—, and $R_{44'}$ is —$(CH_2)_3$—NH_2.

5,616,534
SUBLIMATION TYPE THERMOSENSITIVE IMAGE TRANSFER RECORDING MEDIUM

Osamu Ito, Numazu; Hideo Sakurai, Shizuoka-ken; Chiharu Nogawa, and Shinya Kawahara, both of Numazu, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Sep. 29, 1995, Ser. No. 536,606
Claims priority, application Japan, Sep. 29, 1994, 6-259376
Int. Cl.^{6} B41M *5/035;5/38*
U.S. Cl. 503—227 **11 Claims**



1. Thermosensitive image transfer recording medium adapted for imagewise transferring an ink from a surface thereof to a recording sheet when heated imagewise with said recording sheet being superimposed thereon, said recording medium comprising a support, and a transferable ink layer comprising a sublimable dye provided on said support, wherein said surface has a waviness of not greater than 2.0 μm in terms of maximum filtered waviness.

5,616,535
HERBICIDAL COMPOSITIONS INCLUDING GLYPHOSATES AND QUATERNARY AMMONIUM SURFACTANTS

Kenneth G. Bowey, Warwickshire, England, and Neil A. Baldwin, W. Yorks, United Kingdom, assignors to Service Chemicals plc., Daventry, United Kingdom

Filed Apr. 21, 1995, Ser. No. 426,070
Claims priority, application United Kingdom, May 20, 1994, 9410139
Int. Cl.^{6} A01N *25/30*
U.S. Cl. 504—206 **5 Claims**

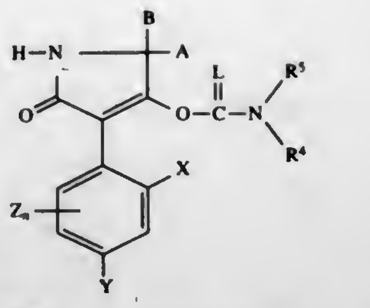
1. A herbicidal composition comprising a glyphosate compound and a surfactant including a diisobutylphenoxyethoxyethyl dimethyl alkaryl ammonium halide compound.

5,616,536
SUBSTITUTED 1H-3-ARYL-PYRROLIDINE-2,4-DIONE DERIVATIVES

Reiner Fischer, Monheim; Bernd-Wieland Krüger, Bergisch Gladbach; Thomas Bretschneider, Siegburg; Christoph Erdelen, Leichlingen; Ulrike Wachendorff-Neumann, Monheim; Klaus Lürssen, Bergisch Gladbach; Hans-Joachim Santel, Leverkusen, and Robert R. Schmidt, Bergisch Gladbach, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 483,913, Jun. 7, 1995, which is a continuation of Ser. No. 166,669, Dec. 14, 1993, abandoned, which is a continuation of Ser. No. 901,051, Jun. 19, 1992, abandoned.
This application Jun. 3, 1996, Ser. No. 657,076
Claims priority, application Germany, Jun. 28, 1991, 41 21 365.3
Int. Cl.^{6} A01N *43/36;43/84;* **C07D** *207/273;413/12*
U.S. Cl. 504—225 **9 Claims**

1. Substituted 3-aryl-pyrrolidine-2,4-dione derivatives of the general formula (I)



(I)

in which

X represents alkyl, halogen or alkoxy,

Y represents hydrogen, alkyl, halogen, alkoxy or halogenoalkyl,

Z represents alkyl, halogen or alkoxy,

n represents a number from 0–3,

A represents hydrogen, or represents alkyl, alkoxyalkyl or alkylthioalkyl, each of which is optionally substituted by halogen, cycloalkyl which is optionally interrupted by hetero atoms, or represents aryl, arylalkyl or hetaryl, each of which is optionally substituted by halogen, alkyl, halogenoalkyl, alkoxy or nitro,

B represents hydrogen, alkyl or alkoxyalkyl,

or in which

A and B together with the carbon atom to which they are bonded form an optionally substituted saturated or unsaturated cycle which can be interrupted by oxygen and/or sulphur,

L represents oxygen or sulphur, and

R^4 and R^5 independently of each other represent hydrogen, or represent alkyl, alkenyl, alkoxy or alkoxyalkyl, each of which is optionally substituted by halogen, or represent optionally substituted phenyl or optionally substituted benzyl, or R^4 and R^5 together represent an alkylene radical which is optionally interrupted by oxygen,

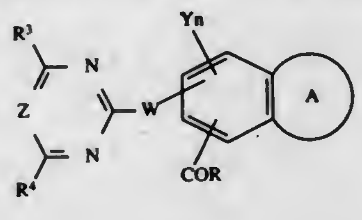
and the pure enantiomeric forms of compounds of the formula (I).

5,616,537
CONDENSED HETEROCYCLIC DERIVATIVES AND HERBICIDES

Sumio Yokota; Masafumi Matsuzawa; Nobuyuki Ohba; Toshihiro Nagata, all of Iwata-gun; Shigehiko Tachikawa, Shizuoka; Takeshige Miyazawa, and Katsutada Yanagisawa, both of Ogasa-gun, all of Japan, assignors to Kumiai Chemical Industry Co., Ltd., and Ihara Chemical Industry Co., Ltd., both of Tokyo, Japan

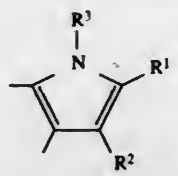
PCT No. PCT/JP93/00909, § 371 Date Mar. 1, 1994, § 102(e) Date Mar. 1, 1994, PCT Pub. No. WO94/01415, PCT Pub. Date Jan. 20, 1994
PCT Filed Jul. 2, 1993, Ser. No. 204,199
Claims priority, application Japan, Jul. 3, 1992, 4-199054; May 14, 1993, 5-136808
Int. Cl.^{6} C07D *403/12;403/06;413/10;* **A01N** *403/54;* **C07D** *417/10*
U.S. Cl. 504—242 **30 Claims**

1. A condensed heterocyclic derivative of the formula (I):

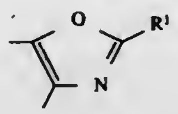


wherein:

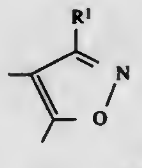
A is a heterocyclic ring of the formula



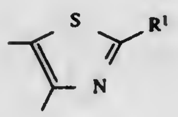
(A-4)



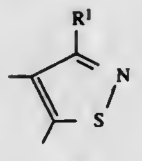
(A-5)



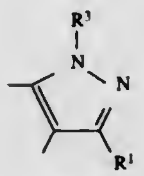
(A-6)



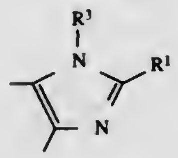
(A-7)



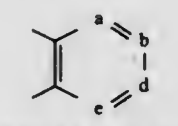
(A-8)



(A-9)



(A-10)



(A-13)

R is a hydrogen atom; a hydroxyl group; an alkoxy group which may be substituted with pentanoyloxy, butanoyloxy, hexanoyloxy, ethoxycarbonyl, ethoxy, ethylmalonyl, benzoyloxy, (2'-trimethylsilyl)ethyl, methoxy, trimethylsilyl or (2'-methoxy)ethoxy; a benzyloxy group which may be substituted with methoxy; a phenyloxy group; a C_1–C_2 alkylthio group; a benzylthio group; a phenylthio group; a C_3-alkenyloxy group which may be substituted with Br; a C_3-alkynyloxy group; a C_3-alkenylthio group; a C_3-alkynylthio group; a C_3-alkylideneaminoxy group; O^- $[N(CH_2CH_2CH_2CH_4)_4]^+$; O^- $(CH_3)_2$ $CHNH_3^+$; O^- $CH_3CH_2CH_2NH_3^+$; O^- Na^+; or a group of the formula —NR^6R^7, wherein:

each of R^6 and R^7, which may be the same or different, is a hydrogen atom, a C_1–C_4 alkyl group, a benzyl group, a phenyl group, a methylsulfonyl group or a phenylsulfonyl group; or R^6 and R^7 may, together with the nitrogen atom, form a 1,3-imidazole ring, pyrrolidine ring, piperidine ring or morpholine ring;

each of R^1 and R^2, which may be the same or different, is a hydrogen atom; a formyl group; a C_1–C_8 alkylcarbonyl group which may be substituted with fluorine; a cyclopentylcarbonyl group; a benzoyl group which may be substituted with chlorine; a pyridylcarbonyl group which may be substituted with methylsulfonyl; a carboxyl group; a group of the formula —$CONR^6R^7$; a C_1–C_8 alkylthiocarbonyl group which may be substituted with diethylamino; a C_3–C_8 cycloalkylthiocarbonyl group; a phenyloxycarbonyl group which may be substituted with chlorine or methoxy; a C_1–C_8 alkoxycarbonyl group which may be substituted with fluorine, chlorine, bromine, 2-furyl, 2-thienyl, cyano, ethoxycarbonyl, hydroxy, dimethylamino, cyclopropyl, methoxy, ethoxy or methylthio; a C_3-cycloalkyl group; a C_1–C_8 alkyl group which may be substituted with fluorine, chlorine, methoxy, nitro, cyano, methoxycarbonyl, dimethylamino or hydroxy; a C_2–C_3 alkenyl group which may be substituted with CN or nitro; a C_3 alkynyl group; an ethoxy group; a methoxy group; a phenyl group which may be substituted with chlorine; a halogen atom; a benzyloxycarbonyl group which may be substituted with methoxy; a benzylthiocarbonyl group; a C_3–C_8 cycloalkoxycarbonyl group; a phenylthiocarbonyl group; a C_3–C_6 alkenyloxycarbonyl group which may be substituted with chlorine; a C_3–C_6 alkynyloxycarbonyl group; a C_3–C_6 alkenylthiocarbonyl group; a C_3–C_6 alkynylthiocarbonyl group; an isopropylideneaminoxycarbonyl group; a nitro group; a cyano group; a halogenated carbonyl group; a group of the formula CR^8=N—R^9; a group of the formula $NR^{10}R^{11}$ or a group of the formula N=$CR^{12}R^{13}$, wherein:

R^6 and R^7 are as defined above;

R^8 is a hydrogen atom, a phenyl group, or a methyl group;

R^9 is a hydroxyl group, a propyl group, a phenyl group, a benzyl group, a benzyloxy group, a methoxy group, a propoxy group, a propenyloxy group, a propynyloxy group, a phenoxy group, a methylamino group, a dimethylamino group, a phenylamino group or a phenylsulfonylamino group which may be substituted with methyl;

each of R^{10} and R^{11}, which may be the same or different, is a hydrogen atom, a methyl group, a phenyl group, a benzyl group, a formyl group, an acetyl group, a benzoyl group, a pyridylcarbonyl group, an ethoxycarbonyl group, a methylsulfonyl group, a phenylsulfonyl group, a carbamoyl group, an ethylthiocarbonyl group or a phenylthiocarbonyl group which may be substituted with chlorine, or R^{10} and R^{11} may, together with the nitrogen atom, form a morpholine ring; and

each of R^{12} and R^{13}, which may be the same or different, is a hydrogen atom, a methyl group or a phenyl group, or R^{12} and R^{13} may, together with the carbon atom to which they are bound, form a cyclopentylidene group;

each of R^3 and R^4, which may be the same or different, is a hydrogen atom; a methoxy group which may be substituted with fluorine; a halogen atom; a methylamino group; a dimethylamino group or a C_1–C_6 alkyl group;

R^5 is a hydrogen atom; a methyl group which may be substituted with methoxycarbonyl, ethoxycarbonyl, t-butylcarbonyloxy or methoxy; a formyl group; a C_1–C_8 alkylcarbonyl group; a benzoyl group which may be substituted with chlorine; a pyridylcarbonyl group; a carbamoyl group; a C_2–C_4 alkoxycarbonyl group; a phenyloxycarbonyl group; a benzyloxycarbonyl group; a methylthiocarbonyl group; a phenylthiocarbonyl group; a methylsulfonyl group; a p-tolylsulfonyl group; a tri-C_1–C_4-alkylsilyl group; a propenyl group; a propynyl group; a 4,6-dimethoxypyridin-2-yl group or a trichloromethylthio group;

each of a, b, d and e is a nitrogen atom or a methine group, provided that at least two of them are nitrogen atoms;

Y is a halogen atom, a methyl group, a methoxy group, a phenyl group, a nitro group, a methylamino group or a dimethylamino group,

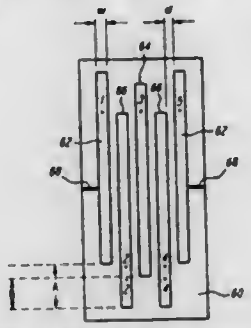
n is an integer of from 0 to 2, provided that when n is 2, it may represent a combination of different groups,

W is an oxygen atom, a sulfur atom, an N-formyl group, a methylene group, a carbonyl group, a cyanomethylene group, and

Z is a methine group;

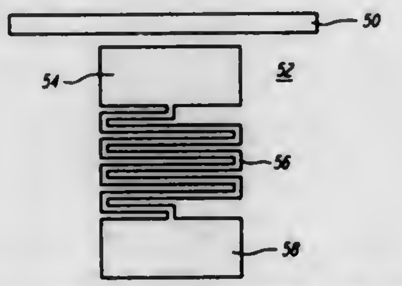
or a salt thereof.

5,616,538
HIGH TEMPERATURE SUPERCONDUCTOR STAGGERED RESONATOR ARRAY BANDPASS FILTER
Gregory L. Hey-Shipton, and George L. Matthaei, both of Santa Barbara, Calif., assignors to Superconductor Technologies, Inc., Santa Barbara, Calif.
Filed Jun. 6, 1994, Ser. No. 254,313
Int. Cl.[6] H01P *1/203;* **H01B** *12/06*
U.S. Cl. 505—210 **3 Claims**



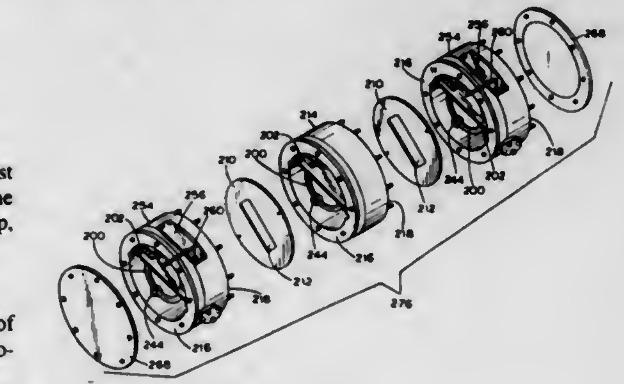
1. A bandpass filter in strip line configuration comprising:
an input tap and an output tap,
a first outside resonator and a second outside resonator, the first outside resonator being connected to the input tap and the second outside resonator being connected to the output tap, and
an additional odd number of resonators including,
a center resonator and
one or more intermediate resonators disposed between each of the first and second outside resonators and the center resonator,
characterized in that the resonators are offset from their nearest neighbor resonator by a distance less than ¼ wavelength of the signal applied to the filter, the filters being arranged such that they are symmetric about a line dissecting the center resonator in a lateral direction.

5,616,539
HIGH TEMPERATURE SUPERCONDUCTOR LUMPED ELEMENT BAND-REJECT FILTERS
Gregory L. Hey-Shipton, Santa Barbara; Stephan M. Rohlfing, Newbury Park; George L. Matthaei, and Roger J. Forse, both of Santa Barbara, all of Calif., assignors to Superconductor Technologies, Inc., Santa Barbara, Calif.
Continuation-in-part of Ser. No. 70,100, May 28, 1993. This application Aug. 26, 1994, Ser. No. 297,289
Int. Cl.[6] H03H *7/01;* **H01B** *12/06*
U.S. Cl. 505—210 **22 Claims**



10. A superconductive band reject structure comprising:
a substrate,
a transmission line disposed on the substrate, and a superconductive lumped element structure which is epitaxial to the substrate comprising:
an input pad, and
a zig-zag conductor comprising an inductor and having one end thereof connected to the input pad and having another end thereof ending in a terminal end,
the input pad and zig-zag conductor being disposed on the substrate and the input pad being electromagnetically coupled to the transmission line, the structure being operably considered for band reject operation.

5,616,540
ELECTROMAGNETIC RESONANT FILTER COMPRISING CYLINDRICALLY CURVED SPLIT RING RESONATORS
Robert D. Lithgow, Schaumburg, and James M. Peters, Evanston, both of Ill., assignors to Illinois Superconductor Corporation, Evanston, Ill.
Filed Dec. 2, 1994, Ser. No. 349,060
Int. Cl.[6] H01P *1/201;7/00;* **H01B** *12/06*
U.S. Cl. 505—210 **25 Claims**

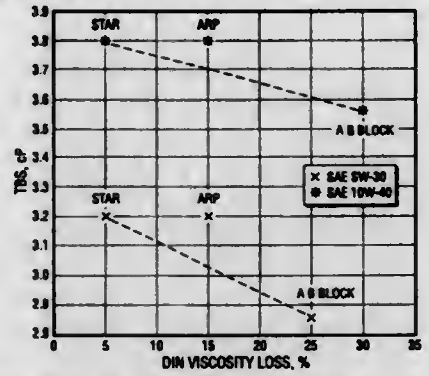


1. A filter comprising:
a housing having a cavity therein;
a cylindrically curved split ring resonator located in the cavity of the housing, the resonator having an outer surface, a first face and a second face, wherein the resonator has a cross-section generally perpendicular to the curve of the resonator, the cross-section is defined by a planar figure closed by the outer surface of the resonator, the planar figure is free of corners and the first and second faces oppose each other to define a gap therebetween, wherein the freedom from corners in the cross-section minimizes electromagnetic discontinuities and
means for coupling electromagnetic energy through the housing to the resonator, wherein the resonator comprises a high-temperature superconducting material.

5,616,541
LOW SOLIDS, HIGH DENSITY FLUIDS FOR WELL DRILLING
James W. Dobson, Jr., Houston; Terry D. Robertson, Kingwood, and Kenneth B. Mondshine, Houston, all of Tex., assignors to Texas United Chemical Company, LLC., Houston, Tex.
Filed Feb. 10, 1995, Ser. No. 386,443
Int. Cl.[6] C08B *11/20;* **C09K** *3/00;7/02;* **E21B** *43/00*
U.S. Cl. 507—145 **14 Claims**

1. In a fluid useful in various downhole oil and gas well operations which comprises a brine having dissolved therein a salt selected from the group consisting of calcium bromide, zinc bromide, and mixtures thereof, and, optionally, one or more additional water soluble salts, the brine having a density from about 1500 kg/m^3 to about 2400 kg/m^3, a viscosifier, a fluid loss control additive, and a bridging agent selected from the group consisting of water soluble, particulate salts which are not appreciably soluble in the brine, acid soluble materials, and mixtures thereof, the improvement wherein the viscosifier comprises silica having an ultimate particle size less than 100 millimicrons in an amount to provide the fluid with a low shear rate viscosity of at least 3000 centipoise.

5,616,542
OIL WITH ASYMMETRIC RADIAL POLYMER HAVING BLOCK COPOLYMER ARM
Robert J. Sutherland, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.
Filed Apr. 3, 1996, Ser. No. 627,294
Int. Cl.[6] C10M *155/02*
U.S. Cl. 508—207 **19 Claims**



1. A lubricating oil composition comprising:
(a) an oil component selected from the group consisting of synthetic oil, mineral oil and mixtures thereof; and
(b) a hydrogenated asymmetric radial polymer, molecules of which have a core composed of the remnant of a tetravalent silicon coupling agent, a plurality of rubbery arms comprising polymerized diene units each having a molecular weight within the range of 10,000-200,000 and a block copolymer arm having at least one polymerized diene block and a polymerized monovinyl aromatic compound block;
said monovinyl aromatic block having a molecular weight within the range of 20,000-50,000, said polymerized diene block of said block copolymer arm having a molecular weight which is equal to or lower than the molecular weight of said rubbery arms, and wherein said molecules are predominantly made up of three of said rubbery arms and one of said block copolymer arms.

5,616,543
LUBRICATING OIL COMPOSITIONS
Stephen J. Cook, North Humberside, England, assignor to BP Chemicals (Additives) Limited, London, England
Filed Mar. 11, 1996, Ser. No. 613,312
Claims priority, application England, Mar. 10, 1995, 9504914
Int. Cl.[6] C10M *133/44*
U.S. Cl. 508—239 **9 Claims**

1. A lubricating oil composition suitable for use in low- or medium-speed diesel engines comprising a fuel oil with a residual oil content characterised in that the lubricating oil composition further comprises a "black paint" reducing amount of the product obtained by the reaction at elevated temperature of a hydrocarbyl-substituted succinic anhydride with either serine or an aminosalicylic acid.

5,616,544
WATER SOLUBLE METAL WORKING FLUIDS
Dennis J. Kalota; Skippy H. Ramsey, both of Fenton, and Larry A. Spickard, Chesterfield, all of Mo., assignors to Monsanto Company, St. Louis, Mo.
PCT No. PCT/US94/11645, § 371 Date Apr. 1, 1996, § 102(e) Date Apr. 1, 1996, PCT Pub. No. WO95/10583, PCT Pub. Date Apr. 20, 1995
PCT Filed Oct. 7, 1994, Ser. No. 624,377
Int. Cl.[6] C10M *149/00;173/02*
U.S. Cl. 508—508 **23 Claims**

1. A metal working composition comprising an aqueous solution of a polyaspartic polymer selected from the group consisting of the acid, salt and amide thereof wherein the concentration of said polymer is in the range of from about 0.5% to about 70% and a corrosion inhibitor in amount effective to prevent substantial corrosion at a pH of the solution where the polyaspartic polymer does not function as corrosion inhibitor.

5,616,545

Patent Not Issued For This Number

5,616,546
AUTOMATIC DISHWASHING COMPOSITIONS COMPRISING MULTIPERACID-FORMING BLEACH ACTIVATORS
Gregory S. Miracle, Hamilton, and Mark R. Sivik, Fairfield, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Division of Ser. No. 383,398, Feb. 3, 1995, Pat. No. 5,534,180. This application Oct. 23, 1995, Ser. No. 546,874
Int. Cl.[6] C11D *3/26;3/39;3/395*
U.S. Cl. 510—223 **14 Claims**

1. A automatic dishwashing detergent composition comprising:
i) from about 0.1% to about 30% by weight of a bleach activator having the formula:

$$[R^1\frac{}{}]_{4-x}\overset{\oplus}{N}[R^2-G]_x \quad Zj \qquad (I)$$

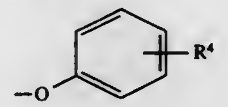
wherein x is an integer from 2 to 4; each G is independently selected from the group consisting o

$$-\overset{O}{\overset{\|}{C}}-L,\quad -O-\overset{O}{\overset{\|}{C}}-L',\quad \text{and}\quad -\overset{NR^3}{\overset{\|}{C}}-L'',$$

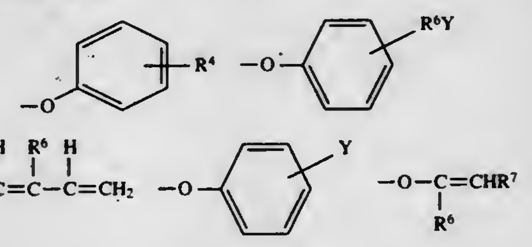
provided that at least one G is

$$-O-\overset{O}{\overset{\|}{C}}-L';$$

and wherein R^3, when present, is selected from C_1–C_{12} alkyl and C_6–C_{12} aryl and wherein L, L' and L" are leaving groups; L' being selected from the group consisting of



wherein R^4 is selected from $-CO_2R^5$ and $-OR^5$ wherein R^5 is selected from C_1–C_{12} alkyl; L and L" being selected from the group consisting of



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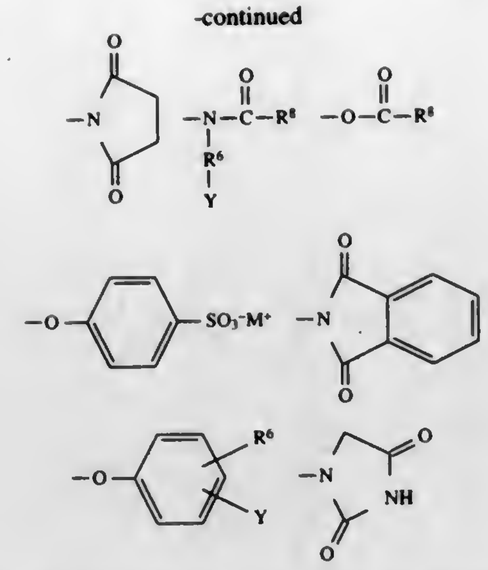


wherein R4 is selected from —CO_2R^5 and —OR^5 wherein R^5 is selected from C_1–C_{12} alkyl; Y is selected from —$(SO_3^-)M$, —$(C(O)O)^-M$, —$(C(O)OR^6$, —$(SO_4^{2-})M$, —$(N(R6)3)^+X^-$, —NO_2, —OH, O $N(R^6)^2$ and mixtures thereof; X^- is an oxidation compatible anion; M is selected from sodium, potassium and ammonium; R^6 and R^7 are selected from C_1–C_{12} alkyl and hydrogen; R^8 is selected from C_1–C_{12} alkyl; each R^1 is independently selected from the group consisting of alkyl, alkenyl, alkynyl, cycloalkyl, cycloalkenyl, alkaryl, aryl, phenyl, hydroxyalkyl, and polyoxyalkylene; each R^2, when present, is independently selected from alkylene, cycloalkylene, alkylenephenylene, phenylene, arylene, alkoxyalkylene, polyalkoxy-alkylene, and hydroxyalkylene, any R^2 being substituted with a moiety selected from H, C_1–C_{20} alkyl, alkenyl, aryl, aralkyl, and alkaryl; Z is an oxidation compatible ion; and j is selected such that said bleach activator is electrically neutral; and

ii) from about 0.1% to about 70% by weight of a source of hydrogen peroxide.

5,616,547

DETERGENT COMPOSITIONS CONTAINING WASH LIQUID-HYDROLYZABLE POLYIMIDE BIOPOLYMERS

Arnaud Ponce, Aubervilliers, and Florence Tournilhac, Paris, both of France, assignors to Rhone-Poulenc Chimie, Courbevoie Cedex, France

Continuation of Ser. No. 863,964, Apr. 6, 1992, abandoned. This application Mar. 9, 1994, Ser. No. 208,040

Claims priority, application France, Apr. 15, 1991, 91 04566

Int. Cl.⁶ C11D *3/28;3/37*

U.S. Cl. 510—230 **30 Claims**

21. A detergent composition comprising:

a) from 0.2 to 80 percent by weight polysuccinimide;

b) from 2 to 50 percent by weight of one or more surfactants; and, in addition to the polysuccinimide,

c) one or more builders, the total amount of polysuccinimide plus other builders corresponding to approximately 0.2 to approximately 80 percent by weight.

5,616,548

STABLE MICROEMULSION CLEANING COMPOSITION

Barbara Thomas, Princeton; Ammanuel Mehreteab, Piscataway, both of N.J.; Rita Erilli, Rocourt, Belgium; Gilbert Gomes, Somerset, N.J.; Frank Bala, Jr., Middlesex, N.J.; Jiashi Tarng, Dayton, N.J.; Regis Lysy, Olne, and Guy Broze, Grace-Hollogne, both of Belgium, assignors to Colgate-Palmolive Co., Piscataway, N.J.

Continuation-in-part of Ser. No. 91,775, Jul. 14, 1993, Pat. No. 5,393,468. This application Nov. 4, 1994, Ser. No. 334,106

Int. Cl.⁶ C11D *3/065*

U.S. Cl. 510—242 **9 Claims**

1. A light duty liquid cleaning microemulsion composition consisting essentially of approximately by weight:

a) 15% to 36% of a magnesium salt of a sulphonate surfactant;

b) 1% to 20% of an alkali metal or ammonium salt of an alkyl polyethenoxy sulfate surfactant;

c) 0 to 10% of an alkyl polyglucoside;

d) 0.1% to 4% of D-limonene;

e) 0.1% to 3% of a hydrotrope which is an alkyl aryl sulphonate;

f) 0.5% to 3% of an alkyl monoalkanol amide or an alkyl dialkanol amide and mixtures thereof;

g) 1% to 25% of at least one cosurfactant; and selected from the group consisting of a mono C1–C6 alkyl ether of R(x)nOH or R1(x)nOH wherein R is a C1–C6 alkyl group, R1 is a C2–C4 alkyl group, X is selected from the group consisting of (OCH2CH2) and (OCH2CH(CH3)) and n is number from 1–4;

h) the balance being water, wherein the composition has a pH of about 1 to 11 and is optically clear having at least 90% light transmission.

5,616,549

MOLECULAR LEVEL CLEANING OF CONTAMINATES FROM PARTS UTILIZING AN ENVRONMENTALLY SAFE SOLVENT

Lawrence A. Clark, P.O. Box 5052, Alameda, Calif. 94501-8552

Filed Dec. 29, 1995, Ser. No. 580,840

Int. Cl.⁶ C11D *7/30;7/24;7/26;* **B08B** *3/08*

U.S. Cl. 510—412 **21 Claims**

1. A solvent mixture for use in a vapor degreasing system, said solvent mixture comprising:

90 percent to about 96.5 percent n-Propyl bromide;

an effective amount of up to about 6.5 percent of a mixture of terpenes, said terpene mixture comprising 35 percent to about 50 percent cis-pinane and 35 percent to about 50 percent trans-pinane; and

3.5 percent to about 5 percent of a mixture of low boiling solvents, said solvent mixture comprising 0.5 percent to about 1 percent nitromethane, 0.5 percent to about 1 percent 1,2-butylene oxide and 2.5

percent to about 3 percent 1,3-dioxolane.

5,616,550

PROCESS FOR THE CONTINUOUS PRODUCTION OF A GRANULAR DETERGENT

Hans-Friedrich Kruse, Korschenbroich; Hans-Josef Beaujean, Dormagen; Thomas Holderbaum, Monheim, and Jochen Jacobs, Wuppertal, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP93/01191, § 371 Date Dec. 19, 1994, § 102(e) Date Dec. 19, 1994, PCT Pub. No. WO93/23523, PCT Pub. Date Nov. 25, 1993

PCT Filed May 13, 1993, Ser. No. 335,810

Claims priority, application Germany, May 21, 1992, 42 16 774.4

Int. Cl.⁶ C11D *11/00*

U.S. Cl. 510—444 **14 Claims**

1. A process for the continuous production of a granular detergent composition comprising:

(a) pregranulating for a period of from 0.5 to 10 minutes at least 40% by weight of a mixture of solid and liquid detergent components, based on the total weight of said solid and liquid cleaning components, in a first low-speed mixer/granulator having mixing tools contained therein operating at a peripheral speed of from 4 m/s to 5 m/s to form a pregranulated detergent mixture; and

(b) granulating for a period of from 0.1 to 30 seconds said pregranulated detergent mixture in a second high-speed mixer/granulator operating at a peripheral speed of from 12 m/s to 30 m/s to form a final granular detergent composition wherein the percentage of granules having a diameter larger than 2 mm is less than 25% by weight of said composition.

5,616,551

Patent Not Issued For This Number

5,616,552

DETERGENT COMPOSITION COMPRISING N-ACYLTHREONINE SALT

Hideki Yoshihara, Kawasaki; Yoshihiro Kobayashi, Tokyo; Yasunobu Noguchi, and Manabu Kitazawa, both of Kawasaki, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Jun. 15, 1995, Ser. No. 490,716

Claims priority, application Japan, Jun. 15, 1994, 6-132849

Int. Cl.⁶ C11D *1/10;17/02;3/33*

U.S. Cl. 510—490 **21 Claims**

1. A detergent composition comprising (A) an N-acylthreonine salt in which the acyl group is a fatty acid residue having 8–22 carbon atoms and (B) a higher fatty acid salt having 8–22 carbon atoms.

5,616,553

FABRIC CONDITIONING COMPOSITIONS

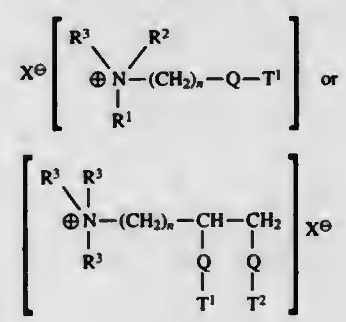
Frederick A. Hartman, Cincinnati, Ohio; Bruno A. J. Hubesch, Tervuren; Johan G. L. Pluyter, Strombeek-Bever, both of Belgium, and Manuel G. Venegas, West Chester, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Aug. 12, 1993, Ser. No. 105,421

Int. Cl.⁶ D06M *16/00;13/46*

U.S. Cl. 510—522 **24 Claims**

1. A fabric softening composition having improved storage stability comprising cellulase and from about 1% to about 80% of a quaternary ammonium softening agent, amine precursor softening agent, or mixtures thereof of the formula:



(I) or

(II)

Q is

$$-O-\overset{O}{\overset{\|}{C}}- \text{ or } -\overset{O}{\overset{\|}{C}}-O- \text{ or } -O-\overset{O}{\overset{\|}{C}}-O- \text{ or}$$

-continued

$$-NR^4-\overset{O}{\overset{\|}{C}}- \text{ or } -\overset{O}{\overset{\|}{C}}-NR^4-;$$

R^1 is $(CH_2)_n$—Q—T^2 or T^3;

R^2 is $(CH_2)_m$—Q—T^4 or T^5 or R^3;

R^3 is C_1–C_4 alkyl or C_1–C_4 hydroxyalkyl or H;

R^4 is H or C_1–C_4 alkyl or C_1–C_4 hydroxyalkyl;

T^1, T^2, T^3, T^4, T^5 are (the same or different) C_{11}–C_{22} alkyl or alkenyl;

n and m are integers from 1 to 4; and

X^- is a softener-compatible anion, and wherein further said composition has a neat pH, at 20° C., of from about 2.0 to no more than 4.5.

5,616,554

IMMUNE-ENHANCING AGENT FOR THERAPEUTIC USE IN IMMUNOCOMPROMISED HOSTS

Terry R. Beardsley, 32547 Mesa Lilac Rd., Escondido, Calif. 92026

Continuation-in-part of Ser. No. 850,586, Mar. 13, 1992, abandoned. This application Jul. 26, 1994, Ser. No. 280,781

Int. Cl.⁶ A61K *38/16*

U.S. Cl. 514—8 **24 Claims**

1. An isolated thymus-derived cationic protein factor TISF expressed by a cloned type II thymic epithelial cell line of human, bovine, canine or feline origin, having a molecular weight of about 50,000 Daltons on a polyacrylamide gel, an isoelectric point of about 6.5, and capable of inducing or enhancing cell-mediated immune responsiveness of mature T-cells and stimulating IL-2 production in a mammal.

5,616,555

CRYSTALLINE R-H-GM-CSF AND METHOD

Paul Reichert, Montville; Gerald S. Hammond, Montclair; Hung V. Le, Rockaway; Tattanahalli L. Nagabhushan, Parsippany, and Paul P. Trotta, Rutherford, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Continuation of Ser. No. 337,578, Nov. 10, 1994, abandoned, which is a continuation of Ser. No. 806,408, Dec. 13, 1991, abandoned, which is a division of Ser. No. 362,187, Jun. 6, 1989, Pat. No. 5,109,119. This application Jun. 7, 1995, Ser. No. 482,168

Int. Cl.⁶ A61K *38/16;* **C07K** *1/00;14/00;17/00*

U.S. Cl. 514—8 **13 Claims**

1. Crystalline, mature human recombinant non-glycosylated Granulocyte Macrophage-Colony Stimulating Factor (GM-CSF).

5,616,556

METHOD OF TREATING RHEUMATOID ARTHRITIS AND OSTEOARTHROSIS USING TETRAHYDRO WS9326A

Takashi Fujii, Ikeda, and Masaaki Tomoi, Higashiosaka, both of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Continuation of Ser. No. 805,624, Dec. 12, 1991, abandoned. This application Nov. 18, 1993, Ser. No. 154,730

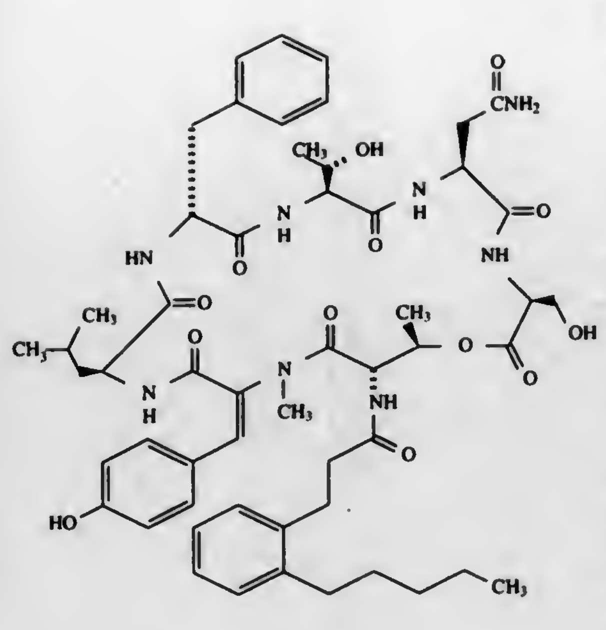
Claims priority, application Japan, Dec. 21, 1990, 2-418298

Int. Cl.⁶ A61K *38/12*

U.S. Cl. 514—11 **3 Claims**

1. A method for treating rheumatoid arthritis or osteoarthrosis, comprising:

administering an effective amount of the peptide having the formula (SEQ ID No. 2):



or a pharmaceutically acceptable salt thereof to a human being or animal suffering from said rheumatoid arthritis or osteoarthrosis.

5,616,557

PROCESS FOR SELECTIVELY INHIBITING ACTIVITY OF ENDOTOXIN

Masakazu Tsuchiya, and Kazuaki Harada, both of Amagasaki, Japan, assignors to Wako Pure Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 183,436, Jan. 19, 1994, abandoned. This application May 31, 1995, Ser. No. 454,866

Claims priority, application Japan, Jan. 21, 1993, 5-026159

Int. Cl.⁶ A61K *38/12*

U.S. Cl. 514—11 **6 Claims**

1. A process for selectively inhibiting the activity of an endotoxin which comprises contacting a) a surfactant and b) an endotoxin-inhibiting peptide selected from the group consisting of polymyxins A, B, C, D, E, K, M and P, tachyplesin, polyphemusin and anti-LPS factor, which binds to the endotoxin to inhibit the reaction of the endotoxin with c) a sample containing the endotoxin.

5,616,558

MEDICAMENTS COMPRISING GLICENTIN AS ACTIVE INGREDIENT

Akira Ohneda, Sendai; Kazuyuki Sasaki, Tokyo; Yohei Natori, Tokyo, and Tomohisa Nagasaki, Tokyo, all of Japan, assignors to Nisshin Flour Milling Co., Ltd., Tokyo, Japan

Filed Jun. 30, 1993, Ser. No. 83,501

Claims priority, application Japan, Jul. 13, 1992, 4-185066

Int. Cl.⁶ A61K *38/00; 38/26;* **C07K** *14/00; 14/605*

U.S. Cl. 514—12 **4 Claims**

1. A method for stimulating insulin secretion comprising: administering an effective amount of glicentin and a pharmaceutically acceptable carrier or excipient to an individual in need thereof.

5,616,559

PAPILLOMAVIRUS E2 TRANS-ACTIVATION REPRESSORS

Elliot J. Androphy, Natick, and James G. Barsoum, Lexington, both of Mass., assignors to Biogen, Inc., Cambridge, and New England Medical Center Hospitals, Inc., Boston, both of Mass.

Division of Ser. No. 94,128, Sep. 24, 1993, which is a continuation-in-part of Ser. No. 646,998, Jan. 28, 1991, Pat. No. 5,219,990. This application May 31, 1995, Ser. No. 455,674

Int. Cl.⁶ C07K *14/00*

U.S. Cl. 514—12 **3 Claims**

1. A pharmaceutically acceptable composition for treating papillomavirus infection comprising a pharmaceutically acceptable carrier and a pharmaceutically effective amount of an E2 trans-activation repressor fusion protein, said fusion protein comprising a transport moiety and an E2 trans-activation repressor selected from the group consisting of:

a) an E2 trans-activation repressor comprising a polypeptide having an amino acid sequence homologous to the native E2 DNA binding domain (SEQ ID NO:1), said polypeptide being capable of forming inactive heterodimers with native E2 protein and said inactive heterodimers being incapable of binding to E2 DNA binding sites;

b) an E2 trans-activation repressor comprising a polypeptide fragment of the native E2 DNA binding domain (SEQ ID NO:1), said fragment being capable of forming inactive heterodimers with native E2 protein and said inactive heterodimers being incapable of binding to E2 DNA binding sites; and

c) an E2 trans-activation repressor comprising a polypeptide having an amino acid sequence homologous to a fragment of the native E2 DNA binding domain SEQ ID NO:1), said fragment being capable of forming inactive heterodimers with native E2 protein and said inactive heterodimers being incapable of binding to E2 DNA binding sites.

5,616,560

METHODS FOR THE TREATMENT OF OSTEOPOROSIS USING BISPHOSPHONATES AND PARATHYROID HORMONE

Ann D. Geddes, Norwich, N.Y., and Rogely W. Boyce, Pottstown, Pa., assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 424,822, Apr. 19, 1995, abandoned, which is a continuation of Ser. No. 235,201, Apr. 29, 1994, abandoned, which is a continuation of Ser. No. 809,620, Dec. 17, 1991, abandoned. This application Mar. 20, 1996, Ser. No. 619,103

Int. Cl.⁶ C07K *1/00;* **A61K** *38/27; 38/00*

U.S. Cl. 514—12 **24 Claims**

1. A method of increasing bone mass in a human or other animal subject afflicted with osteoporosis, consisting essentially of a thirty(30)-day treatment period, consisting essentially of a parathyroid hormone administration regimen and bisphosphonate administration regimen, wherein

(a) said parathyroid hormone administration regimen consists essentially of the administration to said subject of parathyroid hormone at a level of from about 4 IU/kg per day to about 15 IU/kg per day that said parathyroid hormone is administered, provided that said parathyroid hormone is administered at least one day every seven days of every said thirty(30)-day treatment period; and wherein

(b) said bisphosphonate administration regimen consists essentially of the administration to said subject of a bisphosphonate at a level of from about 0.0005 mgP/kg to about 1.0 mgP/kg per day that said bisphosphonate is administered, provided that said bisphosphonate is administered at least 1 day of every said thirty(30)-day treatment period.

5,616,561

TGF-β ANTAGONISTS AS MITIGATORS OF RADIATION-INDUCED TISSUE DAMAGE

Mary H. Barcellos-Hoff, Oakland, Calif., assignor to Regents of the University of California, Oakland, Calif.

Filed Mar. 31, 1995, Ser. No. 414,020

Int. Cl.⁶ A61K *38/00*

U.S. Cl. 514—13 **21 Claims**

1. A method for the mitigation of human tissue damage due to radiation exposure comprising the administration of a TGF-β antagonist.

5,616,562

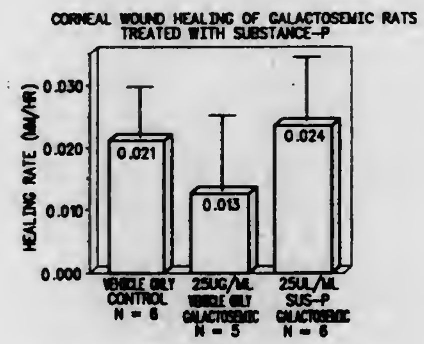
METHODS AND COMPOSITIONS USING SUBSTANCE P TO PROMOTE WOUND HEALING

Christopher J. Murphy, 858 Terry Pl., Madison, Wis. 53711; Ted W. Reid, 3511 43rd St., Lubbock, Tex. 79413, and Mark J. Mannis, 5061 Keane Dr., Carmichael, Calif. 95608

Continuation-in-part of Ser. No. 148,021, Nov. 4, 1993, abandoned, which is a continuation of Ser. No. 13,676, Feb. 4, 1993, abandoned, which is a continuation of Ser. No. 876,805, Apr. 29, 1992, abandoned, which is a continuation of Ser. No. 758,330, Aug. 28, 1991, abandoned, which is a continuation of Ser. No. 515,371, Apr. 27, 1990, abandoned. This application Jul. 25, 1994, Ser. No. 279,991

Int. Cl.⁶ A61K *38/10*

U.S. Cl. 514—15 **7 Claims**



1. A method for promoting healing of a corneal or an epithelial wound in a substance P deficient patient, said method comprising applying substance P to the wound in an amount sufficient to promote healing of the wound.

5,616,563

GLUTATHIONE N-HYDROXYCARBAMOYL THIOESTERS AND METHOD OF INHIBITING NEOPLASTIC GROWTH

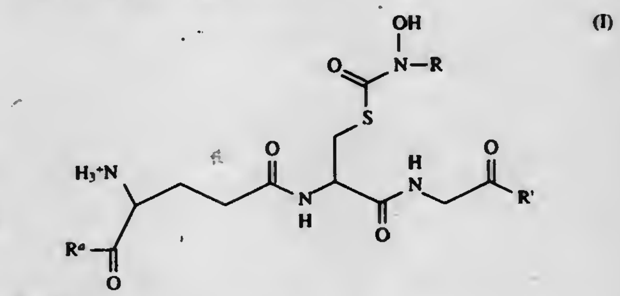
Donald J. Creighton, and Diana S. Hamilton, both of Baltimore, Md., assignors to University of Maryland Baltimore Campus, Baltimore, Md.

Continuation-in-part of Ser. No. 986,691, Dec. 7, 1992, abandoned. This application Jun. 24, 1994, Ser. No. 264,940

Int. Cl.⁶ A61K *38/06*

U.S. Cl. 514—18 **25 Claims**

1. A compound of the formula



(I)

wherein

R is hydrogen, $(C_1–C_{18})$alkyl, $(C_6–C_{20})$aryl, or $(C_6–C_{20})$aryl substituted with halogen or $(C_1–C_{18})$alkyl;

R' is hydroxyl, or $—O(C_1–C_{18})$alkyl; and

R^a is an $—O(C_1–C_{18})$alkyl, pharmaceutically acceptable salts thereof, or mixtures thereof.

5,616,564

ANTIPARASITIC OLIGONUCLEOTIDES ACTIVE AGAINST DRUG RESISTANT MALARIA

Eliezer Rapaport, Belmont, and Paul C. Zamecnik, Shrewbury, both of Mass., assignors to Worcester Foundation for Biomedical Research, Inc., Worcester, Mass.

Continuation of Ser. No. 815,393, Dec. 31, 1991, abandoned. This application Jan. 7, 1994, Ser. No. 178,450

Int. Cl.⁶ A61K *48/00;* **C12A** *1/68;* **C12N** *5/10;* **C07H** *21/04*

U.S. Cl. 514—44 **44 Claims**

11. An antimalarial oligonucleotide comprising one or more phosphorothioate internucleotide linkages and consisting of a nucleotide sequence that is complementary to the mRNA of a gene essential to the growth or reproduction of drug-resistant *Plasmodium falciparum*, which oligonucleotide is taken up by parasitized erythrocytes and inhibits the growth or reproduction of *Plasmodium falciparum*.

5,616,565

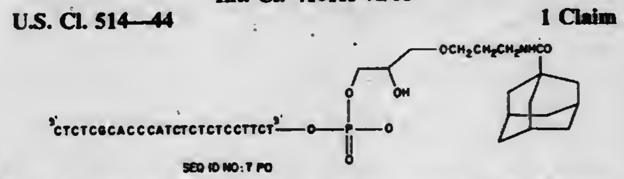
CYCLODEXTRIN CELLULAR DELIVERY SYSTEM FOR OLIGONUCLEOTIDES

Sudhir Agrawal, Shrewsbury; Qiuyan Zhao, Worcester, and Ivan Habus, Shrewsbury, all of Mass., assignors to Hybridon, Inc., Worcester, Mass.

Division of Ser. No. 341,522, Nov. 17, 1994, which is a continuation-in-part of Ser. No. 252,072, Jun. 1, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 480,834

Int. Cl.⁶ A61K *48/00*

U.S. Cl. 514—44 **1 Claim**



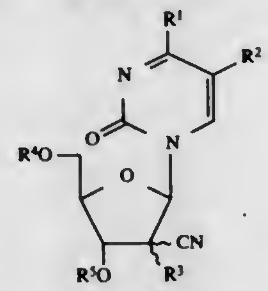
1. A method of increasing the cellular uptake of an antisense oligonucleotide, comprising the steps of

(a) covalently linking the oligonucleotide to adamantane,

(b) non-covalently complexing the adamantane-linked oligonucleotide with a cyclodextrin, and
(c) contacting cells with the complex of (b).

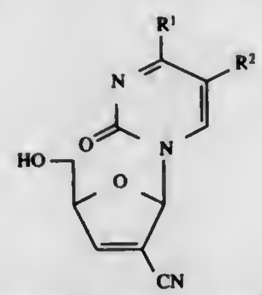
5,616,566
METHOD OF INHIBITING HIV REPLICATION WITH 2',3'-DIDEOXYADENOSINE
Hiroaki Mitsuya, Rockville; Samuel Broder, and Robert Yarchoan, both of Bethesda, all of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.
Division of Ser. No. 663,288, Feb. 28, 1991, Pat. No. 5,254,539, which is a continuation of Ser. No. 420,664, Aug. 28, 1989, abandoned, which is a continuation of Ser. No. 84,055, Aug. 11, 1987, Pat. No. 4,861,759, which is a continuation-in-part of Ser. No. 937,925, Dec. 4, 1986, abandoned, which is a continuation-in-part of Ser. No. 769,016, Aug. 26, 1985, abandoned. This application Apr. 30, 1993, Ser. No. 56,043
Int. Cl.^{6} A61K *31/70;* **C07H** *19/173;19/20*
U.S. Cl. 514—47 **4 Claims**
4. A method for inhibiting HIV replication within an HIV-infected cell comprising treating said cells with 2',3'-dideoxyadenosine or a pharmaceutically acceptable salt thereof, wherein the resulting 2',3'-dideoxyadenosine-5'-triphosphate contacts the intracellular HIV reverse transcriptase.

5,616,567
2'-CYANO PYRIMIDINE NUCLEOSIDE COMPOUNDS
Takuma Sasaki, Kanazawa; Akira Matsuda, Sapporo, and Tohru Ueda, deceased, late of Sapporo, all of Japan, assignors to Sankyo Company, Limited, Tokyo, Japan
Continuation of Ser. No. 989,719, Dec. 14, 1992, abandoned. This application Sep. 7, 1994, Ser. No. 301,720
Claims priority, application Japan, Jun. 15, 1990, 2-156688
Int. Cl.^{6} A61K *31/70;* **C07H** *19/06;19/09*
U.S. Cl. 514—49 **20 Claims**
1. A compound having the formula:



(1)

or the formula:



(2)

and pharmacologically acceptable nontoxic salts of said compounds of formulas (1) and (2), wherein
R^1 represents a hydroxyl group or an unsubstituted amino group;
R^2 represents a hydrogen atom or an alkyl group having 1 to 4 carbon atoms;
R^3 represents a hydrogen atom; and
R^4 and R^5 each represent a hydrogen atom.
15. An antitumor agent comprising an effective amount of a compound selected from the compounds set forth in claim 1 and a pharmaceutically acceptable carrier or excipient.

5,616,568
FUNCTIONALIZED DERIVATIVES OF HYALURONIC ACID
Tara Pouyani, Stony Brook, and Glenn D. Prestwich, St. James, both of N.Y., assignors to The Research Foundation of State University of New York, Albany, N.Y.
Filed Nov. 30, 1993, Ser. No. 158,996
Int. Cl.^{6} A61K *31/715;* **C07H** *1/00;5/04;5/06*
U.S. Cl. 514—54 **19 Claims**
1. A composition of matter comprising hyaluronate functionalized with a dihydrazide at glucuronic acid sites of the hyaluronate.

5,616,569
PET FOOD PRODUCT CONTAINING FERMENTABLE FIBERS AND PROCESS FOR TREATING GASTROINTESTINAL DISORDERS
Gregory A. Reinhart, Dayton, Ohio, assignor to The Iams Company, Dayton, Ohio
Filed Mar. 28, 1994, Ser. No. 219,014
Int. Cl.^{6} A61K *31/715;* **A23K** *1/18*
U.S. Cl. 514—54 **16 Claims**
1. A pet food product for use in maintaining normal gastrointestinal function and ameliorating chronic diarrhea in pet animals by providing short chain fatty acids in the gastrointestinal tract of said pet animals comprising a pet food composition containing fermentable fibers which have an organic matter disappearance of 15 to 60 weight percent when fermented by fecal bacteria for a 24 hour period, said fermentable fibers being present in amounts from 3 to 9 weight percent of supplemental total dietary fiber.

5,616,570
USE OF NON-ABSORBABLE SYNTHETIC SULFATED POLYSACCHARIDES TO DECREASE CHOLESTEROL ABSORBTION
Louis G. Lange, III, 38 Kingsburg Pl., St. Louis, Mo. 63112, and Curtis A. Spilburg, 2230 Willow Ridge La., Chesterfield, Mo. 63017
Continuation of Ser. No. 773,875, Oct. 18, 1991, abandoned. This application Aug. 1, 1994, Ser. No. 283,723
Int. Cl.^{6} A61K *31/72*
U.S. Cl. 514—54 **12 Claims**
1. A method for inhibiting the intestinal absorption of cholesterol in a mammal by administering orally a non-absorbable inhibitor of cholesterol esterase comprising a 3-sulfated polysaccharide having a molecular weight greater than 100,000 Da.

5,616,571
BISPHOSPHONATES PREVENT BONE LOSS ASSOCIATED WITH IMMUNOSUPPRESSIVE THERAPY
Anastasia G. Daifotis, and Ashley J. Yates, both of Westfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.
Filed Jun. 6, 1995, Ser. No. 471,466
Int. Cl.^{6} A61K *31/66*
U.S. Cl. 514—102 **14 Claims**
1. A method of treating or preventing bone loss associated with immunosuppressive therapy comprising: administering an effective amount of a bisphosphonate selected from the group consisting of: 4-amino-1-hydroxybutylidene-1,1-bisphosphonic acid, 1-hydroxyethidene-bisphosphonic acid, 3-amino-1-hydroxypropylidene-1,1-diphosphonate, 2-(3-pyridinyl)-1-hydroxyethylidene-bisphosphonic acid, dichloromethylene-bisphosphonic acid, chloro-4-phenylthiomethylidene-bisphosphonic acid, 1-hydroxy-3(methylpentylamino) -proylidene-bisphosphonic acid, pharmaceutically acceptable salts of any of the foregoing, and mixtures thereof to a patient undergoing immunosuppressive therapy.

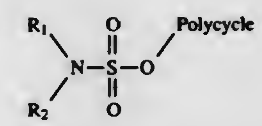
5,616,572
USE OF SALICYLIC ACID FOR REGULATING SKIN WRINKLES AND/OR SKIN ATROPHY
Roy L. Blank, Spring Valley, N.Y., assignor to Richardson-Vicks Inc., Shelton, Conn.
Continuation of Ser. No. 434,250, May 3, 1995, abandoned, which is a continuation of Ser. No. 28,756, Mar. 9, 1993, abandoned, which is a continuation of Ser. No. 796,750, Nov. 25, 1991, abandoned. This application Apr. 30, 1996, Ser. No. 641,296
Int. Cl.^{6} A61K *31/60*
U.S. Cl. 514—159 **1 Claim**
1. A method for preventing, retarding, arresting, or reversing wrinkles or atrophy in mammalian skin comprising treating the skin with a safe and effective amount of a composition comprising:
(a) a safe and effective amount of salicylic acid;
(b) a safe and effective amount of a retinoid selected from the group consisting of all-trans retinoic acid, 13-cis-retinoic acid, Vitamin A, natural or synthetic analogs of Vitamin A, and mixtures thereof; and
(c) a pharmaceutically-acceptable carrier.

5,616,573
GLUCOCORTICOIDS
Hans J. Zentel; Michael Töpert; Henry Laurent; Thomas Brumby, and Peter Esperling, all of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin, Germany
PCT No. PCT/EP94/00937, § 371 Date Oct. 6, 1995, § 102(e) Date Oct. 6, 1995, PCT Pub. No. WO94/22898, PCT Pub. Date Oct. 13, 1994
PCT Filed Mar. 24, 1994, Ser. No. 530,352
Claims priority, application Germany, Apr. 7, 1993, 43 11 987.5
Int. Cl.^{6} A61K *31/57;* **C07J** *5/00*
U.S. Cl. 514—172 **6 Claims**
1. A glucocorticoid of general formula I

R—Val—O—GC (I),

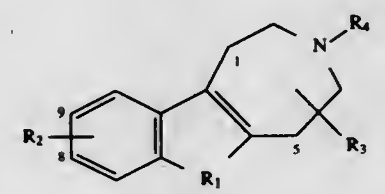
in which
O-GC is the radical of a 21-hydroxycorticoid that has an antiinflammatory action,
Val represents a valine radical in the 21-position of the corticoid and
R means a hydrogen atom or a hydrocarbon radical with up to 32 carbon atoms that is optionally substituted by hydroxy groups, amino groups, oxo groups and/or halogen atoms and/or interrupted by oxygen atoms, SO_2 groups and/or NH groups a salt thereof.

5,616,574
STEROID SULPHATASE INHIBITORS
Michael J. Reed, London, and Barry V. L. Potter, Bathford, both of United Kingdom, assignors to Imperial College of Science, Technology and Medicine, United Kingdom
PCT No. PCT/GB92/01587, § 371 Date Dec. 27, 1994, § 102(e) Date Dec. 27, 1994, PCT Pub. No. WO93/05064, PCT Pub. Date Mar. 18, 1993
PCT Filed Aug. 28, 1992, Ser. No. 196,192
Claims priority, application United Kingdom, Aug. 29, 1991, 9118478
Int. Cl.^{6} A61K *31/165;* **C07J** *1/00*
U.S. Cl. 514—178 **12 Claims**
1. A compound of the formula



where R_1 and R_2 are each independently selected from H and methyl, provided that at least one of R_1 and R_2 is hydrogen; and
the group —O— polycycle is a 3-sterol the sulfate of which is hydrolyzable by an enzyme having steroid sulphatase (E.C. 3.1.6.2) activity;
or a pharmaceutically acceptable salt thereof.

5,616,575
BIOACTIVE TRICYCLIC IBOGAINE ANALOGS
S. Mbua N. Efange, Plymouth, Minn., and Deborah C. Mash, North Bay Village, Fla., assignors to Regents of the University of Minnesota, Minneapolis, Minn., and University of Miami, Miami, Fla.
Filed Dec. 4, 1995, Ser. No. 567,374
Int. Cl.^{6} A61K *31/395*
U.S. Cl. 514—215 **21 Claims**
1. A compound of the formula (I):



(I)

wherein
R_1 is S or O;
R_2 is H, $(C_1–C_4)$ alkyl, $(C_1–C_4)$alkoxy, OH, CN, $CONH_2$, halo, oxazolyl, $(C_1–C_4)$alkylthio, or trifluoro$(C_1–C_2)$alkyl;
R_3 is phenyl which is unsubstituted or is substituted at the 2'- or 3'-position of the phenyl ring with halo, $N(R)_2$, wherein each R is H_2 or $(C_1–C_4)$alkyl; or NO_2; and
R_4 is $(C_3–C_6)$cycloalkyl, $(C_1–C_4)$alkyl, $(C_3–C_6)$cycloalkyl or $(C_1–C_4)$alkyl optionally containing 1–2 double bonds.
17. A method of treating cocaine use comprising administering to a human in need of such treatment, an amount of a compound of claim 1 effective to reduce the use of cocaine by said human.

5,616,576

CONTROLLING BONE RESORPTION WITH PYRROLOQUINOLINE QUINONE (PQQ) AND RELATED COMPOUNDS

Peter V. Hauschka, Needham, and Paul M. Gallop, Chestnut Hill, both of Mass., assignors to The Children's Medical Center Corporation, Boston, Mass.

Filed Jul. 12, 1994, Ser. No. 274,193

Int. Cl.[6] A61K *31/675;31/44*

U.S. Cl. 514—81 **14 Claims**

1. A method of reducing undesired bone resorption in a patient by administering to said patient a bone-resorption decreasing amount of PQQ or of a compound that contains a PQQ group.

5,616,577

PROTEIN KINASE C INHIBITOR

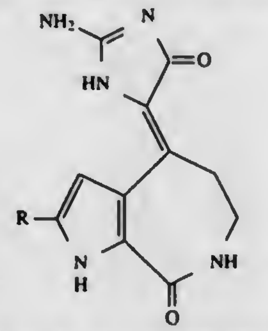
Ponnal Nambi, Berwyn, and Ashok D. Patil, King of Prussia, both of Pa., assignors to SmithKline Beecham Corporation

Continuation of Ser. No. 290,981, Aug. 25, 1994, Pat. No. 5,565,448. This application Jul. 29, 1996, Ser. No. 688,630

Int. Cl.[6] A61K *31/55*

U.S. Cl. 514—215 **6 Claims**

1. A method of inhibiting protein kinase C in mammals which comprises administering to the mammal in need of such treatment an effective amount of a compound of formula (1):



(1)

in which R is H or Br; or a pharmaceutically acceptable salt thereof.

5,616,578

METHOD OF TREATING HUMAN IMMUNODEFICIENCY VIRUS INFECTION USING A CYCLIC PROTEASE INHIBITOR IN COMBINATION WITH A REVERSE TRANSCRIPTASE INHIBITOR

Michael J. Otto, West Chester, Pa., assignor to The Dupont Merck Pharmaceutical Company, Wilmington, Del.

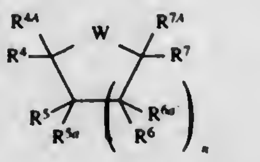
Filed Aug. 26, 1993, Ser. No. 110,603

Int. Cl.[6] A61K *31/55;31/51;31/52;31/505*

U.S. Cl. 514—218 **26 Claims**

1. A method of treating human immunodeficiency virus(HIV)infection in a mammal comprising administering in combination to the mammal a synergistically and therapeutically effective amount of: (i) at least one cyclic HIV protease inhibitor, and (ii) at least one HIV reverse transcriptase inhibitor selected from the group consisting of AZT, ddI, ddC, d4T, and 3TC;

wherein the HIV protease inhibitor is selected from compounds of the Formula (I):



or a pharmaceutically acceptable salt thereof, wherein:

R^4 and R^7 are independently selected from the following groups:
- hydrogen;
- C_1–C_8 alkyl substituted with 0–3 R^{11};
- C_2–C_8 alkenyl substituted with 0–3 R^{11};
- C_2–C_8 alkynyl substituted with 0–3 R^{11};
- a C_3–C_{14} carbocyclic ring system substituted with 0–3 R^{11} or R^{12};
- a 5- to 10-membered heterocyclic ring system containing 1 to 4 heteroatoms independently selected from oxygen, nitrogen or sulfur, said heterocyclic ring system being substituted with 0–2 R^{12};
- —OR^{13}; —SR^{13}; CO_2R^{13};

R^{4A} and R^{7A} are independently selected from the following groups:
- hydrogen;
- C_1–C_4 alkyl substituted with halogen or C_1–C_2 alkoxy; benzyl substituted with halogen or C_1–C_2 alkoxy; —OR^{13}; —SR^{13}; CO_2R^{13};

R^4 and R^{4A} can alternatively join to form a 5–7 membered carbocyclic ring substituted with 0–2 R^{12};

R^7 and R^{7A} can alternatively join to form a 5–7 membered carbocyclic ring substituted with 0–2 R^{12};

n is 1;

R^5 is selected from H; halogen; C_1–C_6 alkyl substituted with 0–3 R^{11}; —$N(R^{20})_2$; —SR^{20}; or —OR^{20};

R^6 is independently selected from: hydrogen, halogen, C_1–C_6 alkyl substituted with 0–3 R^{11}, —$N(R^{20})_2$, —SR^{20}, or —OR^{21};

R^5 and R^6 can alternatively join to form an epoxide or aziridine ring; —OCH_2SCH_2O—; —OS(=O)O—; —OC(=O)O—; —OCH_2O—; —OC(=S)O—; —OC(=O)C(=O)O—; —$OC(CH_3)_2O$—; —$OC((CH_2)_3NH_2)(CH_3)O$—; —$OC(OCH_3)(CH_2CH_2CH_3)O$—; —OS(=O)O—; —NHC(=O)NH—; —OC(=O)NH—; —NHC(=O)O—; —$NHCH_2O$—; —OCH_2NH—; —NHC(=S)O—; —OS(=O)NH—; —NHC(=O)C(=O)O—; —OC(=O)C(=O)NH—; —NHC(=O)C(=O)NH—; —$OC(CH_3)_2O$—; —$NHC(CH_3)_2O$—; —$OC(CH_3)_2NH$— or any group that, when administered to a mammalian subject, cleaves to form a free dihydroxyl or diamino or hydroxyl and amino;

R^{5a} is selected from hydrogen, halogen, C_1–C_6 alkyl, —$N(R^{20})_2$, —SR^{20}, or —OR_{20};

R^{6a} is selected from: hydrogen, halogen, C_1–C_6 alkyl, —$N(R^{20})_2$, —SR^{20} or —OR^{21};

R^5 and R^{5a} can alternatively join to form =O, =S, or a ketal ring;

R^6 and R^{6a} can alternatively join to form =O, =S, or a ketal ring;

R^{20} and R^{21} are independently selected from:
- hydrogen;
- C_1–C_6 alkyl substituted with 0–3 R^{11};
- C_3–C_6 alkoxyalkyl substituted with 0–3 R^{11};
- C_1–C_6 alkylcarbonyl substituted with 0–3 R^{11};
- C_1–C_6 alkoxycarbonyl substituted with 0–3 R^{11};
- C_1–C_6 alkylaminocarbonyl substituted with 0–3 R^{11};
- benzoyl substituted with 0–3 R^{12};
- phenoxycarbonyl substituted with 0–3 R^{12};
- phenylaminocarbonyl substituted with 0–3 R^{12}; or any group that, when administered to a mammalian subject, cleaves to form a free hydroxyl, amino or sulfhydryl;

R^{11} is selected from one or more of the following:
- H, keto, halogen, cyano, —$CH_2NR^{13}R^{14}$, —$NR^{13}R^{14}$, —CO_2R^{13}, —OC(=O)R^{13},—OR^{13}, C_2–C_6 alkoxyalkyl, —$S(O)_mR^{13}$, —NHC(=NH)NHR^{13}, —C(=NH)NHR^{13}, —C(=O)$NR^{13}R^{14}$, —NR^{14}C(=O)R^{13}, =NOR^{14}, —NR^{14}C(=O)OR^{14}, —OC(=O)$NR^{13}R^{14}$, —NR^{13}C(=O)$NR^{13}R^{14}$, —$NR^{14}SO_2NR^{13}R^{14}$, —$NR^{14}SO_2R^{13}$, —SO_2 $NR^{13}R^{14}$, C_1–C_4 alkyl, C_2–C_4 alkenyl, C_3–C_{10} cycloalkyl, C_3–C_6 cycloalkylmethyl, benzyl, phenethyl, phenoxy, benzyloxy, nitro, C_7–C_{10} arylalkyl, hydroxamic acid, hydrazide, boronic acid, sulfonamide, formyl, C_3–C_6 cycloalkoxy, C_1–C_4 alkyl substituted with —$NR^{13}R^{14}$, C_1–C_4 hydroxyalkyl, methylenedioxy, ethylenedioxy, C_1–C_4 haloalkyl, C_1–C_4 haloalkoxy, C_1–C_4 alkoxycarbonyl, C_1–C_4 alkylcarbonyloxy, C_1–C_4 alkylcarbonyl, C_1–C_4 alkylcarbonylamino, —OCH_2CO_2H, 2-(1-morpholino)ethoxy, azido, or —C(R^{14})=N(OR^{14});
- 1–3 amino acids linked together via amide bonds, and linked to R^4, R^7, R^{20} or R^{21} via the amine or carboxylate terminus;
- —(C_1–C_3 alkyl)aryl substituted with 0–2 R^{12};
- a C_5–C_{14} carbocyclic residue substituted with 0–3 R^{12};
- a 5- to 10-membered heterocyclic ring system containing 1 to 4 heteroatoms independently selected from oxygen, nitrogen or sulfur, said heterocyclic ring system being substituted with 0–3 R^{12};

R^{11A} is selected from one or more of the following:
- H, keto, halogen, cyano, —CH_2NH_2, —NH_2, —CO_2H, —OC(=O)(C_1–C_3 alkyl), —OH, C_2–C_6 alkoxyalkyl, —C(=O)NH_2, —OC(=O)NH_2, —NHC(=O)NH_2, —SO_2NH_2, C_1–C_4 alkyl, C_2–C_4 alkenyl, C_3–C_{10} cycloalkyl, C_3–C_6 cycloalkylmethyl, benzyl, phenethyl, phenoxy, benzyloxy, nitro, C_7–C_{10} arylalkyl, hydroxamic acid, hydrazide, boronic acid, C_3–C_6 cycloalkoxy, C_1–C_4 alkyl substituted with —NH_2, C_1–C_4 hydroxyalkyl, methylenedioxy, ethylenedioxy, C_1–C_4 haloalkyl, C_1–C_4 haloalkoxy, C_1–C_4 alkoxycarbonyl, C_1–C_4 alkylcarbonyloxy, C_1–C_4 alkylcarbonyl, C_1–C_4 alkylcarbonylamino, —OCH_2CO_2H, 2-(1-morpholino)ethoxy, azido, aryl(C_1–C_3 alkyl), a C_5–C^{14} carbocyclic residue; a 5- to 10-membered heterocyclic ring system containing 1 to 4 heteroatoms independently selected from oxygen, nitrogen or sulfur, said heterocyclic ring system;

R^{12} when a substituent on carbon, is selected from one or more of the following:
- phenyl, benzyl, phenethyl, phenoxy, benzyloxy, halogen, hydroxy, nitro, cyano, C_1–C_4 alkyl, C_3–C_6 cycloalkyl, C_3–C_6 cycloalkylmethyl, C_7–C_0 arylalkyl, C_1–C_4 alkoxy, —CO_2H, hydroxamic acid, hydrazide, boronic acid, sulfonamide, formyl, C_3–C_6 cycloalkoxy, —OR^{13}, C_1–C_4 alkyl substituted with —$NR^{13}R^{14}$, —$NR^{13}R^{14}$, C_2–C_6 alkoxyalkyl, C_1–C_4 hydroxyalkyl, methylenedioxy, ethylenedioxy, C_1–C_4 haloalkyl, C_1–C_4 haloalkoxy, C_1–C_4 alkoxycarbonyl, C_1–C_4 alkylcarbonyloxy, C_1–C_4 alkylcarbonyl, C_1–C_4 alkylcarbonylamino, —$S(O)_mR^{13}$, —$SO_2NR^{13}R^{14}$, —$NHSO_2R^{14}$, —OCH_2CO_2H, 2-(1-morpholino)ethoxy, —C(R^{14})=N(OR^{14}); or
- a 5- or 6-membered heterocyclic ring containing from 1 to 4 heteroatoms independently selected from oxygen, nitrogen or sulfur;
- or R^{12} may be a 3- or 4- carbon chain attached to adjacent carbons on the ring to form a fused 5- or 6-membered ring, said 5- or 6- membered ring being optionally substituted on the aliphatic carbons with halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, hydroxy, or
- —$NR^{13}R^{14}$; or, when R^{12} is attached to a saturated carbon atom, it may be =O or =S;

R^{12} when a substituent on nitrogen, is selected from one or more of the following:
- phenyl, benzyl, phenethyl, hydroxy, C_1–C_4 hydroxyalkyl, C_1–C_4 alkoxy, C_1–C_4 alkyl, C_3–C_6 cycloalkyl, C_3–C_6 cycloalkylmethyl, —$CH_2NR^{13}R^{14}$, —$NR^{13}R^{14}$, C_2–C_6 alkoxyalkyl, C_1–C_4 haloalkyl, C_1–C_4 alkoxycarbonyl, —CO_2H, C_1–C_4 alkylcarbonyloxy, C_1–C_4 alkylcarbonyl, —C(R^{14})=N(OR^{14});

R^{13} is selected from:
- H;
- phenyl substituted with 0–3 R^{11A};
- benzyl substituted with 0–3 R^{11A};
- C_1–C_6 alkyl substituted with 0–3 R^{11A};
- C_2–C_4 alkenyl substituted with 0–3 R^{11A};
- C_1–C_6 alkylcarbonyl substituted with 0–3 R^{11A};
- C_1–C_6 alkoxycarbonyl substituted with 0–3 R^{11A};
- C_1–C_6 alkylaminocarbonyl substituted with 0–3 R^{11A};
- C_3–C_6 alkoxyalkyl substituted with 0–3 R^{11A};
- an amine protecting group when R^{13} is bonded to N;
- a hydroxy protecting group when R^{13} is bonded to 0;

R^{14}, is OH; H; CF_3; C_1–C_6 alkyl substituted with 0–3 groups selected from OH, C_1–C_4 alkoxy, halogen, NH_2; C_1–C_6 alkoxy; NH_2; C_2–C_6 alkenyl; benzyl; an amine protecting group when R^{14} is bonded to N; a hydroxy protecting group when R^{14} is bonded to 0;

R^{13} and R^{14} can alternatively join to form —$(CH_2)_4$—, —$(CH_2)_5$—, —$CH_2CH_2N(R^{15})CH_2CH_2$—, or —$CH_2CH_2OCH_2CH_2$—;

R^{15} is H or CH_3;

m is 0, 1 or 2;

W is —N(R^{22})C(=Z)N(R^{23})—;

wherein:

Z is 0;

R^{22} and R^{23} are independently selected from the following:
- hydrogen;
- C_1–C_8 alkyl substituted with 0–3 R^{31};
- C_2–C_8 alkenyl substituted with 0–3 R^{31};
- C_2–C_8 alkynyl substituted with 0–3 R^{31};
- a C_3–C_{14} carbocyclic ring system substituted with 0–5 R^{31} or R^{32};
- a 5- to 10-membered heterocyclic ring system containing 1 to 4 heteroatoms independently selected from oxygen, nitrogen or sulfur, said heterocyclic ring system being substituted with 0–2 R^{32};
- —OR^{22a}; —N(R^{22a})(R^{22b});

R^{22a} and R^{22b} are independently selected from the following:
- hydrogen;
- C_1–C_8 alkyl substituted with 0–3 R^{31};
- C_2–C_8 alkenyl substituted with 0–3 R^{31};
- C_2–C_8 alkynyl substituted with 0–3 R^{31};
- a C_3–C_{14} carbocyclic ring system substituted with 0–5 R^{31} or R^{32};
- a 5- to 10-membered heterocyclic ring system containing 1 to 4 heteroatoms independently selected from oxygen, nitrogen or sulfur, said heterocyclic ring system being substituted with 0–2 R^{32};

alternatively, R^{22} can join with R^4 or R^{4A} to form a 5- or 6-membered fused heterocyclic ring or carbocyclic ring substituted with 0–2 R^{12}, said heterocyclic ring containing 1–3 heteroatoms independently selected from N, S, or O; or

alternatively, R^{23} can join with R^7 or R^{7A} to form a 5- or 6-membered fused heterocyclic ring or carbocyclic ring substituted with 0–2 R^{12}, said heterocyclic ring containing 1–3 heteroatoms independently selected from N, S, or O; or

alternatively, R^{22} or R^{23} can join with R^5 or R^6 to form a 0- to 7-membered bridge to form a carbocyclic or heterocyclic ring, said bridge being substituted with 0–2 R^{12} and said bridge containing 0–3 heteroatoms independently selected from N, S, or O(i.e., a 0-membered bridge is formed when R^{22} or $R^{23}$are taken together with R^5 or R^6 to form a direct bond);

alternatively R23 can join with R7A to form a direct bond;

alternatively R22 can join with R4A to form a direct bond;

R^{31} is selected from one or more of the following:
- keto, halogen, cyano, —$CH_2NR^{13}R^{14}$, —$NR^{13}R^{14}$, —CO_2R^{13}, —C(=O)R^{11}, —OC(=O)R^{13} —OR^{13}, C_2–C_6 alkoxyalkyl, —$S(O)_m$ R^{13}, —NHC(=NH)NHR^{13}, —C(=NH)NHR^{13}, —C(=O)$NR^{13}R^{14}$, —NR^{14}C(=O)R^{13}, =NOR^{14}, —NR^{14}C(=O)OR^{14}, —OC(=O)$NR^{13}R^{14}$, —NR^{13}C(=O)$NR^{13}R^{14}$, —$NR^{14}SO_2NR^{13}R^{14}$, —$NR^{14}SO_2R^{13}$, —SO_2NR^{13} R^{14}, C_1–C_4 alkyl, C_2–C_4 alkenyl, C_3–C_{10} cycloalkyl, C_3–C_6 cycloalkylmethyl, benzyl, phenethyl, phenoxy, benzyloxy, nitro, C_7–C_{10} arylalkyl, hydroxamic acid, hydrazide, oxime, boronic acid, sulfonamide, formyl, C_3–C_6 cycloalkoxy, C_1–C_4 alkyl substituted with —$NR^{13}R^{14}$, C_1–C_4 hydroxyalkyl, methylenedioxy, ethylenedioxy, C_1–C_4 haloalkyl, C_1–C_4 haloalkoxy, C_1–C_4 alkoxycarbonyl, C_1–C_4 alkylcarbonyloxy, C_1–C_4 alkylcarbonyl, C_1–C_4 alkylcarbonylamino, —$OCH_2CO_2R^{13}$, 2-(1-morpholino)ethoxy, azido, —C(R^{14})=N(OR^{14}); or
- 1–3 amino acids, linked together via amide bonds, and linked to R^{22}, R^{23}, R^{25}, or R^{27} via the amine or carboxylate terminus;

a C_5–C_{14} carbocyclic residue substituted with 0–5 R^{32}; or
a 5- to 10-membered heterocyclic ring system containing 1 to 4 heteroatoms independently selected from oxygen, nitrogen or sulfur, said heterocyclic ring system being substituted with 0–2 R^{32};

R^{32}, when a substituent on carbon, is selected from one or more of the following:
phenethyl, phenoxy, C_3–C_{10} cycloalkyl, C_3–C_6 cycloalkylmethyl, C_7–C_{10} arylalkyl, hydrazide, oxime, boronic acid, C_2–C_6 alkoxyalkyl, methylenedioxy, ethylenedioxy, C_1–C_4 alkylcarbonyloxy, —$NHSO_2R^{14}$, benzyloxy, halogen, 2-(1-morpholino)ethoxy, —CO_2R^{13}, hydroxamic acid, —$CONR^{13}NR^{13}R^{14}$, cyano, boronic acid, sulfonamide, —CHO, C_3–C_6 cycloalkoxy, —$NR^{13}R^{14}$, —$C(R^{14})$=$N(OR^{14})$, NO_2, —OR^{13}, —$NR^{40}R^{41}$, —SO_mR^{13}, —$SO_mNR^{13}R^{14}$, —$C(=O)NR^{13}R^{14}$, —$OC(=O)NR^{13}R^{14}$, —$C(=O)R^{11}$, —$OC(=O)R^{11}$, —OCO_2R^{13}, phenyl, —$C(=O)NR^{13}$—(C_1–C_4 alkyl)—$NR^{13}R^{14}$, —$C(=O)NR^{40}R^{41}$, C_1–C_4 haloalkyl, C_1–C_4 haloalkoxy, C_2–C_4 haloalkenyl, C_1–C_4 haloalkynyl, or
—$C(=O)NR^{13}C(R^{11})_2NR^{13}R^{14}$;
—$C(=O)NR^{13}C(R^{11})_2NR^{13}NR^{14}$;
—$C(=O)NR^{13}C(R^{11})_2NR^{13}CO_2R^{13}$;
—$C(=O)NR^{13}$—(C_1–C_4 alkyl)—$NR^{13}CO_2R^{13}$;
—$C(=O)N(R^{13})$—(C_1–C_4 alkyl)—R^{11}; or
—$C(=O)C(R^{11})_2NR^{13}R^{14}$; —$C(=O)C(R^{11})_2NR^{13}NR^{14}$;
—$C(=O)C(R^{11})_2NR^{13}CO_2R^{13}$; —C(=O)— ($C_1$–$C_4$ alkyl)—$NR^{13}R^{14}$; (C_1–C_4 alkyl)—$NR^{13}CO_2R^{13}$; or
C_1–C_4 alkoxy substituted with 0–4 groups selected from: R^{11}, C_3–C_6 cycloalkyl, —CO_2R^{13}, —$C(=O)NR^{13}R^{14}$, —$NR^{13}R^{14}$, or OH;
C_1–C_4 alkyl substituted with 0–4 groups selected from: R^{11}, =NR^{14}, =$NNR^{13}C(=O)NR^{13}R^{14}$, or —$NR^{13}R^{14}$;
C_2–C_4 alkenyl substituted with 0–4 R^{11};
C_2–C_4 alkynyl substituted with 0–4 R^{11};
a 5- or 6-membered heterocyclic ring containing from 1 to 4 heteroatoms independently selected from oxygen, nitrogen or sulfur;
or R^{32} may be a 3- or 4- carbon chain attached to adjacent carbons on the ring to form a fused 5- or 6-membered ring, said 5- or 6- membered ring being optionally substituted on the aliphatic carbons with halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, hydroxy, or
—$NR^{13}R^{14}$; or, when R^{32} is attached to a saturated carbon atom, it may be =O or =S;

R^{32} when a substituent on nitrogen, is selected from one or more of the following:
phenyl, benzyl, phenethyl, hydroxy, C_1–C_4 hydroxyalkyl, C_1C_4 alkoxy, C_1–C_4 alkyl, C_3–C_6 cycloalkyl, C_3–C_6 cycloalkylmethyl, —$CH_2NR^{13}R^{14}$, —$NR^{13}R^{14}$, C_2–C_6 alkoxyalkyl, C_1–C_4 haloalkyl, C_1–C_4 alkoxycarbonyl, —CO_2H, C_1–C_4 alkylcarbonyloxy, C_1–C_4 alkylcarbonyl, —$C(R^{14})$=$N(OR^{14})$;

R^{40} is selected from: H, C_1–C_3 alkyl;
R^{41} is selected from:
—$C(=O)NR^{13}R^{14}$;
—$C(=O)NR^{13}NR^{14}$;
—$C(=O)C(R^{11})_2NR^{13}R^{14}$;
—$C(=O)C(R^{11})_2NR^{13}NR^{14}$;
—$C(=O)C(R^{11})_2NR^{13}CO_2R^{13}$;
—C(=O)H;
—$C(=O)R^{11}$;
—C(=O)—(C_1–C_4 alkyl)—$NR^{13}R^{14}$;
—C(=O)—(C_1–C_4 alkyl)—$NR^{13}CO_2R^{13}$;
1–3 amino acids linked together via amide bonds, and linked to the N atom via the carboxylate terminus;
provided that:
R^4, R^{44}, R^7 and R^{74} are not all hydrogen;
when R^4, R^{44} are hydrogen, at least R^{22} is not hydrogen.

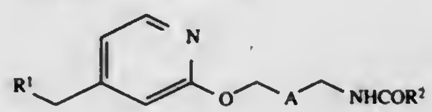
5,616,579

ANTI-ULCER PYRIDYLOXY DERIVATIVES, THEIR PREPARATION AND USES

Hiroshi Fukumi; Mitsuo Sugiyama; Keiichi Tabata, and Koichi Kojima, all of Tokyo, Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

Filed Mar. 22, 1993, Ser. No. 35,081
Claims priority, application Japan, Mar. 23, 1992, 4-65324; Apr. 21, 1992, 4-101392; Jul. 2, 1992, 4-175707; Dec. 28, 1992, 4-349035
Int. Cl.[6] C07D *401/00;409/00;* **A61K** *31/54;31/505*
U.S. Cl. 514—222.5 **39 Claims**

1. A compound of formula (I):



(I)

wherein:
R^1 represents
a cyclic amino group having from 3 to 7 ring atoms, of which from 1 to 3 are nitrogen atoms, 0 or 1 is an oxygen atom or a sulfur atom, and the remainder are carbon atoms, or
a dialkylamino group in which each alkyl group is independently selected from the group consisting of alkyl groups having from 1 to 4 carbon atoms;
R^2 represents
a group of formula —$NHCHR^3R^4$, wherein
R^3 and R^4 are independently selected from the group consisting of alkyl groups having from 1 to 6 carbon atoms, aryl groups as defined below and aralkyl groups as defined below, or
R^3 and R^4 together with the carbon atom to which they are attached, represent a cycloalkyl group having from 3 to 8 ring carbon atoms, which group is unsubstituted or is substituted by at least one substituent selected from the group consisting of substituents α,
an aromatic heterocyclic group having 5 ring atoms, of which from 1 to 3 are hetero-atoms selected from the group consisting of nitrogen, oxygen and sulfur hetero-atoms, said group being unsubstituted or having at least one substituent selected, in the case of substituents on carbon atoms, from the group consisting of substituents α and, in the case of substituents on nitrogen atoms, from the group consisting of substituents β,
or a group of formula —B—$S(O)_m$—R^5, wherein
R^5 represents: a substituted alkyl group which has from 1 to 4 carbon atoms and which is substituted by at least one substituent selected from the group consisting of substituents γ, or an aromatic heterocyclic group which has 5 or 6 ring atoms of which from 1 to 4 are hetero-atoms selected from the group consisting of nitrogen, oxygen and sulfur hetero-atoms, said group being unsubstituted or having at least one substituent selected, in the case of substituents on carbon atoms, from the group consisting of substituents α and, in the case of substituents on nitrogen atoms, from the group consisting of substituents ε.
B represents an alkylene or alkylidene group having from 1 to 6 carbon atoms,
and m is 0, 1 or 2;
A represents a group of formula —CH=CH— or —$(CH_2)_n$—, where n is 1, 2 or 3;
said aryl groups are carbocyclic aromatic groups having from 6 to 10 ring carbon atoms which are unsubstituted or which are substituted by at least one substituent selected from the group consisting of substituents ζ;

said aralkyl groups are alkyl groups which have from 1 to 4 carbon atoms and which are substituted by from 1 to 3 aryl groups as defined above;
said substituents α are selected from the group consisting of: alkyl groups having from 1 to 4 carbon atoms; alkoxy groups having from 1 to 4 carbon atoms; hydroxy groups; halogen atoms; amino groups; monoalkylamino groups in which the alkyl part has from 1 to 4 carbon atoms; dialkylamino groups in which each alkyl part is independently selected from the group consisting of alkyl groups having from 1 to 4 carbon atoms; alkanoylamino groups having from 1 to 5 carbon atoms; arylcarbonylamino groups in which the aryl part is as defined above; and aryl groups as defined above;
said substituents β are selected from the group consisting of alkyl groups having from 1 to 4 carbon atoms;
said substituents γ are selected from the group consisting of: hydroxy groups; alkanoyloxy groups having from 1 to 5 carbon atoms; substituted alkanoyloxy groups which have from 2 to 5 carbon atoms and which are substituted by at least one substituent selected from the group consisting of substituents δ; arylcarbonyloxy groups in which the aryl part is as defined above; and cycloalkylcarbonyloxy groups in which the cycloalkyl part has from 3 to 6 ring carbon atoms and is unsubstituted or is substituted by at least one substituent selected from the group consisting of substituents α;
said substituents δ are selected from the group consisting of: carboxy groups; alkoxycarbonyl groups in which the alkoxy part has from 1 to 4 carbon atoms; aryloxycarbonyl groups in which the aryl part is as defined above; and aryl groups as defined above;
said substituents ε are selected from the group consisting of: alkyl groups having from 1 to 4 carbon atoms; and hydroxyalkyl groups having from 2 to 4 carbon atoms;
said substituents ζ are selected from the group consisting of substituents α, provided that any aryl group in said substituents α is not further substituted by an aryl group;
PROVIDED THAT, when m is 1, R^5 represents: said substituted alkyl group having from 1 to 4 carbon atoms; an aromatic heterocyclic group which has 5 ring atoms of which from 2 to 4 are hetero-atoms selected from the group consisting of nitrogen, oxygen and sulfur hetero-atoms, said group being unsubstituted as defined above or an aromatic heterocyclic group which has 6 ring atoms of which from 1 to 4 are hetero-atoms selected from the group consisting of nitrogen, oxygen and sulfur hetero-atoms, said group being unsubstituted as defined above;
and pharmaceutically acceptable salts thereof.

5,616,580

PHARMACOLOGICAL COMPOSITION FOR PREVENTING NEUROTOXIC SIDE EFFECTS OF NMDA ANTAGONISTS

John W. Olney, #1 Lorenzo La., Ladue, Mo. 63124

Division of Ser. No. 424,548, Oct. 20, 1989, Pat. No. 5,034,400. This application Apr. 26, 1991, Ser. No. 691,974
Int. Cl.[6] A61K *31/54;31/445;31/135*
U.S. Cl. 514—226.2 **7 Claims**

1. A pharmacological composition comprising a mixture of an NMDA antagonist and an anti-cholinergic agent, both of which can penetrate blood-brain barriers, wherein the NMDA antagonist is present in a therapeutically effective quantity sufficient to reduce excitotoxic damage in the brain if administered to a mammal, and wherein the NMDA antagonist can cause neurotoxic side effects in the brain if administered without an accompanying anti-cholinergic agent, and wherein the anti-cholinergic agent is present in a second quantity that can reduce the neurotoxic side effects which would be caused by the NMDA antagonist if administered without the accompanying anti-cholinergic agent.

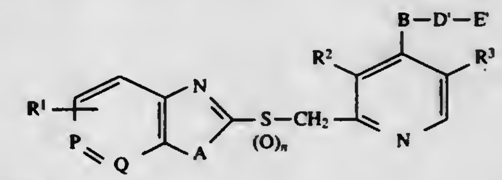
5,616,581

PHARMACEUTICAL USE OF PYRIDINE COMPOUNDS

Takeshi Kawakita; Mitsuharu Sano; Yuko Yutoku; Yoshifumi Ikeda, and Keiichiro Haga, all of Chikujo-gun, Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Japan

Division of Ser. No. 352,183, Dec. 1, 1994, Pat. No. 5,504,082. This application Jun. 2, 1995, Ser. No. 460,666
Claims priority, application Japan, Jun. 1, 1992, 4-167017; Oct. 29, 1993, 5-272494
Int. Cl.[6] A61K *31/44;31/535*
U.S. Cl. 514—234.5 **4 Claims**

1. A method for preventing or treating various diseases caused by the bacteria belonging to the genus Helicobacter, which comprises administering to a patient in need of treatment a pyridine compound of formula (I')

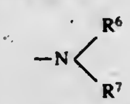


(I')

wherein
R^1 is a hydrogen, a halogen, an alkyl, an alkoxy, a hydroxyl, an alkoxycarbonyl, a carboxyl, a haloalkyl, a nitro, an amino, a mono- or dialkylamino, an alkoxycarbonylalkylamino or a carboxyalkylamino,
R^2 and R^3 are the same or different and each is a hydrogen, a halogen or an alkyl,

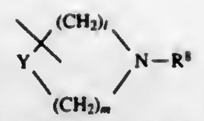
—P=Q— is —CH=CH—.

A is an oxygen atom, a sulfur atom or $N(R^4)$, wherein R^4 is hydrogen, alkyl, alkoxycarbonyl, hydroxyalkyl, alkoxyalkyl, acyloxyalkyl, alkoxycarbonylalkyl, carboxyalkyl, carbamoyl, carbamoylalkyl, mono- or dialkylcarbamoyl, mono- or dialkylcarbamoylalkyl, thiocarbamoyl, or mono- or dialkylthiocarbamoyl,
n is 0, 1 or 2,
B is S(O)p, wherein p is 0, 1 or 2,
D' is a single bond, an alkylene, an alkylene having substituent or an alkylene having oxo, and
E' is an alkoxyalkyl, a group of the formula (a),



(a)

wherein R^6 and R^7 are the same or different and each is hydrogen, alkyl, cycloalkyl, acyl, alkoxycarbonyl, carbamoyl, mono- or dialkylcarbamoyl, optionally substituted phenylcarbamoyl, thiocarbamoyl, mono- or dialkylthiocarbamoyl, optionally substituted phenylthiocarbamoyl, hydroxyalkyl, alkoxycarbonylaklyl, optionally substituted phenylalkylcarbamoyl, optionally substituted phenylalkylthiocarbamoyl, carboxyalkyl, optionally substituted phenyl, optionally substituted phenylalkyl or optionally substituted heteroarylalkyl, or R^6 and R^7 may form, together with the adjoining nitrogen atom, an optionally condensed and optionally substituted heterocyclic ring, or a group of the formula (b)



(b)

wherein R^8 is hydrogen, alkyl, acyl, carboxyalkyl or optionally substituted phenylalkyl, Y is methylene, oxygen atom or sulfur atom and l and m are the same or different and each is 0 or an integer of 1 to 3;

or a pharmaceutically acceptable salt thereof as an active ingredient.

5,616,582

QUINAZOLINE DERIVATIVES AS ANTI-PROLIFERATIVE AGENTS

Andrew J. Barker, Macclesfield, England, assignor to Zeneca Limited, London, United Kingdom

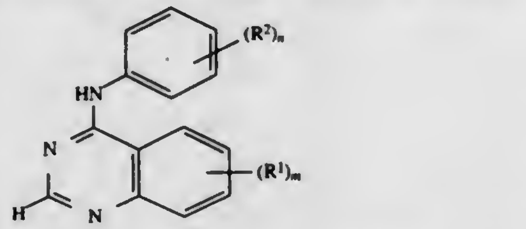
Continuation of Ser. No. 284,293, Aug. 2, 1994, Pat. No. 5,457,105, which is a continuation of Ser. No. 5,280, Jan. 19, 1993, abandoned. This application Jun. 15, 1995, Ser. No. 490,666

Claims priority, application United Kingdom, Jan. 20, 1992, 9201095; Jun. 26, 1992, 9213572; Nov. 12, 1992, 9223735

Int. Cl.^{6} C07D *403/00;239/82;* **A61K** *31/51;31/535*

U.S. Cl. 514—234.5 **12 Claims**

1. A method for producing an anticancer effect in a warm-blooded animal having an EGF-type receptor tyrosine kinase sensitive cancer which comprises administering to said animal an effective amount of a quinazoline derivative of the formula I



I

wherein

m is 1, 2 or 3 and each R^1 is independently 6-hydroxy, 7-hydroxy, amino, ureido, methoxycarbonyl, ethoxycarbonyl, hydroxyamino, trifluoromethoxy, methyl, ethyl, a 6- or 7-methoxy, ethoxy, propoxy, isopropoxy or butoxy group, methylenedioxy, ethylenedioxy, methylamino, ethylamino, dimethylamino, diethylamino, piperidino, morpholino, methylthio, ethylthio, bromomethyl, dibromomethyl, methoxymethyl, piperidinomethyl, morpholinomethyl, piperazin-1-ylmethyl, methoxyethoxymethyl, methylthiomethyl, 2-hydroxyethylthiomethyl, anilinomethyl, phenylthiomethyl, cyanomethyl, 2-bromoethoxy, 2-hydroxyethoxy, 3-hydroxypropoxy, 2-methoxyethoxy, 2-ethoxyethoxy, 3-methoxypropoxy, 3-ethoxypropoxy, methoxycarbonylmethoxy, ethoxycarbonylmethoxy, carbamoylmethoxy, 2-dimethylaminoethoxy, 2-diethylaminoethoxy, 2-methoxyacetoxy, benzyloxy, 2-anilinoethoxy, 2-piperidinoethoxy, 2-morpholinoethoxy, 2-(piperazin-1-yl)ethoxy, 2-hydroxyethylamino, 3-hydroxypropylamino, 2-methoxyethylamino, 2-ethoxyethylamino, 3-methoxypropylamino, 3-ethoxypropylamino, 2-dimethylaminoethylamino, 2-diethylaminoethylamino, 3-dimethylaminopropylamino, 3-diethylaminopropylamino, acetamido, propionamido, benzamido, 3-phenylureido, 2-chloroacetamido, 2-oxopyrrolidin-1-yl, 2-hydroxyacetamido, 2-methoxyacetamido or 2-ethoxyacetamido;

n is 1 or 2 and each R^2 is independently hydrogen, fluoro, chloro, bromo, trifluoromethyl, nitro, cyano, methyl or ethyl; or a pharmaceutically-acceptable salt thereof.

5,616,583

N- (3-HYDROXY-4-PIPERIDINYL) (BENZODIOXOLANE, BENZODIOXANE OR BENZODIOXEPANE) CARBOXAMIDE DERIVATIVES

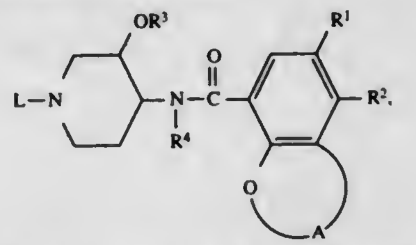
Georges H. P. Van Daele, Turnhout, and Frans M. A. Van den Keybus, Essen, both of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

Division of Ser. No. 301,825, Sep. 7, 1994, Pat. No. 5,552,553, which is a division of Ser. No. 489,419, Mar. 6, 1990, Pat. No. 5,374,637, which is a continuation-in-part of Ser. No. 326,941, Mar. 22, 1989, abandoned. This application Apr. 13, 1995, Ser. No. 421,658

Int. Cl.^{6} A61K *31/00;* **C07D** *405/10;405/12;405/14*

U.S. Cl. 514—235.5 **9 Claims**

1. A compound of the formula:



(I)

an N-oxide form, a pharmaceutically acceptable salt thereof, or a stereochemically isomeric form thereof, wherein:

A represents a group of the formula:

—CH_2—O— (a-4),

—CH_2—CH_2—O— (a-5),

or

—CH_2—CH_2—CH_2—O— (a-6),

wherein one or two hydrogen atoms in said groups (a-4) to (a-6) may be replaced by a C_{1-6}alkyl group;

R^1 represents hydrogen, halo, C_{1-6}alkylsulfonyl, or aminosulfonyl;

R^2 represents hydrogen, amino, mono- or di(C_{1-6}alkyl)amino, arylC_{1-6}alkylamino, or C_{1-6}alkylcarbonylamino;

R^3 and R^4 each independently represent hydrogen or C_{1-6}alkyl; and

L represents C_{3-6}cycloalkyl, C_{5-6}cycloalkanone, C_{3-6}alkenyl optionally substituted with aryl, or L represents a group of the formula:

—Alk—R^5 (b-1);

—Alk—X—R^6 (b-2);

—Alk—Y—CO—R^8 (b-3);

or

—Alk—Y—CO—$NR^{10}R^{11}$ (b-4),

wherein:

each Alk represents C_{1-6}alkanediyl;

R^5 represents hydrogen, cyano, C_{1-6}alkylsulfonylamino, C_{3-6}cycloalkyl, C_{5-6}cycloalkanone, aryl, di(aryl)methyl, or Het;

R^6 represents hydrogen, C_{1-6}alkyl, C_{3-6}cycloalkyl, aryl or Het;

X represents O, S, SO_2, or NR^7 wherein R^7 represents hydrogen, C_{1-6}alkyl, or aryl;

R^8 represents hydrogen, C_{1-6}alkyl, C_{3-6}cycloalkyl, aryl, arylC_{1-6}alkyl, di (aryl) methyl or C_{1-6}alkyloxy;

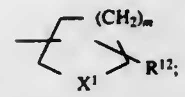
Y represents NR^9 or a direct bond, wherein R^9 represents hydrogen, C_{1-6}alkyl or aryl;

each R^{10} and R^{11} independently represent hydrogen, C_{1-6}alkyl, C_{3-6}cycloalkyl, aryl or arylC_{1-6}alkyl; or R^{10} and R^{11} combined with the nitrogen atom bearing R^{10} and R^{11} may form a pyrrolidinyl or piperidinyl ring, both being

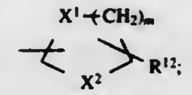
optionally substituted with C_{1-6}alkyl, amino or mono- or di(C_{1-6}alkyl)amino; or R^{10} and R^{11} combined with the nitrogen atom bearing R^{10} and R^{11} may form a piperazinyl or 4-morpholinyl group, both being optionally substituted with C_{1-6}alkyl;

wherein in the foregoing:

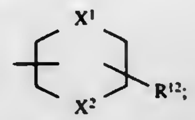
Het represents a group of the formula:



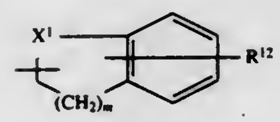
(c-1),



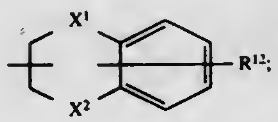
(c-2),



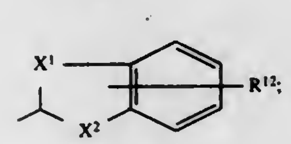
(c-3),



(c-4),

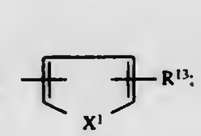


(c-5),



(c-6),

or



(c-7)

wherein each X^1 and X^2 independently represent O or S, m represents 1 or 2, each R^{12} independently represents hydrogen, C_{1-4}alkyl, C_{1-4}alkyloxyC_{1-4}alkyl, or hydroxyC_{1-4}alkyl, and R^{13} represents hydrogen, halo, or C_{1-4}alkyl; and

aryl represents phenyl or phenyl substituted with 1, 2, or 3 substituents each independently selected from the group consisting of halo, hydroxy, C_{1-6}alkyl, C_{1-6}alkyloxy, aminosulfony, C_{1-6}alkylcarbonyl, nitro, trifluoromethyl, amino, and aminocarbonyl.

5,616,584

1,2,4-BENZOTRIAZINE OXIDES AS RADIOSENSITIZERS AND SELECTIVE CYTOTOXIC AGENTS

William W. Lee, Palo Alto; J. Martin Brown, Stanford; Edward W. Grange, Palo Alto, and Abelardo P. Martinez, San Jose, all of Calif., assignors to SRI International, Menlo Park, Calif.

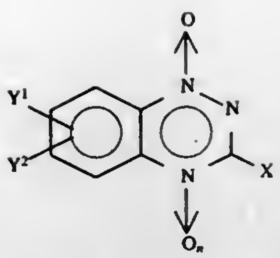
Division of Ser. No. 939,787, Oct. 27, 1992, abandoned, which is a division of Ser. No. 409,480, Sep. 18, 1989, Pat. No. 5,175,287, which is a continuation-in-part of Ser. No. 356,602, May 24, 1989, abandoned, which is a continuation of Ser. No. 169,873, Mar. 18, 1988, abandoned, which is a continuation-in-part of Ser. No. 911,906, Sep. 25, 1986, abandoned. This application Jan. 26, 1995, Ser. No. 378,420

Int. Cl.^{6} A61K *31/53;31/535*

U.S. Cl. 514—243 **9 Claims**

1. A method of radiosensitizing tumor cells of solid tumors having hypoxic cells, and susceptible to such treatment in a warm-blooded mammal, comprising:

(a) administering to said mammal a pharmaceutical composition in an amount sufficient to produce radiosensitivity in said tumor cells, said pharmaceutical composition comprising a 1,2,4-benzotriazine oxide having the structure



wherein X is NH_2; NHR or NRR; wherein the R groups are independently selected from alkyl (1–4C) and acyl (1–4C), optionally substituted with OH, NH_2, alkyl (1–4C) secondary and dialkyl (1–4C) tertiary amino groups, alkoxy (1–4C) or halogen, and in the case of NRR, the two R's can be linked together directly or through a bridge oxygen into a morpholino ring, pyrrolidino ring or piperidino ring;

n is 0 or 1; and

Y^1 and Y^2 are independently either H; nitro, halogen; hydrocarbyl (1–14C) including cyclic and unsaturated hydrocarbyl, optionally substituted with 1 or 2 substituents selected from the group consisting of halogen, hydroxy, epoxy, alkoxy (1–4C), alkylthio (1–4C), primary amino (NH_2), lower alkyl (1–4C) secondary amino, dialkyl (1–4C) tertiary amino, dialkyl (1–4C) tertiary amino where the two alkyls are linked together to produce a morpholino, pyrrolidino or piperidino, acyloxy (1–4C), acylamido (1–4C) and thio analogs thereof, acetylaminoalkyl (1–4C), carboxy, alkoxycarbonyl (1–4C), carbamyl, alkylcarbamyl (1–4C), alkylsulfonyl (1–4C) or alkylphosphonyl (1–4C), wherein the hydrocarbyl can optionally be interrupted by a single ether (—O—) linkage; or wherein Y^1 and Y^2 are independently either morpholino, pyrrolidino, piperidino, NH_2, NHR', NR'R' O(CO)R', NH(CO)R', O(SO)R', or O(POR')R' in which R' is a hydrocarbyl (1–4C) which may be substituted with OH, NH_2, alkyl-(1–4C) secondary amino, dialkyl (1–4C) tertiary amino, morpholino, pyrrolidino, piperidino, alkoxy (1–4C), or halogen substituents;

(b) subjecting said tumor cells to distinct radiation doses; and

(c) repeating steps (a) and (b) such that the mammal receives a plurality of doses of said pharmaceutical composition and radiation over an extended period of time, wherein each of said radiation doses is 1 to 5 Gy.

5,616,585

PYRIDOPYRAZINE DERIVATIVES FOR TREATING ALCOHOL AND NICOTINE ABUSE AND ADDICTION

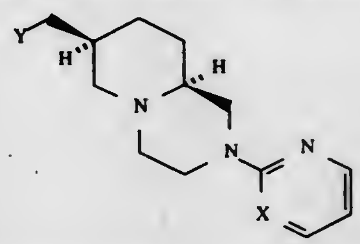
Gene M. Bright, Groton, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation of Ser. No. 969,843, Feb. 3, 1993, abandoned. This application Jan. 25, 1995, Ser. No. 377,874

Int. Cl.^{6} A61K *31/495;31/50*

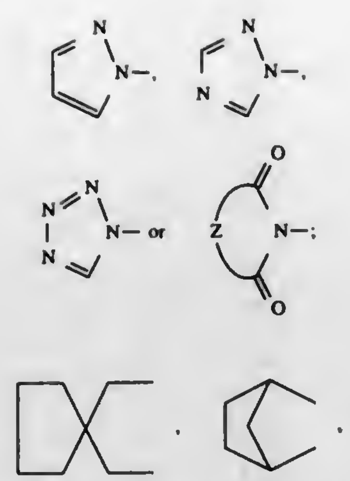
U.S. Cl. 514—249 **18 Claims**

1. A method of treating substance abuse or addiction in a human, wherein said substance abuse or addiction is selected from the group consisting of alcohol and nicotine abuse or addiction, which comprises administering to said human an effective amount of a racemic or optically active compound of the formula



or pharmaceutically acceptable acid addition salt thereof, wherein X is N or CH;

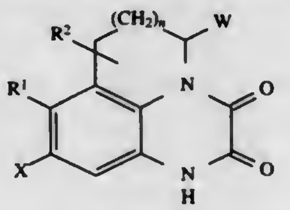
Y is



SCH_2, OCH_2, —$Y^1(CH_2)_n$—wherein the $(CH_2)_n$ portion of said —$Y^1(CH_2)_n$— is optionally substituted with 1 or 2 methyl groups;
n is 1 or 2; and
Y^1 is CH_2, NH or NCH_3.

5,616,586
TRICYCLIC QUINOXALINEDIONES
Ryu Nagata, Kyoto; Norihiko Tanno, Ibaraki, and Toru Kodo, Osaka, all of Japan, assignors to Sumitomo Pharmaceuticals Company, Limited, Osaka-fu, Japan
PCT No. PCT/JP92/01375, § 371 Date Apr. 1, 1994, § 102(e) Date Apr. 1, 1994, PCT Pub. No. WO93/08188, PCT Pub. Date Apr. 29, 1993
PCT Filed Oct. 22, 1992, Ser. No. 211,314
Claims priority, application Japan, Oct. 23, 1991, 3-305456
Int. Cl.[6] A61K *31/495;* **C07D** *471/06;487/06;215/48*
U.S. Cl. 514—250 **7 Claims**

1. A tricyclic quinoxalinedione represented by the formula:



wherein
X represents alkyl, halogen, cyano, trifluoromethyl, nitro, hydroxy, amino, alkylamino, alkoxy, alkanoyl, alkoxycarbonyl, sulfamoyl, carbamoyl, alkylcarbamoyl, alkylthio, alkylsulfinyl, alkylsulfonyl, alkylsulfamoyl, alkylsulfonylamino, or acylamino;
R^1 represents hydrogen, alkyl, halogen, cyano, trifluoromethyl, nitro, hydroxy, amino, alkylamino, alkoxy, alkanoyl, alkoxycarbonyl, sulfamoyl, carbamoyl, alkylcarbamoyl, alkylthio, alkylsulfinyl, alkysulfonyl, alkylsulfamoyl, alkylsulfonylamino, or acylamino;
R^2 represent hydrogen, alkyl, cycloalkyl, alkenyl, alkynyl, cycloalkylalkyl, arylalkyl, substituted arylalkyl, aryl, or substituted aryl;
W represents hydrogen, CO_2R^3, CO_2Y, $CONR^3R^4$, $CONR^3Y$, $CON(OR^3)R^4$, COR^3, CN, tetrazolyl, or substituted alkyl;
R^3 and R^4 independently represent hydrogen, alkyl, cycloalkyl, alkenyl, alkynyl, cycloalkylalkyl, arylalkyl, substituted arylalkyl, aryl, substituted aryl, heteroarylalkyl, heteroaryl, substituted heteroaryl, substituted heteroarylalkyl or heterocyclic;
Y represents mono-substituted alkyl or di substituted alkyl; and
n is an integer 0 or 1; or
a pharmaceutically acceptable salt thereof; and
wherein,
the term "alkyl" as used herein means alkyl groups containing from 1 to 6 carbon atoms; the term "alkoxy" as used herein means alkoxy groups containing from 1 to 6 carbon atoms; the term "alkanoyl" as used herein means alkanoyl groups containing from 1 to 6 carbon atoms; the term "alkoxycarbonyl" used herein means alkoxycarbonyl groups containing from 2 to 6 carbon atoms; the term "alkylthio" as used herein means alkylthio groups containing from 1 to 6 carbon atoms; the term "alkylsulfinyl" as used herein means alkylsulfinyl groups containing from 1 to 6 carbon atoms; the term "alkylsulfonyl" as used herein means alkylsulfonyl groups containing from 1 to 6 carbon atoms; the term "alkylcarbamoyl" as used herein means mono- or dialkylcarbamoyl, wherein an alkyl moiety contains from 1 to 6 carbon atoms; the term "alkylsulfamoyl" as used herein means sulfamoyl groups substituted with 1 or 2 alkyl groups containing from 1 to 6 carbon atoms; the term "alkylsulfonylamino" as used herein means alkylsulfonylamino groups containing from 1 to 6 carbon atoms; the term "acylamino" as used herein means alkanoylamino groups containing from 1 to 6 carbon atoms, or the term "acylamino" means aroylamino groups containing from 7 to 11 carbon atoms; the term "cycloalkyl" as used herein means cycloalkyl groups containing from 3 to 7 carbon atoms; the term "alkenyl" as used herein means alkenyl groups containing from 2 to 6 carbon atoms; the term "alkynyl" as used herein means alkynyl groups containing from 2 to 6 carbon atoms; the term "cycloalkylalkyl" as used herein means alkyl groups attached to cycloalkyl groups, said cycloalkylalkyl containing up to 13 carbon atoms; the term "arylalkyl" as used herein means alkyl groups attached to aryl groups, said alkylaryl containing up to 15 carbon atoms; the term "aryl" as used herein means aryl groups containing up to 10 carbon atoms; the term "heteroaryl" as used herein means 5 or 6 membered heteroaryl groups containing up to 4 nitrogen atoms and the rest carbon atoms, or the term "heteroaryl" means 5 or 6 membered heteroaryl groups containing up to 2 nitrogen atoms, up to 1 oxygen atom or up to 1 sulfur atom and the rest carbon atoms, or the term "heteroaryl" means 5 or 6 membered heteroaryl groups containing up to 3 nitrogen atoms, up to 1 oxygen atom or 1 sulfur atom and the rest carbon atoms which are fused with a benzene ring; the term "heteroarylalkyl" as used herein means alkyl groups containing up to 6 carbon atoms which are attached to a heteroaryl group, wherein the heteroaryl group is as defined above; the term "heterocyclic" as used herein means heterocyclic groups containing up to 6 carbon atoms together with 1 or 2 heteroatoms which are selected from nitrogen, oxygen, and sulfur atoms, or the term "heterocyclic" means a heterocyclic group fused with a benzene-ring wherein the fused rings contain carbon atoms together with 1 or 2 heteroatoms which are selected from nitrogen, oxygen and sulfur atoms; the term "alkylamino" as used herein means mono- or dialkylamino groups, wherein the alkyl groups thereof contain from 1 to 6 carbon atoms; the alkyl groups of both of the terms "substituted alkyl" as used in W and "mono-substituted alkyl" as used in Y mean alkyl groups containing from 1 to 4 carbon atoms; the substituent of the term "substituted alkyl" as used in W means CO_2R^3, CO_2Y, $CONR^3R^4$, $CONR^3Y$, $CON(OR^3)R^4$, COR^3, CN, $NR^3CO_2R^4$, $NR^3CONR^4R^5$, phthalimido, heteroaryl, substituted heteroaryl, heterocyclic, NR^3R^4, $NR^3SO_2R^4$, NR^3COR^4, NR^3COY, $NR^3COCO_2R^4$, $NR^3COCONR^4R^5$, NR^3COCOR^4, OR^3, $OC(O)R^3$, O—C—(O)Y, OCO_2R^3, O—$CONR^3R^4$, O—$COCO_2R^3$, O—$COCOR^3$, O—$COCONR^3R^4$, OSO_2^{R3}, PO $(OR^3)_2$, SR^3, SOR^3, SO_2R^3, SO_3R^3, $SO_2NR^3R^4$, Cl, Br, or I, wherein R^5 represents hydrogen, alkyl, cycloalkyl, alkenyl, alkynyl, cycloalkylalkyl, arylalkyl, substituted arylalkyl, aryl, substituted aryl, heteroarylalkyl, heteroaryl, substituted heteroaryl, substituted heteroarylalkyl or heterocyclic, and R^3, R^4 and Y are the same as defined above; the substituent of the term "mono-substituted alkyl" as used in Y means CO_2R^3, $CONR^3R^4$, COR^3, CN, $NR^3CO_2R^4$, $NR^3CONR^4R^5$, phthalimido, NR^3R^4, $NR^3SO_2R^4$, NR^3COR^4, OR^3, O—COR^3,

OCO_2R^3 or O—$CONR^3R^4$, wherein R^3, R^4 and R^5 are the same as defined above; the alkyl groups of the term "di-substituted alkyl" as used in Y mean straight-chained alkyl groups containing from 1 to 4 carbon atoms; the substituents of the term "di-substituted alkyl" as used in Y independently mean CO_2R^3, $CONR^3R^4$, COR^3, CN, $NR^3CO_2R^4$, $NR^3CONR^4R^5$, phthalimido, aryl, substituted aryl, heteroaryl, substituted heteroaryl, heterocyclic, NR^3R^4, $NR^3SO_2R^4$, NR^3COR^4, OR^3, O—COR^3, OCO_2R^3 or O—$CONR^3R^4$, wherein R^3, R^4 and R^5 are the same as defined above; the number of substituents of the terms "substituted aryl," "substituted arylalkyl," "substituted heteroaryl" or "substituted heteroarylalkyl", as respectively used herein is 1 to 3, with said substituents being selected from the group consisting of alkyl, halogen, cyano, trifluoromethyl, nitro, hydroxy, mercapto, amino, alkylamino, alkoxy, alkanoyl, alkoxycarbonyl, carboxy, sulfamoyl, carbamoyl, alkylcarbamoyl, alkylthio, alkylsulfinyl, alkylsulfonyl, alkylsulfamoyl, alkylsulfonylamino, acylamino, substituted alkyl, substituted alkenyl and substituted alkynyl, wherein the alkyl group of the term "substituted alkyl" means alkyl groups containing from 1 to 4 carbon atoms, the substituent of the term "substituted alkyl" is selected from the group consisting of amino, alkylamino, alkoxycarbonyl, carboxy and carbamoyl, the alkenyl group of the term "substituted alkenyl" means alkenyl groups containing 2 to 5 carbon atoms, the substituent of the term "substituted alkenyl" means amino, alkylamino, alkoxycarbonyl, carboxy or carbamoyl, the alkynyl group of the term "substituted alkynyl" means alkynyl groups containing from 2 to 5 carbon atoms, and the substituent of the term "substituted alkynyl" means amino, alkylamino, alkoxycarbonyl, carboxy, or carbamoyl.

5,616,587
AQUEOUS RISPERIDONE FORMULATIONS
Marc K. J. François, Kalmthout, and Willy M. A. C. Dries, Merksplas, both of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium
Filed Apr. 26, 1995, Ser. No. 429,435
Int. Cl.[6] A61K *9/08*
U.S. Cl. 514—258 **13 Claims**

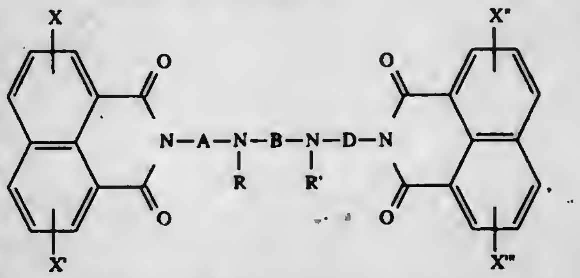
1. An aqueous solution suitable for oral and parenteral administration comprising water, risperidone or a pharmaceutically acceptable acid addition salt thereof, characterized in that said solution comprises a buffer to maintain the pH in the range of 2 to 6 and is essentially free of sorbitol.

5,616,588
RAPAMYCIN FORMULATION FOR IV INJECTION
Robert P. Waranis, Chazy, N.Y., and Thomas W. Leonard, Wilmington, N.C., assignors to American Home Products Corporation, Madison, N.J.
Continuation-in-part of Ser. No. 129,526, Sep. 30, 1993, abandoned. This application Sep. 12, 1994, Ser. No. 302,190
Int. Cl.[6] A61K *31/44*
U.S. Cl. 514—291 **15 Claims**

1. An aqueous, injectable rapamycin solution free of non-ionic surfactant obtained by a process consisting essentially of mixing 40 to 75 volume percent of a concentrate solution of rapamycin in propylene glycol, at concentrations of rapamycin ranging from 0.25 mg/ml to 8 mg/ml, with a diluent consisting essentially of water, wherein the diluent ranges from 60 to 25 volume percent of the combined solution; such that the concentration of rapamycin in the injectable solution ranges from 0.1 mg/ml to 4 mg/ml.

5,616,589
BIS-NAPHTHALIMIDES FOR THE TREATMENT OF CANCER
Gerhard Keilhauer, Marlborough; Cynthia Romerdahl, Wayland, both of Mass.; Miguel F. Braña, Madrid, Spain; Xiao-Dong Qian, Wellesley; Peter Bousquet, Leominster, both of Mass.; Jose M.C. Berlanga, Madrid, Spain; Marina M. Moset, Madrid, Spain, and Maria J.P. de Vega, Madrid, Spain, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany
Continuation-in-part of Ser. No. 108,949, Aug. 18, 1993, abandoned. This application Aug. 9, 1994, Ser. No. 287,421
Int. Cl.[6] C07D *221/14;401/12;221/18;* **A61K** *31/445*
U.S. Cl. 514—296 **8 Claims**

1. A compound of the formula (I)

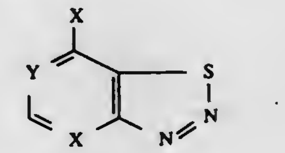


(I)

and the pharmaceutically acceptable acid addition salts thereof, wherein X, X', X", and X'" are identical or different and are selected from the group consisting of H, NH_2, $NHCOCH_3$, C_{1-6}-alkylamino, di-C_{1-6}alkylamino, OH, C_{1-6}alkoxy, halogen, trihalomethyl, C_{1-6}alkyl, formyl, C_{1-6}alkylcarbonyl, ureyl, and C_{1-6}alkylureyl; R and R' are H, C_{1-4}alkyl, aryl or benzyl; A and D are —CH_2—CH_2—; B is —$(CH_2)_n$—, wherein n is 3 or 4, and may be optionally substituted with a C_{1-4}alkyl substituent.

5,616,590
PLANT MICROBICIDES
Thomas Maetzke, Münchenstein, Switzerland, assignor to Ciba-Geigy Corporation, Tarrytown, N.Y.
Filed Jun. 7, 1995, Ser. No. 474,054
Claims priority, application Switzerland, Jun. 30, 1994, 2093/94
Int. Cl.[6] A61K *31/435;* **C07D** *513/04*
U.S. Cl. 514—301 **23 Claims**

1. A compound of the formula I



(I)

in which
a) X is CH and Y is N; or
b) X is N and Y is CH; and in which
Z is a C_1 group to which them are bonded 1–3 halogen atoms or 1–3 substituted or unsubstituted hetero atoms O, S and/or N; in free form or in salt form.

5,616,591

INDOLE- AND BENZIMIDAZOLE-SUBSTITUTED QUINOLINE DERIVATIVES

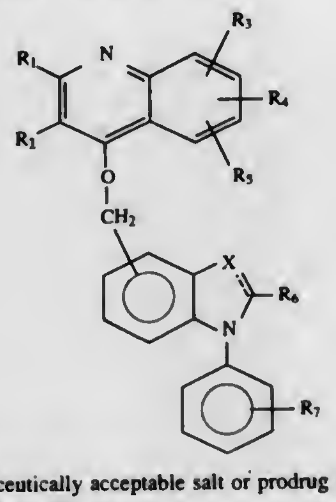
Michael A. Poss, Lawrenceville, N.J., assignor to E.R. Squibb & Sons, Inc., Princeton, N.J.

Filed Mar. 27, 1992, Ser. No. 858,902

Int. Cl.[6] A61K *31/47;* **C07D** *215/233;401/12*

U.S. Cl. 514—312 **9 Claims**

1. A compound of the formula



I.

or a pharmaceutically acceptable salt or prodrug thereof;

wherein X is —N—or

$$-\overset{\overset{R_6'}{|}}{C}-;$$

the broken line adjacent to the X atom represents the possible presence of a double bond, provided that if X is nitrogen, the double bond must be present;

R_1 is hydrogen, alkyl of 1 to 8 carbon atoms, alkoxy, cycloalkyl, (cycloalkyl)alkyl, haloalkyl, phenyl or arylalkyl;

R_2 is hydrogen, alkyl of 1 to 8 carbon atoms unsubstituted or substituted with one or more fluoro atoms, cycloalkyl, (cycloalkyl)alkyl, carboxy, alkoxycarbonyl, cyano, nitro, phenyl or arylalkyl;

R_3 is hydrogen, alkyl of 1 to 4 carbon atoms unsubstituted or substituted with one or more fluoro atoms, alkoxy of 1 to 4 carbon atoms, halogen, cyano or nitro;

R_4 and R_5 are independently selected from hydrogen; alkyl of 1 to 4 carbon atoms, unsubstituted or substituted with amino, hydroxy or alkoxy of 1 to 4 carbon atoms; alkoxy of 1 to 4 carbon atoms unsubstituted or substituted with halogen; halogen; hydroxy; haloalkyl; cyano, nitro; amino; alkanoylamino of 1 to 4 carbon atoms; alkylamino or dialkylamino of up to 6 carbon atoms; (dialkylamino)alkyl of 3 to 8 carbon atoms; alkanoyl of 1 to 4 carbon atoms; carbamoyl; N-alkylcarbamoyl or di-(N-alkyl)carbamoyl of up to 7 carbon atoms; carboxy; alkoxycarbonyl of 1 to 4 carbon atoms; alkylthio of 1 to 6 carbon atoms; alkylsulphinyl of 1 to 6 carbon atoms; or alkylsulphonyl of 1 to 6 carbon atoms; or

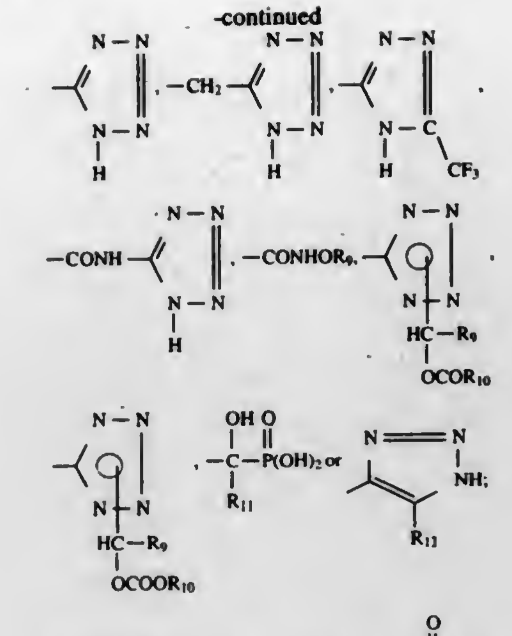
R_4 and R_5 together form an alkylenedioxy of 1 to 4 carbon atoms, when bonded to adjacent carbon atoms;

R_6 and R_6' are independently selected from hydrogen, alkyl, aryl, cycloalkyl, arylalkyl, haloalkyl,

$$-CO_2R_8,\ -NHSO_2CF_3,\ -O\overset{\overset{O}{\|}}{S}(OH)_2,\ -SO_3H,\ -C(CF_3)_2OH,$$

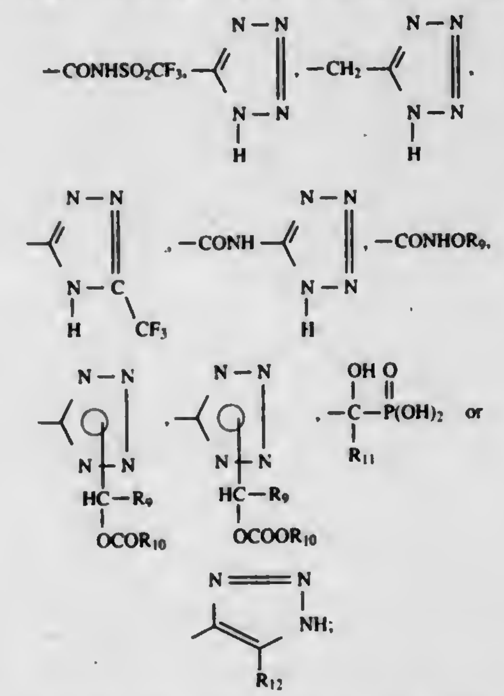
$$-O\overset{\overset{O}{\|}}{P}(OH)_2,\ -PO_3H_2,\ -NH\overset{\overset{O}{\|}}{P}(OH)_2,\ -CONHSO_2CF_3,$$

-continued



R_7 is hydrogen, $-CO_2R_8$, $-NHSO_2CF_3$, $-O\overset{\overset{O}{\|}}{S}(OH)_2$,

$-SO_3H$, $-C(CF_3)_2OH$, $-O\overset{\overset{O}{\|}}{P}(OH)_2$, $-PO_3H_2$, $-NH\overset{\overset{O}{\|}}{P}(OH)_2$,



R_8 is hydrogen, alkyl, perfluoroalkyl of 1 to 8 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, phenyl, benzyl,

$$\underset{\underset{R_9}{|}}{-CH}-O-COR_{10}\quad\text{or}\quad\underset{\underset{R_9}{|}}{-CH}-O-COOR_{10};$$

R_9 is hydrogen, alkyl, aryl, alkylaryl, arylalkyl, or cycloalkyl;

R_{10} is alkyl, aryl, alkylaryl, arylalkyl or cycloalkyl;

R_{11} is hydrogen, alkyl of 1 to 5 carbon atoms or phenyl; and

R_{12} —CN, —NO_2 or —CO_2R_8.

6. A pharmaceutical composition comprising a compound of claim 1 and a pharmaceutically acceptable carrier.

7. A method for treating hypertension comprising administering to a mammalian specie in need thereof a therapeutically effective amount of a composition of claim 6.

5,616,592

3-AMIDOPYRAZOLE DERIVATIVES, PROCESS FOR PREPARING THESE AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Robert Boigegrain, Assas; Danielle Gully, Saubens; Francis Jeanjean, Valflaunes, and Jean-Charles Molimard, Saint-Gely-du-Fesc, all of France, assignors to Sanofi, Paris, France

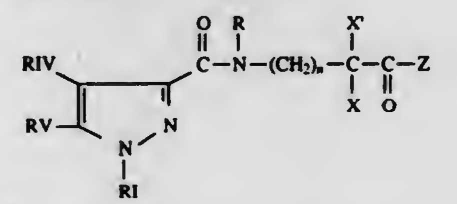
Division of Ser. No. 119,830, Sep. 13, 1993, Pat. No. 5,420,141, which is a continuation of Ser. No. 747,359, Aug. 20, 1991, abandoned. This application Feb. 27, 1995, Ser. No. 394,756

Claims priority, application France, Aug. 20, 1990, 90 10486

Int. Cl.[6] A61K *31/47;* **C07D** *401/04;403/04*

U.S. Cl. 514—314 **19 Claims**

1. A 3-amidopyrazole of formula (I):



(I)

in which:

X is hydrogen;

X' is a C_3–C_7 cycloalkyl group; or

X and X', together with the carbon atom to which they are linked, form a C_3–C_{12} cycloalkyl group optionally substituted by a C_1–C_3 alkyl group;

R_I represents:

a quinolyl or isoquinolyl group optionally substituted by R_a, R'_a and R''_a, wherein R_a, R'_a and R''_a each independently represent a hydrogen atom, a halogen atom, a hydroxyl group, a linear or branched C_1–C_4 alkyl group, a C_1–C_4 alkoxy group, a trifluoromethyl group, a trifluoromethoxy group, a nitro group, a carboxyl group or an amino group;

R represents hydrogen or linear or branched C_1–C_4 alkyl;

n represents 0, 1, 2 or 3;

Z represents

a hydroxyl group;

a C_1–C_6 alkoxy group;

an oxygen atom substituted with a carboxylic acid-protecting group, wherein the carboxylic acid-protecting group is selected from the group consisting of tert-butyl, benzyl, benzyl substituted with a halogen atom, C_1–C_6 alkyl, trifluoromethyl, trifluoromethoxy or carboxyl group;

an amino group; or

a nitrogen atom substituted with a carboxyalkyl group in which the alkyl group is a linear or branched C_1–C_6 group;

R_{IV} represents a hydrogen atom, a halogen atom or a C_1–C_6 alkyl group;

R_V represents:

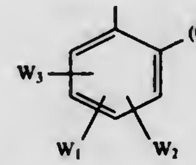
a phenyl group substituted by R_5, R'_5 and R''_5, where R_5, R'_5 and R''_5 each independently represent a hydrogen atom, a halogen atom, a linear or branched C_1–C_4 alkyl group, a hydroxyl group, C_1–C_4 alkoxy group, a nitro group, a trifluoromethyl group, a trifluoromethoxy group, a cyano group, an amino group, a carboxyl group, a C_1–C_4 carboxyalkyl group or a phenyl group;

a naphthyl group unsubstituted or substituted with a C_1–C_4 alkyl group;

a pyridyl group;

a styryl group unsubstituted or substituted with a C_1–C_4 alkyl group; or alternatively R_{IV} and R_V considered together represent:

a group



in which the phenyl group substitutes the pyrazole at position 5 and the group —$(CH_2)_i$—in which i=1 to 3 substitutes the pyrazole at position 4; W_1, W_2 and W_3 substitute the benzene ring and independently represent hydrogen, a halogen atom or a hydroxyl group;

or one of its pharmaceutically acceptable, crystallization or separation salts with organic or inorganic acids or with inorganic or organic bases.

5,616,593

COMPOSITIONS CONTAINING PIPERINE

Ramanbhai B. Patel, and Indravadan A. Modi, both of Ahmedabad, Ind., assignors to Cadila Laboratories Limited, Ahmedabad, Ind.

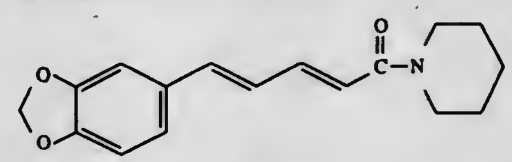
Filed Oct. 18, 1994, Ser. No. 324,584

Claims priority, application Ind., Oct. 29, 1993, 356/BOM/93

Int. Cl.[6] A01N *43/40*

U.S. Cl. 514—321 **13 Claims**

1. A pharmaceutical composition having increased bioavailability comprising piperine of the formula



and a drug wherein the drug is an antimicrobial agent, antiprotozoal agent. anthelmintic agent, central nervous system drug, non-steroid anti-inflammatory drug, antihistaminic, prokinetic drug, corticosteroid, steroid hormone, oral vaccine, haematinic, vitamin, antiulcer drug, muscle relaxant, or anticancer drug; the amount of piperine in the composition is from 0.1 to 50% by weight of the drug and the amount of the drug is from 70 to 95% by weight of the composition.

5,616,594

TRIAZOLE DERIVATIVES, INSECTICIDE, ACARICIDE AND METHODS THEREOF

Atsuhiko Ikeda; Masami Ozaki; Reijiro Honami; Takashi Yumita, all of Iwata-gun; Hiroyuki Yano, Ogasa-gun; Yuki Nakano, Ogasa-gun; Yutaka Kurihara, Ogasa-gun, and Tadayoshi Hirano, Kakegawa, all of Japan, assignors to Ihara Chemical Industry Co. Ltd., and Kumiai Chemical Industrial Co., Ltd., both of Tokyo, Japan

PCT No. PCT/JP94/00629, § 371 Date Nov. 18, 1994, § 102(e) Date Nov. 18, 1994, PCT Pub. No. WO94/24110, PCT Pub. Date Oct. 27, 1994

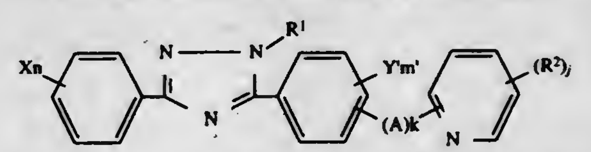
PCT Filed Apr. 15, 1994, Ser. No. 338,446

Claims priority, application Japan, Apr. 16, 1993, 5-113802

Int. Cl.[6] A01N *43/653;* **C07D** *401/12;401/10*

U.S. Cl. 514—340 **5 Claims**

1. A triazole derivative represented by a general formula:



wherein R^1 is a C1–C6 alkyl group, X is selected from the group consisting of a hydrogen atom, a halogen atom, a C1–C6 alkyl group, a C1–C6 alkoxy group, a C1–C6 alkylthio group, a nitro group and a cyano group, n is an integer of 1–5 provided that when n is 2 or more, X is the same or a different combination, Y' is selected from the group consisting of a halogen atom a C1–C6 alkyl group, a C1–C6 alkoxy group, a C1–C6 haloalkyl group, and a C1–C6 haloalkoxy group; m' is an integer of 1–4 provided that when m' is 2 or more, Y' is the same or a different combination; A is selected from the group consisting of an oxygen atom, a sulfur

atom, a C1–C4 alkylene group, a C1–C4 alkyleneoxy group, a C1–C4 oxyalkylene group, a C1–C4 alkyleneoxy group, a C1–C4 alkylene group, a C1–C4 alkylenethio group, a C1–C4 thioalkylene group, a vinylerie group and an ethylene group; k is 0 or 1, R^2 is selected from the group consisting of a hydrogen atom, a halogen atom, a C1–C6 alkyl group, a C1–C6 alkoxy group, a trifluoromethyl group and a trifluoromethoxy group, j is an integer of 1–5 provided that when j is 2 or more, R^2 is the same or a different combination.

5,616,595
PROCESS FOR RECOVERING WATER INSOLUBLE COMPOUNDS FROM A FERMENTATION BROTH

Alexander H. T. Chu, Buffalo Grove, and Gene P. Wloch, Lake Villa, both of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Jun. 7, 1995, Ser. No. 472,615
Int. Cl.[6] A61K *31/44*
U.S. Cl. 514—344 **20 Claims**

1. A process for recovering within a single apparatus a water insoluble compound from a raw fermentation broth, comprising the steps of:

a. concentrating said fermentation broth by tangential filtration across a solvent compatible porous filtration membrane, to produce a permeate traversing said membrane and a retentate comprising said concentrated broth, said water insoluble compound being retained in said retentate wherein said retentate continuously recirculates along a circulation path to form a retentate stream, wherein said raw broth is fed to said retentate stream until all of said raw broth is concentrated;

b. solubilizing said water insoluble compound of said retentate by adding a solvent to said concentrated broth to produce a solution of said compound; and

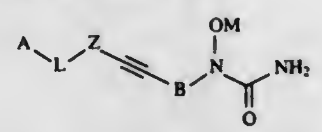
c. filtering or diafiltering said solution through said filtration membrane of step (a) to produce a solvent permeate traversing said filtration membrane wherein said solvent permeate comprises said solubilized compound.

5,616,596
SUBSTITUTED ARYLALKYNYL-AND HETEROARYLALKYNL-N-HYDROXYUREA INHIBITORS OF LEUKOTRIENE BIOSYNTHESIS

Anwer Basha, Lake Forest; Clint D. W. Brooks; Pramila Bhatia, both of Libertyville, all of Ill.; Richard A. Craig, Racine, Wis.; James D. Ratajczyk, Waukegan, and Andrew O. Stewart, Libertyville, both of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

PCT No. PCT/US93/10675, § 371 Date Apr. 13, 1995, § 102(e) Date Apr. 13, 1995, PCT Pub. No. WO94/11342, PCT Pub. Date May 26, 1994
Continuation-in-part of Ser. No. 973,100, Nov. 6, 1992, Pat. No. 5,288,751. This PCT application Nov. 5, 1993, Ser. No. 416,807
Int. Cl.[6] A61K *31/42;31/425;* **C07D** *263/30;277/20*
U.S. Cl. 514—365 **4 Claims**

1. A compound of the formula:



or a pharmaceutically acceptable salt thereof wherein

M is selected from the group consisting of hydrogen, a pharmaceutically acceptable cation, and a pharmaceutically acceptable metabolically cleavable group;

B is a straight or branched divalent alkylene group of from one to twelve carbon atoms;

Z is thiazolyl, optionally substituted with
alkyl of from one to six carbon atoms or
haloalkyl of from one to six carbon atoms;

L is selected from the group consisting of
(a) alkylene of from 1–6 carbon atoms,
(b) alkenylene of from 2–6 carbon atoms,
(c) alkynylene of from 2–6 carbon atoms,
(d) hydroxyalkyl of 1–6 carbon atoms,
(e) >C=O,
(f) >C=N—OR_1, where R_1 is hydrogen or C_1–C_6 alkyl,
(g) —$(CHR_1)_n(CO)(CHR_2)_m$, where n and m are independently selected from an integer from one to six and R_1 and R_2 are independently selected from hydrogen and C_1–C_6-alkyl,
(h) —$(CHR_1)_nC{=}NOR_2$, where R_1, R_2 and n are as defined above;
(i) —$(CHR_1)_nON{=}CR_2$, where R_1, R_2 and n are as: defined above;
(j) —$(CHR_1)_n$—O—$(CHR_2)_m$—, where R_1, R_2, n and m are as defined above,
(k) —$(CHR_1)_n$—$NR_2(CHR_3)_m$—, where R_1, R_2, n and m are as defined above and R_3 is selected from hydrogen and C_1–C_6-alkyl;
(l) —$(CHR_1)_n$—S—$(CHR_2)_m$—, where R_1, R_2, n and m are as defined above; and
(m) —$(CHR_1)_n$—(SO_2)—$(CHR_2)_m$—, where R_1, R_2, n and m are as defined above;

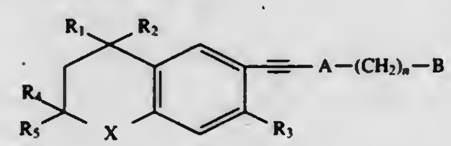
A is carbocyclic aryl optionally substituted with
alkyl of from one to six carbon atoms,
haloalkyl of from one to six carbon atoms,
hydroxyalkyl of from one to six carbon atoms,
alkoxy of from one to twelve carbon atoms,
alkoxyalkoxyl in which the two alkoxy portions may each independently contain from one to six carbon atoms,
alkylthio of from one to six carbon atoms,
hydroxy,
halogen,
cyano,
amino,
alkylamino of from one to six carbon atoms,
dialkylamino in which the two alkyl groups may independently contain from one to six carbon atoms,
alkanoylamino of from two to eight carbon atoms,
N-alkanoyl-N-alkylamino in which the alkanoyl is of from two to eight carbon atoms and the alkyl group is of from one to six carbon atoms,
alkylaminocarbonyl of from two to eight carbon atoms,
dialkylaminocarbonyl in which the two alkyl groups are independently of from one to six carbon atoms,
carboxyl,
alkcoxycarbonyl or from two to eight carbon atoms,
phenyl, optionally substituted with
  alkyl of from one to six carbon atoms,
  haloalkyl of from one to six carbon atoms,
  alkoxy of from one to six carbon atoms,
  hydroxy or
  halogen,
phenoxy, optionally substituted with
  alkyl of from one to six carbon atoms,
  haloalkyl of from one to six carbon atoms,
  alkoxy of from one to six carbon atoms,
  hydroxy or
  halogen, and
phenylthio, optionally substituted with
  alkyl of from one to six carbon atoms,
  haloalkyl of from one to six carbon atoms,
  alkoxy of from one to six carbon atoms,
  hydroxy or
  halogen.

5,616,597
ACETYLENES DISUBSTITUTED WITH A HETEROAROMATIC GROUP AND A 2-SUBSTITUTED CHROMANYL, THIOCHROMANYL OR 1,2,3,4—TETRAHYDROQUINOLINYL GROUP HAVING RETINOID-LIKE ACTIVITY

Roshantha A. S. Chandraratna, El Toro, Calif., assignor to Allergan, Waco, Tex.

Division of Ser. No. 385,000, Feb. 7, 1995, which is a division of Ser. No. 144,178, Oct. 27, 1993, Pat. No. 5,407,937, which is a division of Ser. No. 967,630, Oct. 28, 1992, Pat. No. 5,272,156, which is a division of Ser. No. 732,270, Jul. 18, 1991, Pat. No. 5,183,827, which is a division of Ser. No. 409,476, Sep. 19, 1989, Pat. No. 5,045,551. This application Jun. 2, 1995, Ser. No. 460,477
Int. Cl.[6] A61K *31/50*
U.S. Cl. 514—365 **18 Claims**

1. Compounds of the formula



where X is S or O;

R_1, R_2 and R_3 are hydrogen or lower alkyl;

R_4 and R_5 are hydrogen or lower alkyl with the proviso that R_4 and R_5 both are not hydrogen;

n is an integer from 0 to 5;

A is thiazolyl, and

B is hydrogen, COOH or a pharmaceutically acceptable salt thereof, $COOR_8$, $COONR_9R_{10}$, —CH_2OH, CH_2OR_{11}, CHO, $CH(OR_{12})_2$, $CHOR_{13}O$, —COR", CR"$(OR_{12})_2$, or CR"$OR_{13}O$, where R" is an alkyl group having 1 to 5 carbons, cycloalkyl having 3 to 5 carbons or alkenyl group having 2 to 5 carbons, R_8 is an alkyl group of 1 to 10 carbons, or a cycloalkyl group of 5 to 10 carbons, or R_8 is phenyl or lower alkylphenyl, R_9 and R_{10} independently are hydrogen, an alkyl group of 1 to 10 carbons, or a cycloalkyl group of 5 to 10 carbons, or phenyl or lower alkylphenyl, R_{11} is lower alkyl, phenyl or lower alkylphenyl, R_{12} is lower alkyl, R_{13} is divalent alkyl radical of 2–5 carbons.

5,616,598
COSMETIC COMPOSITION COMPRISING A FATTY SUBSTANCE AND AN AQUEOUS POLYMER DISPERSION AND THE USE THEREOF

Bertrand Lion, Livry Gargan, and Jean Mondet, Aulnay Sous Bois, both of France, assignors to L'Oreal, Paris, France

Filed Jun. 7, 1995, Ser. No. 478,024
Claims priority, application France, Jun. 17, 1994, 94 07480
Int. Cl.[6] A01N *43/76;* **A61K** *31/74;7/32*
U.S. Cl. 514—374 **33 Claims**

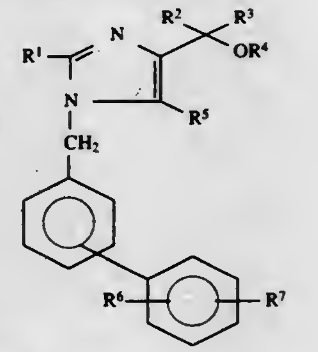
1. A cosmetic composition, which comprises at least one fatty substance and an aqueous polymeric dispersion comprising particles composed of at least one radical monomer and at least one polymer chosen from polyesters, polyesteramides, and alkyds, said at least one radical monomer being polymerized within and/or partially at the surface of the particles of said at least one polymer.

5,616,599
ANGIOTENSIN II ANTAGOSIST 1-BIPHENYLMETHYLIMIDAZOLE COMPOUNDS AND THEIR THERAPEUTIC USE

Hiroaki Yanagisawa; Koichi Fujimoto; Yoshiya Amemiya; Yasuo Shimoji; Takuro Kanazaki; Hiroyuki Koike, and Toshio Sada, all of Tokyo, Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 839,482, Feb. 20, 1992, abandoned, and Ser. No. 69,595, Jun. 1, 1993, abandoned. This application Jan. 26, 1995, Ser. No. 378,650
Claims priority, application Japan, Feb. 21, 1991, 3-027098; Apr. 26, 1991, 3-096588; Jun. 6, 1991, 3-134889; Jul. 8, 1991, 3-167138; Jul. 15, 1991, 3-173972; Jul. 24, 1991, 3-184841; Jun. 2, 1992, 4-141160
Int. Cl.[6] C07D *403/10;257/04;* **A61K** *31/41;31/415*
U.S. Cl. 514—381 **42 Claims**

1. A compound of formula (I):



(I)

wherein:

R^1 represents an alkyl group having from 2 to 5 carbon atoms or an alkenyl group having from 3 to 5 carbon atoms;

R^2 and R^3 are independently selected from the group consisting of:
alkyl groups having from 1 to 4 carbon atoms;

R^4 represents:
a hydrogen atom; a methyl group; an ethyl group; or
an alkanoyl group having from 1 to 5 carbon atoms;

R^5 represents a group of formula —$COOR^{5a}$ or a group of formula —$CONR^8R^9$,

R^{5a} represents
a hydrogen atom,
an alkyl group having from 1 to 4 carbon atoms,
a benzyl group,
an alkanoyloxyalkyl group, in which the alkanoyl part has from 1 to 5 carbon atoms, and the alkyl part is a methyl or ethyl group,
a cycloalkanoyloxyalkyl group, in which the cycloalkanoyl part has 6 or 7 carbon atoms, and the alkyl part is a methyl or ethyl group,
an alkoxycarbonyloxyalkyl group, in which the alkoxy part has from 1 to 4 carbon atoms, and the alkyl part is a methyl or ethyl group,
a cycloalkoxycarbonyloxyalkyl group, in which the cycloalkoxy part has 5 or 6 carbon atoms, and the alkyl part is a methyl or ethyl group,
a (5-phenyl-2-oxo-1,3-dioxolen-4-yl)methyl group, a (5-methyl-2-oxo-1,3-dioxolen-4-yl)methyl group, a (5-ethyl-2-oxo-1,3dioxolen-4-yl)methyl group or a phthalidyl group;

R^8 and R^9 are independently selected from the group consisting of hydrogen atoms,
methyl groups, ethyl groups, methoxycarbonylmethyl groups, ethoxycarbonylmethyl groups and carboxymethyl groups; or R^8 and R^9 together represent
a tetramethylene, pentamethylene, 1-carboxytetramethylene or 1-carboxypentamethylene group;

R^6 represents a hydrogen atom,
a methyl group, a methoxy group or a fluorine atom or a chlorine atom at the 6-position of the benzene ring; R^7 repre-

sents a carboxy group or a tetrazol-5-yl group at the 2-position of the benzene ring;

the benzyl ring which bears the substituents represented by R^6 and R^7 is at the 4-position of the benzyl group to which it is attached;

and pharmaceutically acceptable salts and esters thereof.

5,616,600

GRISEOLIC ACID COMPOUNDS AND THEIR USE AS A PHOSPHODIESTERASE INHIBITOR

Masakatsu Kaneko; Yoshinobu Morofushi; Misako Kimura; Mitsuo Yamazaki, and Yasuteru Iijima, all of Tokyo, Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

Division of Ser. No. 130,154, Sep. 30, 1993, Pat. No. 5,498,819, which is a continuation of Ser. No. 916,794, Jul. 17, 1992, abandoned, which is a continuation of Ser. No. 742,287, Aug. 8, 1991, abandoned, which is a continuation of Ser. No. 616,763, Nov. 19, 1990, abandoned, which is a continuation of Ser. No. 361,806, May 30, 1989, abandoned, which is a continuation of Ser. No. 157,112, Feb. 10, 1988, abandoned, which is a continuation of Ser. No. 854,418, Apr. 21, 1986, abandoned. This application May 9, 1995, Ser. No. 437,644

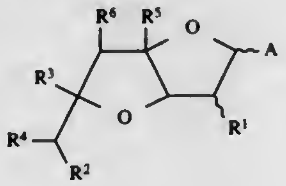
Claims priority, application Japan, Apr. 19, 1985, 60-82132; Apr. 27, 1985, 60-91987; Apr. 27, 1985, 60-91989

Int. Cl.⁶ A61K *31/415;* **C07D** *233/02;233/04;233/54*

U.S. Cl. 514—397 **23 Claims**

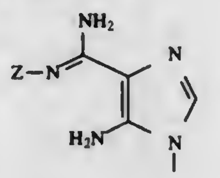
1. A compound of formula I:

(I)



wherein:

A represents a group formula:



R^1 and R^2 are independently selected from the group consisting of a hydrogen atom, a halogen atom and a group of formula $—OR^9$;

R^3 and R^4 are each independently selected from the group consisting of a carbamoyl group and a carboxy group;

R^5 and R^6 each independently represent a hydrogen atom or together they represent an extra carbon-carbon bond between the carbon atoms to which they are attached;

R^9 represent a hydrogen atom, a C_1–C_6 alkyl group, an alkylsulfonyl group, a haloalkylsulfonyl group, an arylsulfonyl group or a hydroxy-protecting group, said hydroxy-protecting group being selected from the group consisting of an aralkyl group; an alkoxycarbonyl group; an alkenyloxycarbonyl groups; an aralkyloxycarbonyl group; a heterocyclic group having 5 or 6 ring atoms, of which from 1 to 3 ring atoms are hetero-atoms selected from the group consisting of oxygen, nitrogen and sulfur atoms, said heterocyclic group being unsubstituted or having from 1 to 3 substituents selected from the group consisting of halogen, C_1–C_4 alkyl and C_1–C_4 alkoxy; a trialkylsilyl group in which each alkyl part has 1 to 4 carbon atoms; a C_1–C_{20} aliphatic acyl group; an aromatic acyl group and an alkoxymethyl group; and

Z represents a hydrogen atom, a hydroxy group, a C_1–C_4 alkoxy group or an aralkyloxy group in which the alkyl part has 1 to 3 carbon atoms and the aryl part is a C_6–C_{10} carbocyclic aryl group which is unsubstituted or has from 1 to 3 substituents selected from the group consisting of a nitro group, a halogen atom, a C_1–C_4 alkyl group, a C_1–C_4 alkoxy group, a hydroxy group and a cyano group;

or a pharmaceutically acceptable salt thereof or a pharmaceutically acceptable ester thereof.

12. A method of treating a mammal suffering from a disorder arising from a phosphodiesterase imbalance, which comprises administering to said mammal an effective phosphodiesterase inhibiting amount of a phosphodiesterase inhibitor, wherein said phosphodiesterase inhibitor is a compound of claim 1 or a pharmaceutically acceptable salt thereof or a pharmaceutically acceptable ester thereof according to claim 1.

5,616,601

1,2-ARYL AND HETEROARYL SUBSTITUTED IMIDAZOLYL COMPOUNDS FOR THE TREATMENT OF INFLAMMATION

Ish K. Khanna, Vernon Hills; Richard M. Weier, Lake Bluff; Paul W. Collins, Deerfield; Yi Yu, Skokie; Xiangdong Xu; Richard A. Partis, both of Evanston, and Francis J. Koszyk, Prospect Heights, all of Ill., assignors to GD Searle & Co, Skokie, Ill.

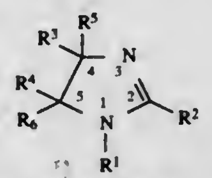
Continuation-in-part of Ser. No. 282,395, Jul. 28, 1994, abandoned. This application Jun. 5, 1995, Ser. No. 464,154

Int. Cl.⁶ A61K *31/44;* **C07D** *401/04;213/53*

U.S. Cl. 514—399 **86 Claims**

1. A compound of Formula I

(I)



wherein R^1 and R^2 are independently selected from aryl and heteroaryl, wherein R^1 and R^2 are unsubstituted or substituted with one or more radicals independently selected from alkylsulfonyl, aminosulfonyl, haloalkylsulfonyl, halo, alkylthio, alkylsulfinyl, alkyl, cyano, carboxyl, alkoxycarbonyl, haloalkyl, hydroxyl, alkoxy, hydroxyalkyl, alkoxyalkyl, haloalkoxy, amino, alkylamino, arylamino and nitro;

wherein R^3 is a radical selected from hydrido, alkyl, haloalkyl, aralkyl, heterocycloalkyl, formyl, cyano, alkoxy, alkylthio, alkylthioalkyl, alkylsulfonyl, alkylsulfonylalkyl, cycloalkylthio, cycloalkylthioalkyl, cycloalkylsulfonyl, cycloalkylsulfonylalkyl, cycloalkyloxy, cycloalkyloxyalkyl, haloalkylsulfonyl, arylsulfonyl, halo, hydroxyalkyl, alkoxyalkyl, alkylcarbonyl, arylcarbonyl, heterocyclocarbonyl, aralkylcarbonyl, heterocycloalkylcarbonyl, cyanoalkyl, aminoalkyl, alkylaminoalkyl, N-arylaminoalkyl, N-alkyl-N-arylaminoalkyl, carboxyalkyl, alkoxycarbonylalkyl, alkoxycarbonyl, haloalkylcarbonyl, carboxyl, aminocarbonyl, alkylaminocarbonyl, N-alkoxy-N-alkylaminocarbonyl, alkylaminocarbonylalkyl, heteroarylalkoxyalkyl, heteroaryloxyalkyl, heteroarylthioalkyl, aralkoxy, aralkylthio, heteroaralkoxy, heteroaralkylthio, heteroarylalkylthioalkyl, heteroaryloxy, heteroarylthio, arylthioalkyl, aryloxyalkyl, arylthio, aryloxy, aralkylthioalkyl, aralkoxyalkyl, aryl and heteroaryl;

wherein R^4 is a radical selected from hydrido, alkyl and halo;

wherein R^5 is selected from hydroxyl and alkoxy; and

wherein R^6 is hydrido; or wherein R^5 and R^6 together form a double bond;

provided at least one of R^1 and R^2 is substituted with alkylsulfonyl or aminosulfonyl;

or a pharmaceutically-acceptable salt thereof.

17. A method of treating inflammation or an inflammation-associated disorder in a subject, said method comprising administering to the subject having such inflammation or inflammation-associated disorder, a therapeutically-effective amount of a compound of claim 1; or a pharmaceutically-acceptable salt thereof.

5,616,602

TOPICALLY ADMINISTRABLE ZINC PHTHALOCYANINE COMPOSITIONS

Peter W. Taylor, Billingshurst; William G. Love, Horsham, both of England, and Brigitte C. H. van der Zanden, Utrecht, Netherlands, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Filed Jun. 30, 1994, Ser. No. 269,416

Claims priority, application United Kingdom, Jul. 9, 1993, 9314206; Apr. 5, 1994, 9406693

Int. Cl.⁶ A61K *31/40*

U.S. Cl. 514—410 **20 Claims**

1. A topically administrable pharmaceutical composition comprising (A) zinc phthalocyanine complex, (B) as carrier for the complex, (i) a N-alkylpyrrolidone together with a pharmaceutically acceptable co-solvent for the complex, (ii) dimethyl sulfoxide or a mixture thereof with a pharmaceutically acceptable co-solvent for the complex, (iii) a liposome, or (iv) a N,N-dialkylbenzamide or a mixture thereof with a pharmaceutically acceptable co-solvent for the complex, and (C) a gelling agent.

5,616,603

ENANTIOMERS OF CARBAZOLE DERIVATIVES AS 5-HT₁-LIKE AGONISTS

Gary T. Borrett, Stansted; John Kitteringham, Hertford; Roderick A. Porter, Ashwell; Mark R. Shipton, Bishop's Stortford; Mythily Vimal, Edmonton, and Rodney C. Young, Oxford, all of England, assignors to SmithKline Beecham plc, United Kingdom

Filed May 26, 1995, Ser. No. 451,898

Int. Cl.⁶ A61K *31/40;* **C07D** *209/88*

U.S. Cl. 514—411 **12 Claims**

1. (+)-6-Carboxamido-3-methylamino-1,2,3,4-tetrahydrocarbazole or a salt, solvate or hydrate thereof.

5,616,604

AMINOPYRROLIZINONE ANALOGUES FOR ANTI-INFLAMMATION AND ANALGESIA (II)

Shoufang Zhang, and Xinxian Zhao, both of #7 Wen Hua Road, Shenzhen, China

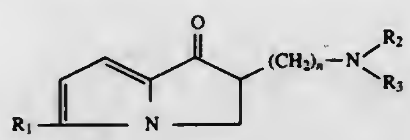
Filed Feb. 15, 1996, Ser. No. 600,891

Int. Cl.⁶ A61K *31/40;* **C07D** *487/02*

U.S. Cl. 514—413 **3 Claims**

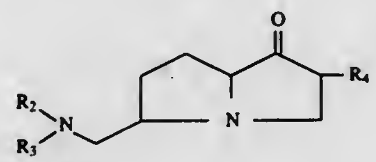
1. Pyrrolizinone compounds having the following chemical formulas:

(I)



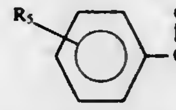
or

(II)

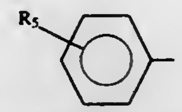


wherein n is 1–3;

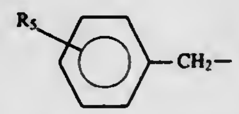
wherein R_1 is H, or substituted benzyl group:



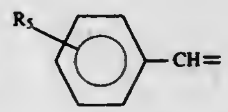
R_2 is H, an alkyl group of 1–3 carbon atoms or a substituted phenyl group:



R_3 is a group as R_1 and R_2 defined as above; or R_3=—$(CH_2)n$—R_2, n=4 or 5 and R_4 is H, a substituted benzyl or benzylidene group:



or



R_5 is H, F, Cl, Br, —$COOHCH_3COO$—, H_3N—, CH_3CONH—, or an alkoxy group of 1–4 carbon atoms.

5,616,605

PEPTIDE DERIVATIVES OF COLLAGENASE INHIBITOR

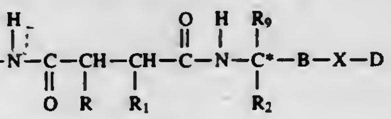
Robert D. Gray; Arno F. Spatola, and Krzysztof Darlak, all of Louisville, Ky., assignors to Research Corporation Tech., Inc., Tucson, Ariz.

Division of Ser. No. 981,149, Nov. 24, 1992, Pat. No. 5,387,610, which is a continuation of Ser. No. 715,948, Jun. 14, 1991, abandoned. This application Aug. 8, 1994, Ser. No. 287,320

Int. Cl.⁶ C07D *209/12;209/14;* **A61K** *31/405*

U.S. Cl. 514—415 **109 Claims**

1. A compound of the formula

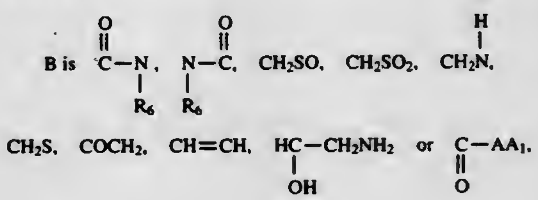


or pharmaceutically acceptable salts thereof

wherein R and R_1 are independently hydrogen, lower alkyl, aryl or aryl lower alkyl,

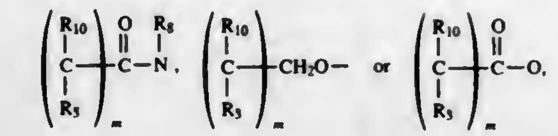
R_2 is indolyl lower alkyl, said R_2 being unsubstituted or mono- or di-substituted with halo, nitro, carboxy, lower carbalkoxy, cyano, lower alkanoyl, trifluoromethyl, lower alkyl, hydroxy, lower alkoxy, formyl, amino, lower alkyl amino, di-lower alkyl amino, mercapto, lower alkylthio or mercapto lower alkyl,

B is



AA_1 is an amino acid residue,

X is a chemical bond, lower alkylene,



R_9 and R_{10} are independently hydrogen, methyl or ethyl,

D, R_5, R_6, R_7, and R_8 are independently hydrogen or lower alkyl,

said lower alkyl, aryl and aryl lower alkyl groups being unsubstituted or substituted with electron donating or electron withdrawing groups,

m is 1, 2 or 3.

5,616,606

OLIGOPEPTIDE ANTIRETROVIRAL AGENTS

J. William Lown, Edmonton, and Ronald G. Micetich, Sherwood Park, both of Canada, assignors to Synphar Laboratories, Inc., Alberta, Canada, and Taiho Pharmaceutical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 102,715, Aug. 6, 1993, abandoned.
This application Aug. 2, 1995, Ser. No. 510,333
Int. Cl.⁶ A61K *37/00;* **C07C** *103/52;* **C07K** *7/06*
U.S. Cl. 514—422 **31 Claims**

1. A method for treating a patient infected with Human Immunodeficiency Virus, comprising administering to the patient an anti-HIV effective amount of a compound of the formula:

$$A-(NHCO)_x-\underset{R_2}{\underset{|}{Het}}-(NHCO-\underset{R_3}{\underset{|}{Het}})_y-NH-R_1-NH-(\underset{R_4}{\underset{|}{Het}}-NHCO)_z-\underset{R_5}{\underset{|}{Het}}-(CONH)_x-A$$

wherein:

A is a moiety bearing a positive charge and of a size which does not inhibit binding of said compound to nucleic acid sequences associated with the cellular action of Human Immunodeficiency Viruses;

R_1 is a moiety derived from a residue of carbonic acid or a residue of a dicarboxylic acid selected from the group consisting of:

(i) a residue of a dicarboxylic acid of the formula —CO—C_p—H_{2p}—CO where p equals 1 to 22;

(ii) a residue of an unsaturated aliphatic dicarboxylic acid of the formula —CO—C_q—H_{2q-2}—CO— where q equals 2 to 22;

(iii) a residue of an aromatic dicarboxylic acid;

(iv) a residue of a cycloalkane dicarboxylic acid of the formula —CO—C_r—H_{2r-2}—CO— where r equals 3 to 7, optionally fused to one or more three to seven membered C rings; and

(v) a residue of a cycloalkene dicarboxylic acid of the formula —CO—C_s—H_{2s-4}—CO where s equals 3 to 7;

Hew is pyrrole;

x is 0 or 1;

y is 0, 1, 2 or 3;

z is 0, 1, 2 or 3;

R_2, R_3, R_4 and R_5 are attached to a ring atom other than carbon and are independently selected from the group consisting of C_1–C_6 alkyl and —CH_2—O—R_6, where R_6 is a C_1–C_6 alkyl; and salts thereof.

21. A compound exhibiting activity against Human Immunodeficiency Virus, represented by the formula:

$$A-(NHCO)_x-\underset{R_2}{\underset{|}{Het}}-(NHCO-\underset{R_3}{\underset{|}{Het}})_y-NH-R_1-NH-(\underset{R_4}{\underset{|}{Het}}-NHCO)_z-\underset{R_5}{\underset{|}{Het}}-(CONH)_x-A$$

wherein R_1 is a moiety derived from a residue of a dicarboxylic acid selected from the group consisting of: a residue of a C_6 aromatic dicarboxylic acid; a residue of an unsaturated aliphatic dicarboxylic acid of the formula CO—C_q—H_{2q-2}—CO— where q equals 2; a residue of a cycloalkane dicarboxylic acid of the formula CO—C_r—H_{2r-2}—CO where r equals 3 to 6 optionally fused to one or more three to seven C membered rings, and A, x, y and z are as defined in claim 1 and R_2, R_3, R_4, and R_5 are attached to a ring atom other than carbon and are independently selected from the group consisting of C_2–C_6 alkyl and —CH_2—O—R_6 where R_6 is a C_1–C_6 alkyl; and salts thereof.

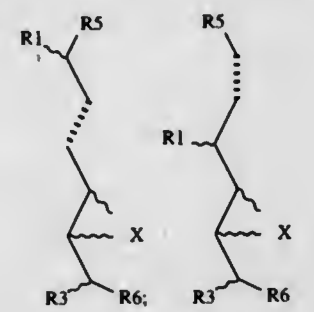
5,616,607

HEPOXILIN ANALOGS

Cecil R. Pace-Asciak, Toronto, Canada, and Peter M. Demin, Moscow, Russian Federation, assignors to HSC Research and Development Limited Partnership, Toronto, Canada

Continuation of Ser. No. 38,324, Mar. 29, 1993, abandoned.
This application Mar. 21, 1995, Ser. No. 405,603
Int. Cl.⁶ A01N *43/02*
U.S. Cl. 514—430 **21 Claims**

1. A compound selected from the group consisting of:



and pharmaceutically acceptable salts thereof, wherein:

X is C_n, NH, or S, wherein n is 1, 2, 3 or 4;

R1 is OH, CH_3, CH_2OH, N_3 or CH_2N_3;

R3 is H or CH_3;

R5 is Y-R2, wherein Y is a six-carbon chain optionally containing up to three double or triple bonds or a mixture of double and triple bonds up to a maximum of three;

R2 is C_1-C_{10} alkyl OH, C_1-C_{10} alkyl N_3 or COOR4;

R4 is H, C_1-C_{10} alkyl, C_3-C_6 cycloalkyl, or C_3-C_6 aryl;

R6 is a seven-carbon chain optionally containing up to three double or triple bonds or a mixture of double and triple bonds up to a maximum of three; and

. . . . . . is a single, double or triple bond.

5,616,608

METHOD OF TREATING ATHEROSCLEROSIS OR RESTENOSIS USING MICROTUBULE STABILIZING AGENT

James L. Kinsella, and Steven J. Sollott, both of Baltimore, Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation of Ser. No. 99,067, Jul. 29, 1993, abandoned.
This application Apr. 18, 1996, Ser. No. 633,185
Int. Cl.⁶ A61K *31/335;33/08*
U.S. Cl. 514—449 **14 Claims**

1. A method of preventing or reducing a fibroproliferative vascular disease in a patient comprising:

treating said patient with a pharmaceutical preparation comprising a therapeutically effective amount of a microtubule stabilizing agent selected from the group consisting of taxol, a water soluble taxol derivative, and deuterium oxide.

5,616,609

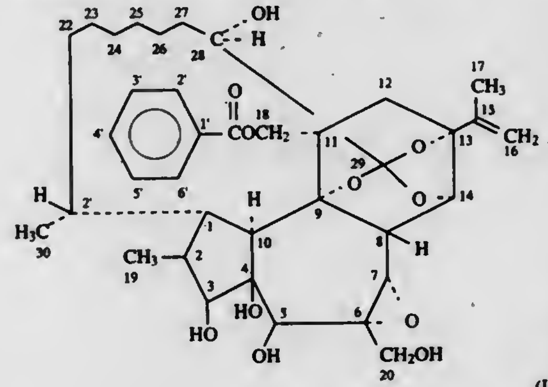
CARCINOSTATIC COMPOUND AND PRODUCTION THEREOF

Tetsuro Ikekawa, 5-22, Asahi-machi 1-chome, Kanazawa-shi, Ishikawa 920, and Nobuo Ikekawa, 2-21-5, Kichijojihigashi-machi, Musashino-shi, Tokyo 180, both of Japan

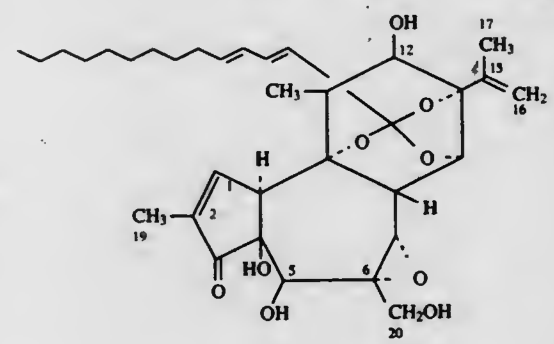
PCT No. PCT/JP92/01017, § 371 Date Feb. 8, 1994, § 102(e) Date Feb. 8, 1994, PCT Pub. No. WO93/03039, PCT Pub. Date Feb. 18, 1993
PCT Filed Aug. 7, 1992, Ser. No. 185,964
Claims priority, application Japan, Aug. 8, 1991, 3-285390
Int. Cl.⁶ A61K *31/335*
U.S. Cl. 514—450 **8 Claims**

1. Purified stelleramacrin A or purified stelleramacrin B represented respectively by the following formulas (I) and (II):

(I)



(II)



5,616,610

(R)-5-CARBAMOYL-8-FLUORO-3-N,N-DISUBSTITUTED-AMINO-3,4-DIHYDRO-2H-1-BENZOPYRANS

John L. Evenden, Stockholm; Eva M. Hammarberg, Södertälje; Hans S. Hansson, Stockholm; Sven E. Hellberg; Lars G. Johansson, both of Södertälje; Johan R. M. Lundkvist, Lund; Svante B. Ross; Daniel D. Sohn, both of Södertälje, and Seth O. Thorberg, Järna, all of Sweden, assignors to Astra Aktiebolag, Sodertalje, Sweden

PCT No. PCT/SE94/01010, § 371 Date Jan. 4, 1995, § 102(e) Date Jan. 4, 1995, PCT Pub. No. WO95/11891, PCT Pub. Date May 4, 1995
Continuation-in-part of Ser. No. 144,671, Oct. 28, 1993, Pat. No. 5,420,151, which is a continuation-in-part of Ser. No. 957,214, Oct. 6, 1992, abandoned, and Ser. No. 780,531, Oct. 18, 1991, abandoned, which is a continuation-in-part of Ser. No. 633,247, Dec. 21, 1990, abandoned. This PCT application Oct. 26, 1994, Ser. No. 362,544
Claims priority, application Sweden, Dec. 22, 1989, 8904361; Oct. 8, 1991, 9102905; Jun. 29, 1992, 9202000
Int. Cl.⁶ A61K *31/35;* **C07D** *311/20*
U.S. Cl. 514—456 **16 Claims**

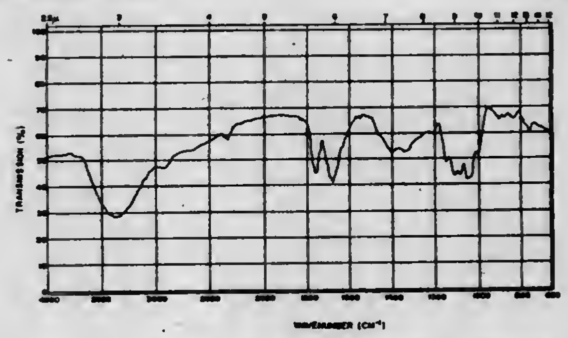
1. The compound (R)-3-(N-tert-butyl-N-n-propylamino)-5-carbamoyl-8-fluoro-3,4-dihydro-2H- 1-benzopyran in the form of the free base or a pharmaceutically acceptable salt thereof.

5,616,611

α-GLYCOSYL-L-ASCORBIC ACID, AND ITS PREPARATION AND USES

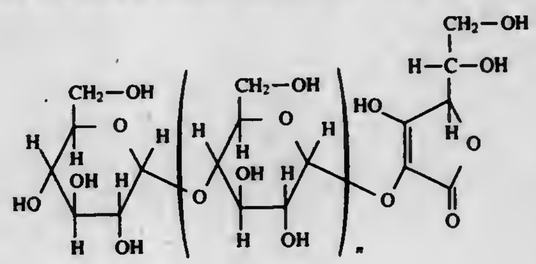
Itaru Yamamoto; Norio Muto, and Toshio Miyake, all of Okayama, Japan, assignors to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Okayama, Japan

Division of Ser. No. 501,899, Mar. 30, 1990, Pat. No. 5,137,723. This application Dec. 11, 1991, Ser. No. 805,169
Claims priority, application Japan, May 19, 1989, 1-127072; Oct. 20, 1989, 1-274518
Int. Cl.⁶ A61K *31/375;* **C07D** *307/62*
U.S. Cl. 514—474 **5 Claims**



1. In a pharmaceutical composition containing a pharmaceutically-acceptable carrier and L-ascorbic acid as an effective ingredient for viral diseases, bacterial diseases, traumatic diseases, immunopathies, allergy, diabetes, cataract and malignant tumors, the improvement wherein

said L-ascorbic acid is present in a form of an α-glycosyl-L-ascorbic acid which exhibits no direct reducing activity and has the chemical structure shown by the following formula:



wherein n is an integer from 0 to 6, said composition containing at least 0.001 w/w% of said α-glycosyl-L-ascorbic acid.

5,616,612

URETHANES AND UREAS THAT ENHANCE THE GROWTH OF BONE MARROW PROGENITOR CELLS

Semiramis Ayral-Kaloustian, Tarrytown; Steven R. Schow, Washingtonville; Mila T. Du, Suffern, all of N.Y., and James J. Gibbons, Jr., Westwood, N.J., assignors to American Cyanamid Company, Madison, N.J.

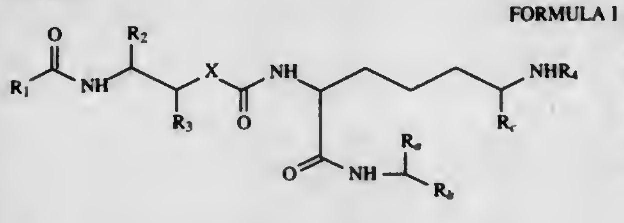
Division of Ser. No. 213,303, Mar. 14, 1994, Pat. No. 5,545,662, which is a division of Ser. No. 63,174, Sep. 12, 1993, Pat. No. 5,312,831. This application May 25, 1995, Ser. No. 451,099

Int. Cl.⁶ A61K *37/00;38/00*

U.S. Cl. 514—478 **3 Claims**

1. A method of enhancing the growth of bone marrow progenitor cells in a mammal in need thereof which comprises administering to said mammal an effective amount of a compound having the structure

FORMULA I



wherein:

R_1 is selected from the group consisting of hydrogen, a substituted or unsubstituted (C_1–C_{20}) alkyl group, a substituted or unsubstituted cycloalkyl group, a substituted or unsubstituted cycloalkylalkyl group, a vinyl group, an acetylene group, a substituted or unsubstituted amino group, a substituted or unsubstituted acylamino group, a substituted or unsubstituted aryl group, a substituted or unsubstituted aralkyl group, a substituted or unsubstituted aryloxy group, a substituted or unsubstituted alkoxyaryl group, a substituted or unsubstituted alkoxyaralkyl group and a substituted or unsubstituted monocyclic or bicyclic heterocylic group containing from 1 to 4 hetero atoms selected from the group consisting of nitrogen, sulfur and oxygen atoms; R_a and R_3 are independently selected from hydrogen, substituted or unsubstituted (C_1–C_6) alkyl, substituted or unsubstituted alkoxyalkyl, substituted or unsubstituted cycloalkyl, substituted or unsubstituted cycloalkylalkyl, substituted or unsubstituted aryl, substituted or unsubstituted arakyl, substituted or unsubstituted alkoxyaralkyl, vinyl, acetylene and a substituted or unsubstituted monocyclic or bicyclic heterocycle containing from 1 to 4 heteroatoms selected from the group consisting of nitrogen, sulfur and oxygen atoms provided that, in the case of R_3, the hetero atoms in said heterocycle are not directly bonded to the —CH— group of the —CH—X— moiety; and R_2, R_b and R_c are independently selected from carboxy or protected carboxy, carboxy or protected carboxyloweralkyl and carboxyamide; X is oxygen or nitrogen; and R_4 is H or an amino protecting group; wherein the substituents in the aforementioned substituted alkyl, cycloalkyl, cycloalkylalkyl, amino, acylamino, aryl, aralkyl, aryloxy, alkoxyaryl, alkoxyaryalkyl and heterocyclic groups are selected from the group consisting of halogen, hydroxyl, lower alkyl, lower alkoxy, aryloxy, aralkyloxy, amino, mono- or di-lower alkylamino, arylamino, aralkyamino, carboxyl, formyl, lower alkoxycarbonyl, aryloxycarbonyl, aralkyloxycarbonyl, lower alkylthio, arylthio, aralkylthio, arylsulfinyl, aralkylsulfinyl, lower alkylsulfonyl, arylsulfonyl, aralkylsulfonyl and a monocyclic or bicyclic heterocyclic group having 1–4 hetero atoms selected from nitrogen, sulfur and oxygen; or a pharmaceutically acceptable salt thereof.

5,616,613

PLATINUM(II) COMPLEX AND MALIGNANT TUMOR TREATMENT AGENT

Hideki Kawai; Masami Tamaoka, both of Kamakura, and Yukie Saito, Yokosuka, all of Japan, assignors to Toray Industries, Inc., Japan

PCT No. PCT/JP95/00775, § 371 Date Jan. 29, 1996, § 102(e) Date Jan. 29, 1996, PCT Pub. No. WO95/28408, PCT Pub. Date Oct. 26, 1995

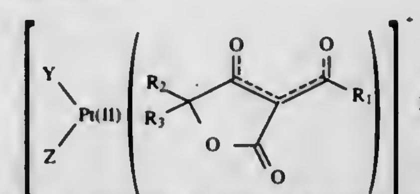
PCT Filed Apr. 19, 1995, Ser. No. 557,078

Claims priority, application Japan, Apr. 19, 1994, 6-080642

Int. Cl.⁶ A61K *31/28;* **C07F** *15/00*

U.S. Cl. 514—492 **4 Claims**

1. A novel platinum(II) complex represented by the following general formula (A)



(A)

in which R_1 represents a lower hydrocarbon radical of 1 to 3 carbon atoms, R_2 and R_3 each independently represent a hydrogen atom or a lower hydrocarbon radical of 1 to 3 carbon atoms, or R_2 and R_3 together may form $—(CH_2)_4—$ or $—(CH_2)_5—$, Y and Z each independently represent an ammonia molecule or a monodentate amine of 1 to 7 carbon atoms or X and Y together may form a bidentate diamine of 2 to 10 carbon atoms, and X^- represents an inorganic acid anion or an organic carboxylate anion.

5,616,614

NAPHTHYLALKYLAMINES

Said Yous, Lille; Daniel Lesieur, Gondecourt; Patrick Depreux, Armentieres; Béatrice Guardiola-Lemaitre, Neuilly-sur-Seine; Gérard Adam, Le Mesnil le Roi; Pierre Renard, Versailles, and Daniel H. Caignard, Paris, all of France, assignors to Adir ET Compagnie, Courbevoie, France

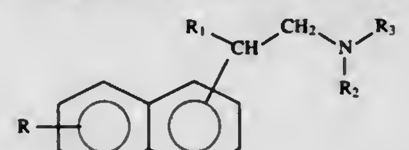
Division of Ser. No. 35,936, Mar. 23, 1993, Pat. No. 5,420,158. This application Jan. 25, 1995, Ser. No. 377,812

Claims priority, application France, Mar. 27, 1992, 92 03700

Int. Cl.⁶ A61K *31/215;* **C07C** *229/26*

U.S. Cl. 514—530 **9 Claims**

1. A compound selected from those of formula (I):



(I)

in which:

R represents hydrogen or a group $—O—R_4$ in which R_4 denotes hydrogen or a substituted or unsubstituted group chosen from alkyl, cycloalkyl, cycloalkylalkyl, phenyl, phenylalkyl, and diphenylalkyl,

R_1 represents a group $—CO—O—R_5$ in which R_5 denotes hydrogen or substitued or unsubstituted alkyl,

R_2 represents hydrogen or a group $—R'_2$ wherein R'_2 represents alkyl or substituted alkyl,

R_3 represents:

a group

$$—\underset{\underset{X}{\|}}{C}—NH—(CH_2)_{n'}—R_7$$

in which X represents oxygen or sulfur, n' is 0 or 1 to 3inclusive and R_7 represents a radical selected from alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, phenyl,

and substituted phenyl, an optical isomer therefor an addition salt thereof with a pharmaceutically-acceptable base, on the understanding that, except where otherwise specified,

the term "substituted" means that the groups to which it relates may be substituted with one or more radicals chosen from halogen, (C_1–C_4) alkyl, (C_1–C_4) alkoxy, phenyl, and phenylalkyl, it being possible for a phenyl ring itself to be substituted with one or more radicals selected from halogen, (C_1–C_4) alkyl, (C_1–C_4) alkoxy, hydroxyl, and trifluoromethyl,

the term "alkyl" denotes alkyl containing 1 to 6 carbon atoms, inclusive, in an unbranched or branched chain,

the term "alkene" denotes alkene containing 2 to 6 carbon atoms, inclusive, in an unbranched or branched chain,

the term "cycloalkyl" denotes a saturated or unsaturated, mono- or bicyclic group containing 3 to 10 carbon atoms, inclusive.

5,616,615

ENAMINONE ESTERS

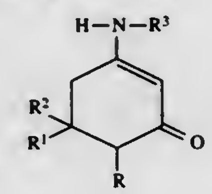
Kenneth R. Scott, Silver Spring; Jesse M. Nicholson, Upper Marlboro, and Ivan O. Edafiogho, Oxon Hill, all of Md., assignors to Howard University, Washington, D.C.

Division of Ser. No. 24,970, Mar. 2, 1993, Pat. No. 5,468,775, which is a continuation-in-part of Ser. No. 844,068, Mar. 2, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 487,341

Int. Cl.⁶ A61K *31/24*

U.S. Cl. 514—511 **4 Claims**

1. An enaminone having the formula



wherein

R is $COOCH_3$;

R^1 is CH_3;

R^2 is H; and

R^3 is selected from the group consisting of C_6H_4(p-Cl) and $CH_2C_6H_5$.

5,616,616

ROOM TEMPERATURE STERILANT

Robert T. Hall, II, Welch, and Bradley K. Onstad, Deephaven, both of Minn., assignors to Minntech Corporation, Minneapolis, Minn.

Filed Jun. 1, 1994, Ser. No. 252,610

Int. Cl.⁶ A01N *37/00;37/02;59/00;* **A61K** *33/40*

U.S. Cl. 514—557 **17 Claims**

1. An anti-microbial composition having improved anti-corrosive properties comprising:

an ester of formic acid;

an oxidizer;

performic acid; and

water.

5,616,617

FACE PIMPLES PREVENTION METHOD AND COMPOSITIONS

Arthur Van Moerkerken, 18761 W. Dixie Hwy., #209, North Miami Beach, Fla. 33180

Filed Nov. 27, 1995, Ser. No. 562,692

Int. Cl.⁶ A01N *37/12;* **A61K** *31/195*

U.S. Cl. 514—561 **6 Claims**

1. The method of treating facial pimples in a person in need of such prevention, comprising the oral administration to such person of an effective amount of at least one nutrient compound having the formula

$$X—(CH_2)_n—CH(O)_qH—\underset{\underset{(NH_2^+)_pH}{|}}{CH}—COO—$$

in which X is selected from the group consisting of $—CONH_2$,

$$—N(CH_3)_3^+,\ —NH_2 \text{ and } —\underset{\underset{NH_2}{|}}{NH}—C{=}NH,$$

n is zero, one, two, or three and p and q are each zero or one, provided that p and q are not both zero and p is zero and q is one only when X is $—N(CH_3)_3+$.

5,616,618

THREO-3-(3,4-DIHYDROXYPHENYL)SERINE ANALGESIC COMPOSITION

Hiroshi Takagi, Kyoto, Japan, assignor to Sumitomo Pharmaceuticals Company, Limited, Osaka, Japan

PCT No. PCT/JP94/00120, § 371 Date Jul. 24, 1995, § 102(e) Date Jul. 24, 1995, PCT Pub. No. WO94/16689, PCT Pub. Date Aug. 4, 1994

PCT Filed Jan. 28, 1994, Ser. No. 495,480

Claims priority, application Japan, Jan. 29, 1993, 5-034366

Int. Cl.⁶ A01N *37/12;* **A61K** *31/195*

U.S. Cl. 514—567 **4 Claims**

1. A method for the treatment of pain which comprises administering to a human an effective dose of threo-3-(3,4-dihydroxyphenyl)serine or a pharmaceutically acceptable acid addition salt thereof.

5,616,619

TOPICAL COMPOSITION FOR BURN RELIEF AND METHOD OF USE

Dorothy E. Stofer, 5331 Lake LeClare Rd., Lutz, Fla. 33549

PCT No. PCT/US94/02787, § 371 Date Jun. 3, 1994, § 102(e) Date Jun. 3, 1994

PCT Filed Mar. 15, 1994, Ser. No. 244,545

Int. Cl.⁶ A61K *31/19*

U.S. Cl. 514—574 **17 Claims**

1. A pasty, formable topical composition for treatment of burns of the skin consisting essentially of a mixture of citrus juice and salt, wherein said salt is a pharmaceutically acceptable, topically tolerable salt present in an amount of from 1.0 to 4.0 parts by weight per part by weight of citrus juice.

5,616,620

AMINO ACID DERIVATIVES, PHARMACEUTICAL COMPOSITIONS CONTAINING THESE COMPOUNDS AND THEIR USE IN THE TREATMENT OF OBESITY

Klaus Rudolf; Wolfgang Eberlein; Wolfhard Engel; Gerhard Mihm, all of Biberach; Henri Doods, Warthausen; Heike A. Wieland, Biberach; Klaus-Dieter Willim, Schweinhausen/Hochdorf; Jürgen Krause, Ummendorf; Horst Dollinger; Franz Esser, both of Ingelheim; Gerd Schnorrenberg, Gau-Algesheim; Michael Entzeroth, Warthausen, and Wolfgang Wienen, Äpfingen, all of Germany, assignors to Karl Thomae GmbH, Biberach an der Riss, Germany

Division of Ser. No. 184,160, Jan. 21, 1994, abandoned. This application Jun. 1, 1995, Ser. No. 458,093

Claims priority, application Germany, Jan. 20, 1993, 43 01 452.6; Aug. 6, 1993, 43 26 465.4

Int. Cl.^{6} A61K *31/165;* **C07C** *273/00;275/00*

U.S. Cl. 514—620 **8 Claims**

1. A compound of the formula

$$T—Z—NR^1—(R^2CR^3)—CO—Y—(CH_2)_n—R \qquad (I)$$

wherein

n denotes the number 0, 1, 2, 3, 4 or 5,

R denotes a phenyl or naphthyl group, a phenyl or naphthyl group which are mono- or disubstituted independently by fluorine, chlorine, bromine or iodine atoms, or by cyano, alkyl, phenyl, hydroxy, alkoxy, dialkylaminoalkoxy, hydroxyphenyl, phenylalkoxy, alkylcarbonyl, amino, alkylamino, dialkylamino, alkylsulphonylamino, alkylcarbonylamino, alkoxycarbonylamino, alkoxycarbonyloxy, carboxy, alkoxycarbonyl, aminocarbonyl, alkylaminocarbonyl, dialkylaminocarbonyl, alkylcarbonyloxy, alkylsulphonyloxy, hydroxymethyl, hydroxyethyl, hydroxypropyl, hydroxybutyl, trifluoromethyl, trifluoromethoxy, trifluoromethylthio, aminoalkyl, alkylaminoalkyl, aminocarbonylaminoalkyl, benzoylamino, alkanoylaminoalkyl, alkoxycarbonylaminoalkyl, benzyloxycarbonylaminoalkyl, aminosulphonyl, alkylaminosulphonyl, dialkylaminosulphonyl, aminosulphonylamino, alkylaminosulphonylamino, dialkylaminosulphonylamino, cyanamino, aminocarbonylamino, alkylaminocarbonylamino, dialkylaminocarbonylamino, aminosulphonylaminoalkyl, alkylaminosulphonylaminoalkyl, carboxyalkyl, alkoxycarbonylalkyl, aminocarbonylalkyl, alkylaminocarbonylalkyl, aminosulphonylalkyl, alkylaminosulphonylalkyl, alkylsulphonyl, aminosulphonyloxy, alkylaminosulphonyloxy, dialkylaminosulphonyloxy or cyanoguanidino groups,

an aminophenyl or aminonaphthyl group disubstituted independently by chlorine or bromine atoms, or

a hydroxyphenyl or hydroxynaphthyl group, disubstituted independently by chlorine or bromine atoms or alkyl or alkoxy groups,

a diphenylmethyl group or a (2,2-diphenylethyl)aminocarbonylaminophenyl group,

a phenyl group substituted by a [1,5-dihydro-2,4(3H)-dioxo-imidazol-3-yl]alkyl or [1,2-dihydro-3,5(4H)-dioxo-3H-1,2,4-triazol-4-yl]alkyl group or by a [1,5-dihydro-2,4 (3H)-dioxo-imidazol-3-yl]alkyl or [1,2-dihydro-3,5(4H)-dioxo-3H-1,2,4-triazol-4-yl]alkyl group wherein the imidazole and triazole moiety additionally are substituted by 1 or 2 phenyl groups,

R^1 denotes a hydrogen atom, a branched or straight-chained C_{1-10}-alkyl group, a C_{3-7}-cycloalkyl group, a phenyl group, a phenyl group substituted by a hydroxy or hydroxyalkyl group, a phenylmethyl group or a phenylmethyl group substituted in the phenyl moiety by a hydroxy or hydroxyalkyl group,

R^2 denotes an unbranched C_{1-5} alkyl group which is substituted in the ω-position by an amino or alkylamino group (which themselves are unsubstituted or are protected by a protecting group for an amino group selected from p-toluenesulphonyl, phenylmethoxycarbonyl, tert.butyloxycarbonyl, (4-methoxyphenyl)methoxycarbonyl, adamantyloxycarbonyl, biphenylylisopropyloxycarbonyl, isonicotinoyloxycarbonyl, o-nitrophenylsulphenyl, formyl, o-nitrophenylsulphenyl, biphenylylisopropyloxycarbonyl, 9-fluorenylmethoxycarbonyl, acetyl, trifluoroacetyl, (2-chlorophenyl)methoxycarbonyl, (4-chlorophenyl)methoxycarbonyl, (4-nitrophenyl)methoxycarbonyl or phthaloyl), by a dialkylamino, N-alkylbenzylamino, aminocarbonylamino, aminomethylimino, aminoiminomethyl, [amino(hydroxyimino)methyl], [amino(alkoxyimino)methyl], guanidino, hydrazinoiminomethyl, [amino(nitroimino)methyl], [amino(nitroimino)methyl]amino, [amino(cyanimino)-methyl], [amino(cyanimino)methyl]-amino, [(alkylamino)iminomethyl]amino, [(alkylamino)-(alkylimino)methyl]amino- or [amino(alkylimino)methyl]-amino group,

wherein the aminoiminomethyl, [amino(hydroxyimino)-methyl] and guanidino groups mentioned above in the definition of R^2 are meant to encompass said unsubstituted groups and said groups in which one or more hydrogen atoms bound to nitrogen atoms are independently replaced by alkyl groups and

wherein the HN<, HN= or H_2N— groups present in the group R^2 are unsubstituted or one hydrogen atom in said HN<, HN= or H_2N— groups is replaced by an alkoxycarbonyl group having a total of 2 to 7 carbon atoms, by a phenylalkyloxycarbonyl group having 1 to 6 carbon atoms in the alkyl moiety, by a phenyloxycarbonyl group, or by an R^{15}—CO—O—$(R^{16}CR^{17})$—O—CO— or by an $(R^{18}O)PO(OR^{19})$— group, wherein

R^{15} denotes a C_{1-15}-alkyl group, a C_{3-7}-cycloalkyl group, a phenyl group or a phenylalkyl groups having 1 to 3 carbon atoms in the alkyl moiety,

R^{16} and R^{17} independently denote hydrogen atoms or C_{1-6}-alkyl groups and one of the groups R^{16} or R^{17} additionally denotes a C_{3-7}-cycloalkyl group or a phenyl group,

R^{18} and R^{19} independently denote hydrogen atoms, C_{1-4}-alkyl groups, or benzyl or phenyl groups;

R^3 denotes a hydrogen atom, a C_{1-7}-alkyl group or a C_{4-7}-cycloalkyl group,

T denotes

the group $(T^1T^2U)—(CH_2)_m—$, wherein

one of T^1 and T^2 denotes a hydrogen atom and the other of T^1 and T^2 denotes a phenyl, 1-naphthyl or 2-naphthyl group or a phenyl, 1-naphthyl or 2-naphthyl group which is independently mono- or disubstituted by fluorine, chlorine, bromine or iodine atoms or by cyano, hydroxy, amino, dimethylamino, diethylamino, N-ethyl-methylamino, trifluoromethyl, trifluoromethoxy, trifluoromethylthio, acetylamino, propionylamino, methanesulphonylamino, methanesulphonyloxy, phenyl, phenylmethoxy, 2-phenylethoxy, alkyl or alkoxy groups, or is trisubstituted by an amino or hydroxy group together with two chlorine or bromine atoms or by a hydroxy group together with two alkyl or alkoxy groups, and the above-mentioned alkyl and alkoxy moieties each contain 1 to 4 carbon atoms, or

both of T^1 and T^2 independently denote phenyl, 1-naphthyl or 2-naphthyl groups or phenyl, 1-naphthyl or 2-naphthyl groups which are independently mono- or disubstituted by fluorine, chlorine, bromine or iodine atoms or by cyano, hydroxy, amino, dimethylamino, diethylamino, N-ethylmethylamino, trifluoromethyl, trifluoromethoxy, trifluoromethylthio, acetylamino, propionylamino, methanesulphonylamino, methanesulphonyloxy, phenyl, phenylmethoxy, 2-phenylethoxy, alkyl or alkoxy groups, or are trisubstituted by an amino or hydroxy group together with two chlorine or bromine atoms or by a hydroxy group together with two alkyl or alkoxy groups, and the abovementioned alkyl and alkoxy moieties each contain 1 to 4 carbon atoms,

U denotes a >CH— group, a >CH— group wherein the hydrogen atom is replaced by an alkyl, phenyl, hydroxy, alkoxy, alkanoyloxy, alkoxycarbonyl or alkanoylamino group, whilst the above-mentioned alkyl and alkoxy moieties each contain 1 to 3 carbon atoms and the above-

mentioned alkanoyl moiety each contain 2 or 3 carbon atoms, or U denotes a >$CHCH_2$— group or a nitrogen atom, and

m denotes the number 0, 1, 2 or 3,

or T denotes a $(T^1T^2U)—(CH_2)_m—$ group wherein

T^1, T^2, U and m are as hereinbefore defined, with the proviso that the phenyl, 1-naphthyl or 2-napbthyl groups mentioned above for T^1 and T^2 are linked together via a bond or via a —CH_2—, —$C(CH_3)_2$—, —CH_2CH_2— or —CH=CH— bridge;

Y denotes a —NR^4— group, wherein R^4 has the meanings given above for R^1 and the groups R^1 and R^4 are identical or different, and

Z denotes a single bond, or a —CO— group, and unless otherwise specified the above-mentioned alkyl and alkoxy moieties each contain 1 to 3 carbon atoms,

or the compound

(R)-N-[[4-[(4,5-dihydro-5,5-dimethyl-2,4(3H)-dioxo-1H-imidazol-3 -yl)methyl]phenyl]methyl]-N^2-(diphenyl-acetyl)-argininamide,

or a tautomer or salt thereof.

5,616,621

TASTE MASKING LIQUIDS

Shankar D. Popli, Marlton, and Zenaida O. Go, Hammonton, both of N.J., assignors to American Home Products Corporation, Madison, N.J.

Filed Jan. 30, 1995, Ser. No. 380,540

Int. Cl.^{6} A61K *47/32*

U.S. Cl. 514—772.4 **44 Claims**

1. A pharmaceutical composition comprising (i) a liquid excipient base consisting essentially of water and per 100 milliliters of said base about 5 to about 20 grams of a (a) polyethylene glycol having a molecular weight of about 950 to about 2200, and (b) a cellulosic compound selected from the group consisting of methyl cellulose, hydroxyethycellulose, hydroxypropylcellulose, hydroxyethyl methylcellulose, hydroxyproply methylcellulose, carboxymethyl cellulose, mixtures and salts thereof, the weight ratio of said polyethylene glycol to said cellulosic compound being between about 100:1 and about 20:1, and the spindle viscosity of the liquid excipient base being between about 150 and about 1000 centipoises at 50 RPM and 150–1200 centipoises at 10 RPM, and (ii) at least one pharmaceutically active compound selected from the group consisting of antihistamines, decongestants, antitussives, expectorants, non-steroidal anti-inflammatory drugs (NSAIDs) and analgesic drugs, said pharmaceutically active compound being dissolved in the liquid excipient base.

5,616,622

CROSSLINKED SEEDED COPOLYMER BEADS AND PROCESS OF MANUFACTURE

William I. Harris, and Robert L. Sammler, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 27, 1994, Ser. No. 330,039

Int. Cl.^{6} B01J *39/18;* **C08F** *8/36;8/38;8/18*

U.S. Cl. 521—33 **11 Claims**

1. A method for producing crosslinked seeded copolymer beads and cation-exchange resins having a high resistance to oxidation and leaching comprising:

a) imbibing polymer seed beads of a first copolymer, comprised of a first monovinyl aromatic monomer and a first polyvinyl aromatic monomer wherein the concentration of the polyvinyl aromatic monomer is less than about 3.0 percent by weight of the total amount of monomer in the first copolymer, with a monomer mixture comprising a second monovinyl aromatic monomer, a second polyvinyl aromatic monomer, and a free-radical initiator,

b) forming a polymer matrix comprising the first copolymer and a second copolymer, wherein the second copolymer is formed by free-radical polymerization of the monomer mixture imbibed in the polymer seed beads, and

c) crosslinking the first copolymer and the second copolymer of the polymer matrix together to form crosslinked seeded copolymer beads.

5,616,623

PROCESS FOR THE DECOMPOSTION OF POLYURETHANE PLASTICS

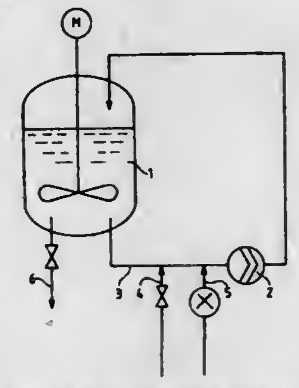
Thomas Münzmay, Dormagen; Peter Fuhrmann, Köln; Franz Lamla, Dormagen; Walter Meckel, Neuss, and Werner Rasshofer, Köln, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 20, 1995, Ser. No. 560,565

Claims priority, application Germany, Nov. 29, 1994, 44 42 379.9

Int. Cl.^{6} C08J *11/04*

U.S. Cl. 521—49.5 **4 Claims**



1. A process for generating isocyanate-reactive materials from polyurethane plastics comprising mixing and comminuting

1) a polyurethane plastic,

2) a compound consisting of at least two isocyanate-reactive hydrogen atoms and

3) a regeneration product prepared by cleaving a polyurethane plastic with a compound containing at least two isocyanate-reactive hydrogen atoms

in amounts such that the weight of 3) is from about 2 to about 20 times the weight of 1) plus 2) by at high speed by means of a device which generates high shear forces between its rotor and stator in which the isocyanate-reactive material generated during the process is withdrawn from the reaction mixture.

5,616,624

PREPARATION OF BEAD-FORM EXPANDABLE STYRENE POLYMERS HAVING IMPROVED EXPANDABILITY

Michael Witt, Ludwigshafen; Dietrich Scherzer, Neustadt; Klaus Hahn, Kirchheim, and Dieter Naegele, Worms, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP94/00662, § 371 Date Aug. 2, 1995, § 102(e) Date Aug. 2, 1995, PCT Pub. No. WO94/21719, PCT Pub. Date Sep. 29, 1994

PCT Filed Mar. 5, 1994, Ser. No. 495,594

Claims priority, application Germany, Mar. 18, 1993, 43 08 636.5

Int. Cl.^{6} C08J *9/18*

U.S. Cl. 521—56 **4 Claims**

1. A process for the preparation of bead-form expandable styrene polymers by polymerizing styrene, optionally in the presence of up to 50% by weight, based on the weight of the styrene polymers, of further comonomers, in aqueous suspension in the presence of organic molecular colloids as suspension stabilizers and conventional styrene-soluble polymerization catalysts and with addition of

a blowing agent and, optionally, conventional additives in effective amounts, wherein the aqueous suspension contains at least one olefinically unsaturated carboxylic acid or a water-soluble salt thereof in an amount, based on the organic phase, of from 0.002 to 0.3% by weight of carboxylate anions.

5,616,625
REACTIVE HOT MELT FOAM
Ju-Ming Hung, Yardley, Pa., and James W. Nowicki, Hopewell, N.J., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.
Filed Feb. 17, 1995, Ser. No. 390,443
Int. Cl.[6] C08J *9/08*
U.S. Cl. 521—79 **7 Claims**

1. A process for foaming polyurethane reactive hot melt adhesive comprising the steps of:
a) melting a reactive polyurethane adhesive containing 0.05 to 0.5% by weight of a 2,2'dimorpholinodiethyl ether or di(2,6-dimethylmorpholinodiethyl)ether catalyst in a heated reservoir;
b) pumping the adhesive from the heated reservoir into a heated recirculating melt foaming device;
c) foaming the adhesive by injecting therein an effective amount of an anhydrous gas;
d) discharging a portion of the foamed adhesive through an orifice onto a substrate to be bonded; and
e) recirculating the remaining foamed adhesive back to the foaming device to be stored for discharge at a time following the initial and subsequent recirculation back to the foaming device.

5,616,626
PHENOLIC FOAM COMPOSITION AND USE THEREOF FOR IN PLACE FOAMING
Samuel L. Rader, Lewisburg, W. Va., assignor to Jiffy Foam, Inc., Newport, R.I.
Division of Ser. No. 477,821, Jun. 7, 1995, and a continuation-in-part of Ser. No. 328,694, Oct. 25, 1994, Pat. No. 5,432,207. This application Dec. 12, 1995, Ser. No. 571,220
Int. Cl.[6] C08J *9/08;* **C08G** *14/04*
U.S. Cl. 521—94 **8 Claims**

1. A process for making a flexible foamed product comprising the steps of:
reacting a reactive phenolic resin, urea, an isocyanate, and a catalyst for polymerizing the phenolic resin, whereby water is formed and generates carbon dioxide by reaction of the water with said isocyanate.

5,616,627
POLYPROPYLENE RESIN COMPOSITION, POLYPROPYLENE RESIN FOAMED MATERIAL AND PROCESS FOR PRODUCING THE SAME
Tadashi Sakurai, Kyoto; Kouichirou Asao, and Akinobu Sakamoto, both of Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan
Filed Jul. 17, 1995, Ser. No. 502,880
Claims priority, application Japan, Jul. 15, 1994, 6-164187; Dec. 26, 1994, 6-322841
Int. Cl.[6] C08J *9/10*
U.S. Cl. 521—134 **10 Claims**

1. A process for producing a polypropylene resin foamed material, comprising the steps of:
(I) preparing a polypropylene resin composition by melt-kneading about 90 to 60 parts by weight of a polypropylene block copolymer (A) which contains about 99 to 90% by weight of a crystalline polypropylene (a) and about 1 to 10% by weight of an amorphous ethylene-α-olefin copolymer (b) and has the melt properties of a MFR of about 2 to 15 g/10 minutes, and a die swell ratio measured by a capillary rheometer of at least 1.7; 10 to 40 parts by weight of a polyethylene resin (B); and a foaming agent; and
(II) foaming the polypropylene resin composition.

5,616,628
PROCESS FOR THE PRODUCTION OF OPTIONALLY CELLULAR POLYURETHANES AND/OR POLYURETHANE UREAS
Wulf von Bonin; Hanns-Peter Müller, both of Odenthal, and Manfred Kapps, Bergisch Gladbach, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
Filed Mar. 13, 1996, Ser. No. 615,657
Claims priority, application Germany, Mar. 20, 1995, 195 10 056.5
Int. Cl.[6] C08G *18/00*
U.S. Cl. 521—157 **18 Claims**

1. A process for the production of optionally cellular polyurethanes and/or polyurethane ureas comprising reacting at least one polyisocyanate with a mixture comprising
A) one or more non-basic compounds having a molecular weight of 62 to 10,000 and containing at least two hydroxyl groups; and
B) at least one component selected from the group consisting of:
1) at least one basic polyhydroxyl compound comprising
i) at least one compound selected from the group consisting of monoalkanolamines, dialkanolamines, trialkanolamines and mixtures thereof, and
ii) at least one compound having an OH number of from 300 to 800, said compound being the reaction product of a) an alkylene oxide and b) a compound selected from the group consisting of ammonia, alkanolamines, diamines and polyamines, and
2) at least one acid or the salt thereof, wherein said acid is an organic carboxylic acid having less than 8 carbon atoms or an inorganic acid; and
C) at least one component selected from the group consisting of:
1) at least one fatty acid having more than 8 carbon atoms, and
2) at least one salt of said fatty acid;
wherein said reaction is at a temperature of from 0° to 150° C. and component A) is present as an at least 50 wt. % aqueous solution.

5,616,629
RADIATION-CURABLE ORGANOPOLYSILOXANE RELEASE COMPOSITIONS
Thanh V. Nguyen, Painesville, Ohio; John Allen, Yorba Linda, and Qun Yu, Los Angeles, both of Calif., assignors to Avery Dennison Corporation, Pasadena, Calif.
Continuation-in-part of Ser. No. 294,957, Aug. 24, 1994, abandoned. This application Feb. 27, 1995, Ser. No. 394,726
Int. Cl.[6] C08F *2/50;* **C08L** *83/06;83/07*
U.S. Cl. 522—40 **22 Claims**

1. A radiation-curable release composition, comprising:
(A) an organopolysiloxane represented by the formula

$$RSi(CH_3)_2—O—(Si(CH_3)_2O)_n(Si(CH_3)(R)O)_mSi(CH_3)_2R \qquad (I)$$

wherein in Formula (I), each R is $—R^1—O(O)C—C(R^2)═CH$ or $—R^1—O—C(R^2)═CH_2$; R^1 is a hydrocarbylene group; each R^2 is independently hydrogen or a methyl or ethyl group; m is a number from about 1 to about 15; and n is a number from about 50 to about 300; and
(B) an organosiloxane copolymer represented by the formula

$$(R_3SiO)_x(SiO_{4/2})_y \qquad (II)$$

wherein in Formula (II), each R is independently a hydrocarbon group or a group represented by the formula

$$O(O)C—C(R^*)═CH_2$$

wherein R^* is hydrogen or a methyl or ethyl group; x is a number from about 0.25 to about 75; y is a number from about 1 to about 56; the ratio of x to y is from about 0.3:1 to about 1.5, with the proviso when R in Formula (I) is $—R^1—O(O)C—C(R^2)═CH_2$, R in Formula (II) is other than $—O(O)C—C(R^*)═CH_2$.

5,616,630
ESTER/URETHANE ACRYLATE HYBRID OLIGOMERS
Richard E. Heinze, Erie, Pa., assignor to Lord Corporation, Cary, N.C.
Continuation of Ser. No. 13,912, Feb. 5, 1993, abandoned. This application Feb. 17, 1995, Ser. No. 393,151
Int. Cl.[6] C08F *2/50;* **C08G** *18/12;18/34;18/42*
U.S. Cl. 522—96 **12 Claims**

1. An ester/urethane acrylate hybrid oligomer comprising the reaction product of (a) an acrylate/hydroxy-functional polyester, (b) an isocyanate compound, and (c) a hydroxy-functional acrylate compound, wherein the acrylate/hydroxy-functional polyester is preformed prior to reacting the acrylate/hydroxy-functional polyester with the isocyanate compound and the hydroxy-functional acrylate compound and wherein
the acrylate/hydroxy-functional polyester is prepared by reacting an acrylate-forming compound and a polyester polyol, wherein the acrylate-forming compound corresponds to the formula:

$$CH_2{=}\overset{\overset{\displaystyle R}{|}}{C}{-}\overset{\overset{\displaystyle O}{\|}}{C}{-}X$$

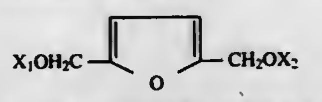
wherein R can be H or CH_3; X can be OH, OY, Cl, Br or F; and Y can be an alkyl, aryl or cycloalkyl hydrocarbon radical baving from 1 to 10 carbon atoms; and the polyester polyol is prepared by reacting a polycarboxylic acid (or anhydride thereof) or lactone with an excess of a multi-functional hydroxy compound, wherein the polycarboxylic acid is selected from the group consisting of phthalic acid, isophthalic acid, terephthalic acid, tetrahydrophthalic acid, hexahydrophthalic acid, adipic acid, succinic acid, suberic acid, azelaic acid, sebacic acid, maleic acid, glutaric acid, chlorendic acid, tetrachlorophthalic acid, itaconic acid, trimellitic acid and tricarballylic acid, the lactone corresponds to the formula:

$$\underbrace{RCH{+}CR_2)_x{-}C{=}O}_{\text{ring closed through }O}$$

wherein R is hydrogen or an alkyl group having from 1 to 12 carbon atoms, x is from 4 to 7 and at least (x-2)R's are hydrogen, and the multi-functional hydroxy compound is selected from the group consisting of ethylene glycol, diethylene glycol, neopentyl glycol, 1,4-butane diol, 1,3-propane diol, 1,6-hexane diol, 2-methyl-1,3,propane diol, trimethylol propane, cyclohexanedimethanol, glycerol, erythritol, pentaerythritol, poly(ethylene oxide) diol, poly(ethylene oxide/propylene oxide) diol, polypropylene glycol, and poly(tetramethylene oxide) diol,
the isocyanate compound is selected from the group consisting of toluene-2,4-diisocyanate, 2,2,4-trimethylhexamethylene-1,6-diisocyanate, hexamethylene-1,6-diisocyanate, diphenylmethane-4,4'-diisocyanate, triphenylmethane-4,4,'4"-triisocyanate, polymethylene polyphenylisocyanate, m-phenylene diisocyanate, p-phenylene diisocyanate, 2,6-toluene diisocyanate, 1,5-naphthalene diisocyanate, naphthalene-1,4-diisocyanate, 1,4-cyclohexylene dimethylene diisocyanate, xylene-1,4-diisocyanate, xylene-1,3-diisocyanate, cyclohexyl-1,4-diisocyanate, 4,4'-methylene-bis(cyclohexyl isocyanate), 3,3'-dimethyldiphenylmethane-4,4'-diisocyanate, isophorone diisocyanate, m-tetramethyl xylene diisocyanate, the product obtained by reacting trimethylol propane and 2,4-toluene diisocyanate in a ratio of 1:3, and isocyanurate and biuret adducts of hexamethylene-1,6-diisocyanate, and the hydroxy-functional acrylate compound is selected from the group consisting of 2-hydroxyethyl acrylate, 2-hydroxyethyl methacrylate, 2-hydroxypropyl acrylate, 2-hydroxypropyl methacrylate, 2-hydroxybutyl acrylate, 2-hydroxybutyl methacrylate, 3-hydroxypropyl acrylate, 4-hydroxybutyl acrylate, 3-hydroxypentyl acrylate, 6-hydroxynonyl acrylate, 3-hydroxypropyl methacrylate, 2-hydroxypentyl methacrylate, 5-hydroxypentyl methacrylate, 7-hydroxyheptyl methacrylate, 5-hydroxydecyl methacrylate, N-hydroxymethyl acrylamide, N-hydroxymethyl methacrylamide, diethylene glycol monoacrylate, diethylene glycol monomethacrylate, glycerin dimethacrylate, trimethylol propane dimethacrylate, alkoxylated hydroxyethyl acrylate, trimethylolpropane diacrylate, alkoxylated trimethylolpropane diacrylate, a lactone-acrylate adduct, and reaction products of polyether glycols with acrylic acid or methacrylic acid.

5,616,631
BINDER COMPOSITION FOR MOLD MAKING, BINDER/CURING AGENT COMPOSITION FOR MOLD MAKING, SAND COMPOSITION FOR MOLD MAKING, AND PROCESS OF MAKING MOLD
Kazuhiko Kiuchi, Aichi; Shigeo Nakai; Masuo Sawa; Masayuki Kato, all of Aichi; Mitsuru Sakai, Wakayama, and Shinya Nomura, Aichi, all of Japan, assignors to Kao Corporation, Tokyo, Japan
Division of Ser. No. 291,065, Aug. 17, 1994, Pat. No. 5,491,180. This application Oct. 31, 1995, Ser. No. 550,734
Int. Cl.[6] B22C *1/22;* **C08F** *283/00*
U.S. Cl. 523—139 **24 Claims**

1. A binder composition for mold making which comprises:
(a) a binder comprising an acid-curable resin and
(b) from 0.5 to 63.0% by weight, based on the binder composition, of at least one curing accelerator selected from compounds represented by formula (1):



(1)

wherein X_1, X_2 each independently represent a hydrogen atom, a methyl group or an ethyl group, and
wherein said acid-curable resin is at least one compound selected from the group consisting of a phenol/aldehyde polycondensate, a urea/aldehyde polycondensate, and a co-condensate of said phenol/aldehyde and said urea/aldehyde polycondensates.

5,616,632
SILICONE COMPOSITIONS
Hironao Fujiki; Shigeki Shudo, and Takashi Kondou, all of Usui-gun, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan
Continuation-in-part of Ser. No. 436,582, May 8, 1995, abandoned. This application Nov. 20, 1995, Ser. No. 560,586
Claims priority, application Japan, May 9, 1994, 6-119580
Int. Cl.[6] C08K *9/10*
U.S. Cl. 523—211 **14 Claims**

1. A silicone composition comprising, in admixture,

(A) a diorganopolysiloxane of the general formula (1):

$$R^1_aR^2_b(CH_3)_cSiO_{(4-a-b-c)/2} \quad (1)$$

wherein R^1 is an aliphatic unsaturated group having 2 to 8 carbon atoms, R^2 is a substituted-or unsubstituted monovalent hydrocarbon group excluding an aliphatic unsaturated group and methyl group, letters a, b, and c are numbers in the range: $c/(a+b+c) \geqq 0.95$, $0.0001<a<0.05$, and $1.8 <a+b+c<2.205$, said diorganopolysiloxane containing at least two aliphatic unsaturated groups in a molecule, at least 95 mol % of the organic groups bonded to silicon atoms exclusive of a silicon-oxygen bond being methyl,

(B) an organohydrogenpolysiloxane of the general formula (2):

$$R^3_dH_eSiO_{(4-d-e)/2} \quad (2)$$

wherein R^3 is an substituted or unsubstituted monovalent hydrocarbon group, letters d and e are numbers in the range: $0.002 \leqq e \leqq 1.0$, $0.8 \leqq$s d <2.2, and $0.8<d+e \leqq 3.0$, having at least three hydrogen atoms each bonded to a silicon atom in a molecule, and

(C) a hydrosilylation catalyst in the form of a platinum group compound stabilized by coordination with an organopolysiloxane of the general formula (3):

$$R^4_fR^5g\ (CH_3)_hSiO_{(4-f-g-h)/2} \quad (3)$$

wherein R^4 is an aliphatic unsaturated group having 2 to 8 carbon atoms, R^5 is a substituted or unsubstituted monovalent hydrocarbon group excluding an aliphatic unsaturated group and methyl group, letters f, g, and h are numbers in the range: $(f+g)/(f+g+h) \geqq 0.10$, $0.0001<f \leqq 2.0$, and $1.8<f+g+h<2.205$, said organopolysiloxane containing at least two aliphatic unsaturated groups in a molecule, at least 10 mol % of the organic groups bonded to silicon atoms exclusive of a silicon-oxygen bond being a group other than methyl,

said stabilized platinum group compound being included in a silicone resin comprising at least one kind of units selected from the group consisting of $R^6SiO_{3/2}$ and $SiO_{4/2}$ units, and optionally further comprising $R^6_3SiO_{1/2}$ and/or $R^6_2SiO_{2/2}$ units wherein R^6 is a substituted or unsubstituted monovalent hydrocarbon group, at least 10 mol % of the organic groups bonded to silicon atoms exclusive of a silicon-oxygen bond being the same group as R^5 in formula (3), said silicone resin having a melting or softening point of 30° to 200° C.

5,616,633
LIQUID EPOXY RESIN COMPOSITION

Paul T. Wombwell, Royston; Philip D. Willis, Bishop's Stortford, and Christopher H. Bull, Cambridge, all of England, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Continuation-in-part of Ser. No. 135,860, Oct. 12, 1993, abandoned, which is a continuation of Ser. No. 945,071, Sep. 15, 1992, abandoned. This application Sep. 9, 1994, Ser. No. 303,904

Claims priority, application United Kingdom, Sep. 20, 1991, 9120078

Int. Cl.^{6} C08K *3/34;3/36;* **C08L** *63/00*

U.S. Cl. 523—400 **11 Claims**

1. A liquid epoxy resin composition comprising an epoxy resin, at least one filler, an inorganic thixotropic agent in an amount effective to reduce settling of said filler at ambient temperatures and a polymer powder which dissolves in and thickens the composition when it is heated prior to curing in an amount effective to reduce settling of said filler at temperatures up to the gelling temperature of said composition and, optionally, a curing agent, wherein the resulting epoxy resin composition is a free-flowing liquid at room temperature when subjected to a pressure of 3 bar or less.

5,616,634
STABLE, AQUEOUS EPOXY RESIN DISPERSIONS, PROCESSES FOR THEIR PREPARATION, AND THEIR USE

Armin Pfeil; Michael Hoenel, both of Wiesbaden, and Uwe Neumann, Bad Schwalbach, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Filed Jun. 22, 1995, Ser. No. 493,548

Claims priority, application Germany, Jun. 30, 1994, 44 22 869.4; Oct. 10, 1994, 44 36 094.0

Int. Cl.^{6} C08K *3/20;* **C08L** *63/02*

U.S. Cl. 523—404 **19 Claims**

1. A stable, aqueous epoxy resin dispersion comprising

(A) an epoxy resin formed by condensation of

(A-1) at least one epoxide compound having on average at least two epoxide groups per molecule, with

(A-2) an aralkylated or alkylated polyhydroxy aromatic compound formed by reacting

(A-2a) a polyhydroxy aromatic compound with

(A-2b) an aromatic or aliphatic compound which carries an alkenyl group;

(B) a dispersant; and water.

5,616,635
AQUEOUS MULTICOLOR PAINT

Kantilal D. Patel, Loveland, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Nov. 27, 1995, Ser. No. 562,676

Int. Cl.^{6} C08L *1/28;* **C08K** *3/34*

U.S. Cl. 524—37 **16 Claims**

1. A process for preparing a multicolor paint formulation which comprises the steps of:

(1) preparing a thickener solution by mixing from about 0.5 to about 10 parts by weight of a cellulosic thickener into 100 parts by weight of water;

(2) adding a sufficient quantity of a base to the thickener solution to produce a pH adjusted thickener solution having a pH which is within the range of about 7.5 to about 12;

(3) dispersing from about 15 to about 90 parts by weight of a first pigment into 100 parts by weight of the pH adjusted thickener solution to produce a first color imparting thickener solution;

(4) mixing about 50 to about 300 parts by weight of a neutralized latex, from about 5 to about 80 parts by weight of a solvent, from about 0.5 to about 20 parts by weight of a plasticizer, and from about 5 to about 80 parts by weight of an aqueous hectorite clay solution, into the first color imparting thickener solution to produce a first color imparting latex component; wherein said aqueous hectorite clay solution contains from about 1 to about 20 weight percent clay; and wherein said neutralized latex is made by a method which comprises (A) free radical aqueous emulsion polymerizing at a pH of less than about 3.5 a monomer mixture which comprises, based on 100 weight percent monomers: (a) from about 45 to about 85 weight percent vinyl aromatic monomers, (b) from about 15 to about 50 weight percent of at least one alkyl acrylate monomer, and (c) from about 1 to about 6 weight percent of at least one unsaturated carbonyl compound; in the presence of about 0.5 to 4.0 phm at least one phosphate ester surfactant and in the presence of about 0.5 to 4.0 phm of at least one water insoluble nonionic surface active agent to produce a latex, and (B) neutralizing the latex with ammonia to a pH which is within the range of about 7 to about 10.5 to produce the neutralized latex;

(5) dispersing from about 15 to about 90 parts by weight of a second pigment into 100 parts by weight of the pH adjusted thickener solution to produce a second color imparting thickener solution;

(6) mixing about 50 to about 300 parts by weight of a neutralized latex, from about 5 to about 80 parts by weight of a solvent, from about 0.5 to about 20 parts by weight of a plasticizer, and from about 5 to about 80 parts by weight of an aqueous hectorite clay solution, into the second color imparting thickener solution to produce a second color imparting latex component; wherein said aqueous hectorite clay solution contains from about 1 to about 20 weight percent clay; and wherein said neutralized latex is made by a method which comprises (A) free radical aqueous emulsion polymerizing at a pH of less than about 3.5 a monomer mixture which comprises, based on 100 weight percent monomers: (a) from about 45 to about 85 weight percent vinyl aromatic monomers, (b) from about 15 to about 50 weight percent of at least one alkyl acrylate monomer, and (c) from about 1 to about 6 weight percent of at least one unsaturated carbonyl compound; in the presence of about 0.5 to 4.0 phm at least one phosphate ester surfactant and in the presence of about 0.5 to 4.0 phm of at least one water insoluble nonionic surface active agent to produce a latex, and (B) neutralizing the latex with ammonia to a pH which is within the range of about 7 to about 10.5 to produce the neutralized latex; and

(7) mixing the first color imparting latex component and the second color imparting latex component into a second hectorite clay solution to produce the multicolored paint formulation; wherein the second hectorite clay solution contains from about 0.5 to about 10 weight percent hectorite clay, wherein the weight ratio of the second hectorite clay solution to the sum of the first color imparting latex component and the second color imparting latex component is within the range of about 1:2 to about 4:1.

5,616,636
PHOSPHONITE-HALS AND PHOSPHITE-HALS COMPOUNDS AS STABILIZERS

Lajos Avar, Biel-Benken, Switzerland; Peter Staniek, Kandern, Germany; Klaus Stoll, Ruemmingen, Germany; Wolf D. Habicher, and Uwe Hähner, both of Dresden, Germany, assignors to Sandoz Ltd., Basel, Switzerland

Continuation of Ser. No. 206,813, Mar. 7, 1994, abandoned, which is a continuation of Ser. No. 28,855, Mar. 10, 1993, abandoned. This application Feb. 27, 1995, Ser. No. 396,050

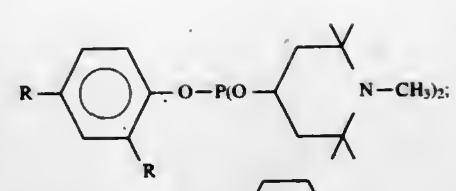
Claims priority, application United Kingdom, Mar. 11, 1992, 9205308; May 6, 1992, 9209759; Oct. 9, 1992, 9221279; Nov. 23, 1992, 9224522

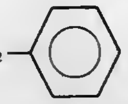
Int. Cl.^{6} C08K *5/5393;5/529;* **C07F** *9/576*

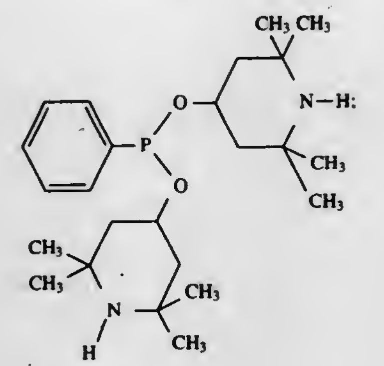
U.S. Cl. 524—102 **8 Claims**

1. A composition consisting essentially of:

a) a compound containing a phosphite or phosphonite group and at least one 2,2,6,6-tetraalkylpiperidinyl group (herein defined as component a) of formulae:


2)

wherein R = $-C(CH_3)_2-$ 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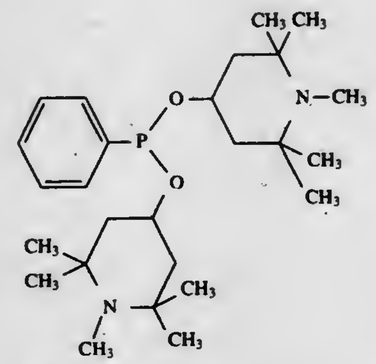
or


4)

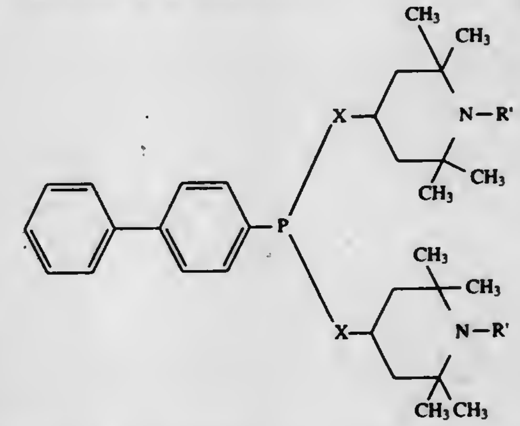
and

b) a polyolefin which has been produced in the presence of a catalyst which is either

i) a supported Ziegler catalyst or

ii) a metallocene catalyst, from which polyolefin the catalyst has not been removed (hereinafter component b).

8. A compound of the formula XIII

(XIII)


in which R' is hydrogen, —O—CO—phenyl, C_{1-14}alkyl, C_{1-24}alkoxy, —CO—R_5' or —CO—CH=CH_2;

R_5' is C_{1-8}alkyl, —COC_{1-8}alkyl, or —CO—O—C_{1-4}alkyl;

X is each independently a direct bond, —N(R_3)—, —O—, or —S—; and

R_3 is H or C_{1-4}alkyl.

5,616,637

POLYETHERS CONTAINING HINDERED AMINE SIDE CHAINS AS STABILIZERS

Alfred Steinmann, Praroman, Switzerland, assignor to Ciba-Geigy Corporation, Tarrytown, N.Y.

Division of Ser. No. 271,704, Jul. 7, 1994, Pat. No. 5,521,282. This application Mar. 13, 1996, Ser. No. 614,575

Claims priority, application Switzerland, Jul. 13, 1993, 2099/93

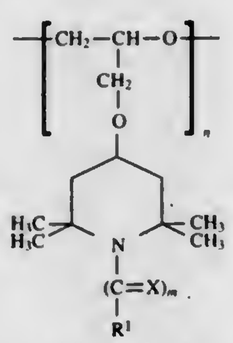
Int. Cl.^{6} C08K *5/34*

U.S. Cl. 524—102 **6 Claims**

1. A composition comprising

(a) an organic material which is sensitive to damage by light, oxygen and/or heat, and

(b) and effective stabilizing amount of a polyether of the formula I



(I)

in which m is 0 or 1; n is an integer in the range from 3 to 100; R^1, in the case where m is 0 or 1, is C_1–C_{36}alkyl or C_7–C_{36}aralkyl, each of which is unsubstituted or substituted by C_5–C_8cycloalkyl, interrupted in the aliphatic part by C_5–C_8cycloalkylene or by oxygen or sulfur or —NR^{11}— or is substituted in the aromatic part by 1 to 3 C_1–C_4alkyl and/or C_1–C_4alkoxy radicals; C_3–C_{36}alkenyl; C_5–C_{12}cycloalkyl which is unsubstituted or substituted by 1 to 4 C_1–C_4alkyl and/or C_1–C_4alkoxy radicals; C_6–C_{10}aryl which is unsubstituted or substituted by 1 to 4 C_1–C_4alkyl and/or C_1–C_4alkoxy radicals; and R^1, in the case where m is 0, can alternatively be hydrogen; C_1–C_{36}alkoxy or C_7–C_{36}aralkoxy, each of which is unsubstituted or substituted by C_5–C_8cycloalkyl, interrupted in the aliphatic part by C_5–C_8cycloalkylene or by oxygen or sulfur or —NR^{11}— or is substituted in the aromatic part by 1 to 3 C_1–C_4alkyl and/or C_1–C_4alkoxy radicals; C_3–C_{36}alkenyloxy; C_5–C_{12}cycloalkoxy which is unsubstituted or substituted by 1 to 4 C_1–C_4alkyl and/or C_1–C_4alkoxy radicals; or C_6–C_{10}aryloxy which is unsubstituted or substituted by 1 to 4 C_1–C_4alkyl and/or C_1–C_4alkoxy radicals; R^{11} is C_1–C_{18}alkyl, C_5–C_8cycloalkyl, phenyl or C_7–C_9phenylalkyl; and X is an oxygen or sulfur atom.

5,616,638

CURED COMPOSITE AND PROCESS THEREFOR

Michael Hallden-Abberton, Maple Glen, Pa.; Donald McLeod, Jr., Briarcliff Manor, N.Y.; James S. Ritscher, and Scot M. Turner, both of Marietta, Ohio, assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Mar. 20, 1995, Ser. No. 406,605

Int. Cl.^{6} B29D *11/00;* **B29C** *47/06*

U.S. Cl. 524—178 **11 Claims**

1. A process for producing light pipe comprising the steps of:

(a) concurrently and coaxially extruding:

i) a molten fluoropolymer through an annular channel of a coextrusion die to form an extruded tubular fluoropolymer cladding, and

ii) a crosslinkable core mixture through a core mixture delivery tube of the coextrusion die to form an extruded crosslinkable core mixture within the circumference of the extruded tubular fluoropolymer cladding;

(b) filling the extruded tubular fluoropolymer cladding with the extruded crosslinkable core mixture; and

(c) curing the extruded crosslinkable core mixture within the extruded tubular fluoropolymer cladding wherein the cured extruded crosslinkable core mixture and the extruded tubular fluoropolymer cladding are in substantially complete contact, wherein the crosslinkable core mixture comprises:

(d) from about 95 to about 99.9 weight percent, based on the crosslinkable core mixture weight, of an uncrosslinked copolymer having weight average molecular weight from about 10,000 to about 150,000 daltons, the uncrosslinked copolymer comprising:

i) from about 77.9 to about 99.9 weight percent, based on the uncrosslinked copolymer weight, of a bulk monomer unit selected from methyl acrylate, ethyl acrylate, n-butyl acrylate, methyl methacrylate, ethyl methacrylate, n-butyl methacrylate, or mixtures thereof;

ii) from about 0.5 to about 12 weight percent, based on the uncrosslinked copolymer weight, of a functionally reactive monomer selected from 2-methacryloxyethyltrimethoxysilane, 3-methacryloxypropyltrimethoxysilane, 3-acryloxypropyltrimethoxysilane, vinyltrimethoxysilane, vinyltriethoxysilane, or mixtures of these, the functionally reactive monomer being stabilized with from about 0.05 to about 100 parts per million, based on the functionally reactive monomer, of at least one non-aromatic stable free radical or stable free-radical precursor; and

iii) from 0 to about 10 weight percent, based on the uncrosslinked copolymer weight, of a refractive index increasing monomer selected from styrene, benzyl acrylate, benzyl methacrylate, phenylethyl acrylate or phenylethyl methacrylate; and

(e) from about 0.1 to about 5 weight percent, based on the crosslinkable core mixture weight, of a reactive additive which is water and a silane condensation reaction catalyst; wherein the light pipe so formed has improved color (as measured by the ratio of short wavelength transmission values relative to transmission values at 600 nm) and lower light loss at equal transmission length relative to otherwise equivalent light pipe prepared with the functionally reactive monomer absent the at least one non-aromatic stable free radical or stable free-radical precursor.

5,616,639

TIRE WITH SILICA REINFORCED TREAD

Danielle Lucas, Welsdorf, Luxembourg, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed May 24, 1995, Ser. No. 449,864

Int. Cl.^{6} C08L *9/00;* **B60C** *1/00*

U.S. Cl. 524—262 **12 Claims**

1. A pneumatic tire is provided having a rubber tread comprised of, based on 100 parts by weight rubber, (A) three diene-based elastomers comprised of, based on the rubber of the tread, (i) about 20 to about 50 phr of isoprene/butadiene copolymer rubber (IBR-1) containing about 20 to about 60 percent isoprene and having a Tg of about −35° to about −50° C., (ii) about 20 to about 50 phr of isoprene/butadiene copolymer rubber (IBR-2) containing about 15 to about 40 percent isoprene and having a Tg of about −65° C. to about −90° C.; wherein the Tg of said IBR-2 is at least 30° C. lower than the Tg of said IBR-1, and (iii) about 20 to about 50 phr of cis 1,4-polybutadiene rubber (cis-BR rubber) having a cis content of about 90 to about 99 percent and a Tg in a range of about −85° C. to about 105° C., (B) about 30 to about 110 phr particulate, precipitated silica, (C) at least one silica coupler having a silane moiety reactive with the surface of the silica and a moiety interactive with said elastomer, in a weight ratio of silica to coupler of about 8/1 to about 20/1, and (D) about 5 to about 50 phr carbon black, wherein the weight ratio of silica to carbon black is at least 1/1 and where the total of silica, and carbon black is about 40 to about 120 phr.

5,616,640

GOLF BALL COVER COMPOSITION CONTAINING OXA ACIDS

Kevin M. Harris, New Bedford, Mass., assignor to Acushnet Company, Fairhaven, Mass., and E. I. Du Pont de Nemours & Co., Wilmington, Del.

Filed Jun. 7, 1995, Ser. No. 482,520

Int. Cl.^{6} A63B *37/12;* **C08K** *5/09*

U.S. Cl. 473—378 **14 Claims**

1. A golf ball comprising a cover and a core wherein said cover is formed from a blend which comprises a compound having the formula:

$$HO-\overset{\overset{\displaystyle O}{\|}}{C}-CH2-O-R$$

wherein R is an organic moiety selected from the group consisting of alkyl, carbocyclic, and heterocyclic groups.

5,616,641

SEPARATION OF PLASTIC COMPONENTS FOR RECYCLING THEREOF

Jeffrey D. Basch, Evansville; Robert R. Gallucci, and Douglas G. Hamilton, both of Mt. Vernon, all of Ind., assignors to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 346,043, Nov. 29, 1994, abandoned. This application May 28, 1996, Ser. No. 653,984

Int. Cl.^{6} C08K *3/32*

U.S. Cl. 524—417 **20 Claims**

1. An improved process for separating at least one thermoplastic resin component from a physical mixture of materials including said thermoplastic resin component and comprising a plurality of components, each component having a different specific gravity, said process comprising dissolving an amount of a water soluble salt in an aqueous bath to obtain a specific gravity that is between the specific gravity of said one resin component to be separated and the remaining components of the physical mixture, said salt being added in to said aqueous bath in a sufficient amount to form an aqueous separation floatation bath having a specific gravity greater than about 1.0 gram per cubic centimeter, said salt being selected from the group consisting of alkali metal and alkaline earth metal salts of phosphates, pyrophosphates, metaphosphates, polyphosphates, hydrates thereof, and blends thereof contacting said physical mixture of material with said aqueous bath for one of either floating or sinking said one resin component and for the other of either floating or sinking said remaining components to separate said one resin component from said remaining components, and removing said one resin component from said aqueous bath.

5,616,642

LEAD-FREE FRANGIBLE AMMUNITION

Harley L. West, P.O. Box 850678, Yukon, Okla. 73085, and John F. Mullins, P.O. Box 625, Burns Flat, Okla. 73624

Filed Apr. 14, 1995, Ser. No. 423,660

Int. Cl.^{6} G08K *3/00*

U.S. Cl. 524—439 **14 Claims**

1. A frangible ammunition comprising:

(a) a powder selected from the group consisting of copper, tungsten, bismuth, ceramic, bronze and stainless steel and combinations thereof, wherein the powder is at least 85% by weight of the ammunition;

(b) a polyester resin; and

(c) an ionomer resin.

5,616,643

Patent Not Issued For This Number

5,616,644

DYESTUFF-CONTAINING AQUEOUS DISPERSIONS

Bernhard Schlarb; Kurt Wendel; Helmut Bellaire, and Karin H. Beck, all of Ludwigshafen, Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Jun. 28, 1995, Ser. No. 495,902

Claims priority, application Germany, Jul. 6, 1994, 44 23 610.7

Int. Cl.^{6} C08L *33/00*

U.S. Cl. 524—522 **6 Claims**

1. A dyestuff-containing aqueous dispersion obtainable by

a) preparation of at least two copolymers A) and B) in an organic solvent by solution polymerization, said copolymers A) and B) each consisting essentially of monomers derived from ethylenically unsaturated monomers, and which may optionally be crosslinked, copolymer A) containing from 5 to 50% by weight, based on copolymer A), of an ethylenically unsaturated acid and copolymer B) being essentially free of ethylenically unsaturated acids and the solution polymerization of the copolymers A) or B) being carried out in the presence of the other respective copolymer A) or B) already prepared,

b) addition of a substantially water-insoluble dyestuff before, during or after the solution polymerization,

c) dispersion of the resulting solution in water and

d) removal of the organic solvent if desired.

5,616,645

GELLED FLUORIDE RESIN FINE PARTICLE DISPERSION, METHOD OF PRODUCTION THEREOF, AND PRESERVATION METHOD FOR AN ALKALINE INORGANIC HARDENED BODY UTILIZING THE SAME

Shin'ichi Kuwamura, Nara-ken; Yoshinobu Deguchi; Tokio Goto, both of Takaishi, and Fumio Yoshino, Izumiohtsu, all of Japan, assignors to Dainippon Ink & Chemicals, Inc., Tokyo, Japan

Continuation of Ser. No. 859,736, Jun. 15, 1992, abandoned. This application Jul. 11, 1994, Ser. No. 272,612

Claims priority, application Japan, Oct. 30, 1990, 2-292466; Dec. 27, 1990, 2-408018; Mar. 26, 1991, 3-061762; WIPO, Oct. 30, 1991, PCT/JP91/01483

Int. Cl.^{6} C08L *27/12*

U.S. Cl. 524—546 **34 Claims**

1. An aqueous dispersion of particles of gelled fluoride resin prepared from a fluoro-olefin, other monomers and a crosslinking monomer, characterized in that said fluoride resin is obtained by mixing together and copolymerizing, in an aqueous medium and in the presence of an emulsifier, a fluoro-olefin, a second monomer, and, as a crosslinking monomer, a monomer containing a hydrolyzable silyl group.

5,616,646

RESTRUCTURING SILICONE RUBBER TO PRODUCE FLUID OR GREASE

Steven S. Kendall, Howell, Mich., assignor to Genesee Polymers Corporation, Flint, Mich.

Division of Ser. No. 335,249, Nov. 7, 1994, abandoned. This application Mar. 24, 1995, Ser. No. 427,666

Int. Cl.^{6} C08L *83/00*

U.S. Cl. 524—588 **8 Claims**

1. The process of suppressing foam using silicone rubber comprising the steps of applying sufficient energy to the silicone rubber until at least some of the silicone rubber has been converted to a

grease, wherein the energy is thermal, mechanical, or thermal and mechanical; and adding said grease to a foaming system, whereby foam suppression is achieved.

5,616,647

ONE PART ROOM TEMPERATURE VULCANIZING COMPOSITION HAVING BOTH A HIGH RATE OF EXTRUSION AND LOW SAG

John J. Dziark, Ballston Spa; Michael R. Pink, Schuylerville, and John P. Martucci, Ballston Lake, all of N.Y., assignors to General Electric Company, Waterford, N.Y.

Continuation of Ser. No. 270,095, Jul. 1, 1994, abandoned, which is a continuation-in-part of Ser. No. 96,315, Jul. 23, 1993, abandoned, which is a continuation-in-part of Ser. No. 981,571, Nov. 25, 1992, abandoned. This application Jan. 22, 1996, Ser. No. 589,521

Int. Cl.^{6} C08K *3/26;* **C08L** *83/06*

U.S. Cl. 524—788 **14 Claims**

1. A method for producing a room-temperature vulcanizable composition having a high thixotropy and a high rate of extrusion from an extruder having a front end and an exit end with a middle in between, said extruder preceded by a static mixer having an entry and an exit to a first injection port of said extruder, said extruder having a second injection port after the first injection port, a third injection port at the middle of said extruder and a fourth injection port between the middle of the extruder wherein is located the third injection port and the exit port, said method comprising the steps in order of:

(1) continuously supplying a base composition (A) to a static reactor which feeds the base composition from an exit port of the static mixer to an extruder at a first supply port of the extruder, said base composition (A) comprising 100 parts by weight of a diorganopolysiloxane polymer, (A1), said diorganopolysiloxane polymer having the formula $HO(R_2SiO)_xH$ where each R is a monovalent hydrocarbon radical free of aliphatic unsaturation and containing from 1 to about 10 carbon atoms, and x varies so that (A1) has a viscosity ranging from about 600 to about 300,000 cps at 25° C.; and at least one cross-linking agent, (A4), selected from the group consisting of alkyl-tris(dialkylketoximo)silane, alkyl-tris(dialkenylketoximo)silane, alkyl-tris(alkylalkenylketoximo)silane, alkenyl-tris(dialkylketoximo)silane, alkenyl-tris(dialkenyl-ketoximo)silane, and alkenyl-tris(alkylalkenylketoximo)siliane; being reacted at a temperature ranging from about 20° C. to about 120° C. for a period of time ranging from about 2 minutes to about 60 minutes wherein said diorganopolysiloxane polymer, (A1) and said crosslinking agent, (A4) are added to said static mixer first; and

(2) continuously adding at a second injection port, (A2) an amount of from about 3 to about 25 parts by weight based upon (A1) of a silica filler having a surface area of from about 100 to about 300 m^2/g as measured when said silica filler is in an untreated state; and (A3) up to about 200 parts by weight based upon (A1) of finely divided calcium carbonate; and

(3) continuously adding at a third injection port (B1), an M-stopped fluid, an amount of up to about 56 parts by weight based upon (A1), having a viscosity ranging from about 50 to about 10,000 cps at 25° C.; and

(4) continuously adding at a fourth injection port (B1) an amount of up to about 24 parts by weight based upon (A1), having a viscosity ranging from about 50 to about 10,000 cps at 25° C., and (B2) a tin based catalyst present in an amount of up to 0.50 parts by weight based upon 100 parts of the base composition (A) and optionally (A5) gamma-aminopropyltriethoxysilane present in an amount up to about 4 parts by weight based upon 100 parts of the base composition (A); wherein the cross linking agent, (A4), ranges from about 2 to 15 parts by weight based upon the sum of (A1),(A2), and (A3) and

(5) extruding the resultant composition from the extruder such that said room temperature vulcanizable sealant composition having high application and low sag exits the exit port of the extruder.

5,616,648

MICROEMULSION OF POLYTETRAFLUOROETHYLENE PARTICLES

Huey S. Wu, Newark, Del., assignor to W. L. Gore & Associates, Inc., Newark, Del.

Division of Ser. No. 374,008, Jan. 18, 1995, Pat. No. 5,504,170, which is a continuation-in-part of Ser. No. 245,326, May 18, 1994, Pat. No. 5,399,640, which is a continuation-in-part of Ser. No. 113,532, Aug. 27, 1993. This application Jan. 2, 1996, Ser. No. 581,674

Int. Cl.^{6} C08L *27/12*

U.S. Cl. 524—805 **3 Claims**

1. An aqueous dispersion of particles of polytetrafluoroethylene wherein the average particle size is between 0.01 and 0.08 micrometer.

5,616,649

METHOD FOR COMPATIBILIZING RESINS WITH EACH OTHER AND RESIN COMPOSITION COMPRISING RESINS COMPATIBILIZED WITH EACH OTHER, OBTAINED BY SAID METHOD

Kozo Kotani, Toyonaka; Toshio Kawakita, Ibaraki; Taiichi Sakaya, Takatsuki, and Ryuma Kuroda, Ibaraki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Division of Ser. No. 132,899, Oct. 7, 1993, Pat. No. 5,498,664. This application Oct. 5, 1995, Ser. No. 539,406

Int. Cl.^{6} C08L *29/04;29/02*

U.S. Cl. 525—56 **18 Claims**

1. A method for compatibilizing at least two different thermoplastic resins each having hydroxyl group(s), with each other, which method comprises reacting at least one of said thermoplastic resins with a boron compound simultaneously with or before mixing of said resins and forming boric acid ester bonding between said thermoplastic resins at least at the boundary of said resins; and removing water formed during said reaction under kneading conditions, wherein one of the at least two thermoplastic resins having hydroxyl group(s) is a completely or partially saponified polyvinyl acetate having 20% by weight or more of hydroxyl group(s) and the other is a completely or partially saponified ethylene-vinyl acetate copolymer having 0.01–20% by weight of hydroxyl group(s).

5,616,650

METAL-NITROGEN POLYMER COMPOSITIONS COMPRISING ORGANIC ELECTROPHILES

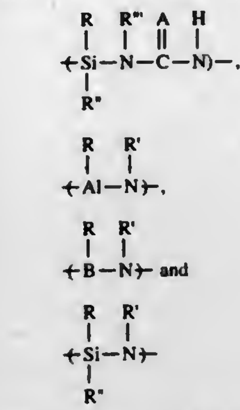
Kurt J. Becker, Newark; James A. Jensen, Hockessin, and Alexander Lukacs, III, Wilmington, all of Del., assignors to Lanxide Technology Company, LP, Newark, Del.

Continuation-in-part of Ser. No. 148,044, Nov. 5, 1993, abandoned. This application Apr. 5, 1994, Ser. No. 223,294

Int. Cl.^{6} C01F *8/42*

U.S. Cl. 525—102 **35 Claims**

1. A reaction mixture comprising (1) at least one organic electrophile, comprising at least one organic polymer comprising a multiplicity of organic, electrophilic substituents wherein said electrophilic substituents comprise at least one electrophilic reactive group selected from the group consisting of epoxides, carbonyl-containing groups, and isocyanates, and (2) at least one metal-containing polymer comprising at least one of (i) a polymer selected from the group consisting of silicon-nitrogen polymers, aluminum-nitrogen polymers, and boron-nitrogen polymers comprising the repeat units (a), (b), and (c),



(a)

(b)

(c)

(d)

respectively, where R, R', R'' and R'''=hydrogen, alkyl, alkenyl, alkynyl or aryl and A=O or S; (ii) at least one mixture of polymers comprising two or more of the structural units (a), (b), (c), and (d); (iii) at least one metal-crosslinked polymer comprising one or more of the structural units (a), (b), (c), and (d); and (iv) at least one copolymer comprising two or more of the structural units (a), (b), (c), and (d).

5,616,651

RUBBERY POLYMER

Mariano S. Niño, Orsay, and Hung D. Ngoc, Limeil Brevannes, both of France, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 440,032, May 12, 1995, Pat. No. 5,504,160, which is a division of Ser. No. 306,291, Sep. 15, 1994, Pat. No. 5,415,940, which is a division of Ser. No. 43,076, Apr. 5, 1993, Pat. No. 5,380,785. This application Oct. 20, 1995, Ser. No. 546,031

Int. Cl.^{6} C08F *267/00*

U.S. Cl. 525—305 **20 Claims**

1. A process for preparing a rubbery polymer which can be blended with polyvinyl chloride to make leathery compositions having good heat and ultraviolet light resistance, said process comprising the steps of (1) polymerizing (a) butyl acrylate, (b) at least one member selected from the group consisting of methyl methacrylate, ethyl methacrylate, methyl acrylate, and ethyl acrylate, (c) acrylonitrile, (d) a crosslinking agent, and (e) a half ester maleate soap under emulsion polymerization conditions to produce a seed polymer containing latex; (2) adding (a) styrene, (b) additional acrylonitrile, and (c) additional crosslinking agent to the seed polymer containing latex under emulsion polymerization conditions which result in the formation of an emulsion containing the rubbery polymer; (3) adding an aminoalcohol to the emulsion containing the rubbery polymer; and (4) recovering the rubbery polymer from the emulsion containing the rubbery polymer.

5,616,652

MICROPOROUS CRUMBS OF HYDROGENATED BLOCK COPOLYMERS AND PROCESS FOR PRODUCING THE SAME

Manabu Kusano, Ibaraki-ken; Masao Ishii, Kashima, and Nobuo Sukenobe, Ibaraki-ken, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Mar. 6, 1996, Ser. No. 611,820

Claims priority, application Japan, Mar. 6, 1995, 7-072414

Int. Cl.^{6} C08F *6/10;6/12*

U.S. Cl. 525—315 **6 Claims**

1. Microporous crumbs of a hydrogenated block copolymer, wherein said hydrogenated block copolymer is obtained by hydrogenating more than 50% of unsaturated bonds derived from conjugated diene of a block copolymer comprising at least one polymer block consisting essentially of a vinyl aromatic compound and at least one polymer block consisting essentially of a conjugated diene in which the weight ratio of the vinyl aromatic compound to the conjugated diene is within a range from 5/95 to 95/5, and wherein said crumbs have (1) a bulk density of more than 0.18 g/cc, (2) a total volume of micropores of more than 0.4 cc/g and (3) a ratio of the sum of the volume of micropores having a pore diameter within a range from 0.14 to 3.9 μm based on the total volume of the micropores of more than 8%.

5,616,653

COUPLED STYRENE-ISOPRENE-BUTADIENE RUBBER

Wen-Liang Hsu, Copley; Adel F. Halasa, Bath; Barry A. Matrana, Akron; Scott M. Christian, Clinton; Laurie E. Austin, Hartville, and Bill B. Gross, Stow, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 439,750, May 12, 1995, Pat. No. 5,541,264, which is a division of Ser. No. 288,858, Aug. 11, 1994, Pat. No. 5,422,403. This application Jul. 29, 1996, Ser. No. 681,568

Int. Cl.^{6} C08F *8/42*

U.S. Cl. 525—332.5 **13 Claims**

1. A styrene-isoprene-butadiene rubber which is particularly valuable for use in making tire treads, said rubber being comprised of repeat units which are derived from about 5 weight percent to about 40 weight percent styrene, from about 1 weight percent to about 10 weight percent isoprene, and from about 50 weight percent to about 94 weight percent 1,3-butadiene, wherein the repeat units derived from styrene, isoprene, and 1,3-butadiene are in essentially random order, wherein the rubber has a glass transition temperature which is within the range of about −20° C. to about −45° C., and wherein over 70% of the repeat units in the SIBR which are derived from styrene are in blocks of only one repeat unit, wherein the rubber is coupled with a member selected from the group consisting of tin tetrachloride and silicon tetrachloride, wherein the rubber has a Mooney viscosity which is within the range of about 70 to about 120, and wherein the rubber has a number average molecular weight which is within the range of about 250,000 to about 300,000.

5,616,654

POLYOLEFIN DIOLS

John R. Blackborow, Edinburgh, Scotland, and Lee J. Morton, Hull, England, assignors to BP Chemicals Limited, London, England

Division of Ser. No. 462,010, Jun. 5, 1995. This application Jul. 15, 1996, Ser. No. 680,011

Claims priority, application United Kingdom, Apr. 10, 1995, 9507393

Int. Cl.^{6} C08F *8/06*

U.S. Cl. 525—333.7 **2 Claims**

1. 1,3-diols of polyolefins having a $—C(CH_3)=CH_2$ end group.

5,616,655

SULFUR VULCANIZABLE RUBBER CONTAINING SODIUM THIOSULFATE PENTAHYDRATE

Richard M. D'Sidocky, Ravenna; David J. Zanzig, Uniontown, and Shingo Futamura, Wadsworth, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sep. 11, 1995, Ser. No. 526,183

Int. Cl.^{6} C08C *19/25;* **C08K** *3/36*

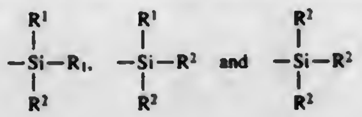
U.S. Cl. 525—342 **5 Claims**

1. A method of processing a rubber composition which comprises at least one nonproductive stage and a productive stage wherein the nonproductive stage includes thermomechanical mixing at a rubber temperature in a range of 140° C. to 190° C. for a mixing time of 1 to 20 minutes

(i) 100 parts by weight of at least one sulfur vulcanizable elastomer selected from conjugated diene homopolymers and copolymers and from copolymers of at least one conjugated diene and aromatic vinyl compound;
(ii) 10 to 250 phr of particulate precipitated silica;
(iii) 0.01 to 1.0 parts by weight per part by weight of said silica of an organosilicon compound of the formula

Z-Alk-S_n-Alk-Z

in which Z is selected from the group consisting of



where
R^1 is an alkyl group of 1 to 4 carbon atoms, cyclohexyl or phenyl;
R^2 is alkoxy of 1 to 8 carbon atoms, or cycloalkoxy of 5 to 8 carbon atoms;
Alk is a divalent hydrocarbon of 1 to 18 carbon atoms and n is an integer of 2 to 8; and
(iv) 0.05 to 10 phr of sodium thiosulfate pentahydrate
and the productive stage includes addition of 0.5 to 8 phr of the sulfur vulcanizing agent.

5,616,656
METHOD FOR MAKING BROMINATED SYNDIOTACTIC STYRENIC POLYMERS
James L. Dever, Medina, and James C. Gill, Macedonia, both of Ohio, assignors to Ferro Corporation, Cleveland, Ohio
Filed Apr. 6, 1995, Ser. No. 418,098
Int. Cl.[6] C08F 8/22
U.S. Cl. 525—355 12 Claims

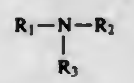
1. A method of preparing brominated syndiotactic styrenic polymers comprising the steps of:
a. providing a source of syndiotactic styrenic polymer;
b. providing a source of inert reaction medium that is not capable of dissolving to any appreciable degree said syndiotactic styrenic polymer at ambient temperature and pressure;
c. providing a source of brominating agent;
d. providing a source of Lewis acid catalyst;
e. mixing said syndiotactic styrenic polymer with said inert reaction medium and said Lewis acid catalyst; and
f. reacting said syndiotactic styrenic polymer with said brominating agent to produce a brominated syndiotactic styrenic polymer.

5,616,657
PROCESS FOR THE PREPARATION OF HIGH MOLECULAR LACTIC COPOLYMER POLYESTER
Shoji Imamura, and Hiroshi Ebato, both of Chiba, Japan, assignors to Dainippon Ink and Chemicals, Inc., Tokyo, Japan
Filed Jul. 18, 1995, Ser. No. 503,608
Claims priority, application Japan, Jul. 20, 1994, 6-167960
Int. Cl.[6] C08F 20/00
U.S. Cl. 525—437 10 Claims

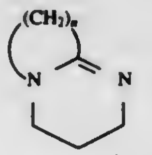
1. A process for the preparation of a high molecular lactic copolymer polyester, which comprises allowing a lactide (A), a polyester terminated by hydroxyl group at both ends (B1), a polyvalent carboxylic acid having 3 or more functionalities and/or acid anhydride thereof (C) to undergo ring opening copolymerization in such an amount that the weight ratio of (A)/(B1) is from 50/50 to 98/2 and the proportion of the component (C) is from 0.001 to 5% by weight of the sum of the amount of the components (A) and (B1) in the presence of a ring opening polymerization catalyst (D).

5,616,658
PROCESS FOR THE PRODUCTION OF MATT EPOXY RESIN AND HYBRID POWDER COATINGS
Rainer Gras, Bochum, and Elmar Wolf, Recklinghausen, both of Germany, assignors to Huels Aktiengesellschaft, Marl, Germany
Filed Jan. 10, 1995, Ser. No. 370,644
Claims priority, application Germany, Jan. 14, 1994, 44 00 930.5; Feb. 2, 1994, 44 03 129.7
Int. Cl.[6] C08F 20/00; C08G 59/14;59/40
U.S. Cl. 525—438 5 Claims

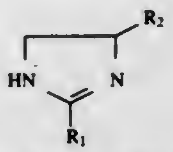
1. A curing agent for a composition useful for the production of matt epoxy resin and hybrid powder coatings, comprising a mixture of
a) salts of phthalic acid, isophthalic acid and terephthalic acid with at least one of the following amines



A)



B)



C)

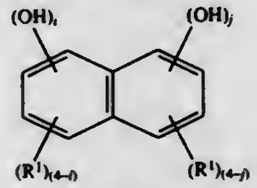
in which R_1, R_2 and R_3 are identical or different aliphatic, cycloaliphatic, araliphatic or aromatic hydrocarbon radicals having 1–20 carbon atoms and in which one or more CH_2 groups in the carbon chain may be replaced by O atoms, by NR_4 groups where R_4=C_{1-4}-alkyl, CH—OH groups, and/or one or more terminal methyl groups may be replaced by dialkyl-substituted amino groups having 1 to 6 carbon atoms, and R_1 and R_2 may form a joint ring in which one CH_2 group may be replaced by an O atom or by an NR_4 group, and R_1, R_2, R_3=—CH_2—CH_2— and n=3–11, and 0.5–2 mol of amine A)–C) per mole of acid, and
b) pyromellitic acid and/or trimellitic acid, 0.25–2 mol of b) being employed per mole of a).

5,616,659
LOW FLAMMABILITY THERMOSET POLYMERS
Marvin L. Deviney, and Joel J. Kampa, both of San Antonio, Tex., assignors to Southwest Research Institute, San Antonio, Tex.
Continuation-in-part of Ser. No. 183,500, Jan. 19, 1994, abandoned. This application Jan. 31, 1996, Ser. No. 595,023
Int. Cl.[6] C08L 61/06;61/10;61/14
U.S. Cl. 525—480 27 Claims

1. A fire resistive, cross-linked polymer composition comprising: from about 1–99% by weight of a novolak resin; and about 1–99% by weight of one or more bis(oxazolyl)aryldiarylphosphate cross-linking agents.

5,616,660
POLYMERIZATION OF ETHYLENIC MONOMER WITH SCALE PREVENTIVE AGENT
Toshihide Shimizu, Urayasu; Mikio Watanabe, and Toshihiko Nakano, both of Kamisu-machi, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan
Division of Ser. No. 321,467, Oct. 11, 1994, Pat. No. 5,576,370, which is a continuation of Ser. No. 149,948, Nov. 10, 1993, abandoned. This application Jun. 25, 1996, Ser. No. 672,371
Claims priority, application Japan, Nov. 10, 1992, 4-324887
Int. Cl.[6] C08F 2/24;2/20
U.S. Cl. 526—62 8 Claims

1. A process for producing a polymer of a monomer having an ethylenically unsaturated double bond, which comprises polymerizing the monomer in a polymerization vessel having a coating on its inner wall surfaces, whereby polymer scale is prevented from being deposited, wherein said coating has been formed by applying an alkaline solution of pH from 9 to 14 of:
(A) a condensation product consisting of
(A-1) a hydroxynaphthalene compound (1): having the following general formula

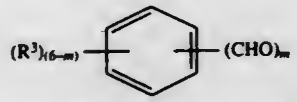


(1)

wherein R^1 group or groups, which may be the same or different from each other, are each a member selected from the group consisting of —H, —SO_3H and —COOH, i is an integer from 1 to 4, and j is an integer from 0 to 4, and
(A-2) at least one aldehyde compound selected from the group consisting of the compounds of the following general formulas (2) and (4):

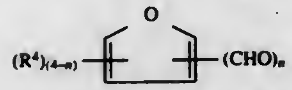
R^2—CHO (2)

wherein R^2 is —H, —COOH, —CHO or an alkyl group of from 1 to 5 carbon atoms;



(3)

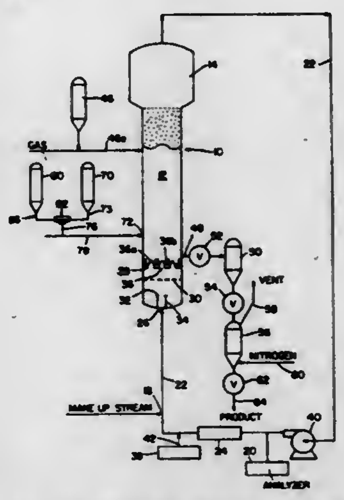
wherein R^3 group or groups, which may be the same or different from each other, are each a member selected from the group selected from the group consisting of —H and —OH, and m is an integer from 1 to 6; and



(4)

wherein R^4 is a hydrogen atom or an alkyl group of 1 to 5 carbon atoms, and, where plural R^4's are present, they may be the same or different, and n is an integer from 1 to 4,
(B) an inorganic colloid of silica, an oxide, a hydroxide or a mixture of two or three thereof, said oxide and hydroxide being those of a metal selected from the group consisting of aluminum, titanium, zirconium, tin and iron, and
(C) a water-soluble polymeric compound selected from the group consisting of gelatin, casein, polyacrylic acid, carboxymethyl cellulose, polyvinyl pyrrolidine and pectin, in a mixed solvent containing water and a organic solvent miscible with water, said organic solvent being present in an amount of not more than 50% by weight based on said mixed solvent, followed by drying.

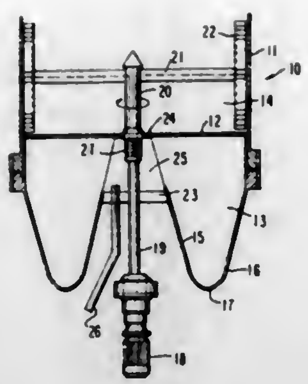
5,616,661
PROCESS FOR CONTROLLING PARTICLE GROWTH DURING PRODUCTION OF STICKY POLYMERS
Ronald S. Eisinger, Charleston; Christopher S. Hunnisett, Dunbar; Fathi D. Hussein, Crosslanes; Kiu H. Lee, South Charleston, all of W. Va., and Kevin J. Cann, Rocky Hill, N.J., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.
Filed Mar. 31, 1995, Ser. No. 414,522
Int. Cl.[6] C08F 2/34
U.S. Cl. 526—88 10 Claims



1. A process for controlling the particle growth of a polymer in a gas phase, fluidized bed, polymerization reaction which comprises:
(a) continuously introducing a gaseous stream comprising one or more monomers having from 2 to 18 carbon atoms in a reactor;
(b) introducing an inert particulate material into the reactor so as to maintain an amount in the polymer ranging from about 0.1 to 75 wt % and so as to maintain an average particle size in the polymer in the range of 0.01 to 0.08 inches substantially free of oversized polymer particles;
(c) introducing an unsupported polymerization catalyst in liquid form comprising:
(A) (i) a transition metal compound selected from Groups IIIB to VIII of the Periodic Table of Elements and optionally (ii) an organometallic compound, wherein (i) and (ii) are in liquid form; or
(B) a solution of (i) a transition metal compound selected from Groups IIIB to VIII of the Periodic Table of Elements or (ii) the reaction product of a transition metal compound selected from Groups IIIB to VIII of the Periodic Table of Elements and an organometallic compound; and
(c) withdrawing a polymeric product from said reaction zone.

5,616,662
METHOD FOR POLYMERIZING OLEFINS IN A FLUID-BED REACTOR
Jukka Koskinen, Espoo; Henrik Andtsjö , Porvoo, both of Finland; Jouni Takakarhu, Lyngby, Denmark, and Kari Sarantila, Porvoo, Finland, assignors to Borealis Polymers Oy, Porvoo, Finland
PCT No. PCT/FI94/00304, § 371 Date Jan. 4, 1996, § 102(e) Date Jan. 4, 1996, PCT Pub. No. WO95/01831, PCT Pub. Date Jan. 19, 1995
PCT Filed Jul. 1, 1994, Ser. No. 578,642
Claims priority, application Finland, Jul. 5, 1993, 933073
Int. Cl.[6] C08F 2/34
U.S. Cl. 526—88 4 Claims

1. A method of polymerizing olefins in a fluidized-bed polymerization reactor in which olefin monomers are polymerized in a fluidized bed formed by polymerizing particles containing the



polymerization catalyst, said fluidized bed being maintained in fluidized state by introducing to the reactor (**10**) at least one gas flow containing polymerizable monomers and optionally hydrogen, inert gases or a diluent gas, and said fluidized bed being stirred by virtue of at least one agitator means (**21**,**22**), which is attached to an essentially vertical drive shaft (**19**,**20**) and is suited for stirring a fluidized bed, characterized in that at least a portion of the gas flow is lead into the reactor (**10**) close to the inner walls of the reactor via at least one flow channel provided to the interior of said shaft (**20**) and said agitator means (**21**,**22**) and extending to reach close to the reactor wall.

5,616,663

TRANSITION METAL COMPOUND, OLEFIN POLYMERIZATION CATALYST COMPONENT COMPRISING THE TRANSITION METAL COMPOUND, OLEFIN POLYMERIZATION CATALYST COMPRISING THE OLEFIN POLYMERIZATION CATALYST COMPONENT, AND PROCESS FOR OLEFIN POLYMERIZATION

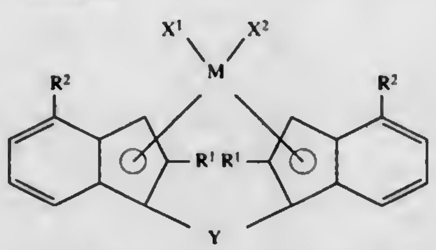
Junichi Imuta; Daisuke Fukuoka; Masayasu Yoshida; Junji Saito; Terunori Fujita; Takashi Tashiro; Koji Kawaai; Takashi Ueda, and Yoshihisa Kiso, all of Waki-cho, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Nov. 10, 1994, Ser. No. 338,810
Claims priority, application Japan, Nov. 12, 1993, 5-283778
Int. Cl.⁶ C08F *4/60;4/622;10/00*
U.S. Cl. 526—127 **22 Claims**

1. A process for olefin polymerization comprising polymerizing or copolymerizing an olefin in the presence of an olefin polymerization catalyst from the group consisting of:

(1) an olefin polymerization catalyst comprising

(A) a transition metal compound represented by the following formula (I)



(I)

wherein M is a transition metal of Group IVa, Va or VIa of the periodic table,

each R^1 is a hydrocarbon group of 1 to 20 carbon atoms,

each R^2 is an aryl group of 6 to 16 carbon atoms substituted with a halogenated methyl group,

X^1 and X^2 are each a hydrogen atom, a halogen atom, a hydrocarbon group of 1 to 20 carbon atoms, a halogenated hydrocarbon group of 1 to 20 carbon atoms, an oxygen-containing group or a sulfur-containing group, and

Y is a divalent hydrocarbon group of 1 to 20 carbon atoms, a divalent halogenated hydrocarbon group of 1 to 20 carbon atoms, a divalent silicon-containing group, a divalent germanium-containing group, a divalent tin-containing group, —O—, —CO—, —S—, —SO—, —SO_2—, —NR^3—, —$P(R^3)$—, —$P(O)(R^3)$—, —BR^3— or —AlR^3— where R^3 is a hydrogen atom, a halogen atom, a hydrocarbon group of 1 to 20 carbon atoms or a halogenated hydrocarbon group of 1 to 20 carbon atoms, and

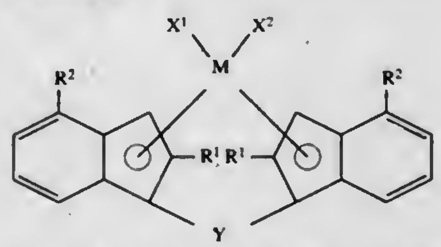
(B) at least one compound selected from the group consisting of

(B-1) an aluminoxane, and

(B-2) a compound which reacts with the transition metal compound (A) to form an ion pair;

(2) an olefin polymerization catalyst comprising

(A) a transition metal compound represented by the following formula (I)



(I)

wherein M is a transition metal of Group IVa, Va or VIa of the periodic table,

each R^2 is a hydrocarbon group of 1 to 20 carbon atoms,

each R^2 is an aryl group of 6 to 16 carbon atoms substituted with a halogenated methyl group,

X^1 and X^2 are each a hydrogen atom, a halogen atom, a hydrocarbon group of 1 to 20 carbon atoms, a halogenated hydrocarbon group of 1 to 20 carbon atoms, an oxygen-containing group or a sulfur-containing group, and

Y is a divalent hydrocarbon group of 1 to 20 carbon atoms, a divalent halogenated hydrocarbon group of 1 to 20 carbon atoms, a divalent silicon-containing group, a divelent germanium-containing group, a divalent tin-containing group, —O—, —CO—, —S—, —SO—, —SO_2—, —NR^3—, —$P(R^3)$—, —$P(O)(R^3)$—, —BR^3— or —AlR^3— where R^3 is a hydrogen atom, a halogen atom, a hydrocarbon group of 1 to 20 carbon atoms or a halogenated hydrocarbon group of 1 to 20 carbon atoms,

(B) at least one compound selected from the group consisting of

(B-1) an aluminoxane, and

(B-2) a compound which reacts with the transition metal compound (A) to form an ion pair, and

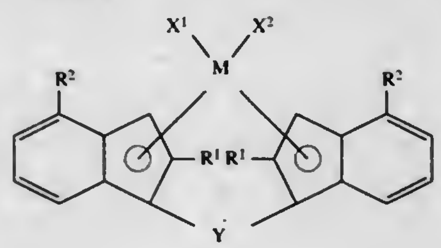
(C) an organoaluminum compound represented by the following formula (III)

$$R^7{}_nAl\ X_{3-n} \quad \text{(III)}$$

wherein R^7 is a hydrocarbon group of 1 to 12 carbon atoms, X is a halogen atom or a hydrogen atom and n is 1 to 3;

(3) an olefin polymerization catalyst comprising

(A) a transition metal compound represented by the following formula (I)



(I)

wherein M is a transition metal of Group IVa, Va or VIa of the periodic table,

each R^1 is a hydrocarbon group of 1 to 20 carbon atoms,

each R^2 is an aryl group of 6 to 16 carbon atoms substituted with a halogenated methyl group,

X^1 and X^2 are each a hydrogen atom, a halogen atom, a hydrocarbon group of 1 to 20 carbon atoms, a halogenated hydrocarbon group of 1 to 20 carbon atoms, an oxygen-containing group or a sulfur-containing group, and

Y is a divalent hydrocarbon group of 1 to 20 carbon atoms, a divalent halogenated hydrocarbon group of 1 to 20 carbon atoms, a divalent silicon-containing group, a divalent germanium-containing group, a divalent tin-containing group, —O—, —CO—, —S—, —SO—, —SO_2—, —NR^3—, —$P(R^3)$—, —$P(O)(R^3)$—, —BR^3— or —AlR^3— where R^3 is a hydrogen atom, a halogen atom, a hydrocarbon group of 1 to 20 carbon atoms or a halogenated hydrocarbon group of 1 to 20 carbon atoms,

(B) at least one compound selected from the group consisting of

(B-1) an aluminoxane, and

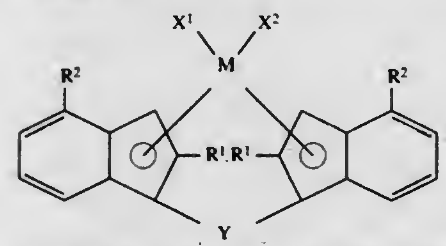
(B-2) a compound which reacts with the transition metal compound (A) to form an ion pair, and

a fine particle carrier,

wherein said transition metal compound (A) and said at least one compound (B) are supported on the fine particle carrier;

(4) an olefin polymerization catalyst comprising

(A) a transition metal compound represented by the following formula (I)



(I)

wherein M is a transition metal of Group IVa, Va or Via of the periodic table,

each R^1 is a hydrocarbon group of 1 to 20 carbon atoms,

each R^2 is an aryl group of 6 to 16 carbon atoms substituted with a halogenated methyl group,

X^1 and X^2 are each a hydrogen atom, a halogen atom, a hydrocarbon group of 1 to 20 carbon atoms, a halogenated hydrocarbon group of 1 to 20 carbon atoms, an oxygen-containing group or a sulfur-containing group, and

Y is a divalent hydrocarbon group of 1 to 20 carbon atoms, a divalent halogenated hydrocarbon group of 1 to 20 carbon atoms, a divalent silicon-containing group, a divalent germanium-containing group, a divalent tin-containing group, —O—, —CO—, —S—, —SO—, —SO_2—, —NR^3—, —$P(R^3)$—, —$P(O)(R^3)$—, —BR^3— or —AlR^3— where R^3 is a hydrogen atom, a halogen atom, a hydrocarbon group of 1 to 20 carbon atoms or a halogenated hydrocarbon group of 1 to 20 carbon atoms,

(B) at least one compound selected from the group consisting of

(B-1) an aluminoxane, and

(B-2) a compound which reacts with the transition metal compound (A) to form an ion pair,

(C) an organoaluminum compound represented by the following formula (III)

$$R^7{}_nAl\ X_{3-n} \quad \text{(III)}$$

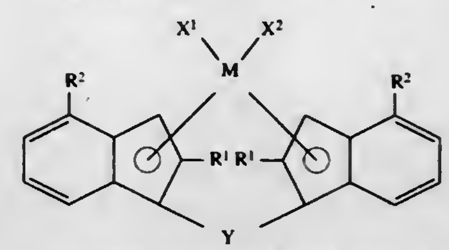
wherein R^7 is a hydrocarbon group of 1 to 12 carbon atoms, X is a halogen atom or a hydrogen atom and n is 1 to 3, and

a fine particle carrier, wherein said transition metal compound (A), said at least one compound (B) and said organoaluminum compound (C) are supported on the fine particle carrier;

(5) an olefin polymerization catalyst comprising

(i) a solid catalyst component comprising

(A) a transition metal compound represented by the following formula (I)



(I)

wherein M is a transition metal of Group IVa, Va or VIa of the periodic table,

each R^1 is a hydrocarbon group of 1 to 20 carbon atoms,

each R^2 is an aryl group of 6 to 16 carbon atoms substituted with a halogenated methyl group,

X^1 and X^2 are each a hydrogen atom, a halogen atom, a hydrocarbon group of 1 to 20 carbon atoms, a halogenated hydrocarbon group of 1 to 20 carbon atoms, an oxygen-containing group or a sulfur-containing group, and

Y is a divalent hydrocarbon group of 1 to 20 carbon atoms, a divalent halogenated hydrocarbon group of 1 to 20 carbon atoms, a divalent silicon-containing group, a divalent germanium-containing group, a divalent tin-containing group, —O—, —CO—, —S—, —SO—, —SO_2—, —NR^3—, —$P(R^3)$—, —$P(O)(R^3)$—, —BR^3— or —AlR— where R^3 is a hydrogen atom, a halogen atom, a hydrocarbon group of 1 to 20 carbon atoms or a halogenated hydrocarbon group of 1 to 20 carbon atoms,

(B) at least one compound selected from the group consisting of

(B-1) an aluminoxane, and

(B-2) a compound which reacts with the transition metal compound (A) to form an ion pair, and a fine particle carrier,

wherein said transition metal compound (A) and said at least one compound (B) are supported on the fine particle carrier, and

(ii) an organoaluminum compound represented by the following formula (III)

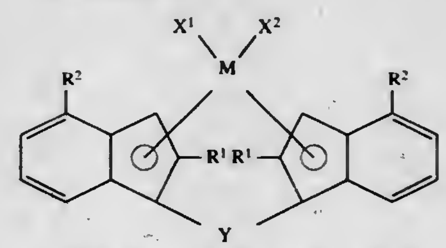
$$R^7{}_nAl\ X_{3-n} \quad \text{(III)}$$

wherein R^7 is a hydrocarbon group of 1 to 2 carbon atoms, X is a halogen atom or a hydrogen atom and n is 1 to 3; and

(6) an olefin polymerization catalyst comprising

(i) a solid catalyst component comprising

(A) a transition metal compound represented by the following formula (I)



(I)

wherein M is a transition metal of Group IVa, Va or VIa of the periodic table,

each R^1 is a hydrocarbon group of 1 to 20 carbon atoms,

each R^2 is an aryl group of 6 to 16 carbon atoms substituted with a halogenated methyl group,

X^1 and X^2 are each a hydrogen atom, a halogen atom, a

hydrocarbon group of 1 to 20 carbon atoms, a halogenated hydrocarbon group of 1 to 20 carbon atoms, an oxygen-containing group or a sulfur-containing group, and

Y is a divalent hydrocarbon group of 1 to 20 carbon atoms, a divalent halogenated hydrocarbon group of 1 to 20 carbon atoms, a divalent silicon-containing group, a divalent germanium-containing group, a divalent tin-containing group, —O—, —CO—, —S—, —SO—, $—SO_2—$, $—NR^3—$, $—P(R^3)—$, $—P(O)(R^3)—$, $—BR^3—$ or $—AlR^3—$ where R^3 is a hydrogen atom, a halogen atom, a hydrocarbon group of 1 to 20 carbon atoms or a halogenated hydrocarbon group of 1 to 20 carbon atoms,

(B) at least one compound selected from the group consisting of

(B-1) an aluminoxane, and

(B-2) a compound which reacts with the transition metal compound (A) to form an ion pair,

(C) an organoaluminum compound represented by the following formula (III)

$$R^7_nAl\ X_{3-n} \qquad (III)$$

wherein R^7 is a hydrocarbon group of 1 to 12 carbon atoms, X is a halogen atom or a hydrogen atom and n is 1 to 3, and

a fine particle carrier, wherein said metal compound (A), said at least one compound (B) and said organoaluminum compound (C) are supported on the fine particle carrier, and

(ii) an organoaluminum compound represented by the following formula (III)

$$R^7_nAl\ X_{3-n} \qquad (III)$$

wherein R^7 is a hydrocarbon group of 1 to 12 carbon atoms, X is a halogen atom or a hydrogen atom and n is 1 to 3.

5,616,664
POLYMERIZATION PROCESS WITH BISCYCLOPENTADIENYL DIENE COMPLEX CONTAINING CATALYSTS

Francis J. Timmers; David D. Devore, both of Midland, Mich., and James C. Stevens, Richmond, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 481,791, Jun. 7, 1995, which is a continuation-in-part of Ser. No. 284,925, Aug. 2, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 474,046

Int. Cl.^{6} C08F *4/643*

U.S. Cl. 526—127 **31 Claims**

1. An olefin polymerization process comprising contacting at least one α-olefin having from 2 to 10 carbon atoms under polymerization conditions with a catalyst comprising:

1) a metal complex containing two cyclopentadienyl groups or substituted cyclopentadienyl groups, said complex corresponding to the formula:

CpCp'MD

wherein:

M is titanium, zirconium or hafnium in the +2 or +4 formal oxidation state;

Cp and Cp' are each substituted or unsubstituted cyclopentadienyl groups bound in an η5 bonding mode to the metal, said substituted cyclopentadienyl group being substituted with from one to five substituents independently selected from the group consisting of hydrocarbyl, silyl, germyl, halo, cyano, hydrocarbyloxy, and mixtures thereof, said substituent having up to 20 nonhydrogen atoms, optionally, two such substituents (except cyano or halo) together cause Cp or Cp' to have a fused ring structure, or one substituent on Cp and Cp' forms a linking moiety joining Cp and Cp';

D is a stable, conjugated diene, optionally substituted with one or more hydrocarbyl groups, silyl groups, hydrocarbylsilyl groups, silylhydrocarbyl groups, or mixtures thereof, said D having from 4 up to 40 nonhydrogen atoms and forming a π-complex with M when M is in the +2 formal oxidation state, and forming a σ-complex with M when M is in the +4 formal oxidation state;

2) a cocatalyst or activating technique selected from the group consisting of:

2a) strong Lewis acids;

2b) oxidizing salts corresponding to the formula:

$$(0x^{e+})_d(A^{d-})_e$$

wherein:

$0x^{e+}$ is a cationic oxidizing agent having a charge of e^+;

e is 1 or 2; and

A is a noncoordinating compatible anion having a charge of d^-;

d is an integer from 1 to 3;

2c) carbenium salts corresponding to the formula:

$$©^+A^-$$

wherein:

$©^+$ is a C_1–C_{20} carbenium ion; and

A^- is a noncoordinating compatible anion having a charge of −1;

2d) an activating technique comprising electrolyzing the metal complex under bulk electrolysis conditions in the presence of an electrolyte of the general formula:

$$G^+A^-$$

wherein

A^- is a noncoordinating compatible anion having a charge of −1; and

G^+ is a cation which is non-reactive towards the starting and resulting complex;

2e) polymeric or oligomeric alumoxanes;

2f) salts of a silylium ion and a noncoordinating, compatible anion represented by the formula:

$$R\#_3Si(X\#)_s{}^+A^-$$

wherein:

R# is C_{1-20} hydrocarbyl,

s is 0 or 1,

X# is a neutral Lewis base, and

A^- is as previously defined; and

2g) Bronsted acid salts baving the formula:

$$(L—H)^+_d(A)^{d-}$$

wherein:

L is a neutral Lewis base;

$(LH)^+$ is a Bronsted acid;

A is a noncoordinating compatible anion having a charge of d-; and

d is an integer from 1 to 3;

with the proviso that when the cocatalyst is a Bronsted acid salt of 2 g), then:

D is a stable terminally C_{1-10} hydrocarbyl substituted 1,3-butadiene π-bonded to the transition metal; and

M is titanium, zirconium or hafnium in the +2 formal oxidation state.

5,616,665
SUPPORTED POLYMERIZATION CATALYST SYSTEMS, THEIR PRODUCTION AND USE

Moses O. Jejelowo, Kingwood, and Robert L. Bamberger, Crosby, both of Tex., assignors to Exxon Chemical Patents, Inc., Wilmington, Del.

Continuation of Ser. No. 398,490, Mar. 3, 1995, abandoned, which is a division of Ser. No. 122,213, Sep. 17, 1993, Pat. No. 5,422,325. This application Jan. 16, 1996, Ser. No. 586,360

Int. Cl.^{6} C08F *4/42;4/64*

U.S. Cl. 526—129 **10 Claims**

1. A process for polymerizing olefins alone or in combination with one or more other olefins, said process comprising polymerizing in the presence of a supported catalyst system, said supported catalyst system prepared by the method comprising the steps of:

a) contacting a porous inorganic carrier having labile protons with an organometallic compound;

b) adding at least one metallocene of Group 4, 5, or 6; and

c) introducing a cocatalyst or an activator for said metallocene, wherein the mole ratio of the organometallic compound to the labile protons is less than 2:1.

5,616,666
BISMALEIMIDE COMPOUNDS

Trevor C. Morton, Hampton; Jonathan H. Hodgkin, Burwood, and Robert Eibl, Little River, all of Australia, assignors to Commonwealth Scientific and Industrial Research Organisation, Campbell, Australia

PCT No. PCT/AU93/00248, § 371 Date Jan. 5, 1995, § 102(e) Date Jan. 5, 1995, PCT Pub. No. WO93/24488, PCT Pub. Date Dec. 9, 1993

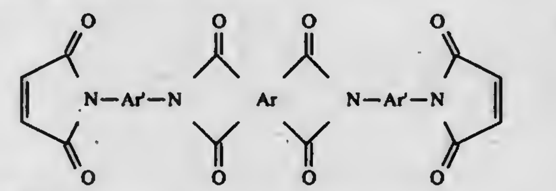
PCT Filed May 27, 1993, Ser. No. 338,504

Claims priority, application Australia, May 28, 1992, PL2658

Int. Cl.^{6} C08F *122/40;* **C07D** *487/02*

U.S. Cl. 526—262 **28 Claims**

1. A curable bismaleimide composition comprising a bismaleimide compound of formula (I) substantially free of oligomeric, amidic and uncyclized impurities:



(I)

wherein:

Ar is an optionally substituted aromatic residue; and

Ar' is an optionally substituted aromatic residue which provides good conjugation between the nitrogen-containing groups shown in formula (I);

together with one or more curing agents.

5,616,667
COPOLYMERS

Recai Sezi, Roettenbach; Horst Borndoerfer, Erlangen; Hellmut Ahne, Roettenbach; Siegfried Birkle, Hoechstadt A/Aisch; Eberhard Kuehn, Hemhofen; Rainer Leuschner, Erlangen; Eva Rissel, Forchheim, and Michael Sebald, Hessdorf-Hannberg, all of Germany, assignors to Siemens Aktiengesellschaft, München, Germany

Continuation of Ser. No. 153,836, Nov. 17, 1993, abandoned, which is a continuation of Ser. No. 811,831, Dec. 20, 1991, abandoned. This application May 4, 1995, Ser. No. 434,955

Claims priority, application Germany, Dec. 20, 1990, 40 41 000.5

Int. Cl.^{6} C08F *222/06;220/10*

U.S. Cl. 526—271 **4 Claims**

1. A non-grafted copolymer which can be used as a base polymer of a high-resolution resist, the copolymer characterized by 40 to 99 mole % of vinyl benzoic acid tert. butyl ester as a first component and 1 to 60 mole % of an anhydride of an unsaturated carboxylic acid as a second component, the copolymer being further characterized as being without an acrylic acid component and the copolymer being soluble in an organic solvent.

5,616,668
POLYMERIC DISPERSANTS HAVING POLYALKYLENE AND SUCCINIC GROUPS

James J. Harrison, Novato, and William R. Ruhe, Jr., Benicia, both of Calif., assignors to Chevron Chemical Company, San Ramon, Calif.

Continuation of Ser. No. 469,736, Jun. 6, 1995, abandoned, which is a continuation of Ser. No. 165,871, Dec. 13, 1993, abandoned. This application Dec. 14, 1995, Ser. No. 572,497

Int. Cl.^{6} C08F *222/04*

U.S. Cl. 526—271 **11 Claims**

1. A copolymer of an unsaturated acidic reactant and a high molecular weight olefin, wherein the copolymer has a ratio of anhydride groups to hydrocarbon groups of between 1.3 and 2.0, wherein the olefin is selected from the group consisting of alpha olefin and alkylvinylidene olefin, wherein the olefin has an average molecular weight of from 500 to 5000, and wherein the olefin has a sufficient number of carbon atoms such that the resulting copolymer is soluble in lubricating oil.

5,616,669
SOLUBLE CONDUCTIVE POLYMER MANUFACTURING METHOD THEREOF AND DISPLAY DEVICE EMPLOYING THE SAME

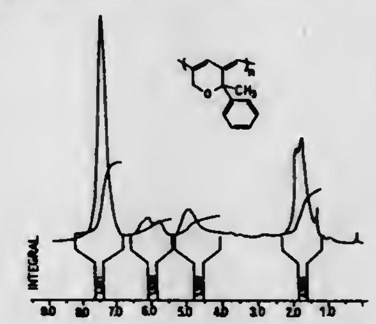
Sung-ho Jin, Suwon, and Shin-woong Kang, Seoul, both of Rep. of Korea, assignors to Samsung Display Devices Co., Ltd., Kyungki-do, Rep. of Korea

Filed Jun. 6, 1995, Ser. No. 471,385

Claims priority, application Rep. of Korea, Dec. 30, 1994, 94-40136

Int. Cl.^{6} C08F *138/00*

U.S. Cl. 526—285 **1 Claim**



1. The soluble conductive polymer poly(2-propargyloxy-2-phenyl-3-butyne).

5,616,670
PRESSURE SENSITIVE ADHESIVES WITH GOOD OILY SURFACE ADHESION

Greggory S. Bennett, Hudson, Wis., and Christopher A. Haak, Oakdale, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 150,426, Nov. 10, 1993, abandoned. This application Sep. 29, 1995, Ser. No. 537,832

Int. Cl.^{6} C08F *218/00*

U.S. Cl. 526—307.7 **30 Claims**

1. A composition consisting essentially of a pressure sensitive adhesive polymer consisting of the reaction product of:

(a) 25–97 parts by weight of an acrylic acid ester of a monohydric alcohol whose homopolymer has a Tg less than 0° C.;
(b) 3–75 parts by weight of a non-polar ethylenically unsaturated monomer whose homopolymer has a solubility parameter of no greater than 10.50 and a Tg greater than 15° C.; and
(c) 0–5 parts by weight of a polar ethylenically unsaturated monomer whose homopolymer has a solubility parameter of greater than 10.50 and a Tg greater than 15° C.,

the relative amounts of said acrylic ester, said non-polar ethylenically unsaturated monomer, and said polar ethylenically unsaturated monomer being chosen such that the 90° peel adhesion of said reaction product to a surface provided with 1.5±0.25 mg/in^2 oil is greater than zero after a 10 second dwell at room temperature as measured according to Test Procedure B, with the proviso that the composition contains essentially no emulsifier.

5,616,671
POLYSACCHARIDES GRAFTED WITH ALIPHATIC POLYESTERS DERIVED FROM CYCLIC ESTERS
Ramani Narayan, Okemos, Mich.; Philippe Dubois, Ciplet, Belgium, and Mohan Krishnan, Okemos, Mich., assignors to Board of Trustees operating Michigan State University, East Lansing, Mich.
Division of Ser. No. 400,979, Mar. 8, 1995, Pat. No. 5,540,929. This application Apr. 15, 1996, Ser. No. 632,291
Int. Cl.^{6} C08G *16/00*
U.S. Cl. 527—300 **8 Claims**

1. A process for forming a polymer which is a starch grafted with an aliphatic polyester which comprises:
(a) drying the starch in an oven for up to 20 hours at 90° to 140° C. until there is less than 2% by weight moisture to produce a dried starch; and
(b) reacting the dried starch with a cyclic aliphatic ester monomer containing 4 to 24 carbon atoms in the presence of an organometallic polymerizing agent at a temperature between about 60° and 150° C. in absence of a solvent for the starch or the monomer.

5,616,672
PAPER RELEASE COMPOSITIONS HAVING IMPROVED RELEASE CHARACTERISTICS
Michael J. O'Brien, Clifton Park, and Roy M. Griswold, Ballston Spa, both of N.Y., assignors to General Electric Company, Waterford, N.Y.
Filed Nov. 17, 1995, Ser. No. 560,144
Int. Cl.^{6} C08G *77/08*
U.S. Cl. 528—15 **19 Claims**

1. A substantially branched curable alkenyl silicone having the formula

$$M^{vi}_a T_b D_c M_d$$

where

$M^{vi}=R_{3-p}R^1_pSiO_{1/2}$, where R is selected from the group consisting of one to forty carbon monovalent hydrocarbon radicals and trifluoropropyl and R^1 is a two to forty carbon atom terminal olefinic monovalent hydrocarbon radical, where p ranges from 1 to 3;
$T=R^2SiO_{3/2}$ where R^2 is selected from the group consisting of R and R^1;
$D=R^3R^4SiO_{2/2}$ where R^3 and R^4 are each independently selected from the group consisting of R and R^1; and
$M=R_3SiO_{1/2}$ where each R is as previously defined and is independently selected; wherein a and b have values ranging from 2 to 5, c is an integer ranging from about 50 to about 1,000 and d has a value ranging from 0 to about 0.5.

5,616,673
PROCESS FOR PRODUCTION OF LOW VISCOSITY LOW SILANOL CONTENT SILICONE FLUIDS
Patricia P. Anderson, Williamstown, Mass., and Dennis P. Thompson, Clifton Park, N.Y., assignors to General Electric Company, Waterford, N.Y.
Filed Dec. 13, 1995, Ser. No. 572,232
Int. Cl.^{6} C08G *77/08*
U.S. Cl. 528—23 **18 Claims**

1. A process for producing low viscosity silicone fluids consisting essentially of:
1) feeding a silicone fluid or mixture of silicone fluids to a single fixed bed reactor containing a granular, acid treated clay catalyst having a Tyler mesh from about 5 to about 50,
2) contacting the catalyst with the silicone fluid, and
3) recovering a low viscosity silicone fluid therefrom,

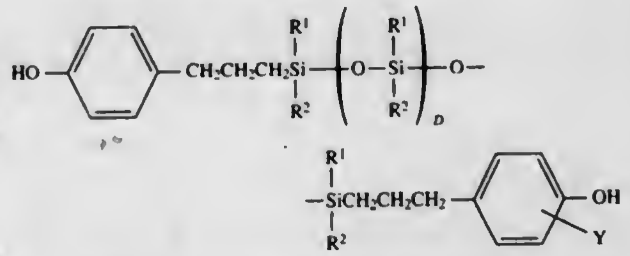
said silicone fluid having the formula:

$$R(CH_3)_2SiO(RCH_3SiO)_zSi(CH_3)_2R$$

wherein z is a number greater than zero, whereby when R is methyl said silicone fluid has a silanol content below about 600 ppm.

5,616,674
METHOD OF PREPARING POLYCARBONATE-POLYSILOXANE BLOCK COPOLYMERS
Rodney L. Michel; Paul D. Sybert, both of Evansville, Ind.; Gary C. Davis, Albany, N.Y., and William J. Swatos, Mt. Vernon, Ind., assignors to General Electric Company, Pittsfield, Mass.
Continuation-in-part of Ser. No. 241,324, May 10, 1994, Pat. No. 5,519,105. This application Sep. 20, 1995, Ser. No. 531,354
Int. Cl.^{6} C08G *77/04*
U.S. Cl. 528—29 **14 Claims**

1. A process for preparing a polycarbonate-polysiloxane block copolymer which comprises;
charging to a reactor
(i) a dihydric phenol;
(ii) a polysiloxane diol of the formula



wherein R^1 and R^2 are each independently hydrogen, hydrocarbyl or halogen-substituted hydrocarbyl; D is an integer of from about 10 to about 120, and Y is hydrogen, hydrocarbyl, hydrocarbyloxy or halogen;
(iii) water;
(iv) a water-immiscible, inert organic solvent for the block copolymer;
(v) a catalytic proportion of a phase transfer polymerization catalyst

to form a heterogeneous reaction mixture having an organic phase and an aqueous phase.
agitating the reaction mixture to enhance contact between the phases,
adding to the heterogeneous reaction mixture a carbonate precursor and
copolymerizing the dihydric phenol (I) with the polysiloxane diol (ii), whereby the phase transfer polymerization catalyst functions to transfer water soluble reactants into the organic phase where a homogeneous reaction can take place rapidly.

5,616,675
PROCESS OF PREPARING ELASTOMERIC THREAD
Kenneth Wilkinson, 1010 Glenwood Blvd., Waynesboro, Va. 22980
Filed Feb. 8, 1995, Ser. No. 385,688
Int. Cl.^{6} C08G *18/42;18/48;18/10;* **B29C** *47/00*
U.S. Cl. 528—61 **10 Claims**

1. A process for preparing an elastic thread comprising the steps of:
providing a liquid polyurethane prepolymer which is essentially a linear polyurethane having predominantly terminal isocyanate groups and which is the reaction product of a linear polymer having terminal hydroxyl groups which is a member selected from the group consisting of glycol-capped polyesters and glycol-capped polyethers with a diisocyanate wherein the mole ratio of diisocyanate to glycol-capped polymer is 1.3:1.0 to 2.1:1.0;
choosing denier, number of threads per spin cell, and spinning speed;
calculating equivalents of organic diamine crosslinker needed to react with free isocyanate end groups in the liquid prepolymer;
calculating grams per minute of prepolymer exiting an orifice in the spin tower;
calculating the equivalents (or moles) per minute of free isocyanate exiting the orifice in the spin tower;
calculating the rate of flow of diamine crosslinker;
choosing a concentration of diamine crosslinker in a mixture of inert gas and crosslinker;
calculating grams per minute of diamine crosslinker;
extending the prepolymer in the form of a filament into a gaseous mixture of an organic diamine and an inert gas wherein the mixture of diamine and inert gas has a concentration of about 50 to 2000 ppm of diamine, based on weight, and wherein the mole ratio of amine groups in the amine compound to free isocyanate groups in the prepolymer is about 0.7:1 to about 1.2:1 to obtain a fiber having a chemically discontinuous cross-section wherein the cross section of the fiber has decreasing molecular weight along the radius vector, increasing free-amine content along the radius vector, and decreasing free-isocyanate content along the radius vector; wherein the free-amine content is less than about 40 meq./kg. at the center of the fiber and greater than about 100 meq./kg. at the surface or outer shell of the fiber; and
recovering an elastic thread.

5,616,676
THERMOSETTING POLYURETHANE-UREA ELASTIC YARN AND PROCESS THEREOF
Kenichi Katsuo, Tsuruga, Japan, assignor to Toyo Boseki Kabushiki Kaisha, Okaka, Japan
Filed Oct. 18, 1995, Ser. No. 544,896
Claims priority, application Japan, Oct. 19, 1994, 6-253518
Int. Cl.^{6} D01F *6/70;6/72;* **C08G** *18/10;18/32*
U.S. Cl. 528—61 **8 Claims**

1. A thermosetting polyurethane-urea elastic yarn having a thermosetting ratio of 45–65%, which is obtained by reacting a polyglycol which has a number average molecular weight of 600–6,000 and which has hydroxy at both terminals, with a molar excess of a diisocyanate compound to give an isocyanate-terminated polymeric intermediate, reacting the isocyanate-terminated polymeric intermediate with a diamine compound to give a segmented polyurethane-urea elastomer, and subjecting the obtained elastomer to a spinning step, wherein:
(a) the diamine compound is a mixture comprising a diamine compound and a secondary monoamine compound; and
(b) the segmented polyurethane-urea elastomer is obtained by reacting the polymeric intermediate, the diamine compound and the secondary monoamine compound in amounts such that A and R in equations (1) through (4) below fall within the area enclosed by the lines of equations (1) through (4), giving a polyurethane-urea elastic yarn having a thermosetting ratio of 45–65%:

$$A=1.09R-0.98 \quad (1)$$

$$A=-0.19R+0.19 \quad (2)$$

$$A=1.10R-0.92 \quad (3)$$

$$A=-0.37R+0.37 \quad (4)$$

wherein A is an equivalent ratio of the diamine compound and the secondary monoamine compound to be reacted, which is obtained by equation (5):

$$A=MA/(DA+MA) \quad (5)$$

wherein MA is an amine equivalent of the secondary monoamine compound to be reacted, DA is an amine equivalent of the diamine compound to be reacted, and

R is a ratio of an isocyanate (free) equivalent of the polymeric intermediate to the total amine equivalent of the compounds to be reacted, which is obtained by equation (6):

$$R=I/(DA+MA) \quad (6)$$

wherein I is a free isocyanate equivalent of the polymeric intermediate and DA and MA are as defined above.

5,616,677
PREPARATION OF SPRAYABLE ALIPHATIC POLYUREA ELASTOMERS HAVING IMPROVED PROPERTIES
Dudley J. Primeaux, II, Elgin, and Robert L. Zimmerman, Austin, both of Tex., assignors to Huntsman Petrochemical Corporation, Salt Lake City, Utah
Continuation of Ser. No. 265,537, Jun. 24, 1994, abandoned. This application Dec. 27, 1995, Ser. No. 579,473
Int. Cl.^{6} C08G *18/32*
U.S. Cl. 528—66 **13 Claims**

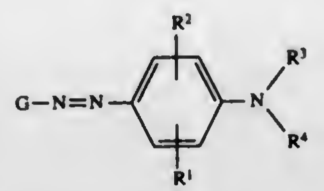
1. A sprayable polyurea elastomer, prepared by reacting at least one aliphatic isocyanate with at least one amine-terminated polyoxyalkylene polyol in the presence of a diamine chain extender, wherein the diamine is selected from the group consisting of cis-,1,4-diaminocyclohexane; isophoronediamine; m-xylylenediamine; 4,4'-methylenedicyclohexylamine; methanediamine; 1,4-diaminoethylcyclohexane; alkyl substituted derivatives thereof; and mixtures thereof and wherein about 40% to about 60% of primary amine groups of the diamine have been converted to secondary amines.

5,616,678
AZO DYESTUFF- AND URETHANE-CONTAINING POLYADDUCT AND ITS USE IN NONLINEAR OPTICS
Stefan Beckmann, Bad Dürkheim; Karl-Heinz Etzbach, Frankenthal; Rüdiger Sens, Mannheim, and Karl Häberle, Speyer, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany
Filed Oct. 19, 1994, Ser. No. 325,060
Claims priority, application Germany, Oct. 19, 1993, 43 35 540.4
Int. Cl.^{6} C08G *18/30*
U.S. Cl. 528—73 **12 Claims**

1. An azo dyestuff- and urethane-containing polyadduct comprising
(a) at least one organic polyisocyanate,
(b) at least one diol of a heterocyclic azo dyestuff, and if desired
(c) one or more compounds having at least two groups reactive to NCO, which have an average molecular weight of M_n of up to 500 g/mol, and/or
(d) one or more polyhydroxy compounds having average molecular weights M_n of from over 500 up to 5000 g/mol,

with the proviso that relative to one gram equivalent of NCO of the component (a), from 0.1 to 2 gram equivalents of hydroxyl groups of the components (b), from 0 to 0.9 gram equivalents of NCO-reactive groups of the component (c), and from 0 to 0.5 gram equivalent of hydroxyl groups of the component (d) are employed, the ratio of the NCO groups in component (a) to the sum of the

NCO-reactive groups in the components (b), (c) and (d) being 2:1 to 1:2, and the component (b) has the general formula (I)



(I)

where

G is a heterocyclic ring,

R^1 and R^2 are identical to or different from one another and are hydrogen, alkyl having 1 to 6 carbon atoms, cycloalkyl having 3 to 7 carbon atoms, alkoxy having 1 to 6 carbon atoms, phenyl- or C_1- to C_4-alkoxy-substituted alkyl, CN, NO_2, SO_3H, CHO or a group capable of crosslinking, at least one of R^1 and R^2 being a group capable of crosslinking selected from the group consisting of cinnamic acid, oxirane, acrylate, methacrylate, vinyl, vinyl ester or vinyl ether radical;

R^3 and R^4 are identical to or different from one another and are aliphatic hydrocarbon radicals having 1 to 12 carbon atoms, cycloaliphatic hydrocarbon radicals having 5 to 15 carbon atoms, aromatic hydrocarbon radicals having 6 to 15 carbon atoms or araliphatic hydrocarbon radicals having 7 to 15 carbon atoms, or R^3 and R^4 together form a nitrogen-containing ring, with the proviso that either R^3 and R^4 in each case carry a hydroxyl group or R^3 carries two hydroxyl groups, but R^4 carries no hydroxyl group, or in the case where R^3 and R^4 together form a nitrogen-containing ring, this ring carries two hydroxyl groups bonded directly or via C_1–C_6-alkylene groups.

5,616,679
POLYALKYLENE GLYCOL

Matthias Fies, Krefeld; Roland Grützmacher, Wülfrath, and Alfred Westfechtel, Hilden, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP94/01553, § 371 Date Nov. 14, 1995, § 102(e) Date Nov. 14, 1995, PCT Pub. No. WO94/26804, PCT Pub. Date Nov. 24, 1994

PCT Filed May 13, 1994, Ser. No. 549,776

Claims priority, application Germany, May 14, 1993, 43 16 245.2

Int. Cl.⁶ C08G *18/48*

U.S. Cl. 528—76 **33 Claims**

1. A polyalkylene glycol having the general formula:

$$HO\text{—}[R\text{—}O\text{—}]_nH$$

in which n has a value of at least 2 and R is an alkylene radical containing at least 20 carbon atoms.

5,616,680
PROCESS FOR PRODUCING LIQUID CRYSTAL POLYMER

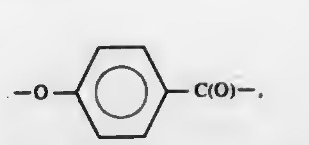
H. Clay Linstid, III, Clinton, N.J., assignor to Hoechst Celanese Corporation, Somerville, N.J.

Continuation of Ser. No. 462,479, Jun. 5, 1995, abandoned, which is a continuation-in-part of Ser. No. 317,961, Oct. 4, 1994, abandoned. This application Nov. 22, 1995, Ser. No. 563,910

Int. Cl.⁶ C08G *63/00*

U.S. Cl. 528—183 **32 Claims**

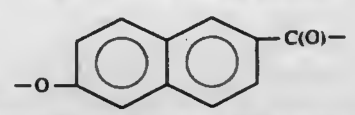
1. A process for producing an anisotropic melt-forming polymer consisting essentially of repeating units of the formula:



(I)

$$O-Ar^1-Y, \qquad \text{(II)}$$

$$-C(O)-Ar^2-C(O)- \text{ and, optionally,} \qquad \text{(III)}$$



(IV)

wherein for each repeating unit represented by formula (II) Y is oxygen or nitrogen and wherein for each repeating unit represented by formula (II) or (III) Ar^1 and Ar^2 independently represent a divalent radical comprising at least one aromatic ring,

which comprises the steps of:

(a) combining, in a first reactor equipped for controlled vapor phase reflux the p-hydroxybenzoic acid, aromatic diol, and 6-hydroxy-2-naphthoic acid reactants from which repeating units (I), (II) and, when present, (IV) are derived with an excess of from about 1 to about 10 mole percent of acetic anhydride, based on the total moles of reactive hydroxyl and, if present, amine groups present on said reactants, to form an acetylation mixture;

(b) heating the acetylation mixture to a temperature at which acetylation of the hydroxyl groups is initiated;

(c) maintaining the resulting acetates in a molten state for a period of time sufficient to substantially complete the acetylation reaction and remove substantially all acetic acid byproducts generated by the acetylation reaction without causing significant polymerization or loss of the acetates;

(d) introducing the molten acetates into a second reactor equipped for controlled vapor phase reflux and preheated to a temperature sufficient to maintain the acetates in the melt without causing significant polymerization;

(e) heating the polymerization mixture, in the presence of a polycondensation catalyst and a stoichiometric amount of the aromatic dicarboxylic acid from which repeating unit (III) is derived, to a temperature sufficient to induce polymerization at a rate which avoids sublimation of the acetates or the oligomeric products initially produced;

(f) maintaining the melt at polymerization temperature under vacuum for a period of time sufficient to produce a polymer of desired melt viscosity; and

(g) discharging the resultant polymer from the second reactor.

5,616,681
PROCESS FOR PRODUCING ALIPHATIC POLYESTER

Hiroshi Itoh, Kobe; Yoshinobu Yamamoto, Suita; Koji Fukuhara; Masahiro Shiroshima, both of Osaka, and Hiroya Kobayashi, Minoo, all of Japan, assignors to Nippon Shokubai Co., Ltd., Osaka, Japan

Filed Oct. 31, 1995, Ser. No. 550,964

Claims priority, application Japan, Nov. 1, 1994, 6-269095; Nov. 1, 1994, 6-269096; Mar. 29, 1995, 7-71559

Int. Cl.⁶ C08G *63/85*

U.S. Cl. 528—279 **79 Claims**

1. A process for producing an aliphatic polyester, comprising the step of:

carrying out a ring-opening polymerization of a cyclic acid anhydride with a cyclic ether in a presence of at least one zirconium compound selected from the group consisting of zirconium 2-ethylhexanoate, zirconium carbonate hydroxide oxide and zirconium hydroxide.

5,616,682

Patent Not Issued For This Number

5,616,683
PROCESS FOR MAINTAINING OF IMPROVING THE MECHANICAL PROPERTIES OF FIBERS OF AROMATIC COPOLYAMIDES IN ALKALINE MEDIA AND SHAPED ARTICLES CONTAINING SUCH FIBERS

Richard Neuert, Winkelhaid, and Georg-Emerich Miess, Regensburg, both of Germany, assignors to Hoechst AG, Frankfurt, Germany

Filed Jan. 13, 1994, Ser. No. 181,172

Claims priority, application Germany, Jan. 13, 1993, 43 00 626.4

Int. Cl.⁶ C08F *6/00;* **D06M** *11/00*

U.S. Cl. 528—480 **24 Claims**

1. A process for maintaining or increasing the tensile strength of fibers of aromatic copolyamides which contain a major portion of para-monomers and are soluble in organic aprotic and polar solvents, in the course of storage in alkaline media, comprising the steps of:

a) producing fibers from the aromatic copolyamides by dry or wet spinning processes,

b) after treating the produced fibers, and

c) storing the after treated fibers, which fibers have an initial tensile strength of at least 120 cN/tex and an initial elasticity modulus based on 100% elongation, of more than 30 N/tex before storage, in an aqueous environment which has a pH of at least 10 for at least a period of time and at a temperature such that the tensile strength of the said fibers, based on the tensile strength of the fibers employed in step c), is at least retained or increased.

5,616,684
CYCLIC PEPTIDES AND USE THEREOF

Mitsuhiro Wakimasu; Takashi Kikuchi; Akira Kawada, all of Ibaraki, and Hideo Shirafuji, Kyoto, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 927,205, Aug. 7, 1992, abandoned. This application Apr. 20, 1994, Ser. No. 231,449

Claims priority, application Japan, Aug. 13, 1991, 3-203032; Nov. 19, 1991, 3-303635; Feb. 21, 1992, 4-35436; Apr. 30, 1992, 4-111792

Int. Cl.⁶ C07K *7/64*

U.S. Cl. 530—317 **1 Claim**

1. A cyclic peptide having endothelin receptor antagonistic activity represented by formula [I] or a pharmaceutically acceptable salt thereof:

$$\boxed{A-X-Y-B-C-D} \qquad [I]$$

wherein A is D-aspartic acid, X is aspartic acid β-4-phenylpiperazineamide, Y is aspartic acid, B is D-2-thienylglycine, C is leucine and D is D-tryptophan.

5,616,685
SNRNP-A ANTIGEN AND FRAGMENTS THEREOF

Walter J. Van Venrooij; Peter T. G. Sillekens, and Winand J. A. Habets, all of Nijmegen, Netherlands, assignors to Akzo Nobel N.V., Arnhem, Netherlands

Continuation of Ser. No. 908,507, Jun. 30, 1992, abandoned, which is a continuation of Ser. No. 823,051, Jan. 16, 1992, abandoned, which is a continuation of Ser. No. 569,266, Aug. 17, 1990, abandoned, which is a continuation of Ser. No. 260,713, Oct. 21, 1988, abandoned. This application Oct. 6, 1994, Ser. No. 319,503

Claims priority, application Netherlands, Oct. 21, 1987, 8702510

Int. Cl.⁶ C07K *7/52;9/00;* **A61K** *39/00*

U.S. Cl. 530—324 **5 Claims**

Pro Pro Gly Leu Ala Pro Gly Gln Ile Pro Pro Gly Ala Met Pro Pro Gln Gln
Leu Met Pro Gly Gln Met Pro Pro Ala Gln Pro Leu Ser Glu Asn Pro Pro Asn

1. An isolated fragment of an snRNP-A antigen having the amino acid sequence of amino acids 1–171 in FIG. 1, wherein said fragment has an epitope recognized by anti-Sm antibodies.

5,616,686
POLYPEPTIDE OF A HYBRID SURFACE PROTEIN BY BACTERIA

Vincent A. Fischetti, West Hempstead, and Olaf Schneewind, New York, both of N.Y., assignors to The Rockefeller University, New York, N.Y.

Continuation of Ser. No. 46,495, Apr. 8, 1993, abandoned, which is a continuation of Ser. No. 902,432, Jun. 18, 1992, abandoned, which is a continuation of Ser. No. 814,323, Dec. 23, 1991, abandoned, which is a continuation of Ser. No. 742,199, Aug. 5, 1991, abandoned, which is a continuation of Ser. No. 522,440, May 11, 1990, abandoned. This application Jul. 26, 1994, Ser. No. 280,390

Int. Cl.⁶ A61K *38/00;* **C07K** *5/00;7/00;17/00*

U.S. Cl. 530—326 **5 Claims**

1. A polypeptide consisting of from about six to about twenty amino acid residues and including as an integral portion of its structure a peptide construct responsible for anchoring a virulence determinant protein to the surface of a gram-positive coccal bacteria, or a pharmaceutically acceptable salt of said polypeptide.

5,616,687
COUPLING REAGENT AND METHOD

Manoj C. Desai, Mystic, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 56,261, Apr. 30, 1993, Pat. No. 5,416,193. This application May 5, 1995, Ser. No. 435,904

Int. Cl.⁶ A61K *38/02*

U.S. Cl. 530—334 **6 Claims**

4. A method of synthesizing a peptide comprising reacting a first compound having the formula P^1—NH—R^1—COOH with a second compound having the formula H_2N—R^2—COO—P^2 in the presence of an insoluble polymer bearing pendant side chains, wherein each side chain comprises a terminal portion having the formula:

$$\begin{array}{l} \quad CH_3 \qquad\quad Y^- \\ \quad | \\ -N^+-(CH_2)_n-N=C=N-CH_2-CH_3 \\ \quad | \\ \quad CH_3 \end{array}$$

wherein

P^1 and P2 represent an amino protecting group and a carboxyl protecting group, respectively;

R^1, together with the amino and carboxyl group to which it is bonded, represents an amino acid or a peptide;

R^2, together with the amino and carboxyl group to which it is bonded, represents an amino acid or a peptide;

Y is a counteranion; and

n is an integer of 2–6.

5,616,688
MACROPHAGE-DERIVED INFLAMMATORY MEDIATOR (MIP-1ALPHA AND MIP-1BETA)

Anthony Cerami, Shelter Island, N.Y.; Bruce Beutler, Dallas, Tex., and Stephen D. Wolpe, New York, N.Y., assignors to The Rockefeller University, New York, N.Y.

Continuation of Ser. No. 24,867, Mar. 1, 1993, abandoned, which is a continuation-in-part of Ser. No. 104,827, Oct. 2, 1987, abandoned, which is a continuation-in-part of Ser. No. 766,852, Aug. 16, 1985, abandoned, which is a continuation-in-part of Ser. No. 414,098, Sep. 7, 1982, Pat. No. 4,603,106, which is a continuation-in-part of Ser. No. 351,290, Feb. 22, 1982, abandoned, which is a continuation-in-part of Ser. No. 299,932, Sep. 8, 1981, abandoned. This application Mar. 7, 1994, Ser. No. 207,888

Int. Cl.⁶ C07K *1/00;14/00;* **G01N** *33/53;33/555*

U.S. Cl. 530—351 **15 Claims**

1. An inflammatory cytokine comprising a protein in purified form capable of binding to heparin, inducing localized inflammation characterized by polymorphonuclear cell infiltration when

administered subcutaneously and inducing in vitro polymorphonuclear cell chemokinesis, while lacking the ability to suppress the activity of the anabolic enzyme lipoprotein lipase, cause the cytotoxicity of cachectin/TNF-sensitive cells, stimulate the blastogenesis of endotoxin-resistant C3H/HeJ thymocytes, or induce the production of cachectin/TNF by primary thioglycollate-elicited mouse macrophage cells, which protein is anionic under physiological conditions and has an apparent molecular weight of approximately 8000 daltons as determined by SDS-PAGE.

5,616,689

METHOD OF CONTROLLING STRUCTURE STABILITY OF COLLAGEN FIBERS PRODUCED FORM SOLUTIONS OR DISPERSIONS TREATED WITH SODIUM HYDROXIDE FOR INFECTIOUS AGENT DEACTIVATION

Vivek N. Shenoy, Sunnyvale; Timothy T. Revak, Los Altos; George H. Chu, Cupertino; Hugh R. McMullin, Menlo Park; Joel S. Rosenblatt, Palo Alto, all of Calif., and George R. Martin, Bethesda, Md., assignors to Collagen Corporation, Palo Alto, Calif.

Filed Jul. 13, 1994, Ser. No. 274,673

Int. Cl.[6] A61K *38/17*; C07K *1/00*

U.S. Cl. 530—356 **29 Claims**

14. In a method for preparing a dispersion of collagen fibers from a solution or a dispersion of collagen wherein said collagen has been treated with a sodium hydroxide to inactivate infectious agents and wherein said collagen fibers have been destabilized as a result of treatment with said sodium hydroxide, the improvement comprising stabilizing said collagen fibers subsequent to said treatment by reacting said collagen fibers with a physical fiber-stabilizing agent, said agent comprising a polymeric material capable of causing collagen fibers to precipitate from solution.

5,616,690

HEXOSE DERIVATIZED HUMAN SERUM ALBUMIN CLEARING AGENTS

Donald B. Axworthy, and John M. Reno, both of Brier, Wash., assignors to NeoRx Corporation, Seattle, Wash.

Continuation-in-part of Ser. No. 995,383, Dec. 23, 1992, abandoned, which is a continuation-in-part of Ser. No. 895,588, Jun. 9, 1992, Pat. No. 5,283,342. This application Oct. 8, 1993, Ser. No. 133,613

Int. Cl.[6] C07K *14/765*; *1/107*; C07D *235/02*

U.S. Cl. 530—363 **14 Claims**

1. A clearing agent compound useful in practicing pretargeting methods, wherein said clearing agent has the following structure:

$$(\text{Hexose})_m\text{—Human Serum Albumin (HSA)—(Ligand)}_n,$$

wherein the hexose is one which is recognized by Ashwell receptors, and wherein the m and n are selected such that the resultant clearing agent compound is capable of complexing with a previously administered circulating conjugate containing an anti-ligand binding partner of said ligand, and wherein the resultant anti-ligand containing conjugate-clearing agent complex is capable of binding to Ashwell receptors, thereby providing for enhanced clearance of the previously administered anti-ligand containing conjugate from the blood, wherein said ligand is biolin and said anti-ligand is avidin or streptavidin.

5,616,691

PROCESS FOR PRODUCING ALBUMIN PREPARATION

Tuyoshi Takahashi; Kazuo Ikegaya; Shinobu Mochizuki, and Hideo Nishimaki, all of Osaka, Japan, assignors to The Green Cross Corporation, Osaka, Japan

Filed Jun. 1, 1995, Ser. No. 456,484

Claims priority, application Japan, Jun. 1, 1994, 6-119977

Int. Cl.[6] C07K *3/22*

U.S. Cl. 530—364 **13 Claims**

1. A process for producing an albumin preparation which comprises the steps of:

a) treating an aqueous solution containing serum albumin with an anion exchanger;

b) treating the resultant solution of step (a) with a cation exchanger; and

c) subjecting the resultant solution of step (b) to heat treatment carried out for a time and at a temperature sufficient to inactivate viruses,

wherein said cation exchange is a polyacrylamide-type carrier containing cation exchange group.

5,616,692

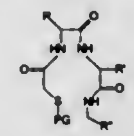
METAL-RADIONUCLIDE-LABELED PROTEINS AND GLYCOPROTEINS FOR DIAGNOSIS AND THERAPY

Alan R. Fritzberg, Edmonds; Sudhakar Kasina, Kirkland; Tripuraneni N. Rao, Mill Creek; Jean-Luc VanderHeyden, Seattle, and Ananthachari Srinivasan, Kirkland, all of Wash., assignors to NeoRx Corporation, Seattle, Wash.

Continuation of Ser. No. 152,272, Nov. 12, 1993, abandoned, which is a continuation of Ser. No. 800,535, Nov. 27, 1991, abandoned, which is a continuation of Ser. No. 494,191, Mar. 15, 1990, Pat. No. 5,091,514, which is a division of Ser. No. 172,004, Mar. 23, 1988, Pat. No. 4,965,392, which is a continuation-in-part of Ser. No. 31,440, Mar. 26, 1987, abandoned. This application May 8, 1995, Ser. No. 436,961

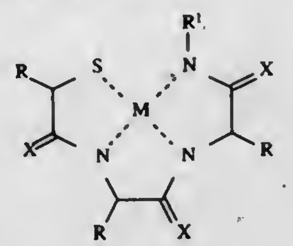
Int. Cl.[6] C07K *5/08*; *17/00*; A61K *39/385*; *51/10*

U.S. Cl. 530—391.5 **16 Claims**



Compound	PG	R	R'	R''
A	THP	H	H	COOTFP
B	EOE	H	H	COOTFP
C	EOE	H	H	CH_2-CH_2-COOTFP
D	i-PrCO	CH_2-COOH	H	CH_2-CH_2-COOTFP
E	i-PrCO	CH_2-COOH	CH_2-COOH	CH_2-CH_2-COOTFP
F	i-PrCO	CH_2-CH_2-COOH	CH_2-COOH	CH_2-CH_2-COOTFP
G	Acm	H	H	COOH
H	Acm	CH_2-CH_2-CH_2-COOTFP	H	COOH
I	MOM e-CH_2-COOH	H	H	CH_2-CH_2-COOTFP

1. A compound of the formula:



and water soluble salts thereof, wherein:

M is a radionuclide;

each X independently represents H_2 or O;

each R independently represents a substituent selected from the group consisting of hydrogen; a non-alkyl side chain of an amino acid other than cysteine; alkyl; geminal dialkyl; and $(CH_2)_n$—Z;

Z represents —COOH or a targeting compound;

n is an integer of from 1 to 4;

R' is H_2; —$(CH_2)_n$—Z; or an alkyl group of from 1 to 7 carbons and having one or more polar groups substituted thereon, wherein when R' is —$(CH_2)_n$—Z and Z is a targeting compound, then n is 3 to 4; and

wherein the compound comprises at least one targeting compound.

5,616,693

PROCESS FOR SEPERATING ALPHA-1-PROTEINASE INHIBITOR FROM COHN IV_1+IV_4 PASTE

Duk S. Hwang, South Pasadena; Evelyn Nario, Chino Hills; Mark Lepe, West Covina; Lyndon Luz, Huntington Park; Hirokazu Ito, and Kazuo Takechi, both of Arcadia, all of Calif., assignors to Alpha Therapeutic Corporation, Los Angeles, Calif.

Filed Jul. 1, 1996, Ser. No. 673,064

Int. Cl.[6] C07K *14/81*

U.S. Cl. 530—392 **20 Claims**

1. A process for purifying alpha-1-PI comprising:

providing an impure protein fraction comprising alpha-1-PI;

suspending the impure protein fraction comprising alpha-1-PI in an aqueous solution at a pH of about 6 for a time sufficient for soluble proteins to dissolve;

filtering the suspension and recovering insoluble proteins;

resuspending the insoluble protein in an aqueous solution;

adding PEG to the resuspended insoluble protein to precipitate α-2-globulin;

recovering the supernatant from the PEG precipitation, wherein the supernatant comprises alpha-1-PI;

adding $ZnCl_2$ to the supernatant to precipitate crude alpha-1-PI;

recovering the crude alpha-1-PI;

solubilizing the recovered crude alpha-1-PI;

applying the solubilized crude alpha-1-PI to an anion-exchange medium; and

recovering a fraction comprising purified alpha-1-PI from the anion-exchange medium.

5,616,694

AZO COMPOUND

Ronald W. Kenyon, Manchester, and Prahalad M. Mistry, Lancashire, both of United Kingdom, assignors to Zeneca Limited, London, England

PCT No. PCT/GB93/02585, § 371 Date Jul. 12, 1995, § 102(e) Date Jul. 12, 1995, PCT Pub. No. WO94/16021, PCT Pub. Date Jul. 21, 1994

PCT Filed Dec. 17, 1993, Ser. No. 495,418

Claims priority, application United Kingdom, Jan. 12, 1993, 9300438; Apr. 8, 1993, 9307478

Int. Cl.[6] C09D *11/02*; C09B *43/00*

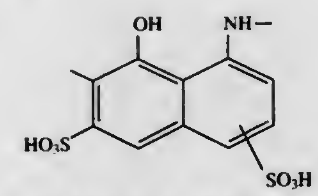
U.S. Cl. 534—598 **18 Claims**

1. In a process for ink jet printing a substrate with an ink, the improvement wherein the ink contains a compound selected from the group consisting of a compound of Formula (1) and salts thereof:

$$Ar^1N{=}N\text{-}J\text{-}X\text{-}L\text{-}X\text{-}J\text{-}N{=}NAr_2 \qquad (1)$$

wherein:

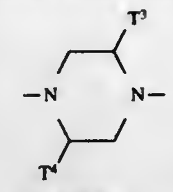
J is



(2)

Ar^1 and Ar^2 are each independently aryl containing at least two carboxy groups; and

L is a group of the Formula (3b):

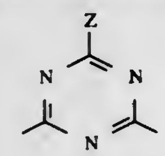


(3b)

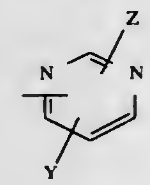
in which

T^3 and T^4 each independently is H, C_{1-4}-alkyl, C_{1-4}-alkoxy or C_{3-4}-alkenyl provided that T^3 and T^4 are not both H;

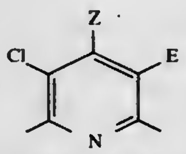
each X independently is a group of the Formula (4), (5) or (6):



(4)



(5)



(6)

each Z independently is H, halogen, alkyl, NR^1R^2, SR^3 or OR^3;

each Y independently iS Z, SR^4 or OR^4;

each E independently is Cl or CN; and

R^1, R^2, R^3 and R^4 are each independently H, alkyl, substituted alkyl, alkenyl, substituted alkenyl, cycloalkyl, aryl, substituted aryl, aralkyl or substituted aralkyl,

or R^1 and R^2, together with the nitrogen atom to which they are attached, form a 5 or 6 membered ring.

5,616,695

AZO DYES CONTAINING A 1-ALKYL-6-HYDROXY-4-METHYL-3-SULFOMETHYL-PYRID-2-ONE COUPLING COMPONENT

Peter Aeschlimann, Allschwil, Switzerland, assignor to Ciba-Geigy Corporation, Tarrytown, N.Y.

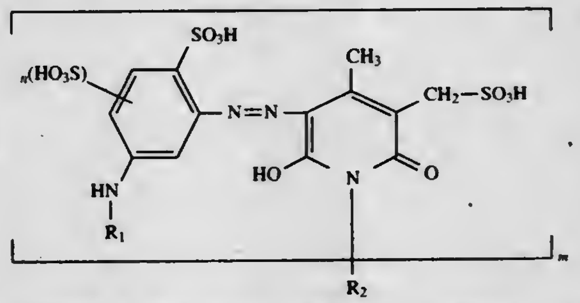
Filed Aug. 25, 1995, Ser. No. 519,227

Claims priority, application Switzerland, Aug. 30, 1994, 2652/94; Sep. 16, 1994, 2838/94

Int. Cl.[6] C09B *62/491*; *62/493*; D06P *1/38*

U.S. Cl. 534—643 **15 Claims**

1. An azo dye of formula



(1)

wherein R_1 is acryloyl, α-haloacryloyl, α-methylacryloyl or α,β-dihalopropionyl, R_2 is C_1–C_5alkyl which is unsubstituted

or substituted by halogen, cyano, hydroxy, sulfo, sulfato or C_1–C_4alkoxy, n is 0 or 1 and m is 1;
or wherein R_1 is acryloyl, α-haloacryloyl, α-methylacryloyl or α,β-dihalopropionyl, R_2 is C_2–C_8alkylene which is unsubstituted or substituted by hydroxy, halogen, C_1–C_4alkoxy, n is 0 or 1 and m is 2.

5,616,696

AZO DYES HAVING UTILITY FOR INK JET PRINTERS

William P. Leary, Jr., Franklin Lakes, N.J., assignor to Tricon Colors Incorporated, Elmwood Park, N.J.

Filed Sep. 14, 1995, Ser. No. 528,125

Int. Cl.⁶ C09B *31/06;31/12;31/30;31/26*

U.S. Cl. 534—667 **5 Claims**

1. A composition comprising a compound consisting of the reaction product of a hydroxy naphthylamine sulfonic acid with a diazotized compound consisting of an aromatic azo substituted Cleves Acid such that the diazotized compound is coupled with the hydroxy naphthylamine sulfonic acid ortho to the amine group of the hydroxy naphthylamine sulfonic acid.

5,616,697

THIAZOLYLAZOANILINE DYES FOR USE IN THERMAL DYE SUBLIMINATION TRANSFER

Luc Vanmaele, Lochristi, Belgium, assignor to Agfa-Gevaert, N.V., Mortsel, Belgium

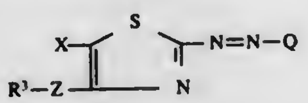
Continuation of Ser. No. 74,453, Jun. 10, 1993, Pat. No. 5,366,951. This application Sep. 22, 1994, Ser. No. 310,083

Claims priority, application European Pat. Off., Jul. 14, 1992, 92202156

Int. Cl.⁶ C09B *29/042;* **D06F** *1/04*

U.S. Cl. 534—795 **2 Claims**

2. A thiazolylazoaniline dye according to the following formula (I)



(I)

wherein

X represents CN or R^4—C=A;

Q represents a phenyl group substituted in para position with NR^1R^2 group;

Z represents O or S;

A represents O, N—R^5, CR^6R^7;

R^1 and R^2 each independently represent hydrogen, an alkyl, a cycloalkyl, an aryl, or R^1 and R^2 together represent the atoms necessary for completing a heterocyclic nucleus;

R^3 represents hydrogen, an alkyl, a cycloalkyl, an aryl;

R^4 represents hydrogen or an electron withdrawing group selected from the group consisting of CN, halogen, NO_2, alkyloxycarbonyl and alkylcarbonyl;

R^5 represents H, CN, NR^8R^9, OR^8, $OCOR^8$, $OCOOR^8$, $OCONR^8R^9$, OSO_2R^8, $OPO(OR^8)(OR^9)$;

R^6 and R^7 each independently represent an electron withdrawing group selected from the group consisting of CN, $COOR^8$, $CONR^8R^9$, NO_2, COR^8, $PO(OR^8)(OR^9)$, SO_2R^8, SO_3R^8;

R^8 and R^9 each independently represent hydrogen, an alkyl, an aryl, a cycloalkyl or R^8 and R^9 together represent the atoms necessary for completing a heterocyclic nucleus.

5,616,698

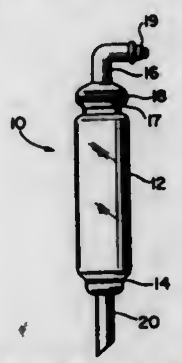
POLYMER-SUPPORTED SOLUTION SYNTHESIS OF OLIGOSACCHARIDES

Jiri J. Krepinsky, Newmarket; Stephen P. Douglas, Scarborough, and Dennis M. Whitfield, Toronto, all of Canada, assignors to University of Toronto Innovations Foundation, Toronto, Canada

Filed Jan. 10, 1994, Ser. No. 179,096

Int. Cl.⁶ C07G *3/00;* **C07H** *1/00;15/04;* **C08B** *37/00*

U.S. Cl. 536—18.6 **35 Claims**



1. A method for the preparation of oligosaccharides which comprises:

a) reacting as a first reactant, a saccharide having at least one monosaccharide unit and having a carbohydrate hydroxyl group and as a second reactant a monomethylether of polyethylene glycol linked to a tether having one free hydroxyl group of a benzylic or allylic diol, and the linkage formed between the two reactants is an O-glycosidic linkage or an ether linkage;

b) activating the saccharide-polyethylene glycol derivative reaction product for glycosylation;

c) subjecting the activated saccharide-polyethylene glycol derivative reaction product to a glycosylation reaction through at least one addition of a glycosylating agent, while monitoring the reaction for completion;

d) capping any non-glycosylated hydroxyl with a capping reagent which is more reactive than the glycosylating agent.

5,616,699

CODING, PROMOTER AND REGULATOR SEQUENCES OF IRF-1

Tadatsugu Taniguchi, Ibaraki, and Takashi Fujita, Mino, both of Japan, assignors to Tadatsugu Taniguchi, Osaka, Japan

Continuation of Ser. No. 87,465, Jul. 8, 1993, abandoned, which is a continuation of Ser. No. 397,967, Aug. 24, 1989, abandoned. This application Nov. 18, 1994, Ser. No. 347,251

Claims priority, application European Pat. Off., Aug. 24, 1988, 881137939; Nov. 24, 1988, 881196026

Int. Cl.⁶ C07H *21/02;21/04;* **C12N** *15/00;* **C12P** *19/34*

U.S. Cl. 536—23.1 **37 Claims**

1. An isolated DNA molecule, wherein said molecule comprises a nucleic acid sequence, wherein said nucleic acid sequence:

(1) encodes an IRF-1 protein

(a) that binds to a first recognition sequence $(AAGTGA)_4$; and

(b) that binds to a second recognition sequence at bases −64 to −100 of the human IFN-β gene;

wherein said binding in steps (a) and (b) augments transcription of a coding sequence operably linked to a promoter that contains said first or second recognition sequence; and

(2) wherein said nucleic acid sequence hybridizes to the antisense sequence of a DNA selected from the group consisting of the coding sequences:

ATGCCCATCACTTGGATGCGCATGAGACCCTGGCTAG

AGATGCAGATTAA

TTCCAACCAAATCCCGGGGCTCATCTGGATTAATAAA

-continued

GAGGAGATGATCT

TGGAGATCCCATGGAAGCATGCTGCCAAGCATGGCTG

GGACATCAACAAG

GATGCCTGTTTGTTCCGGAGCTGGGCCATTCACACAG

GCCGATACAAAGC

AGGGGAAAAGGAGCCAGATCCCAAGACGTGGAAGGCC

AACTTTCGCTGTG

CCATGAACTCCCTGCCAGATATCGAGGAGGTGAAAGA

CCAGAGCAGGAAC

AAGGGCAGCTCAGCTGTGCGAGTGTACCGGATGCTTC

CACCTCTCACCAA

GAACCAGAGAAAAGAAAGAAAGTCGAAGTCCAGCCGA

GATGCTAAGAGCA

AGGCCAAGAGGAAGTCATGTGGGGATTCCAGCCCTGA

TACCTTCTCTGAT

GGACTCAGCAGCTCCACTCTGCCTGATGACCACAGCA

GCTACACAGTTCC

AGGCTACATGCAGGACTTGGAGGTGGAGCAGGCCCTG

ACTCCAGCACTGT

CGCCATGTGCTGTCAGCAGCACTCTCCCCGACTGGCA

CATCCCAGTGGAA

GTTGTGCCGGACAGCACCAGTGATCTGTACAACTTCC

AGGTGTCACCCAT

GCCCTCCATCTCTGAAGCTACAACAGATGAGGATGAG

GAAGGGAAATTAC

CTGAGGACATCATGAAGCTCTTGGAGCAGTCGGAGTG

GCAGCCAACAAAC

GTGGATGGGAAGGGGTACCTACTCAATGAACCTGGAG

TCCAGCCCACCTC

TGTCTATGGAGACTTTAGCTGTAAGGAGGAGCCAGAA

ATTGACAGCCCAG

GGGGGGATATTGGGCTGAGTCTACAGCGTGTCTTCAC

AGATCTGAAGAAC

ATGGATGCCACCTGGCTGGACAGCCTGCTGACCCCAG

TCCGGTTGCCCTC

CATCCAGGCCATTCCCTGTGCACCG

and

ATG CCA ATC ACT CGA ATG CGG ATG AGA

CCC TGG CTA GAG ATG CAG ATT

AAT TCC AAC CAA ATC CCA GGG CTG ATC

TGG ATC AAT AAA GAA GAG ATG

-continued

ATC TTC CAG ATT CCA TGG AAG CAC GCT

GCT AAG CAC GGC TGG GAC ATC

AAC AAG GAT GCC TGT CTG TTC CGG AGC

TGG GCC ATT CAC ACA GGC CGA

TAC AAA GCA GGA GAA AAA GAG CCA GAT

CCC AAG ACA TGG AAG GCA AAC

TTC CGT TGT GCC ATG AAC TCC CTG CCA

GAC ATC GAG GAA GTG AAG GAT

CAG AGT AGG AAC AAG GGC AGC TCT GCT

GTG CGG GTG TAC CGG ATG CTG

CCA CCC CTC ACC AGG AAC CAG AGG AAA

GAG AGA AAG TCC AAG TCC AGC

CGA GAC ACT AAG AGC AAA ACC AAG AGG

AAG CTG TGT GGA GAT GTT AGC

CCG GAC ACT TTC TCT GAT GGA CTC AGC

AGC TCT ACC CTA CCT GAT GAC

CAC AGC AGT TAC ACC ACT CAG GGC TAC

CTG GGT CAG GAC TTG GAT ATG

GAA AGG GAC ATA ACT CCA GCA CTG TCA

CCG TGT GTC GTC AGC AGC AGT

CTC TCT GAG TGG CAT ATG CAG ATG GAC

ATT ATA CCA GAT AGC ACC ACT

GAT CTG TAT AAC CTA CAG GTG TCA CCC

ATG CCT TCC ACC TCC GAA GCC

GCA ACA GAC GAG GAT GAG GAA GGG AAG

ATA GCC GAA GAC CTT ATG AAG

CTC TTT GAA CAG TCT GAG TGG CAG CCG

ACA CAC ATC GAT GGC AAG GGA

TAC TTG CTC AAT GAG CCA GGG ACC CAG

CTC TCT TCT GTC TAT GGA GAC

TTC AGC TGC AAA GAG GAA CCA GAG ATT

GAC AGC CCT CGA GGG GAC ATT

GGG ATA GGC ATA CAA CAT GTC TTC ACG

GAG ATG AAG AAT ATG GAC TCC

ATC ATG TGG ATG GAC AGC CTG CTG GGC

AAC TCT GTG AGG CTG CCG CCC

TCT ATT CAG GCC ATT CCT TGT GCA CCA TAG

when the hybridization is performed at 65° degrees for 20 hours in a medium consisting essentially of 1M NaCl, 50 mM Tris-HCl, pH 7.4, 10 mM EDTA, 0.1% sodium dodecyl sulfate, 0.2% ficoll, 0.2% polyvinylpyrrolidone, 0.2% bovine serum albumin, 50 μg/ml *E. coli* DNA, said nucleic acid sequence and said antisense sequence.

5,616,700

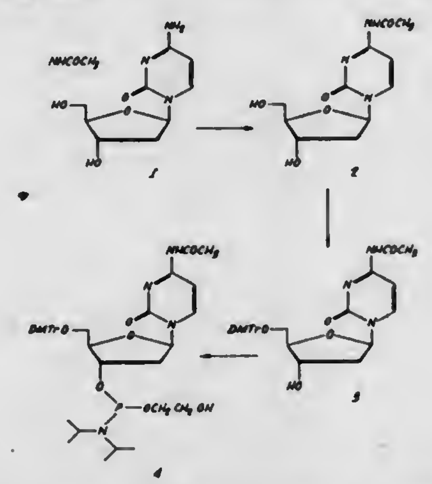
PROCESSES FOR SYNTHESIZING NUCLEOTIDES AND MODIFIED NUCLEOTIDES USING N_4 PROTECTED DEOXYCYTIDINES

M. Parameswara Reddy, Brea, and Firdous Farooqui, La Habra, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Continuation-in-part of Ser. No. 873,330, Apr. 24, 1992, Pat. No. 5,428,148. This application Nov. 18, 1993, Ser. No. 154,370

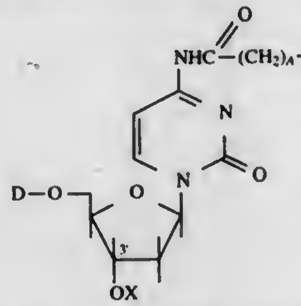
Int. Cl.[6] C07H *21/00*

U.S. Cl. 536—25.3 **15 Claims**



1. A process for preparing oligonucleotides incorporating deoxycytidine, said process comprising the steps:

(a) providing nucleoside phosphoramidite derivatives comprising protected deoxycytidine having the formula:



wherein A is a whole number between 0 and 9; X is a phosphoramidite functionality; and D is selected from the group consisting of hydrogen, a trityl protecting group or a pixyl protecting group;

(b) coupling said phosphoramidite derivatives in an oligonucleotide synthesis procedure to provide coupled oligonucleotide; and

(c) exposing said oligonucleotide to a methylamine/ammonia reagent to provide deprotected oligonucleotide.

5,616,701

DNA PURIFICATION BY SOLID PHASE EXTRACTION USING A HYDROXIDE-WASHED GLASS FIBER MEMBRANE

Daniel L. Woodard; Adriann J. Howard, both of Raleigh, and James A. Down, Cary, all of N.C., assignors to Becton Dickinson and Company, Franklin Lakes, N.J.

Division of Ser. No. 127,404, Sep. 27, 1993, Pat. No. 5,438,127. This application May 24, 1995, Ser. No. 449,441

Int. Cl.[6] C07H *21/04*

U.S. Cl. 536—25.4 **1 Claim**

1. A method for purifying DNA comprising the steps of:

(a) contacting a suspension containing DNA with a glass fiber membrane which has been modified by treatment with NaOH, under conditions suitable to bind DNA to said membrane; p1

(b) washing said membrane having bound DNA; and

(c) eluting the DNA from said membrane.

5,616,702

2-'-ETHENYLIDENE CYTIDINE, URIDINE AND GUANOSINE DERIVATIVES

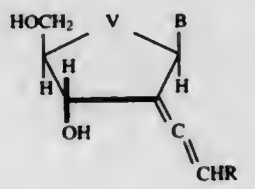
Michael L. Edwards, Cincinnati, Ohio; Donald P. Matthews, Indianapolis, Ind., and James R. McCarthy, Solona Beach, Calif., assignors to Merrell Pharmaceuticals Inc., Cincinnati, Ohio

Continuation-in-part of Ser. No. 304,744, Sep. 12, 1994, abandoned, which is a division of Ser. No. 113,505, Aug. 27, 1993, Pat. No. 5,378,693, which is a continuation of Ser. No. 563,470, Aug. 7, 1990, abandoned, which is a continuation-in-part of Ser. No. 271,479, Nov. 15, 1988, abandoned. This application Dec. 22, 1994, Ser. No. 362,366

Int. Cl.[6] C07H *19/73; 19/173*

U.S. Cl. 536—27.13 **13 Claims**

1. A compound of the formula

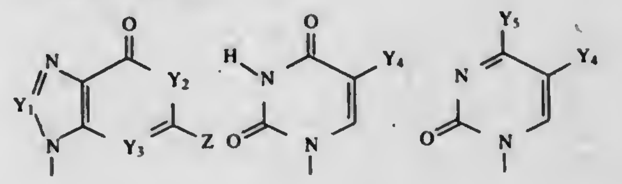


wherein

V is oxy, methylene, or thio,

R is hydrogen or C_1–C_4 alkyl,

B is a radical of the formula



wherein Y_1 is nitrogen, a CH group, a CCl group, a CBr group or a CNH_2 group; Y_2 and Y_3 are each independently nitrogen or a CH group; Y_4 is hydrogen, C_1–C_4 alkyl, C_2–C_4 alkoxy or halogen; Y_5 is amino or C_1–C_4 alkoxy;

and Z is hydrogen, halogen, or NH_2;

or a parmaceutically acceptable salt thereof.

5,616,703

SEPARATION OF CEPHALOSPORIN ISOMERS

Johannes Ludescher, Breitenbach; Harald Summer, Wörgl, and Siegfried Wolf, Brixlegg, all of Austria, assignors to Biochemie Gesellschaft m.b.H., Austria

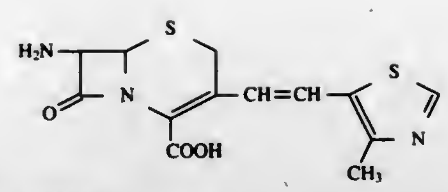
Filed Nov. 16, 1994, Ser. No. 340,580

Claims priority, application Austria, Nov. 17, 1993, 2329/93; Nov. 17, 1993, 2330/93

Int. Cl.[6] C07D *501/12*

U.S. Cl. 540—226 **11 Claims**

1. A process for depleting the E isomer of a mixture of the Z and E isomers of the compound of the formula



I

which comprises

a) subjecting a mixture of the Z and E isomers of the compound of formula I in amine salt form to crystallization and converting the crystallized product into a mixture of the Z and E isomers of the compound of formula I enhanced with the Z isomer or to pure Z isomer, or

b) subjecting a mixture of Z and E isomers of the compound of formula I to adsorption chromatography.

5,616,704

SOLUBILIZED ANIONIC POLYMERIZATION INITIATORS

David F. Lawson, Uniontown; Mark L. Stayer, Jr., Suffield; David Saffles, Massillon, and H. James Harwood, Stow, all of Ohio, assignors to Bridgestone Corporation, Tokyo, Japan

Continuation of Ser. No. 65,791, May 24, 1993, abandoned, which is a continuation-in-part of Ser. No. 955,969, Oct. 2, 1992, Pat. No. 5,332,810. This application Apr. 29, 1996, Ser. No. 639,980

Int. Cl.[6] C07D *295/02;* **C08F** *4/08*

U.S. Cl. 540—450 **5 Claims**

1. An anionic polymerization initiator soluble in acyclic alkane solvents, comprising:

a solubilized lithio amine having the formula

$(A)Li(SOL)_y$

where y is from about 1 to about 3; SOL is a solubilizing component selected from the group consisting of dienyl and vinyl aromatic polymers and copolymers having from 3 to about 300 polymerization units; and, A is a radical of a cycloalkylamine selected from the group consisting of azacyclotridecane, azacycloheptadecane, 1-azacycloheptadec-9-ene, and 1-azacycloheptadec-8-ene.

5,616,705

N-SUBSTITUTED AZABICYCLOHEPTANE DERIVATIVES, THEIR PREPARATION AND USE

Gerd Steiner, Kirchheim; Rainer Munschauer, Neustadt; Liliane Unger, Ludwigshafen; Hans-Jürgen Teschendorf, Dudenhofen, and Thomas Höger, Edingen-Neckarhausen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP94/03910, § 371 Date Apr. 19, 1996, § 102(e) Date Apr. 19, 1996, PCT Pub. No. WO95/15312, PCT Pub. Date Jun. 8, 1995

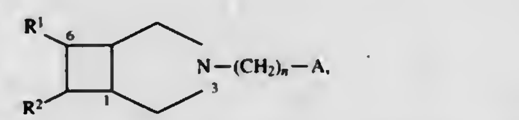
PCT Filed Nov. 26, 1994, Ser. No. 632,398

Claims priority, application Germany, Dec. 4, 1993, 43 41 402.8

Int. Cl.[6] C07D *209/52*

U.S. Cl. 544—105 **2 Claims**

1. An N-substituted 3-azabicyclo[3.2.0]heptane derivative of the formula I



I

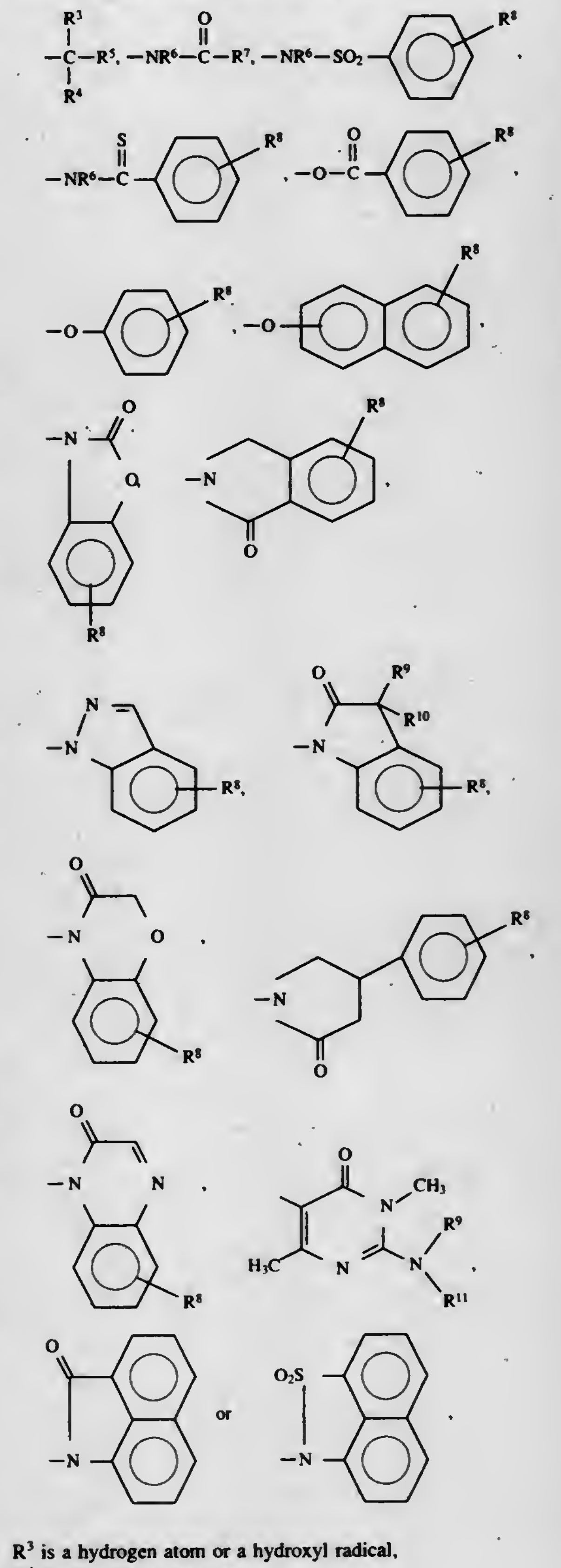
where

R^1 is a phenyl or thienyl group which is unsubstituted or mono- or disubstituted by halogen atoms or C_1–C_4-alkyl, trifluoromethyl, hydroxyl, C_1–C_4-alkoxy, amino, mono-methylamino, dimethylamino, cyano or nitro groups,

R^2 is a hydrogen atom or a phenyl group which is unsubstituted or substituted by halogen, methoxy, hydroxyl or amino,

n is the number 1, 2, 3 or 4,

A is a hydrogen atom or one of the radicals



R^3 is a hydrogen atom or a hydroxyl radical,

R^4 is a hydrogen atom or

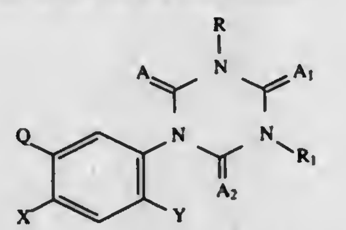
R^3 and R^4 together are an oxygen atom,
R^5 is a thienyl or naphthyl group which is unsubstituted or substituted by fluorine or chlorine,
R^6 is a hydrogen atom or a methyl group,
$R^7$is a phenyl group which is disubstituted by fluorine, chlorine, hydroxyl or methoxy or monosubstituted by amino, C_{1-4}-alkylamino or di-C_{1-4}-alkylamino or a thienyl, naphthyl, benzofuryl, benzothienyl, indolyl, N-methylindolyl or indenyl group which is unsubstituted or substituted by fluorine, chlorine or nitro or a C_3- to C_6-cycloalkyl group,
R^8 is hydrogen, fluorine, chlorine, C_{1-4}-alkyl, methoxy or amino,
R^9 is hydrogen or a methyl group and
R^{10} is hydrogen or a methyl group or
R^9 and R^{10}, together with the ring C atom, are a spirocyclopropane ring,
R^{11} is a phenyl or benzyl radical which is unsubstituted or substituted by fluorine or chlorine, or a cyano group,
and their salts with physiologically tolerable acids.

5,616,706
1-(3-HETEROCYCLYLPHENYL)-S-TRIAZINE-2,4,6-OXO OR THIOTRIONE HERBICIDAL AGENTS

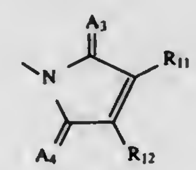
Alvin D. Crews, Jr., Voorhees; Philip M. Harrington, Mercer; Gary M. Karp, Princeton Jct.; Mark C. Manfredi, Hamilton, and Michael A. Guaciaro, Hightstown, all of N.J., assignors to American Cyanamid Company, Parsippany, N.J.

Filed Jun. 2, 1995, Ser. No. 458,211
Int. Cl.⁶ C07D *251/00*
U.S. Cl. 544—221 **7 Claims**

1. A compound having the structural formula



wherein
X and Y are each independently hydrogen, halogen, nitro, cyano, C_1–C_4alkyl, C_1–C_4haloalkyl, C_1–C_4alkoxy, C_1–C_4haloalkoxy or $S(O)_mR_2$;
m is an integer of 0, 1 or 2;
R_2 is C_1–C_4alkyl or C_1–C_4haloalkyl;
R is hydrogen, C_1–C_6alkyl, C_2–C_{12}alkoxyalkyl, C_3–C_{12}alkylcarbonylalkyl, C_3–C_{12}haloalkylcarbonylalkyl, C_3–C_{12}alkoxycarbonylalkyl, C_3–C_{12}haloalkoxycarbonylalkyl, C_3–C_6alkenyl, C_3–C_6alkynyl, an alkali metal,
phenyl optionally substituted with one to three halogen, C_1–C_4alkyl, C_1–C_4alkoxy or C_1–C_4 haloalkoxy groups, or
benzyl optionally substituted with one to three halogen, C_1–C_4alkyl, C_1–C_4alkoxy or C_1–C_4 haloalkoxy groups;
R_1 is hydrogen, C_3–C_6alkenyl, C_3–C_6alkynyl, cyano, C_1–C_{12}alkyl optionally substituted with one or more halogen atoms, or on4e cyano, $C(O)R_3$, $C(W)R_4$, $OC(O)R_5$, $CH_2OC(O)R_5$, OR_4, CH_2OR_4 or $CR_6(OR_7)_2$ group, or one phenyl group optionally substituted with one to three halogen, C_1–C_4 alkyl, C_1–C_4alkoxy or C_1–C_4haloalkoxy groups, or
phenyl optionally substituted with one to three halogen, C_1–C_4alkyl, C_1–C_4alkoxy or C_1–C_4 haloalkoxy groups;
R_3 is OH, OR_8, SR_8, or NR_9R_{10};
W is O, NOR_9, $NCOR_9$ or $NNHCONH_2$;
R_4, R_5 and R_6 are each independently hydrogen, C_1–C_4alkyl or C_1–C_4haloalkyl;
R_7 is C_1–C_4alkyl;
R_8 is C_1–C_6alkyl optionally substituted with C_1–C_4alkoxy, C_1–C_4alkylthio, halogen, hydroxy, C_3–C_6cycloalkyl, furyl or phenyl optionally substituted with one or more halogen, cyano, nitro, C_1–C_4 alkyl, C_1–C_4haloalkyl, C_1–C_4alkoxy or C_1–C_4 haloalkoxy groups,
C_3–C_6alkenyl optionally substituted with C_1–C_4alkoxy, halogen, C_3–C_6cycloalkyl or phenyl optionally substituted with one or more halogen, cyano, nitro, C_1–C_4alkyl, C_1–C_4haloalkyl, C_1–C_4alkoxy or C_1–C_4haloalkoxy groups,
C_3–C_6alkynyl optionally substituted with C_1–C_4alkoxy or halogen,
C_3–C_6cycloalkyl,
$N{=}C(R_4R_5)$, or
an alkali metal, alkaline earth metal, manganese, copper, zinc, cobalt, silver, nickel, ammonium or organic ammonium cation;
R_9 and R_{10} are each independently hydrogen,
C_1–C_6alkyl,
benzyl optionally substituted with one or more halogen, cyano, nitro, C_1–C_4alkyl, C_1–C_4 haloalkyl, C_1–C_4alkoxy or C_1–C_4haloalkoxy groups, or
phenyl optionally substituted with one or more halogen, cyano, nitro, C_1–C_4alkyl, C_1–C_4 haloalkyl, C_1–C_4alkoxy or C_1–C_4haloalkoxy groups;
Q is



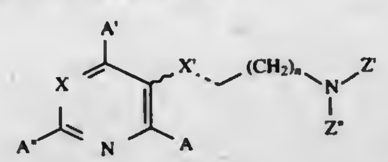
R_{11} and R_{12} are each independently hydrogen,
C_1–C_6alkyl optionally substituted with one or more halogen atoms, or
C_3–C_6cycloalkyl optionally substituted with one or more halogen atoms, and
when R_{11} and R_{12} are taken together with the atoms to which they are attached, they form a ring in which $R_{11}R_{12}$ is a C_2–C_5 alkylene group optionally interrupted by $S(O)_r$, and optionally substituted with one to three methyl groups or one or more halogen atoms, or $R_{11}R_{12}$ is represented by the structure: $—CR_{18}{=}CR_{19}—CR_{20}{=}CR_{21}—$ where R_{18}, R_{19}, R_{20} and R_{21} are each independently hydrogen, halogen or methyl,
A, A_1, A_2, A_3 and A_4 are each independently O or S; and r is an integer of 0, 1 or 2.

5,616,707
COMPOUNDS WHICH ARE USEFUL FOR PREVENTION AND TREATMENT OF CENTRAL NERVOUS SYSTEM DISORDERS

Peter A. Crooks, 3233 Raven Cir., Lexington, Ky. 40502; William S. Caldwell, 1270 Yorkshire Rd., Winston-Salem, N.C. 27106; Gary M. Dull, 1175 Sequoia Dr., Lewisville, N.C. 27023; Balwinder S. Bhatti, 605 Elk Lake Dr., Lexington, Ky. 40517; Niranjan M. Deo, 2150 Richmond Rd., Apt. #7, Lexington, Ky. 40502, and Alain Ravard, 700 Woodland Ave., #B 211, Lexington, Ky. 40508

Filed Jan. 6, 1995, Ser. No. 364,976
Int. Cl.⁶ C07D *237/02;213/02*
U.S. Cl. 544—242 **6 Claims**

2. A compound having the formula:



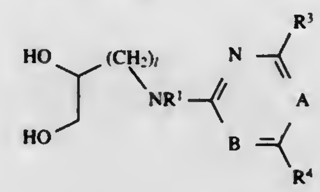
where X is nitrogen or carbon bonded to a substituent species wherein that species has a sigma m value of less than 0 to about −0.3 and greater than 0 to about 0.75;
n is an integer which ranges from 1 to 5; Z' and Z" individually represent hydrogen or alkyl containing one to five carbon atoms; A and A' represent hydrogen; A" represents hydrogen, methyl or ethyl; the dashed line in the structure represents a C—C triple bond; the wavy line in the structure represents C—C single bond; and X' represents C.

5,616,708
FUNGICIDAL SPIROHETEROCYCLIC COMPOUNDS

Waldemar F. A. Pfrengle, Selbersbach, Germany, assignor to Shell Research Limited, London, United Kingdom

Continuation of Ser. No. 235,936, May 2, 1994, Pat. No. 5,462,944. This application May 30, 1995, Ser. No. 454,084
Claims priority, application European Pat. Off., May 3, 1993, 93107131
Int. Cl.⁶ C07D *239/42*
U.S. Cl. 544—332 **7 Claims**

1. A compound of the formula:



in which
R^1 represents a hydrogen atom or an optionally substituted alkyl, cycloalkyl, haloalkyl, alkenyl, alkynyl, aryl or aralkyl group,
A represents a group CR^5 and B represents a nitrogen atom;
R^3, R^4 and R^5 each independently represent a hydrogen or halogen atom, a hydroxy or cyano group or an optionally substituted alkyl, alkenyl, alkynyl, haloalkyl, alkoxyalkyl, aralkyl, aryl, alkylamino, alkylthio or alkoxy group; and
l represents an integer from 1 to 3.

5,616,709
METHOD OF SYNTHESIS FOR 6,9-BIS[(2-AMINOETHYL)AMINO]BENZO[G]ISOQUINOLINE-5,10-DIONE AND ITS DIMALEATE SALT

Silvano Spinelli, Monza, and Roberto DiDomenico, Milan, both of Italy, assignors to Boehringer Mannheim GmbH, Monza, Italy

Division of Ser. No. 220,007, Mar. 28, 1994, Pat. No. 5,506,232. This application Jun. 7, 1995, Ser. No. 482,575
Int. Cl.⁶ C07D *419/14*
U.S. Cl. 546—101 **1 Claim**

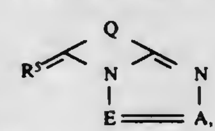
1. The compound 6,9-bis[(2-aminoethyl)amino]benzo[g]isoquinoline-5,10-dione or a physiologically acceptable salt thereof with a purity greater than 97%.

5,616,710
TRIAZOLOPYRIDINE DYES

Rüdiger Sens, Mannheim; Ernst Schefczik, Ludwigshafen; Helmut Reichelt, Neustadt, and Karl-Heinz Etzbach, Frankenthal, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

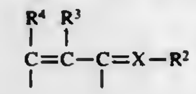
PCT No. PCT/EP95/00564, § 371 Date Aug. 19, 1996, § 102(e) Date Aug. 19, 1996, PCT Pub. No. WO95/22581, PCT Pub. Date Aug. 24, 1995
PCT Filed Feb. 15, 1995, Ser. No. 687,453
Claims priority, application Germany, Feb. 18, 1994, 44 05 167.0
Int. Cl.⁶ C09B *23/04;55/00;* **B41M** *5/38*
U.S. Cl. 546—119 **6 Claims**

1. A triazolopyridine dye of the formula I

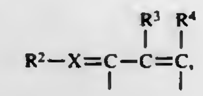


(I)

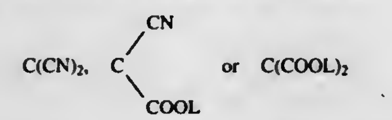
where
A is nitrogen,
E is a radical of the formula C-R^1, where R^1 is C_1–C_{20}-alkyl which is unsubstituted or substituted and may be interrupted by 1 to 4 oxygen atoms in ether functionality, unsubstituted or substituted phenyl, mercapto or unsubstituted or substituted C_1–C_{20}-alkylthio,
Q is a radical of the formula



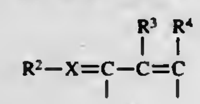
or



where
$R^2$is a 5- or 6-membered carbocyclic or heterocyclic radical which may be benzo-fused,
R^3 is C_1–C_4-alkyl which may be interrupted by an oxygen atom in ether functionality, C_1–C_4-haloalkyl, C_1–C_4-alkoxycarbonyl or unsubstituted or substituted phenyl,
R^4 is cyano, carbamoyl, carboxyl, C_1–C_4-alkoxycarbonyl or benzothiazolyl or R^3 and R^4 together are the remainder of a fused-on benzene ring and
X is CH or nitrogen, and
R^5 is oxygen or a radical of the formula



where L is in each case C_1–C_8-alkyl which may be interrupted by 1 or 2 oxygen atoms in ether functionality, or unsubstituted or substituted phenyl,
with the proviso that when
Q is a radical of the formula



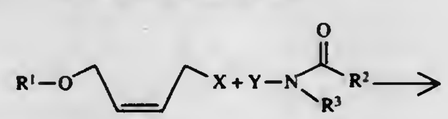
the two radicals A and E may also be mutually interchanged.

5,616,711
METHODS OF PRODUCING AMINOBUTENE DERIVATIVES

Hiroshi Ikawa; Hajime Matsumoto, both of Tokyo; Masakatsu Matsumoto, Sagamihara; Yasuo Sekine, Tokyo; Masato Nishimura, Tokyo, and Akihiko Hosoda, Tokyo, all of Japan, assignors to Fujirebio Inc., Tokyo, Japan

Filed Aug. 6, 1993, Ser. No. 102,819
Claims priority, application Japan, Aug. 7, 1992, 4-231498; Aug. 7, 1992, 4-231499; Sep. 30, 1992, 4-283575; Nov. 6, 1992, 4-321365
Int. Cl.⁶ C07C *233/00;* **C07D** *211/68;211/36;217/22*
U.S. Cl. 546—141 **24 Claims**

1. A method of producing an aminobutene derivative of formula (I), which comprises:
reacting a butene derivative of formula (II) with an amide derivative of formula (III):



(II) (III)

-continued

(I)

wherein R^1 represents hydrogen; a protective group for a hydroxyl group, an unsubstituted or substituted aromatic hydrocarbon group, or an unsubstituted or substituted heterocyclic group; X represents a hydroxyl group, a halogen atom, a sulfonyloxy group, an acyloxy group, an alkoxycarbonyloxy group, or a group which can form a cyclic sulfurous ester, sulfuric ester or carbonic acid ester in combination with R^1; Y represents an alkali metal, an alkaline earth metal, or hydrogen; R^2 represents hydrogen, an alkoxy group, an unsubstituted or substituted alkyl group selected from the group consisting of methyl, ethyl, propyl, butyl, chloromethyl, dichloromethyl, trichloromethyl, trifluoromethyl, benzyl, furfurylthiomethyl, furfurylsulfinylmethyl, and furfurylsulfonylmethyl, an unsubstituted or substituted aromatic hydrocarbon group, or an unsubstituted or substituted heterocyclic group, and R^3 represents hydrogen, an unsubstituted or substituted acyl group, an alkoxy-carbonyl group, sulfonyl group or a substituted alkyl group.

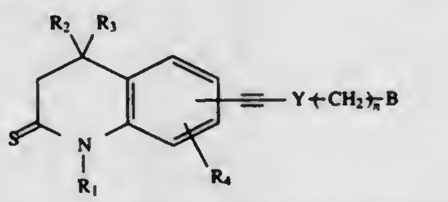
5,616,712
ACETYLENES DISUBSTITUTED WITH A PHENYL OR HETEROARYL GROUP AND A 2-THIO-1,2,3,4-TETRAHDROQUINOLINYL, 2-ALKYLTHIO-3,4-DIHYDROQUINOLINYL OR 2-ALKOXY-3,4-DIHYDROQUINOLINYL GROUP HAVING RETINOID-LIKE BIOLOGICAL ACTIVITY

Min Teng, Aliso Viejo; Richard L. Beard, Newport Beach; Diana Colon; Tien T. Duong, both of Irvine, and Roshantha A. Chandraratna, Mission Viejo, all of Calif., assignors to Allergan, Waco, Tex.

Filed May 16, 1995, Ser. No. 442,223
Int. Cl.^{6} C07D *215/36;215/227;* **A61K** *31/47*

U.S. Cl. 546—158 **19 Claims**

1. A compound of the formula



wherein R_1 is lower alkyl of 1 to 10 carbons or benzyl;

R_2 and R_3 are hydrogen, lower alkyl of 1–6 carbons, or halogen;

R_4 is hydrogen, lower alkyl of 1–6 carbons, halogen, OR_{11}, SR_{11}, $OCOR_{11}$, $SCOR_{11}$, NH_2, NHR_{11}, $N(R_{11})_2$, $NHCOR_{11}$ or $NR_{11}COR_{11}$;

Y is phenyl or a heteroaryl group selected from a group consisting of pyridyl, thienyl, furyl, pyridazinyl, pyrimidinyl, pyrazinyl, thiazolyl, imidazolyl and oxazolyl;

n is 0–5,

and B is COOH or a pharmaceutically acceptable salt thereof, $COOR_8$, or $CONR_9R_{10}$ where R_8 is an alkyl group of 1 to 10 carbons, or a cycloalkyl group of 5 to 10 carbons, or R_8 is phenyl or lower alkylphenyl, R_9 and R_{10} independently are hydrogen, an alkyl group of 1 to 10 carbons, or a cycloalkyl group of 5–10 carbons, or phenyl or lower alkylphenyl, R_{11} is lower alkyl, phenyl or lower alkylphenyl.

5,616,713
PROCESS OF PREPARING 2-HYDROXYMETHYL-3,5-DIMETHYL-4-METHOXYPYRIDINE

Shan-Yen Chou, Taipei; Tsai-Mien Huang, Changhua; Shyh-Fong Chen, and Hao Ku, both of Taipei, all of Taiwan, assignors to Development Center for Biotechnology, Taipei, Taiwan

Filed Jul. 22, 1996, Ser. No. 681,123
Int. Cl.^{6} C07D *213/12*

U.S. Cl. 546—250 **20 Claims**

1. A process of preparing 2-hydroxymethyl-3,5-dimethyl-4-methoxypyridine, which process comprises the following steps:

acylating 2-methyl-1-penten-1-alkoxy-3-one to obtain 2-alkoxycarbonyl-3,5-dimethyl-4-pyrone;

ammonolyzing said 2-alkoxycarbonyl-3,5-dimethyl-4-pyrone to obtain 2-alkoxycarbonyl-3,5-dimethyl-4(1H)-pyridone;

halogenating said 2-alkoxycarbonyl-3,5-dimethyl-4(1H)-pyridone to obtain 2-alkoxycarbonyl-4-halo-3,5- dimethylpyridine;

methoxylating said 2-alkoxycarbonyl-4-halo-3,5-dimethylpyridine to obtain 2-methoxycarbonyl-3,5-dimethyl-4methoxypyridine; and

reducing said 2-methoxycarbonyl-3,5-dimethyl-4-methoxypyridine to obtain 2-hydroxymethyl-3,5-dimethyl-4-methoxypyridine.

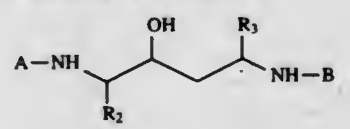
5,616,714
RETROVIRAL PROTEASE INHIBITING COMPOUNDS

Dale J. Kempf, Libertyville; Daniel W. Norbeck, Lindenhurst; Lynn M. Codacovi, Antioch; Hing L. Sham, Gurnee, and Steven J. Wittenberger, Mundelein, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Division of Ser. No. 270,210, Aug. 23, 1994, abandoned, which is a division of Ser. No. 121,673, Sep. 14, 1993, Pat. No. 5,354,866, which is a continuation of Ser. No. 777,626, Oct. 23, 1991, abandoned, which is a continuation-in-part of Ser. No. 746,020, Aug. 15, 1991, abandoned, which is a continuation-in-part of Ser. No. 616,170, Nov. 20, 1990, abandoned, which is a continuation-in-part of Ser. No. 518,730, May 9, 1990, Pat. No. 5,142,056, which is a continuation-in-part of Ser. No. 456,124, Dec. 22, 1989, abandoned, which is a continuation-in-part of Ser. No. 405,604, Sep. 8, 1989, abandoned, which is a continuation-in-part of Ser. No. 355,945, May 23, 1989, abandoned. This application Mar. 24, 1995, Ser. No. 410,260
Int. Cl.^{6} C07D *417/00*

U.S. Cl. 546—269.7 **10 Claims**

1. A compound of the formula:



wherein R_2 and R_3 are independently selected from C_3-to-C_7-cycloalkyl-C_1-to-C_6-alkyl and (C_6-monocyclic or C_9- or C_{10}-bicyclic)aryl-C_1-to-C_6-alkyl; and

(a) A is pyridyl-C_1-to-C_6-alkyl-R_9-C(O)-NH-CH(R_5)-C(O)- or (substituted-pyridyl)-C_1-to-C_6-alkyl-R_9-C(O)-NH-CH(R_5)-C(O)- wherein R_9 is -O-, -NH- or -N(C_1-to-C_6-loweralkyl)-, R_5 is C_1-to-C_6-loweralkyl and substituted-pyridyl is a pyridyl ring substituted with one or two substituents independently selected from C_1-to-C_6-loweralkyl, hydroxy, halo, amino, C_1-to-C_6-alkylamino, di-C_1-to-C_6-alkylamino, C_1-to-C_6-alkoxy, halo-C_1-to-C_6-alkyl, unsubstituted -C_3-to-C_7-cycloalkyl, unsubstituted (C_6-monocyclic or C_9- or C_{10}-bicyclic)aryl, unsubstituted (C_6-monocyclic or C_9- or C_{10}-bicyclic)aryl-C_1-to-C_6-alkyl,-COOH and -SO_3H and B is thiazolyl-C_1-to-C_6-alkyl-O-C(O)-, thiazolyl-C_1-to-C_6-alkyl-NH-C(O)-, thiazolyl-C_1-to-C_6-alkyl-N(C_1-to-C_6-loweralkyl)-C(O)-, (substituted-thiazolyl)-C_1-to-C_6-alkyl-O-C(O)-, (substituted-thiazolyl)-C_1-to-C_6-alkyl-NH-C(O)- or

(substituted-thiazolyl)-C_1-to-C_6-alkyl-N(C_1-to-C_6-loweralkyl)-C(O)- wherein substituted-thiazolyl is a thiazolyl ring substituted with one or two substituents independently selected from C_1-to-C_6-loweralkyl, hydroxy, halo, amino, C_1-to-C_6-alkylamino, di-C_1-to-C_6-alkylamino, C_1-to-C_6-alkoxy, halo-C_1-to-C_6-alkyl, unsubstituted -C_3-to-C_7-cycloalkyl, unsubstituted (C_6-monocyclic or C_9- or C_{10}-bicyclic)aryl, unsubstituted (C_6-monocyclic or C_9- or C_{10}-bicyclic)aryl-C_1-to-C_6-alkyl, -COOH and -SO_3H; or

(b) A is thiazolyl-C_1-to-C_6-alkyl-R_9-C(O)-NH-CH(R_5)-C(O)- or (substituted-thiazolyl)-C_1-to-C_6-alkyl-R_9-C(O)-NH-CH(R_5)-C(O)- wherein R_9 is -O-, -NH- or -N (C_1-to-C_6-loweralkyl)-, R_5 is C_1-to-C_6-loweralkyl and substituted-thiazolyl is a thiazolyl ring substituted with one or two substituents independently selected from C_1-to-C_6-loweralkyl, hydroxy, halo, amino, C_1-to-C_6-alkylamino, di-C_1-to-C_6-alkylamino, C_1-to-C_6-alkoxy, halo-C_1-to-C_6-alkyl, unsubstituted -C_3-to-C_7-cycloalkyl, unsubstituted (C_6-monocyclic or C_9- or C_{10}-bicyclic)aryl, unsubstituted (C_6-monocyclic or C_9- or C_{10}-bicyclic)aryl-C_1-to-C_6-alkyl, -COOH and -SO_3H and B is pyridyl-C_1-to-C_6-alkyl-O-C(O)-, pyridyl-C_1-to-C_6-alkyl-NH-C(O)-, pyridyl-C_1-to-C_6-alkyl-N(loweralkyl)-C(O)-, (substituted-pyridyl)-C_1-to-C_6-alkyl-O-C(O)-, (substituted-pyridyl)-C_1-to-C_6-alkyl-NH-C(O)- or (substituted-pyridyl)-C_1-to-C_6-alkyl-N(C_1-to-C_6-loweralkyl)-C(O)- wherein substituted-pyridyl is a pyridyl ring substituted with one or two substituents independently selected from C_1-to-C_6-loweralkyl, hydroxy, halo, amino, C_1-to-C_6-alkylamino, di-C_1-to-C_6-alkylamino, C_1-to-C_6-alkoxy, halo-C_1-to-C_6-alkyl, unsubstituted -C_3-to-C_7-cycloalkyl, unsubstituted (C_6-monocyclic or C_9- or C_{10}-bicyclic)aryl, unsubstituted (C_6-monocyclic or C_9- or C_{10}-bicyclic)aryl-C_1-to-C_6-alkyl, -COOH and -SO_3H; or

(c) A is thiazolyl-C_1-to-C_6-alkyl-O-C(O)-, thiazolyl-C_1-to-C_6-alkyl-NH-C(O)-, thiazolyl-C_1-to-C_6-alkyl-N(C_1-to-C_6-loweralkyl)-C(O)-, (substituted-thiazolyl)-C_1-to-C_6-alkyl-O-C(O)-, (substituted-thiazolyl)-C_1-to-C_6-alkyl-NH-C(O)- or (substituted-thiazolyl)-C_1-to-C_6-alkyl-N(C_1-to-C_6-loweralkyl)-C(O)- wherein substituted-thiazolyl is a thiazolyl ring substituted with one or two substituents independently selected from C_1-to-C_6-loweralkyl, hydroxy, halo, amino, C_1-to-C_6-alkylamino, di-C_1-to-C_6-alkylamino, C_1-to-C_6-alkoxy, halo-C_1-to-C_6-alkyl, unsubstituted -C_3-to-C_7-cycloalkyl, unsubstituted (C_6-monocyclic or C_9- or C_{10}-bicyclic)aryl, unsubstituted (C_6-monocyclic or C_9- or C_{10}-bicyclic)aryl-C_1-to-C_6-alkyl, -COOH and -SO_3H and B is pyridyl-C_1-to-C_6-alkyl-R_9-C(O)-NH-CH(R_5)-C(O)- or (substituted-pyridyl)-C_1-to-C_6-alkyl-R_9-C(O)-NH-CH(R_5)-C(O)- wherein R_9 is -O-, -NH- or -N(C_1-to-C_6-loweralkyl)-, R_5 is C_1-to-C_6-loweralkyl and substituted-pyridyl is a pyridyl ring substituted with one or two substituents independently selected from C_1-to-C_6-loweralkyl, hydroxy, halo, amino, C_1-to-C_6-alkylamino, di-C_1-to-C_6-alkylamino, C_1-to-C_6-alkoxy, halo-C_1-to-C_6-alkyl, unsubstituted -C_3-to-C_7-cycloalkyl, unsubstituted (C_6-monocyclic or C_9- or C_{10}-bicyclic)aryl, unsubstituted (C_6-monocyclic or C_9- or C_{10}-bicyclic)aryl-C_1-to-C_6-alkyl, -COOH and -SO_3H; or

(d) A is pyridyl-C_1-to-C_6-alkyl-O-C(O)-, pyridyl-C_1-to-C_6-alkyl-NH-C(O)-, pyridyl-C_1-to-C_6-alkyl-N(C_1-to-C_6-loweralkyl)-C(O)-, (substituted-pyridyl)-C_1-to-C_6-alkyl-O-C(O)-, (substituted-pyridyl)-C_1-to-C_6-alkyl-NH-C(O)- or (substituted-pyridyl)-C_1-to-C_6-alkyl-N(C_1-to-C_6-loweralkyl)-C(O)- wherein substituted-pyridyl is a pyridyl ring substituted with one or two substituents independently selected from C_1-to-C_6-loweralkyl, hydroxy, halo, amino, C_1-to-C_6-alkylamino, di-C_1-to-C_6-alkylamino, C_1-to-C_6-alkoxy, halo-C_1-to-C_6-alkyl, unsubstituted -C_3-to-C_7-cycloalkyl, unsubstituted (C_6-monocyclic or C_9- or C_{10}-bicyclic)aryl, unsubstituted (C_6-monocyclic or C_9- or C_{10}-bicyclic)aryl-C_1-to-C_6-alkyl, -COOH and -SO_3H and B is thiazolyl-C_1-to-C_6-alkyl-R_9-C(O)-NH-CH(R_5)-C(O)- or (substituted-thiazolyl)-C_1-to-C_6-alkyl-R_9-C(O)-NH-CH(R_5)-C(O)- wherein R_9 is -O-, -NH- or -N(C_1-to-C_6-loweralkyl)-, R_5 is -C_1-to-C_6-loweralkyl and substituted-thiazolyl is a thiazolyl ring substituted with one or two substituents independently selected from C_1-to-C_6-loweralkyl, hydroxy, halo, amino, C_1-to-C_6-alkylamino, di-C_1-to-C_6-alkylamino, C_1-to-C_6-alkoxy, halo-C_1-to-C_6-alkyl, unsubstituted -C_3-to-C_7-cycloalkyl, unsubstituted (C_6-monocyclic or C_9- or C_{10}-bicyclic)aryl, unsubstituted (C_6-monocyclic or C_9- or C_{10}-bicyclic)aryl-C_1-to-C_6-alkyl, -COOH and -SO_3H; or a pharmaceutically acceptable salt thereof.

5,616,715
DIHYDROPYRIDINE-3, 5-DICARBOXYLIC ACID ESTER DERIVATIVES

Kazuharu Tamazawa; Tadao Kojima, both of Saitama; Hideki Arima, Tokyo; Yukiyasu Murakami, Saitama; Yasuo Isomura, Tokyo; Minoru Okada, Tokyo; Toichi Takenaka, Tokyo, and Kiyoshi Takanobu, Saitama, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

Division of Ser. No. 238,537, May 5, 1994, Pat. No. 5,463,064, which is a division of Ser. No. 826,232, Jan. 23, 1992, Pat. No. 5,364,872, which is a continuation of Ser. No. 600,130, Oct. 17, 1990, abandoned, which is a continuation of Ser. No. 478,724, Feb. 9, 1990, abandoned, which is a continuation of Ser. No. 296,919, Jan. 11, 1989, abandoned, which is a continuation of Ser. No. 945,168, Dec. 22, 1986, abandoned, which is a continuation of Ser. No. 723,043, Apr. 15, 1985, abandoned. This application Jun. 19, 1995, Ser. No. 491,793
Claims priority, application Japan, Apr. 6, 1984, 59-114098; Apr. 16, 1984, 59-75998; Jul. 8, 1984, 59-165793
Int. Cl.^{6} C07D *211/90*

U.S. Cl. 546—278.4 **2 Claims**

1. A process of producing diastereoisomer A or a pharmaceutically acceptable acid addition salt thereof which comprises subjecting a mixture of diastereoisomers A and B of 2,6-dimethyl-4-(3-nitrophenyl)-1,4-dihydropyridine-3,5-dicarboxylic acid 3-(1-benzylpyrrolidin-3-yl) ester 5-methyl ester to column chromatography using silica gel as a carrier and a mixture of ethyl acetate and acetic acid as an eluent, and then separating the acetate of diastereoisomer A from the eluate, or treating the acetate with a base, or further treating the resulting diastereoisomer A with a pharmaceutically acceptable acid.

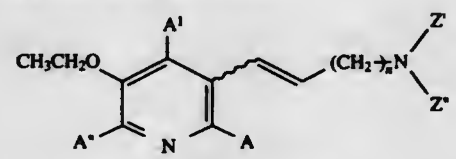
5,616,716
(3-(5-ETHOXYPYRIDIN)YL)-ALKENYAMINE COMPOUNDS

Gary M. Dull, 6025 Shallowford Rd., Lewisville, N.C. 27023; William S. Caldwell, 1270 Yorkshire Rd., Winston-Salem, N.C. 27106, and Craig H. Miller, 1564 Sharon Rd., Winston-Salem, N.C. 27103

Continuation-in-part of Ser. No. 364,979, Jan. 6, 1996. This application Apr. 23, 1996, Ser. No. 631,762
Int. Cl.^{6} C07D *213/02*

U.S. Cl. 546—300 **9 Claims**

1. A compound having the formula:



where n is an integer which ranges from 1 to 7; Z' and Z" individually represent hydrogen, methyl or isopropyl; A, A' and A" individually represent hydrogen, alkyl containing 1 to 7 carbon atoms, or halo; and the wavy line represents a cis (Z) or trans (E) form of the compound.

5,616,717

PROCESS FOR THE PREPARATION OF PURE ENANTIOMERS OF 1-(2-PYRIDYL)-2-CYCLOHEXYLETHYLAMINE

Karl G. Grozinger, Ridgefield, Conn., assignor to Boehringer Ingelheim Pharmaceuticals, Inc., Ridgefield, Conn.

Filed Apr. 20, 1995, Ser. No. 425,526

Int. Cl.⁶ C07D *211/26*

U.S. Cl. 546—329 **2 Claims**

1. A process for producing (+)-S or (−)-R-1-(2-pyridyl)-2-cyclohexylethylamine which comprises admixing 1-(S,R)-(2-pyridyl)-2-cyclohexylethylamine with (+)- or (−)-3-bromocamphor-8-sulfonic acid to produce a crystalline addition product, and admixing a solution of an alkali metal hydroxide or ammonium hydroxide with the crystalline addition product to produce (+)-S or (−)-R-1-(2-pyridyl)-2-cyclohexylethylamine.

5,616,718

2-CYANO-1-AMINOBENZENE COMPOUNDS

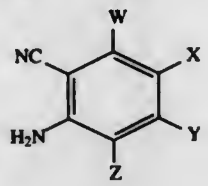
Robert N. Henrie, II, East Windsor; Clinton J. Peake, Trenton; Thomas G. Cullen, Milltown, all of N.J.; Walter H. Yeager, Yardley, Pa.; John W. Buser, North Brunswick; James J. Fiordeliso, Somerset, both of N.J., and John A. Dixson, Newtown, Pa., assignors to FMC Corporation, Philadelphia, Pa.

Division of Ser. No. 267,340, Jun. 28, 1994, Pat. No. 5,534,518, which is a continuation-in-part of Ser. No. 149,491, Nov. 9, 1993, abandoned, which is a continuation-in-part of Ser. No. 19,389, Feb. 18, 1993, abandoned. This application Apr. 20, 1995, Ser. No. 426,541

Int. Cl.⁶ C07D *213/26;339/06;327/04;323/02*

U.S. Cl. 546—330 **1 Claim**

1. A compound having the formula:



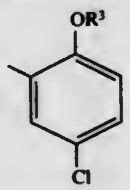
wherein

W is selected from hydrogen, halogen, lower alkyl, lower haloalkyl, or lower alkoxy;

X is selected from

(a) halogen;

(b) substituted aryl, wherein the substituents are selected from one or more halogens, lower alkyl, lower haloalkyl, lower alkoxy, lower alkylthio, lower alkylsulfonyl, formyl, lower alkoxycarbonyl, phenyl or phenyl substituted with one or more halogens or lower haloalkyl, phenoxy, or phenoxy substituted with one or more halogens, lower haloalkoxy, lower alkoxyalkyl, carboxy, cyano, nitro, aminocarbonyl, lower alkylcarbonylamino and, lower alkylsulfonylamino; or X is substituted phenyl of the formula



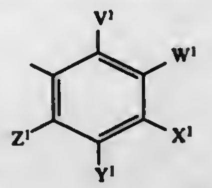
wherein R^3 is hydrogen; alkyl; tri(lower alkyl)silylalkyl; (4-halophenyl) lower alkyl; pentahalophenylalkyl; pyridin-2-ylalkyl; or 2-(4-alkylsulfonylphenoxy)ethyl;

(c) naphthyl;

(d) thienyl or thienyl substituted with halogen, lower alkyl, or haloalkyl;

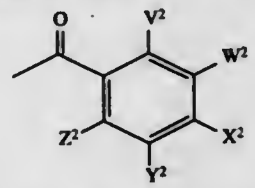
(e) an alkynyl of the formula:

wherein G is hydrogen, trimethylsilyl or



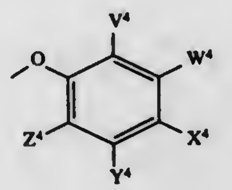
wherein V^1, W^1, X^1, Y^1, and Z^1 are independently selected from hydrogen, halogen, lower alkyl, lower haloalkyl, cyano, carboxy, lower alkoxycarbonyl, and aminocarbonyl;

(f) aroyl or substituted aroyl of the formula:



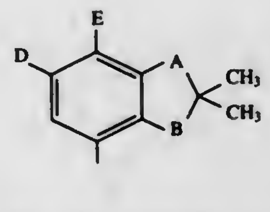
wherein V^2, W^2, X^2, Y^2, and Z^2 are independently selected from hydrogen, halogen, haloalkyl, cyano, carboxy, lower alkoxycarbonyl, and phenyl substituted with halogen or haloalkyl;

(g) substituted aryloxy of the formula:



wherein V^4, W^4, X^4, Y^4, and Z^4 are selected from hydrogen, halogen, or haloalkyl; and

(h) a benzo-fused oxygen-containing heterocycle of the formula:



wherein A and B are independently selected from oxygen, methylene, or carbonyl; with the proviso that at least one of A or B is oxygen; and wherein D is hydrogen, halogen, lower alkyl, lower haloalkyl; and E is hydrogen, hydroxy or lower alkoxy;

Y is hydrogen or fluorine;

Z is hydrogen;

with the proviso that when X is iodo, W is other than hydrogen; when X is bromo, W is other than hydrogen or methyl; and with the further proviso that when X is substituted phenyl or aryloxy, W is other than hydrogen.

5,616,719

PHOTOACTIVE INDICATOR COMPOUNDS

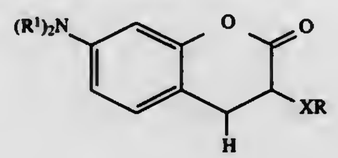
Dariush Davalian, San Jose; Rajendra Singh, Mountain View, and Edwin F. Ullman, Atherton, all of Calif., assignors to Behringwerke AG, Marburg, Germany

Division of Ser. No. 117,365, Sep. 3, 1993, abandoned. This application May 9, 1995, Ser. No. 438,154

Int. Cl.⁶ C07D *213/90;311/02;* **C07C** *255/00*

U.S. Cl. 546—334 **4 Claims**

1. A compound of the following formula:



wherein

R is an organic or organometallic group bound to X through an unsaturated carbon atom, a silicon atom, or a tin atom; and R^1 is hydrogen or alkyl; and

X is selenium or tellurium; and

wherein the remaining hydrogen atom on the carbon adjacent to the carbon to which XR is bound may be replaced by alkyl or alkylene substituents.

5,616,720

RETROVIRAL PROTEASE INHIBITING COMPOUNDS

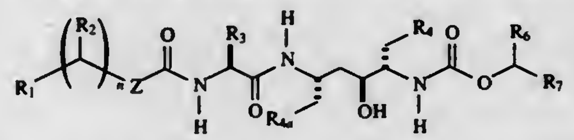
Dale J. Kempf, Libertyville; Daniel W. Norbeck, Crystal Lake; Hing L. Sham; Chen Zhao, both of Gurnee, all of Ill., and Daniel S. Reno, Kenosha, Wis., assignors to Abbott Laboratories, Abbott Park, Ill.

Division of Ser. No. 158,587, Dec. 2, 1993, abandoned, which is a continuation-in-part of Ser. No. 998,114, Dec. 29, 1992, abandoned, which is a continuation-in-part of Ser. No. 777,626, Oct. 23, 1991, abandoned, which is a continuation-in-part of Ser. No. 746,020, Aug. 15, 1991, abandoned, which is a continuation-in-part of Ser. No. 616,170, Nov. 20, 1990, abandoned, which is a continuation-in-part of Ser. No. 518,730, May 9, 1990, Pat. No. 5,142,056, which is a continuation-in-part of Ser. No. 456,124, Dec. 22, 1989, abandoned, which is a continuation-in-part of Ser. No. 405,604, Sep. 8, 1989, abandoned, which is a continuation-in-part of Ser. No. 355,945, May 23, 1983, abandoned. This application Apr. 6, 1995, Ser. No. 418,056

Int. Cl.⁶ C07D *277/30*

U.S. Cl. 548—204 **4 Claims**

1. A process for the preparation of a compound of the formula:



wherein R_1 is monosubstituted thiazolyl, monosubstituted oxazolyl, monosubstituted isoxazolyl or monosubstituted isothiazolyl wherein the substituent is selected from C_1-to-C_6-loweralkyl;

n is 1, 2 or 3;

R_2 is hydrogen or C_1-to-C_6-loweralkyl;

R_3 is C_1-to-C_6-loweralkyl;

R_4 and R_{4a} are independently selected from phenyl, thiazolyl and oxazolyl wherein the phenyl, thiazolyl or oxazolyl ring is unsubstituted or substituted with a substituent selected from

(i) halo,

(ii) C_1-to-C_5-loweralkyl,

(iii) hydroxy,

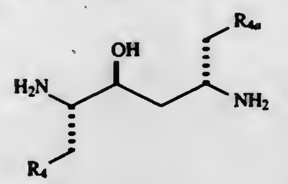
(iv) C_1-to-C_6-alkoxy or benzyloxy and

(v) C_1-to-C_6-thioalkoxy or benzyl-S-;

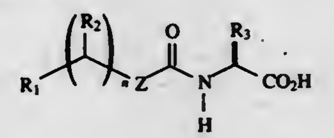
R_6 is hydrogen or C_1-to-C_6-loweralkyl;

R_7 is thiazolyl, oxazolyl, isoxazolyl or isothiazolyl wherein the thiazolyl, oxazolyl, isoxazolyl or isothiazolyl ring is unsubstituted or substituted with C_1-to-C_6-loweralkyl; and

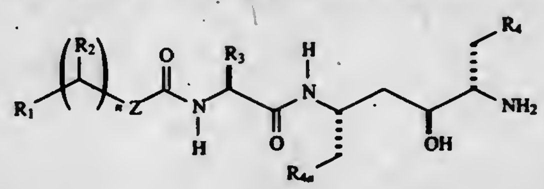
Z is absent, —O—, —S—, —CH_2— or —N(R_8)— wherein R_8 is C_1-to-C_6-loweralkyl, C_3-to-C_7-cycloalkyl, —OH or —NHR_{8a} wherein R_{8a} is hydrogen or C_1-to-C_6-loweralkyl; or a pharmaceutically acceptable salt thereof, comprising (a) reacting a compound of the formula:



wherein R_4 and R_{4a} are as defined above with Ti(OR****)$_4$ wherein R**** is C_1-to-C_6-loweralkyl, followed by reaction with a compound of the formula:



or an activated ester derivative thereof, wherein R_1, R_2, R_3, Z and n are as defined above to give a compound of the formula:



and (b) acylation of the product of step (a) with a compound of the formula (R_6)(R_7)CHOC(O)OL wherein L is an activating group for the acylation reaction and wherein R_6 and R_7 are defined as above.

5,616,721

PROCESS FOR PREPARING BENZOPYRAN COMPOUNDS

Graham Johnson; Neil Smith, both of West Sussex; Graham R. Geen, Essex; Inderjit S. Mann, Kent, all of England, and Vance Novack, Devon, Pa., assignors to SmithKline Beecham plc, England

PCT No. PCT/EP93/03257, § 371 Date May 26, 1995, § 102(e) Date May 26, 1995, PCT Pub. No. WO94/12492, PCT Pub. Date Jun. 9, 1994

PCT Filed Nov. 19, 1993, Ser. No. 446,666

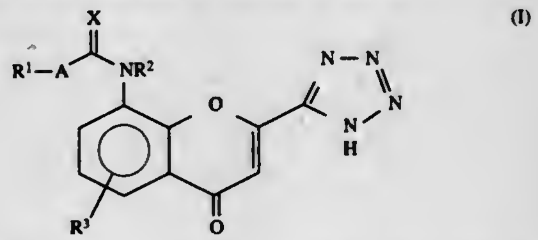
Claims priority, application United Kingdom, Nov. 27, 1992, 9224922

Int. Cl.⁶ C07D *405/04*

U.S. Cl. 548—253 **4 Claims**

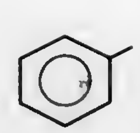
1. A process for preparing a compound of structure (I):

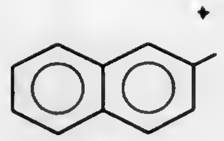
(I)

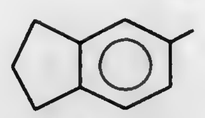


in which,

R^1 is C_{1-20}alkyl, C_{2-20}alkenyl, C_{2-20}alkynyl, or a group of structure:


(i)


(ii)


(iii)

each of which may be substituted by one or two substituents selected independently from C_{1-20}alkyl, C_{2-20}alkenyl or C_{2-20}alkynyl, up to 5 carbon atom(s) of which may optionally be replaced by oxygen atom(s), sulphur atom(s), halogen atom(s), nitrogen atom(s), benzene ring(s), thiophene ring(s), naphthalene ring(s), carbocyclic ring(s) of from 4 to 7 carbon atom(s), carbonyl group(s), carbonyloxy group(s), hydroxy group(s), carboxy group(s), azido group(s) and/or nitro group(s);

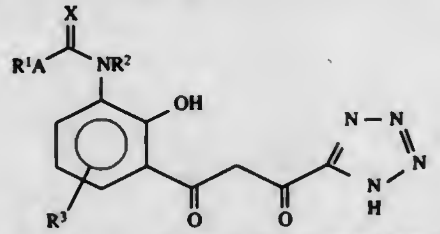
R^2 is hydrogen or C_{1-6}alkyl;

R^3 is hydrogen, halogen, hydroxy, nitro, a group of general formula —$COOR^4$ (wherein R^4 represents hydrogen or C_{1-6}alkyl), or C_{1-6}alkyl, C_{1-6}alkoxy or C_{1-6}alkylthio;

A is a single bond or a methylene, ethylene, trimethylene, tetramethylene, vinylene, propenylene, butenylene, butadienylene or ethynylene group optionally being substituted by one, two or three C_{1-10}alkyl and/or phenyl group(s); and

X is oxygen or sulphur;

or a salt, hydrate or solvate thereof, which comprises cyclization of a compound of structure (II)


(II)

or a salt, hydrate or solvate thereof, in which R^1, R^2, R^3, A and X are as described for structure (I), and optionally thereafter forming a salt, hydrate or solvate thereof.

5,616,722

ANTIMICROBIAL SOLUTION OF FORMALDEHYDE SUBSTITUTED HYDANTOIN AND PROCESS FOR PREPARATION

Thomas G. Schoenberg, Lemont; Richard J. Otterson, Olympia Fields, and Darrell J. Zehner, Plainfield, all of Ill., assignors to McIntyre Group, Ltd., University Park, Ill.

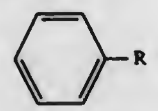
Filed Dec. 5, 1995, Ser. No. 567,150

Int. Cl.[6] C07D *233/78;233/72;233/74;* **A61K** *31/415*

U.S. Cl. 548—319.1 **13 Claims**

1. A method for preparing an antimicrobial solution of a formaldehyde substituted hydantoin comprising the steps of sequentially:

(a) dissolving a formaldehyde selected from the group consisting or paraformaldehyde and formalin in at least one liquid aromatic alcohol having the formula:



where R is selected from the group consisting of —CH_2OH, —OCH_2—OH, —OCH_2CH_2OH, —CH_2CH_2OH, —OC_3H_6OH, and —C_3H_6OH to provide a liquid medium containing at least about 2 weight percent 100 weight percent total formaldehyde on a calculated liquid medium basis;

(b) heating said liquid medium to a temperature in the range of about 35° to about 55° C. to provide a heated liquid medium;

(c) admixing into said heated liquid medium, a 5,5-disubstituted hydantoin wherein each such substituent is independently selected from the class consisting of phenyl and lower alkyl groups containing less than 7 carbon atoms per group to provide a reaction mixture, the amount of said hydantoin so admixed being sufficient to produce in said reaction mixture an initial calculated mole ratio of formaldehyde to said hydantoin of about 1:1 to about 3:1;

(d) further heating under autogenous conditions said reaction mixture to a temperature in the range of about 80° to about 110° C. and maintaining said temperature until the reaction between said paraformaldehdye and said hydantoin is substantially complete, thereby to attach methylol functional groups to at least one of the two nitrogen atoms of the ring of said hydantoin, the amount of free formaldehyde present in said resulting reaction mixture being below about 2 weight percent based on the total weight of said resulting reaction mixture; and

(e) thereafter cooling said resulting reaction mixture to provide said antimicrobial solution, said antimicrobial solution being characterized by:

(1) containing a condensation product of said paraformaldehyde and said hydantoin wherein methylol functional groups are attached to at least one of the two nitrogen atoms of the ring of said hydantoin; and

(2) having the capacity to inhibit and/or retard the growth of microorganisms when an effective antimicrobial amount of said antimicrobial solution is subsequently included in a medium capable of supporting growth of said microorganisms.

5,616,723

PROCESS FOR THE PREPARATION OF 3-AMINO-5-METHYLPYRAZOLE

Jürgen Muhr, Alfter, and Marcel Feld, Köln, both of Germany, assignors to Hüls Aktiengesellschaft, Marl, Germany

Continuation of Ser. No. 224,476, Apr. 7, 1994, abandoned. This application Mar. 6, 1996, Ser. No. 611,282

Claims priority, application Germany, May 5, 1993, 43 14 851.4

Int. Cl.[6] C07D *231/12*

U.S. Cl. 548—371.4 **8 Claims**

1. A method of preparing 3-amino-5methylpyrazole which comprises reacting an alkali metal salt of cyanoacetone with hydrazine, a hydrazinium salt or hydrazinium hydrate.

5,616,724

FUSED PYRROLO[2,3-C]CARBAZOLE-6-ONES

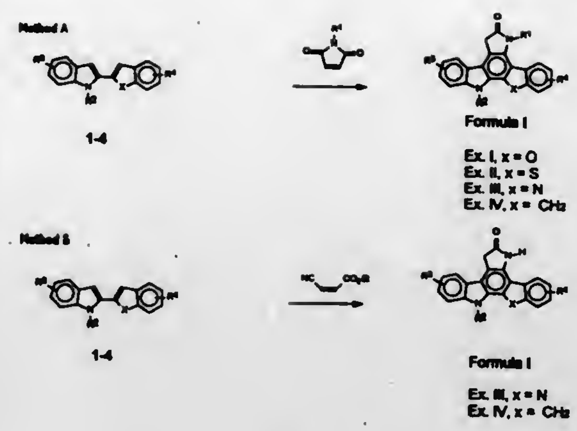
Robert L. Hudkins, Chester Springs; James L. Diebold, Norristown, both of Pa., and Ernest Knight, Jr., Wilmington, Del., assignors to Cephalon, Inc., West Chester, Pa.

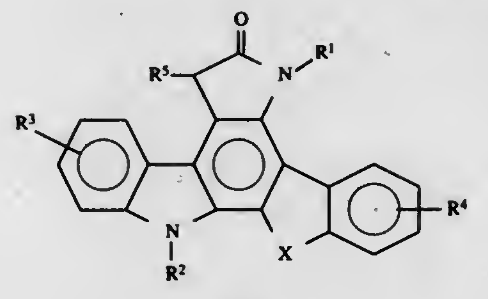
Filed Feb. 21, 1996, Ser. No. 604,474

Int. Cl.[6] C07D *487/14;487/04;* **A61K** *31/40*

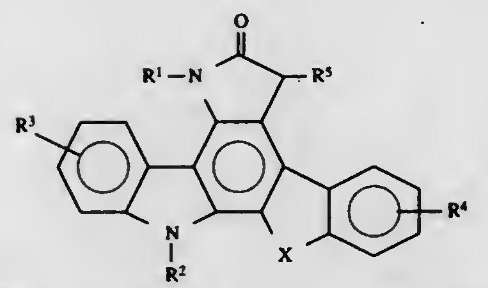
U.S. Cl. 548—417 **16 Claims**

1. A fused pyrrolo[2,3-c]carbazole-6-one represented by a formula selected from the group consisting of:




I

and


II

wherein:

a) R^1 is selected from the group consisting of H, alkyl of 1–4 carbons substituted or unsubstituted aryl, arylalkyl, heteroaryl, heteroarylalkyl; C(=O)R^9, where R^9 is alkyl of 1–4 carbons or aryl; $(CH_2)_nOR^9$, where n is an integer of 1–4; OR^{10}, where R^{10} is H or alkyl of 1–4 carbons; $(CH_2)_nOR^{14}$, where R^{14} is the residue of an amino acid after the hydroxyl group of the carboxyl group is removed; OR^{14}, NR^7R^8; $(CH_2)_nNR^7R^8$, and $O(CH_2)_nNR^7R^8$; and either
(1) R^7 and R^8 independently are H or alkyl of 1–4 carbons; or
(2) R^7 and R^8 are combined together to form a linking group of the general formula —$(CH_2)_2$—X^1—$(CH_2)_2$—, where X^1 O, S or CH_2;

b) R^2 is selected form the group consisting of H, SO_2R^9, CO_2R^9, C(=O)R^9, alkyl of 1–8 carbons, alkenyl of 1–8 carbons, alkynyl of 1–8 carbons, and a monosaccharide of 5–7 carbons, wherein each hydroxyl group of said monosaccharide is independently selected from the group consisting of unsubstituted hydroxyl and a replacement moiety replacing said hydroxyl group selected from the group consisting of H, alkyl of 1–4 carbons, alkylcarbonyloxy of 2–5 carbons, and alkoxy of 1–4 carbons; wherein either
1) each alkyl of 1–8 carbons, alkenyl of 1–8 carbons, or alkynyl of 1–8 carbons is unsubstituted; or
2) each alkyl of 1–8 carbons, alkenyl of 1–8 carbons, or alkynyl of 1–8 carbons independently is substituted with 1–3 groups selected from the group consisting of aryl of 6–10 carbons, heteroaryl, F, Cl, Br, I, CN, NO_2, OH, OR^9, $O(CH_2)_nNR^7R^8$, $OCOR^9$, $OCONHR^9$, O-tetrahydropyranyl, NH_2, NR^7R^8, $NR^{10}COR^9$; $NR^{10}CO_2R^9$, $NR^{10}CONR^7R^8$, NHC(=NH)NH_2, $NR^{10}SO_2R^9$; $S(O)_yR^{11}$, wherein R^{11} is H, alkyl of 1–4 carbons, aryl of 6–10 carbons, or heteroaryl, and y is 1 or 2; SR^{11}, CO_2R^9, $CONR^7R^8$, CHO, COR^9, CH_2OR^7, CH_2OR^9, CH=$NNR^{11}R^{12}$, CH=NOR^{11}, CH=NR^9, CH=NNHCH(N=NH)NH_2; $SO_2NR^{12}R^{13}$, wherein either
(1a) R^{12} and R^{13}, independently, are H, alkyl of 1–4 carbons, aryl of 6–10 carbons, or heteroaryl; or
(2a) R^{12} and R^{13} are combined together to form a —$(CH_2)_2$—X^1—$(CH_2)_2$ linking group;
$PO(OR^{11})_2$, NHR^{14}, $NR^{10}R^{14}$, OR^{14}, and a monosaccharide of 5–7 carbons wherein each hydroxyl group of said monosaccharide is independently selected from the group consisting of unsubstituted hydroxyl and a replacement moiety replacing said hydroxyl group selected from the group consisting of H, alkyl of 1–4 carbons, alkylcarbonyloxy of 2–5 carbons, and alkoxy of 1–4 carbons;

c) each R^3 and R^4, independently, is selected from the group consisting of H, aryl of 6–10 carbons, heteroaryl, F, Cl, Br, I, CN, CF_3, NO_2, OH, OR^9, $O(CH_2)_nNR^7R^8$, $OCOR^9$, $OCONHR^9$, NH_2, $(CH_2)_nOR^9$, $(CH_2)_nOR^{10}$, $(CH_2)_nOR^{14}$, OR^{14}, NHR^{14}, NR^7R^8, $NR^7(CH_2)_nNR^7R^8$, $NR^{10}COR^9$, $NR^{10}CONR^7R^8$, SR^{11}, $S(O)_yR^{11}$, CO_2R^9, COR^9, $CONR^7R^8$, CHO, CH=NOR^{11}, CH=NR^9, CH=$NNR^{11}R^{12}$, $(CH_2)_nSR^9$, $(CH_2)_nS(O)_yR^9$; CH_2SR^{15}, where R^{15} is alkyl of 1–4 carbons; $CH_2S(O)_yR^{14}$, $(CH_2)_nNR^7R^8$, $(CH_2)_nNHR^{14}$, alkyl of 1–8 carbons, alkenyl of 1–8 carbons, and alkynyl of 1–8 carbons; and either
1) each alkyl of 1–8 carbons, alkenyl of 1–8 carbons or alkynyl of 1–8 carbons is unsubstituted; or
2) each alkyl of 1–8 carbons, alkenyl of 1–8 carbons, or alkynyl of 1–8 carbons is independently substituted as described in b)2) above;

d) R^5 is selected from the group consisting of H, alkyl of 1–8 carbons, alkenyl of 1–8 carbons, and alkynyl of 1–8 carbons; and either
1) each alkyl, alkenyl, or alkenyl group is unsubstituted; or
2) each alkyl, alkenyl, or alkynyl group is substituted with 1–3 groups selected from the group consisting of F, Cl, Br, I, CN, CF_3, NO_2, OH, OR^9, $O(CH_2)_nNR^7R^8$, $OCOR^9$, $OCONHR^9$, NH_2, $(CH_2)_nOR^9$, $(CH_2)_nOR^{14}$, NR^7R^8, $NR^7(CH_2)_nNR^7R^8$, $NR^{10}COR^9$, $NR^{10}CONR^7R^8$, SR^{11}, $S(O)_yR^{11}$, CO_2R^9, COR^9, $CONR^7R^8$, CHO, CH=NOR^{11}, CH=NR^9, CH=$NNR^{11}R^{12}$, $(CH_2)_nSR^9$, $(CH_2)_nS(O)_yR^9$, CH_2SR^{15}, $CH_2S(O)_yR^{14}$, $(CH_2)_nNR^7R^8$, and $(CH_2)_nNHR^{14}$;

e) X is selected from the group consisting of —N—, —O—, —S—, —S(=O)—, —S(=O)$_2$—, alkylene of 1–3 carbons, —C(=O)—, —C(R^2)=C(R^2)—, —$(CR^2)_2$—, —CH=CH—, —CH(OH)—CH(OH)—, —C(=NOR^{11})—, —C(OR^{11})(R^{11})—, —C(=O)CH(R^{15})—, —CH(R^{15})C(=O)—; —CH_2—Z—, —Z—CH_2—, —CH_2ZCH_2—, where Z is selected from the group consisting of —C(OR^{11})(R^{11})—, O, S, C(=O), and NR^{11}; and alkylene of 1–3 carbons substituted with a group selected from the group consisting of one R^5 substituent group, SR^{10}, OR^{10}, OR^{14}, R^{15}, phenyl, naphthyl, and arylalkyl of 7–14 carbons.

5,616,725

PYRROLO[3,4-C]PYRROLE SYNTHESIS

John S. Zambounis, Murten; Zhimin Hao, Marly, and Abul Iqbal, Arconciel, all of Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

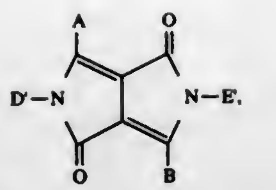
Division of Ser. No. 319,406, Oct. 6, 1994, Pat. No. 5,484,943. This application Oct. 11, 1995, Ser. No. 541,004

Claims priority, application Switzerland, Oct. 13, 1993, 3079/93; Jun. 29, 1994, 2074/94; Jun. 29, 1994, 2075/94; Jun. 29, 1994, 2076/94

Int. Cl.[6] C07D *487/04*

U.S. Cl. 548—453 **7 Claims**

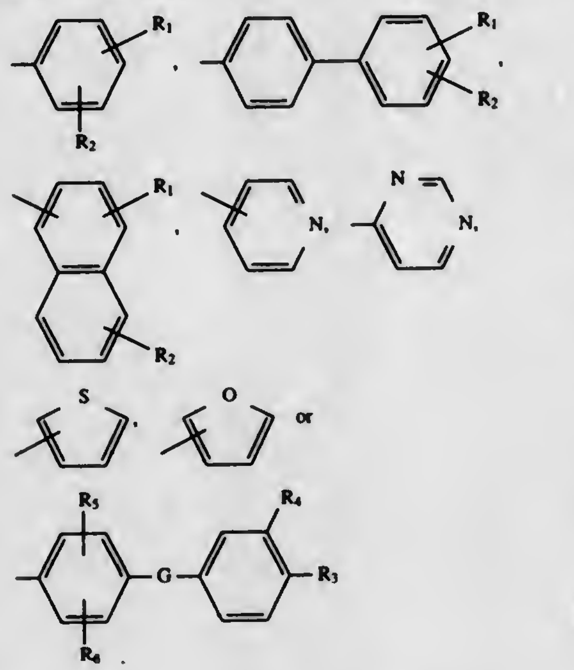
1. A process for the preparation of a pyrrolo[3,4-c]pyrrole of formula



(VII)

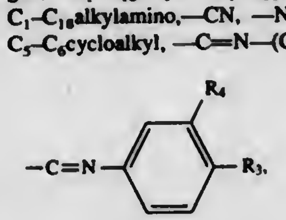
wherein

A and B are each independently of the other a group of formula



wherein

R_1 and R_2 are each independently of the other hydrogen, halogen, C_1–C_{18}alkyl, C_1–C_{18}alkoxy, C_1–C_{18}alkylmercapto, C_1–C_{18}alkylamino,—CN, —NO_2, -phenyl, trifluoromethyl, C_5–C_6cycloalkyl, —C=N—(C_1–C_{18}alkyl),

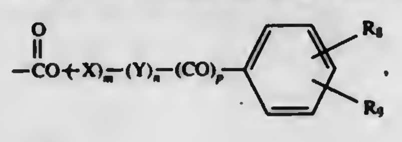


imidazolyl, pyrrazolyl, triazolyl, piperazinyl, pyrrolyl, oxazolyl, benzoxazolyl, benzothiazolyl, benzimidazolyl, morpholinyl, piperidinyl or pyrrolidinyl,

G is —CH_2—, —$CH(CH_3)$—, —$C(CH_3)_2$—, —CH=N—, —N=N—, — O—, —S—, —SO—, —SO_2— or —NR_7—,

R_3 and R_4 are each independently of the other hydrogen, halogen, C_1–C_6alkyl, C_1–C_{18}alkoxy or —CN, R_5 and R_6 are each independently of the other hydrogen, halogen or C_1–C_6alkyl and R_7 is hydrogen or C_1–C_6alkyl,

D' and E' are each independently of the other a group of formula

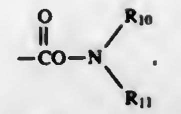


(II)

$$-\overset{\overset{\displaystyle O}{\|}}{C}O\!-\!(X)_m\!-\!(Z)_r\!-\!Q \quad \text{(III)}$$

or

-continued



(IV)

and D' may also be hydrogen, and in formulae II, III and IV

m, n and p are each independently of one another 0 or 1,

X is C_1–C_{14}alkylene or C_2–C_8alkenylene,

Y is a group —V—$(CH_2)_q$—,

Z is a group —V—$(CH_2)_r$—,

V is C_3–C_6cycloalkylene,

q is an integer from 1 to 6, and

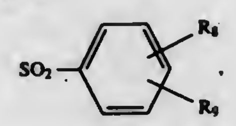
r is an integer from 0 to 6,

R_8 and R_9 are each independently of the other hydrogen, C_1–C_6alkyl, C_1–C_4alkoxy, halogen, CN, NO_2, unsubstituted phenyl or phenoxy or phenyl or phenoxy which are substituted by C_1–C_4alkyl, C_1–C_4alkoxy or halogen,

Q is hydrogen, CN, $Si(R_8)_3$,

is a group $C(R_{12})(R_{13})(R_{14})$, wherein R_{12}, R_{13} and R_{14} are halogen,

a group



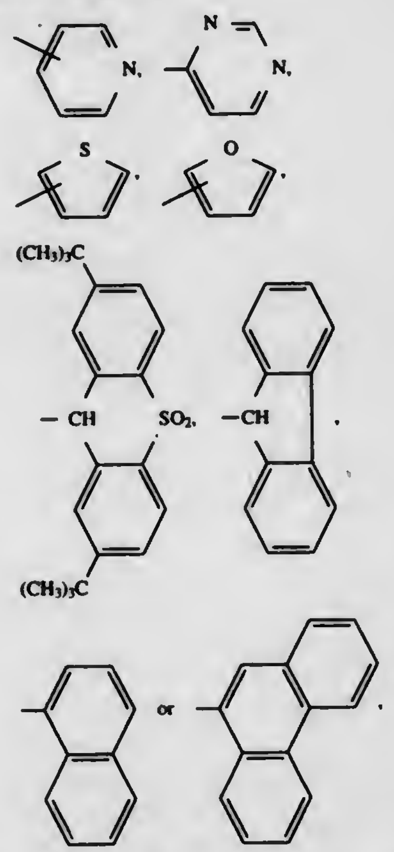
wherein R_8 and R_9 are as defined above,

a group SO_2R_{15} or SR_{15}, wherein R_{15} is C_1–C_4alkyl,

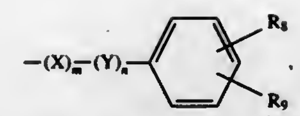
a group $CH(R_{16})_2$, wherein R_{16} is unsubstituted phenyl or phenyl which is substituted by C_1–C_4alkyl, C_1–C_4alkoxy or halogen,

or

a group of formula

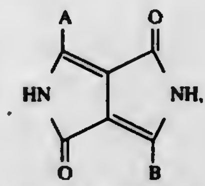


R_{10} and R_{11} are each independently of the other hydrogen, C_1–C_{18}alkyl a group



wherein X, Y, R_8, R_9, m and n are as defined above, or R_{10} and R_{11}, together with the linking nitrogen atom, form a pyrrolidinyl, piperidinyl or morpholinyl radical,

which process comprises reacting a pyrrolo[3,4-c]pyrrole of formula



(VIII)

wherein A and B are as defined above,

in the desired molar ratio with a dicarbonate of formula

E'-O-E' (IX)

or with a trihaloacetate of formula

$(R_{17})_3$C-E' (X)

or with a 1:1 mixture of a dicarbonate of formula IX and a dicarbonate of formula

D'-O-D' (XI)

or with a 1:1 mixture of a trihaloacetate of formula X and a trihaloacetate of formula

$(R_{17})_3$C-D' (XII),

or with an azide of formula

E'N_3 (XIII),

which may also be used in a 1:1 mixture with

D'N_3 (XIV)

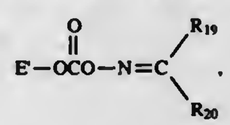
or with a carbonate of formula

E'-OR_{18} (XV),

which may also be used in a 1:1 mixture with

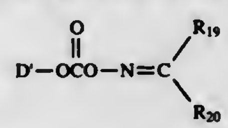
D'-OR_{18} (XVI)

or with an alkylidene-iminooxyformate of formula



(XVII)

which may also be used in a 1:1 mixture with



(XVIII)

wherein D' and E' are each as defined above, R_{17} is chloro, fluoro or bromo, R_{18} is C_1–C_4alkyl or unsubstituted phenyl or phenyl which is substituted by halogen, C_1–C_4alkyl, C_1–C_4alkoxy or —CN, R_{19} is —CN or —$COOR_{18}$, and R_{20} is unsubstituted phenyl or phenyl which is substituted by halogen, C_1–C_4alkyl, C_1–C_4alkoxy or —CN, in an aprotic organic solvent and in the presence of a base as catalyst, conveniently in the temperature range from 0° to 400° C., preferably from 20° to 200° C., for 2 to 80 hours, to form the pyrrolo[3,4-c]pyrrole of formula (VII);

and then isolating, and optionally purifying, said pyrrolo[3,4c]pyrrole.

5,616,726
OPTICALLY ACTIVE AMINOALCOHOL DERIVATIVES AND METHOD OF PRODUCING SAME

Masaru Mitsuda, Takasago; Shigeo Hayashi, Kobe; Junzo Hasegawa, Akashi; Noboru Ueyama; Takehisa Ohashi, both of Kobe, and Masakatsu Shibasaki, Mitaka, all of Japan, assignors to Kaneka Corporation, Osaka, Japan

PCT No. PCT/JP94/01049, § 371 Date Jun. 21, 1995, § 102(e) Date Jun. 21, 1995, PCT Pub. No. WO95/01323, PCT Pub. Date Jan. 12, 1995

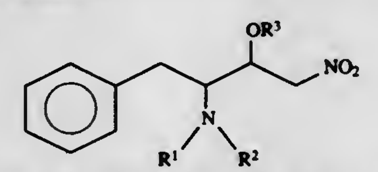
PCT Filed Jun. 29, 1994, Ser. No. 392,826

Claims priority, application Japan, Jun. 29, 1993, 5-159597; Feb. 24, 1994, 6-052829

Int. Cl.^{6} C07C *215/28*

U.S. Cl. 548—475 24 Claims

1. An 3-amino-1-nitro-4-phenyl-2-butanol derivative of the general formula (1)



(1)

wherein R^1 and R^2 each independently represents a hydrogen atom or an amino group protecting group and R^3 represents a hydrogen atom or a hydroxy group protecting group.

5,616,727
PROCESS FOR PURIFYING 1-[N²-((S)-ETHOXYCARBONYL)-3-PHENYLPROPYL)-N⁶-TRIFLUOROACETYL]-L-LYSYL-L-PROLINE (LISINOPRIL (TFA) ETHYL ESTER

Matthias Kottenhahn, and Karlheinz Drauz, both of Freigericht, Germany, assignors to Degussa Aktiengesellschaft, Germany

Filed Mar. 18, 1996, Ser. No. 616,885

Int. Cl.^{6} C07D *207/20*

U.S. Cl. 548—533 20 Claims

1. A process for purifying a 1-[N^2-((S)-ethoxycarbonyl)-3-phenylpropyl)-N^6-trifluoroacetyl]-1-lysyl-1-proline (I) raw product obtained by reductive amination, by means of two extraction steps with organic solvent and crystallization from methyl-tert. butyl ether, comprising

i) treating the raw product in a first extraction step with a two-phase system of water-solvent whose aqueous phase is adjusted to a pH between 0 and 3.5 and retaining a resulting aqueous phase therefrom;

ii) adjusting the resulting aqueous phase with an alkalinizing compound to a pH between 3.5 and 6.3 and treating said aqueous phase with an organic solvent or solvent mixture non-miscible with water in a second extraction step and retaining a resulting solvent phase therefrom; and

iii) crystallizing 1-[N^2-((S)-ethoxycarbonyl)- 3-phenylpropyl)-N^6-trifluoroacetyl]-1-lysyl-1-proline (I) from said resulting solvent phase with addition of methylcycloxexane.

5,616,728

ORGANIC CHARGE TRANSFER COMPLEX

Harald Müller, München, Germany, and Yoshinobu Ueba, Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

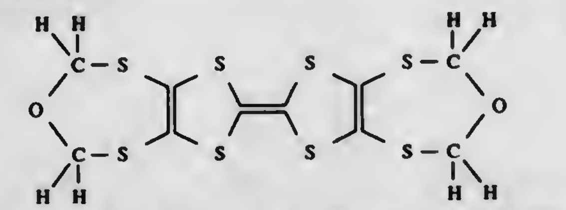
Continuation of Ser. No. 195,028, Feb. 14, 1994, abandoned. This application Oct. 6, 1995, Ser. No. 540,154

Claims priority, application Japan, Feb. 12, 1993, 5-024490

Int. Cl.[6] C07D *339/06;* **C07C** *50/06*

U.S. Cl. 549—11 **6 Claims**

1. An organic charge transfer complex comprising an electron donor and an electron acceptor, said electron donor is represented by formula (1):

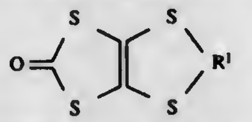


(1)

said electron donor being produced by a process comprising:

subjecting 1,3,4,6-tetrathiapentalene-2,5-dione to a ring opening reaction to produce 1,3-dithiol-2-one-4,5-dithiolate dianion;

reacting said 1,3-dithiol-2-one-4,5-dithiolate dianion with a compound containing a divalent organic group selected from the consisting of $-CH_2-O-CH_2-$ or $-CH_2-S-CH_2-$, to produce a precursor represented by formula (4):



(4)

wherein R^1 represents $-CH_2-O-CH_2-$ or $-CH_2-S-CH_2-$; and

coupling two molecules of said precursor to produce said electron donor;

and said electron acceptor is tetracyanoquinodimethane.

5,616,729

ENHANCED CHEMILUMINESCENCE FROM 1,2-DIOXETANES THROUGH ENERGY TRANSFER TO TETHERED FLUORESCERS

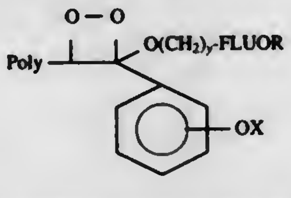
Arthur P. Schaap, and Hashem Akhavan-Tafti, both of Detroit, Mich., assignors to Board of Governors of Wayne State University, Detroit, Mich.

Continuation-in-part of Ser. No. 887,139, Jul. 17, 1986. This application Dec. 27, 1988, Ser. No. 289,837

Int. Cl.[6] C07D *311/82;219/00;417/00;* **C07H** *3/00*

U.S. Cl. 549—223 **14 Claims**

1. A dioxetane compound of the formula:



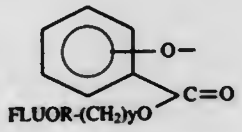
wherein Poly is a spirofused polycyclic alkylene group containing 6 to 30 carbon atoms and optionally containing atoms selected from the group consisting of oxygen and nitrogen in place of a carbon atom,

wherein FLUOR is a fluorescent substituent containing group wherein the fluorescent substituent exhibits fluorescence between 400 and 900 nanometers,

wherein y is an integer between 1 and 14, and

wherein X is a leaving group selected from the group consisting of hydroxyl, alkyl or aryl carboxyl ester, inorganic oxyacid salt, alkyl or aryl silyloxy and oxygen pyranoside and wherein aryl is a single ring, which when removed by an activating agent produces an oxide intermediate of the dioxestane compound which spontaneously decomposes to form light because of FLUOR and carbonyl containing molecules of the formulae

Poly=O and



5,616,730

PROCESS FOR PREPARING SUCCINIC ANHYDRIDE

Joerg-Dietrich Jentsch, Mülheim; Georg Martin, Düsseldorf, and Eberhard Zirngiebl, Köln, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jun. 6, 1995, Ser. No. 468,586

Claims priority, application Germany, Jul. 8, 1994, 44 24 069.4

Int. Cl.[6] C07D *307/60*

U.S. Cl. 549—233 **9 Claims**

1. A process for the preparation of succinic anhydride (SA) which comprises catalytically hydrogenating in a semi-batch or continuous procedure maleic anhydride (MA) with hydrogen in the liquid phase wherein

the starting material, based upon total weight of MA and SA is composed of at least 5% of MA and up to 95% SA, at a temperature of 125° C. to 140° C. and at a H_2 pressure from 20 to 130 bar; and wherein

0.01 to 10% by weight of catalyst, based upon MA, is initially charged with the SA.

5,616,731

PHOTOCHEMICAL LABELLING OF NUCLEIC ACIDS WITH DIGOXIGENIN REAGENTS AND THEIR USE IN GENE PROBE TEST SYSTEMS

Antonius Löbberding, Wuppertal; Gamal K. Mikhail, Odenthal, and Wolfgang Springer, Wuppertal, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 86,600, Jul. 1, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 468,452

Claims priority, application Germany, Jul. 7, 1992, 42 22 254.0

Int. Cl.[6] C07D *493/04;493/06*

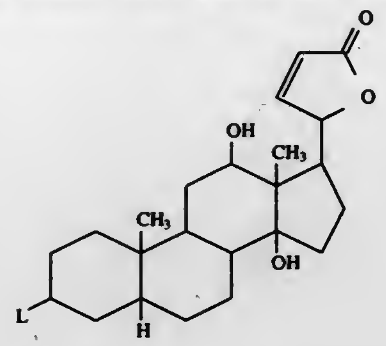
U.S. Cl. 549—282 **3 Claims**

1. A labeling reagent of the formula:

Dig—S—Fu

wherein

Dig represents a digoxigenin derivative of the formula:



in which

L represents COO—, S—, NH— or O—;

S represents a spacer selected from the group consisting of spacers of the formulae:

$-\overset{R}{\overset{|}{N}}\!\left[(CH_2)_x-\overset{R}{\overset{|}{N}}\right]_y$; or $-O\left[(CH_2)_x-O\right]_y$

in which

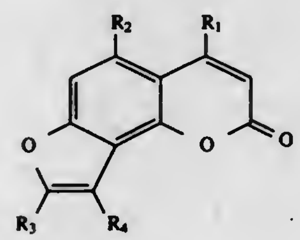
R represents H, alkyl or alkoxy each having 1 to 7 carbon atoms, or aryl;

x represents a number between 2 and 7; and

y represents a number between 3 and 10;

or a combination of such spacers; and

Fu represents a furocoumarin derivative selected from the group consisting of angelicin derivatives of the formula:

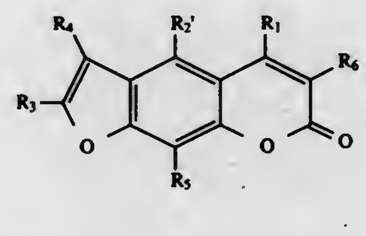


in which

R_1, R_2 and R_3 independently represent H or alkyl having 1 to 7 carbon atoms; and

R_4 represents H, alkyl having 1 to 7 carbon atoms and optionally substituted with hydroxyl, alkoxy having 1 to 7 carbon atoms, amino, halogen, or N-phthalimido;

and psoralen derivatives of the formula:



in which

R_1, R_3 and R_4 are as indicated above; and

R_6 represents H or alkyl having 1 to 7 carbon atoms; and

R_2, and R_5 independently represent H, hydroxyl, carboxyl, carbo-C_1–C_7-alkoxy or alkoxy having 1 to 7 carbon atoms.

5,616,732

INTERMEDIATES FOR DIFLUOROPROSTACYCLINS AND METHODS FOR THEIR PRODUCTION

Yasushi Matsumura; Takashi Nakano; Mayumi Makino, and Yoshitomi Morizawa, all of Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

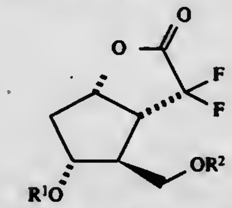
Division of Ser. No. 390,316, Feb. 17, 1995, Pat. No. 5,538,995. This application Feb. 13, 1996, Ser. No. 600,824

Claims priority, application Japan, Feb. 17, 1994, 6-20450; Mar. 17, 1994, 6-46853; Apr. 8, 1994, 6-71097; Apr. 11, 1994, 6-71989; Apr. 19, 1994, 6-80641; Nov. 17, 1994, 6-283857

Int. Cl.[6] C07D *307/935;307/937*

U.S. Cl. 549—305 **13 Claims**

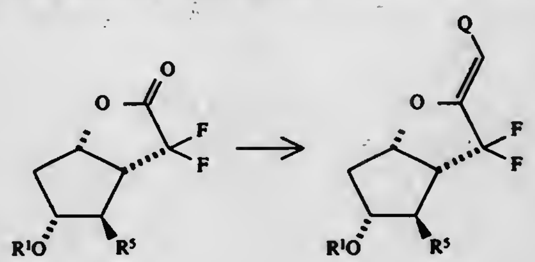
1. A difluorolactone of the following formula (I):



(I)

wherein each of R^1 and R^2 which are independent of each other, is a hydrogen atom or a protecting group for a hydroxyl group.

2. A process for producing a compound of the following formula (XV), which comprises introducing an α-chain moiety to a compound of the following formula (XII):



(XII) (XV)

wherein Q is a substituted or unsubstituted C_{1-10} alkyl group, a substituted or unsubstituted C_{1-10} alkenyl group, a substituted or unsubstituted C_{1-10} alkynyl group, a substituted or unsubstituted C_{3-8} cycloalkyl group, a substituted or unsubstituted aralkyl group, or a substituted or unsubstituted aryl group, R^1 is a hydrogen atom or a protecting group for a hydroxyl group, R^5 is $-CH_2OR^2$ or $-A-CH(OR^3)-R$, wherein A is an ethylene group, a vinylene group, or an ethynylene group, R is a substituted or unsubstituted C_{1-10} alkyl group, a substituted or unsubstituted C_{1-10} alkenyl group, a substituted or unsubstituted C_{1-10} alkynyl group, a substituted or unsubstituted C_{3-8} cycloalkyl group, a substituted or unsubstituted aralkyl group, or a substituted or unsubstituted aryloxy group, and each of R^2 and R^3 which are independent of each other, is a hydrogen atom or a protecting group for a hydroxyl group.

5,616,733

PREPARATION METHOD FOR 2-COUMARANONE

Jean-Claude Vallejos, Paris; Alain Perrard, Sainte Foy les Lyon; Yani Christidis, Paris, and Pierre Gallezot, Lyons, all of France, assignors to Societe Francaise Hoechst, Puteaux, France

Filed Jun. 7, 1995, Ser. No. 472,400

Claims priority, application France, Jun. 22, 1994, 94 07651

Int. Cl.[6] C07D *307/78*

U.S. Cl. 549—307 **21 Claims**

1. A process for preparing 2-coumaranone, comprising:

(1) reacting glyoxylic acid with cyclohexanone using an amount of cyclohexanone from approximately stoichimetric to a slight excess relative to said glyoxylic acid, in a solvent having a boiling point of less than 150° C.; and

(2) dehydrogenating the resultant reaction products over a dehydrogenation catalyst deposited on an inert solid support in vapor phase using a supporting gas.

5,616,734

PROCESS FOR THE CATALYTIC OXIDATION OF AROMATIC COMPOUNDS

Wolfgang A. Herrmann, Freising; Joao D. G. Correia, München; Richard Fischer, Frankfurt; Waldemar Adam, Würzburg, all of Germany; Jianhua Lin, Singapore, Singapore; Chantu R. Saha-Möller, Würzburg, Germany, and Masao Shimizu, Ibaraki, Japan, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Filed Jan. 25, 1995, Ser. No. 378,231

Claims priority, application Germany, Jan. 27, 1994, 44 02 333.2; Jun. 6, 1994, 44 19 799.3

Int. Cl.[6] C07D *311/74;* **C07C** *50/10;50/04*

U.S. Cl. 549—406 **15 Claims**

1. A process for the oxidation of electron-rich aromatic compounds, which comprises oxidizing an aromatic ring of electron-rich C_6–C_{22}-aryl compounds and their derivatives in the presence of a catalyst of the formula I

$$R^1{}_aRe_bO_c \quad \text{(I),}$$

where a is from 1 to 6, b is from 1 to 4 and c is from 1 to 14 and the sum of a, b and c is in accordance with the valence of from 5 to 7 of the rhenium, with the proviso that c is not greater than 3·b, and where R^1 is identical or different and is an aliphatic hydrocarbon radical having from 1 to 10 carbon atoms, an aromatic hydrocarbon radical having from 6 to 10 carbon atoms or an arylalkyl radical having from 7 to 9 carbon atoms, with the radicals R^1 being able, if desired, to be identically or differently substituted independently of one another and, in the case of σ-bonded radicals, at least one hydrogen atom still being bonded to the carbon atom in the α position, and a peroxide-containing compound.

5,616,735

RECOVERY OF TOCOPHEROLS

Tracy K. Hunt, Kankakee, Ill., assignor to Henkel Corporation, Plymouth Meeting, Pa.

Continuation of Ser. No. 180,592, Jan. 13, 1994, abandoned, which is a continuation of Ser. No. 103,628, Aug. 6, 1993, abandoned. This application Sep. 20, 1995, Ser. No. 531,366

Int. Cl.[6] C07D *311/72*

U.S. Cl. 549—413 **11 Claims**

1. A process for recovery of tocopherols from a fatty mixture comprised of fatty acids and tocopherols, said process comprising:

pre-esterifying free fatty acids present in said mixture with a higher alcohol selected from the group consisting of primary and secondary mono-alkanols having at least five carbon atoms and removing higher alcohol and by-product water by volatilization thereof, wherein said higher alcohol is essentially immiscible with water,

transesterifying fatty acid esters present in said mixture with a lower alkanol in the presence of a basic catalyst, and

distilling alkyl fatty acid esters from said mixture after incapacitation of said basic catalyst.

5,616,736

METHOD OF PREPARING CYCLIC FORMALS

Hubert H. Thigpen, Corpus Christi, Tex., assignor to Hoechst Celanese Corporation, Somerville, N.J.

Filed Feb. 4, 1994, Ser. No. 191,689

Int. Cl.[6] C07D *317/10;317/12*

U.S. Cl. 549—430 **6 Claims**

1. A method of preparing a cyclic formal by reacting alkylene glycol with formaldehyde in the presence of a catalyst selected from the group consisting of phosphoric acid, sulfuric acid, methane sulfonic acid, benzene sulfonic acid, paratoluene sulfonic acid, naphthalin sulfonic acid, ion exchange resins, ion exchange fibers, ion exchange membranes, zeolite, and silica alumina, comprising:

(a) supplying alkylene glycol and formaldehyde to a reaction vessel provided with a vapor-liquid contact zone at the upper part of the vessel;

(b) allowing vapor to generate from the reaction mixture, said vapor containing the cyclic formal;

(c) passing the vapor through the vapor-liquid contact zone to form a condensate, said condensate containing the cyclic formal;

(d) refluxing part of the condensate into the vapor-liquid contact zone; and

(e) removing the remainder of the condensate from the vapor-liquid contact zone as a distillate, cyclic formal product, wherein the distillation occurs in the absence of ethylene glycol or the formation of formic acid.

5,616,737

STEREOSELECTIVE PREPARATION OF (–) 3A,6,6,9A-TETRAMETHYL-PERHYDRONAPHTHO[2,1-B]FURAN

Johannes Grimmer, Ludwigshafen, and Christoph Martin, Mannheim, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

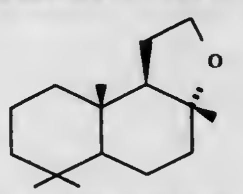
Filed Jul. 3, 1996, Ser. No. 674,914

Int. Cl.[6] C07D *307/92*

U.S. Cl. 549—458 **9 Claims**

1. A process for the stereoselective preparation of (–)3a,6,6,9a-tetramethylperhydronaphtho[2,1-b]furan of the formula Ia

(Ia)



by dehydration and cyclization of decahydro-2-hydroxy-2,5,5,8-tetramethyl-1-naphthaleneethanol using solid acidic catalysts, wherein the decahydro-2-hydroxy- 2,5,5,8-tetramethyl-1-naphthaleneethanol is heated in the molten state at from 80° to 200° C. in the presence of from 10 to 100% by weight, based on the diol, of an active acidic aluminum oxide commercially supplied for (preparative) column chromatography.

5,616,738

N-(3-HYDROXY-4-PIPERIDINYL)(DIHYDROBENZOFURAN, DIHYDRO-2-H-BENZOPYRAN OR DIHYDROBENZODIOXIN)CARBOXAMIDE DERIVATIVES

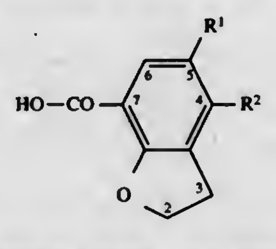
Georges H. P. Van Daele, Turnhout, and Frans M. A. Van den Keybus, Essen, both of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

Division of Ser. No. 301,825, Sep. 7, 1994, Pat. No. 5,552,553, which is a division of Ser. No. 489,419, Mar. 6, 1990, Pat. No. 5,374,637, which is a continuation-in-part of Ser. No. 326,941, Mar. 22, 1989, abandoned. This application Mar. 31, 1995, Ser. No. 414,673

Int. Cl.[6] C07D *307/87*

U.S. Cl. 549—467 **2 Claims**

1. A chemical intermediate of the formula:



a salt or a stereochemically isomeric form thereof, wherein:

R^1 represents halo, C_{1-6}alkylsulfonyl, or aminosulfonyl; and

R^2 represents amino, mono- or di(C_{1-6}alkyl)amino, arylC_{1-6}alkylamino, or C_{1-6}alkylcarbonylamino.

5,616,739

METHOD OF PREPARING TAXANE DERIVATIVES

Jean-Manuel Mas, Villeurbanne, and Viviane Massonneau, Ecully, both of France, assignors to Rhone-Poulenc Rorer, S.A., Antony, France

PCT No. PCT/FR93/00967, § 371 Date May 3, 1995, § 102(e) Date May 3, 1995, PCT Pub. No. WO94/07877, PCT Pub. Date Apr. 14, 1994

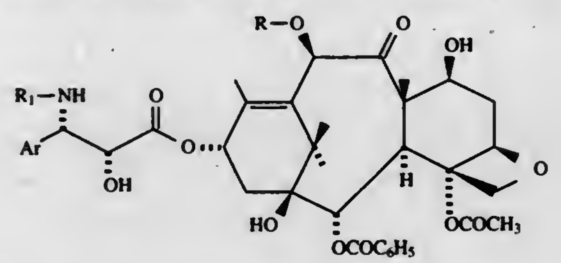
PCT Filed Oct. 4, 1993, Ser. No. 411,692

Claims priority, application France, Oct. 5, 1992, 92 11741

Int. Cl.[6] C07D *305/14*

U.S. Cl. 549—510 **21 Claims**

1. Process for preparing taxane derivatives of formula:



in which:

R represents a hydrogen atom or an acetyl radical, and R_1 represents a benzoyl radical or a radical R_2—O—CO— in which R_2 represents:

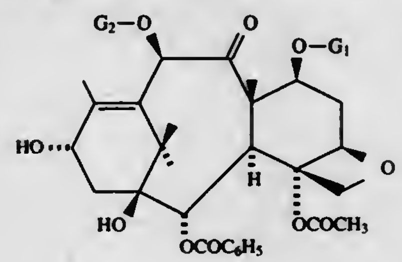
an unbranched or branched alkyl radical containing 1 to 8 carbon atoms, an alkenyl radical containing 2 to 8 carbon atoms, an alkynyl radical containing 3 to 8 carbon atoms, a cycloalkyl radical containing 3 to 6 carbon atoms, a cycloalkenyl radical containing 4 to 6 carbon atoms or a bicycloalkyl radical containing 7 to 10 carbon atoms, these radicals being optionally substituted with at least one substituent selected from halogen atoms and hydroxyl radicals, alkyloxy radicals containing 1 to 4 carbon atoms, dialkylamino radicals in which each alkyl portion contains 1 to 4 carbon atoms, piperidino or morpholino radicals, 1-piperazinyl radicals (optionally substituted at position 4 with an alkyl radical containing 1 to 4 carbon atoms or with a phenylalkyl radical in which the alkyl portion contains 1 to 4 carbon atoms), cycloalkyl radicals containing 3 to 6 carbon atoms, cycloalkenyl radicals containing 4 to 6 carbon atoms, phenyl, cyano or carboxyl radicals or alkyloxycarbonyl radicals in which the alkyl portion contains 1 to 4 carbon atoms,

or a phenyl radical optionally substituted with at least one atom or radical selected from alkyl radicals containing 1 to 4 carbon atoms or alkyloxy radicals containing 1 to 4 carbon atoms,

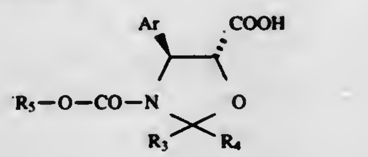
or a saturated or unsaturated 5- or 6-membered nitrogenous heterocyclic radical optionally substituted with at least one alkyl radical containing 1 to 4 carbon atoms, the cycloalkyl, cycloalkenyl or bicycloalkyl radicals can be optionally substituted with at least one alkyl radical containing 1 to 4 carbon atoms, and

Ar represents a phenyl or α- or β-naphthyl radical optionally substituted with at least one atom or radical selected from halogen including fluorine, chlorine, bromine, iodine atoms and alkyl, alkenyl, alkynyl, aryl, arylalkyl, alkoxy, alkylthio, aryloxy, arylthio, hydroxyl, hydroxyalkyl, mercapto, formyl, acyl, acylamino, aroylamino, alkoxycarbonylamino, amino, alkylamino, dialkylamino, carboxyl, alkoxycarbonyl, carbamoyl, dialkylcarbamoyl, cyano and trifluoromethyl radicals, the alkyl radicals and alkyl portions of the other radicals contain 1 to 4 carbon atoms, and that the alkenyl and alkynyl radicals contain 3 to 8 carbon atoms and the aryl radicals are phenyl or α- or β-naphthyl radicals, comprising

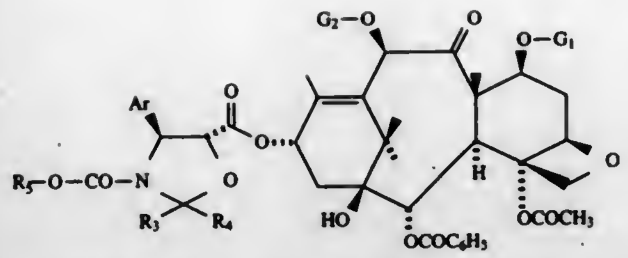
esterifying a protected 10-deacetylbaccatin III or baccatin III derivative of formula:



in which G_1 and, where appropriate, G_2 represent a group protecting the hydroxyl function, by means of an acid of formula:

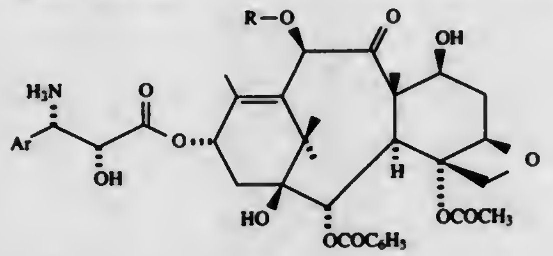


in which Ar is defined as above, R_3 and R_4, which may be identical or different, represent a hydrogen atom or an alkyl radical containing 1 to 4 carbon atoms or an alkenyl radical containing 2 to 4 carbon atoms, or an aralkyl radical in which the alkyl portion contains 1 to 4 carbon atoms and the aryl portion represents a phenyl radical optionally substituted with at least one alkoxy radical containing 1 to 4 carbon atoms, or an aryl radical representing a phenyl radical optionally substituted with at least one alkoxy radical containing 1 to 4 carbon atoms, or alternatively R_3 and R_4, together with the carbon atom to which they are linked, form a 4- to 7-membered ring, and R_5 represents an alkyl radical containing 1 to 4 carbon atoms substituted with at least one chlorine atom, or an activated derivative of this acid, to obtain a product of formula:



in which Ar, R_3, R_4, R_5, G_1 and G_2 are defined as above,

b) replacing the groups protecting the hydroxyl and amino functions of the product obtained by hydrogen atoms to obtain a product of formula:



in which Ar and R are defined as above, then

c) treating the product thereby obtained with a reagent which enables a substituent R_1 to be introduced on the amino function, and

d) isolating the product obtained.

5,616,740

PROCESS FOR MAKING 9-DEOXOTAXANE COMPOUNDS

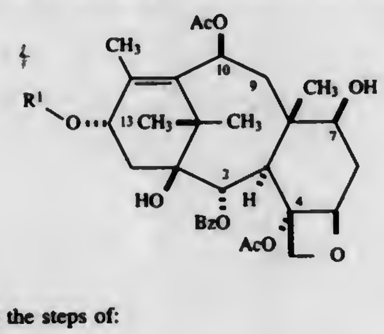
Larry L. Klein, Lake Forest; Clinton M. Yeung, Skokie, and Leping Li, Gurnee, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Division of Ser. No. 208,509, Mar. 9, 1994, Pat. No. 5,440,056, which is a continuation-in-part of Ser. No. 46,678, Apr. 14, 1993, Pat. No. 5,352,806, which is a continuation-in-part of Ser. No. 914,720, Jul. 16, 1992, abandoned, which is a continuation-in-part of Ser. No. 870,509, Apr. 17, 1992, abandoned. This application May 11, 1995, Ser. No. 439,334

Int. Cl.⁶ C07C *305/14*

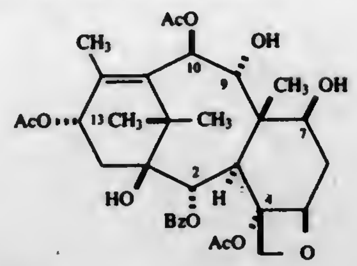
U.S. Cl. 549—510 **13 Claims**

1. A process for preparing a compound of the formula:

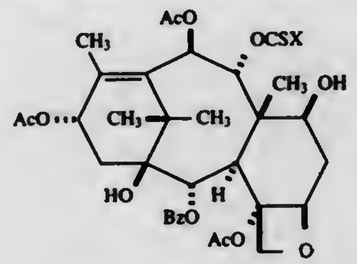


comprising the steps of:

(a) treating a compound of the formula:

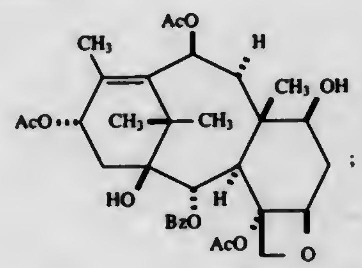


with lithium hexamethyldisilazide, carbon disulfide and methyl iodide to give a compound of the formula:

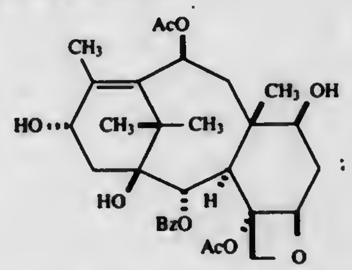


wherein X is methyl;

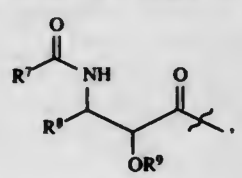
(b) treating said methyl xanthate with a trisubstituted tin reagent or tris(trimethylsilyl)silane to give a deoxygenated compound of the formula:



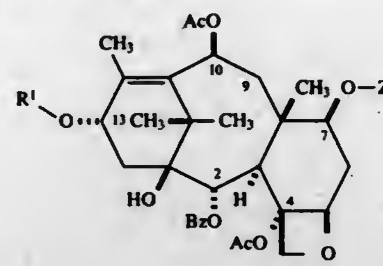
(c) deacetylating in the 13-position using methyllithium to give a compound of the formula:



(d) protecting the 7-position and then reacting the 13-hydroxy group with side chain precursor R^1—Y where Y is a leaving group and R^1 is alkanoyl or a radical of the formula:

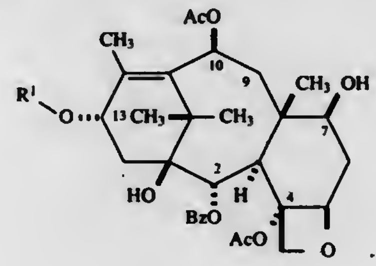


in which R^7 is hydrogen, alkyl, phenyl, substituted phenyl, alkoxy, substituted alkoxy, amino, substituted amino, phenoxy or substituted phenoxy; R^8 is hydrogen, alkyl, hydroxyalkyl, alkoxyalkyl, aminoalkyl, phenyl, substituted phenyl, α-naphthyl, β-naphthyl or heteroaryl; and R^9 is hydrogen, alkanoyl, substituted alkanoyl or aminoalkanoyl, to give a compound of the formula:



wherein Z is an hydroxy protecting group and R^1 is as defined above; and

(e) removing the Z-protecting group to give a compound of the formula:



5,616,741

PROCESS FOR THE PREPARATION OF GLYCINE-CONJUGATED BILE ACIDS

Antonio Bonaldi, Chiuduno; Egidio Molinari, Longone al Segrino, and Aldo Roda, Bologna, all of Italy, assignors to Erregierre Industria Chimica S.p.A., S. Paolo D'Argon, Italy

Division of Ser. No. 364,241, Dec. 27, 1994, which is a continuation-in-part of Ser. No. 32,282, Mar. 17, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 468,665

Claims priority, application Italy, Aug. 4, 1992, MI92A1924

Int. Cl.⁶ C07J *9/00;41/00*

U.S. Cl. 552—554 **12 Claims**

1. A process for the preparation of a glycine-conjugated bile acid of general formula (I):

$$Y\text{—}NH\text{—}CH_2\text{—}COOH \quad (I)$$

wherein Y is the acyl radical of a bile acid selected from the group consisting of: ursodeoxycholic, chenodeoxycholic, lithocholic, 3α-7β-12α-tri-hydroxycholanic, 3α-7β-dihydroxy-12-ketocholanic, deoxycholic, dehydrocholic, iodeoxycholic and iocholic acids, comprising:

a) salifying bile acid of formula (II)

$$Y\text{—}OH \quad (II)$$

wherein Y is as defined above, with a tertiary amine of alkyl or heteroaromatic type in an aprotic solvent at a temperature below 20° C.;

b) treating the reaction mixture containing the aforesaid bile acid salt, or the previously isolated salt, with a chloroformate of general formula (III):

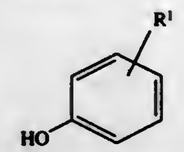
$$Cl\text{—}COOR \quad (III)$$

where R is selected from the group consisting of C_1–C_5 alkyl, phenyl, benzyl, at a temperature below 20° C. in the presence of an aprotic solvent to give the corresponding mixed anhydride of formula (IV):

$$Y\text{—}O\text{—}COOR \quad (IV)$$

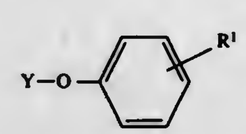
where Y and R are as defined above;

c) reacting the mixed anhydride (IV) with a phenol of general formula (V):



(V)

where R^1 is selected from H and C_1–C_5 alkyl, C_2–C_5 acyl and nitro group, at a temperature below 60° C. in the presence of an aprotic solvent and of a tertiary amine to give the corresponding phenol ester of formula (VI):



(VI)

d) separating the product by water addition, phenol ester extraction in a solvent, evaporation and crystallization, followed by an optional recrystallization;

e) treating the phenol ester with an aqueous solution of glycine as is or in the form of an alkaline metal salt or of a tertiary amine of an alkyl or heteroaromatic type, at a temperature ranging from 0° C. to 100° C. optionally in the presence of a protic solvent;

f) separating the product, precipitating by acidifying the reaction mixture produced in (e) to a pH between 1 and 4, after optional solvent evaporation and relative filtration;

g) the product recovered in (f) is crystallized in a protic or aprotic polar solvent.

5,616,742

PROCESS FOR PREPARING Δ9,11 AND 21-CHLORO CORTICOSTEROIDS

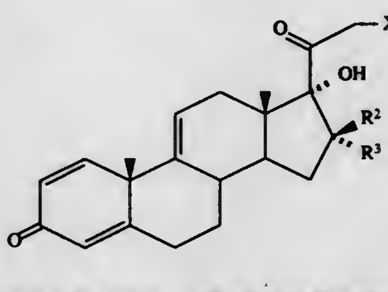
Xiaoyong Fu; Tiruvettipuram K. Thiruvengadam, both of Edison; Chou-Hong Tann, Berkeley Heights, and Cesar Colon, Rahway, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Division of Ser. No. 252,302, Jun. 1, 1994, Pat. No. 5,502,222. This application May 22, 1995, Ser. No. 446,982

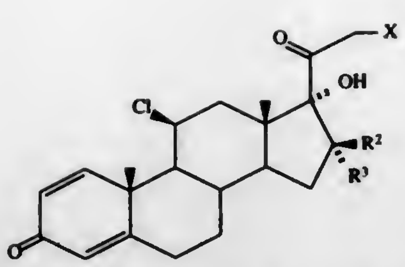
Int. Cl.⁶ C07J *75/00*

U.S. Cl. 552—595 **10 Claims**

1. A regioselective process for preparing $\Delta^{9,11}$ steroids of the formula



wherein: X is H, halogeno or —OR, wherein R is H or —C(O)R^1, and R^1 is C_1–C_6 alkyl or C_1–C_6 alkoxy; and one of R^2 or R^3 is CH_3 and the other is H, comprising heating an 11-β-chloro steroid of the formula



wherein X, R^2 and R^3 are as defined above, in the presence of a polar solvent.

5,616,743

16-METHYL-$\Delta^{1,4}$-PREGNADIENE-3,20-DIONES

Jean Boivin, Forges les Bains; Samir Zard, Gif sur Yvette, and Christine Chauvet, Paris, all of France, assignors to Roussel UCLAF, France

Division of Ser. No. 86,240, Jul. 1, 1993, Pat. No. 5,412,091, which is a division of Ser. No. 903,886, Jun. 25, 1992, Pat. No. 5,248,773. This application Jan. 13, 1995, Ser. No. 372,295

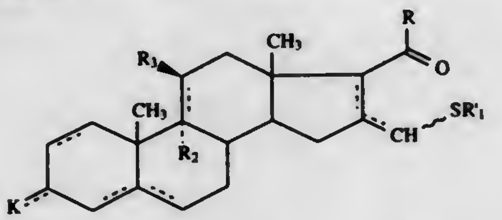
Claims priority, application France, Jun. 25, 1991, 91 07784

Int. Cl.[6] C07J *7/00;5/00;17/00;43/00*

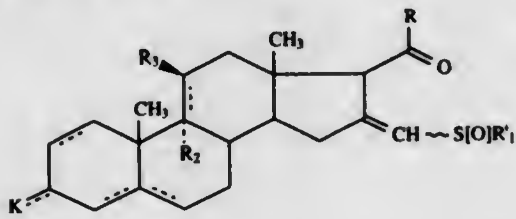
U.S. Cl. 552—604 **1 Claim**

1. A compound having a formulae selected from the group consisting of

IV

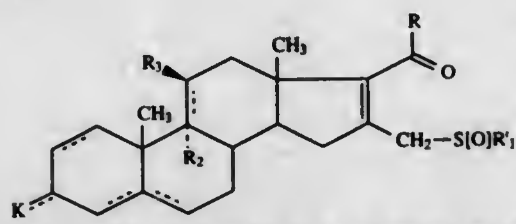


V_b

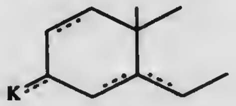


and

V_c



wherein R_2 and R_3 are hydrogen or R_2 is fluorine and R_3 is formyloxy or acetyloxy, the dotted line in 9(11) position indicates an optional double bond and the dotted line in position 16(17) indicates an optional double bond



is a 3-keto-Δ^4-system or 3-keto-Δ1,4-system or 3-OR_4-Δ^5-system, R_4 is hydrogen or a protector group of hydroxy, R is —CH_3, —CH_2OH or —CH_2—R', R' is a hydroxy protector group and R'_1 is selected from the group consisting of methyl, a branched alkyl of 5 to 8 carbon atoms not possessing hydrogen in the β-position, aryl of up to 10 carbon atoms and benzyl, heteroaryl up to 10 carbon atoms and at least one heteroatom selected from the group consisting of nitrogen, sulfur and oxygen, with the exception of the compounds of formula Vc in which R is methyl, R_2 and R_3 are hydrogen or R_2 and R_3 together form a second carbon-carbon bond.

5,616,744

19-NOR-VITAMIN D COMPOUNDS

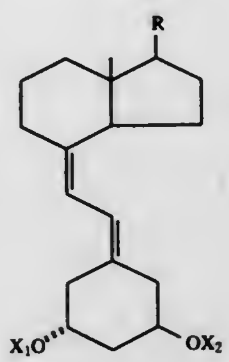
Hector F. DeLuca, Deerfield; Heinrich K. Schnoes, and Fariba Aria, both of Madison, all of Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Division of Ser. No. 410,858, Mar. 27, 1995, Pat. No. 5,525,745, which is a division of Ser. No. 302,399, Sep. 8, 1994, Pat. No. 5,430,196, which is a continuation of Ser. No. 926,829, Aug. 7, 1992, abandoned. This application May 23, 1995, Ser. No. 447,795

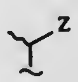
Int. Cl.[6] C07C *401/00*

U.S. Cl. 552—653 **6 Claims**

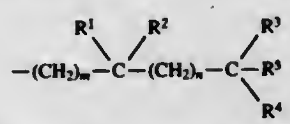
1. A compound of the formula:



where X_1, and X_2 each represent, independently, hydrogen or a hydroxy-protecting group, and where R is represented by the structure



where the stereochemical center at carbon 20 in the side chain may have the R or S configuration, and where Z is selected from the group consisting of Y, —OY, —CH_2OY, —C≡CY and —CH═CHY, where the double bond may have the cis or trans stereochemical configuration, and where Y is selected from the group consisting of hydrogen, methyl, —CR^5O and a radical of the structure,



where m and n, independently, represent the integers from 0 to 5, where R^1 is selected from the group consisting of hydrogen, hydroxy, protected hydroxy, fluoro, trifluoromethyl, and C_{1-5}-alkyl, which may be straight chain or branched and, optionally bear a hydroxy or protected-hydroxy substituent, and where each of R^2, R^3, and R^4, independently, is selected from the group consisting of hydrogen, fluoro, trifluoromethyl and C_{1-5} alkyl, which may be straight-chain or branched, and optionally, bear a hydroxy or protected-hydroxy substituent, and where R^1 and R^2, taken together, represent an oxo group, or an alkylidene group, $=CR^2R^3$, or the group —$(CH_2)_p$—, where p is an integer from 2 to 5, and where R^3 and R^4, taken together, represent an oxo group, or the group —$(CH_2)_q$—, where q is an integer from 2 to 5, and where R^5 represents hydrogen, hydroxy, protected hydroxy, or C_{1-5} alkyl.

5,616,745

LIPOPOLYAMINES, THEIR PREPARATION AND THEIR USE

Jean-Paul Behr, and Jean-Philippe Loeffler, both of Strasbourg, France, assignors to Centre National de la Recherche Scientifique, Paris, France

Division of Ser. No. 191,068, Feb. 3, 1994, Pat. No. 5,476,962, which is a continuation of Ser. No. 922,887, Jul. 31, 1992, abandoned, which is a continuation of Ser. No. 509,788, Apr. 17, 1990, Pat. No. 5,171,678. This application Jun. 7, 1995, Ser. No. 477,690

Claims priority, application France, Apr. 17, 1989, 89 05037

Int. Cl.[6] C07C *233/00;235/00*

U.S. Cl. 554—56 **4 Claims**

1. Lipopolyamine in the D, L, or DL form having the formula:

$$H_2N-\left(\underset{\displaystyle R}{\underset{|}{(CH)_m}}-NH\right)_n-H \qquad (I)$$

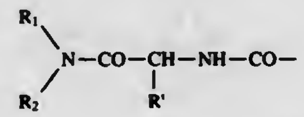
in which:

n is an integer between 1 and 5 inclusive;

m is an integer between 2 and 6 inclusive;

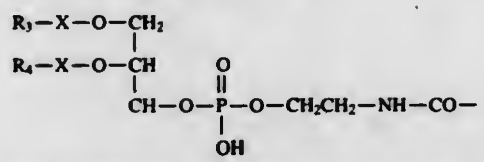
R represents a hydrogen atom or a radical of the formula:

(II)



in which R_1 and R_2, which may be identical or different, each represent a saturated aliphatic radical C_pH_{2p+2} or unsaturated aliphatic radical C_pH_{2p} or C_pH_{2p-2}, p is an integer between 12 and 22 inclusive, and R' represents a hydrogen atom or an alkyl radical containing 1 to 4 carbon atoms optionally substituted with a phenyl radical, or a radical of the formula:

(III)



in which X represents a methylene group or carbonyl group, and R_3 and R_4, which may be indentical or different, each represent a saturated aliphatic radical $C_{p'}$, $H_{2p'+2}$ or an unsaturated aliphatic radical $C_{p'}H_{2p'}$ or $C_{p'}H_{2p'-2}$, p' being an integer between 11 and 21 inclusive, with the provisions that:

irrespective of the values of m and n, only one of the symbols R represents a radical of general formula (II) or (III), one of the symbols R represents a hydrogen atom only if m or n is greater than 1, and, if m or n is greater than 1, all but one of the symbols R represent hydrogen atom; and

where n is between 2 and 5 , the values of m in the different fragments

$$-\underset{\displaystyle R}{\underset{\vdots}{(CH)_m}}$$

may be identical or different, as well as its salts.

5,616,746

USE IN COSMETICS OF LIPOPHILIC DERIVATIVES OF AMINO DEOXYALDITOLS, COSMETIC COMPOSITIONS CONTAINING THEM, AND NOVEL ALKYL CARBAMATES

Claude Mahieu, Paris; Didier Semeria, Courtry; Danièle Cauwet, Paris, and Guy Vanlerberghe, Villevaudé, all of France, assignors to L'Oreal, Bureau D. A. Casalonga-Josse

Division of Ser. No. 356,269, Feb. 15, 1995. This application Jun. 5, 1995, Ser. No. 463,723

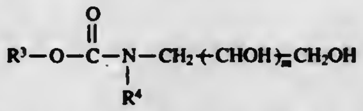
Claims priority, application France, Apr. 15, 1993, 93 04444

Int. Cl.[6] C07C *233/00;271/00*

U.S. Cl. 554—66 **4 Claims**

1. Compound, having the formula:

(II)



in which R^3 is a saturated linear C_{22}–C_{40} aliphatic radical, R^4 is a hydrogen atom or a linear C_1–C_6 alkyl radical and m is an integer from 1 to 5.

5,616,747

PROCESS FOR THE PREPARATION OF BRIDGED, CHIRAL METALLOCENE CATALYSTS OF THE BISINDENYL TYPE

Jürgen Rohrmann, Kelkheim, and Frank Küber, Oberursel, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Division of Ser. No. 76,991, Jun. 15, 1993, Pat. No. 5,391,790. This application Nov. 15, 1994, Ser. No. 339,535

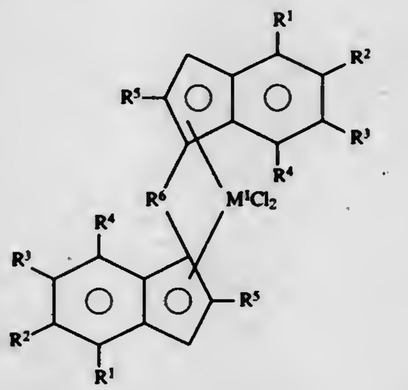
Claims priority, application European Pat. Off., Jun. 13, 1992, 92109988

Int. Cl.[6] C07F *17/00;7/00;11/00*

U.S. Cl. 556—11 **11 Claims**

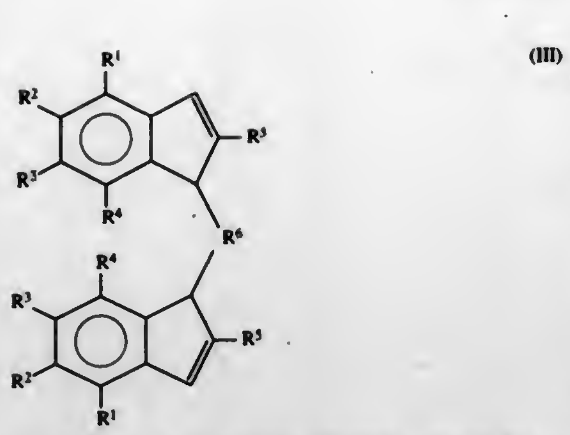
1. A process for the preparation of a metallocene of the formula IV

(IV)



comprising,

deprotonating a solution or suspension of a ligand system of the formula III



in a solvent or solvent mixture containing a base to give a suspension of a metallated product of the ligand system,

adding to the suspension of the metallated product a metal tetrahalide of the formula M^1Cl_4,

and reacting the suspension of the metallated product and metal tetrahalide,

whereby

M^1 is a metal from the group consisting of titanium, zirconium, hafnium, vanadium, niobium and tantalum,

R^1, R^2, R^3, R^4 and R^5 are identical or different and are hydrogen, $(C_1–C_{20})$alkyl, $(C_6–C_{14})$aryl, $(C_1–C_{10})$alkoxy, $(C_2–C_{10})$alkenyl, $(C_7–C_{20})$arylaklyl, $(C_7–C_{20})$alkylaryl, $(C_6–C_{10})$-aryloxy, $(C_1–C_{10})$fluoroalkyl, $(C_6–C_{10})$haloaryl, $(C_2–C_{10})$alkylnyl, —SiR^7_3, where R^7 is $(C_1–C_{10})$alkyl, halogen or heteroaromatic radicals having 5 or 6 ring members and optionally one or more hetero atoms, or adjacent radicals R^1–R^4, together with the atoms connecting them, form one or more rings,

R^6 is $\left[\begin{array}{c} R^8 \\ | \\ -M^2- \\ | \\ R^9 \end{array} \right]_p$,

where

M^2 is carbon, silicon, germanium or tin, and

R^8 and R^9 are identical or different and are hydrogen, $(C_1–C_{20})$alkyl, $(C_6–C_{14})$aryl, $(C_1–C_{10})$alkoxy, $(C_2–C_{10})$alkenyl, $(C_7–C_{20})$arylakyl, $(C_7–C_{20})$alkylaryl, $(C_6–C_{10})$aryloxy, $(C_1–C_{10})$fluoroalkyl, $(C_6–C_{10})$haloaryl, $(C_2–C_{10})$alkynyl, —SiR^7_3, halogen or heteroaromatic radicals having 5 or 6 ring members and optionally one or more hetero atoms, or together with the atoms connecting them, form one or more rings, and p is 1, 2 or 3.

5,616,748

PROCESS FOR PREPARATION OF REDUCED METAL TITANIUM COMPLEXES

Thomas H. Newman, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 181,940, Jan. 18, 1994, abandoned. This application Apr. 25, 1995, Ser. No. 429,392
Int. Cl.[6] **C07F** *17/00;7/00;9/02*
U.S. Cl. 556—11 **6 Claims**

1. A process for preparing titanium or zirconium metal complexes corresponding to the formula:

$$Cp_mMX_nX'_p \quad \text{(III)}$$

wherein:

Cp is a single η^5-cyclopentadienyl or η^5-substituted cyclopentadienyl group, the substituted cyclopentadienyl group being optionally also bonded to M through a substituent X;

M is titanium or zirconium in the +3 oxidation state;

X independently each occurrence is an inert anionic ligand of up to 20 nonhydrogen atoms selected from the group consisting of hydrocarbyl, silyl, NR_2, PR_2, OR, SR, BR_2, and combinations thereof, wherein R is C_{1-10} hydrocarbyl, and optionally one X and Cp are joined together forming the divalent ligand, —CpX—;

X' is an inert, neutral donor ligand;

m is 0, 1 or 2;

n is an integer greater than or equal to 1;

p is independently 0 or 1; and

the sum of m and n is equal to 3,

the steps of the process comprising contacting a metal complex corresponding to the formula:

$$Cp_mM'X^*_{n+1}X'p$$

wherein:

Cp, X', m, n and p are as previously defined;

M' is titanium or zirconium in the +4 oxidation state;

X^* independently each occurrence is X with the proviso that in at least one occurrence X^* is OR, wherein X and R are as previously defined;

with a lithium alkyl reducing agent and recovering the resulting product.

5,616,749

PREPARATION OF LAYERED ZIRCONIUM PHOSPHITE SULFOPHENYLPHOSPHONATES AND THEIR USE AS A CATALYST

Soofin Cheng, and Ren-Jai Shih, both of Taipei, Taiwan, assignors to National Science Council, Taipei, Taiwan

Filed Sep. 27, 1994, Ser. No. 312,884
Int. Cl.[6] **C07F** *7/00;* **B01J** *27/18*
U.S. Cl. 556—13 **10 Claims**

1. A method of preparing a zirconium phosphite sulfophenylphosphonates having the following formula

$$Zr(HPO_3)_m(HPO_4)_n(PO_3C_6H_5)_y(PO_3C_6H_4SO_3H)_z$$

wherein m+n=x; x+y+z=2; $0.4 \leqq x \leqq 1.7$; $0 \leqq y \leqq 1.6$; and $0.01 \leqq z0.8$, the method comprising the following steps:

(a) reacting phenylphosphonic acid with an excess amount of fuming sulfuric acid at a temperature from about 80° C. to about 150° C. to convert substantially all the phenylphosphonic acid to sulfophenylphosphonic acid;

(b) cooling the reaction mixture to a temperature below about 80° C.;

(c) mixing the cooled reaction mixture with: (i) phosphorous acid; (ii) an aqueous or organic solution of zirconium salt; and (iii) phenylphosphonic acid when y is >0, to give a resultant solution mixture;

(d) stirring the resultant solution mixture at a temperature between about 150° C. and room temperature until a co-precipitate is formed therein;

(e) removing the co-precipitate from the solution mixture; and

(f) washing and drying the co-precipitate.

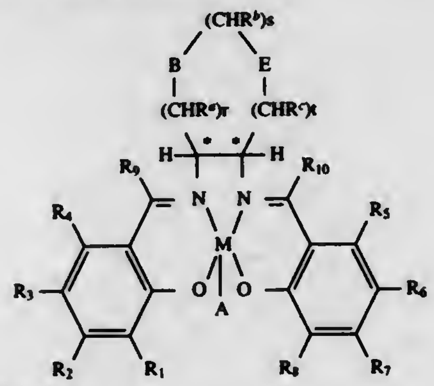
5,616,750

COMPOUNDS AND PROCESS

David Bell; David Miller, and Robin P. Attrill, all of Harlow, England, assignors to SmithKline Beecham plc, United Kingdom

PCT No. PCT/GB93/01666, § 371 Date Oct. 6, 1993, § 102(e) Date Oct. 6, 1993, PCT Pub. No. WO94/03271, PCT Pub. Date Feb. 17, 1994
PCT Filed Aug. 5, 1993, Ser. No. 129,162
Claims priority, application United Kingdom, Aug. 6, 1992, 9216662; Apr. 30, 1993, 9308968
Int. Cl.[6] **C07F** *13/00;* **C07D** *301/12;301/06*
U.S. Cl. 556—32 **11 Claims**

1. A compound of formula (I):



(I)

n which M is Mn;

A is a counter-ion if required;

r, s and t are independently 0 to 3 such that r+s+t is in the range of 1 to 3;

R^a, R^b, R^c are each independently hydrogen or CH_2OR' where R' is hydrogen or an organic group;

B and E are independently oxygen; CH_2, NR^d in which R^d is alkyl, hydrogen, alkylcarbonyl, or arylcarbonyl; or SO_n where n is 0 or an integer 1 or 2; with the proviso that B and E are not simultaneously CH_2 and that when B is oxygen, NR^d or SO_n, then r cannot be 0 and when E is oxygen, NR^d or SO_n, then t cannot be 0;

R_1, R_2, R_3, R_4, R_5, R_6, R_7, R_8, R_9 and R_{10} are independently hydrogen, alkyl or alkoxy.

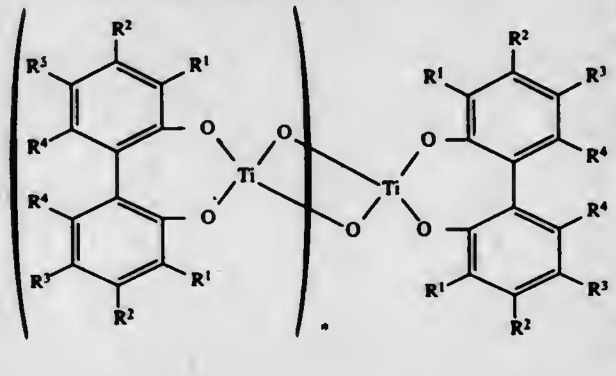
5,616,751

OXOTITANIUM COMPLEX, ASYMMETRIC HYDROGENATION CATALYST COMPRISING THE COMPLEX, AND PROCESS FOR PRODUCING β-HYDROXY KETONE OR α-HYDROXY CARBOXYLIC ACID ESTER USING THE COMPLEX

Takeshi Nakai, Kanagawa; Dai Kitamoto, Ibaraki, and Noboru Sayo, Kanagawa, all of Japan, assignors to Takasago International Corporation, Tokyo, Japan

Filed Mar. 10, 1995, Ser. No. 401,800
Claims priority, application Japan, Mar. 11, 1994, 6-067607
Int. Cl.[6] **C07F** *7/00*
U.S. Cl. 556—54 **5 Claims**

1. An oxotitanium complex represented by general formula (I):



(I)

wherein R^1 and R^2 may be the same or different and each represents a hydrogen atom, a lower alkyl group, a lower alkoxy group, a halogen atom, a phenyl group, a substituted phenyl group, a trialkylsilyl group, a monoalkyldiphenylsilyl group, a dialkylmonophenylsilyl group, a triphenylsilyl group, a substituted triphenylsilyl group, or a lower alkoxycarbonyl group, provided that R^1 and R^2 may be bonded to each other to form a hydrocarbon ring or a substituted hydrocarbon ring in cooperation with the carbon atoms to which R^1 and R^2 are bonded; R^3 and R^4 may be the same or different and each represents a hydrogen atom, a lower alkyl group, a lower alkoxy group, a benzoyl group, a benzenesulfonyl group, or a halogen atom, provided that R^3 and R^4 may be bonded to each other to form a hydrocarbon ring or a substituted hydrocarbon ring in cooperation with the carbon atoms to which R^3 and R^4 are bonded; and n is 1 or 2.

5,616,752

METALLOCENES AND PROCESSES THEREFOR AND THEREWITH

Konstantinos Patsidis; Bernd Peifer; Helmut G. Alt, all of Bayreuth, Germany; Rolf L. Geerts, Bartlesville, Okla.; Darryl R. Fahey, Bartlesville, Okla.; M. Bruce Welch, Bartlesville, Okla.; Syriac J. Palackal, Bartlesville, Okla., and Harold R. Deck, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 402,244, Mar. 10, 1995, Pat. No. 5,565,592, which is a division of Ser. No. 154,224, Nov. 17, 1993, Pat. No. 5,466,766, which is a continuation-in-part of Ser. No. 75,712, Jun. 11, 1993, Pat. No. 5,399,636, Ser. No. 75,931, Jun. 11, 1993, Pat. No. 5,347,026, Ser. No. 984,054, Nov. 30, 1992, Pat. No. 5,393,911, Ser. No. 734,853, Jul. 23, 1991, Pat. No. 5,436,305, and Ser. No. 697,363, May 9, 1991, Pat. No. 5,191,132. This application Jun. 5, 1995, Ser. No. 462,328
Int. Cl.[6] **C07F** *17/00;7/00*
U.S. Cl. 556—95 **8 Claims**

1. A process for preparing a bridged cyclopentadienyl-type compound having a branch containing an olefinic group comprising reacting a dihalo olefinic silane with an alkali metal salt of a suitable cyclopentadiene-type compound to produce a compound of the formula Z—R+—Z wherein each Z is the same or alternatively to produce a compound of the formula Z—R'–X wherein X is a halogen and then reacting that compound with an alkali metal salt of another different cyclopentadiene-type compound to produce a compound of the formula Z—R'—Z wherein the two Z's differ, said Z's each being individually selected from the group consisting of cyclopentadienyl-type compounds and R' is the organic remnant of the dihalo olefinic silane.

3. A bridged cyclopentadienyl-type compound of the formula

$$H_2C{=}CH{-}(CH_2)_n{-}\overset{\displaystyle Z}{\underset{\displaystyle Z}{\overset{|}{\underset{|}{R}}}}{-}R''$$

(I)

wherein said Z's are the same or different cyclopentadienyl-type radicals; n is a number in the range of about 0 to 10; R is Si, Ge, C, or Sn; R'' is selected from hydrogen, or alkyl groups having 1 to 10 carbon atoms, or aryl groups having 6 to 10 carbon atoms.

5. A process for preparing a bridged cyclopentadienyl-type compound having a branch containing olefinic vinyl group comprising reacting a carbonyl compound having olefinic unsaturation with cyclopentadiene in the presence of pyrrolidine and methanol to yield an alkenyl fulvene which is then reacted with an alkali metal salt of a cyclopentadiene-type compound to yield the unsaturated-branched-bridged ligand containing two cyclopentadienyl-type groups.

5,616,753

STABILIZERS FOR UNSATURATED, POLYMERIZABLE ORGANOSILICON COMPOUNDS

Scot M. Turner; James S. Ritscher, both of Marietta, Ohio; Michael Hallden-Abberton, Maple Glen, Pa., and Donald McLeod, Jr., Briarcliff Manor, N.Y., assignors to OSi Specialties, Inc., Danbury, Conn.

Filed Mar. 20, 1995, Ser. No. 406,604
Int. Cl.[6] C07F 7/08
U.S. Cl. 556—401 19 Claims

1. An inhibited silane composition comprising a polymerizable silane and a non-aromatic stable free radical in an amount sufficient to inhibit the silane.

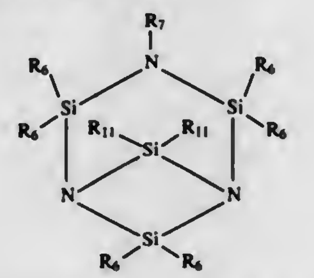
5,616,754

COMPOUNDS USEFUL AS CHEMICAL PRECURSORS IN CHEMICAL VAPOR DEPOSITION OF SILICON-BASED CERAMIC MATERIALS

Richard Cruse, Kendall Park, N.J.; Veronika Szalai, New Haven, Conn.; Terence Clark, Princeton, N.J.; Stephen Rohman, Kendall Park, N.J., and Robert Mininni, Stockton, N.J., assignors to Enichem S.p.A., Milan, Italy

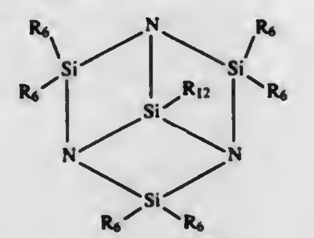
Division of Ser. No. 155,769, Nov. 23, 1993, Pat. No. 5,413,813. This application Jan. 26, 1995, Ser. No. 378,574
Int. Cl.[6] C07P 7/08; C07F 7/10
U.S. Cl. 556—409 14 Claims

1. A compound having the structure



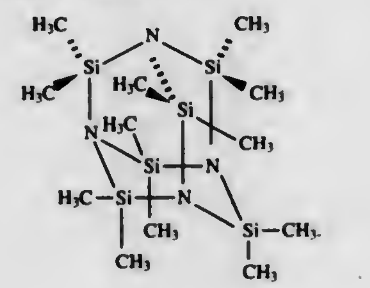
wherein R_6 is hydrogen or C_{1-20} alkyl, R_7 is hydrogen, Li or $SiR_8R_9R_{10}$ where R_8, R_9, and R_{10} are, independently, hydrogen or C_{1-20} alkyl, and R_{11} is hydrogen or C_{1-20} alkyl; or

a compound having the structure



wherein R_6 and R_{12} are, independently, hydrogen or C_{1-20} alkyl; or

a compound having the structure



5,616,755

PROCESS FOR PREPARING LOW-CHLORIDE OR CHLORIDE-FREE AMINOFUNCTIONAL ORGANOSILANES

Claus-Dietrich Seiler; Hartwig Rauleder; Hans-Joachim Koetzsch, all of Rheinfelden, and Hans-Guenther Srebny, Duelmen-Rorup, all of Germany, assignors to Huels Aktiengesellschaft, Marl, Germany

Filed Sep. 14, 1995, Ser. No. 527,873
Claims priority, application Germany, Sep. 14, 1994, 44 32 638.6; Apr. 13, 1995, 195 13 976.3
Int. Cl.[6] C07F 7/08;7/10
U.S. Cl. 556—413 16 Claims

1. A process for preparing low-chloride or chloride-free aminofunctional organosilanes comprising:

reacting chlorofunctional organosilanes of the formula

$$Cl\!+\!CH_2\!+_n\underset{\displaystyle R_m}{\underset{|}{Si}}(OR)_{3-m}$$

where

n is 1 or 2 or 3,

m is 0 or 1 or 2, and

R each is an alkyl radical having from 1 to 3 carbon atoms, with organic amines of the formulas

$$H_nN(R)_{3-n},$$

where R is an alkyl radical having from 1 to 3 carbon atoms

$$NH_2—CH_2—CH_2—(NH—CH_2—CH_2—)_n—NH_2,$$

where n is 0 or 1 or 2 or 3 and/or

$$\underset{R^1}{\underset{|}{NH}}—CH_2—CH_2—\underset{R^2}{\underset{|}{NH}},$$

where R^1 and R^2 are each an alkyl radical having from 1 to 3 carbon atoms to form alkylhydrochlorides,

separating off said alkylhydrochlorides,

further reacting any remaining alkylhydrochlorides with metal alkoxides dissolved in alcohols to form metal chlorides and separating off said metal chlorides,

wherein said metal alkoxides dissolved in alcohols are added stepwise in up to stoichiometric equivalent amounts based on the alkyl hydrochlorides, the initial amount added being 70–80% of the stoichiometrically equivalent amount to completely eliminate the chloride content of the silanes, followed by removal of the metal salts formed, and one or more subsequent additions of the metal alkoxides dissolved in alcohols in amounts determined by the residual chloride content of the silanes.

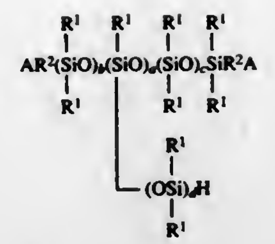
5,616,756

ORGANOSILICON COMPOUNDS AND METHOD FOR THE PREPARATION THEREOF

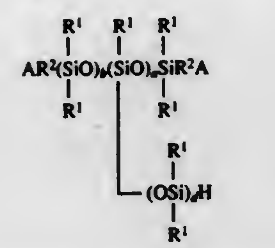
Hisataka Nakashima, Fukuoka Prefecture, Japan, assignor to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan

Filed May 29, 1996, Ser. No. 672,385
Claims priority, application Japan, May 31, 1995, 7-157176
Int. Cl.[6] C07F 7/08;7/10
U.S. Cl. 556—413 18 Claims

1. An organosilicon compound having a formula selected from the group consisting of



and



in which each R^1 is independently selected from C_1 to C_{20} monovalent hydrocarbon radicals, each R^2 is selected from C_1 to C_{20} divalent organic groups, A is selected from the group consisting of amino-functional organic groups, epoxy-functional organic groups, hydroxyl group and a group obtained by substituting an active hydrogen in one of the preceding groups with triorganosilyl group, a is an integer from 1 to 20, b is an integer from 1 to 20, c is an integer from 1 to 20, and d is an integer from 1 to 20.

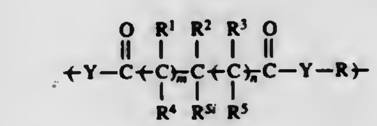
5,616,757

ORGANOSILICON-CONTAINING MATERIALS USEFUL FOR BIOMEDICAL DEVICES

Ronald E. Bambury, Fairport, and Jay F. Kunzler, Canandaigua, both of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Apr. 8, 1993, Ser. No. 45,459
Int. Cl.[6] C07F 7/08;7/10
U.S. Cl. 556—419 36 Claims

1. A polymer containing repeating units of the formula:



wherein:

each Y is —O— or —NR^{30}— wherein R^{30} is H or C_1–C_6 alkyl;

each R^1, R^2, R^3, R^4 and R^5 is independently selected from the group consisting of H, C_1–C_6 alkyl, C_1–C_6 haloalkyl, C_2–C_6 alkyl wherein at least one methylene group is replaced with —O—, C_2–C_6 haloalkyl wherein at least one methylene group is replaced with —O—, and —R^{Si};

m and n are independently 0 or an integer of 1 to 6;

each R^{Si} is independently an organosilicon radical; and

R is the divalent residue of an α,ω-dihydroxyl compound or an α,ω-diamino compound.

5,616,758

CATIONIC SILICONES

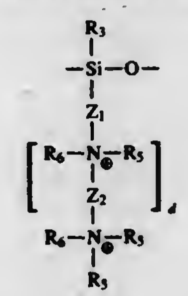
James P. McCarthy, Janesville, Wis.; George H. Greene, Morristown, N.J., and Anthony G. DeWar, Janesville, Wis., assignors to Karlshamns AB, Karlshamns, Sweden

Division of Ser. No. 289,535, Aug. 12, 1994, Pat. No. 5,474,835, which is a division of Ser. No. 975,335, Nov. 16, 1992, Pat. No. 5,352,817, which is a division of Ser. No. 546,372, Jun. 29, 1990, Pat. No. 5,164,522. This application Jun. 6, 1995, Ser. No. 466,124
Int. Cl.[6] C07F 7/10
U.S. Cl. 556—423 7 Claims

1. A cationic silicone comprising at least one

$$—\underset{R_3}{\underset{|}{\overset{R_3}{\overset{|}{Si}}}}—O—$$

structural unit and at least one structural unit having the formula:



where

d is 0–4;

R_3 is an alkyl group, aryl group, alkynyl group, alkenyl group, or an alkyloxyalkylene group;

Z_1 and Z_2 are the same or different and are each an alkyl group;

R_5 is the same or different and is a hydrogen, alkyl, aryl, alkynyl, alkenyl or oxyalkylene group; and

R_6 is the same or different and is an alkyl or aryl group.

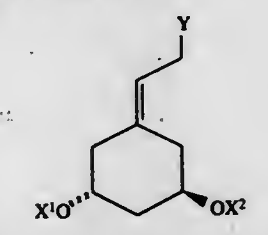
5,616,759

CYCLOHEXYLIDENE COMPOUNDS

Hector F. DeLuca, Deerfield; Heinrich K. Schnoes; Kato L. Perlman, both of Madison, all of Wis., and Rolf E. Swenson, Lake Bluff, Ill., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Division of Ser. No. 329,334, Oct. 26, 1994, Pat. No. 5,486,636, which is a division of Ser. No. 180,702, Jan. 13, 1994, Pat. No. 5,391,755, which is a division of Ser. No. 979,482, Nov. 20, 1992, Pat. No. 5,281,731, which is a continuation of Ser. No. 705,917, May 28, 1991, abandoned. This application May 16, 1995, Ser. No. 441,966
Int. Cl.[6] C07F 7/04;9/02
U.S. Cl. 556—443 5 Claims

1. A compound of the structure:



where X^1 and X^2 which may be the same or different, represent hydrogen or a hydroxy-protecting group, and where Y is —POPh2, or —PO(OAlkyl)$_2$, or —SO_2Ar, or —Si(Alkyl)$_3$.

5,616,760

PROCESS FOR REACTING ORGANODISILANES WITH ORGANIC HALIDES

Howard M. Bank, Freeland; Brian M. Naasz, DeWitt, and Binh T. Nguyen, Midland, all of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jan. 31, 1996, Ser. No. 593,316

Int. Cl.[6] C07F 7/08

U.S. Cl. 556—468 **14 Claims**

1. A process for forming monosilanes from organodisilanes, the process comprising heating a mixture consisting essentially of an organodisilane described by formula

$$R^1{}_nSi_2X_{6-n}$$

and an organic halide described by formula

$$R^2X$$

at a temperature within a range of about 100° C. to 350° C., where each R^1 is an independently selected monovalent hydrocarbon radical comprising about one to 18 carbon atoms, R^2 is a monovalent hydrocarbon radical comprising about one to 18 carbon atoms, each X is independently selected from a group consisting of chlorine and bromine atoms, and n=1 to 6.

5,616,761

PROCESS FOR PREPARAING ALKYL- OR ARYLDICHLOROSILANES

Gilbert Geisberger, Altoetting, Germany, assignor to Wacker-Chemie GmbH, Munich, Germany

Filed May 8, 1995, Ser. No. 437,196

Claims priority, application Germany, Jun. 1, 1994, 44 19 270.3

Int. Cl.[6] C07F 7/08

U.S. Cl. 556—469 **5 Claims**

1. A process for preparing alkyl- or aryldichlorosilanes by comproportionation of alkyl- or aryltrichlorosilanes with at least one silane containing Si-bonded methyl groups, hydrogen, chlorine atoms or mixtures thereof, in the presence of a catalyst, wherein the silane is methylsilane, methylchlorosilane or mixtures of methylsilane and methylchlorosilane and the catalyst comprises a support insoluble in the reaction medium to which NR_2R^1— groups or $^-X^+NR_3R^1$— groups are bonded, where

R is identical or different and is a hydrogen atom or a monovalent hydrocarbon radical having from 1 to 20 carbon atoms per radical or two radicals R together are a divalent hydrocarbon radical having from 4 to 11 carbon atoms which may, optionally, be interrupted by a hetero atom,

R^1 is a divalent hydrocarbon radical having from 1 to 20 carbon atoms per radical and

X^- is a chloride ion, bromide ion or iodide ion.

5,616,762

PROCESS FOR THE PREPARATION OF 3-HALO-AND PSEUDOHALO-ALKYLSILANE ESTERS

Frank Kropfgans; Albert Frings; Michael Horn; Hans-Joachim Koetzsch; Jaroslaw Monkiewicz; Claus-Dietrich Seiler, all of Rheinfelden; Hans-Guenther Srebny, Duelmen-Rorup, and Burkhard Standke, Loerrach, all of Germany, assignors to Huels Aktiengesellschaft, Marl, Germany

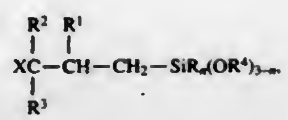
Filed Oct. 25, 1995, Ser. No. 548,131

Claims priority, application Germany, Oct. 25, 1994, 44 38 031.3; Sep. 20, 1995, 195 34 853.2

Int. Cl.[6] C07F 7/08;7/10

U.S. Cl. 556—479 **9 Claims**

1. A process for the preparation of a silane compound of formula I:



(I)

wherein

R is an alkyl, a branched alkyl or a cycloalkyl group having 1 to 18 carbon atoms, which may be halogenated;

R^1 is R or hydrogen;

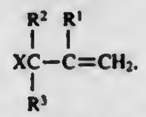
R^2 is R, hydrogen, an aryl substituent or halogen;

R^3 is equal to R^2, with a given R^3 substituent being the same as or different from the specific R^2 group selected;

R^4 is a branched or unbranched alkyl group of 1 to 10 carbon atoms, optionally containing aliphatic ether groups;

X is a fluoride, chloride, bromide, iodide, cyanide, isocyanate, isothiocyanate or azido radical; and

n is 0, 1 or 2 by hydrosilation, which comprises: reacting a compound of formula (II):



(II)

wherein X, R^1, R^2 and R^3 are as defined above, or a compound containing the pseudohalide structure of formula (II) as a component, wherein one of R^2 or R^3 represents a bond to a carbon atom of the remaining portion of the compound, with a hydridosilane ester of formula (III):

$$HSiR_n(OR^4)_{3-n} \quad \text{(III)},$$

wherein R, R^4 and n are as defined above, in the presence of a catalyst of a group VIII element or compound thereof in a reaction medium under the conditions in which (i) the amount of compound of formula (II) or compound containing formula (II), alone or in a mixture, is present in a 0.01 to 100 mol % excess of the amount of compound of formula III and/or (ii) the catalyst is prepared by stirring a 1/10 to 1/10,000 molar solution or suspension of elemental Ir, a compound of Ir or a combination thereof in the reaction medium without heating for at least 20 minutes, the catalyst having a concentration of from 10^{-5} to 10^{-3} mol %, based on the hydridosilane ester employed, and then conducting the hydrosilation reaction.

5,616,763

ALDEHYDES AS ACCELERATORS FOR HYDROSILATION

Howard M. Bank, Freeland, and Gary T. Decker, Midland, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jan. 29, 1996, Ser. No. 593,383

Int. Cl.[6] C07F 7/08;7/10:7/18

U.S. Cl. 556—479 **17 Claims**

1. A hydrosilation process comprising: contacting

(A) a silicon hydride described by formula

$$R^1{}_aH_bSiX_{4-a-b},$$

where each R^1 is independently selected from a group consisting of alkyls comprising one to about 20 carbon atoms, cycloalkyls comprising four to about 12 carbon atoms, and aryls; each X is independently selected from a group consisting of halogen and organooxy radicals described by formula —OR^1, where R^1 is as previously described, a=0 to 3, b=1 to 3, and a+b=1 to 4; and

(B) an unsaturated reactant selected from a group consisting of

(i) substituted and unsubstituted organic compounds containing non-aromatic, unsaturated carbon-carbon bonds,

(ii) silicon compounds comprising substituted or unsubstituted organic substituents containing non-aromatic, unsaturated carbon-carbon bonds, and

(iii) mixtures of (i) and (ii);

in the presence of a platinum catalyst selected from a group consisting of platinum compounds and platinum complexes, and an aldehyde accelerator.

5,616,764

FUNCTIONALIZATION OF POLYMERS VIA ENAMINE OF ACETOACETATE

Alvin C. Lavoie, Lansdale; Daniel A. Bors, Maple Glen, and Ward T. Brown, North Wales, all of Pa., assignors to Rohm and Haas Company, Phila., Pa.

Division of Ser. No. 91,489, Jul. 14, 1993, Pat. No. 5,525,662. This application Jun. 6, 1995, Ser. No. 467,115

Int. Cl.[6] C07F 7/04

U.S. Cl. 556—482 **3 Claims**

1. A process comprising reacting an acetoacetate-functional monomer with a compound which has primary amine and at least one divalent group selected from the group consisting of C_2 to C_{18} alkyl, and alkoxyl and polyalkoxyl chains having molecular weights of from about 72 to about 400,000 at conditions which favor formation of the enamine.

5,616,765

METHOD FOR THE PREPARATION OF 4-HYDROXY-AND 4-TRIMETHYLSILOXYBENZOCYCLOBUTENE

Loon-Seng Tan, Centerville, and Narayanan Venkatasubramanian, Fairborn, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 12, 1996, Ser. No. 605,242

Int. Cl.[6] C07F 7/08;7/18

U.S. Cl. 556—486 **3 Claims**

1. A method for the preparation of 4-hydroxybenzocyclobutene which comprises heating 4-methoxybenzocyclobutene in acetonitrile in the presence of freshly prepared aluminum iodide, under reflux conditions for about 1 to 10 hours, and recovering and purifying the resulting crude product.

5,616,766

METHOD FOR RECOVERING L-PHENYLALANINE

Tadashi Takemoto; Toyoto Hijiya; Teruo Yonekawa, and Chiaki Mochizuki, all of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Division of Ser. No. 190,450, Feb. 2, 1994, Pat. No. 5,466,864. This application May 16, 1995, Ser. No. 441,737

Claims priority, application Japan, Feb. 25, 1993, 5-036880; Feb. 25, 1993, 5-036881; Mar. 22, 1993, 5-061972

Int. Cl.[6] C07C 305/06

U.S. Cl. 558—38 **3 Claims**

1. An optically active phenylalanine monomethylsulfate crystal.

5,616,767

PROCESS FOR MAKING BIPHENYLENE AND BISPHENYLENE PHOSPHITES

William P. Enlow, Belpre, Ohio, and James A. Mahood, Morgantown, W. Va., assignors to General Electric Company, Pittsfield, Mass.

Filed Feb. 28, 1995, Ser. No. 395,722

Int. Cl.[6] C07F 9/6574

U.S. Cl. 558—92 **31 Claims**

1. A process for making a phosphite compound, said phosphite compound being a biphenylene phosphite compound or a bisphenylene phosphite compound, said process comprising:

(a) reacting phosphorus trichloride with a first hydroxyl-substituted compound selected from one of either:

(a)(i) a hydroxyl-substituted compound selected from 2,2'-bisphenol compounds and 2,2'-biphenol compounds, or

(a)(ii) a hydroxyl-substituted compound selected from phenol, alkanols, hydroxyl-substituted cycloalkanes and hydroxyl-substituted aralkyl compounds to form a reaction intermediate;

(b) reacting the reaction intermediate with a second hydroxyl-substituted compound of (a)(i) or (a)(ii) that is other than the first hydroxyl-substituted compound selected in step (a) to form the phosphite compound, wherein:

the reaction of step (b) produces hydrogen chloride,

the reaction of step (b) is conducted in an amount of an aromatic hydrocarbon medium that is less than 25 percent by weight of the amount of phosphite compound produced in the reaction of step (b),

the reaction of step (b) is conducted in the presence of a molar amount of a tri n-alkyl amine, each of the n-alkyl moieties of the amine having a least three carbon atoms per moiety, that is equal to or greater than the molar amount of hydrogen chloride that is produced during the reaction of step (b), and

the phosphite compound is insoluble in the aromatic hydrocarbon medium;

(c) isolating the phosphite compound from the aromatic hydrocarbon medium; and

(d) purifying the phosphite compound without recrystallizing the phosphite compound.

5,616,768

PROCESS FOR PURIFYING PHOSPHORIC ESTERS

Shigeru Kawata, Osaka; Kazuo Noguchi, Aichi; Kenji Ako, Nara, and Shin Nakamura, Aichi, all of Japan, assignors to Daihachi Chemical Industry Co., Ltd., Osaka, Japan

Filed Jun. 19, 1995, Ser. No. 491,402

Claims priority, application Japan, Jun. 23, 1994, 6-142023

Int. Cl.[6] C07F 9/02

U.S. Cl. 558—146 **12 Claims**

1. A process for purifying a phosphoric ester, which comprises treating a crude phosphoric ester with an epoxy compound, heating the resultant in the presence of water, washing the resultant with water, and removing the residual water.

5,616,769

METHOD FOR PURIFYING O,S-DIMETHYL N-ACETYLPHOSPHORAMIDOTHIOATE

Yoji Sakito; Mamoru Shirahata; Yujiro Kiyoshima; Kazuya Minamisaka, all of Oita, and Atakazu Iwata, Takatsuki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Sep. 21, 1995, Ser. No. 531,751

Claims priority, application Japan, Sep. 22, 1994, 6-227885

Int. Cl.[6] C07F 9/02

U.S. Cl. 558—146 **8 Claims**

1. A method for purifying O,S-dimethyl N-acetylphosphoramidothioate, which comprises subjecting a crude crystal of O,S-dimethyl N-acetylphosphoramidothioate to recrystallization by using a two-phase solvent system comprising water and an organic solvent which is an aromatic hydrocarbon, an aliphatic carboxylic acid ester or an aliphatic ketone, wherein the amount of water is 0.1 to 2 parts by weight and the amount of organic solvent is 1 to 20 parts by weight to 1 part by weight of crude O,S-dimethyl N-acetylphosphoramidothioate.

5,616,770
1,4-CYCLOHEXANEDIMETHANOL BIS (DIARYL PHOSPHATE)
Danielle A. Bright, New City, N.Y., assignor to Akzo Nobel, NV, Arnhem, Netherlands
Filed Feb. 28, 1996, Ser. No. 608,266
Int. Cl.^{6} C07F *9/12*
U.S. Cl. 558—161 **6 Claims**

1. 1,4-cyclohexanedimethanol bis (diaryl phosphate) wherein aryl may be substituted.

5,616,771
PREPARATION OF ARYL CHLOROFORMATES
Thomas-Michael Kahl, Römerberg, and Thomas Wettling, Limburgerhof, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany
Filed May 16, 1996, Ser. No. 648,892
Claims priority, application Germany, May 19, 1995, 195 18 473.4
Int. Cl.^{6} C07C *68/02*
U.S. Cl. 558—282 **5 Claims**

1. A process for preparing aryl chloroformates of the general formula I

$$Ar-O-\overset{\overset{\large O}{\|}}{C}-Cl. \qquad (I)$$

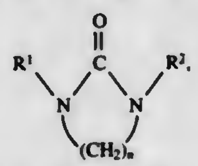
where

Ar is aryl which is unsubstituted or substituted once to five times by C_1–C_6alkyl, C_2–C_6-alkenyl, C_3–C_8-cycloalkyl, C_4–C_{10}-cycloalkylalkyl, C_1–C_6-haloalkyl, C_1–C_6-alkoxy, C_1–C_4-alkylthio, halogen, cyano, C_2–C_6-alkylcarbonyloxy, formyl, C_2–C_6-dialkylamino, aryl, aryloxy, arylthio, aroyl, C_7–C_{10}-aralkyl, C_7–C_{10}-aralkoxy, arylsulfonyl or C_7–C_{10}-aralkylthio and/or once or twice by chloroformyl or nitro

by reacting phosgene and a phenol of the general formula II

$$AR—OH \qquad (II),$$

where Ar has the abovementioned meanings, in the presence of a nitrogen-containing compound at from 60° to 180° C. under from 0.01 to 5 bar, wherein the nitrogen-containing compound used is a cyclic urea of the general formula III



(III)

where R^1 and R^2 are each C_1–C_4-alkyl and n is 2 or 3.

5,616,772
METHOD OF STABILIZING NITRILES
Gerald J. O'Neill, Arlington, Mass., and Albert H. Levesque, Nashua, N.H., assignors to Hampshire Chemical Corp., Lexington, Mass.
Filed Jun. 6, 1995, Ser. No. 466,095
Int. Cl.^{6} C07C *409/00*
U.S. Cl. 558—304 **10 Claims**

1. A method of stabilizing nitriles, comprising contacting said nitriles with a stabilizer selected from the group consisting of a combination of silica and alumina, silica and zeolites, and silica and glass.

5,616,773
PREPARATION OF 5-CYANOVALERATES
Stefan Stahl, Worms; Wolfgang Harder, Weinheim, and Arthur Hoehn, Kirchheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany
Continuation-in-part of Ser. No. 203,022, Feb. 28, 1994, Pat. No. 5,434,290. This application Apr. 10, 1995, Ser. No. 419,608
Claims priority, application Germany, Mar. 3, 1993, 43 06 507.4
Int. Cl.^{6} C07C *255/03*
U.S. Cl. 558—353 **4 Claims**

1. A process for the preparation of a 5-cyanovalerate (I) by the carbonylation of a 1-cyanobutene with carbon monoxide and a C_1–C_{12}-alkanol (II) corresponding to the ester radical, at a temperature of from 130° to 200° C. and under superatomospheric pressure in the presence of a cobalt catalyst selected from the group consisting of dicobalt octacarbonyl, cobalt carbonyl hydrogen, cobalt acetate, cobalt formate, cobalt-2-ethyl hexanote, cobalt valerate, cobalt adipate and cobalt methyl glutarate and in the presence of an activating solvent of the formula III

$$R_2N—CO—NR_2 \qquad III$$

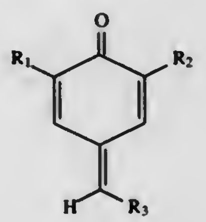
in which the radicals R may be the same or different and stand for C_1–C_6-alkyl groups which may be interconnected to form a cyclic urea having a 5-membered to 7-membered ring or C_5–C_7-cycloalkyl groups, the initial concentration of the activating solvent in the total reaction mixture being from 35 to 65 wt %.

5,616,774
INHIBITION OF UNSATURATED MONOMERS WITH 7-ARYL QUINONE METHIDES
Samuel Evans, Marly, Switzerland; Matthew E. Gande, New Fairfield, Conn.; Peter Nesvadba, Yorktown Heights, N.Y.; Volker H. von Ahn, Mahopac, N.Y., and Roland A. E. Winter, Armonk, N.Y., assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.
Filed Apr. 14, 1995, Ser. No. 422,284
Int. Cl.^{6} C07C *69/00*
U.S. Cl. 560—4 **26 Claims**

1. A composition for inhibiting the premature polymerization of an ethylenically unsaturated monomer which comprises

(a) an ethylenically unsaturated monomer or mixture of monomers, and

(b) an effective inhibiting amount of a compound of formula I



I

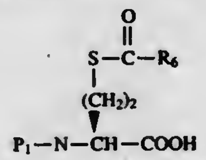
where

R_1 and R_2 are independently alkyl of 4 to 18 carbon atoms, cycloalkyl of 5 to 12 carbon atoms or phenylalkyl of 7 to 15 carbon atoms, and

R_3 is 2-, 3- or 4-pyridyl, 2- or 3-thienyl, 2- or 3-pyrryl, 2- or 3furyl, aryl of 6 to 10 carbon atoms, or said aryl substituted by one to three alkyl of 1 to 8 carbon atoms, alkoxy of 1 to 8 carbon atoms, alkylthio of 1 to 8 carbon atoms, alkylamino of 1 to 8 carbon atoms, dialkylamino of 2 to 8 carbon atoms, alkoxycarbonyl of 2 to 8 carbon atoms, hydroxy, nitro, amino, cyano, carboxy, aminocarbonyl, chloro or mixtures of said substituents.

5,616,775
PROCESS FOR PREPARING HOMOCYSTEIN ANALOGS USEFUL AS INTERMEDIATES FOR COMPOUNDS CONTAINING A FUSED BICYCLIC RING
David R. Kronenthal, Yardley, Pa., and Jollie D. Godfrey, Jr., Trenton, N.J., assignors to Bristol-Myers Squibb Co., Princeton, N.J.
Division of Ser. No. 238,764, May 5, 1994, Pat. No. 5,508,272. This application Feb. 5, 1996, Ser. No. 596,811
Int. Cl.^{6} C07C *381/00*
U.S. Cl. 560—9 **3 Claims**

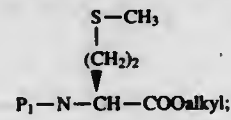
1. A process for preparing a compound of the formula



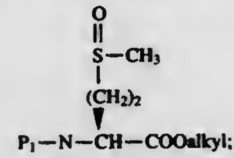
wherein P_1 is a nitrogen protecting group and R_6 is alkyl, substituted alkyl, or benzyl which comprises:

a) reacting L-methionine to introduce the P_1 protecting group;

b) esterifying the product from part (a) by treating with an alcohol, alkyl-OH, in the presence of an acid catalyst to give



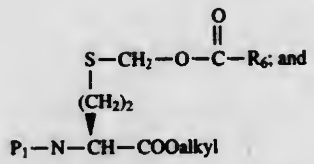
c) oxidizing the ester product of part (b) to give



d) treating the sulfoxide product of part (c) with an acid anhydride of the formula

$$R_6-\overset{\overset{\large O}{\|}}{C}-O-\overset{\overset{\large O}{\|}}{C}-R_6$$

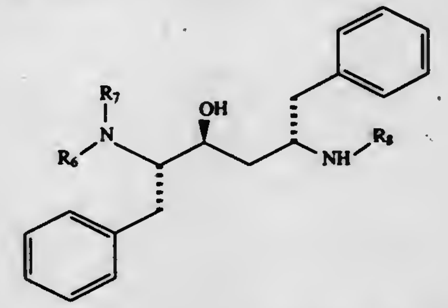
to give



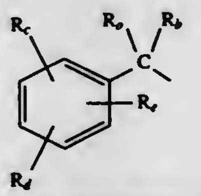
e) treating the product of part (d) with an alkali metal hydroxide followed by removal of formaldehyde, and treatment with an acid anhydride as defined above or an acid halide halo-C(O)—R_6 to give the desired product.

5,616,776
PROCESS FOR THE PREPARATION OF A SUBSTITUTED 2.5-DIAMONO-3-HYDROXY-HEXANE
Timothy L. Stuk, Lindenhurst; Anthony R. Haight, Mundelein; Francis A. J. Kerdesky; M. Robert Leanna, both of Grayslake; Howard E. Morton; Timothy A. Robbins, both of Gurnee, all of Ill.; David Scarpetti, Baltimore, Md., and Jien-Heh J. Tien, Libertyville, Ill., assignors to Abbott Laboratories, Abbott Park, Ill.
Division of Ser. No. 281,502, Jul. 27, 1994, Pat. No. 5,491,253, which is a continuation-in-part of Ser. No. 141,795, Oct. 22, 1993, abandoned. This application Apr. 7, 1995, Ser. No. 418,705
Int. Cl.^{6} C07C *261/00;233/00*
U.S. Cl. 560—27 **3 Claims**

1. A process for the preparation of a substantially pure compound of the formula:

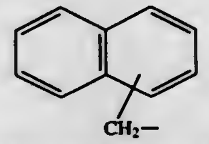


wherein R_6 and R_7 are each hydrogen or R_6 and R_7 are independently selected from



(i)

wherein R_a and R_b are independently selected from hydrogen, loweralkyl and phenyl and R_c, R_d and R_e are independently selected from hydrogen, loweralkyl, trifluoromethyl, alkoxy, halo and phenyl; and

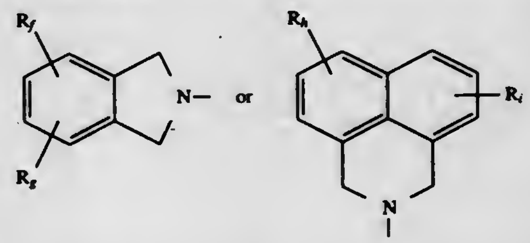


(ii)

wherein the naphthyl ring is unsubstituted or substituted with one, two or three substitutents independently selected from loweralkyl, trifluoromethyl, alkoxy and halo; or

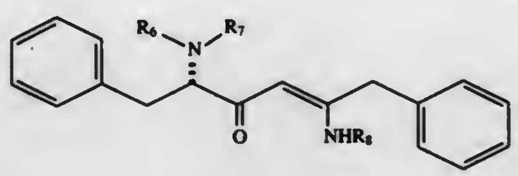
R_6 is as defined above and R_7 is R_{7a}OC(O)—wherein R_{7a} is benzyl; or

R_6 and R_7 taken together with the nitrogen atom to which they are bonded are

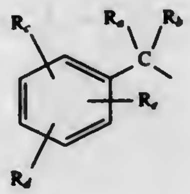


wherein R_f, R_g, R_h and R_i are independently selected from hydrogen, loweralkyl, alkoxy, halogen and trifluoromethyl and R_8 is hydrogen or —C(O)R" wherein R" is loweralkyl,

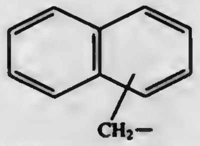
alkoxy, benzyloxy or phenyl wherein the phenyl ring is unsubstituted or substituted with one, two or three substituents independently selected from loweralkyl, trifluoromethyl, alkoxy and halo; or an acid addition salt thereof comprising (I) reacting a compound of the formula:



wherein R_6 and R_7 are each hydrogen or R_6 and R_7 are independently selected from


(i)

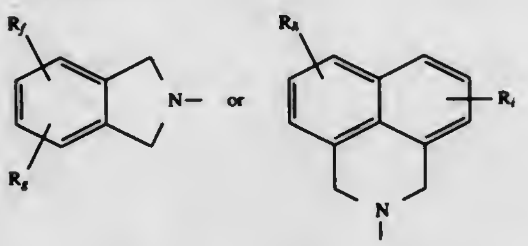
wherein R_a and R_b are independently selected from hydrogen, loweralkyl and phenyl and R_c, R_d and R_e are independently selected from hydrogen, loweralkyl, trifluoromethyl, alkoxy, halo and phenyl; and

(ii)


wherein the naphthyl ring is unsubstituted or substituted with one, two or three substituents independently selected from loweralkyl, trifluoromethyl, alkoxy and halo; or

R_6 is as defined above and R_7 is R_{7a}OC(O)—wherein R_{7a} is benzyl; or

R_6 and R_7 taken together with the nitrogen atom to which they are bonded are



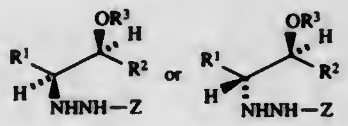
wherein R_f, R_g, R_h and R_i are independently selected from hydrogen, loweralkyl, alkoxy, halogen and trifluoromethyl and R_8 is hydrogen with a mixture of (a) an acid selected from (i) R_{26}—COOH wherein R_{26} is loweralkyl, haloalkyl, phenyl or halophenyl, (ii) R_{27}—SO_3H wherein R_{27} is OH, F, loweralkyl, haloalkyl, phenyl, loweralkyl-substituted phenyl, halophenyl or naphthyl and (iii) R_{28}—PO_3H_2 wherein R_{28} is OH, loweralkyl or phenyl or a combination thereof and (b) a boron-containing reducing agent, said mixture prepared by adding the acid or combination of acids to the boron-containing reducing agent, followed by

(IIa) reacting the reaction mixture of step (I) with a mixture of a borohydride reagent and R_{29}—COOH wherein R_{29} is loweralkyl, haloalkyl, phenyl or halophenyl, said mixture of the borohydride reagent and R_{29}—COOH prepared by adding the R_{29}—COOH to the borohydride reagent; or followed by

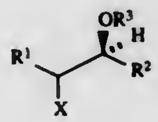
(IIb) reacting the reaction mixture of step (I) with a boron complexing agent, followed by reaction of the resulting mixture with a ketone reducing agent.

5,616,777
CHIRAL HYDRAZINE DERIVATIVES
David R. Andrews, Maplewood, and Anantha Sudhakar, East Brunswick, both of N.J., assignors to Schering Corporation, Kenilworth, N.J.
Filed Apr. 19, 1995, Ser. No. 425,129
Int. Cl.[6] C07C *269/04;243/12*
U.S. Cl. 560—29 **8 Claims**

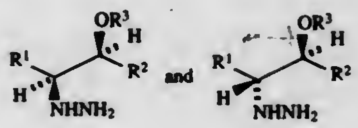
1. A process for preparing a compound having the formula



wherein:
R^1 and R^2 are independently C_1–C_{10} alkyl;
R^3 is H or R^4 wherein R^4 is a hydroxy protecting group; and
Z is H, —CHO, —C(O)OC(CH_3)$_3$ or —C(O)OC$H_2C_6H_5$, comprising the steps:
(a) reacting a chiral compound of the formula



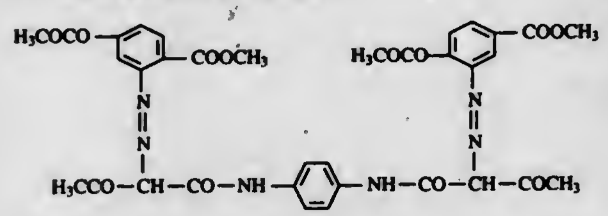
wherein
X is a leaving group, and R^1, R^2 and R^3 are as defined above, with hydrazine, to form a mixture of diastereomeric hydrazines of the formulae



wherein
R^1, R^2 and R^3 are as defined above, treating the mixture with a chiral acid to isolate the desired diastereomer as its chiral acid salt, and optionally regenerating the free hydrazine; and
(b) treating the free hydrazine or the chiral acid salt of step (a) with a compound of the formula Y—Z, wherein Z is —CHO, —C(O)OC(CH_3)$_3$ or —C(O)OC$H_2C_6H_5$, and Y is a leaving group, to form the chiral hydrazine derivative.

5,616,778
MODIFIED FORM OF BIS-1,4-[2'-(2",5"-DIMETHOXYCARBONYLPHENYLAZO)-3'-OXOBUTYRAMIDO]BENZENE AND PROCESS FOR ITS SYNTHESIS
Jürgen Goldmann, Münchenstein, and Bansi L. Kaul, Biel-Benken, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland
Continuation of Ser. No. 948,371, Sep. 21, 1992, abandoned, which is a continuation of Ser. No. 631,570, Dec. 21, 1990, abandoned. This application Apr. 21, 1994, Ser. No. 230,990
Claims priority, application Germany, Dec. 22, 1989, 39 42 557.6
Int. Cl.[6] C07C *229/00*
U.S. Cl. 560—35 **2 Claims**

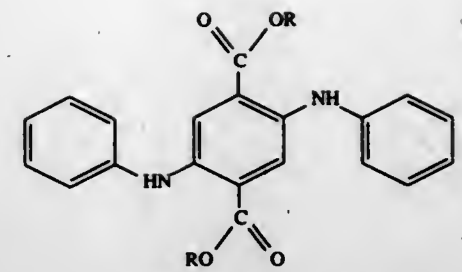
1. The compound of the formula



having the following CIELAB values:
L*=82.55,
a*=11.53,
b*=90.49,
C*=91.22 and
H*=82.74,
said CIELAB values being measured when the compound is incorporated into an alkydmelamine-formaldehyde resin coating in an amount of 25.3% by weight, which is prepared by the process comprising:
a) dissolving 1,4-bis-(acetoacetylamino)benzene in an aqueous alkaline hydroxide solution;
b) precipitating 1,4-bis(acetoacetylamino)benzene to form an aqueous suspension by brining the pH of said solution to 6.5–7.5; and
c) coupling the product of step b) with an aqueous solution of diazotized 2-aminoterephthalic acid dimethyl ester, the molar ratio of diazotized 2-aminoterephthalic acid dimethyl ester to 1,4-bis(acetoacetylamino)-benzene being about 2:1; and
d) filtering and washing salt-free the product of step c), with water, then drying and treating with a high boiling organic solvent for a period of up to six hours at 80° to 150° C. and filtering; and
e) washing the product of step d) with a low boiling alcohol, and drying.

5,616,779
PROCESS FOR THE PREPARATION OF 2,5-DI-PHENYLAMINO-TEREPHTHALIC ACID AND ITS DIALKYL ESTERS
Otto Arndt, Hofheim/Ts, Germany, assignor to Hoechst AG, Germany
Continuation of Ser. No. 59,816, May 10, 1993, abandoned. This application Mar. 2, 1995, Ser. No. 397,733
Claims priority, application Germany, May 12, 1992, 42 15 685.8
Int. Cl.[6] C07C *101/38;101/68;103/76*
U.S. Cl. 560—48 **21 Claims**

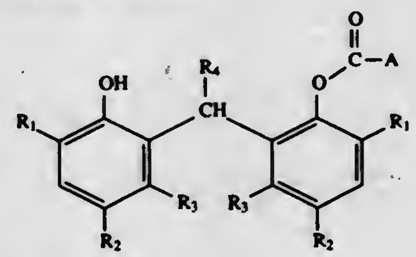
1. A process for the preparation of 2,5-di-phenylamino-terephthalic acid or one of its dialkyl esters of the formula



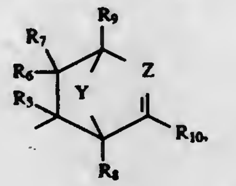
in which R is a hydrogen atom or a methyl or an ethyl group, comprising reacting a 2,5-dihydroxycyclohexadiene-1,6-dicarboxylic acid dialkyl ester with aniline in a solvent in the presence of acid; and by dehydrating the resulting 2,5-di-phenylamino-dihydro-(3.6)-terephthalic acid dialkyl ester by means of pure oxygen in the presence of acid and in the presence of an alkali metal ion and/or alkaline earth metal ion, at a temperature of 95° to 110° C.; and optionally hydrolyzing the resulting 2,5-di-phenylamino-terephthalic acid dialkyl ester.

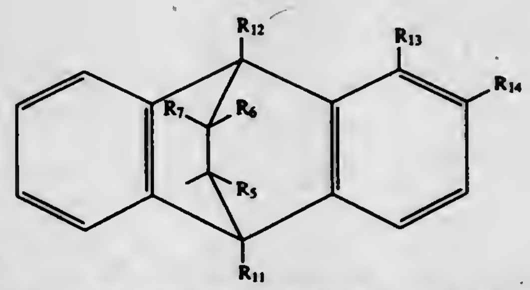
5,616,780
BISPHENOL ESTER DERIVATIVES
Rita Pitteloud, Praroman, Switzerland, and Bernard Gilg, St. Louis-la-Chaussée, France, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.
Filed Jan. 31, 1996, Ser. No. 594,199
Claims priority, application Switzerland, Aug. 2, 1995, 368/95
Int. Cl.[6] C07C *261/00*
U.S. Cl. 560—118 **14 Claims**

1. A compound of the formula I

(I)


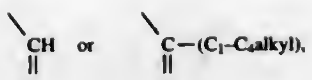
in which
A is a group of the formula IIa or IIb,

(IIa)


(IIb)


Y is oxygen, methylene, ethylidene or a >C=C(CH_3)$_2$ group,

Z is nitrogen,



the radicals R_1, independently of one another, are C_1–C_{25}alkyl, C_2–C_{24}alkenyl, C_5–C_{12}cycloalkyl, C_1–C_4alkyl-substituted C_5–C_{12}cycloalkyl, C_5–C_{12} cycloalkenyl, C_1–C_4alkyl-substituted C_5–C_{12}cycloalkenyl, phenyl, C_1–C_4alkyl-substituted phenyl, C_7–C_9phenylalkyl or —CH_2—S—X_1,
the radicals R_2, independently of one another, are hydrogen, C_1–C_{25}alkyl, C_2–C_{24}alkenyl, C_5–C_{12}cycloalkyl, C_1–C_4alkyl-substituted C_5–C_{12}cycloalkyl, C_5–C_{12} cycloalkenyl,
C_1–C_4alkyl-substituted C_5–C_{12} cycloalkenyl, phenyl, C_1–C_4alkyl-substituted phenyl, C_7–C_9phenylalkyl, —CH_2—S—X_1, —$(CH_2)_p$COO—X_2 or —$(CH_2)_q$ O—X_3,
the radicals R_3, independently of one another, are hydrogen or C_1–C_4alkyl,
R_4 is hydrogen or C_1–C_8alkyl,
R_5 is hydrogen, C_1–C_{10}alkyl, phenyl, —CH_2—COO—X_4 or CN,
R_6 is hydrogen, C_1–C_4alkyl, phenyl, —COO—X_5, —CN or —CON(X_6)(X_7),
R_7 is hydrogen or C_1–C_{10}alkyl,
R_8, R_9 and R_{10}, independently of one another, are hydrogen or C_1–C_4alkyl,
R_{11} and R_{12}, independently of one another, are hydrogen, C_1–C_4alkyl or phenyl,
R_{13} and R_{14}, independently of one another, are hydrogen or C_1–C_4alkyl,
X_1 is C_1–C_{25}alkyl, C_5–C_{12}cycloalkyl, C_1–C_4alkyl-substituted C_5– C_{12}cycloalkyl, phenyl, C_1–C_4alkyl-substituted phenyl, C_7–C_9phenylalkyl or —$(CH_2)_r$COO—Y_1,
X_2, X_4 and X_5, independently of one another, are C_1–C_{25}alkyl, C_5–C_{12}cycloalkyl, C_1–C_4alkyl-substituted C_5–C_{12}cycloalkyl, phenyl, C_1–C_4alkyl-substituted phenyl or C_7–C_9phenylalkyl,
X_3 is C_1–C_{25}alkyl, C_5–C_{12}cycloalkyl, C_1–C_4alkyl-substituted C_5– C_{12}cycloalkyl, phenyl, C_1–C_4alkyl-substituted phenyl, C_7–C_9phenylalkyl, C_1–C_{25}alkanoyl, C_3–C_{25} alkenoyl, C_3–C_{25}alkanoyl which is interrupted by oxygen, sulfur or >N—Y_2, C_6–C_9cycloalkylcarbonyl, benzoyl, C_1–C_4alkyl-substituted benzoyl, thenoyl or furoyl,
X_6 and X_7, independently of one another, are hydrogen, C_1–C_{25}alkyl, C_2–C_{24}alkenyl, C_5–C_{12}cycloalkyl, C_1–C_4alkyl-substituted C_5–C_{12}cycloalkyl, C_5–C_{12} cycloalkenyl, C_1–C_4alkyl-substituted C_5–C_{12}cycloalkenyl, phenyl, C_1–C_4alkyl-substituted phenyl or C_7–C_9phenylalkyl,
Y_1 is C_1–C_{25}alkyl, C_5–C_{12}cycloalkyl, C_1–C_4alkyl-substituted C_5– C_{12}cycloalkyl, phenyl,
C_1–C_4alkyl-substituted phenyl or C_7–C_9phenylalkyl,
Y_2 is hydrogen or C_1–C_8alkyl,
p is 0, 1 or 2,
q is an integer from 0 to 8, and
r is 1 or 2.

5,616,781

LIQUID DETERGENT COMPOSITIONS COMPRISING SALTS OF ALPHA SULFONATED FATTY ACID ESTERS AND ANIONIC SURFACTANTS

Branko Sajic, Lincolnwood; Irma Ryklin, Buffalo Grove, and Brian L. Frank, Arlington Heights, all of Ill., assignors to Stepan Company, Northfield, Ill.

Continuation of Ser. No. 135,288, Oct. 12, 1993, abandoned. This application Mar. 27, 1995, Ser. No. 410,933
Int. Cl.[6] C07C *323/52*
U.S. Cl. 510—221 **4 Claims**

1. A detergent composition comprising:
(a) about 5 to 10% by weight of a salt of an alpha-sulfonated methyl ester of a fatty acid having an average of from about 12–14 carbon atoms;
(b) about 2 to 10% by weight of alkyl ethoxy sulfate having a degree of ethoxylation of about 3;
(c) about 17 to 25% by weight of linear alkyl benzene sulfonate having an alkyl chain of 10–13 carbon atoms;
(d) about 1–6% by weight of a nonionic surfactant; and
(e) from about 0.02 to 0.1M of magnesium ion.

5,616,782

METHOD OF PRODUCING ALKYL SULFOACETATE COMPOSITIONS

Ralph Thompson, Hinsdale; Ned M. Rockwell, Lake Bluff; Ann M. Michels, Libertyville; William R. Mohring, Skokie; Kevin C. Kolbe, Mt. Prospect; J. Duke Seibold, Highland Park, all of Ill., and James M. Butterwick, Old Bridge, N.J., assignors to Stepan Company, Northfield, Ill.

Continuation of Ser. No. 259,462, Jun. 14, 1994, abandoned. This application Nov. 16, 1995, Ser. No. 558,825
Int. Cl.[6] C07C *301/00;305/04*
U.S. Cl. 560—149 **15 Claims**

1. A method for preparing a sulfonated ester of the formula:

$$RO(CH_2CHR_1O)_nCOCH_2SO_3M$$

where
R represents straight chain alkyl having from about 6 to 22 carbon atoms;
R_1 is hydrogen, methyl, or ethyl;
n is 0, or an integer of from 1 to 22; and
M represents Ca^{++}, Mg^{++}, Na^+, K^+ or NH_4^+;
comprising reacting an alkyl chloroester of the formula $RO(CH_2CHR_1O)_nCOCH_2Cl$ where R, R_1 and n are defined as above with at least about a 3% molar excess of an aqueous sulfite in the presence of from about 0.1 to 5% by weight of reactants of a sulfitation catalyst at a temperature of at least about 75° C.

5,616,783

PURIFICATION PROCESS OF POLYHYDROXYCARBOXYLIC ACID

Yasunori Yoshida, Kanagawa-ken; Katsuji Watanabe, Fukoka-ken; Shoji Obuchi, and Masahiro Ohta, both of Kanagawa-ken, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Sep. 28, 1995, Ser. No. 535,638
Claims priority, application Japan, Oct. 13, 1994, 6-247881
Int. Cl.[6] C07C *67/48;67/58*
U.S. Cl. 560—191 **4 Claims**

1. A purification process of polyhydroxycarboxylic acid, comprising dissolving polyhydroxycarboxylic acid in a water-immiscible phenol or an organic solvent containing said water-immiscible phenol, successively bringing the resulting solution into contact with water which contains an acidic material, separating an organic layer from an aqueous layer, and isolating polyhydroxycarboxylic acid from the organic layer.

5,616,784

THERMAL CLEAVAGE OF CARBAMIC ESTERS

Hans V. Schwarz, Waterloo, Belgium; Andreas Otterbach, Frankenthal, Germany; Otto Mattner, Speyer, Germany; Franz Merger, Frankenthal, Germany; Wolfgang Schwarz, Otterstadt, Germany; Eckhardt Brandt, Schifferstadt, Germany; Peter Magnussen, Bad Duerkheim, Germany, and Roland Minges, Gruenstadt, Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Continuation of Ser. No. 105,661, Aug. 13, 1993, abandoned, which is a continuation of Ser. No. 915,640, Jul. 21, 1992, abandoned. This application Dec. 11, 1995, Ser. No. 570,250
Claims priority, application Germany, Jul. 25, 1991, 41 24 671.3
Int. Cl.[6] C07C *45/00*
U.S. Cl. 560—345 **9 Claims**

1. A process for removing cleavage products formed in the thermal cleavage of carbamic esters in a reactor consisting of:
passing the products directly from the reactor to a rectifying column, said column having a reflux to the top of the column and having one or more take-off points through which gaseous or liquid product or product mixture is removed.

5,616,785

SYNTHESIS OF AND HYDROFORMYLATION WITH FLUORO-SUBSTITUTED BIDENTATE PHOSPHINE LIGANDS

Jerry D. Unruh; Brigitte E. Segmuller; Gabriel R. Chapa, all of Corpus Christi, and Kent E. Pryor, Houston, all of Tex., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Division of Ser. No. 453,283, May 30, 1995, Pat. No. 5,567,856. This application Apr. 10, 1996, Ser. No. 630,145
Int. Cl.[6] C07F *9/46;9/28*
U.S. Cl. 562—25 **3 Claims**

1. The compound bis(3,5-difluorophenyl)-phosphine oxide.

5,616,786

METHOD OF OBTAINING ANHYDROUS PHENYLALANINE CRYSTALS

Takeru Sato, and Chiaki Sano, both of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Sep. 26, 1995, Ser. No. 533,943
Claims priority, application Japan, Sep. 26, 1994, 6-229255
Int. Cl.[6] C07C *229/28*
U.S. Cl. 562—401 **4 Claims**

1. A method of obtaining α-form crystals of anhydrous phenylalanine from an aqueous solution, which comprises the steps of:
adding one or more osmotic pressure increasing additives to said aqueous solution such that the osmotic pressure (π, mOsm/kg.H_2O) of said aqueous solution is

$$\pi \geqq 10{,}500-450T^{*}4.4T^2$$

where T is the temperature of crystallization of the aqueous solution; and
crystallizing said α-form crystals of anhydrous phenylalanine.

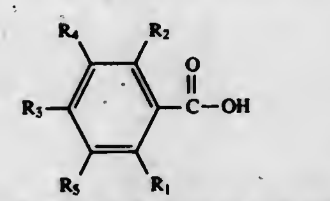
5,616,787

PROCESS FOR THE PREPARATION OF ALKYLATED AROMATIC CARBOXYLIC ACIDS AND ACYL HALIDES

Rinaldo Hüsler, Wünnewil; Ivan Orban, Basel, and Martin Holer, Magden, all of Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

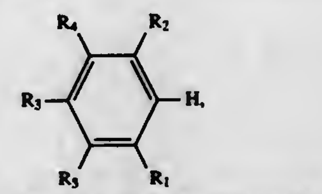
Filed Oct. 11, 1995, Ser. No. 541,006
Claims priority, application Switzerland, Oct. 13, 1994, 3078/94
Int. Cl.[6] C07C *51/58*
U.S. Cl. 562—423 **19 Claims**

1. A process for the preparation of a carboxylic acid of formula I



(I)

wherein R_1, R_2, R_3, R_4 and R_5 are each independently of one another hydrogen, C_1–C_{20}alkyl, halogen and C_5–C_8cycloalkyl, with the proviso that at least two of the substituents R_1, R_2, R_3, R_4 and R_5 are alkyl and/or cycloalkyl, by reacting an aromatic hydrocarbon of formula (II)



(II)

wherein R_1, R_2, R_3, R_4 and R_5 have the meanings given above, in the presence of a Friedel-Crafts catalyst with carbon dioxide and hydrolysing the complexes obtained to the corresponding carboxylic acid, which process comprises carrying out the carboxylation reaction under a maximum pressure of 10 bar and in the temperature range from −20° C. to +40° C.

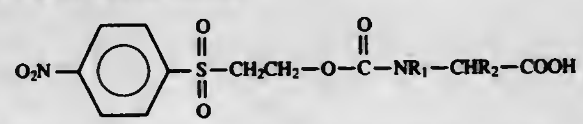
5,616,788

N_α-2-(4-NITROPHENYLSULFONYL) ETHOXYCARBONYL-AMINO ACIDS

Vladimir V. Samukov; Aydar N. Sabirov, and Pavel I. Pozdnyakov, all of Novosibirsk, Russian Federation, assignors to Hyundai Pharm. Ind. Co., Ltd., Seoul, Rep. of Korea

Filed Feb. 1, 1996, Ser. No. 595,381
Claims priority, application Russian Federation, Feb. 15, 1995, 95102102/04(00
Int. Cl.[6] C07C *315/00*
U.S. Cl. 562—430 **4 Claims**

1. N_α-2-(4-nitrophenylsulfonyl)ethoxycarbonyl-amino acids having the general formula:



wherein R_1 represents hydrogen atom, and R_2 represents hydrogen, methyl, isopropyl, 1-methylpropyl, 2-methylpropyl, tert-butoxymethyl, 1-tert-butoxyethyl, 2-methylthioethyl, benzyl, carboxamido-methyl, 2-carboxamidoethyl, tert-butoxycarbonylmethyl, 2-(tert-butoxycarbonyl)ethyl, 4-(tert-butoxycarbomido)butyl, 4-tert-butoxybenzyl, indolyl-3-methyl, S-(triphenylmethyl)thiomethyl, 1-(triphenylmethyl)imidazolyl-4-methyl, 3-(N^G-mesitylenesulfonyl)guanidinopropyl, N-xanthylcarboxamidomethyl, 2-(N-xanthylcarboxamido)ethyl or S-(acetamidomethyl)thiomethyl;
or R_1 and R_2 together represent propylene radical.

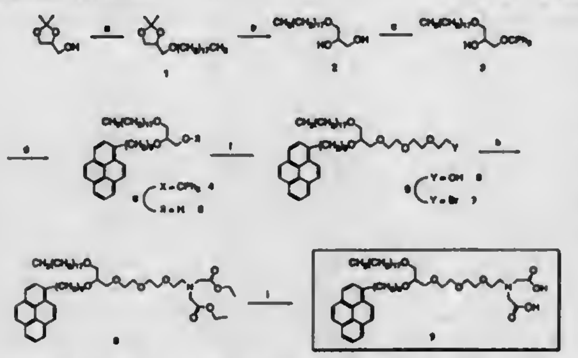
5,616,789
HYDRAZINECARBOXYLIC ACIDS

Michael S. South, and Terri L. Jakuboski, both of St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.
Division of Ser. No. 320,996, Oct. 11, 1994. This application Jun. 6, 1995, Ser. No. 471,595
Int. Cl.[6] A01N *33/26*
U.S. Cl. 562—439 **1 Claim**

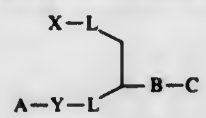
1. 2-(1-(3-trifluoromethyl)phenyl)ethylidene hydrazine carboxylic acid.

5,616,790
LIPID-BASED METAL SENSOR

Frances H. Arnold, Pasadena, Calif.; Darryl Y. Sasaki, Albuquerque, N.M.; Deborah Shnek, Glendale, and Daniel Pack, Pasadena, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.
Filed Nov. 18, 1994, Ser. No. 342,369
Int. Cl.[6] C07C *229/34;* **C07D** *257/00*
U.S. Cl. 562—444 **10 Claims**

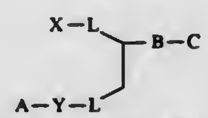


1. A fluorescent metal-chelating amphiphile for use in a sensor for detecting the presence of a metal ion in a liquid, said fluorescent metal-chelating amphiphile having the structure:



configuration a

-or-



configuration b

wherein A is a hydrophobic fluorophore, X and Y are aliphatic hydrocarbons having from 9 to 25 carbon atoms, B is a hydrophilic spacer, C is a metal chelator, and L is either an ether or ester linkage.

5,616,791
METHOD OF PREPARING L-ASPARTYL-D-α-AMINOALKANE CARBOXYLIC ACID-(S)-N-α-ALKYLBENZYLAMIDE

Tadashi Takemoto, and Toyoto Hijiya, both of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan
Filed Sep. 7, 1995, Ser. No. 524,812
Claims priority, application Japan, Sep. 7, 1994, 6-213704
Int. Cl.[6] C07C *229/08*
U.S. Cl. 562—450 **14 Claims**

1. A method of preparing L-aspartyl-D-α-aminoalkanecarboxylic acid-(S)-N-α-alkylbenzylamide comprising the sequential steps of:
reacting N-protected-L-aspartic anhydride and D-α-aminoalkanecarboxylic acid-(S)-N-α-alkylbenzylamide in the presence of acetic acid in an organic solvent which can not be mixed uniformly with water,
adding an aqueous solvent thereto,
removing the protective group in a diphase system,
separating the organic layer, and
crystallizing L-aspartyl-D-α-aminoalkanecarboxylic acid-(S)-N-α-alkylbenzylamide in the aqueous phase.

5,616,792
CATALYTIC PURIFICATION OF DICARBOXYLIC AROMATIC ACID

Thomas M. Bartos, Naperville, and Bruce I. Rosen, Morton Grove, both of Ill., assignors to Amoco Corporation, Chicago, Ill.
Filed Feb. 1, 1996, Ser. No. 595,046
Int. Cl.[6] C07C *51/42*
U.S. Cl. 562—486 **20 Claims**

1. A process for purification of a relatively impure dicarboxylic aromatic acid produced by liquid-phase oxidation of a corresponding benzene having two oxidizable alkyl or acyl ring substituents or an oxidizable alkyl and acyl ring substituent in the meta or para positions or a corresponding naphthalene having two oxidizable alkyl or acyl ring substituents or oxidizable alkyl and acyl ring substituent, with a dioxygen-containing gas in a solvent at an elevated temperature and pressure and in the presence of an oxidation catalyst comprising a heavy metal component, and/or hydrolysis of polyester resin comprising repeating units of aromatic acid residue and repeating units of dihydric alcohol residue linked by ester bonds, which purification comprises:
passing an at least partially aqueous solution of from about 5 to about 50 weight percent of the impure dicarboxylic aromatic acid at a temperature of from about 100° C. to about 350° C. and at a pressure of at least 5.5 kg/cm[2] above the pressure sufficient to maintain the solution substantially in the liquid phase, through a particulate bed of purification catalyst comprising a noble metal of Group VIII of the Periodic Table of Elements on a titanium dioxide support which does not disintegrate in less than one month under the aforesaid conditions employed in the purification, and in the presence of at most an amount of hydrogen formed by chemical conversions within the catalyst bed; and
thereafter cooling the aqueous solution to effect separation of relatively pure dicarboxylic aromatic acid from the aqueous solution by crystallization.

5,616,793
METHODS OF MAKING (S)-3-(AMINOMETHYL)-5-METHYLHEXANOIC ACID

Brian K. Huckabee, and Denis M. Sobieray, both of Holland, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.
Filed Jun. 2, 1995, Ser. No. 458,950
Int. Cl.[6] C07C *205/00*
U.S. Cl. 562—553 **15 Claims**

1. A method of making (S)-(+)-3-(aminomethyl)-5-methylhexanoic acid, the method comprising:
a. Condensing isovaleraldehyde with an alkyl cyanoacetate to form a 2-cyano-5-methylhex-2-enoic acid alkyl ester;
b. Reacting the 2-cyano-5-methylhex-2-enoic acid alkyl ester with a dialkyl malonate to form 3-isobutylglutaric acid;
c. Forming the anhydride of 3-isobutylglutaric acid;
d. Reacting the anhydride with ammonia to form (±)-3-(carbamoylmethyl)-5-methylhexanoic acid;
e. Reacting (±)-3-(carbamoylmethyl)-5-methylhexanoic acid with (R)-(+)-α-phenylethylamine to obtain the (R)-(+)-α-phenylethylamine salt of (R)-(−)-3-(carbamoylmethyl)-5-methylhexanoic acid;
f. Combining the salt with an acid to obtain (R)-(−)-3-(carbamoylmethyl)-5-methylhexanoic acid; and
g. Reacting the (R)-(−)-3-(carbamoylmethyl)-5-methylhexanoic acid with a Hofmann reagent to obtain (S)-(+)-3-aminomethyl-5-methylhexanoic acid.

5,616,794
PROCESS FOR PREPARING FLUOROCARBOXYLIC ACID HALIDES

Frederick E. Behr, and Yuri Cheburkov, both of Woodbury, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Nov. 17, 1995, Ser. No. 558,243
Int. Cl.[6] C07C *51/58*
U.S. Cl. 562—851 **16 Claims**

1. A process for preparing fluorocarboxylic acid halides comprising the steps of (a) forming a starting composition comprising (i) at least one fluorosulfonic acid halide comprising at least one halosulfonyldifluoromethyl group; and (ii) at least one Group III or Group V Lewis acid; and (b) allowing said fluorosulfonic acid halide and said Lewis acid to react to form a product composition comprising at least one fluorocarboxylic acid halide.

5,616,795
PROCESS FOR THE PREPARATION OF A DICARBOXYLIC ACID DICHLORIDE

Marina Mauro; Carlo F. Viscardi, and Massimo Gagna, all of Mozzo, Italy, assignors to Fructamine S.p.A., Mozzo, Italy
Filed May 17, 1996, Ser. No. 650,094
Claims priority, application Italy, May 23, 1995, MI95A1044; Aug. 4, 1995, RM95A0550
Int. Cl.[6] C07C *63/00*
U.S. Cl. 562—855 **14 Claims**

1. A process for the preparation of 5-amino-2,4, 6-triiodo-1,3-benzenedicarboxylic acid dichloride, comprising the reaction in heterogeneous phase between 5-amino-2,4,6-triiodo-1,3-benzenedicarboxylic acid and thionyl chloride, in a solvent selected from the group consisting of: (C_7–C_{16}) linear or branched hydrocarbons, (C_7–C_8) aromatic hydrocarbons, 1,1,1-trichloroethane, n-butylacetate, diglyme (diethylenglycoledimethylether), and in the presence of a catalytic amount of a tertiary amine.

5,616,796
ORGANOBORANE POLYAMINE COMPLEXES AND ADHESIVE COMPOSITION MADE THEREWITH

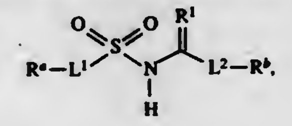
Alphonsus V. Pocius, and Tadesse G. Nigatu, both of Maplewood, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Apr. 14, 1995, Ser. No. 422,443
Int. Cl.[6] C07F *5/02;* **C08F** *4/52*
U.S. Cl. 564—9 **21 Claims**

1. A complex comprising organoborane and polyamine, wherein the polyamine comprises the reaction product of a diprimary amine-terminated material and a material having at least two groups reactive with primary amine, wherein a majority of the terminal groups in the polyamine are primary amine.

5,616,797
N-(CARBONYL, CARBONIMIDOYL, CARBONOTHIOYL)SULFONAMIDE CHARGE CONTROL AGENTS AND TONERS AND DEVELOPERS

John C. Wilson; Peter S. Alexandrovich, both of Rochester, and Steven M. Bonser, Fairport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Division of Ser. No. 171,783, Dec. 22, 1993, Pat. No. 5,405,727. This application Dec. 9, 1994, Ser. No. 353,466
Int. Cl.[6] C07C *307/02*
U.S. Cl. 564—92 **24 Claims**

1. A sulfonamide having the general structure

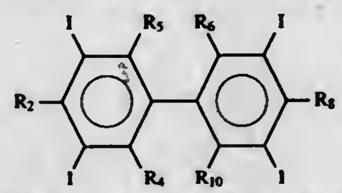


wherein
R^1 is O or S;
L^1 and L^2 are each independently a direct link or divalent alkyl or fluoroalkyl having from 1 to 20 carbons;
R^a and R^b are each a ring system having as a nucleus a single six-carbon ring or from 2 to 3 fused or linked said rings, said ring system having from 6 to 34 carbons;
wherein at least one of R^a and R^b is phenyl having two t-alkyl substituents having from 4 to 8 carbons and a third substituent selected from the group consisting of NO_2, OH, NH_2, $N(CH_3)_2$, alkyl having from 1 to 8 carbons, and alkoxy having from 1 to 8 carbons.

5,616,798
POLY-IODINATED COMPOUNDS, PROCESS FOR THEIR PREPARATION, CONTRAST MEDIUM CONTAINING THEM

Maryse Dugast-Zrihen, Paris, and Dominique Meyer, Saint Maur des Fosses, both of France, assignors to Guerbet S.A., Villepinte, France
PCT No. PCT/FR92/00172, § 371 Date Oct. 25, 1993, § 102(e) Date Oct. 25, 1993, PCT Pub. No. WO92/14695, PCT Pub. Date Sep. 3, 1992
PCT Filed Feb. 25, 1992, Ser. No. 107,839
Claims priority, application France, Feb. 25, 1991, 91 02226
Int. Cl.[6] C07C *233/03;233/04;233/05*
U.S. Cl. 564—153 **7 Claims**

1. Tetra-iodinated compounds of general formula:



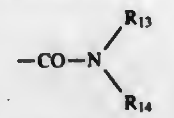
II

in which R_2, R_4, R_5, R_6, R_8 and R_{10} are selected from:
a) a group of formula

$$-\underset{\displaystyle R_{11}}{\underset{|}{N}}-COR_{12},$$

in which R_{11} and R_{12}, identical or different, represent a hydrogen atom, a linear or branched C_1–C_6 alkyl group, a linear or branched hydroxy- or polyhydroxy-C_1–C_6 alkyl group, optionally having in addition one or more C_1–C_6 alkoxy groups, a linear or branched C_1–C_6-alkoxy-C_1–C_6 alkyl group or a linear or branched hydroxy- or polyhydroxy-C_1–C_6 alkoxy-C_1–C_6 alkyl group having from two to five —OH groups;

b) a group formula



in which groups

R_{13} and R_{14}, identical or different, represent a hydrogen atom, a linear or branched C_1–C_6 alkyl group, a linear or branched C_1–C_6 hydroxy- or polyhydroxy-alkyl group, optional having in addition one or more C_1–C_6 alkoxy groups, a linear or branched C_1–C_6 alkoxy-C_1–C_6 alkyl group or a linear or branched hydroxy- or polyhydroxy-C_1–C_6-alkoxy-C_1–C_6 alkyl group having from two to five —OH groups.

5,616,799

PROCESS FOR THE PREPARATION OF GLYCOLOYLANILIDES

Siegfried Planker, Königstein, and Theodor Papenfuhs, Frankfurt, both of Germany, assignors to Hoechst Aktiengesellschaft, Germany

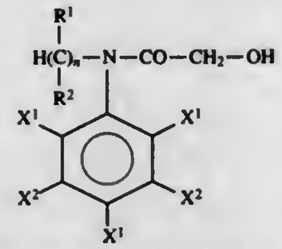
Filed Apr. 17, 1995, Ser. No. 423,522

Claims priority, application Germany, Apr. 19, 1994, 44 13 618.8

Int. Cl.⁶ C07C *233/33;231/02*

U.S. Cl. 564—202 **47 Claims**

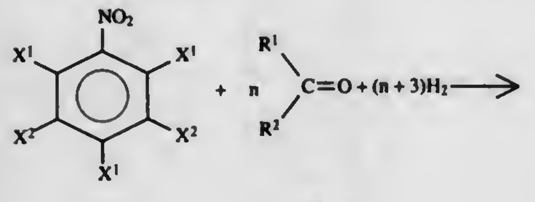
1. A process for the preparation of glycoloylanilides of the formula (G)



(G)

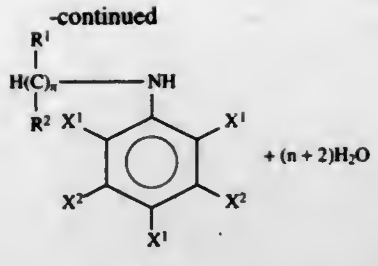
which comprises reacting a nitrobenzene of the formula (A) in which X^1 independently at each occurrence is H, halogen, cyano, trifluoromethyl, alkyl or alkoxy having in each case 1 to 4 carbon atoms in the alkyl moiety, and X^2 independently at each occurrence is H, halogen, cyano, carboxyl, trifluoromethyl, substituted or unsubstituted aminocarbonyl or aminosulfonyl, alkyl, alkoxy or alkoxycarbonyl having in each case 1 to 4 carbon atoms in the alkyl moiety, and n is 0 or 1, with hydrogen and, if desired, with a carbonyl compound of the formula (B) in which R^1 and R^2 are H, alkyl, hydroxyalkyl, alkoxyalkyl or acyloxyalkyl having in each case 1 to 4 carbon atoms in the alkyl moiety, in the presence of a catalyst which comprises noble metal and of a solvent, in accordance with reaction equation (1)

(1)



(A) (B)

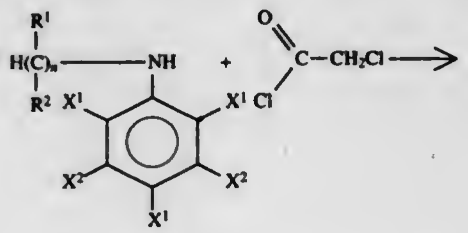
-continued



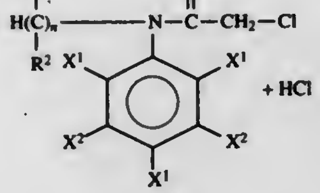
(C)

separating off the catalyst and reacting the compound of the formula (C) with chloroacetyl chloride, in accordance with reaction equation (2)

(2)



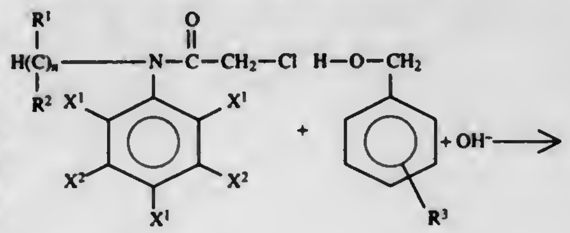
(C)



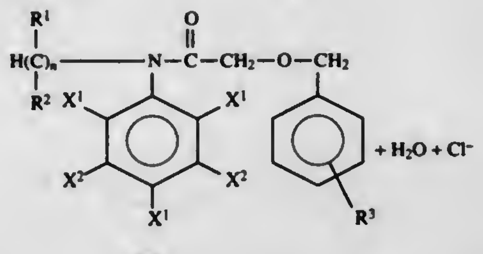
(D)

to give a compound of the formula (D), separating off the hydrogen chloride formed, reacting the compound of the formula (D) with a benzyl alcohol of the formula (E) in which R^3 is H, halogen, alkyl or alkoxy having in each case 1 to 4 carbon atoms, and with a base, in accordance with reaction equation (3)

(3)



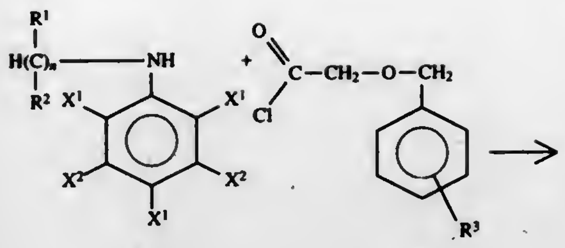
(D) (E)



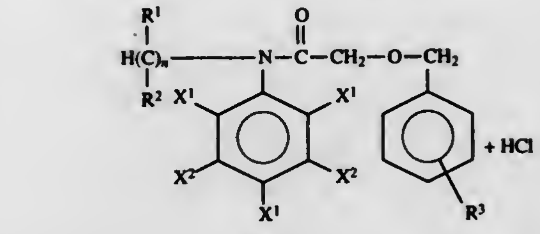
(F)

separating off if desired the salt formed from the base and hydrogen chloride, or reacting the compound of the formula (C) with an O-benzylglycoloyl chloride of the formula (K) in which R^3 is as defined above, and if desired with a base, in accordance with reaction equation (4)

(4)



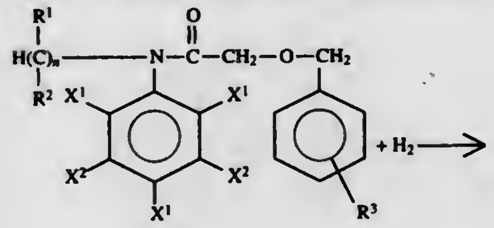
(C) (K)



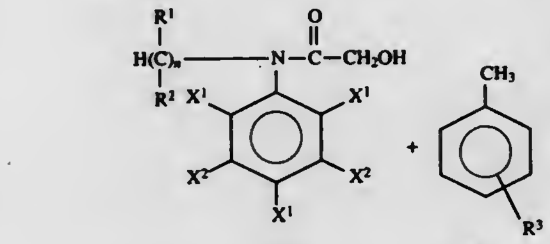
(F)

separating off if desired the salt formed from the base and hydrogen chloride, and reacting the O-benzylglycoloylanilide of the formula (F), in the presence of a catalyst which contains noble metal, with hydrogen, in accordance with reaction equation (5)

(5)



(F)



(G) (H)

separating off the compound of the formula (H) which is formed and isolating the glycoloylanilide of the formula (G).

5,616,800

DICATIONIC AND POLYCATIONIC MONOPRIMARY ALCOHOLS AND DERIVATIVES THEREOF

Dorothy L. Roerden, and R. Keith Frank, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 792,553, Nov. 15, 1991. This application May 31, 1995, Ser. No. 455,803

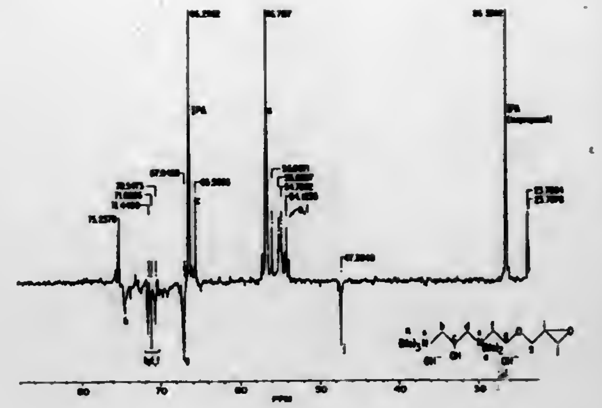
Int. Cl.⁶ C07C *213/04;215/40;* **C07D** *301/26;303/36*

U.S. Cl. 564—292 **6 Claims**

1. A process for making a dicationic monoprimary alcohol, comprising reacting a halohydroxyalkyl trialkylammonium halide of the formula

$$alk_3N^+\text{-}CR_1R_2CR_3OHCR_4R_5X\ X^-$$

wherein each alk is independently of 1–8 carbon atoms; each R_1, R_2, R_3, R_4 and R_5 is independently H or alkyl of 1–8 carbon atoms;



X is Cl, Br or I and X^- is Cl^-, Br^- or I^- with a dialkylalkanolamine of the formula $ALK_2NC_nH_{2n}OH$, wherein each ALK is independently alkyl of 1–8 carbon atoms and n is 2–5; in the presence of an alkaline material to produce a dicationic alcohol.

5,616,801

CHARGE TRANSPORTING MATERIALS AND ELECTROPHOTOGRAPHIC PHOTOCONDUCTORS USING THE SAME

Tomoyuki Shimada, Numazu; Masaomi Sasaki, Susono; Mitsuru Hashimoto, and Tamotsu Aruga, both of Numazu, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

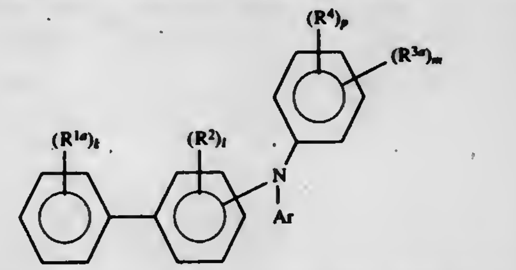
Continuation of Ser. No. 197,853, Feb. 17, 1994, abandoned, which is a continuation of Ser. No. 77,968, Jun. 18, 1993, Pat. No. 5,298,661, which is a continuation of Ser. No. 817,975, Jan. 8, 1992, abandoned, which is a continuation of Ser. No. 442,533, Nov. 28, 1989, abandoned, which is a continuation-in-part of Ser. No. 260,063, Oct. 20, 1988, Pat. No. 4,898,800. This application Oct. 25, 1994, Ser. No. 328,603

Claims priority, application Japan, Jan. 27, 1989, 1-18698; Jan. 27, 1989, 1-18699

Int. Cl.⁶ C07C *211/54;211/00*

U.S. Cl. 564—307 **24 Claims**

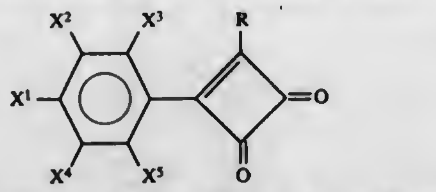
1. Aminobiphenyl compounds having the formula:



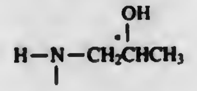
wherein R^{1a} represents lower alkyl group, alkoxy group having 1 to 4 carbon atoms, thioalkoxyl group having 1 to 4 carbon atoms, aryloxy group, aralkyl group, nitro group, aryl group, halogen or lower dialkylamino group; R^2 represents hydrogen, a lower alkyl group, alkoxyl group having 1 to 4 carbon atoms or halogen; R^{3a} represents hydrogen, alkyl group having 1 to 4 carbon atoms, alkoxyl group having 1 to 4 carbon atoms, halogen, lower dialkylamino group, amino group, thioalkoxyl group having 1 to 4 carbon atoms, aryloxy group, methylenedioxy group, aralkyl group or phenyl group; R^4 represents hydrogen, lower alkyl group, alkoxyl group or halogen; Ar represents an unsubstituted or substituted monocyclic hydrocarbon group or non-condensed polycyclic hydrocarbon group; k is an integer of 0 to 5, l is an integer of 0 to 4, and (p+m) is 0 to 5, provided that when Ar is an unsubstituted phenyl group R^{1a}, R^2, R^{3a}, and R^4 cannot be hydrogen at the same time.

5,616,802
CYCLOBUTENEDIONE DERIVATIVE, PROCESS FOR PREPARING THE SAME, AND NONLINEAR OPTICAL ELEMENT
Yasunari Nishikata, and Lyong Sun Pu, both of Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan
Filed Apr. 14, 1995, Ser. No. 421,875
Claims priority, application Japan, Oct. 19, 1994, 6-253717
Int. Cl.[6] C07C *211/16*
U.S. Cl. 564—307 **4 Claims**

1. A cyclobutenedione derivative represented by formula (I)


(I)

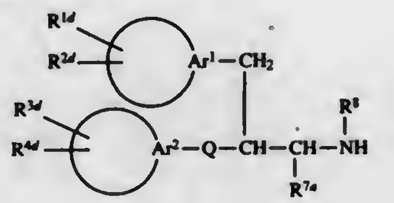
wherein X^1 represents a halogen atom; X^2, X^3, X^4 and X^5 each represents a hydrogen atom or a halogen atom; and R represents a substituent represented by the following formula



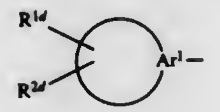
wherein C* represents an asymmetric carbon atom, wherein said carbon atom has an R-configuration or an S-configuration.

5,616,803
SUBSTITUTED AMIC ACID DERIVATIVES
Takashi Nomoto; Masahiro Hayashi; Jun Shibata; Yoshikazu Iwasawa; Morihiro Mitsuya; Yoshiaki Iida; Katsumasa Nonoshita, and Yasufumi Nagata, all of Tsukuba, Japan, assignors to Banyu Pharmaceutical Co., Ltd., Tokyo, Japan
Division of Ser. No. 471,081, Jun. 6, 1995, Pat. No. 5,488,149, which is a continuation of Ser. No. 193,850, Feb. 9, 1994, abandoned. This application Oct. 6, 1995, Ser. No. 540,628
Claims priority, application Japan, Feb. 12, 1993, 5-047364; Sep. 24, 1993, 5-261713; Sep. 24, 1993, 5-261714
Int. Cl.[6] C07C *211/27*
U.S. Cl. 564—337 **7 Claims**

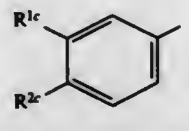
1. A compound of the formula (II'):


(II')

wherein

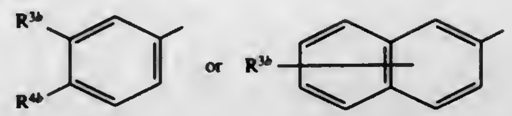


is a group of the formula



(wherein each of R^{1c} and R^{2c} which are the same or different, is a hydrogen atom, a halogen atom, a lower alkyl group or a lower alkoxy group) or a naphthyl group;

is a group of the formula



(wherein R^{3b} is a hydrogen atom, a halogen atom, a lower alkyl group or a lower alkoxy group; and R^{4b} is a hydrogen atom, a halogen atom, a lower alkyl group, a lower alkoxy group, or an aryl or heteroaromatic ring group which may have substituent(s) selected from the group consisting of a halogen atom, a lower alkyl group and a lower alkoxy group, provided that when Q is a single bond, R^{4b} is an aryl or heteroaromatic ring group which may have substituent(s) selected from the group consisting of a halogen atom, a lower alkyl group and a lower alkoxy group); Q is a single bond or a group of the formula —CO—O—, —O—CO—, $—CH_2CH_2—$, —CH=CH—, $—OCH_2—$, $—SCH_2—$, $—CH_2O—$ or $—CH_2S—$; R^{7a} is a lower alkyl group; and R^8 is a hydrogen atom, a lower alkyl group, a lower alkenyl group, a lower alkynyl group or an aralkyl group.

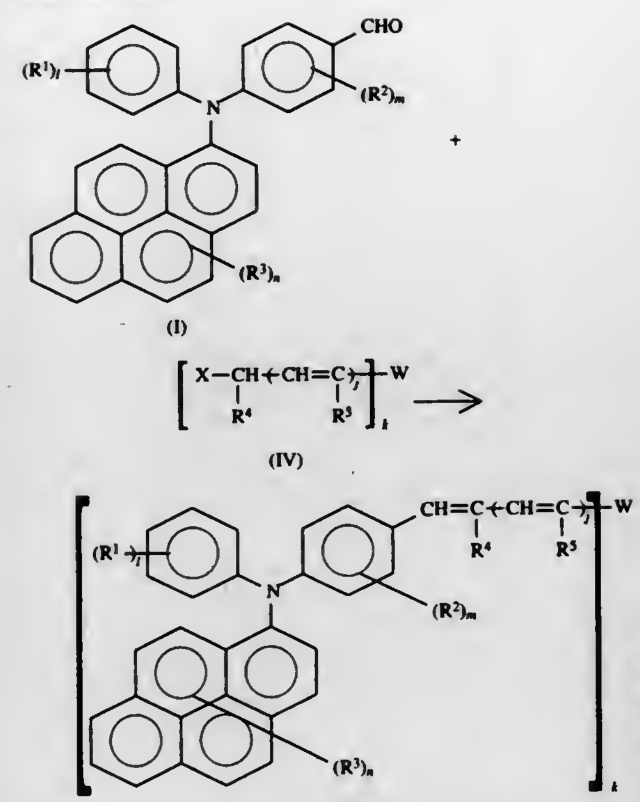
5,616,804
PROCESS FOR THE PREPARATION OF DIBENZYLAMINE
Anna M. C. F. Castelijns, Beek, and Peter J. D. Maas, Schinnen, both of Netherlands, assignors to DSM N.V., Heerlen, Netherlands
Continuation of Ser. No. 309,029, Sep. 20, 1994, abandoned. This application Nov. 17, 1995, Ser. No. 560,510
Claims priority, application Belgium, Sep. 20, 1993, 09300975
Int. Cl.[6] C07C *209/78*
U.S. Cl. 564—398 **12 Claims**

1. A process for the preparation of dibenzylamine comprising the step of hydrogenating benzaldehyde in the presence of ammonia and a catalyst containing palladium wherein the hydrogenation is performed in the presence of a solvent or dispersion medium in an amount of about 3 to 60 wt. % calculated with respect to benzaldehyde.

5,616,805
METHODS FOR PREPARING PYRENYLAMINE DERIVATIVES AND INTERMEDIATES
Chiaki Tanaka, Shizuoka-ken; Masaomi Sasaki, Susono; Tamotsu Aruga, Mishima; Tomoyuki Shimada, Shizuoka-ken, and Hiroshi Adachi, Numazu, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Division of Ser. No. 303,823, Sep. 9, 1994, Pat. No. 5,457,232, which is a division of Ser. No. 205,376, Mar. 4, 1994, abandoned, which is a division of Ser. No. 996,000, Dec. 23, 1992, Pat. No. 5,344,985. This application May 11, 1995, Ser. No. 439,109
Claims priority, application Japan, Dec. 28, 1991, 3-360363; Apr. 15, 1992, 4-121326; Jun. 8, 1992, 4-173818; Jul. 17, 1992, 4-213528; Jul. 17, 1992, 4-213529
Int. Cl.[6] C07C *209/68*
U.S. Cl. 564—405 **2 Claims**

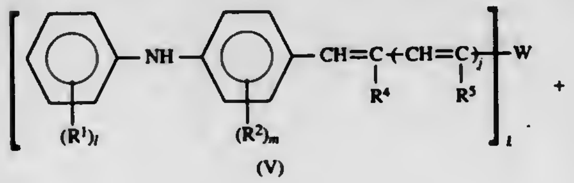
1. A method of preparing a pyrenylamine derivative having an unsaturated bond of formula (III) comprising the step of allowing an aldehyde compound of formula (I) to react with a phosphorus compound of formulas (IV) in accordance with the following

reaction scheme:

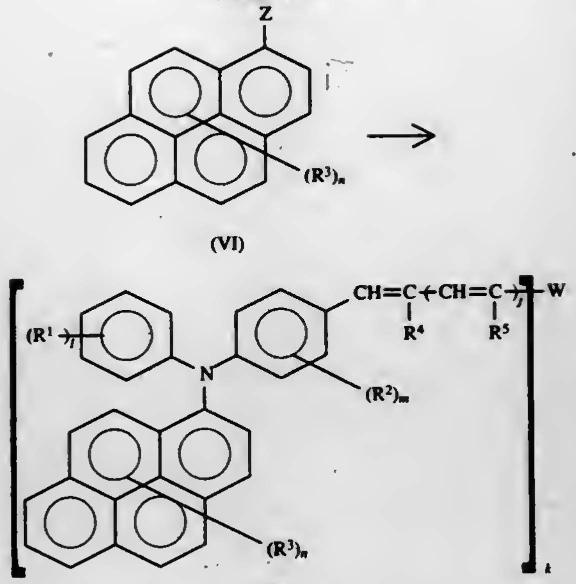

(I)
(IV)
(III)

wherein R^1 and R^2 each represent hydrogen, a halogen atom, nitro group, cyano group, a dialkylamino group, an unsubstituted or substituted alkyl group having 1 to 10 carbon atoms, an unsubstituted or substituted alkoxyl group having 1 to 10 carbon atoms, or phenyl group; R^3 represents hydrogen or an unsubstituted or substituted alkyl group having 1 to 10 carbon atoms; l is an integer of 1 to 5; m is an integer of 1 to 4; n is an integer of 1 to 3; and when l, m or n is 2 or more, R^1, R^2 and R^3 may be the same or different, R^4 and R^5 each represent hydrogen, cyano group, formyl group, an alkoxylcarbonyl group, an unsubstituted or substituted alkyl group having 1 to 10 carbon atoms, an alkenyl group having 1 to 10 carbon atoms, or phenyl group; W represents hydrogen, an unsubstituted or substituted alkyl group having 1 to 10 carbon atoms, a phenylthio group, a bivalent group comprising a chain unsaturated hydrocarbon, a monovalent or bivalent carbocyclic aromatic group, or a monovalent or bivalent group comprising a heterocyclic ring; j is an integer of 0 to 2; k is an integer of 1 or 2; and X in formula (IV) represents a phosphonium salt represented by $—P+(R^6)_3Y^-$, or a dialkylphosphite group represented by $—PO(OR^7)_2$, in which R^6 represents phenyl group or an unsubstituted or substituted alkyl group having 1 to 10 carbon atoms, Y represents a halogen atom, and R^7 represents an unsubstituted or substituted alkyl group having 1 to 10 carbon atoms.

2. A method of preparing a pyrenylamine derivative having an unsaturated bond of formula (III) comprising the step of allowing a secondary amine compound of formula (V) to react with a pyrene compound of formula (VI) in accordance with the following reaction scheme:


(V)

-continued


(VI)
(III)

wherein R^1 and R^2 each represent hydrogen, a halogen atom, nitro group, cyano group, a dialkylamino group, an unsubstituted or substituted alkyl group having 1 to 10 carbon atoms, an unsubstituted or substituted alkoxyl group having 1 to 10 carbon atoms, or phenyl group; R^3 represents hydrogen or an unsubstituted or substituted alkyl group having 1 to 10 carbon atoms; l is an integer of 1 to 5; m is an integer of 1 to 4; n is an integer of 1 to 3; and when l, m or n is 2 or more, R^1, R^2 and R^3 may be the same of different; R^4 and R^5 each represent hydrogen, cyano group, formyl group, an alkoxylcarbonyl group, an unsubstituted or substituted alkyl group having 1 to 10 carbon atoms, an alkenyl group having 1 to 10 carbon atoms, or phenyl group; W represents hydrogen, an unsubstituted or substituted alkyl group having 1 to 10 carbon atoms, a phenylthio group, a bivalent group comprising a chain unsaturated hydrocarbon, a monovalent or bivalent carbocyclic aromatic group, or a monovalent or bivalent group comprising a heterocyclic ring; j is an integer of 0 to 2; k is an integer of 1 or 2; X in formula (IV) represents a phosphonium salt represented by $—P+(R^6)_3Y^-$, or a dialkylphosphite group represented by $—PO(OR^7)_2$, in which R^6 represents phenyl group or an unsubstituted or substituted alkyl group having 1 to 10 carbon atoms, Y represents a halogen atom, and R^7 represents an unsubstituted or substituted alkyl group having 1 to 10 carbon atoms; and Z represents a halogen atom.

5,616,806
PROCESS FOR PREPARING HIGH-PURITY ANILINE
Teruyuki Nagata; Katsuji Watanabe; Yoshitsugu Kono, all of Omuta; Akihiro Tamaki, Yokohama, and Takashi Kobayashi, Omuta, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan
Filed Sep. 17, 1991, Ser. No. 760,771
Claims priority, application Japan, Sep. 18, 1990, 2-246281
Int. Cl.[6] C07C *209/22*
U.S. Cl. 564—423 **12 Claims**

1. A process for the continuous preparation of aniline wherein nitrobenzene is hydrogenated with hydrogen in an aniline solvent containing suspended therein a catalyst of palladium or palladium-platinum which is deposited on a lipophilic carbon having an oil absorbency of at least 100, at a temperature of from 150° to 250° C. substantially in the absence of water while aniline and water formed in said reaction are continuously distilled off as vapor from the reaction product, and the concentration of nitrobenzene in the reaction solution is maintained at 0.01% by weight or less, which comprises adding a zinc compound selected from the group consisting of zinc oxide, zinc acetate, zinc oxalate and zinc nitrate to the reaction system as a promoter and adding carbon monoxide to the hydrogen at a concentration of 5–200 ppm.

5,616,807

PROCESS FOR PREPARING ALKYL ANILINES

James A. Foster, Corpus Christi, Tex.; Werner H. Mueller, Charlotte, N.C., and Debra A. Ryan, Corpus Christi, Tex., assignors to Hoechst Celanese Corp., Somerville, N.J.

Continuation-in-part of Ser. No. 56,554, Apr. 30, 1993, abandoned. This application May 16, 1995, Ser. No. 442,083

Int. Cl.^{6} C07C 209/26

U.S. Cl. 564—423 **29 Claims**

1. A process for producing N-alkyl anilines comprising: continuously adding a nitrobenzene, an alkyl aldehyde, and hydrogen to a well-mixed continuous stirred tank reactor, concurrently hydrogenating the nitrobenzene to an aniline and alkylating the aniline in the presence of a hydrogenation catalyst selected from the group consisting of Raney nickel and palladium in said reactor to form an N-alkyl aniline product wherein said product is continuously withdrawn from said reactor at the same rate as the combined rate of addition of the reactants wherein the conversion of said nitrobenzene is at least about 90%.

5,616,808

OPTICALLY PURE 1-AMINO-2-INDANOLS

Yun Gao, Framingham; Yaping Hong, Worcester; Xiaoyi Nie, Boxborough; Roger P. Bakale, Shrewsbury; Richard R. Feinberg, Norton, and Charles M. Zepp, Berlin, all of Mass., assignors to Sepracor, Inc., Marlborough, Mass.

Continuation-in-part of Ser. No. 278,459, Jul. 21, 1994, which is a continuation-in-part of Ser. No. 121,340, Sep. 14, 1993, Pat. No. 5,516,943. This application Oct. 12, 1994, Ser. No. 321,998

Int. Cl.^{6} C07C 211/38

U.S. Cl. 564—428 **5 Claims**

1. A substantially optically pure 1-alkylamino-2-indanol or salt thereof wherein alkyl is C_1 to C_6 hydrocarbon.

5,616,809

SULFATED METAAMINOPHENOL COMPOUNDS

Alex Junino, Livry-Gargan; Alain Lagrange, Chatou, and Alain Genet, Aulnay-sous-Bois, all of France, assignors to L'Oreal, Paris, France

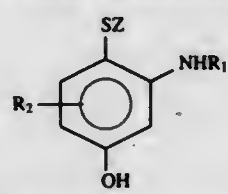
Division of Ser. No. 130,899, Oct. 4, 1993, Pat. No. 5,451,236. This application Apr. 25, 1995, Ser. No. 428,619

Claims priority, application France, Oct. 2, 1992, 92 11712

Int. Cl.^{6} C07C 215/28

U.S. Cl. 564—440 **4 Claims**

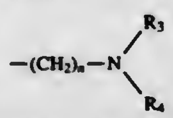
1. A sulfated metaaminophenol coupler having the formula



(I)

wherein

Z represents C_1–C_{18} alkyl, aralkyl wherein the alkyl moiety has 1–6 carbon atoms, C_1–C_6 monohydroxyalkyl, C_2–C_6 polyhydroxyalkyl, aryl, aminoalkyl having the formula



(II)

wherein n is a whole number ranging from 1 to 6 inclusive, R_3 and R_4, each independently, represent hydrogen, C_1–C_4 alkyl, C_1–C_4 hydroxyalkyl or C_1–C_6 acyl;

R_1 represents hydrogen, C_1–C_6 alkyl, C_1–C_6 hydroxyalkyl, C_2–C_6 polyhydroxyalkyl, C_1–C_6 monocarbamylalkyl, C_1–C_6 dicarbamylalkyl, C_1–C_6 aminoalkyl, (C_1–C_6) acylamino(C_1–C_4)alkyl, carb(C_2–C_6)alkoxy (C_1–C_4)alkyl, carbamyl or mono(C_1–C_6)alkyl carbamyl;

R_2 represents hydrogen, C_1–C_4 alkyl, C_1–C_4 monohydroxyalkyl, or a C_1–C_4 alkoxy, or

an acid addition salt thereof.

5,616,810

PROCESS FOR THE PREPARATION OF DEACTIVATED ANILINES

Jean-Marc Ricca, Lyon, France, assignor to Rhone-Poulenc Chimie, Courbevoie, France

Division of Ser. No. 156,633, Nov. 24, 1993, Pat. No. 5,401,882. This application Mar. 28, 1995, Ser. No. 412,653

Claims priority, application France, Nov. 25, 1992, 92 14160; Nov. 25, 1992, 92 14157; Nov. 28, 1992, 92 14155

Int. Cl.^{6} C07C 209/64; 209/62

U.S. Cl. 564—442 **19 Claims**

1. A process for dealkylating a deactivated aniline, which comprises reacting said aniline with ammonia or a primary or secondary amine in the presence of a catalytic amount of a pyridine salt.

5,616,811

ETHERAMINE ALKOXYLATES

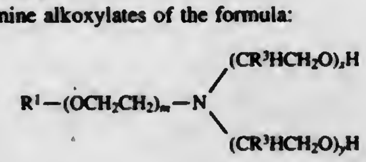
Jeffrey J. Vipond; John M. Larkin; Terry L. Renken, all of Austin, and Howard M. Stridde, Georgetown, all of Tex., assignors to Huntsman Petrochemical Corporation, Salt Lake City, Utah

Filed Jun. 6, 1995, Ser. No. 470,692

Int. Cl.^{6} C07C 211/03

U.S. Cl. 564—505 **8 Claims**

1. Etheramine alkoxylates of the formula:



where R^1 is a straight or branched alkyl, aryl or alkylaryl group of 6 to 22 carbon atoms;

R^3 are independently hydrogen or C_1–C_3 alkyl;

m averages from about 3 to about 20; and

x and y each independently average from about 0 to 30, where x+y averages from about 5 to about 60 and where x and y are not both 0.

5,616,812

METHOD OF PRODUCING A POLYVINYL ETHER COMPOUND

Tatsuya Egawa; Yasuhiro Kawaguchi; Kenji Mogami, and Nobuaki Shimizu, all of Sodegaura, Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan

Division of Ser. No. 66,229, May 25, 1993, abandoned. This application Sep. 13, 1994, Ser. No. 305,797

Claims priority, application Japan, Jun. 4, 1992, 4-143922; Sep. 7, 1992, 4-237842

Int. Cl.^{6} C07C 43/30; 43/32

U.S. Cl. 568—598 **1 Claim**

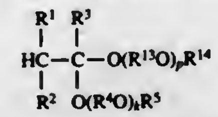
1. A method of production of a polyvinyl ether compound for a lubricating oil comprising the steps of:

(a) charging a boron trifluoride or a complex thereof, a solvent and an alcohol expressed by the general formula (III):

$$R^{14}(OR^{13})_pOH \quad \text{(III)}$$

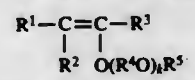
wherein R^{13} is a bivalent hydrocarbon group having 2 to 10 carbon atoms, R^{14} is a hydrocarbon group having 1 to 10 carbon atoms, p is a number the average of which is in the range of 0 to 10 and a plural of $R^{13}O$'s may be the same or different from each other when a plural of $R^{13}O$'s are present, into a reactor to form a mixture therein;

(b) forming an acetal expressed by the general formula (II'):



(II')

wherein R^1, R^2 and R^3 are a hydrogen atom or a hydrocarbon group having 1 to 8 carbon atoms, respectively, and may be the same or different from each other, R^4 is a bivalent hydrocarbon group having 2 to 10 carbon atoms, R^5 is a hydrocarbon group having 1 to 10 carbon atoms, R^{13} and R^{14} are the same as described above, k is the number the average of which is in the range of 0 to 10, a plural of R^4O's may be the same or different from each other when a plural of R^4O's are present and a plural of $R^{13}O$'s may be the same or different from each other when a plural of $R^{13}O$'s are present, by adding gradually a vinyl ether monomer, until the amount of the monomer reaches the equivalent amount to said alcohol, expressed by the general formula (I):



(I)

wherein R^1 to R^5 and k are the same as those described above and a plural of R^4O's may be the same or different from each other when a plural of R^4O's are present, to the mixture formed in step (a) at a temperature of 0° to 100° C.; and

(c) forming a polyvinyl ether compound having a weight average molecular weight in the range of 300 to 1200 and ratio of weight average molecular weight and number average molecular weight in the range of 1.05 to 1.50 by further adding vinyl ether monomer expressed by said general formula (I) to the resulting mixture provided in the reactor in step (b), with a speed which balances with the ability of the reactor to eliminate the heat of polymerization, at a temperature of 0° to 100° C.

5,616,813

VINYL ETHER COMPOUND, PROCESS FOR PRODUCING THE SAME AND COPOLYMER CONTAINING THE SAME

Cherstokov V. Filippovich, Moscow; Sterlin S. Rafailovich, Moscow; S. Lev German, deceased, late of Moscow, all of Russian Federation; Lin Jeng-Tain, Kitaibaraki, Japan; Satoru Saito, and Haruyoshi Tatsu, both of Ibaraki, Japan, assignors to Nippon Mektron Limited, Tokyo, Japan

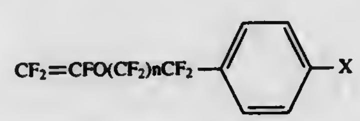
Filed Oct. 31, 1995, Ser. No. 551,272

Claims priority, application Japan, Nov. 17, 1994, 6-308198; Jul. 13, 1995, 7-200357

Int. Cl.^{6} C07C 49/76

U.S. Cl. 568—663 **1 Claim**

1. A vinyl ether compound represented by the following general formula:



where X is a halogen atom and n is an integer of 1 to 5.

5,616,814

METHOD FOR THE WATER WASHING AND RECOVERY OF METHYL TERTIARY BUTYL ETHER

Kyle L. Preston, Port Arthur, Tex., assignor to Texaco Chemical Inc., White Plains, N.Y.

Filed Aug. 17, 1995, Ser. No. 516,373

Int. Cl.^{6} C07C 41/05; 41/09

U.S. Cl. 568—699 **9 Claims**

1. In a method for continuously preparing methyl tertiary butyl ether from methanol, tertiary butyl alcohol and isobutylene, wherein an etherification reaction product is obtained comprising isobutylene, methanol, acidic by-products comprising methyl formate and methyl tertiary butyl ether, the improvement which comprises:

a) charging said etherification reaction product to a first MTBE distillation zone and fractionating it therein to provide a first lower boiling distillation fraction comprising isobutylene, methyl tertiary butyl ether, methanol and acidic by-products and also to provide a higher boiling distillation fraction comprising methanol, tertiary butyl alcohol and water;

b) continuously charging said first lower boiling distillation fraction to a methanol extraction tower adjacent the bottom thereof;

c) continuously charging wash water to said methanol extraction tower adjacent the top thereof;

d) continuously charging an aqueous solution of an alkali to said methanol extraction tower adjacent the top thereof but below the charge point for the wash water, in an amount sufficient to substantially completely neutralize the said acidic by-products, to thereby counter-currently contact the etherification reaction product to provide an overhead extract substantially free from acidic by-products comprising isobutylene, methyl tertiary butyl ether and a minor amount of water, and a bottoms raffinate comprising methanol, water, alkaline by-products and a minor amount of methyl tertiary butyl ether; and

e) continuously separating said extract into a fraction comprising isobutylene and water and a fraction consisting essentially of methyl tertiary butyl ether.

5,616,815

OLEFIN HYDRATION PROCESS

Martin P. Atkins, Ashford, England, assignor to BP Chemicals Limited, London, England

Filed Nov. 13, 1995, Ser. No. 556,646

Claims priority, application United Kingdom, Nov. 23, 1994, 9423646

Int. Cl.^{6} C07C 29/04

U.S. Cl. 568—700 **19 Claims**

1. A process for the hydration of olefins to the corresponding alcohols in the vapour phase in the presence of a catalyst system comprising a heteropolyacid catalyst supported on niobia.

5,616,816

TERTIARY ALKYL ALKYLPHENOLS AND ORGANIC COMPOSITIONS CONTAINING SAME

Louis Burjes, Wickliffe, and Calvin W. Schroeck, Willoughby Hills, both of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

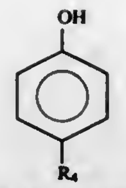
Division of Ser. No. 962,382, Oct. 16, 1992. This application Jun. 1, 1995, Ser. No. 457,345

Int. Cl.^{6} C07C 39/23

U.S. Cl. 568—727 **24 Claims**

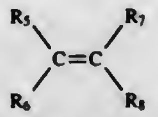
1. A process comprising reacting in the presence of an acidic catalyst at a temperature ranging from about 25° C. to about 200° C. a phenol or mixture of phenols of the formula

(II)



wherein at least 50% of the R_4 groups are aliphatic hydrocarbon groups containing at least 7 carbon atoms, with an olefin of the formula

(III)



wherein each of R_5–R_8 is independently H or an alkyl group with the proviso that at least both of R_5 and R_6 or both of R_7 and R_8 are alkyl and the total number of carbon atoms in the olefin does not exceed 8, and wherein the molar ratio of (II) to (III) ranges from about 1:0.95 to about 1:1.2, and then reacting the product obtained thereby, in the presence of an acidic catalyst or a basic catalyst wherein the basic catalyst is selected from the group consisting of alkali and alkaline earth metal oxides, hydroxides and alkoxides, wherein the alkaline earth metal is selected from the group consisting of calcium, barium and strontium, with an aldehyde or ketone wherein the molar ratio of (II) to aldehyde or ketone ranges from about 2:1.8 to about 2:0.9 at temperatures ranging from about 25° C. to about 200° C., and recovering the product obtained thereby.

5,616,817
PREPARATION OF 1,2-PROPANEDIOL

Ludwig Schuster, Limburgerhof, and Manfred Eggersdorfer, Frankenthal, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Nov. 20, 1995, Ser. No. 559,625
Claims priority, application Germany, Nov. 26, 1994, 44 42 124.9
Int. Cl.⁶ C07C *29/132;29/60;31/20*
U.S. Cl. 568—861 **1 Claim**

1. A process for the preparation of 1,2-propanediol by catalytic hydrogenation of glycerol at elevated temperature and pressure, which comprises using glycerol having a water content of up to 20% by weight and a catalyst comprising the metals cobalt, copper, manganese and molybdenum in amounts of, based on the total weight of the catalyst,

from 40 to 70% by weight of cobalt,
from 10 to 20% by weight of copper,
from 0 to 10% by weight of manganese and
from 0 to 10% by weight of molybdenum,

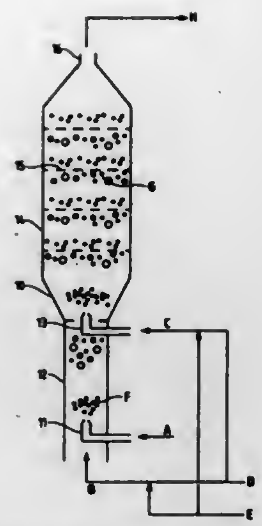
where this catalytically active material may additionally contain inorganic polyacids and/or heteropolyacids in an amount of up to 10% by weight, based on the total weight of the catalyst.

5,616,818
PROCESS FOR THE POLYNITRATION OF AROMATIC COMPOUNDS

Hans-Georg Pirkl, Köln; Reinhard Schomäcker, Leverkusen; Uwe Klingler, Dormagen; Thomas Schieb, Rösrath; Gerhard Wiechers, Leverkusen, all of Germany, and Jürgen Zimmermann, Walnut Creek, Calif., assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 13, 1995, Ser. No. 543,095
Claims priority, application Germany, Oct. 17, 1994, 44 37 047.4
Int. Cl.⁶ C07C *205/06*
U.S. Cl. 568—932 **19 Claims**

1. A continuous process for the polynitration of an aromatic compound in liquid form comprising reacting the aromatic compound with a nitronium ion solution in a manner such that



a) the polynitration is carried out in a single reaction apparatus under adiabatic conditions in an emulsion as the reaction medium,
b) from about 1.3 to about 3.5 mol of HNO_3 per mol of aromatic compound is fed in the form of a nitronium ion solution to the reaction apparatus,
c) the emulsion is maintained by repeated dispersion to reduce coalescence,
d) the time in which the streams of aromatic compound and nitronium ion solution stream are first dispersed is less than one second, and
e) at least 20% of the total amount of HNO_3 is present at the time the aromatic compound and nitronium ion solution are first dispersed.

5,616,819
PROCESS FOR PREPARING FLUORINATED ALIPHATIC COMPOUNDS

C. Bradford Boyce, Baton Rouge, and Randolph K. Belter, Zachary, both of La., assignors to LaRoche Industries Inc., Atlanta, Ga.

Filed Aug. 28, 1995, Ser. No. 519,779
Int. Cl.⁶ C07C *17/08*
U.S. Cl. 570—167 **13 Claims**

1. A process for preparing a fluorinated aliphatic hydrocarbon of the formula

$$CH_aF_{3-a}—CH_2—CH_bF_{3-b}$$

wherein a is 0 or the integer 1 or 2 and b is 0 or the integer 1, 2 or 3, comprising

i.) reacting a chlorinated olefinic-hydrocarbon of the formula

$$CH_cCl_{2-c}{=}CH—CH_dCl_{3-d}$$

wherein c is 0 or the integer 1 or 2, and d is 0 or the integer 1 or 2 with anhydrous hydrogen fluoride at a temperature and for a time sufficient to form a chlorofluoro olefin of the formula

$$CH_eCl_{2-e}{=}CH—CH_fF_{3-f}$$

wherein e is 0 or the integer 1 or 2, and f is 0 or the integer 1 or 2 wherein said reacting is not catalyzed;

ii.) reacting said chlorofluoro olefin with anhydrous hydrogen fluoride and in the presence of a catalytically effective amount of at least one of a metal oxide or at least one of a metal halide or mixtures of said at least one metal oxide with at least one metal halide for a time and at a temperature sufficient to form a reaction mixture containing said fluorinated aliphatic hydrocarbon; and

iii.) separating said fluorinated aliphatic hydrocarbon from said reaction mixture.

5,616,820
PROCESS FOR THE MANUFACTURE OF 1,1,1,2-TETRAFLUORO-2-CHLOROETHANE AND OF PENTAFLUOROETHANE

Bernard Cheminal, Brignais; Eric Lacroix, Lyons, and André Lantz, Vernaison, all of France, assignors to Elf Atochem S.A., France

Continuation of Ser. No. 188,333, Jan. 26, 1994, abandoned. This application Jun. 28, 1995, Ser. No. 496,052
Claims priority, application France, Jan. 27, 1993, 93 00780
Int. Cl.⁶ C07C *17/08*
U.S. Cl. 570—169 **23 Claims**

1. Process for the preparation of:

(i) a mixture of 1,1,1,2-tetrafluoro-2-chloroethane (F124) and pentafluoroethane (F125), starting from a pentahaloethane selected from the group consisting of 1,1,1-trifluoro-2,2-dichloroethane (F123) and its mixture with 1,2-dichloro-1,1,2-trifluoroethane (F123a), or

(ii) a pentafluoroethane (F125) starting from a pentahaloethane selected from the group consisting of 1,1,1,2 -tetrafluoro-2-chloroethane (F124), 1-chloro-1,1,2,2-tetrafluoroethane (F124a), 1,1-dichloro-1,2,2-trifluoroethane (F123b) and mixtures thereof, comprising catalytically fluorinating said pentahaloethane in the gas phase with hydrofluoric acid and a mixed catalyst, said mixed catalyst comprising oxides, halides and/or oxyhalides of nickel and chromium deposited on a support of aluminum fluoride or of a mixture of aluminum fluoride and alumina, the content, by weight, of nickel and chromium in the catalyst being between 0.5 and 20% for each metal, the nickel/chromium atomic ratio being between 0.5 and 5, and recovering the mixture of F124 and F125 when practicing the above (i) or F125 when practicing the above (ii), each synthesized with substantial selectivity and productivity.

5,616,821
METHODS FOR PURIFYING AND RECOVERING CONTAMINATED REFRIGERANTS WITH SOLUTIONS OF BASES IN ORGANIC SOLVENTS

Robert W. Mouk, Westerville, and Albert E. Abel, Powell, both of Ohio, assignors to Commodore Laboratories, Inc., Columbus, Ohio

Continuation-in-part of Ser. No. 207,286, Mar. 7, 1994, abandoned. This application Jan. 30, 1995, Ser. No. 377,631
Int. Cl.⁶ C07C *17/38*
U.S. Cl. 570—177 **15 Claims**

1. A method of purifying a refrigerant composition, which comprises the steps of:

(a) introducing into a closed vessel a base in a suitably compatible organic solvent selected from the group consisting of polyhydric alcohol, polyglycol ether, monohydroxy ether and polyhydroxy ether;
(b) introducing into the closed vessel of step (a) a refrigerant composition to form a reaction mixture with said suitably compatible organic solvent, said refrigerant composition comprising (i) a primary perhalogenated refrigerant compound and (ii) a contaminating fluoroalkane other refrigerant compound in an amount>0.5 percent-by-weight, said contaminating fluoroalkane other refrigerant compound having at least one hydrogen atom and at least one other halogen atom in addition to fluorine;
(c) mixing the reaction mixture under elevated pressure to selectively decompose said contaminating fluoroalkane other refrigerant compound (ii) while allowing the temperature of said reaction mixture to warm, and
(d) withdrawing the primary perhalogenated refrigerant compound (i) as a gas from said closed vessel with a sufficiently reduced amount of contaminating fluoroalkane other refrigerant compound (ii) to enable reuse in refrigeration and air conditioning equipment.

5,616,822
CALIBRATION SYSTEMS

Richard F. Griffiths, Altrincham; John Lawrence, Clwyd., and Aled Williams, Llanfairfechan, all of United Kingdom, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, a British Corporation Sole, London, England

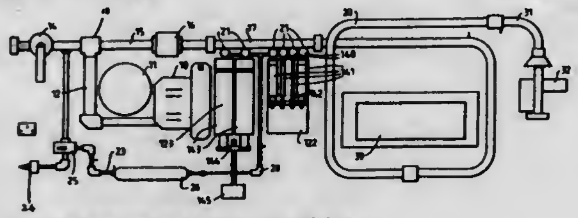
PCT No. PCT/GB93/02334, § 371 Date Jun. 8, 1995, § 102(e) Date Jun. 8, 1995, PCT Pub. No. WO94/11732, PCT Pub. Date May 26, 1994

PCT Filed Nov. 12, 1993, Ser. No. 433,406

Claims priority, application United Kingdom, Nov. 19, 1992, 9224304

Int. Cl.⁶ G01N *31/00*

U.S. Cl. 73—1.06 **11 Claims**



1. A calibration apparatus comprising:

a mixing manifold (17),

means (30) for connecting the manifold to a device (32) to be calibrated,

means (14, 15) for supplying air from the ambient air to the manifold (17),

means (16) for metering the supply of air to the manifold (17);

two alternative delivery systems (122, 123), a first delivery system (122) containing a plurality of comparatively low capacity syringes (141) ganged together (142) to a first common driving means (76) and a second delivery system (123) containing a plurality of comparatively high capacity syringes (143) ganged together (144) to a second common driving means (145), each syringe (141, 143) being individually connectable to, and disconnectable from the mixing manifold (17) by connection means (140), and

means (23, 24, 28) for supplying a test gas to the syringes (141, 143).

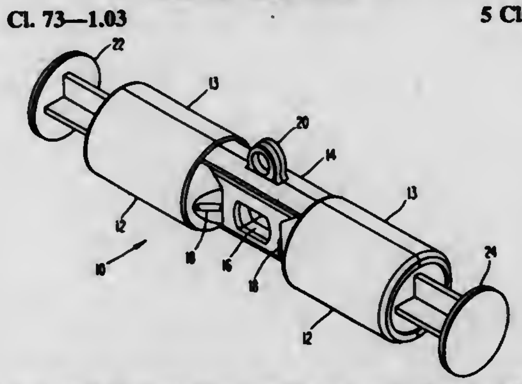
5,616,823
CALIBRATION VERIFICATION DEVICE

James Lattimore, Safety Harbor, Fla., assignor to Johnson & Johnson Medical, Inc., New Brunswick, N.J.

Filed Dec. 21, 1995, Ser. No. 576,773

Int. Cl.⁶ G01N *21/61*

U.S. Cl. 73—1.03 **5 Claims**



1. A calibration verification device for verifying the calibration of an infrared sensor for use in gas concentration measurements, comprising:

a filter comprising a thin film deposition on an infrared transparent substrate, said filter having a known infrared signature corresponding to that of a gas of a known concentration;

a filter housing for protecting the filter between uses, said filter housing being formed in the shape of an airway adapter which is adapted to snap-fit into a sensor housing of the infrared sensor; and

a push-button mechanism containing said filter and a spring, said push-button mechanism extending out an end of said filter housing and, when pushed against the force of said spring by an operator, selectively places the filter in the measurement path of the infrared sensor for calibration verification.

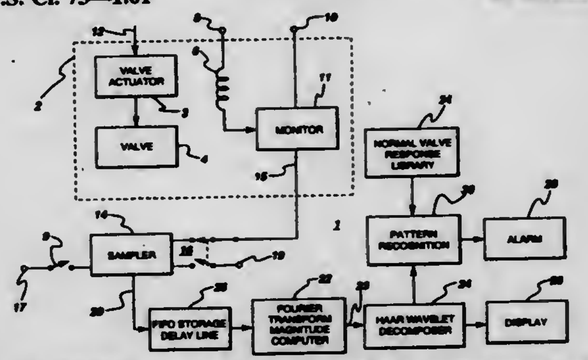
5,616,824
INSTRUMENT FOR DETECTING POTENTIAL FUTURE FAILURES OF VALVES IN CRITICAL CONTROL SYSTEMS

Aiman A. Abdel-Malek, Schenectady; John E. Hershey, Ballston Lake, both of N.Y., and Amer A. Hassan, Cary, N.C., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 21, 1995, Ser. No. 517,884

Int. Cl.⁶ G01M *13/02*

U.S. Cl. 73—1.01 **14 Claims**



1. Apparatus for monitoring the health and response of critical control valves by comparing the actual valve response signal with that of a normal valve response signal comprising:

a valve;

a valve actuator to actuate said valve in response to a valve control signal;

a monitor to monitor the response of said valve upon actuation of said valve to provide a valve response signal; and

means to compare said valve response signal and a normal valve response signal including:

Fourier transform magnitude compiler to compile samples of the magnitudes of the sample;

wavelet transform decomposition means to provide enhanced evaluation signals representing time variations in the time warped valve response signal; and

means to indicate differences between said enhanced evaluation signals and said normal valve response signal to evaluate the response and health of said valve.

5,616,825
EXHAUST SENSOR INCLUDING A CERAMIC TUBE IN METAL TUBE PACKAGE

David E. Achey, Grand Blanc, and Gary E. Thoman, Fenton, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 313,687, Sep. 27, 1994, abandoned. This application Jan. 4, 1996, Ser. No. 583,199

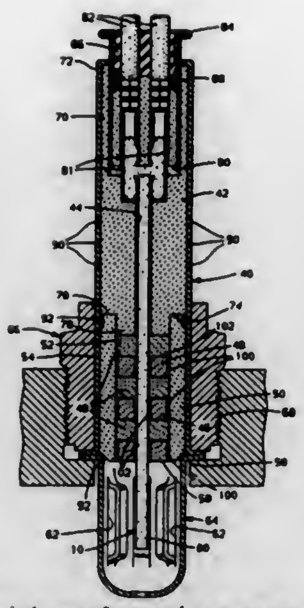
Int. Cl.⁶ G01N *27/04*

U.S. Cl. 73—23.31 **7 Claims**

1. An exhaust gas sensor comprising:

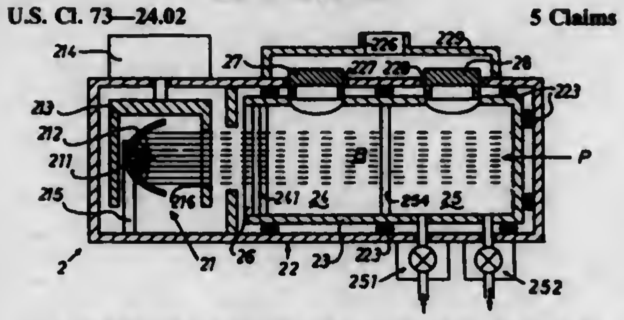
a flat plate sensing element for measuring constituents in the exhaust gas from a combustion engine, said flat plate sensing element comprising an alumina support substrate having an air reference channel;

a metal tubular-shaped housing around the flat plate sensing element;



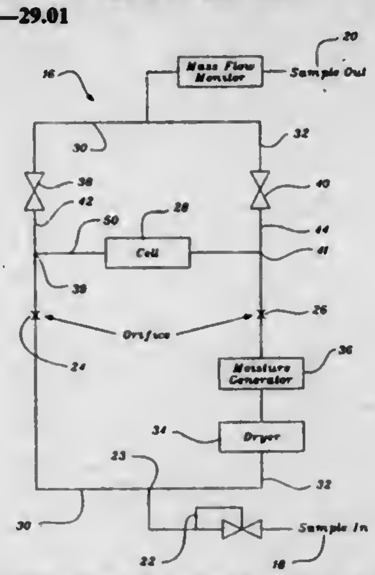
an upper ceramic locator for carrying an upper portion of the flat plate sensing element, a portion of said upper ceramic locator extending from the flat plate sensing element to the housing;
an inner sealing system comprising a plurality of alternating layers of glass and steatite surrounding the flat plate sensing element, said glass and steatite being furnace sintered as a package wherein at least two layers of glass and two layers of steatite are present;
a ceramic tube having substantially straight inside walls, said ceramic tube extending from the bousing to the plurality of alternating layers of glass and steatite, said ceramic tube comprising alumina and constructed to have a coefficient of thermal expansion substantially matching a coefficient of thermal expansion of said flat plate sensing element and, said inner sealing system further comprising a layer of glass extending between said ceramic tube and each of said layers of steatite, and a layer of glass extending between the flat plate sensing element and each of said layers of steatite, and
said upper ceramic locator extending along the inside walls of the metal tubular-shaped housing from the ceramic tube to the top of the metal tubular-shaped housing.

5,616,826
PHOTOACOUSTIC ANALYZER AND METHOD
Jean-Paul Pellaux; John M. Hale, both of Geneva, and Ion Bals, Caran, all of Switzerland, assignors to Orbisphere Laboratories Neuchâtel SA, Neuchâtel, Switzerland
Filed May 18, 1995, Ser. No. 443,533
Claims priority, application European Pat. Off., Jun. 4, 1994, 94810332
Int. Cl.^{6} G01N *21/17*
U.S. Cl. 73—24.02 **5 Claims**



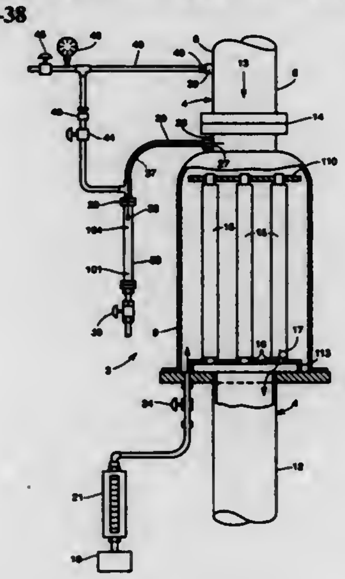
1. A photoacoustic analyzing method comprising the steps of:
passing a pulsating beam of light having a predetermined frequency in an infrared frequency portion through an analytic device comprising at least one reference chamber containing a gaseous reference medium and at least one measuring chamber containing a gaseous analysis medium so as to cause generation of sound within said reference chamber and within said measuring chamber; said gaseous analysis medium containing an unstable chemically reactive species of interest in an unknown concentration, and said gaseous reference consisting of an inert gaseous medium having photoacoustic absorption compatible with said unstable chemically reactive species and capable of serving as a photoacoustic reference for said gaseous analysis medium; separately detecting said sound generated in said at least one reference chamber and in said at least one measuring chamber to generate a first and a second signal in relation to said sound generated in said at least one reference chamber and in said measuring chamber; and evaluating said first and said second signals in relation with said unknown concentration of said species of interest.

5,616,827
FLOW MANIFOLD FOR HIGH PURITY ANALYZERS
John C. Simmermon, Newark; Curtis G. Dell, North Star; Douglas Peterson, Newark; Colin B. Blakemore, Hockessin, all of Del.; John B. Remaley, Marcus Hook, Pa.; Anatoly Golod, Wilmington, and Robert S. Bear, Jr., Newark, both of Del., assignors to Ametek, Inc., Newark, Del.
Filed Jun. 15, 1995, Ser. No. 490,640
Int. Cl.^{6} G01N *7/00*
U.S. Cl. 73—29.01 **38 Claims**



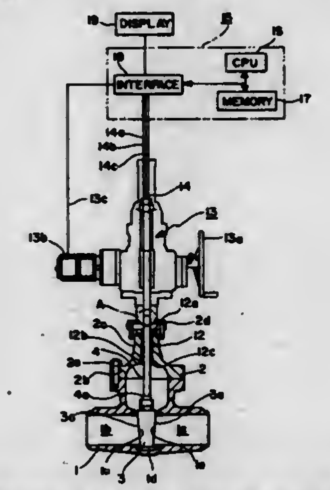
1. A flow manifold for an analytical apparatus which analyzes flowing sample material, said flow manifold comprising:
a) an inlet;
b) an outlet;
c) a sample leg in flow communication with said inlet and said outlet, wherein a sample material flows in a sample flow path;
d) a reference leg in flow communication with said inlet and said outlet, wherein a reference material flows in a reference flow path;
e) a measurement cell conduit extending between and in flow communication with said sample leg and said reference leg;
f) a measurement cell positioned along said measurement cell conduit and in fluid communication with said sample leg and said reference leg, wherein at least one of said sample material and said reference material flow through said measurement cell, said measurement cell providing an analysis of said sample material versus said reference material;
g) a sample flow control valve located in said sample leg between said measurement cell and said outlet; and
h) a reference flow control valve located in said reference leg between said measurement cell and said outlet, wherein said sample flow path and said reference flow path contain no dead legs between said inlet and said measurement cell.

5,616,828
APPARATUS AND METHOD FOR TESTING HYDROPHOBIC FILTERS
Michael T. Kuczenski, Bristol, Conn., assignor to Pfizer Inc., New York, N.Y.
PCT No. PCT/IB94/00203, § 371 Date Feb. 20, 1996, § 102(e) Date Feb. 20, 1996, PCT Pub. No. WO95/06515, PCT Pub. Date Mar. 9, 1995
PCT Filed Jul. 7, 1994, Ser. No. 596,139
Int. Cl.^{6} G01N *15/08;* **B09B** *1/00;* **G01M** *3/26*
U.S. Cl. 73—38 **12 Claims**



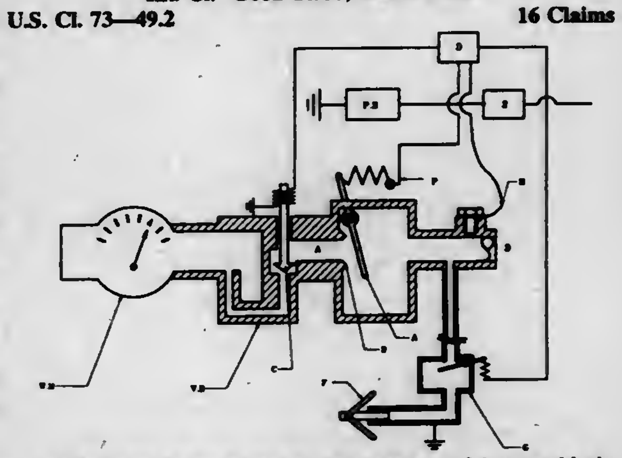
8. A method for testing the integrity of a hydrophobic filter comprising:
a. filling a hydrophobic filter housing with water and pressurizing a hydrophobic filter a hydrophobic filter with water, said hydrophobic filter included in a pressurizable system, said system including a pipe having an upstream end and a downstream end and a hydrophobic filter housing disposed inbetween, wherein the hydrophobic filter housing has said hydrophobic filter disposed therein and said hydrophobic filter housing has an inlet, said hydrophobic filter bousing inlet in fluid communication with said upstream end of said pipe and said hydrophobic filter housing closed to said downstream end of said pipe, but in fluid communication with said downstream end of said pipe through said hydrophobic filter, said system provided with a second inlet, said second inlet disposed upstream of said downstream end of said pipe, said system provided with an overflow outlet upstream of said hydrophobic filter and said second inlet, and a gas pressure outlet disposed upstream of said overflow outlet;
b. controlling the air pressure in said pressurizable system to attain a predetermined pressure;
c. metering water into said system through said second inlet until overflow occurs through said overflow outlet at a rate that is not greater than the rate of flow achievable through said overflow outlet;
d. measuring the rate of water flow from said overflow outlet into a collection housing;
e. maintaining fluid communication between the gas pressure outlet and said collection housing through a separate pressure equalization tube; and
f. determining the difference between the Water inflow rate and the water overflow rate, where the magnitude of any observed difference indicates a water take up rate of said filter and decides an integral or a non-integral filter.

5,616,829
ABNORMALITY DETECTION/SUPPRESSION SYSTEM FOR A VALVE APPARATUS
James J. Balaschak, Duxbury, Mass.; Masatsugu Fujio, Fukuoka, Japan; Keiichiro Hayashi, Fukuoka, Japan; Masatoshi Okano, Fukuoka, Japan, and David E. Thrall, Marion, Mass., assignors to Teledyne Industries Inc., Los Angeles, Calif.
Filed Mar. 9, 1995, Ser. No. 401,469
Int. Cl.^{6} F16K *31/05;13/04;* **G01M** *3/08*
U.S. Cl. 73—46 **7 Claims**



7. A stem assembly for a valve with an associated valve casing and valve body, comprising a stem passing therethru having one end portion coupled integrally to a valve body of said valve having a signal wire passage disposed thru said stem for electrical interconnection routing of conductive signal wires and having the said other end portion provided with terminals for electrical connection, wherein a temperature sensor, a vibration sensor and a strain sensor are disposed internally of said stem in a portion thereof lying outside of a valve casing of said valve when said valve body is at a fully closed position of said valve, with said temperature sensor, said vibration sensor and said strain sensor being electrically connected via said conductive signal wires to said terminals, respectively.

5,616,830
FLUID DRIP DETECTOR
Josef Wodeslavsky, and Shirly Wodeslavsky, both of #5 Peter Lynas Ct., Tenafly, N.J. 07670
Filed Jun. 8, 1995, Ser. No. 488,569
Int. Cl.^{6} G08B *21/00;* **G01N** *27/00*
U.S. Cl. 73—49.2 **16 Claims**



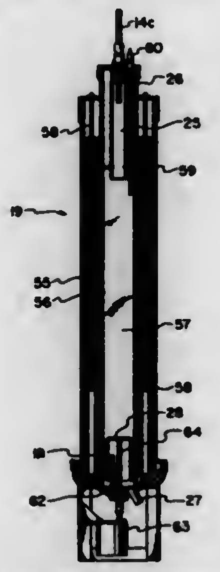
1. A fluid drip detector for detecting presence of drops and leaks of fluid via measured changes in electrical resistances, comprising: an electrically conducting housing having an electrical lead and first electrical contact protruding into the housing, the lead and

contact being electrically insulated from the housing, the housing having a seat disposed therein;

an electrically conducting moving door means and second electrical contact situated in the housing, said moveable door means capable of mechanically engaging with and/or disengaging from the seat; the door means being responsive to a fluid drip via the hydraulic pressure drop caused by the presence of a drop in the housing thereby disengaging the door from the seat in a drip condition such that the electrical resistance between door and seat increases in a drip condition, but the door means is normally engaging the seat and the lead in a no drip condition characterized by a minimum resistance value between said door and seat; and

an electric resistance detector means connected to the lead and said door means for producing an electrical output in the event of a drip condition.

5,616,831
PROCESS AND APPARATUS FOR CONTROLLING GRAVITY SETTLING SYSTEM
Pierre Ferland, Jonquiere; Leopold Tremblay, Chicoutimi, and Jean Doucet, Jonquiere, all of Canada, assignors to Alcan International Limited, Montreal, Canada
Filed Apr. 21, 1995, Ser. No. 426,690
Int. Cl.[6] G01N *15/04*
U.S. Cl. 73—61.63 **21 Claims**



1. A testing device for use in determining optimum operating conditions for a full size industrial continuous gravity settling unit and for the design of such settling unit; said testing device comprising:

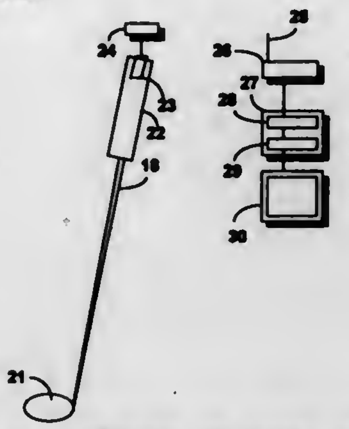
an elongated, vertical, cylindrical settling unit having concentric, inner and outer transparent cylindrical walls forming an annular space therebetween filled with transparent heat exchange liquid and said inner wall defining a cylindrical settling unit, a cylindrical feedwell extending downwardly into the top end of the settling unit, an overflow outlet opening in said inner wall at a location above the bottom end of said feedwell, a solids discharge opening at the bottom of said settling unit and a rotating rake at the bottom of the settling zone for compacting collected solids,

pump means for providing smooth, continuous flows of slurry and flocculant,

mixing means for mixing together said slurry and said flocculant, and

means for measuring and controlling flow rates and temperatures.

5,616,832
SYSTEM AND METHOD FOR EVALUATION OF DYNAMICS OF GOLF CLUBS
George S. Nauck, 2226 Spanish Moss Dr., Jacksonville, Fla. 32246
Filed Aug. 14, 1995, Ser. No. 514,869
Int. Cl.[6] A63B *53/00*
U.S. Cl. 73—65.03 **15 Claims**



1. A method for measuring golf club dynamics and quantifying conditions of potential hazard to a golfer's body comprising the steps of:

employing at least one sensing means inside the shaft of a golf club for sensing of golf club dynamics;

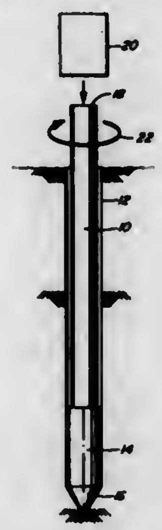
employing conducting means for conducting of sensed golf club dynamics to at least one transmitting means;

employing at least one transmitting means for transmission of said sensed golf club dynamics;

employing at least one receiving means for reception of said transmission of said sensed golf club dynamics;

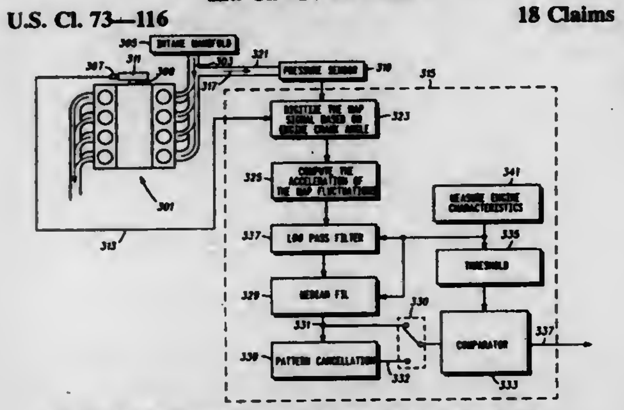
wherein golf club dynamics comprise vibration frequencies and amplitudes present in the shaft.

5,616,833
DYNAMIC CONE PENETRATION DEVICE
Lars G. A. Andersson, 2172 West 14th Avenue, Vancouver, British Columbia, Canada
Division of Ser. No. 422,841, Apr. 13, 1995. This application Jun. 21, 1996, Ser. No. 667,391
Int. Cl.[6] G01N *3/00*
U.S. Cl. 73—84 **8 Claims**



1. In a method of measuring soil denseness wherein a penetrating cone at one end of a cone rod is driven a predetermined distance into the soil by counting the number of strikes of a predetermined force on a striking surface of the cone rod, of a predetermined force, the improvement of reducing soil friction between the cone rod and the soil, comprising the steps of rotating the cone rod at a sufficient speed to reduce friction between the cone rod and the soil while the cone is driven the predetermined distance into the soil.

5,616,834
MISFIRE DETECTION DEPENDENT ON INTAKE AIR CHARGE FLUCTUATIONS
Marvin L. Lynch, Detroit; Michael A. McClish, Northville; Margaret A. Selfe, Farmington Hills; Gregory Steinl, Royal Oak, and Donald J. Remboski, Jr., Dearborn, all of Mich., assignors to Motorola Inc., Schaumburg, Ill.
Filed Jan. 25, 1996, Ser. No. 591,838
Int. Cl.[6] G01M *15/00*
U.S. Cl. 73—116 **18 Claims**

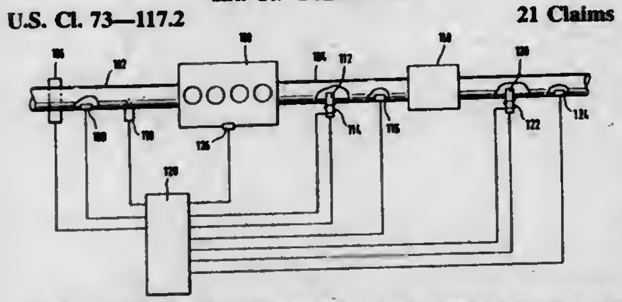


1. A misfire detection method for an engine comprising:

measuring fluctuations of air charge ingested into the engine; and

providing a misfire indication dependent on the measured fluctuations of air charge.

5,616,835
SYSTEM FOR OPERATING A HEATING ELEMENT FOR A CERAMIC SENSOR IN A MOTOR VEHICLE
Eberhard Schnaibel, Hemmingen; Erich Schneider, Kirchheim; Konrad Henkelmann, Friolzheim; Frank Blischke, and Georg Mallebrein, both of Stuttgart, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
PCT No. PCT/DE93/01149, § 371 Date Sep. 8, 1994, § 102(e) Date Sep. 8, 1994, PCT Pub. No. WO94/16371, PCT Pub. Date Jul. 21, 1994
PCT Filed Dec. 2, 1993, Ser. No. 295,903
Claims priority, application Germany, Jan. 12, 1993, 43 00 530.6
Int. Cl.[6] F02D *41/14*
U.S. Cl. 73—117.2 **21 Claims**

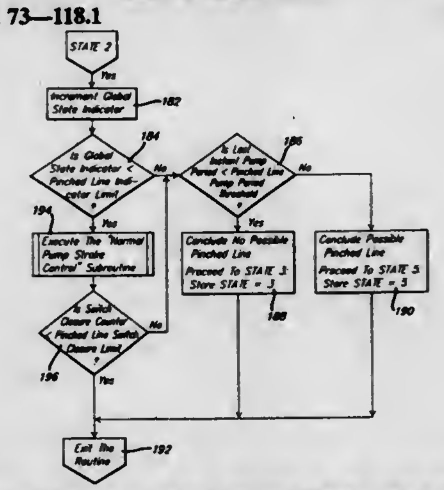


1. An apparatus for controlling a heating element, the heating element heating a first sensor disposed adjacent to or downstream of a catalytic converter in an exhaust passage of an internal combustion engine, the apparatus comprising:

a second sensor for measuring an operating parameter of the engine, and for generating a signal based thereon; and

a control unit coupled to the second sensor for determining an operating state of the engine as a function of the signal, and for controlling the heating element such that the first sensor operates below a pre-selected temperature when the control unit determines that the operating state is indicative of the presence of liquid in a part of the exhaust passage proximate to the first sensor, and operates above the pre-selected temperature when there is no liquid in the part of the exhaust passage proximate to the first sensor.

5,616,836
METHOD OF PINCHED LINE DETECTION FOR AN EVAPORATIVE EMISSION CONTROL SYSTEM
William B. Blomquist, Clarkston; Gary D. Dawson, Rochester; Roland T. Richardson, Detroit, and Glen Tallarek, Grosse Pointe Woods, all of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.
Filed Mar. 5, 1996, Ser. No. 611,138
Int. Cl.[6] G01M *15/00*
U.S. Cl. 73—118.1 **2 Claims**



1. A method of pinched line detection for an evaporative emission control system to determine if a pinched line is present within the system, said method comprising the steps of:

pulsing a leak detection pump at a predetermined rate;

determining if a last pump period is less than a predetermined possible pinched line period limit;

concluding a possible pinched line if the last pump period is not less than the possible pinched line period limit; and

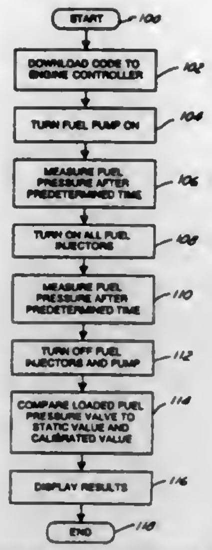
concluding that there is not a possible pinched line if the last pump period is greater than or equal to the possible pinched line period limit.

5,616,837
FUEL LINE PRESSURE TEST
Michael D. Leonard, Sterling Heights, and James C. Murphy, Livonia, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Jun. 6, 1994, Ser. No. 254,736
Int. Cl.[6] G01M *15/00*
U.S. Cl. 73—119 A **7 Claims**

1. A method for testing flow volume of a fuel line in a fuel injected internal combustion engine, the method comprising the steps of:

downloading control code from an electronic computer, external to the engine, to an engine control processor, said processor controlling a fuel pump and fuel injectors according to the control code during testing of the fuel line, said control code operative to cause said processor to operate said fuel pump and said fuel injectors at predetermined times;

initiating running of the control code within the engine control processor by sending a signal from the electronic computer



external to the engine to the processor, said processor turning on the fuel pump connected to the fuel line with the engine fuel injectors closed to so as to pressurize fuel within the fuel line to a static condition;

connecting a pressure transducer to a schrader valve type connection in the fuel line between a fuel pump and fuel injectors in the engine;

measuring fluid pressure within the fuel line in the pressurized, static condition with the pressure transducer and sending a signal representing the measured static condition pressure to the electronic computer;

displaying the measured static condition pressure value and a range of predetermined static pressures for an unobstructed fuel line in a same model engine;

comparing the static condition fuel system pressure with the range of predetermined static pressures for an unobstructed fuel line in a same model engine;

opening all the fuel injectors simultaneously to allow fuel flow therethrough such that the fuel system is in a fully loaded condition;

measuring fluid pressure within the fuel line in the fully loaded condition with the pressure transducer approximately 0.3 seconds to 0.7 seconds after opening all fuel injectors and sending a signal representing the measured fully loaded condition pressure to the electronic computer;

displaying the fully loaded condition fuel line pressure and a range of predetermined fully loaded pressures for an unobstructed fuel line in a same model engine; and

comparing the fully loaded condition fuel line pressure with the range of predetermined fully loaded pressures for an unobstructed fuel line in a same model engine.

5,616,838

METERING APPARATUS FOR CRYOGENIC LIQUIDS

Duane Preston, New Prague; Tom Drube, Lakeville, and Paul Drube, Apple Valley, all of Minn., assignors to MVE, Inc., New Prague, Minn.

Filed Feb. 26, 1996, Ser. No. 606,640

Int. Cl.⁶ B67D *5/378*

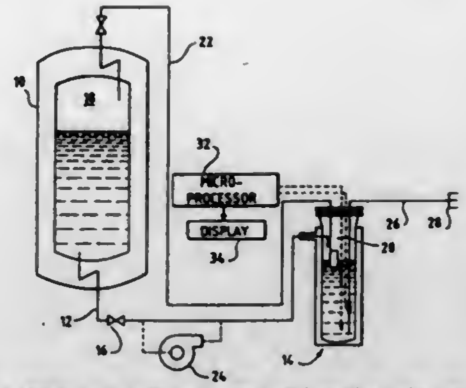
U.S. Cl. 73—195 **9 Claims**

1. Apparatus for accurately measuring the quantity of a liquid cryogen delivered from a storage tank to a use device via a fill line, comprising:

a) an insulated container in circuit with the fill line;

b) means for maintaining a desired level of liquid cryogen in said container including means for selectively venting the vapor in said insulated container to said storage tank to control refilling of said container with liquid cryogen;

c) means, in said container below said desired level of liquid cryogen, for (i) measuring the flow rate and (ii) determining



the density of liquid cryogen delivered to the use device through the fill line; and

d) means for calculating, from the density and flow rate, the quantity of liquid cryogen delivered to the use device through the fill line.

5,616,839

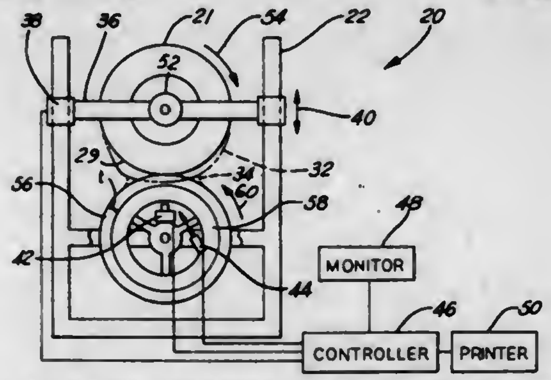
APPARATUS AND METHOD FOR MEASURING CONTACT FORCE DISTRIBUTION OF A TIRE

Fang Chen, Rochester Hills; Christopher T. Griffen, Dearborn, and Eel-Jeu Ni, Troy, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 29, 1996, Ser. No. 593,762

Int. Cl.⁶ G01M *17/02*

U.S. Cl. 73—146 **19 Claims**



1. An apparatus for measuring a full-field contact force distribution of a tire, comprising:

a transparent, rigid, support member having an elasticity substantially greater than the elasticity of the tire;

a transparent, elastically deformable, contact member having a substantially smooth first surface, said support member supporting said first surface of said contact member and said tire, said contact member having an elasticity substantially less than the elasticity of the tire;

an excitation source coupled to the tire for pressing a tire surface against a second surface of said contact member opposite said first surface, thereby compressing said contact member between the tire surface and said support member so as to provide a tire-contact member interface;

a laser light source positioned to illuminate said interface through said support member and said contact member;

an imaging device positioned to receive reflected light from said interface, said imaging device measuring displacement of said tire-contact member interface when the tire surface is pressed against said second surface of said contact member; and,

a controller for receiving displacement data from said imaging device, with said controller thereafter calculating contact force distribution of said tire throughout said tire-contact member interface from said received displacement data so as to provide said full-field contact force distribution.

5,616,840

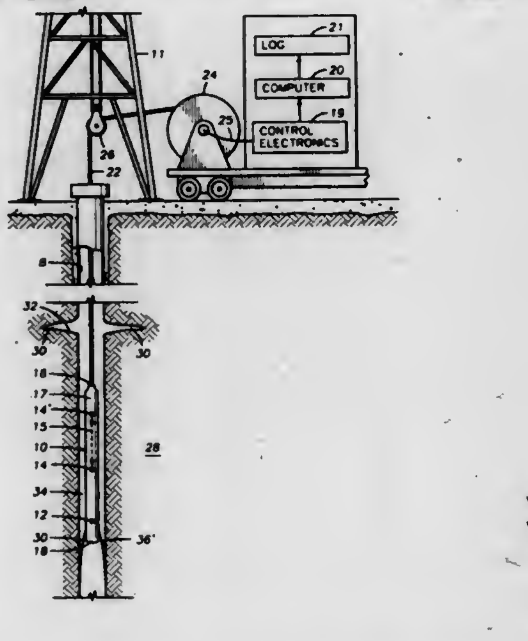
METHOD FOR ESTIMATING THE HYDRAULIC CONDUCTIVITY OF A BOREHOLE SIDEWALL FRACTURE

Xiaoming Tang, Sugar Land, Tex., assignor to Western Atlas International, Houston, Tex.

Filed Mar. 27, 1996, Ser. No. 624,026

Int. Cl.⁶ E21B *49/00*

U.S. Cl. 73—152.05 **4 Claims**



1. A method for modeling the location of a petrophysical discontinuity encompassed within a predefined depth span along the sidewall of a borehole and for estimating the mobility of interstitial fluids associated with said discontinuity, comprising:

propagating an acoustic wavefield, characterized by a preselected excitation frequency, in said borehole from an acoustic source traversing said borehole;

at respective ones of an array of receivers fixedly spaced apart from said source at preselected depth increments, detecting signals representative of first portions of said acoustic wavefield that have been transmitted directly from said source to said receivers;

at said receivers, detecting signals representative of second portions of said acoustic wavefield attributable to reflection of said second wavefield portions from a petrophysical discontinuity;

providing caliper measurements of nominal and of actual borehole radii at discrete depth levels along said predefined depth interval;

filtering the received signals representative of the first and second acoustic wavefield portions to separate an upwardly-propagating directly-transmitted Stoneley wavefield from a downwardly-propagating reflected Stoneley wavefield;

providing instructions for programming a computer for cross-correlating the directly-transmitted Stoneley wavefield with the reflected Stoneley wavefield to model the depth configuration of the petrophysical discontinuity within said predefined depth interval;

with the aid of said programmed computer, combining selected parameters of the directly-transmitted Stoneley wavefield, selected parameters of the reflected Stoneley wavefield and the caliper measurements to derive a signal indicative of the hydraulic conductivity of said petrophysical discontinuity.

5,616,841

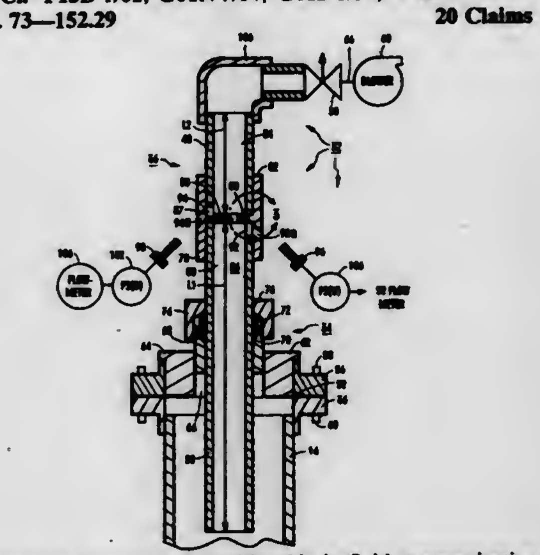
FLOW METERING DEVICE FOR LANDFILL GAS EXTRACTION WELL

Ronald L. Brookshire, El Cajon, Calif., assignor to Landfill Gas & Environmental Products, Inc., Santee, Calif.

Filed May 7, 1996, Ser. No. 646,039

Int. Cl.⁶ F15D *1/02;* G01N *7/14;* G01F *1/34;* F16L *55/10*

U.S. Cl. 73—152.29 **20 Claims**



1. A metering pipe system positionable in fluid communication with a well in a landfill for determining gas flow rate through the well, comprising:

an upstream pipe segment;

a downstream pipe segment oriented coaxially with the upstream pipe segment;

a metering coupling defining an upstream opening, a downstream opening, a fluid passageway extending therebetween, and a ridge circumscribing the fluid passageway, the ridge defining a first face and a second face;

an orifice plate formed with an orifice and defining a first face and a second face respectively oriented in the same direction of fluid flow as the first and second faces of the ridge, the orifice plate being positioned in the fluid passageway against the ridge and configured such that the first face of the orifice plate is co-planar with the first face of the ridge, wherein the upstream pipe segment is surroundingly engaged by the coupling and extends substantially from the orifice plate to beyond the upstream opening, and wherein the downstream pipe segment is surroundingly engaged by the coupling and extends substantially from the orifice plate to beyond the downstream opening, such that fluid in the upstream pipe segment can pass thru the orifice to the downstream pipe segment; and

upstream and downstream pressure sensors positioned externally to the coupling in fluid communication with the fluid passageway upstream and downstream, respectively, of the orifice plate.

5,616,842

DEVICE FOR EVALUATION OF THE LUBRICATING CHARCTERISTICS OF A DRILLING MUD

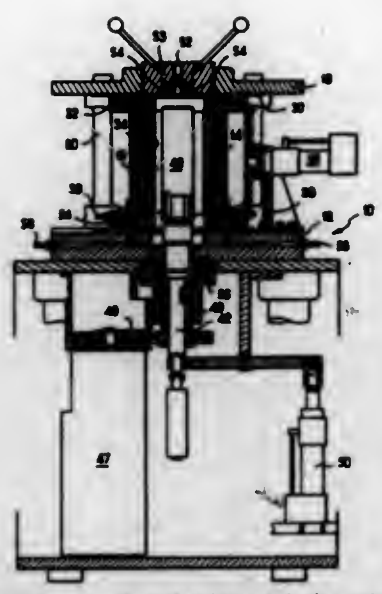
Jean-Francois Armengaud, Toulouse; Alain Martignon, Oloron; Simeon Cortiade, Francon, and Jacques Marti, Ibos, all of France, assignors to Elf Aquitaine Production, France

Filed Jul. 14, 1995, Ser. No. 502,640

Int. Cl.⁶ G01N *3/00*

U.S. Cl. 73—152.18 **7 Claims**

1. Device for evaluation of the lubricating characteristics of a drilling mud, including a substantially tubular vessel provided with an entry and an exit for a mud to be analysed, said vessel being mounted so that it slides in a leakproof manner between a lower flange and an upper flange which are integrally attached to the device, a substantially cylindrical, rotatable measuring shoe



mounted inside the vessel so that its lengthwise axis is substantially parallel to that of the vessel, means for moving the shoe along its lengthwise axis in relation to the vessel, and at least one measuring sensor mounted inside the shoe and capable of measuring the stresses generated during a contact between the shoe and an internal surface of the vessel.

5,616,843

METHOD AND CIRCUIT CONFIGURATION FOR PROTECTING A HEATED TEMPERATURE-DEPENDENT SENSOR RESISTOR AGAINST OVERHEATING

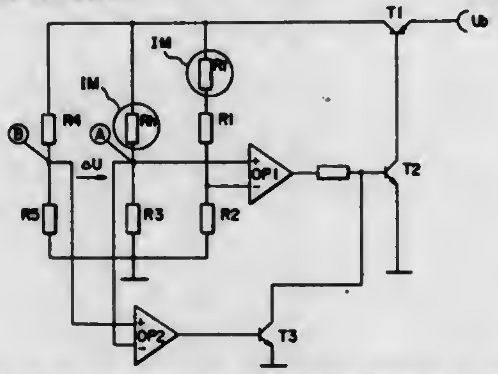
Ludwig Schifferl, Pentling, and Andreas Wildgen, Nittendorf, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 25, 1996, Ser. No. 622,553

Claims priority, application Germany, Sep. 23, 1993, 43 32 412.6

Int. Cl.⁶ G01F *1/68*

U.S. Cl. 73—204.15 **5 Claims**



2. A circuit configuration for measuring a drawn-in air mass in an intake manifold of an internal combustion engine, comprising:

a bridge circuit having a first branch with a center tap and a resistor, a second branch, and a third branch with a center tap;

a heated temperature-dependent sensor resistor connected in said first bridge branch;

a resistor connected in said second bridge branch as air temperature detector;

a first differential amplifier and a first circuit controlling a bridge current as a measure of a drawn-in air mass for keeping a prescribed bridge diagonal voltage constant;

said third bridge branch being connected in parallel with said first bridge branch as a voltage divider;

a second differential amplifier having inputs being connected to said center taps of said first and third bridge branches;

said third bridge branch being tuned in a ratio of said resistors of said first bridge branch in the case of a maximum permissible temperature of said sensor resistor; and

a second circuit connected to said second differential amplifier for reducing a bridge current due to input voltages of said second differential amplifier, if the maximum permissible temperature of said sensor resistor is reached in the event of sudden strong heating of said resistor of said air temperature detector.

5,616,844

CAPACITANCE TYPE ACCELERATION SENSOR

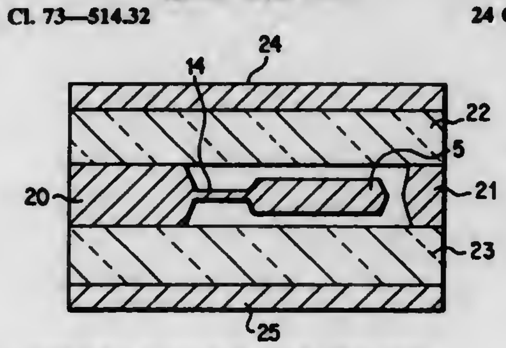
Masayoshi Suzuki, Hitachioota; Takao Sasayama, Hitachi; Keizi Hanzawa; Norio Ichikawa, both of Mito; Junichi Horie, Hitachinaka; Yukiko Sugisawa, Hitachinaka, and Yuuji Ogasawara, Hitachinaka, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 27, 1994, Ser. No. 364,098

Claims priority, application Japan, Dec. 27, 1993, 5-331003

Int. Cl.⁶ G01P *15/125*

U.S. Cl. 73—514.32 **24 Claims**



1. A capacitance acceleration sensor comprising:

a movable electrode which is movable in response to acceleration,

a first static electrode facing the movable electrode;

and a first solid dielectric member disposed between the movable electrode and the first static electrode.

5,616,845

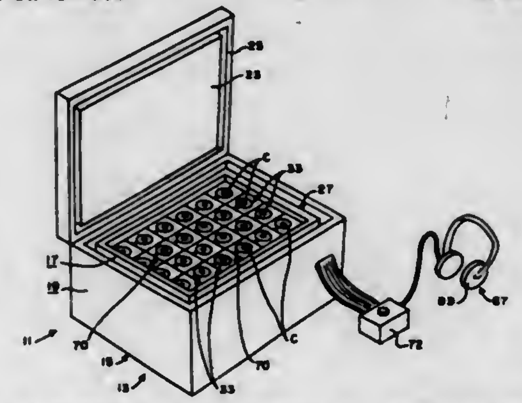
ACOUSTIC SENSOR SYSTEM FOR INSECT DETECTION

Robert Hickling, 323 Country Club Rd., Oxford, Miss. 38655; Peng Lee, P.O. Box 6398, University, Miss. 38677; Wei Wei, P.O. Box 5502, University, Miss. 38677, and Shi-Tse Chang, P.O. Box 6283, University, Miss. 38677

Filed Mar. 18, 1994, Ser. No. 210,376

Int. Cl.⁶ G01N *29/04*

U.S. Cl. 73—584 **10 Claims**



1. An apparatus for detecting insects in a plurality of separate units of agricultural commodities, said apparatus comprising:

(a) isolation means for isolating the plurality of separate units of agricultural commodities from external noise and vibration; said isolation means including an inner box member having an interior for completely enclosing the plurality of separate units of agricultural commodities, an outer box member having an interior for completely enclosing said inner box member, and vibration isolation mounts positioned between said inner and outer box members for limiting passage of external noise and vibration to the plurality of separate units of agricultural commodities completely enclosed within said interior of said inner box member;

(b) a plurality of acoustic sensor means housed within said interior of said inner box member; each of said plurality of acoustic sensor means including a diaphragm having a top surface for allowing one of the plurality of separate units of agricultural commodities to be positioned directly thereon, for detecting any sound from within the agricultural commodities and for generating a signal in response to any sound so detected; said acoustic sensor means including microphone means for generating a signal in response to any sound emitted from the separate units of agricultural commodities positioned directly on said top surface of said diaphragm thereof, and a stethoscope head surrounding said microphone means thereof;

(c) amplification means for producing an amplified signal in response to said signal generated by said plurality of acoustic sensor means; and

(d) output means for producing a discernable output signal in response to said signal generated by said acoustic sensor means.

5,616,846

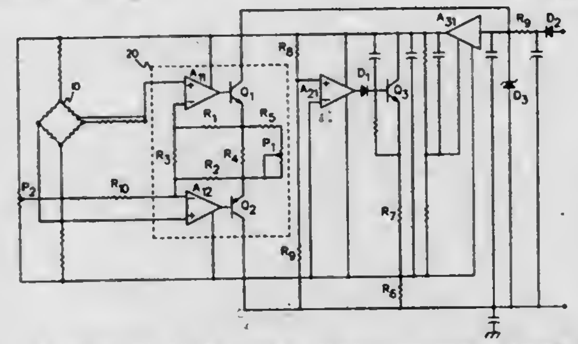
METHOD AND APPARATUS FOR CURRENT REGULATION AND TEMPERATURE COMPENSATION

Joseph W. Kwasnik, 49 Sixth Ave., North Tonawanda, N.Y. 14120

Filed Oct. 27, 1994, Ser. No. 329,418

Int. Cl.⁶ G01L *19/04*; G01C *19/02*

U.S. Cl. 73—708 **13 Claims**



1. A current regulation and temperature compensation apparatus, comprising:

an element which produces a voltage signal proportional to a parameter to be measured, wherein said voltage signal also varies nonlinearly with respect to ambient temperature;

an instrumentation amplifier operatively arranged to convert said voltage signal to a corresponding first current signal proportional to said measured parameter, wherein said current signal also varies nonlinearly with respect to ambient temperature;

a voltage regulator operatively arranged to provide power to said element and said instrumentation amplifier, wherein said voltage regulator has an operating current which varies nonlinearly with respect to ambient temperature; and,

a current regulator which functions to convert said nonlinear voltage signal of said element, said nonlinear current signal of said instrumentation amplifier and said nonlinear operating current of said voltage regulator into a second current signal which is constant;

wherein an output signal of said current regulating apparatus comprises said first current signal proportional to said measured parameter and said second current signal which is constant.

5,616,847

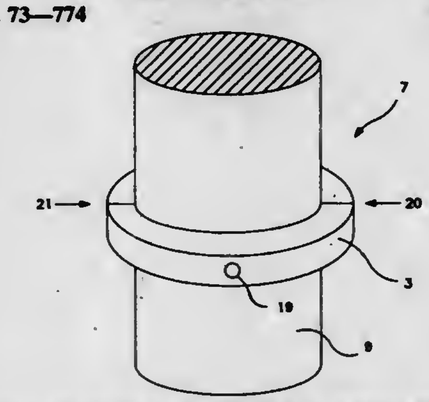
SENSOR FOR EXPANSION MEASUREMENT

Bruno Schlapfer, Oberschneit, CH-8523 Hagenbuch, Switzerland

Filed Sep. 6, 1995, Ser. No. 524,243

Int. Cl.⁶ G01B *7/16*

U.S. Cl. 73—774 **13 Claims**



1. Sensor for electrical measurement of positive and negative expansions of cylindrical bodies, which comprises:

a cylindrical body having a surface; a divided flange adjacent said cylindrical body; recesses on the divided flanges; elastic material in said recesses; expansion-sensitive elements on said flange generating electrical signals; bracing mechanisms operatively associated with said flange which press said elements directly and strongly onto said cylindrical body so that the expansion of the surface of the cylindrical body can be transferred by friction to the expansion-sensitive elements, and thus the stresses and forces acting on the cylindrical body can be assessed directly and without transfer losses.

5,616,848

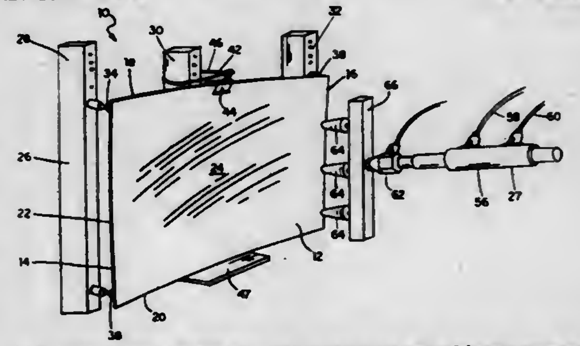
PLATE TESTING APPARATUS AND METHOD OF TESTING

Gregory Hemingway, Northville; James V. Legray, Sylvan Lake, and John S. Hite, Sterling Heights, all of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.

Filed Mar. 20, 1995, Ser. No. 407,540

Int. Cl.⁶ G01N *19/00*

U.S. Cl. 73—838 **16 Claims**

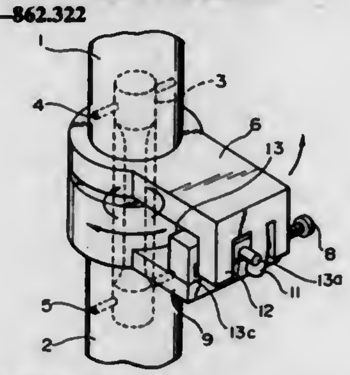


1. A plate testing apparatus for evaluating the ultimate strength of a plate of material by causing movement and breakage of the plate of material, the apparatus comprising:

a fixture for holding the plate, the fixture having a support element for supporting the plate at first and second points on the plate, the support element being adapted to swivel to allow the plate to bend from an applied load and having a

support surface which is adapted to allow the plate to slide on the support surface; and
loading means for applying a load to the plate at a third point interior to the first and second points on the plate.

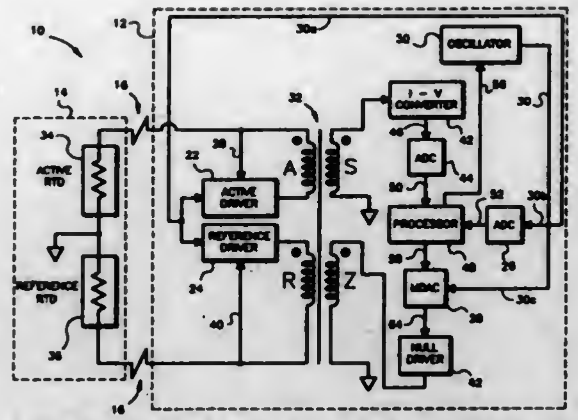
5,616,849
TORQUE SENSOR
Katsuya Mitsuzuka, and Hironori Kato, both of Miyagi-ken, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan
Filed Nov. 20, 1995, Ser. No. 560,617
Claims priority, application Japan, Nov. 21, 1994, 6-286688
Int. Cl.⁶ G01L *3/00*
U.S. Cl. 73—862.322 **7 Claims**



1. A torque sensor comprising:
a first shaft
a second shaft co-axially aligned with the first shaft;
a torsion bar connected between said first shaft and said second shaft;
a sensing device connected to said first shaft for detecting a relative rotation between said first and second shafts, said sensing device including a drive portion having a first contact surface; and
an actuator portion connected to the second shaft, said actuator portion having a second contact surface which is positioned relative to the first contact surface of the drive portion of said sensing device such that the relative rotation between the first and second shafts causes the first contact surface of the drive portion to contact the second contact surface of the actuator portion,
wherein said sensing device is provided with a restoring spring for biasing said drive portion toward said actuator portion, and
wherein said first contact surface of the drive portion and said second contact surface of the actuator portion are respectively curved such that the contact between said first contact surface and said second contact surface occurs at a single point of contact.

5,616,850
EMISSIONS MEASURING SYSTEM AND METHOD
Gerald F. Sage, Mountain View, Calif., assignor to Gas Research Institute, Chicago, Ill.
Filed Dec. 29, 1995, Ser. No. 580,710
Int. Cl.⁶ G01N *7/00*
U.S. Cl. 73—23.31 **20 Claims**

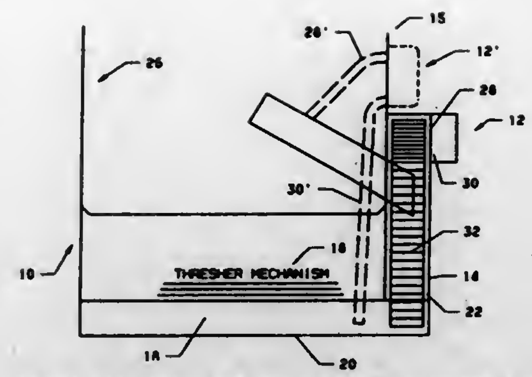
1. A measuring system for use in an emission monitor for measuring emissions from a process comprising:
a sensor having an active resistance temperature device (RTD) and a reference RTD;
an oscillator for generating an excitation signal:
a transformer having an active winding, a reference winding, a sense winding, and a zero winding;
said active winding connected to said active RTD configured to receive a portion of said excitation signal at a first current so as to produce a first flux, said first current also passing



through said active RTD and varying proportionally with changes in a first resistance of said active RTD so that a first voltage across said active RTD remains substantially constant;
said reference winding connected to said reference RTD and configured to receive a portion of said excitation signal at a second current so as to produce a second flux, said second current also passing through said reference RTD and varying proportionally with changes in second resistance of said reference RTD so that a second voltage across said reference RTD remains substantially constant, and wherein said first and second fluxes have opposite senses so as to cancel one another in said transformer when said first and second fluxes are equal;
said sense winding configured to detect a sense flux in said transformer;
a current-to-voltage converter connected to said sense winding and configured for transforming a current produced in said sense winding by said sense flux into a voltage;
an analog-to-digital converter connected to said current-to-voltage converter and configured for transforming said voltage output from said current-to-voltage converter into a digital signal;
a processor connected to said analog-to-digital converter and configured for processing said digital signal into a control signal in accordance with a programmed algorithm;
a multiplying digital-to-analog converter (DAC) for receiving a signal from said oscillator and said control signal from said processor, and outputting a nulling signal from said oscillator based upon said control signal; and
said zero winding configured to receive said nulling signal and generating a nulling flux to cancel said sense flux so as to minimize drift and non-linearity of said transformer;
wherein said control signal is combined in said processor with measured parameter values and calibration factors to determine an emission level value.

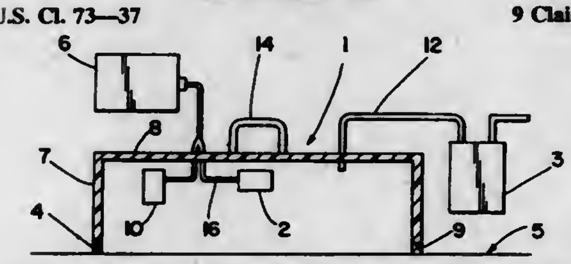
5,616,851
EX-SITU GRAIN MOISTURE ANALYZER FOR A COMBINE
Mike McMahon, Salem; Larry A. Jeffers, Alliance, and Fred White, Beloit, all of Ohio, assignors to Farmex Inc., Aurora, Ohio
Filed Sep. 29, 1995, Ser. No. 536,209
Int. Cl.⁶ A01F *12/00;* **G08B** *21/00;* **A01C** *7/00*
U.S. Cl. 73—29.01 **30 Claims**

1. A combine thresher having a continuous grain moisture analyzer comprising:
a combine thresher having means for moving grain from a grain floor of the combine to a storage bin therein with said moving means being enclosed by an external wall of said combine;
a grain moisture analyzer assembly mounted ex-situ on said external wall of said combine; and
means for bypassing a portion of the grain passing through said moving means through said grain moisture analyzer including an inlet opening and an outlet opening formed in said external



wall of said combine for supplying and exhausting grain to and from said grain moisture analyzer;
a sensing cell for measuring grain moisture; and
feed means for moving the grain from said sensing cell to said outlet opening formed in said external wall for returning said portion of grain back into a normal flow of moving grain within the combine thresher.

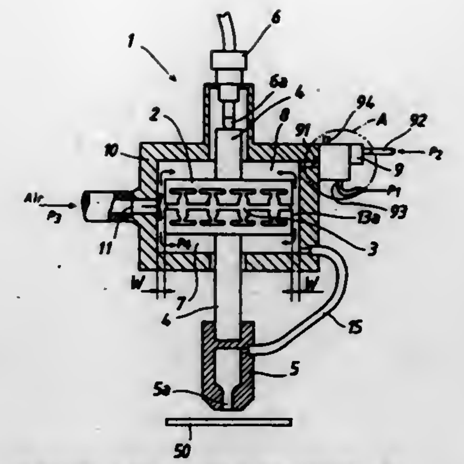
5,616,852
METHOD AND APPARATUS FOR MEASURING FABRIC STRESS
Haruji Tsubota, and Naoya Sasaki, both of Tokyo, Japan, assignors to Kajima Corporation, Tokyo, Japan
Continuation of Ser. No. 388,344, Feb. 14, 1995, abandoned, which is a continuation-in-part of Ser. No. 40,128, Mar. 30, 1993, abandoned. This application Feb. 14, 1996, Ser. No. 601,383
Int. Cl.⁶ G01L *5/04*
U.S. Cl. 73—37 **9 Claims**



1. The method of field testing stress in a stationary suspended woven fabric panel of a building structure, said woven fabric panel having a woof and a warp and upper and lower surfaces subjected to atmospheric pressure, comprising the steps of:
a. confining an air space over a selected small portion of said upper surface of said woven fabric;
b. creating a differential in air pressure between said upper and lower surfaces by evacuating air from said air space to cause distension of said woven fabric within said air space;
c. measuring said distension of the said woven fabric into said evacuated air space;
d. measuring the air pressure in the evacuated air space; and
e. calculating from said measured distension and said measured air pressure the stress in said woven fabric.

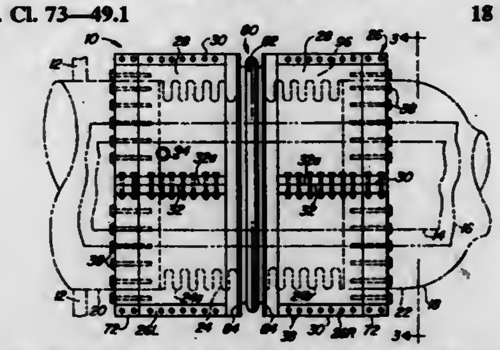
5,616,853
MEASURING MACHINE FOR MEASURING OBJECT
Yuzaburo Oshumi, Shiga, Japan, assignor to Kyocera Corporation, Kyoto, Japan
Filed Mar. 29, 1995, Ser. No. 412,658
Int. Cl.⁶ G01B *13/16;13/22*
U.S. Cl. 73—37.5 **4 Claims**

1. A measuring machine for measuring objects, comprising:
a cylinder,
a piston movably disposed in the cylinder, the piston defining at least a first side and a second side,



a rod projecting from the piston and having a tip,
an injection nozzle attached to the tip of the rod,
supporting means for hydrostatically supporting the piston in the cylinder,
detecting means for detecting displacement of the piston in the cylinder,
at least a first and a second pressurizing chamber, the first pressurizing chamber being formed on the first side of the piston and the second pressurizing chamber being formed on the second side of the piston,
the first pressurizing chamber being linked to the injection nozzle, and
the second pressurizing chamber having a pressure control valve.

5,616,854
APPARATUS FOR PNEUMATICALLY TESTING PIPES FOR LEAKS
Paul Berg, 1046 N. Mapleton Ave., Oak Park, Ill. 60302
Filed Jul. 11, 1995, Ser. No. 500,505
Int. Cl.⁶ G01M *3/28*
U.S. Cl. 73—49.1 **18 Claims**



1. An apparatus for testing a section of pipe for leaks, comprising:
a first portion having an attachment means for attaching said portion to the section of pipe to be tested, an enclosure means for enclosing the section of pipe, and sealing means for sealing said attachment means to the pipe;
a second portion having a second portion attachment means for attaching said second portion to the section of pipe to be tested, an enclosure means for enclosing the section of pipe, second portion sealing means for sealing said second portion attachment means to the pipe; and
resilient expansion means for permitting movement of said first portion relative to said second portion to accommodate expansion of the pipe, said expansion means being secured to said first portion and to said second portion.

5,616,855

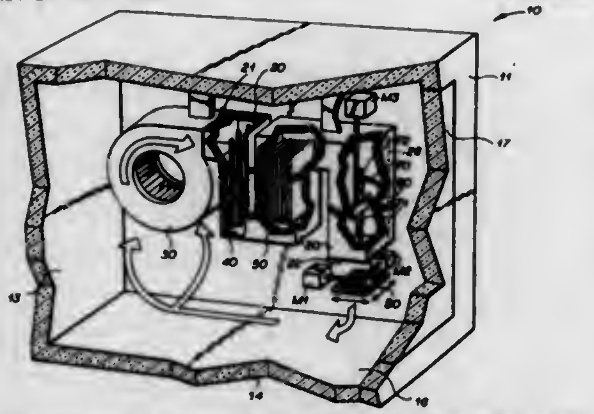
METHOD AND APPARATUS FOR MEASURING VISCOSITY

Dean M. Ball, 4282 Pillsbury Rd., Gainesville, Ga. 30507

Filed Oct. 18, 1995, Ser. No. 544,863

Int. Cl.⁶ G01N *11/00*

U.S. Cl. 73—54.43 **10 Claims**



1. Apparatus for measuring the viscosity of liquids in an ultra stable temperature environment which comprises a thermally insulated test chamber, support means for supporting containers of liquids to be tested within said chamber, a thermally insulated duct mounted within said chamber, means for circulating air within said chamber through said duct, heater means mounted within said duct for heating air flowing through said duct, and viscometer means mounted at least partially within said duct downstream of said heater means for measuring the viscosity of liquids in containers supported upon said support means.

5,616,856

DEVICE AND METHOD FOR DETECTING INTERFACES SEPARATING SEVERAL PHASES BY ULTRASONIC WAVES

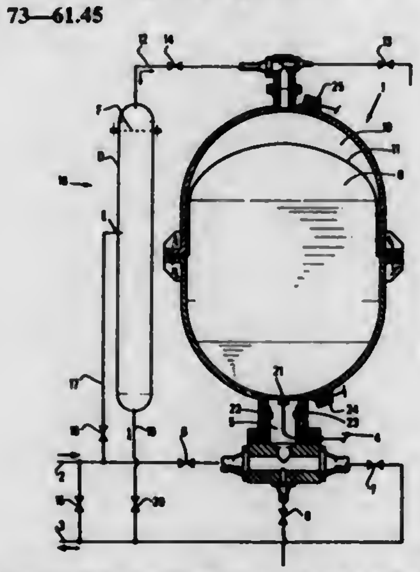
Yvon Castel, Croissy sur Seine, France, assignor to Institut Francais du Petrole, Rueil Malmaison, France

Filed Dec. 28, 1994, Ser. No. 364,936

Claims priority, application France, Dec. 28, 1993, 93 15856

Int. Cl.⁶ G01N *3/22*

U.S. Cl. 73—61.45 **10 Claims**



3. A method of determining by means of at least one ultrasonic wave the composition of a multiphase fluid having several phases, at least a first and a second phase having essentially remote acoustic impedance values and at least the second phase and a third phase having acoustic impedance values substantially close but different, said fluid possibly containing solid particles, characterized in that:

a) at least a proportion of the multiphase fluid is drawn off into a container for analysis,
b) the multiphase fluid is left to decant over a sufficient period of time to allow the various phases to separate,
c) a first ultrasonic wave is emitted in a direction not parallel to a first interface separating two phases, the wave is propagated and passes through the container,
d) by means of an appropriate device, at least a first propagation time T1 is measured representing the reflection of said first ultrasonic wave on a first interface,
e) a second ultrasonic wave is emitted, in a direction substantially perpendicular to the direction of propagation of the first ultrasonic wave, through a first phase when this first phase is located in the lower section of the container and the propagation time T'1 of the second wave in this first phase is measured in order to calculate the real propagation speed V1 of the wave in the first phase,
f) at least the propagation time T1 and a propagation time T2 are measured representing respectively the reflection of the first ultrasonic wave on the first and second interface separating respectively the first and second phases and the second and third phases,
g) the real propagation speed of the wave in the first phase is measured in accordance with step e),
h) the fluid is drained from the container over a sufficient period of time to allow the second phase to reach the level of the lower section of the container, another second ultrasonic wave is sent in a direction substantially perpendicular to the propagation direction of the first wave, through the second phase, this phase being located in the lower section of the container, and the propagation time T'2 of the second wave in this second phase is measured in order to determine the real propagation speed V2 of the wave in the second phase, and
i) using the propagation time T1 and T2, the values of real speeds V1 and V2 and the geometric characteristics of the container, the quantities U1 and U2 of the first and second phases are determined.

5,616,857

PENETRATION HARDNESS TESTER

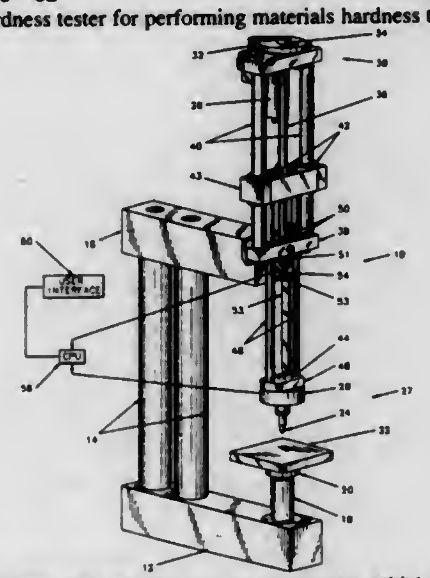
John J. Merck, Jr., Medfield; Jon Wyman, Somerville, and Richard Conti, Foxboro, all of Mass., assignors to Instron Corporation, Canton, Mass.

Filed Jan. 25, 1996, Ser. No. 591,292

Int. Cl.⁶ G01N *3/42*

U.S. Cl. 73—82 **19 Claims**

1. A hardness tester for performing materials hardness testing on



a test specimen through the use of an indentor which creates a deformation in the specimen, said hardness tester operating on a load range including Rockwell tests comprising:

an electric motor,
an actuator vertically movable under control of said electric motor,
said actuator coupled to a load cell which is directly coupled to said indentor,
a linear displacement transducer sensing the amount of vertical movement of said actuator and said indentor,
a closed loop control system to apply load to the test specimen and control indentor movement,
a central processor unit included in said closed loop,
a user interface electronically connected to said central processing unit to provide electrical signals to direct the test operation run by said hardness tester,
said linear displacement transducer connected to said closed loop control system which, in combination, controls non-load vertical movement of the indentor resulting from an electrical feedback signal from the linear displacement transducer which is indicative of the amount of vertical movement of the indentor,
said load cell connected to said closed loop control system which, in combination, controls indentor movement resulting from an electrical feedback signal from the load cell which is also indicative of the amount of load applied to said load cell and said indentor, the signal emitted from said load cell during the operation of the hardness tester directly controlling the indentor movement through said closed loop system, whereby the value of the load being applied is used both to determine said load and control movement of the indentor.

5,616,858

DIAGNOSTIC METHOD FOR RECOGNIZING COMBUSTION MISFIRING IN AN INTERNAL-COMBUSTION ENGINE

Anton Angermeier, and Manfred Wier, both of Landshut, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

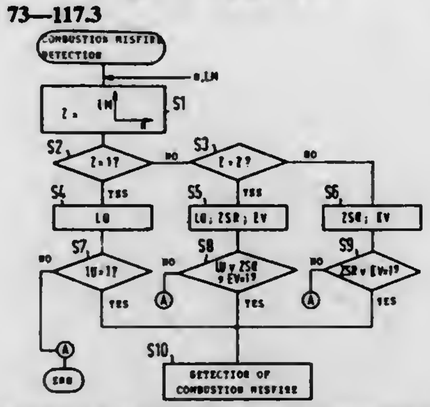
PCT No. PCT/EP91/02277, § 371 Date Jun. 19, 1995, § 102(e) Date Jun. 19, 1995, PCT Pub. No. WO92/11522, PCT Pub. Date Jul. 9, 1992

PCT Filed Dec. 2, 1991, Ser. No. 81,271

Claims priority, application Germany, Dec. 19, 1990, 90 12 4827.8

Int. Cl.⁶ G01M *15/00*

U.S. Cl. 73—117.3 **3 Claims**



1. A diagnostic method for recognizing combustion misfiring in an internal-combustion engine, comprising the steps of:
providing a memory with a map of characteristics, in which characteristic numbers dependent on load and on rotational speed are stored;
selecting at least one diagnostic method from at least two diagnostic methods for detecting combustion misfiring depending on a read out characteristic number from the memory using a selecting device;
recognizing a combustion misfire with a diagnostic device when the at least one of said at least two diagnostic methods detects a combustion misfire.

5,616,859

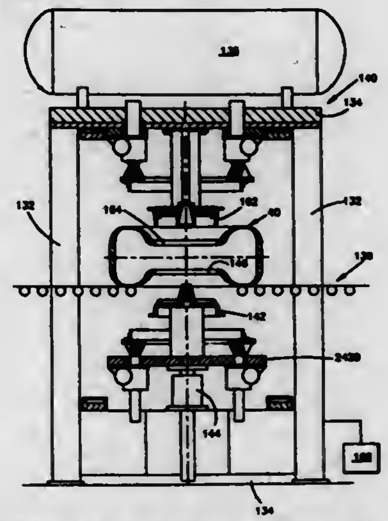
TIRE UNIFORMITY CORRECTION WITHOUT GRINDING

Timothy B. Rhyne, Greenville, S.C., assignor to Michelin Recherche et Technique S.A., Granges-Pacot, Switzerland

Division of Ser. No. 303,228, Sep. 8, 1994, Pat. No. 5,458,176, which is a division of Ser. No. 863,256, Apr. 3, 1992, Pat. No. 5,365,781. This application Jun. 2, 1995, Ser. No. 458,183

Int. Cl.⁶ G01M *17/02*

U.S. Cl. 73—146 **8 Claims**



5. An apparatus for reducing the magnitude of a uniformity characteristic in a cured tire, said apparatus comprising:
means for determining a location on the tire to correct; and
means for introducing a radial runout to the tire as a function of the determined location to offset the uniformity characteristic and reduce the magnitude of a resulting uniformity characteristic to below a minimum threshold magnitude.

5,616,860

AZIMUTH INDICATOR EQUIPPED WITH ANEMOMETER CAPABLE OF INDICATING BLOWING DIRECTION OF WIND

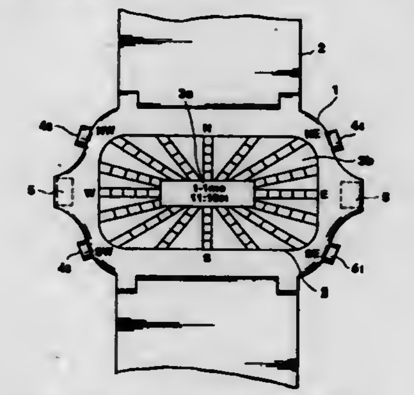
Hiroshi Morohoshi, Tokorozawa; Yuichi Masuda, Kunitachi, and Yasuo Kuroki, Ome, all of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Nov. 29, 1994, Ser. No. 346,487

Claims priority, application Japan, Dec. 13, 1993, 5-341863

Int. Cl.⁶ G01W *1/00*

U.S. Cl. 73—170.14 **23 Claims**



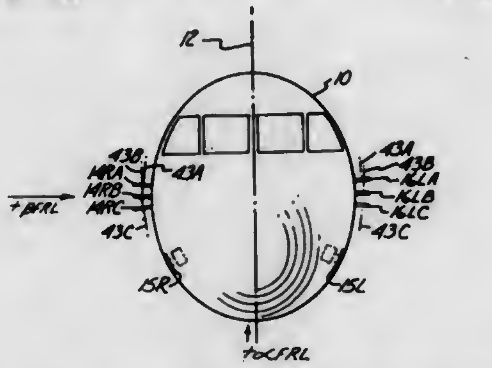
1. An azimuth indicating apparatus, comprising:
azimuth measuring means for measuring azimuth;
wind speed measuring means for measuring a wind speed in an azimuth;
display means having a plurality of wind speed display portions each for indicating a wind speed in an appropriate azimuth,

each wind speed display portion including plural display members adapted to be turned on to indicate a wind speed;

setting means for setting a predetermined maximum wind speed to be indicated by said wind speed display portions of said display means; and

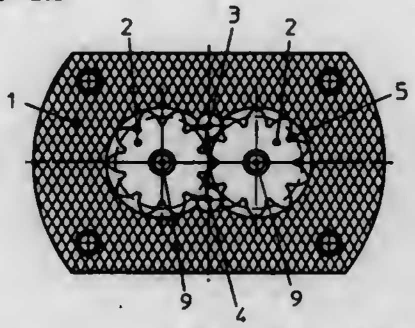
display control means for controlling said display means to which the predetermined maximum wind speed to be indicated is set by said setting means to turn on the display members in one of the plurality of wind speed display portions depending on the measurement result of said azimuth measuring means to indicate a wind speed measured in an azimuth by said wind speed measuring means.

5,616,861
THREE PRESSURE PSEUDO -Δ-P SENSOR FOR USE WITH THREE PRESSURE AIR DATA PROBE
Floyd W. Hagen, Eden Prairie, Minn., assignor to Rosemount Aerospace Inc., Burnsville, Minn.
Filed Jun. 7, 1995, Ser. No. 475,350
Int. Cl.^{6} G01C *21/20*
U.S. Cl. 73—180 **12 Claims**



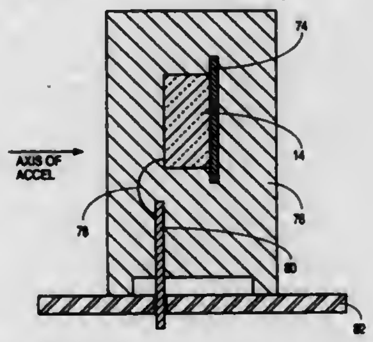
1. An air data sensing assembly for installation on an air vehicle comprising a first air data sensing probe mounted at a first location on the air vehicle, and a second air data sensing probe mounted at a second location on the air vehicle, each of said air data sensing probes having first and second pressure sensing ports with axes lying on a plane including a longitudinal axis of the respective and being oriented to face in generally opposite directions on each probe to sense first and second pressures which vary as a function of angle of attack, the axes of the first and second ports of the first probe lying on a first plane at a defined inclination to a vertical longitudinal central plane of the air vehicle, and the axes of the first and second ports of the second probe lying on a second plane that is inclined a selected different inclination relative to the vertical longitudinal central plane of the air vehicle than the first plane, sensors to provide separate pressure signals from each of the ports on each of the probes whereby at least one of the functions consisting of static pressure and angle of attack sensed at each probe in the first and second planes, respectively, is obtained from the separate pressure signals, the second plane being inclined at a non-orthogonal angle relative to the first plane sufficiently to cause a change of indication of angle of attack relative to a change in air vehicle angle of sideslip from the signals provided from the ports on the first probe when relative flow past the air vehicle is at an angle relative to the vertical longitudinal central plane of the air vehicle.

5,616,862
VOLUME METER
Hans-Jürgen Pucher, Unterweikertshofen, Germany, assignor to KEM Kuppers Elektromechanik GmbH, Karlsfeld, Germany
Filed Jun. 15, 1995, Ser. No. 490,951
Claims priority, application Germany, Nov. 11, 1994, 9418104 U; Dec. 22, 1994, 9420572 U
Int. Cl.^{6} G01F *3/04*
U.S. Cl. 73—261 **6 Claims**



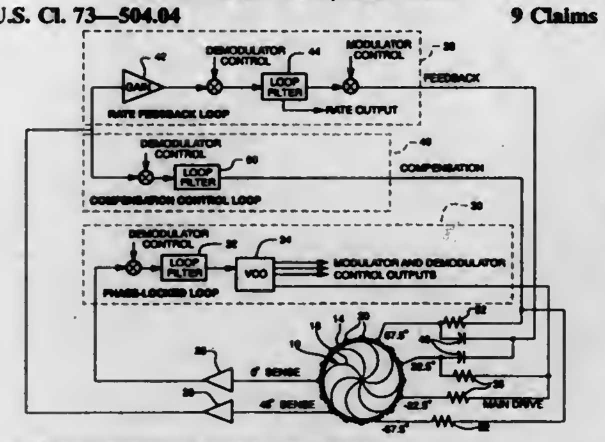
1. Volume meter in a multipart casing (6, 7) with a measuring chamber (5) in which are located two meshing gears (2) substantially filling said measuring chamber (5), wherein said gears (2) are rotataby placed on self-supporting spindles (9) and a flat gasket (1) is provided for sealing the casing parts (6, 7), wherein in the center of the gears (2) are provided bearing bushes (10), whose height corresponds to or is slightly larger than that of the gears (2).

5,616,863
SIDE SURFACE MOUNTED ACCELEROMETER ASSEMBLY
Edward F. Koen, Danville, Calif., assignor to IC Sensors, Inc., Milpitas, Calif.
Continuation of Ser. No. 189,948, Feb. 1, 1994, Pat. No. 5,503,016. This application Dec. 6, 1995, Ser. No. 569,402
Int. Cl.^{6} G01P *1/02*
U.S. Cl. 73—493 **28 Claims**



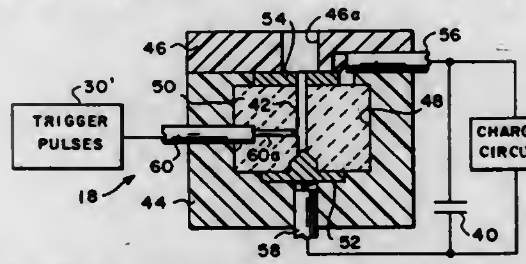
1. A transducer assembly comprising:
a transducer chip having an axis of sensitivity, the axis of sensitivity being at an angle to a plane defined by a principal surface of the transducer chip;
a chip package which houses the transducer chip; and
a circuit board, wherein a side surface of the chip package faces a surface of the circuit board and the chip package is directly supported by the circuit board.

5,616,864
METHOD AND APPARATUS FOR COMPENSATION OF MICROMACHINED SENSORS
Jack D. Johnson, Rossville, and Fie A. Liem, Carmel, both of Ind., assignors to Delco Electronics Corp., Kokomo, Ind.
Filed Feb. 22, 1995, Ser. No. 391,854
Int. Cl.^{6} G01C *19/00;* **G01P** *15/08*
U.S. Cl. 73—504.04 **9 Claims**



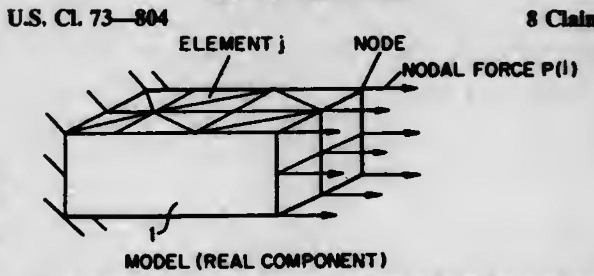
1. A micromachined sensor comprising:
a micromachined vibration element subject to resonant vibration at two closely spaced frequencies;
a plurality of electrodes capacitively coupled to the vibration element;
an excitation circuit for developing an excitation signal for exciting vibration of said vibration element and for sensing vibration of said vibration element;
a feedback circuit for developing a feedback signal for rebalancing said vibration element;
a compensation circuit for producing a compensation signal for substantially resolving the resonant vibration to one frequency; and
means for coupling said feedback signal and one of said excitation and compensation signals to at least one electrode of said plurality of electrodes for electrode sharing.

5,616,865
ACOUSTIC WAVE GENERATING APPARATUS
John M. Webster, New York, N.Y., assignor to Holographics Inc., Long Island City, N.Y.
Division of Ser. No. 157,815, Nov. 24, 1993, Pat. No. 5,505,090. This application Mar. 22, 1995, Ser. No. 408,650
Int. Cl.^{6} H01J *17/00;* **H01S** *4/00*
U.S. Cl. 73—627 **10 Claims**



1. A discharge device for producing a substantially unidirectional high-energy acoustic wave, comprising:
an insulator formed of hard heat-resistant material having a small-diameter axial bore having two ends formed therein, the first end of which is open,
a first annular-shaped electrode surrounding and positioned at the open first end of said bore,
a second electrode disposed in a position to close the second end of said bore,
conductor means for coupling said first and second electrodes across terminals of a source of voltage adapted to be rapidly charged and discharged, and
means for periodically forming an ionized path in said bore between said first and second electrodes, the ionized path resulting in the rapid electrical discharge of the source of voltage and the production of the substantially unidirectional high-energy acoustic wave from said open first end of said bore.

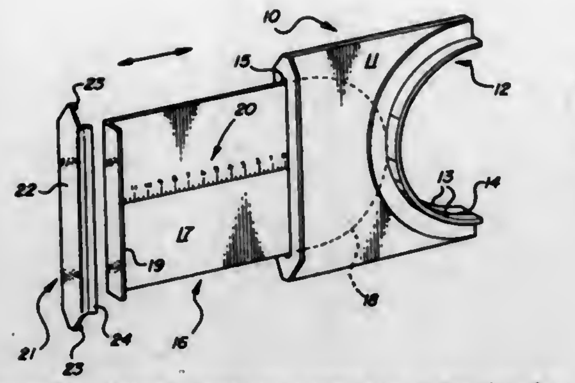
5,616,866
METHOD OF FINDING STRESS DISTRIBUTION FROM TEMPERATURE VARIATION PATTERN ON SURFACE OF ELASTIC BODY
Yukitaka Murakami, Fukuoka, Japan, assignor to Jeol Ltd., Tokyo, Japan
Filed Sep. 19, 1995, Ser. No. 529,267
Int. Cl.^{6} G01N *19/00*
U.S. Cl. 73—804 **8 Claims**



1. A method of finding a stress distribution from a temperature variation pattern on a surface of an elastic body, comprising the steps of:
adiabatically applying stress variations to the elastic body to be investigated;
detecting a temperature variation pattern on the surface of the elastic body created by a thermoelastic effect;
finding sums of principal stresses at points inside the surface of the object from said temperature variation pattern;
preparing a model of a structure having the same shape as said object;
finding distribution of principal stress sums on and in said model by numerical analysis;
finding such a distribution of external forces acting on free nodal points which provide a numerically analyzed principal stress sum distribution closest to an actually measured principal stress sum distribution; and
finding stress components acting on arbitrary points on and in said object by numerical analysis from the found distribution of the external forces.

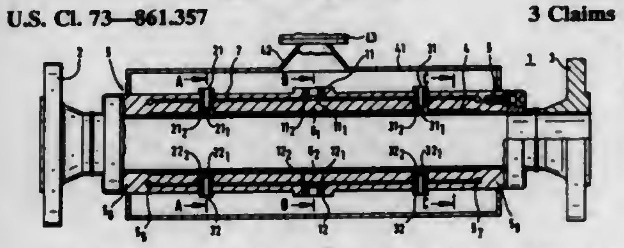
5,616,867
METHODS AND APPARATUS FOR DETERMINING A MINIMUM ACCEPTABLE VOLUME OF FLUID FLOW THROUGH A CONDUIT
Michael T. Fox, Midland, and David C. Norton, Ann Arbor, both of Mich., assignors to Quality Air Heating and Cooling of Midland Inc., Midland, Mich.
Filed Apr. 28, 1995, Ser. No. 430,880
Int. Cl.^{6} G01F *1/42*
U.S. Cl. 73—861.62 **17 Claims**

1. Apparatus for use in determining a minimum acceptable volume of fluid flow through a conduit, said apparatus comprising means for inducing fluid flow through said conduit at a volume greater than a minimum acceptable volume; barrier means movable from a first position in which fluid flow through said conduit is substantially unrestricted to a second position in which fluid flow through said conduit is restricted to a volume less than said acceptable minimum volume; sensor means for sensing the volume of fluid flow through said conduit; and signal means operable in response to sensing by said sensor means of a reduction in the



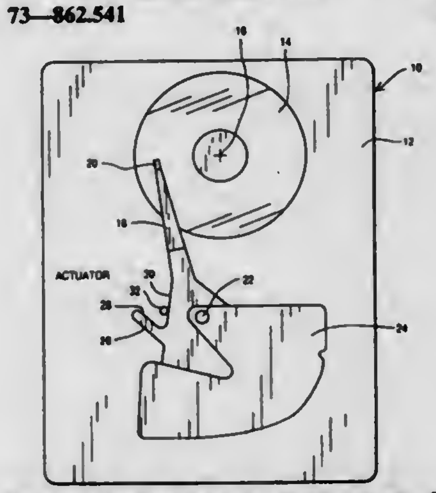
volume of fluid flowing through said conduit to a volume less than said minimum acceptable volume for signaling said reduction.

5,616,868
CORIOLIS-TYPE MASS FLOW SENSOR WITH A SINGLE MEASURING TUBE
Heinrich Hagenmeyer, Rheinfelden, and Alfred Wenger, Neftenbach, both of Germany, assignors to Endress & Hauser Flowtec AG, Reinach, Switzerland
Filed May 7, 1996, Ser. No. 646,123
Claims priority, application European Pat. Off., Jun. 14, 1995, 95109152
Int. Cl.⁶ G01F *1/78*
U.S. Cl. 73—861.357 **3 Claims**



1. A Coriolis-type mass flow sensor which can be installed in a conduit and through which a fluid to be measured flows during operation, comprising:
a vibrating system containing
a single straight measuring tube which is traversed by the fluid and acts as a main vibrator, and
an auxiliary vibrator which does not come in contact with the fluid and
which is mechanically coupled with the measuring tube via connecting elements,
the vibrating system being so excited during operation of the mass flow sensor in one of its natural frequencies of vibration by means of at least one exciter
that the measuring tube vibrates in a hoop mode;
a support, particularly a support tube, to which the vibrating system is attached at the ends and by which the vibrating system is connected with the conduit; and
at least one sensor for the inlet-side vibrations of the measuring tube and at least one sensor for the outlet-side vibrations of the measuring tube,
the vibrating system being so designed
that its kinetic energy is at least twice as high as the kinetic energy of the main vibrator, and
the connecting elements being so designed and arranged
that hoop modes of the measuring tube caused by Coriolis forces are transmitted to the auxiliary vibrator as little as possible.

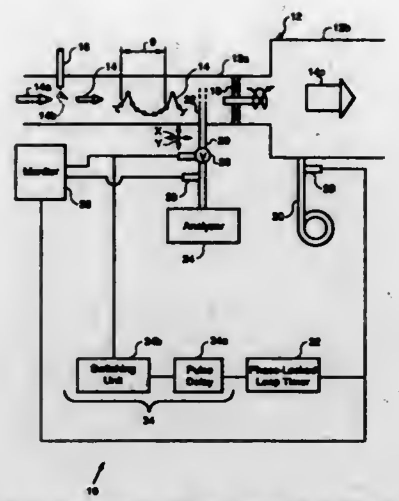
5,616,869
ACTUATOR TORQUE NON-LINEARITY COMPENSATION FOR HARD DISK DRIVES
James A. Valent, Longmont, Colo., assignor to Maxtor Corporation, Longmont, Colo.
Division of Ser. No. 243,455, May 16, 1994, Pat. No. 5,476,015. This application Dec. 18, 1995, Ser. No. 573,943
Int. Cl.⁶ G11B *5/00*
U.S. Cl. 73—862.541 **10 Claims**



1. An apparatus for measuring the torque constant of an electric motor that is incorporated into a hard disk drive and used to move an actuator arm which carries a magnetic read/write head in an arc across a rotating disk within a mechanically defined operating range, wherein the torque constant of the electric motor varies across the operating range on a given drive as a function of the location of the magnetic read/write head over the disk, and the operating range varies from drive to drive due to variations in the manufacturing process of the drives, said apparatus capable of measuring the torque constant when servo information is initially written on to the disk, said apparatus comprising:
positioning means for guiding the magnetic read/write head across a rotating disk, said positioning means including a movable member; and
force measuring means mechanically mounted on said movable member and capable of contacting the actuator arm during operation, said force measuring means further capable of providing an electrical signal proportional to the force exerted by the actuator arm on said force measuring means during operation;
means, connected to said electric motor, for supplying a substantially constant current to the electrical motor to cause the actuator arm to contact said force measuring means during operation; and
means, electrically connected to said force measuring means, for receiving the electrical signal from said force measuring means and information representative of the value of said constant current and calculating the torque constant of the motor for at least one point in the operating range of the magnetic read/write head.

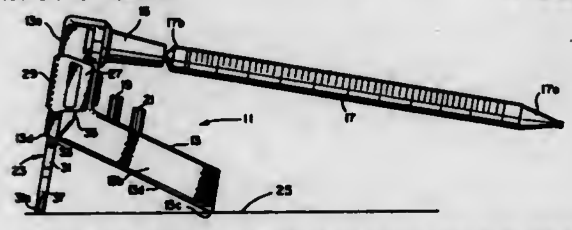
5,616,870
PHASE RESOLVED SAMPLING SYSTEM
John H. Bowen, Greenfield Center, and Jeffery A. Lovett, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed Sep. 25, 1995, Ser. No. 533,591
Int. Cl.⁶ G01N *1/24*
U.S. Cl. 73—863.01 **15 Claims**

13. A method for periodically sampling a fluid stream in a conduit comprising:
removing periodically samples of said stream from said conduit;
analyzing said samples removed from said stream;
controlling flow of said samples for analyzing;
measuring dynamic pressure in said conduit;



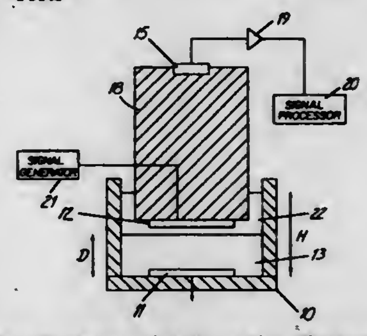
locking-on to a dynamic pressure reference frequency of said stream in said conduit; and
intermittently removing stream samples from said conduit at said reference frequency for analyzing said stream samples at a sampling frequency corresponding to said reference frequency.

5,616,871
PIPET GUN ASSEMBLY
James W. Kenney, Broomall, Pa., assignor to Drummond Scientific Company, Broomall, Pa.
Filed Sep. 28, 1995, Ser. No. 535,468
Int. Cl.⁶ G01N *1/14*; B01L *3/02*
U.S. Cl. 73—864.14 **9 Claims**



1. A pipet gun assembly for supporting a pipet gun in an upright position on a work table and for holding a pipet tube so that it does not touch the work table and for holding the pipet tube at an attitude such that any liquid in the tube does not flow back through the tube and into the pipet gun, comprising
a pipet gun including a handle with a rear wall,
a barrel extending from the handle,
and support stand means connected to the pipet gun for holding the pipet gun upright on a top surface of a work bench with the barrel of the gun being upright but at an angle from the vertical, said barrel not touching the work table, so that any pipet tube having a connecting end mounted on the pipet gun barrel does not touch the work table and any such pipet tube which is sterile does not touch the work table and remains sterile,
and connecting means on the barrel for supporting a pipet tube having a connecting end connected to the barrel and an admitting-emitting tip end for admitting and emitting liquid samples, and for holding the pipet tube at an attitude such that the admitting-emitting tip end is below the level of the connecting end of the pipet tube to prevent any liquid in the tube from flowing back through the tube to the pipet gun.

5,616,872
PARTICLE SIZE AND CHARGE MEASUREMENT IN MULTI-COMPONENT COLLOIDS
Richard W. O'Brien, Turramurra, Australia, assignor to Colloidal Dynamics PTY LTD, Sydney, Australia
PCT No. PCT/AU94/00307, § 371 Date Aug. 31, 1995, § 102(e) Date Aug. 31, 1995, PCT Pub. No. WO94/29694, PCT Pub. Date Dec. 22, 1994
PCT Filed Jun. 7, 1994, Ser. No. 513,934
Claims priority, application Australia, Jun. 7, 1993, PL9250
Int. Cl.⁶ G01N *15/02;15/00;29/02*; G01R *29/24*
U.S. Cl. 73—865.5 **23 Claims**

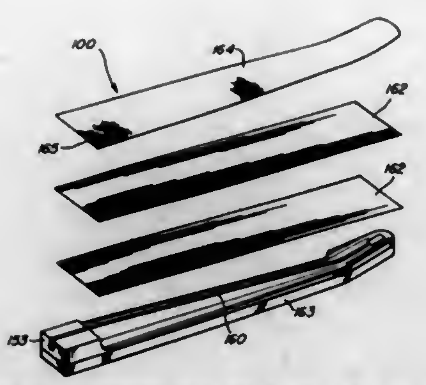


17. A method for determining the particle charge distribution of particles suspended in a liquid medium comprising:
subjecting the suspension to at least one steady, or slowly varying force which moves the particles at a rate that depends on their charge and thereby sets up spatial inhomogeneities in the suspension;
applying at least one of an unsteady electric field and an unsteady mechanical force to the suspension to accelerate the particles, the application of an unsteady electric field resulting in an acoustic wave response being generated by the particles and the application of an unsteady mechanical force resulting in an electrical response being generated by the particles;
measuring the generated response;
monitoring the change in these measurements with time due to the evolution of the spatial inhomogeneities in the suspension; and
calculating the particle charge distribution for the particles.

20. A method for determining the particle size distribution of particles suspended in a liquid medium comprising:
subjecting the suspension to at least one steady or slowly varying force which moves the particles at a rate that depends on their radius and thereby sets up spatial inhomogeneities in the suspension;
applying at least one of an unsteady electric field and an unsteady mechanical force to the suspension to accelerate the particles, the application of an unsteady electric field resulting in an acoustic wave response being generated by the particles and the application of an unsteady mechanical force resulting in an electrical response being generated by the particles;
measuring the generated response;
monitoring the change in these measurements with time due to the evolution of the spatial inhomogeneities in the suspension; and
calculating the particle size distribution for the particles.

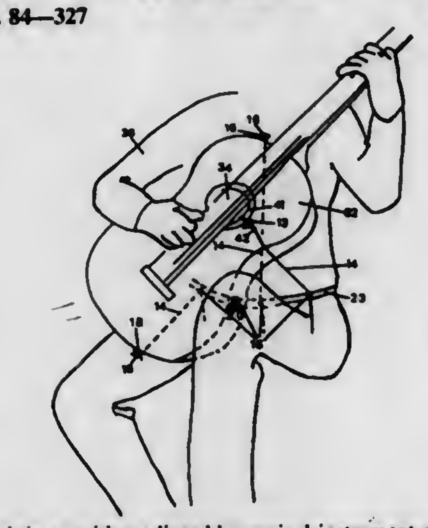
5,616,873
STRINGED MUSICAL INSTRUMENT
Lawrence R. Fishman, 22 Calumet Rd., Winchester, Mass. 01887, and Kenneth Parker, 12 Old Town Rd., Seymour, Conn. 06483
Continuation-in-part of Ser. No. 862,975, Apr. 3, 1992, Pat. No. 5,337,644, which is a division of Ser. No. 352,154, May 15, 1989, Pat. No. 5,125,312. This application Jul. 14, 1994, Ser. No. 275,157
Int. Cl.⁶ G10D *3/00*
U.S. Cl. 84—293 **10 Claims**

1. A method of constructing a light-weight stringed musical instrument neck comprising the steps of:



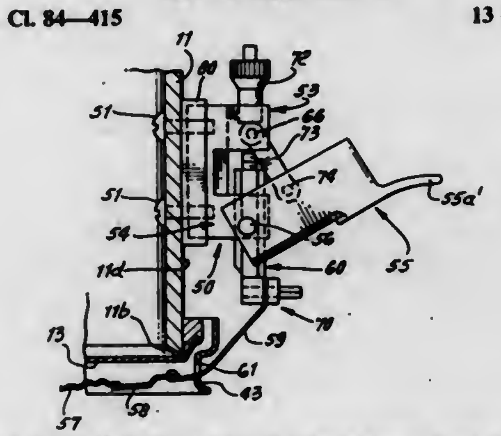
providing a strengthening layer and a thin fiberglass sheet as a finish layer over a wood neck core shaped as the instrument neck; and
securing the layers as a laminate to a surface of the wood neck core.

5,616,874
SITTING POSITION MUSICAL INSTRUMENT RETAINER
Peter C. Kraus, deceased, late of Sherman Oaks, Calif., and Debra J. Kraus, heiress, 13368 Huston #A, Sherman Oaks, Calif. 91423, assignors to Debra J. Kraus, heiress, Sherman Oaks, Calif.
Filed Mar. 20, 1995, Ser. No. 406,575
Int. Cl.^{6} G10D *3/00*
U.S. Cl. 84—327 20 Claims



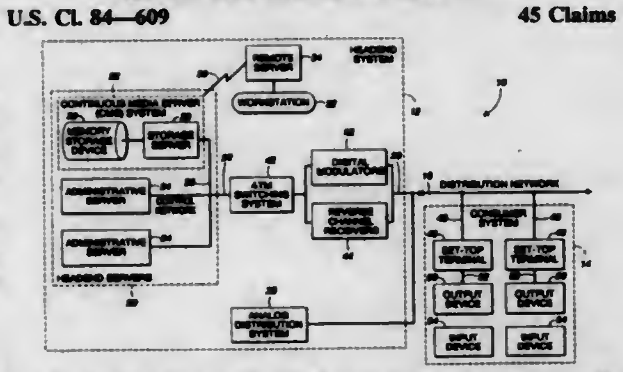
1. A sitting position adjustable musical instrument retainer with a waist worn retaining belt attached to a musical instrument of the guitar family, comprising:
a) a waist belt having a first end and a second end including means for attaching said belt about one's waist to which the following are fastened:
b) a short cord having a first end and a second end; said first end having means such as a knot for adjustably attaching to the right front of said waist belt; with said second end attaching by appropriate knot to a suction cup, used for attaching to the right side of said instrument's body;
c) another short cord having a first end and a second end: said first end having means such as a knot for adjustably attaching to the left front of said waist belt; with said second end of said cord attaching by appropriate knot to a hook, used for attaching to said instrument's sound hole lip;
d) another short cord having a first end and a second end; said first end having means such as a knot for adjustably attaching to another spot on the left front of said waist belt; with said second end attaching by appropriate knot to a suction cup which is used to attach to the top left side of said musical instrument's body.

5,616,875
DRUM STRAND TENSIONER
Donald G. Lombardi, Thousand Oaks, Calif., assignor to Drum Workshop, Inc., Oxnard, Calif.
Filed Dec. 6, 1995, Ser. No. 567,969
Int. Cl.^{6} G10D *13/02*
U.S. Cl. 84—415 13 Claims



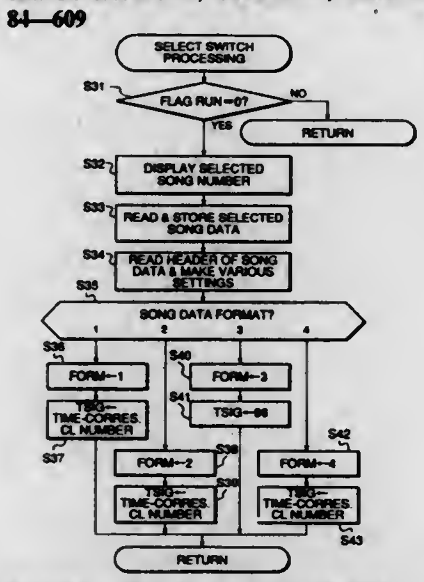
1. A throw-off device for use on a drum having a side wall and a head, comprising
a) a support body attachable to the side wall of the drum,
b) a lever having pivotal attachment to the body.
c) a tensioning member connectible to a strap that tensions or releases strands extending adjacent the drum head,
d) said member having operative guided relation with said body and operative connection with the lever to tension said strap and strands when the lever is swung toward said support body, and to de-tension said strap and strands when the lever is swung away from said support body,
e) said member being adjustable to adjust strap and strand tension,
f) said tensioning member having a first portion guided for sliding movement by a guide on said body, and a second portion movably connected to the lever, and in spaced relation to said pivotal attachment of the lever to said body.

5,616,876
SYSTEM AND METHODS FOR SELECTING MUSIC ON THE BASIS OF SUBJECTIVE CONTENT
Jonathan C. Cluts, Redmond, Wash., assignor to Microsoft Corporation, Redmond, Wash.
Filed Apr. 19, 1995, Ser. No. 424,781
Int. Cl.^{6} G09B *15/06; 15/04;* G10H *7/00*
U.S. Cl. 84—609 45 Claims



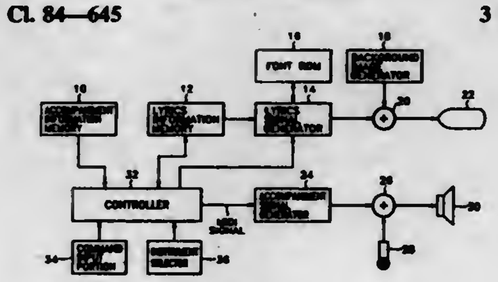
1. In an interactive media distribution system including a media server, a distribution network, an output device and an input device, a method for selecting programming information items from said media server comprising the steps of:
storing on said server a plurality of programming information items and editorial data associated with said programming information items;
playing, in response to a first input signal from said input device, an initial programming information item from said plurality of programming information items;
creating, in response to a second input signal from said input device, a list of proposed new programming information items on the basis of said editorial data associated with said initial programming information item and said plurality of programming information items;
presenting on said output device said list of said proposed new programming information items; and
adding, in response to a third input signal from said input device, said proposed new programming information items to a playlist.

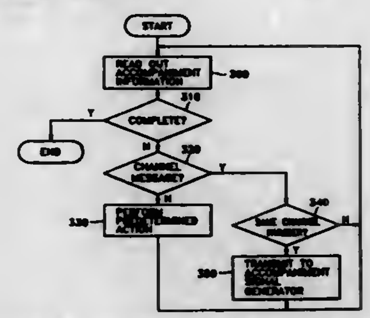
5,616,877
AUTOMATIC PERFORMACE DEVICE
Motoichi Tamura, and Takeo Shibukawa, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Japan
Continuation of Ser. No. 266,121, Jun. 20, 1994, abandoned. This application Jun. 11, 1996, Ser. No. 662,905
Claims priority, application Japan, Jul. 23, 1993, 5-202641
Int. Cl.^{6} A63H *5/00;* G04B *13/00;* G10H *7/00*
U.S. Cl. 84—609 8 Claims



1. An automatic performance device comprising:
memory means for storing automatic performance information comprising timing information and performance information, said performance information containing time change information indicative of a change in time as a rate or tempo at which automatic performance is to be carried out;
instruction means for instructing updating of an automatic performance position within said automatic performance information measure by measure; and
searching means responsive to an instruction from said instruction means, for searching a location of a head of a desired measure in said automatic performance information, by reading out said performance information of said automatic performance information from said memory means, based on said timing information, and counting a time period corresponding to each measure in said performance information read out to obtain a count value of said time period, and continuing said reading-out until said location of said head of said desired measure is searched out;
wherein when said time change information is read out during said searching, said searching means corrects said count value of said time period corresponding to one measure in which said time change information is read out, based on said time change information.

5,616,878
VIDEO-SONG ACCOMPANIMENT APPARATUS FOR REPRODUCING ACCOMPANIMENT SOUND OF PARTICULAR INSTRUMENT AND METHOD THEREFOR
Deok-hyun Lee, Seoul, and Jae-yong Kang, Suwon-city, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea
Filed Jun. 2, 1995, Ser. No. 458,238
Claims priority, application Rep. of Korea, Jul. 26, 1994, 94-18067
Int. Cl.^{6} G10H *7/00*
U.S. Cl. 84—645 3 Claims





1. A video-song accompaniment apparatus comprising:
an accompaniment information memory in which accompaniment information for a song in a musical instrument digital interface (MIDI) format is stored;
a lyrics information memory in which lyrics information for the song is stored;
an accompaniment signal generator for generating an accompaniment signal according to the accompaniment information read out from said accompaniment information memory;
a lyrics signal generator for generating a video character signal according to the lyrics information read out from said lyrics information memory;
a controller for providing the lyrics information read out from said lyrics information memory to said lyrics signal generator and the accompaniment information read out from said accompaniment information memory to said accompaniment signal generator, respectively, and for controlling a generating operation of the lyrics information in synchronization with the accompaniment information; and
an instrument selector for providing instrument selection information to said controller,
wherein said controller selectively outputs to said accompaniment signal generator selected accompaniment information, corresponding to the respective instrument selected by the instrument selection information provided from said instrument selector, from among the accompaniment information read out from said accompaniment information memory.

5,616,879
ELECTRONIC MUSICAL INSTRUMENT SYSTEM FORMED OF DYNAMIC NETWORK OF PROCESSING UNITS

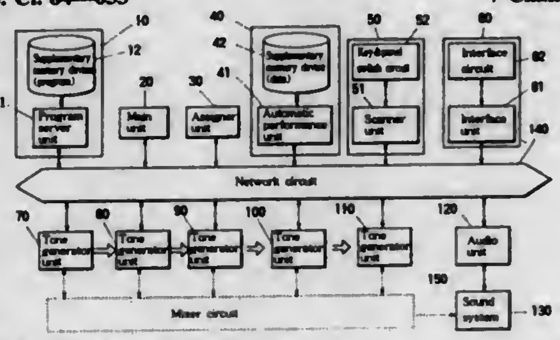
Akira Yamauchi; Yasuyuki Umeyama, and Kyoko Ohno, all of Hamamatsu, Japan, assignors to Yamaha Corporation, Japan

Filed Mar. 3, 1995, Ser. No. 398,288

Claims priority, application Japan, Mar. 18, 1994, 6-072879

Int. Cl.[6] G10H *5/00;* H04Q *1/18*

U.S. Cl. 84—653 **7 Claims**



1. A musical system, comprising:
a plurality of processing units linked together forming a network;
check means linked to said network for checking a characteristic profile of each processing unit, said characteristic profile comprising at least a processing speed of said processing unit and an identification of any external device connected to said processing unit; and
allocation means linked to said network for allocating a job to each of at least two of said plurality of processing units according to characteristic profiles of said at least two processing units so that said at least two processing units cooperatively perform a desired musical operation by each performing its allocated job, wherein a job allocated to at least one of said processing units comprises processing information distributed to said at least one processing unit via said network, and a job allocated to at least another of said processing units comprises controlling an external device connected to said Other of said processing units.

5,616,880
KEYBOARD MUSICAL INSTRUMENT EQUIPPED WITH HAMMER SHANK STOPPER WHERE HAMMER ASSEMBLY REBOUNDS WITHOUT DEFLECTION OF SHANK

Hajime Hayashida; Takashi Aoyagi; Satoshi Inoue; Ringi Nozue; Kiyoshi Kawamura, and Shigeaki Sato, all of Shizuoka, Japan, assignors to Yamaha Corporation, Japan

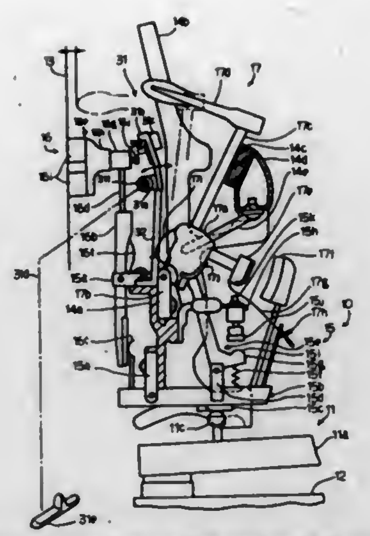
Filed Aug. 25, 1995, Ser. No. 519,424

Claims priority, application Japan, Aug. 30, 1994, 6-205225; Apr. 10, 1995, 7-083724

Int. Cl.[6] G10D *15/00;* G10F *1/22;* G10H *1/34*

U.S. Cl. 84—719 **14 Claims**

1. A keyboard musical instrument allowing a player to perform a music selectively through acoustic sounds and electronic sounds, comprising:
an acoustic piano including
a plurality of keys selectively fingered by a player during a performance,
a plurality of string means vibrative for generating said acoustic sounds,
a plurality of hammer assemblies respectively turning from home positions toward said plurality of string means for producing vibrations in said plurality of strings, a first space being formed between said plurality of string means and said plurality of hammer assemblies at said home positions,



a plurality of key action mechanisms respectively transferring forces exerted on said plurality of keys to said plurality of hammer assemblies so as to cause said plurality of hammer assemblies to turn, and
a plurality of damper assemblies provided in a part of said first space and temporarily spacing from said plurality of string means so as to allow said plurality of string means to vibrate when said plurality of keys are depressed, a second space being left in said first space;
an electronic sound generating system determining depressed keys of said plurality of keys for generating said electronic sounds corresponding to said acoustic sounds; and
a silent system including a hammer stopper having
a rotatable shaft extending in a lower sub-space of said second space under a virtual plane over which damper blocks of said plurality of damper assemblies project, and
a cushion means supported by said rotatable shaft and moved in an upper sub-space of said second space over said virtual plane between a free position and a blocking position, said cushion means in said free position allowing said plurality of hammer assemblies to strike said plurality of string means, said cushion means in said blocking position causing said plurality of hammer assemblies to rebound thereon without a strike at said plurality of string means.

5,616,881
INFLATOR SOCKET PIN COLLAR FOR INTEGRATED CIRCUIT INITAITOR WITH INTEGRAL METAL OXIDE VARISTOR FOR ELECTRO-STATIC DISCHARGE PROTECTIONS

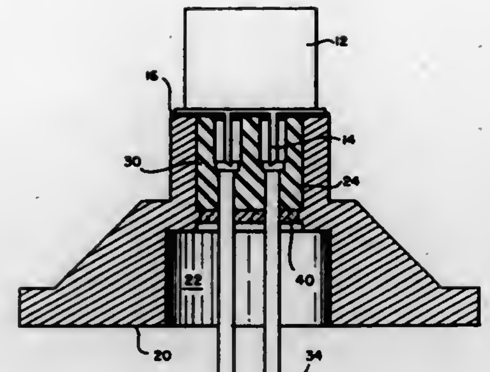
David D. Hansen, Clearfield, Utah, assignor to Morton International, Inc., Chicago, Ill.

Filed May 30, 1995, Ser. No. 456,257

Int. Cl.[6] F42B *3/18;* B60R *21/16*

U.S. Cl. 102—202.4 **11 Claims**

1. An inflator socket pin collar including integral electrostatic discharge protection for an initiator of an air bag inflator comprising:
a body having first and second opposed ends;
a first chamber disposed in said first end;
a second chamber disposed in said second end;
an insert disposed in said first chamber, said insert including means for connecting the initiator to an electrical connector of a vehicle;
a metal oxide varistor disposed in said insert for protecting the initiator from electrostatic discharge; and



wherein said second chamber is capable of receiving the electrical connector of the vehicle.

5,616,882
HIGH ENERGY ROCKET PROPELLANT

Robert Nichols, Lancastor; Timothy A. McKelvey, Edwards AFB, and Stephen L. Rodgers, Pearblossom, all of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation of Ser. No. 353,854, Dec. 9, 1994, abandoned. This application Mar. 29, 1996, Ser. No. 625,026

Int. Cl.[6] C06D *5/02;5/04;5/06*

U.S. Cl. 102—287 **17 Claims**

1. A fuel for rockets comprising, at least 5 weight % quadricyclane (Q), its alkyl-substituted derivatives or a combination thereof and at least one fuel component selected from the group consisting of alkanes, alkenes and alkynes having 1–20 carbon atoms; RP-1, Hexanes, n-Hexane, kerosene and a combination thereof and an oxidizer for said fuel.

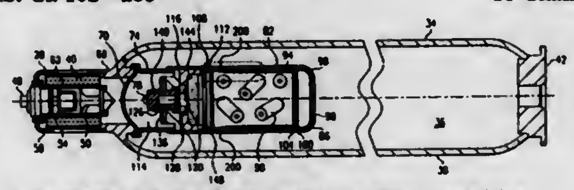
5,616,883
HYBRID INFLATOR AND RELATED PROPELLANTS

Brian K. Hamilton, Littleton, and James L. Baglini, Englewood, both of Colo., assignors to OEA, Inc., Aurora, Colo.

Continuation-in-part of Ser. No. 210,668, Mar. 18, 1994. This application Oct. 25, 1994, Ser. No. 328,657

Int. Cl.[6] C06B *45/12*

U.S. Cl. 102—288 **18 Claims**



1. An inflator for an inflatable safety system, comprising:
an inflator housing;
a pressurized medium contained within at least said inflator housing, wherein said pressurized medium consists essentially of at least one inert gas and oxygen and wherein said pressurized medium is the only pressurized fluid contained within said inflator prior to any activation of said inflator;
a gas generator interconnected with said inflator housing and comprising a gas generator housing and at least one gas generator outlet:
a propellant contained within said gas generator housing comprising a secondary explosive and a binder system, wherein said propellant has a burn rate ranging from about 0.1 inches per second (0.25 cm/sec) to about 1 inch per second (5.0 cm/sec) at 4,000 psi (27.6 MPa), a combustion temperature ranging from about 2,000° K. to about 3,800° K., and has lone-term thermal stability, said secondary explosive being selected from the group consisting of RDX (hexahydrotrinitrotriazine), HMX (cyclotetramethylenetetra-nitramine), PETN (pentaerythritol tetranitrate), and TACN (triaminoguanidine nitrate), said binder system being selected from the group consisting of polymeric binders, plasticizers, stabilizers and combinations thereof, said binder system comprising at least one of an energetic glycidyl azide polymer, a nitrate ester plasticizer, a glycidyl azide plasticizer, nitroglycerin, and BDNPA/F (bis (2,2-dinitropropyl) acetal/formal); and
an inflator activation assembly comprising an ignitable material other than said propellant, wherein said pressurized medium is released from said inflator housing and said propellant is ingnited upon initiating said inflator activation assembly.

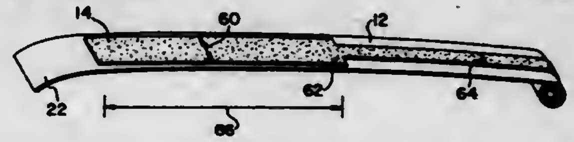
5,616,884
PROPELLANT GAS-GENERATION SYSTEM FOR CANISTER EJECTION

Mark A. Solberg, Edgewood, and James A. Hartwell, Elkton, both of Md., assignors to Thiokol Corporation, Ogden, Utah

Continuation-in-part of Ser. No. 679,305, Apr. 2, 1991. This application Jul. 10, 1992, Ser. No. 911,941

Int. Cl.[6] F42B *4/06;* C06B *45/12*

U.S. Cl. 102—351 **19 Claims**



1. A gas-generating propellant system for ejecting a projectile from a closed-end canister in which the projectile is disposed comprising:
a substrate having opposing surfaces and dimensions of width and length defining a strip, said strip of substrate having a first end and a second end and opposing lateral edges, wherein said lateral edges are coated with a sealant to deter combustion initiation from said lateral edges, said sealant including a carboxy-terminated polybutadiene and a trifunctional epoxy; and
a propellant adhered to at least one of said opposing surfaces of said strip of substrate along said length thereof, said strip of substrate with adhered propellant being adhesively attached to itself at potions along said length wherein said portions of said propellant are concealed and wherein said portions of attachment progressively detach under forces applied between said first and second end thereby exposing said concealed propellant to progressive combustion.

5,616,885
APPARATUS FOR DISPERSING A JET FROM A SHAPED CHARGE LINER VIA NON-UNIFORM CHARGE CONFINEMENT

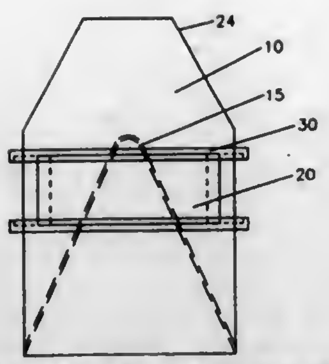
William Walters, Elkton, and Richard Summers, Conowingo, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 3, 1996, Ser. No. 668,606

Int. Cl.[6] F42B *12/10*

U.S. Cl. 102—476 **3 Claims**

1. A shaped charge ammunition round for selectively producing a coherent or dispersed jet pattern when detonated, comprising:
a substantially cylindrical outer casing having an open end;
an explosive charge within said substantially cylindrical outer casing;
a shaped charge liner, contained in said substantially cylindrical outer casing and covering the open end of the substantially cylindrical outer casing; and
at least two confining masses, each selectively attachable to an outer surface of said substantially cylindrical outer casing for producing a tamping effect on said shaped charge ammunition



round such that a jet pattern produced upon detonation of said shaped charge ammunition round is dispersed;

each said confining mass is placed around a portion of an outer diameter of said substantially cylindrical outer casing covering a portion of an outer surface area of said substantially cylindrical outer casing;

each said confining mass comprising a segment of 60 to 90 degrees of a hollow cylinder and said confining masses located on opposite sides of each other and at the same height on said substantially cylindrical outer casing; wherein an axial length of each said confining mass is less than an axial length of said shaped charge ammunition round; wherein each said confining mass is slidably mounted to said substantially cylindrical outer casing so as to allow each said confining mass to slide fore or aft to alter the pattern of the resulting jet when said shaped charge ammunition round is detonated.

5,616,886

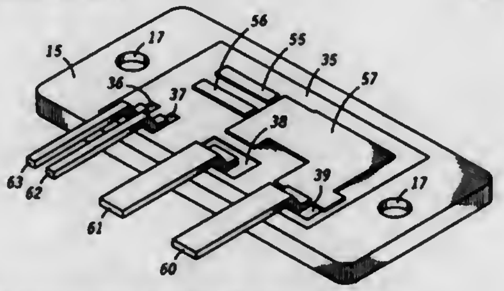
WIREBONDLESS MODULE PACKAGE

Guillermo L. Romero, Scottsdale, and Samuel J. Anderson, Tempe, both of Ariz., assignors to Motorola, Schaumburg, Ill.

Filed Jun. 5, 1995, Ser. No. 464,112

Int. Cl.⁶ H01L *23/02*

U.S. Cl. 174—52.4 **9 Claims**



1. A wirebondless module package comprising:

a preform with a cavity defined therein;

dielectric partitions positioned in the cavity and dividing the cavity into a plurality of separate areas;

a plurality of portions of a first conductive material, one each positioned in each of the plurality of separate areas, the dielectric partitions electrically insulating each of the plurality of portions of the first conductive material from all other of the plurality of portions of the first conductive material;

a semiconductor die mounted on a first portion of the first conductive material in one of the plurality of areas;

external terminals defined on the plurality of portions of the first conductive material; and

metallic depositions extending between the semiconductor die and the external terminals providing interconnections therebetween.

5,616,887

ELECTRICAL AND MECHANICAL CABLE CONNECTOR PERMITTING RELATIVE ROTATION BETWEEN CONNECTOR COMPONENTS

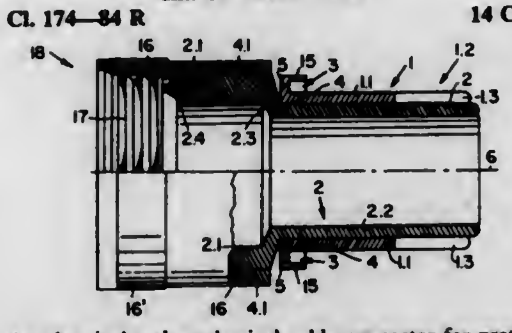
Safa Kirma, Wedel, Germany, assignor to Daimler-Benz Aerospace Airbus GmbH, Hamburg, Germany

Filed Jul. 21, 1995, Ser. No. 505,082

Claims priority, application Germany, Jul. 21, 1994, 44 25 868.2

Int. Cl.⁶ H02G *15/08*

U.S. Cl. 174—84 R **14 Claims**



1. An electrical and mechanical cable connector for protecting electrical installations in an aircraft against electromagnetic overloads, comprising a cylindrical hollow contact first body (1) of electrically conducting material having a circumferentially closed section (1.1) and an axially slotted section (1.2) forming electrical contact springs (1.3), a cylindrical hollow support second body (2) coaxially supporting said contact first body (1) in a manner permitting relative rotation between said first body and said second body, and an axial displacement preventing member (4) engaging said contact first body and said support second body (2) while permitting said relative rotation, and wherein said electrical contact springs (1.3) exert a biasing pressure against said support second body for conducting said electromagnetic overloads through said electrical contact springs, said pressure being distributed in a substantially radial direction relative to a central longitudinal axis (6) of said cable connector (18) and axially distributed in parallel to said central longitudinal axis.

5,616,888

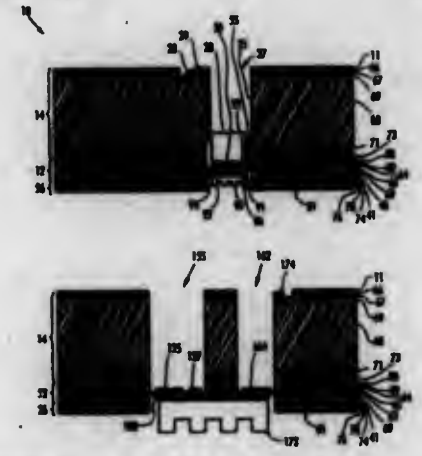
RIGID-FLEX CIRCUIT BOARD HAVING A WINDOW FOR AN INSULATED MOUNTING AREA

Steven R. McLaughlin, Muskego; Christopher J. Wieloch, Brookfield, both of Wis., and John C. Mather, Cedar Rapids, Iowa, assignors to Allen-Bradley Company, Inc., Milwaukee, Wis.

Filed Sep. 29, 1995, Ser. No. 537,216

Int. Cl.⁶ H05K *1/02*

U.S. Cl. 174—260 **29 Claims**



1. A multilayer circuit board, comprising:

a first circuit board layer having an insulating polyimide layer disposed between a first top surface and a first bottom surface, the first top surface having a pad for an electrical or heat dissipating device, the insulating polymide layer being flexible; and

a second circuit board layer having a second top surface and a second bottom surface, the second bottom surface being attached to first top surface, the second circuit board layer being configured so that the pad is exposed.

5,616,889

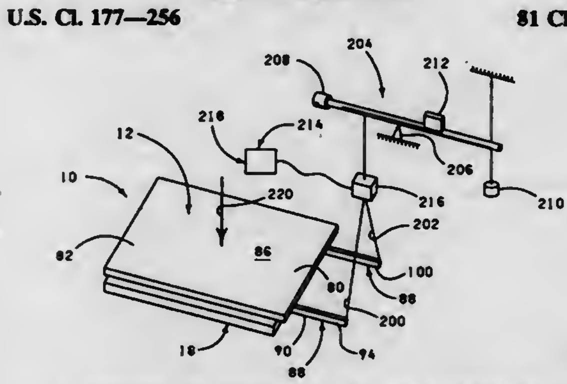
APPARATUS FOR WEIGHING A LOAD WITH A PAIR OF SUMMING BARS AND SUSPENSION STRAPS

John Paul, P.O. Box 729, Duncan, Okla. 73533

Filed Jan. 21, 1994, Ser. No. 185,427

Int. Cl.⁶ G01G *21/08*

U.S. Cl. 177—256 **81 Claims**



1. A summing bar suspension scale for weighing an object, comprising:

a support frame having a first end and a second end;

a first weighing bar having a first end and a second end, the first weighing bar disposed near the first end of the support frame;

a second weighing bar having a first end and a second end, the second weighing bar disposed near the second end of the support frame;

a platform support assembly having a first end and a second end, the platform support assembly disposed between the first and second weighing bars;

a weighing platform having a first end, a second end and an upper surface for supporting an object to be weighed, the weighing platform connected to the platform support assembly;

a weighing arm assembly connected to the first weighing bar, the weighing arm assembly comprising a first weighing arm having a first end and a second end and a spatially disposed second weighing arm having a first end and a second end, the first end of the first weighing arm connected to the first end of the first weighing bar and the first end of the second weighing arm connected to the second end of the first weighing bar, the first and second weighing arms extending from the first weighing bar in the direction of the second weighing bar;

a first summing bar assembly rigidly connected to the first and second weighing arms;

a second summing bar assembly rigidly connected to the the second weighing bar;

a first strap assembly for connecting the first end of the platform support assembly and the first weighing bar to the first end of the support frame;

a second strap assembly for connecting the second end of the platform support assembly and the second weighing bar to the second end of the support frame, the first and second strap assemblies cooperating to rotatingly support the first and second weighing bars whereby the first and second weighing bars are rotated in a direction in response to an object being disposed on the weighing platform for weighing;

a summing bar strap assembly for connecting the first and second summing bar assemblies for rotatably supporting the first and second summing bar assemblies whereby the first and second summing bar assemblies are rotated in response to the rotation of the first and second weighing bars by an object being disposed on the weighing platform for weighing.

5,616,890

BINAURAL STETHOSCOPE ALLOWING SURROUNDING NOISES TO BE HEARD

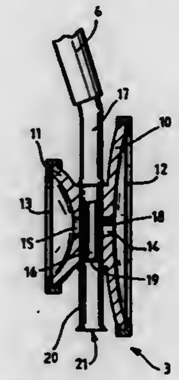
Georges Boussignac, 1, Avenue de Provence, 92160 Antony, France

Filed Nov. 2, 1995, Ser. No. 552,102

Claims priority, application France, Aug. 29, 1995, 95 10156

Int. Cl.⁶ A61B *7/02*

U.S. Cl. 181—131 **5 Claims**



1. A stethoscope comprising:

two earpieces (1,2);

a sound connection (4 to 7) connecting said earpieces (1,2) to;

an endpiece (3), said endpiece (3) being held in one hand by a practitioner during auscultation of a patient and having a common chamber (16) disposed between two opposite bells (10, 11) which are capable of being brought alternately into communication with said common chamber (16) of said endpiece (3), wherein said endpiece (3) has an orifice (19) in sound communication with said common chamber (16) and connected to a rigid projecting tube (20) integral to and extending outward from said endpiece (3), said rigid projecting tube (20) having an end orifice (21) opposite said common chamber (16) and in sound communication with the surroundings, wherein closing and opening of said end orifice (21) are controlled by said hand holding said endpiece (3).

5,616,891

SEALING PANEL, IN PARTICULAR FOR AUTOMOBILES, INCLUDING A LOUDSPEAKER HOUSING

Franck Fumey, Dijon, France, assignor to Plasto SA, Chenove, France

PCT No. PCT/FR94/01428, § 371 Date Jul. 7, 1995, § 102(e) Date Jul. 7, 1995, PCT Pub. No. WO95/15870, PCT Pub. Date Jun. 15, 1995

PCT Filed Dec. 7, 1994, Ser. No. 481,363

Claims priority, application France, Dec. 8, 1993, 93 14731

Int. Cl.⁶ H05K *5/00*

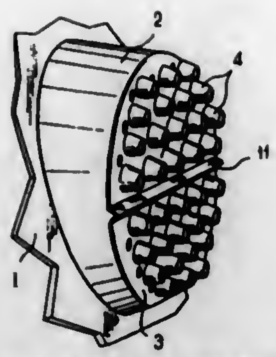
U.S. Cl. 181—141 **10 Claims**

1. A preformed sealing panel for automobiles comprising:

a panel portion;

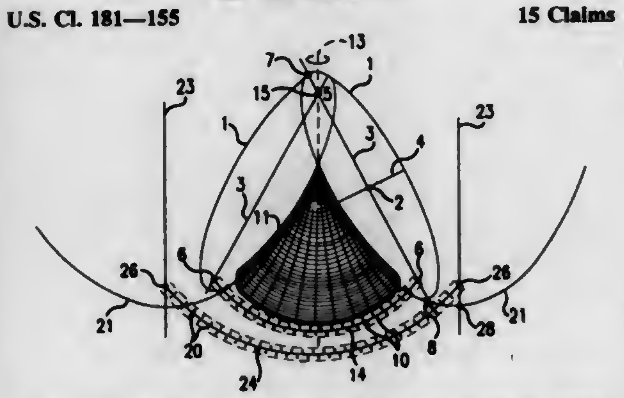
a loudspeaker housing formed in said panel portion, said loudspeaker housing having a back; and

a plurality of cells formed in said back of said loudspeaker housing, said cells having first ends and opposite ends, said cells having a height of between 3 mm and 25 mm, said first



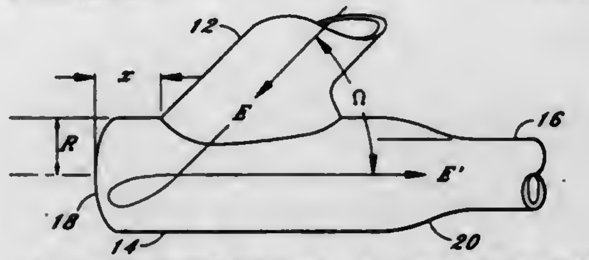
ends being open and interfacing with said back of said loudspeaker housing, said opposite ends having at least one opening therein.

5,616,892
VIRTUAL IMAGING MULTIPLE TRANSDUCER SYSTEM
Michael W. Ferralli, Fairview, Pa., assignor to Technology Licensing Company, Pittsburgh, Pa.
Filed Jan. 16, 1996, Ser. No. 587,237
Int. Cl.⁶ H05K *5/00*
U.S. Cl. 181—155 **15 Claims**



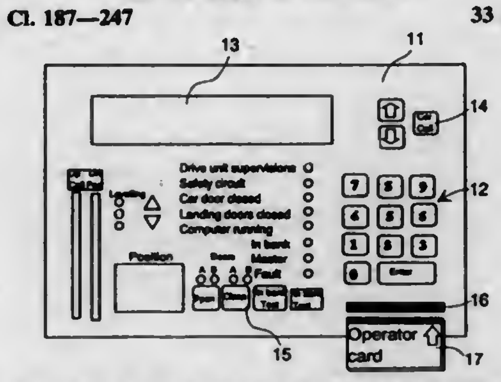
1. An apparatus for transducing radiant or acoustical energy, which comprises:
A. at least one reflector for reflecting said energy, having a surface defined by:
(i) rotating about a first axis at least a section of an ellipse having a major axis and a minor axis and two focal points, said first axis lying in a plane of said ellipse and passing through a first focal point of said ellipse, said first focal point being substantially coincident with a point defined by the intersection of said first axis and said major axis, said first axis being at an angle greater than zero to said major axis, said reflector reflecting said energy into a first focal region having an energy intensity about a first focal arc defined by the rotation of a second focal point of said ellipse about said first axis; and
(ii) rotating about said first axis at least a section of a parabola having a major axis and a focal length defined by a focal point, said first axis lying in a plane of said parabola and being substantially parallel to said major axis, said reflector reflecting said energy into a second focal region having an energy intensity about a second focal arc defined by the rotation of the focal point of said parabola about said first axis; and
B. at least two transducing elements for producing said energy, comprising:
(i) at least one first transducing element positioned above said reflector surface to substantially focus said energy into said first focal region; and
(ii) at least one second transducing element positioned above said reflector surface to substantially focus said energy into said second focal region.

5,616,893
REVERSE ENTRY MUFFLER WITH SURGE SUPPRESSION FEATURE
Woodrow E. Woods, 3640 Fiscal Ct., Riviera Beach, Fla. 33404
Filed Jun. 7, 1995, Ser. No. 472,334
Int. Cl.⁶ F01N *7/12*
U.S. Cl. 181—235 **7 Claims**



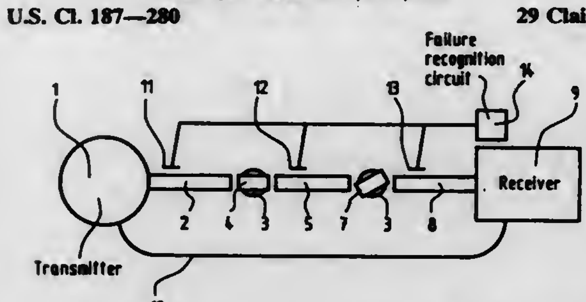
1. A reverse entry muffler for silencing the exhaust output of an inboard marine engine, comprising:
an inlet having an exhaust entry end and an exhaust exit end, said inlet defining a first elongate central axis;
an elongate housing connected to said exhaust exit end of said inlet, said housing defining an attenuation chamber; said housing fluidly coupled to said inlet; and
an outlet having an exhaust entry end and an exhaust exit end, said outlet fluidly coupled to said elongate housing, said elongate housing connected to said exhaust entry end of said outlet, said outlet defining a second elongate central axis; said first elongate central axis and said second elongate central axis defining an angle which is less than 90 degrees and greater than 0 degrees measured between said exhaust entry end of said inlet and said exhaust exit end of said outlet.

5,616,894
PROCEDURE FOR SUPPLYING, STORING AND DISPLAYING ELEVATOR CONTROL DATA
Juha Nieminen; Aki Tamminen, both of Hyvinkää ; Petri Huotari, Muuria; Reima Reinvall, Hyvinkää ; Marjo Kauppinen, Helsinki, and Kimmo Heikkilä , Hyvinkää, all of Finland, assignors to Kone Oy, Helsinki, Finland
Continuation of Ser. No. 273,859, Jul. 12, 1994, abandoned, which is a continuation of Ser. No. 213,070, Mar. 15, 1994, abandoned. This application Jan. 22, 1996, Ser. No. 589,574
Claims priority, application Finland, Mar. 17, 1993, FI 931173
Int. Cl.⁶ B66B *3/00;5/00;1/00*
U.S. Cl. 187—247 **33 Claims**



1. Procedure for supplying and modifying data required in a control system of an elevator of an elevator group and for producing instructions needed for at least one of installation, maintenance, repair and modification on a display in the control system, comprising the steps of:
storing parameter data of the control system and preselected instruction data for each operator carrying out work in a separate individualized storage unit;
when modification, repair or maintenance work is being carried out on the elevator, establishing a communication link between said separate storage unit and a data storage of a control unit in the control system;
supplying said data stored in said separate individualized storage unit to said control unit;
saving the supplied data in the control unit;
producing instructions to the operator in accordance with the parameter data and preselected instruction data supplied from the separate individualized storage unit and saved in the control unit;
carrying out at least one of installation, maintenance, repair, and modification in accordance with said instructions; and
storing failure and feedback information from said control unit in said separate individualized storage unit in connection with operation and testing.

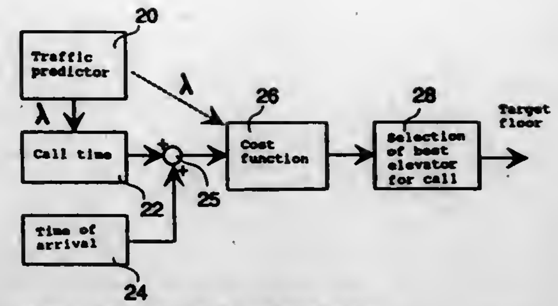
5,616,895
DOOR SAFETY CIRCUIT FOR MONITORING OF STORY DOORS IN LIFT INSTALLATIONS
Peter Spiess, Meggen, Switzerland, assignor to Inventio AG, Hergiswil, Switzerland
Filed Oct. 5, 1994, Ser. No. 318,431
Claims priority, application Switzerland, Oct. 6, 1993, 03006/93
Int. Cl.⁶ B66B *1/28;1/34;3/00*
U.S. Cl. 187—280 **29 Claims**



1. A door safety circuit for monitoring a plurality of story doors of an lift installation, each of said plurality of story doors including a latching device, said door safety circuit comprising:
a transmitter for transmitting a non-electrical signal;
a receiver for receiving said non-electrical signal and for converting said non-electrical signal into an electrical signal;
said non-electrical signal being influenced by operation of said latching device;
first means for conveying said non-electrical signal from said transmitter to said latching device;
second means for conveying said non-electrical signal associated with said latching device;
third means for conveying said non-electrical signal from said latching device to said receiver; and
a serial connection between said transmitter and receiver through each of said plurality of story doors when each of said plurality of story doors are latched closed.

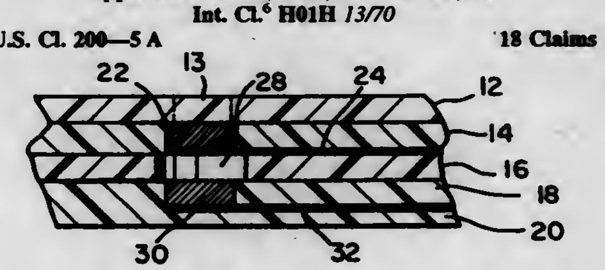
5,616,896
PROCEDURE FOR CONTROLLING AN ELEVATOR GROUP
Risto Kontturi, Kiljava, and Marja-Liisa Siikonen, Helsinki, both of Finland, assignors to Kone Oy, Helsinki, Finland
Filed Nov. 4, 1994, Ser. No. 334,122
Claims priority, application Finland, Nov. 11, 1993, 934993
Int. Cl.⁶ B66B *1/42*
U.S. Cl. 187—384 **13 Claims**

1. A method for controlling a group of at least two elevators in order to serve landing calls issued by call buttons mounted at landings, comprising the steps of:
(a) determining long-term traffic statistics for the elevator group, the traffic statistics indicating a level of demand for elevators at the landings;



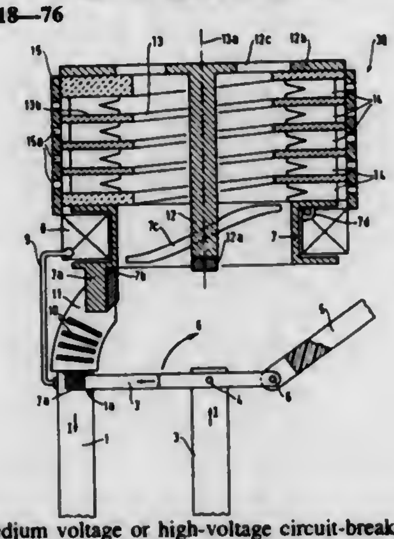
(b) receiving a plurality of landing calls;
(c) defining a call-type weight value for each landing call received in said step (b) based upon the landing where the landing call was placed and the up-down direction indicated by the landing call;
(d) defining a floor-specific weight coefficient for each landing call received in said step (b) based upon the traffic statistics for the corresponding landing of each landing call;
(e) calculating a cost function for each of the landing calls received in said step (b), the cost function including at least an elevator-specific factor and a floor-specific factor, the factors being weighted by the call-type weight value and the floor-specific weight coefficient, the cost function for each landing call being calculated for each elevator in the elevator group, the call-type and floor-specific weight coefficients providing an adjustable weight factor profile for the landing calls by weighting the landing calls issued from at least one floor other than the entrance floor, and wherein the cost functions are for use in selecting an elevator to service a landing call received in said step (b).

5,616,897
FLEXIBLE KEYBOARD
Michael R. Weber, 14535 Bruce B. Down Blvd. 2221, Tampa, Fla. 33613, and Paul J. Weber, 2881 E. Oakland Park Blvd., Ft. Lauderdale, Fla. 33306
Continuation-in-part of Ser. No. 85,888, Jun. 30, 1993. This application Feb. 2, 1995, Ser. No. 382,446
Int. Cl.⁶ H01H *13/70*
U.S. Cl. 200—5 A **18 Claims**



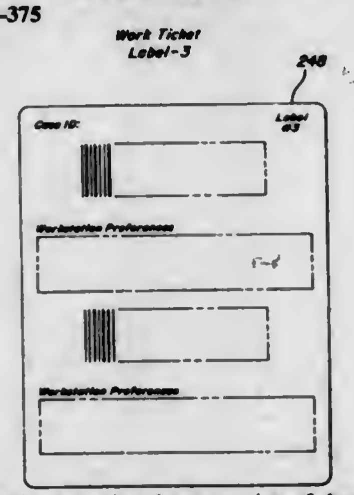
1. A flexible or roll-up electronic keyboard assembly for electronic devices which comprises:
a first section comprising a thin planar sheet of flexible and resilient non-conductive plastic or polymeric material having an indicia array;
a second section comprising a circuit pattern containing an upper array of deformable contacts which are arranged in a matrix pattern;
a third section comprising a non-conductive flexible and resilient plastic or polymeric spacer with openings corresponding to the array of deformable contacts in said second section;
a fourth section comprising a non-conductive flexible and resilient plastic or polymer comprising a lower array and arranged in apposition to said second section and electrically connectable thereto connected; and
a fifth bottom section comprising two overlaid layers of a non-conductive flexible and resilient plastic or polymer overlaid and bonded to form a network of substantially rigid gas filled support members when inflated; and
at least one gas conduit communicating with said support members.

5,616,898
MEDIUM-VOLTAGE OR HIGH-VOLTAGE CIRCUIT-BREAKER
Jean Maineult, Revonnas, France, assignor to GEC Alsthom T & D SA, Paris, France
Filed Apr. 12, 1995, Ser. No. 420,688
Claims priority, application France, Apr. 22, 1994, 94 04890
Int. Cl.⁶ H01H *33/08;33/20*
U.S. Cl. 218—76 **12 Claims**



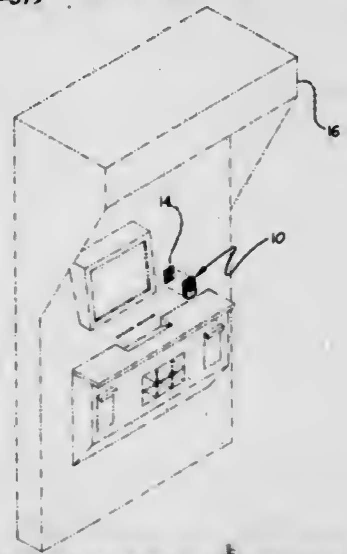
1. A medium voltage or high-voltage circuit-breaker including, in a casing filled with a dielectric gas, an interrupting chamber in which metal plates are disposed for splitting up an electric arc that is provided to the interrupting chamber into a multitude of smaller or elementary arcs under an action of a magnetic field, said circuit-breaker including a helical insulating ramp winding around a central generator line, the ramp being disposed on an inside peripheral portion of the chamber and around a conductive electrode, and the metal plates being disposed along said ramp, around and at a distance from the conductive electrode.

5,616,899
SYSTEM FOR MANAGING CASES IN DENTAL LABORATORY
David T. Recigno, Willow Grove, Pa., assignor to Recigno Laboratories, Inc., Willow Grove, Pa.
Filed Jun. 5, 1995, Ser. No. 461,283
Int. Cl.⁶ G06F *17/00*
U.S. Cl. 235—375 **19 Claims**



1. A system for managing the processing of dental appliances being fabricated in a dental laboratory wherein the fabrication of such appliances is achieved in iterations, with the first of said iterations comprising receipt of a prescription from the doctor for fabricating the appliance therefrom, and with subsequent iterations comprising return of the appliance by the doctor to the laboratory for additional processing, said system comprises digital processing means, a data collection means, and data storage means, said data collection means being arranged to collect process related data associated with each iteration, data storage means being arranged to store said process related data associated with each iteration while preserving previously stored data associated with prior iterations, whereupon data indicative of the history of the fabrication of the appliance through all of the iterations is available to the operator of the laboratory for analysis and the effective and efficient management of the laboratory, said data collection means comprising a bar-code scanner and wherein said system additionally comprises a work ticket, a prescription return form and a shipping label, each having at least one bar-code label containing said process related data and readable by said bar-code scanner.

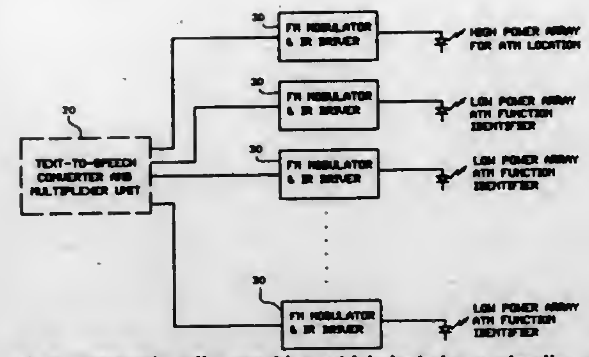
5,616,900
ATM KEYPAD OPERATING DEVICE
O. Ben Seewoster, 23131 Cherry Ave., Lake Forest, Calif. 92630
Filed Jul. 14, 1995, Ser. No. 502,382
Int. Cl.⁶ G06F *17/60*
U.S. Cl. 235—379 **6 Claims**



1. An ATM keypad operating device comprising:
a portable housing which can be placed over and against a numerical keypad of a machine, the keypad having a plurality of keys;
a plurality of solenoids mounted to a rear surface of the portable housing and each positioned for engagement with an individual one of the keys of the keypad, each of the solenoids including a movable projector positioned for engagement with a respective key of the keypad;
a code entering means mounted to the portable housing for receiving a code;
a controller electrically coupled to the code entering means, the controller being further electrically coupled to the solenoids, wherein a code can be entered into the controller through the code entering means and subsequently transferred to the keypad of the machine by the movable projectors of the solenoids.

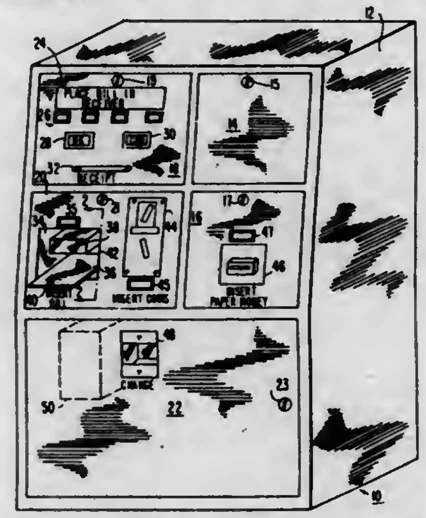
5,616,901
ACCESSIBLE AUTOMATIC TELLER MACHINES FOR SIGHT-IMPAIRED PERSONS AND PRINT-DISABLED PERSONS
William Crandall, San Francisco, Calif., assignor to Talking Signs, Inc., Baton Rouge, La.
Filed Dec. 19, 1995, Ser. No. 574,555
Int. Cl.⁶ G06F *17/60;* **G09B** *21/00*
U.S. Cl. 235—379 **13 Claims**

1. An automatic teller system rendered accessible for sight-impaired persons and print-disabled persons, which system comprises:



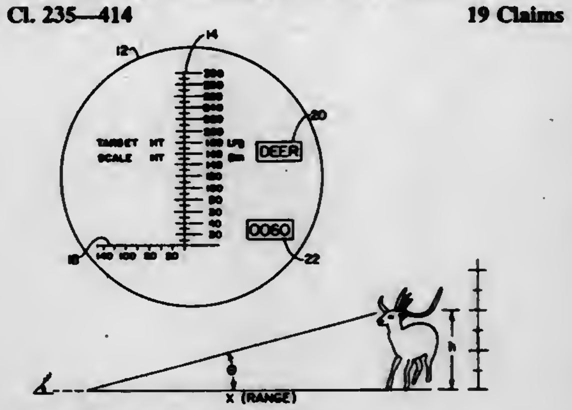
a) an automatic teller machine which includes a plurality of customer interacting means;
b) infrared remote communication means providing repeating, directionally sensitive frequency modulated message signals identifying the direction to and location of the teller machine such that a person having a portable receiver for said signals is led to and enabled to position himself/herself in a proximate operative relationship with the teller machine; and
c) individual short range infrared communication means in the teller machine, each said short range infrared communication means providing a separate repeating, directionally sensitive frequency modulated message signal which at least identifies the location of the respective customer interacting means on the teller machine such that said person can by movement of such portable receiver identify the location on the teller machine of the respective customer interacting means thereof.

5,616,902
BILL PAY SYSTEM AND METHOD
Robert B. Cooley, and Robert L. Burr, both of San Diego, Calif., assignors to Lottery Enterprises Inc., San Diego, Calif.
Filed Sep. 12, 1994, Ser. No. 304,271
Int. Cl.⁶ G06K *5/00*
U.S. Cl. 235—380 **14 Claims**



1. A bill paying machine for the payment of bills bearing bar-coded information regarding the bill owed and the person or entity owing it, said machine comprising, in combination, a support structure, a bar-code scanner secured to said structure, a payment accepting device secured to said structure for accepting payment against amounts due on said bill, and a computer for applying payments against said amounts due and computing the payment status of said bill.

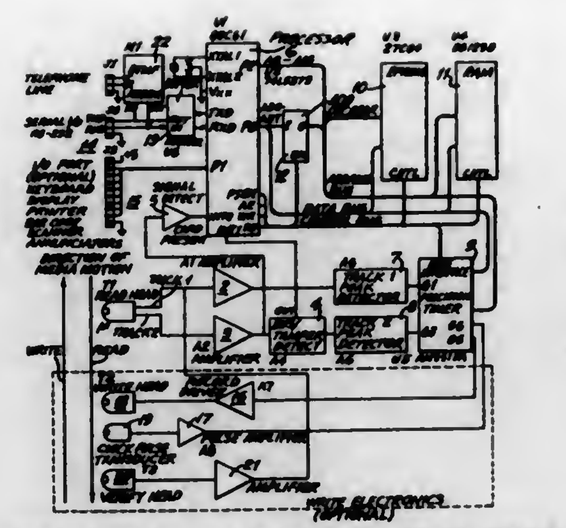
5,616,903
ELECTRONIC RANGEFINDER APPARATUS
Jon W. Springer, Riverton, Wyo., assignor to The Brunton Company, Riverton, Wyo.
Filed Jan. 26, 1995, Ser. No. 378,537
Int. Cl.⁶ G06F *19/00;* **G06G** *7/80;* **G01C** *3/22;5/00*
U.S. Cl. 235—414 **19 Claims**



1. A rangefinder apparatus comprising:
a scope including a transparent display disposed at a plane of focus between an occular and objective lens, said display having a reticle scale thereon provided with a series of numerical units in displayed vertically ascending order, said units being calibrated in relation to distance of a target from said display, said first recording means including a display counter on said display for displaying a selected said one of said units appearing on said reticle scale, and means for incrementing said display counter until the selected said one of said units is displayed which corresponds to said unit most closely aligned with an upper edge of the target object;
first recording means for recording one of said units on said scale corresponding to the height of a target object viewed through said display;
second recording means for recording a known height of said target object viewed in said display;
programmable control means for calculating the distance of said target object from said display based on said recorded one of said units and said recorded known height; and
means for displaying said range calculated by said control means.

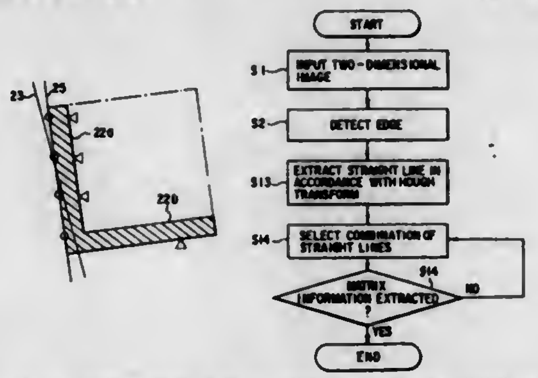
5,616,904
DATA VERIFICATION METHOD AND MAGNETIC MEDIA THEREFOR
Alberto J. Fernadez, Miami, Fla., assignor to XTec, Incorporated, Miami, Fla.
Continuation of Ser. No. 100,120, Jul. 30, 1993, Pat. No. 5,430,279, which is a division of Ser. No. 655,546, Feb. 14, 1991, Pat. No. 5,235,166. This application Apr. 12, 1995, Ser. No. 420,745
Int. Cl.⁶ G06K *7/00*
U.S. Cl. 235—449 **25 Claims**

1. A method for generating a magnetic security signature on a magnetically recordable media comprising the steps of:
A. producing a data representative signal to be recorded on said magnetically recordable media; and,
B. recording the data representative signal on the magnetically recordable media while controlling the rate of change of the



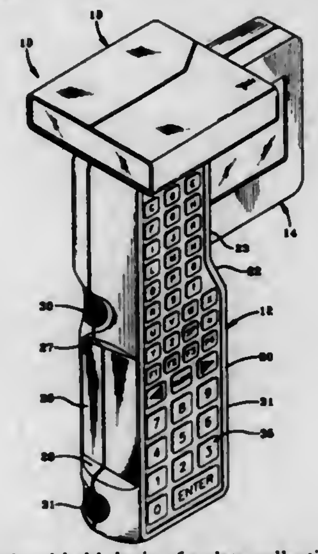
recording signal to extend the length of time that the magnetic flux transition remains on the most curved portion of the hysteresis loop of the magnetically recordable media.

5,616,905
TWO-DIMENSIONAL CODE RECOGNITION METHOD
Makoto Sugiyama, Mishima, Japan, assignor to Kabushiki Kaisha TEC, Shizuoka, Japan
Filed Feb. 16, 1995, Ser. No. 389,591
Claims priority, application Japan, Feb. 24, 1994, 6-026902
Int. Cl.⁶ G06K *7/10*
U.S. Cl. 235—456 **28 Claims**



1. A two-dimensional code recognition apparatus comprising:
an image reading section for optically reading an image including a rectangular two-dimensional code figure and for converting the read image into image information of a dot matrix form corresponding to coordinates of reading points;
an image memory section for storing the image information produced by said image reading section;
an image processing section for extracting a part of the image information stored in said image memory section which corresponds to the two-dimensional code figure, and for detecting two-dimensional code data from the extracted part of the image information;
wherein said image processing section includes: (i) edge point detecting means for detecting edge points forming an outline of the two-dimensional code figure by scanning rows and columns of the image information which are respectively separated by a predetermined number in column and row directions, (ii) straight line approximating means for performing an approximating operation of obtaining straight lines corresponding to the detected edge points by Hough transform and for determining two perpendicularly intersecting straight lines within a result of the Hough transform by a least square approximation, and (iii) specifying means for specifying the part of the image information corresponding to the two-dimensional code figure based on positions of the determined two perpendicularly intersecting straight lines.

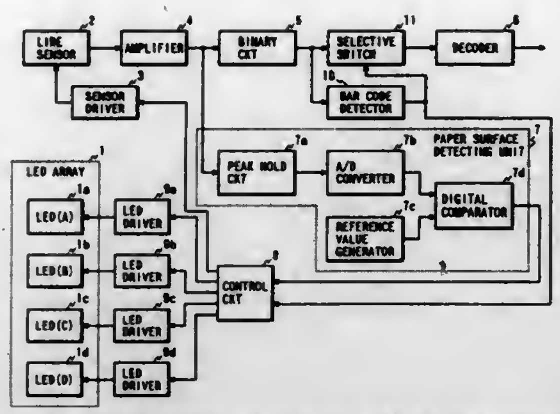
5,616,906
GRIP HELD AND GRIP OPERABLE DATA ENTRY DEVICE
Rajendra Kumar, Akron, Ohio, assignor to Khyber Technologies Corporation, Fairlawn, Ohio
Continuation of Ser. No. 96,678, Jul. 23, 1993, abandoned. This application Jan. 3, 1995, Ser. No. 368,036
Int. Cl.⁶ G06K *7/10*
U.S. Cl. 235—462 **20 Claims**



1. A portable, hand-held device for data collection by an operator, comprising:
a housing having a top and a bottom, a first side having a grasping portion and a second side extending between a front and a rear and said top and bottom;
a housing extension extending outwardly from the first side of the housing and between the top and bottom and having a front located beneath the top of the housing and lying along and beyond the grasping portion of said housing whereby the hand-held device is adapted to be grasped by the operator's hand with the operator's thumb extending along said grasping portion of the first side of the housing, the operator's second finger engaging the second side, opposite the first side, such that the operator's thumb and second finger secure the hand-held device against sideways movement, whereby the operator's hand acts against the rear of the hand-held device, and the operator's thumb acts on the front of the housing extension when the device is received by the operator's right hand such that the operator's hand and thumb secure the hand-held unit against movement toward and away from the user's hand; and
said front of the housing extension communicating with the first side of the housing intermediate the front and rear of said housing.

5,616,907
OPTICAL READING APPARATUS
Kazuo Hasegawa, and Junichi Ouchi, both of Miyagi-ken, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan
Filed Aug. 4, 1995, Ser. No. 511,505
Claims priority, application Japan, Aug. 12, 1994, 6-190539
Int. Cl.⁶ G06K *7/10*
U.S. Cl. 235—462 **9 Claims**

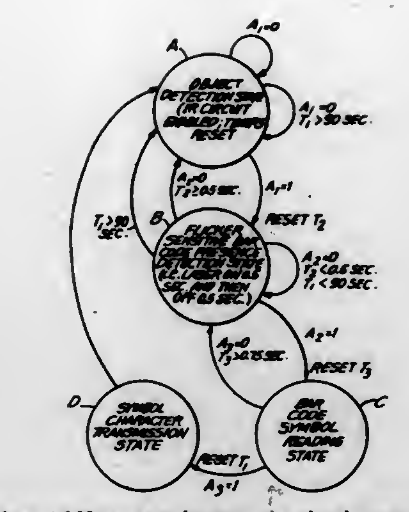
1. An optical reading apparatus comprising:
a plurality of light projection elements for projecting light to a linear record area on an information record surface;



a light reception element for receiving reflected light from said linear record area;
an information reading unit for processing record medium reading signals obtained from said light reception element and obtaining decoded signals of said linear record;
a drive control unit for driving said light projection elements and said light reception element; and
a record surface detecting unit for detecting whether the information record surface exists based on the record medium reading signal, and for supplying a record surface detection signal to said drive control unit when the information record surface is detected,
wherein said drive control unit drives the plurality of light projection elements such that when the record surface detection signal is not supplied, the plural light projection elements emit light in a sequence, and when the record surface detection signal is supplied, all of the plural light projection elements emit light simultaneously.

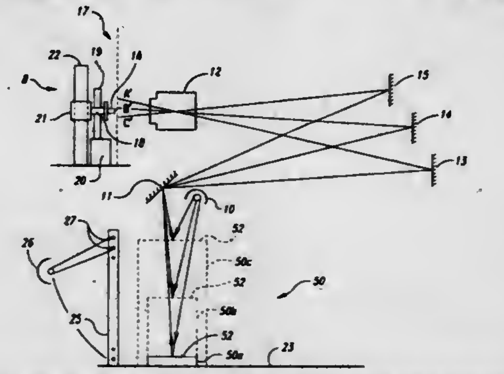
5,616,908
AUTOMATIC COUNTERTOP LASER SCANNER WITH FLICKERING LASER SCANNER BEAM FOR IMPROVED VISIBILITY THEREOF DURING BAR CODE SYMBOL READING
David M. Wilz, Sewell; George B. Rockstein, Audubon; Carl H. Knowles, Morristown, and Charles A. Naylor, Sewell, all of N.J., assignors to Metrologic Instruments, Inc., Blackwood, N.J.
Continuation of Ser. No. 278,109, Nov. 24, 1993, Pat. No. 5,484,992, which is a continuation of Ser. No. 960,733, Oct. 14, 1992, abandoned, which is a continuation-in-part of Ser. No. 898,919, Jun. 12, 1992, Pat. No. 5,340,973, which is a continuation-in-part of Ser. No. 761,123, Sep. 17, 1991, Pat. No. 5,340,971. This application Jan. 11, 1996, Ser. No. 584,135
Int. Cl.⁶ G06K *7/10*
U.S. Cl. 235—462 **9 Claims**

1. An automatic bar code symbol reading system having an object detection mode of operation, a bar code symbol detection mode of operation, and a bar code symbol reading mode of operation, said automatic bar code symbol reading system, comprising;
a housing mountable relative to a countertop surface, and having a light transmission aperture through which visible light can exit and enter said housing;
object detection means disposed in said housing for automatically detecting an object located within a portion of a scan field defined external to said housing;
laser beam source in said housing for producing a visible laser beam within said housing;
laser beam directing means in said housing, for directing said visible laser beam through said light transmission aperture and into a scan field defined external to said housing;
scanning mechanism in said housing for scanning said visible laser beam across said scan field and a bar code symbol on said detected object, said scanned visible laser beam flickering in said scan field at a rate in the range from about 0.1 Hz



to about 16 Hz so as to improve the visual conspicuousness of said visible laser beam in said scan field during said bar code symbol detection mode of operation;
light detection means in said housing, for detecting the intensity of laser light reflected off said bar code symbol as said visible laser beam is scanned across said scan field and said bar code symbol, and for automatically producing scan data indicative of the detected intensity of said reflected laser light;
scan data processing means for processing produced scan data so as to detect and decode said bar code symbol on said detected object, and upon detecting and decoding said bar code symbol on said detected object, automatically producing symbol character data representative of said decoded bar code symbol; and
control means for controlling the operation of said automatic bar code symbol reading system.

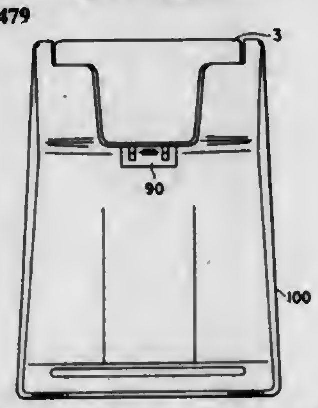
5,616,909
METHOD AND APPARATUS FOR MAINTAINING A SCANNING OPTICAL PATH LENGTH WITHIN A PREDETERMINED RANGE
Kevork G. Arackellian, Everett, Wash., assignor to Intermec Corporation, Everett, Wash.
Filed Jun. 6, 1995, Ser. No. 469,478
Int. Cl.⁶ G06K *7/10*
U.S. Cl. 235—472 **29 Claims**



1. An optical apparatus for reading data present on different size objects, said apparatus comprising:
a reading device that reads only a single image of the data on an object positioned on a reference surface;
an optical system including a lens having a depth of field and a plurality of optical paths each having a unique object plane, wherein the object plane of each of the plurality of optical paths is positioned at a different distance from a point on the reference surface and wherein the object plane of each of the plurality of optical paths is separated from an adjacent object

plane of one of the plurality of optical paths by a distance no greater than the depth of field of the lens;
a size detector that determines the distance of the object from the point on the reference surface; and
a selecting device that selects only one of the plurality of optical paths with the object plane that has a distance from the point on the reference surface closest to the distance from the point of the object, and wherein the object falls within the depth of field of the lens and the reading device substantially simultaneously receives the single image of the data.

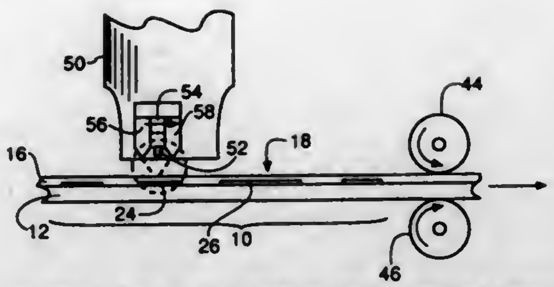
5,616,910
OPTICAL READING APPARATUS
Takashi Kawashima; Akira Tamagawa, and Akira Osanai, all of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Apr. 11, 1995, Ser. No. 422,271
Claims priority, application Japan, Apr. 14, 1994, 6-076041
Int. Cl.⁶ G06K *13/00*
U.S. Cl. 235—479 **4 Claims**



1. An optical reading apparatus for a card medium having an optical signal in bar code form written thereon, the optical reading apparatus comprising:
receiving section which receives a cassette holding said card medium;
a light source for projecting a light beam spot on said optical signal written on said card medium;
reading means for reading said optical signal by moving said light beam spot in a scanning direction along said optical signal or said card medium to scan said optical signal; and
guiding means for moving said cassette in a direction substantially normal to said scanning direction, as said card medium held in said cassette is inserted into said receiving section;
wherein said optical signal written on said card medium is optically read while said cassette is being moved by said guiding means.

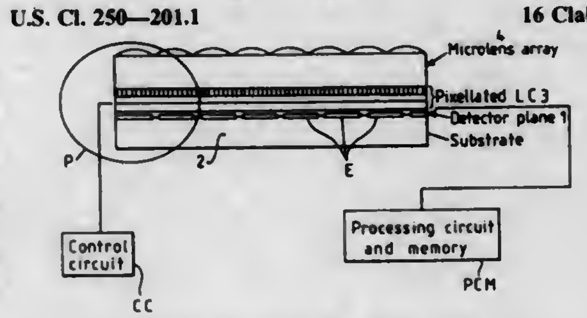
5,616,911
READ-ONLY MAGNETIC SECURITY PATTERN
Tomasz M. Jagielinski, Carlsbad, Calif., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed May 24, 1995, Ser. No. 448,945
Int. Cl.⁶ G06K *19/06*
U.S. Cl. 235—493 **24 Claims**

1. A read-only magnetic security device formed on or in a document for authenticating the document comprising:
a document substrate; and
an intermittent pattern of spaced apart indicia of magnetic material formed on or in the document substrate signifying an authenticating security pattern, the magnetic material of all indicia having a remanence approaching zero thereby rendering the magnetic material capable of being magnetized in the



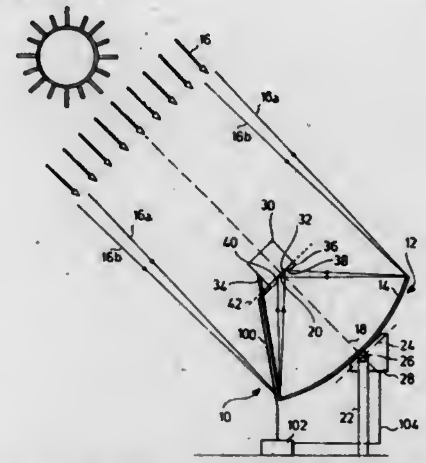
presence of an applied magnetic field to exhibit a magnetic moment but incapable of retaining a discernible magnetization in the absence of an applied magnetic field.

5,616,912
THREE DIMENSIONAL IMAGING APPARATUS, CAMERA, AND MICROSCOPE USING DISCRETE SHUTTER CONTROL TO PRODUCE PARALLAX FOR OBTAINING THREE DIMENSIONAL IMAGES
Michael G. Robinson; Craig Tombling, both of Oxfordshire; Paul May, Cambridge; David Ezra, and Graham J. Woodgate, both of Oxfordshire, all of United Kingdom, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Sep. 22, 1994, Ser. No. 310,853
Claims priority, application United Kingdom, Sep. 23, 1993, 9319619
Int. Cl.⁶ G01J *1/20*
U.S. Cl. 250—201.1 **16 Claims**



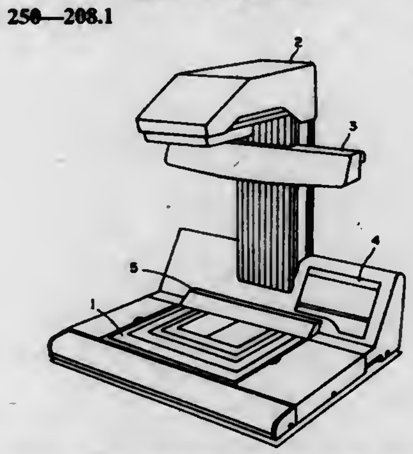
1. A three dimensional imaging apparatus comprising:
a photodetector;
an optical imaging system for imaging an object onto the photodetector;
a spatial optical modulator interrupting an optical path at a location between the object and the photodetector; and
a control circuit for causing the spatial optical modulator selectively to transmit only a selected segment of an area of the optical path at the location, the selected segment being selected sequentially among segments across the area so that the spatial optical modulator acts as a shutter arrangement,
wherein the optical imaging system comprises an array of lenses, the photodetector comprises an array of photodetector elements, each lens of the array is optically aligned with at least one of the photodetector elements, and the spatial optical modulator comprises an array of shutters, each of which is optically aligned with a respective one of the photodetector elements, and wherein each of the shutters comprises a plurality of discrete independently controllable modulation elements for obtaining parallax viewing information of the object in the form of multiple two dimensional views at different angles from the object.

5,616,913
DEVICE FOR CONCENTRATING SOLAR RADIATION
Thomas Litterst, Stuttgart, Germany, assignor to Deutsche Forschungsanstalt fuer Luft- und Raumfahrt e.V., Bonn, Germany
Filed Dec. 20, 1995, Ser. No. 575,297
Claims priority, application Germany, Dec. 23, 1994, 44 46 303.0
Int. Cl.⁶ F24J *2/38*
U.S. Cl. 250—203.4 **24 Claims**



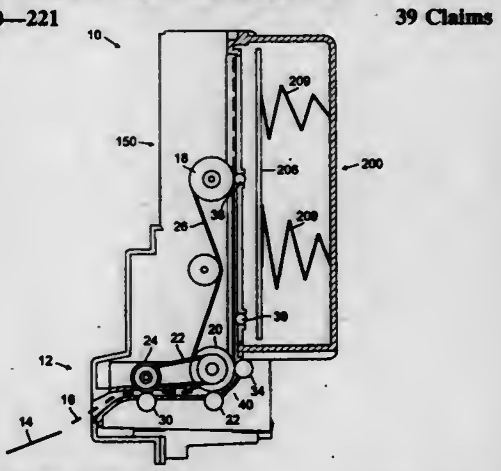
1. Device for concentrating solar radiation onto an absorber, comprising a concentrator element concentrating incident solar radiation in a focal spot on the absorber, characterized in that the device (10) has at least one measuring means for measuring the flux density of the solar radiation in the region of the focal spot and that the measuring means comprises an inlet opening (86), part of the solar radiation passing through said opening into the measuring means, a diffuser (70, 72, 74, 76; 106, 108, 110, 112) for reducing the flux density of the solar radiation reaching the measuring means and a detector (98) for measuring the flux density reduced by means of the diffuser (70, 72, 74, 76; 106, 108, 110, 112).

5,616,914
IMAGE READING APPARATUS WITH CORRECTION OF IMAGE SIGNALS
Shinya Matsuda, Machida, Japan, assignor to Minolta Co., Ltd., Osaka, Japan
Filed Mar. 13, 1995, Ser. No. 402,918
Claims priority, application Japan, Mar. 15, 1994, 6-043692
Int. Cl.⁶ H04N *1/40*
U.S. Cl. 250—208.1 **16 Claims**



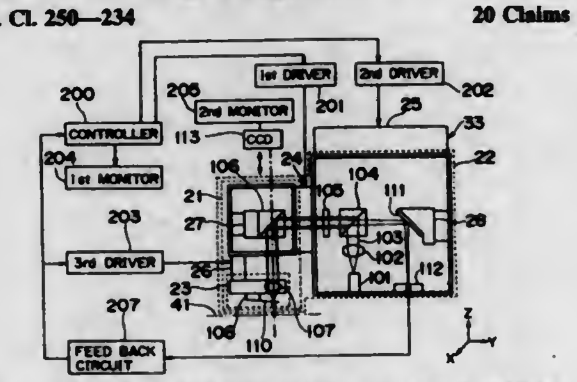
1. An image reading apparatus for reading an open book document placed face up on a document table by optical scanning comprising:
a mirror arranged along a lateral side of the document table in a subscanning direction and which reflects a lateral side view of the book document placed on the document table;
a projection lens disposed above the document table and which projects an image of the book document placed on the document table and the lateral side view of the book document reflected on the mirror;
a scanner disposed above the projection lens which includes a line sensor arranged along a main scanning direction and sequentially moves a reading position of the line sensor in the subscanning direction, wherein the line sensor captures an image of the book document projected by the projection lens and the lateral side view of the book document reflected on the mirror to generate image signals at every reading position;
detection means for detecting a height of the book document placed on the document table at every reading position based on the image signal of the lateral side view of the book document; and
correction means for correcting the detected height of the book document at every reading position based on a deviation between a position of the image of the book document projected on the line sensor and a position of the lateral side view of the book document projected on the line sensor with respect to the subscanning direction.

5,616,915
OPTICAL SENSOR FOR MONITORING THE STATUS OF A BILL MAGAZINE IN A BILL VALIDATOR
Joseph A. Simpkins, and Scott Hudis, both of West Chester, Pa., assignors to Mars Incorporated, McLean, Va.
Filed Jan. 23, 1995, Ser. No. 376,781
Int. Cl.⁶ G01N *9/04;* **G06M** *7/00*
U.S. Cl. 250—221 **39 Claims**



1. A bill validator comprising:
a removable magazine for storing bills, comprising a front portion through which bills are inserted into the magazine and a rear wall opposite the front portion, a pressure plate which moves along a path within the magazine in a first direction as bills are inserted into the magazine and in a second direction as bills are removed from the magazine, and first and second reflecting surfaces exposed to an exterior of the magazine;
a light source proximate the first reflecting surface, the light source directing light toward the first reflecting surface, which reflects the light to the second reflecting surface; and
a photodetector proximate the second reflecting surface, the photodetector detecting light reflected from the second reflecting surface and generating an output signal corresponding to the level of light detected which is indicative of the status of the magazine.

5,616,916
CONFIGURATION MEASURING METHOD AND APPARATUS FOR OPTICALLY DETECTING A DISPLACEMENT OF A PROBE DUE TO AN ATOMIC FORCE
Koji Handa, Osaka; Keishi Kubo, Moriguchi; Masateru Doi, Hirakata, and Keiichi Yoshizumi, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan
Filed Nov. 27, 1995, Ser. No. 563,071
Claims priority, application Japan, Nov. 28, 1994, 6-292460
Int. Cl.⁶ H01J *3/14*
U.S. Cl. 250—234 **20 Claims**

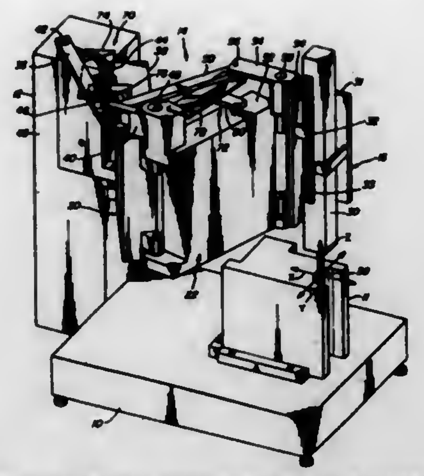


11. A configuration measuring apparatus in which substantially collimated displacement detection light radiated from a detection light radiation system is changed in direction by a mirror into a substantially perpendicular direction so as to be led to a first lens; displacement detection light is condensed by the first lens to proximities to a reflecting surface of a probe; and in which reflected light reflected by the reflecting surface of the probe that will be displaced by an atomic force acting against a surface of a sample, where the reflected light varies in reflection angle according to the displacement, is led to the first lens and then, by being changed in direction by the mirror into a substantially perpendicular direction, led to a displacement detection system, where the displacement of the probe is magnified and detected,

the apparatus comprising:
- a Z direction scan block having the first lens and the probe;
- a Z direction driving device for moving the Z direction scan block in a direction vertical to the sample surface;
- an X direction scan block connected to the Z direction scan block, the Z direction driving device, and the mirror;
- an X direction driving device for moving the X direction scan block in a first axial direction within a plane parallel to the sample surface;
- a Y direction scan block connected to the X direction scan block, the X direction driving device, the detection light radiation system, and the displacement detection system; and
- a Y direction driving device for moving the Y direction scan block in a second axial direction perpendicular to the first axial direction within the plane parallel to the sample surface.

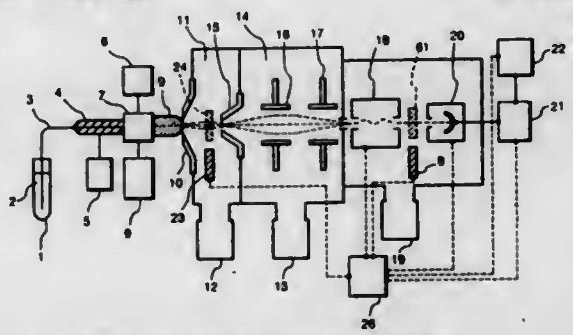
5,616,917
DEVICE FOR MEASURING AN ANGLE BETWEEN PIVOTALLY-CONNECTED MEMBERS
YuZhong Dai, Coventry, R.I., assignor to Brown & Sharpe Manufacturing Company, North Kingstown, R.I.
Filed May 16, 1995, Ser. No. 441,967
Int. Cl.⁶ G01B *11/02;* **B25J** *9/02*
U.S. Cl. 250—237 G **18 Claims**

1. A device for measuring an angular change between pivotally-connected, intersecting sides of a parallelogram, comprising:
- a grating comprising a pattern of parallel, straight grating lines formed on a substrate mounted in a fixed position with respect to a first side of said parallelogram; and



- a read head, including a sensor, mounted in a fixed position with respect to a second side of said parallelogram that is parallel to said first side, said read head traveling in an arc-shaped path relative to said grating lines as said parallelogram changes shape, for sensing displacement of said grating lines relative to said read head in response to an angular change between said intersecting sides of said parallelogram, and for generating a scale reading representative of said angular change.

5,616,918
PLASMA ION MASS SPECTROMETER AND PLASMA MASS SPECTROMETRY USING THE SAME
Konosuke Oishi, Mito; Toyoharu Okumoto, Hitachinaka; Masamichi Tsukada, Higashi, and Takashi Iino, Hitachinaka, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Oct. 5, 1995, Ser. No. 539,258
Claims priority, application Japan, Oct. 11, 1994, 6-245039
Int. Cl.⁶ H01J *49/06*
U.S. Cl. 250—288 **16 Claims**

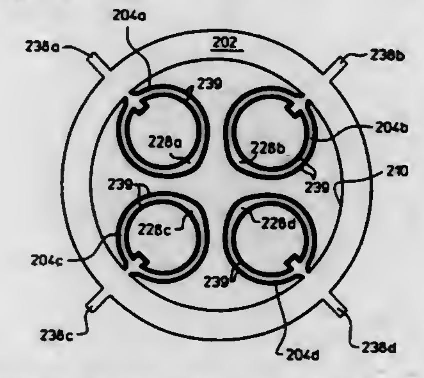


1. In a plasma ion mass spectrometer comprising:
- a plasma ion source for ionizing a sample with a plasma; and
- a mass spectrometric portion for performing mass spectrometry for said ionized sample;

the improvement comprising:
- a shielding device for shielding the flow of said ionized sample from said plasma ion source after an elapse of a specified time; and
- a holding device for holding, ions of said sample accumulated before shielding the flow of said ionized sample, for a specified time after shielding the flow of said ionized sample;

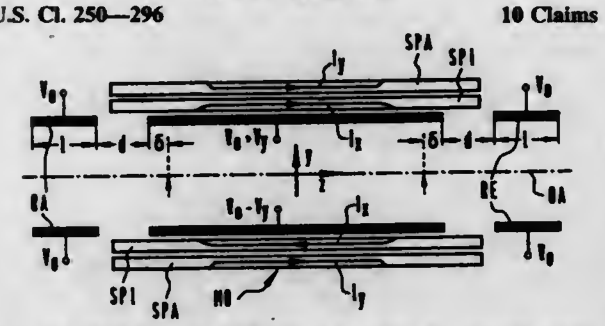
thereby performing mass spectrometry for said ions of said sample held in said holding device.

5,616,919
UNIVERSAL QUADRUPOLE AND METHOD OF MANUFACTURE
Carolyn C. Broadbent, Los Altos; Jeffrey T. Kernan, Mountain View, and Jean L. Truche, Los Altos, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Division of Ser. No. 218,441, Mar. 25, 1994, Pat. No. 5,525,084. This application Jun. 27, 1995, Ser. No. 497,098
Int. Cl.⁶ H01J *1/88*
U.S. Cl. 250—292 **10 Claims**



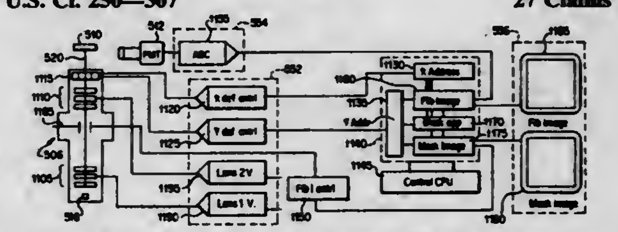
1. A mass filter electrode assembly comprising:
- an elongate outer tube having an internal surface and an external surface, wherein the outer tube provides an outermost structure of the electrode assembly and supports a vacuum; and
- at least four tubular inner structures coupled to the internal surface of the outer tube, each of the inner structures including an arced region having a conductive surface, wherein the inner structures are arranged such that the arced regions thereof are aligned in parallel equidistant opposing pairs around a common axis.

5,616,920
APPARATUS FOR REMOVING IONS FROM AN ELECTRON BEAM
Erich Plies, Tuebingen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany
Filed Oct. 4, 1995, Ser. No. 538,865
Claims priority, application Germany, Oct. 26, 1994, 44 38 315.0
Int. Cl.⁶ H01J *49/48*
U.S. Cl. 250—296 **10 Claims**



1. An apparatus for removing ions from an electron beam, comprising:
- a first deflection unit for generating a substantially uniform electrostatic dipole field;
- a second deflection unit for generating a substantially uniform magnetic dipole field;
- the first and second deflection units comprising a common symmetry axis;
- the electrostatic and the magnetic dipole fields being spatially oriented relative to one another such that corresponding field vectors of the two fields reside nearly perpendicularly on one another and respectively comprise no component in a direction of the common symmetry axis;
- a quotient of a magnitude of an electrostatic field strength of the electrostatic field and a magnitude of a magnetic field strength of the magnetic field being constant along a section of the common symmetry axis and being approximately equal to an average velocity of electrons running along the symmetry axis; and
- the first deflection unit, as viewed in an axial direction, being arranged between two tube electrodes lying at a constant negative potential.

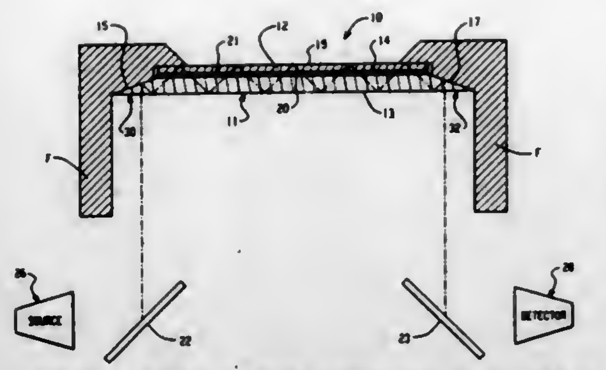
5,616,921
SELF-MASKING FIB MILLING
Christopher G. Talbot, Menlo Park; Douglas Masnaghetti, and Hongyu Ximen, both of San Jose, all of Calif., assignors to Schlumberger Technologies Inc., San Jose, Calif.
Continuation-in-part of Ser. No. 84,532, Jun. 28, 1993, abandoned. This application Jun. 30, 1994, Ser. No. 268,790
Int. Cl.⁶ H01J *37/30*
U.S. Cl. 250—307 **27 Claims**



1. A method of modifying an integrated circuit specimen, comprising the steps of:
- a. scanning a focused particle beam over a surface of a specimen to mill material from the surface;
- b. preparing a set of data representing an image of the surface, the image having a first image portion representing an area of passivation and/or dielectric to be milled further and a second image portion representing an area of metal over which further milling is to be minimized;
- c. scanning the focused particle beam over the surface while controlling the focused particle beam to selectively mill further the area represented in the first image portion and to minimize further milling of the area represented in the second image portion; and
- d. updating the set of data representing an image of the surface to thereby adapt the milling of the surface to changes occurring as the surface is milled.

5,616,922
OPTICALLY COUPLED INFRARED TRANSMITTING COMPOSITE INTERNAL REFLECTING ELEMENTS
John A. Reffner, 97 Ocean Dr., East, Stamford, Conn. 06902; Milan Milosevic, 10 Alden Ct., Fishkill, N.Y. 12524, and Donald W. Sting, 358 Turtleback Rd., New Canaan, Conn. 06840
Continuation-in-part of Ser. No. 28,388, Mar. 9, 1993, abandoned. This application Jul. 11, 1995, Ser. No. 500,552
Int. Cl.⁶ G01N *21/35*
U.S. Cl. 250—339.12 **17 Claims**

1. An apparatus for infrared spectroscopic or radiometric analysis of a sample, comprising:
- (i) a fixture for holding first and second optically transmitting materials;
- (ii) said first optically transmitting material having bulk optical transmission and index of refraction properties which enable infrared radiation transmission therethrough, said first optically transmitting material being of a type which normally has chemical or mechanical degradation when in contact with a sample during spectroscopic or radiometric analysis;
- (iii) said second optically transmitting material held by said fixture relative to said first material to be in optical contact with said first material without being chemically or adhesively

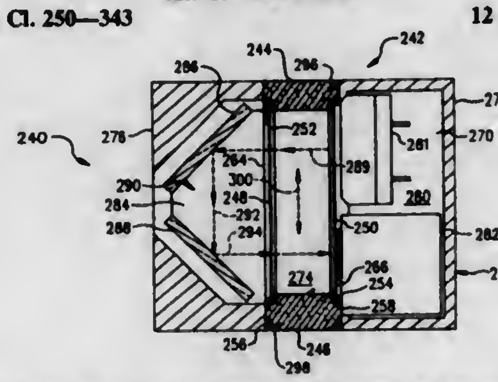


bonded to said first material, whereby said second material prevents a sample placed against the second material from contacting the first material during spectroscopic or radiometric analysis of a sample, said second optically transmitting material:

(a) being substantially chemically resistant to a sample,
(b) having mechanical properties which prevent significant degradation of the second material when a sample contacts the second material during spectroscopic or radiometric analysis, and
(c) having selected optical transmission and index of refraction properties which enable optical transmission from the first material to the second material, or from the second material to the first material, with minimal transmission or reflectivity loss during spectroscopic or radiometric analysis.

5,616,923
GAS ANALYZER CUVETTES

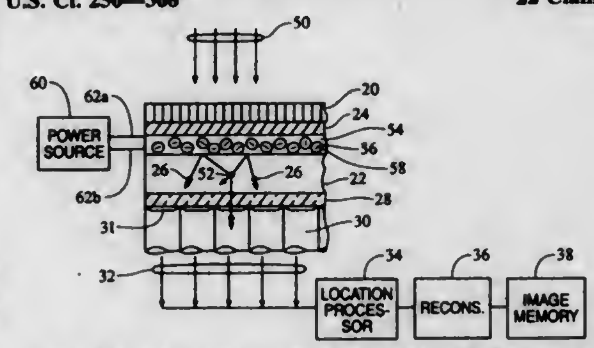
David R. Rich, Glastonbury, Conn.; Gerald R. Apperson, Seattle, Wash.; Lawrence L. Labuda, Issaquah, Wash., and Leslie E. Mace, Mercer Island, Wash., assignors to Novametrix Medical Systems Inc., Wallingford, Conn.
Continuation-in-part of Ser. No. 598,984, Oct. 17, 1990, Pat. No. 5,369,277, which is a continuation-in-part of Ser. No. 528,059, May 23, 1990, abandoned. This application Sep. 2, 1994, Ser. No. 300,383
Int. Cl.^{6} G01N *21/61*
U.S. Cl. 250—343 **12 Claims**



1. A gas analyzer for outputting a signal indicative of the concentration of a designated gas in a gas sample which may contain that gas, said gas analyzer comprising:
a casing which houses an infrared radiation emitter, an infrared radiation detector, and a cuvette for so confining said sample that infrared radiation propagated along an optical path between the infrared radiation emitter and the infrared radiation detector traverses the gas(es) in said sample;
said cuvette comprising wall means and windows fixed in apertures in said wall means at opposite sides thereof, said wall means and said windows defining a sampling passage through which said gas sample can flow along a straight path extending generally normal to said optical path;
said gas analyzer casing having first and second compartments located on opposite sides of the cuvette;
said windows cooperating with the gas analyzer casing wall means to isolate the first and second compartments in the gas analyzer casing from the sampling passage;
the infrared radiation emitter and the infrared radiation detector being isolated in the first compartment with the emitter being so oriented as to direct radiation through the cuvette to the second compartment;
the gas analyzer further comprising mirror means isolated in said second compartment for redirecting the infrared radiation reaching that compartment back through the cuvette to the infrared radiation detector; and
the cuvette wall means having sufficient porosity that gas can reach and/or exit from the sampling passage by diffusion or convective flow.

5,616,924
OPTICAL ENHANCEMENTS TO SCINTILLATING SYSTEMS USING DYNAMICALLY CONTROLLED MATERIALS

Micheal J. Petrillo, Twinsburg, Ohio, assignor to Picker International, Inc., Highland Heights, Ohio
Filed Oct. 16, 1995, Ser. No. 543,288
Int. Cl.^{6} G01T *1/164;1/20*
U.S. Cl. 250—368 **22 Claims**



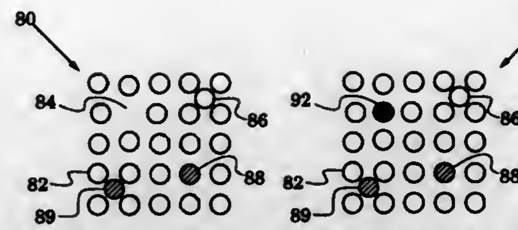
1. In a nuclear camera system including radiation detectors facing an examination region which houses a support for a subject injected with a radiation emitting radiopharmaceutical, each radiation detector including a scintillation crystal which generates light in response to received radiation and having a plurality of faces, a first face of the scintillation crystal being optically coupled to at least one optical sensor and all other faces of the scintillation crystal being encased in a housing material which blocks ambient light from entering the scintillation crystal, and a reconstruction processor for processing signals from the optical sensors into a diagnostic image, the improvement comprising:
a liquid crystal layer disposed between the scintillation crystal and the housing material for selectively reflecting the light generated by the scintillation crystal.

5,616,925
GAMMA RAY DETECTOR WITH IMPROVED RESOLUTION AND METHOD OF FABRICATION

David R. Rhiger; Sanghamitra Sen, both of Santa Barbara, and William J. Hamilton, Jr., Ventura, all of Calif., assignors to Santa Barbara Research Center, Goleta, Calif.
Filed Jun. 7, 1995, Ser. No. 486,497
Int. Cl.^{6} G01T *1/24;* **H01L** *31/0256*
U.S. Cl. 250—370.13 **25 Claims**

1. A gamma ray detector, comprising:
a semiconductor detector layer having first and second sides and formed of $Hg_xCd_{1-x-y}Zn_yTe$, wherein $0<x<0.05$ and $0\leq y<0.5$; and
first and second ohmic contacts respectively contacting said first and second sides.

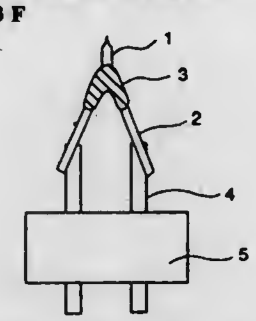
14. A method of detecting gamma rays, comprising the steps of:
providing a $Hg_xCd_{1-x-y}Zn_yTe$ semiconductor crystal, wherein $0<x<0.05$ and $0\leq y<0.5$;



positioning said $Hg_xCd_{1-x-y}Zn_yTe$ semiconductor crystal to intercept said gamma rays; and
detecting the presence of electron-hole pairs that are generated by the interaction of some of said gamma rays with some of the atoms of said crystal.

5,616,926
SCHOTTKY EMISSION CATHODE AND A METHOD OF STABILIZING THE SAME

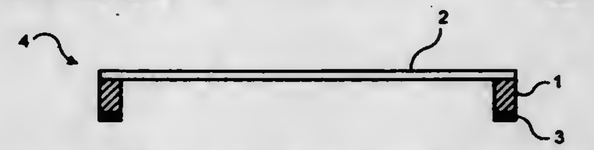
Hiroyuki Shinada, Choufu; Shingo Kimura, Kudamatsu; Katsuhiro Kuroda, Hachiouji; Satoru Fukuhara, Hitachinaka, and Takashi Ohshima, Akishima, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Jul. 31, 1995, Ser. No. 509,286
Claims priority, application Japan, Aug. 3, 1994, 6-182499; Dec. 14, 1994, 6-310192
Int. Cl.^{6} H01J *3/02*
U.S. Cl. 250—423 F **50 Claims**



1. A Schottky emission cathode comprising:
a filament,
a needle-shaped piece of single crystal refractory metal having a flat crystal surface at a tip thereof and attached to said filament, said needle-shaped piece of single crystal refractory metal being adapted to be heated by passing a current through said filament and to have an electric field applied on said tip so that electrons are extracted from said tip, and
an adsorbed layer including at least one kind of metal other than said single crystal refractory metal on said flat crystal surface;
a radius of curvature of a longitudinal cross section of said tip being of a value larger than a radius of curvature at an intersection of a curve of an equilibrium field strength for exerting an electrostatic force balancing with a surface diffusion at said tip vs. a radius of curvature of a longitudinal cross section of said tip and a curve of an electric field strength for extracting electrons of an energy width of a predetermined value among said extracted electrons from said tip vs. a radius of curvature of a longitudinal cross section of said tip, and smaller than 2.5 μm.

5,616,927
FRAME-SUPPORTED PELLICLE FOR DUSTPROOF PROTECTION OF PHOTOMASK

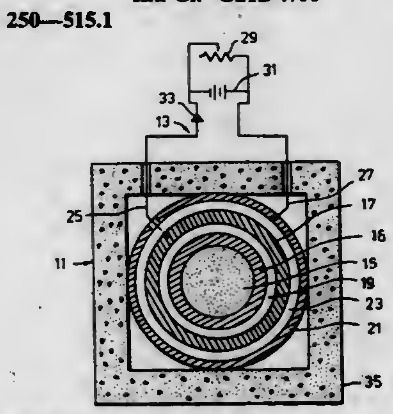
Yoshihiro Kubota; Satoshi Kawakami; Yuichi Hamada; Toru Shirasaki; Yoshihiko Nagata, and Meguru Kashida, all of Gunma-ken, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan
Filed Sep. 22, 1994, Ser. No. 310,879
Claims priority, application Japan, Oct. 21, 1993, 5-263412
Int. Cl.^{6} G21K *5/00*
U.S. Cl. 250—492.2 **3 Claims**



1. A frame-supported pellicle which is an integral body comprising:
(a) a frame made from a rigid material having substantially parallel end surfaces;
(b) a transparent film of a synthetic resin spread over and adhesively bonded to one end surface of the frame in a slack-free fashion; and
(c) a layer of a pressure-sensitive adhesive on the other end surface of the frame, the adhesive bonding strength of the pressure-sensitive adhesive being reducible by heating or by irradiating with light.

5,616,928
PROTECTING PERSONNEL AND THE ENVIRONMENT FROM RADIOACTIVE EMISSIONS BY CONTROLLING SUCH EMISSIONS AND SAFELY DISPOSING OF THEIR ENERGY

Virginia Russell, Buffalo, N.Y., and James W. Russell, administrator, 913 Arnett Dr., Newport News, Va. 23608
Continuation-in-part of Ser. No. 327,415, Mar. 22, 1989, Pat. No. 5,149,494, which is a continuation of Ser. No. 30,041, Mar. 24, 1987, abandoned, which is a continuation of Ser. No. 426,824, Sep. 29, 1982, Pat. No. 4,663,115, which is a continuation-in-part of Ser. No. 933,529, Aug. 14, 1978, abandoned, which is a continuation of Ser. No. 781,503, Apr. 13, 1977, abandoned. This application Jul. 7, 1992, Ser. No. 909,410
Int. Cl.^{6} G21D *7/00*
U.S. Cl. 250—515.1 **19 Claims**

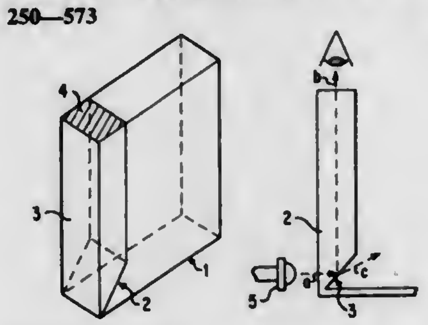


1. An Apparatus for protecting organisms and the environment and preventing damage from harmful emissions of radiation from a source, said apparatus comprising:
first conductive shielding layer located in the path of emissions to absorb said emulsions from said radiation source, said first conductive shielding layer having a negative potential created by absorbing said emissions from said radiation source.
a first dielectric layer covering the outside of said first conductive shielding layer;
a second conductive shielding layer covering the outside said first dielectric layer, said second conductive shielding layer

having a more positive potential, relative to said first conductive shielding layer, created by absorbing said emissions from said radiation source; and

a circuit means including a battery, a diode for preventing a flow of current of said battery to said radiation source, conductive means for connecting said first conductive shielding layer and said second conductive shielding layer and a variable electrical loading means connected to said conductive means for controlling a current generated by the electrical potential difference between said first and second conductive shielding layers.

5,616,929
INK TANK WITH AN INK LEVEL DETECTOR HAVING A VIEWING WINDOW
Kohzo Hara, Ebina, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 321,268, Oct. 11, 1994, abandoned. This application Mar. 4, 1996, Ser. No. 610,344
Claims priority, application Japan, Feb. 7, 1994, 6-034133
Int. Cl.[6] G01N *15/06;21/49;21/85*
U.S. Cl. 250—573 **15 Claims**

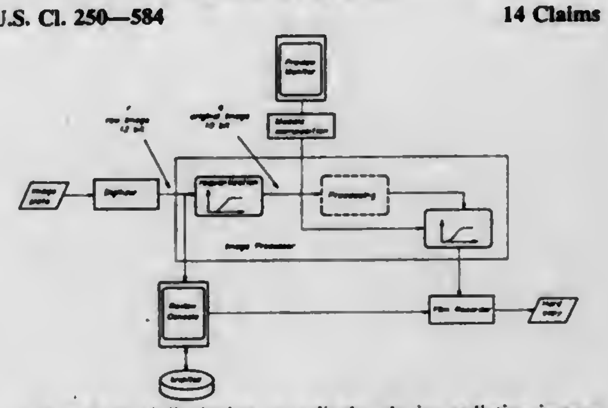


1. An ink tank, comprising:

an ink tank body made of a light transmitting material for accommodating ink therein; and

an optical ink detection device made of the same material as that of said ink tank body and comprising a body member connected interiorly to and integrally with the ink tank at the vicinity where a presence or an absence of the ink is to be detected whereby incident light being emitted exteriorly of the ink tank body enters at a first exterior area of the ink tank body and through the body member in a direction to impinge upon an interface surface of the body member, the interface surface disposed at an oblique angle relative to the direction of the incident light so that, when the ink fails to contact the interface surface, reflecting light reflected from the interface surface is emitted at a second exterior area of the ink tank body thereby indicating absence of the ink where the optical ink detection device is located and, when the ink contacts the interface surface, refracted light refracted from the interface surface is transmitted through the ink in lieu of the reflecting light being emitted at the second exterior area thereby indicating presence of the ink where the optical ink detection device is located.

5,616,930
RADIATION IMAGE DISPLAYING METHOD AND APPARATUS
Danny Janssens, Eindhout; Emile Schoeters, Lier; Pieter Vuylsteke, Mortsel, and Frans Dhaenens, Hever, all of Belgium, assignors to Agfa-Gevaert, Mortsel, Belgium
Continuation of Ser. No. 385,064, Feb. 7, 1995, abandoned, which is a continuation of Ser. No. 49,077, Apr. 20, 1993, abandoned. This application Oct. 12, 1995, Ser. No. 542,096
Claims priority, application European Pat. Off., Apr. 21, 1992, 92201106
Int. Cl.[6] G03B *42/02*
U.S. Cl. 250—584 **14 Claims**



1. A method of displaying on a display device radiation images each represented by a digital signal representation characterised by the steps of:

deducing reduced image signals from said digital signal representation, said reduced signals representing reduced images comprising less pixels than said radiation image each reduced image being obtained by
- (i) subjecting an image to decomposition into a multi-resolution pyramidal representation,
- (ii) modifying pixel values of the multi-resolution pyramidal representation at at least one resolution level according to a non-linear increasing odd mapping function with a slope that gradually increases with increasing argument values, to yield pixel values of a modified multi-resolution representation,
- (iii) reconstructing a modified image by applying to the modified multi-resolution representation the inverse of said decomposition up to an intermediate resolution level which is lower than the original resolution of said image,

forming a composed signal representing a mosaic type image by means of a number of reduced image signals,

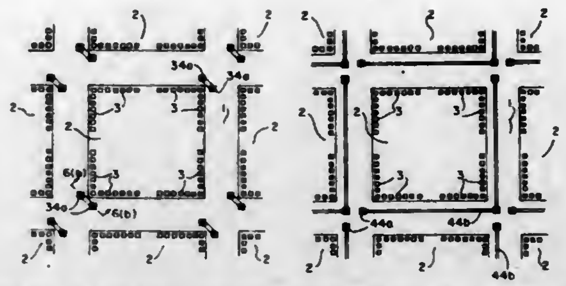
applying said composed signal to a display device,

as a new reduced signal is deduced, amending said composed signal by means of said new signal so that at least one of the reduced images in the displayed image is replaced by the image represented by said new reduced signal and

applying said amended signal to said display device.

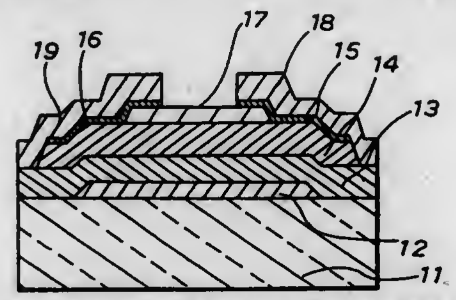
5,616,931
SEMICONDUCTOR DEVICE
Toru Nakamura, and Keiji Toriyama, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan
Filed Aug. 24, 1995, Ser. No. 518,690
Claims priority, application Japan, Aug. 24, 1994, 6-222583
Int. Cl.[6] H01L *23/48*
U.S. Cl. 257—48 **6 Claims**

1. A semiconductor device comprising a plurality of chip regions each having semiconductor elements disposed therein and a plurality of electrode pads disposed on a surface thereof, said chip regions being separated by scribing line regions, and a plurality of dummy pads disposed in said scribing line regions for use in positioning said electrode pads during a wafer probe test, said dummy pads being smaller in size than said electrode pads and



disposed in diagonally opposite positions across each of said chip regions one on each side of said each of the chip regions.

5,616,932
AMORPHOUS SILICON GERMANIUM FILM AND SEMICONDUCTOR DEVICE USING THE SAME
Keiichi Sano, and Yoichiro Aya, both of Osaka-fu, Japan, assignors to Sanyo Electric Co., Ltd., Osaka-fu, Japan
Filed Nov. 21, 1994, Ser. No. 342,734
Claims priority, application Japan, Nov. 22, 1993, 5-292003
Int. Cl.[6] H01L *29/04;31/036;31/0376;31/20*
U.S. Cl. 257—52 **12 Claims**



1. An amorphous silicon germanium film, said film having a hydrogen content in a range determined on the basis of

the content of a silicon-hydrogen bond per Si atom in the film,

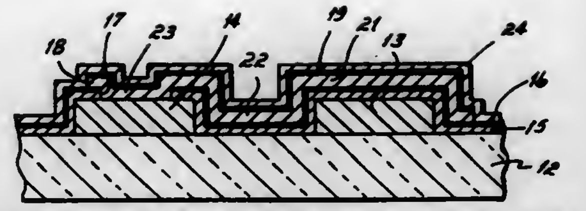
the content of bonding hydrogen in an SiH mode per Si atom in the film, and

the content of bonding hydrogen in an SiH_2 mode per Si atom in the film,

such that with said content of bonding hydrogen per Si atom in the film being in the range of from 8 to 18 at. %, and said content of bonding hydrogen in the SiH_2 mode per Si atom in the film and said content of bonding hydrogen in the SiH mode per Si atom in the film being, respectively, in the ranges of from 0.5 to 7 at. % and from 7 to 10.5 at. %, said content of bonding hydrogen in the SiH_2 mode per Si atom in the film and said content of bonding hydrogen in the SiH mode per Si atom in the film both increase as said content of bonding hydrogen per Si atom in the film increases.

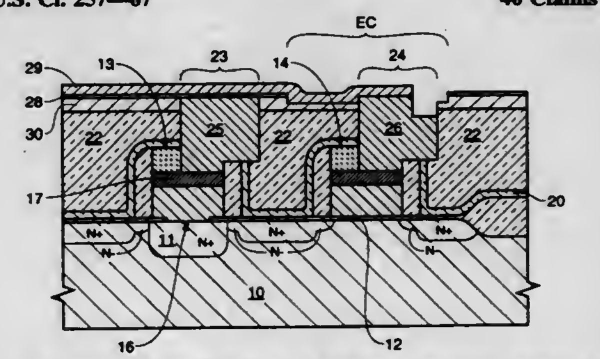
5,616,933
NITRIDE ENCAPSULATED THIN FILM TRANSISTOR FABRICATION TECHNIQUE
Jia Li, San Antonio, Tex., assignor to Sony Corporation, Tokyo, Japan, and Sony Electronics Inc., Park Ridge, N.J.
Filed Oct. 16, 1995, Ser. No. 543,404
Int. Cl.[6] H01L *29/04;23/58*
U.S. Cl. 257—57 **3 Claims**

1. A thin film transistor comprising a hydrogenated semiconductor transistor body adjacent a gate electrode separated from said gate electrode by a gate dielectric; said transistor body having a top planar surface and a bottom planar surface wherein said top planar surface is covered with an upper sealing layer, and said bottom planar surface is covered with a bottom sealing layer separating said bottom surface from said gate dielectric wherein said upper



sealing layer and said bottom sealing layer are effective to prevent hydrogen migration from said transistor body.

5,616,934
FULLY PLANARIZED THIN FILM TRANSISTOR (TFT) AND PROCESS TO FABRICATE SAME
Charles H. Dennison, Boise, and Monte Manning, Kuna, both of Id., assignors to Micron Technology, Inc., Boise, Id.
Continuation of Ser. No. 304,910, Sep. 12, 1994, abandoned, which is a division of Ser. No. 61,402, May 12, 1993, abandoned. This application Mar. 22, 1996, Ser. No. 621,766
Int. Cl.[6] H01L *29/68;21/265*
U.S. Cl. 257—67 **40 Claims**



1. A transistor fabricated on a substrate assembly having a conductive region formed therein, comprising:

a generally insulating material having an opening therein defined in part by a sidewall, said opening extending from a top surface to said conductive region in said substrate assembly;

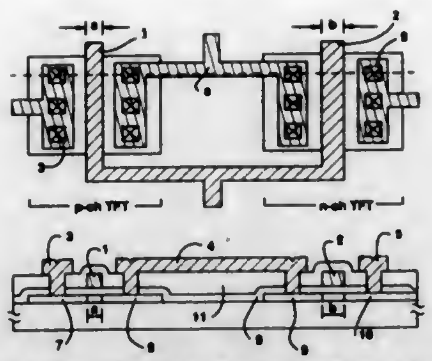
a conductive silicon material within said opening, said conductive silicon material in physical contact with said sidewall of said insulating material and in electrical contact with said conductive region;

a gate dielectric overlying said conductive silicon material; and

at least two semiconductor regions defining source and drain areas overlying said gate dielectric, said source and drain areas in operative relation to said conductive silicon material to form said transistor.

5,616,935
SEMICONDUCTOR INTEGRATED CIRCUIT HAVING N-CHANNEL AND P-CHANNEL TRANSISTORS
Jun Koyama, and Yasuhiko Takemura, both of Kanagawa, Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan
Filed Feb. 1, 1995, Ser. No. 382,410
Claims priority, application Japan, Feb. 8, 1994, 6-036615
Int. Cl.[6] H01L *29/786*
U.S. Cl. 257—69 **11 Claims**

1. A semiconductor integrated circuit having N-channel and P-channel thin-film transistors formed on an insulating surface, each channel region of said N-channel and P-channel thin-film transistors comprising a crystalline silicon layer having a <111 > crystal orientation, wherein a channel length of the P-channel thin-film transistor is shorter than that of the N-channel thin film transistor by at least 20% and an absolute value of a threshold



voltage of said P-channel thin-film transistor is approximately equal to an absolute value of a threshold voltage of said N-channel thin-film transistor.

5,616,936

ACTIVE MATRIX ASSEMBLY WITH SIGNAL LINE CROSSING TO EQUALIZE STRAY CAPACITANCE

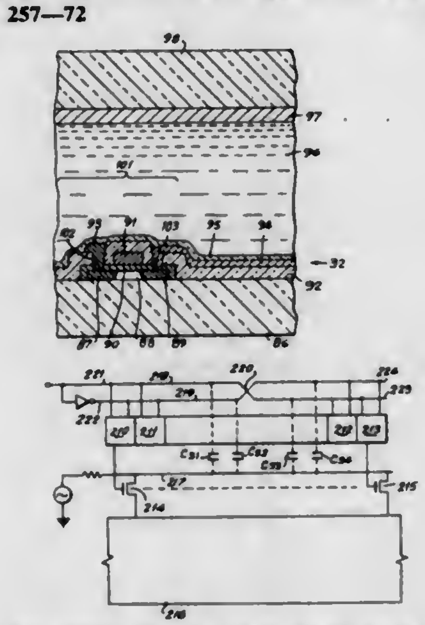
Toshiyuki Misawa, and Hiroyuki Oshima, both of Nagano-ken, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 142,892, Oct. 25, 1993, abandoned, which is a continuation of Ser. No. 924,695, Jul. 31, 1992, abandoned, which is a division of Ser. No. 351,758, May 15, 1989, Pat. No. 5,250,931. This application Mar. 10, 1995, Ser. No. 402,054

Claims priority, application Japan, May 17, 1988, 63-119919

Int. Cl.⁶ H01L *27/13;29/41;* **G02F** *1/137;* **G09G** *3/36*

U.S. Cl. 257—72 **16 Claims**



1. An active matrix assembly for an electro-optical device comprising:

a picture element matrix, the picture element matrix including a plurality of source lines and a plurality of picture elements electrically coupled to the plurality of source lines; and

a source line driving circuit electrically coupled to the picture element matrix through the plurality of source lines, the source line driving circuit comprising a shift register, at least a first clock signal line and a second clock signal line and a signal bus electrically coupled to the picture element matrix and the source line driving circuit, wherein the first clock signal line crosses the second clock signal line at substantially center points of the first and second clock signal lines so as to substantially equalize an average distance between the first clock signal line and the signal bus and an average distance between the second clock signal line and the signal bus.

5,616,937

COMPOUND SEMICONDUCTOR LUMINESCENT DEVICE

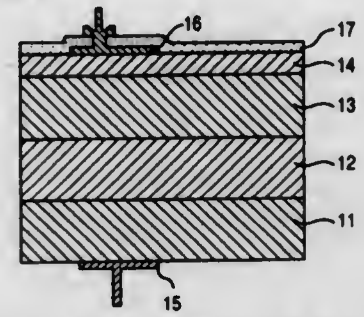
Masahiko Kitagawa, Nara-ken, and Yoshitaka Tomomura, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 402,691, Sep. 1, 1989, Pat. No. 5,113,233. This application Jul. 30, 1991, Ser. No. 737,706

Claims priority, application Japan, Sep. 2, 1988, 63-221081

Int. Cl.⁶ H01L *33/00*

U.S. Cl. 257—94 **5 Claims**



1. A compound semiconductor luminescent device, comprising:

a semiconductor substrate;

a multi-layered structure epitaxially grown on said substrate, said multi-layered structure comprising at least one conductive layer formed on said substrate;

a current infection layer formed on said conductive layer;

a luminescent layer formed on said current injection layer;

a negative metal electrode disposed on a back face of said substrate or on an upper face of said conductive layer;

a positive metal electrode disposed on an upper face of said multi-layered structure; and

a protective layer capable of transmitting light generated in the luminescent layer, which is disposed on said multi-layered structure so as to cover part of said positive metal electrode, wherein said semiconductor substrate, conductive layer and luminescent layer are made of at least one kind of II–VI group compound semiconductor.

5,616,938

MOS-CONTROLLED POWER SEMICONDUCTOR COMPONENT FOR HIGH VOLTAGES

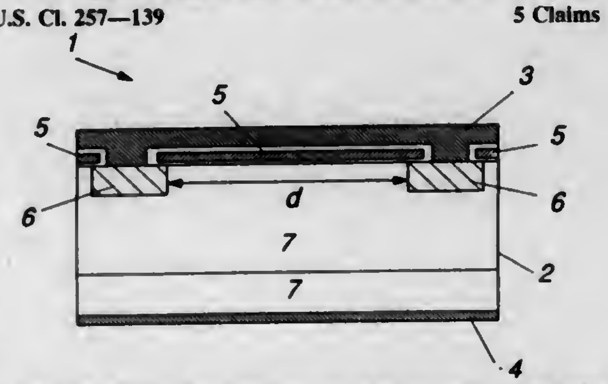
Friedhelm Bauer, Suhr, Switzerland, assignor to Asea Brown Boveri AG, Baden, Switzerland

Filed May 26, 1995, Ser. No. 451,984

Claims priority, application Germany, Aug. 8, 1994, 44 27 988.4

Int. Cl.⁶ H01L *29/739;29/744;29/768;29/41*

U.S. Cl. 257—139 **5 Claims**



1. An MOS-controlled power semiconductor component for high voltages, comprising, in a semiconductor substrate a cathode and an anode, a number of differently doped layers and a multiplicity of cathode cells, embedded on the cathode side and controlled by an MOS gate, wherein the cathode cells take up between 0.1% and 10% of the total component surface area in the case of a circular cell geometry and take up between 0.4% and 40% of the total component surface area in the case of a strip-shaped cell geometry, wherein a lateral separation d between two neighboring cells is equal to between 70 μm and 150 μm.

5,616,939

SEMICONDUCTOR DEVICE INCLUDING RECTANGULAR FUNCTIONAL BLOCKS HAVING AT LEAST ONE COMMON LENGTH

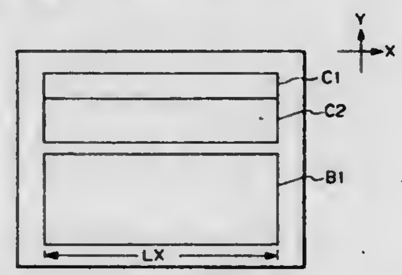
Sinichirou Saitoh, Kanagawa, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 6, 1994, Ser. No. 300,213

Claims priority, application Japan, Sep. 3, 1993, 5-219385

Int. Cl.⁶ H01L *27/10*

U.S. Cl. 257—202 **12 Claims**



1. A semiconductor device comprising:

a plurality of functional blocks formed on a chip, said functional blocks being rectangular and having at least one length along one direction,

wherein at least two of said functional blocks each have at least one same edge along said one direction, said same edge having said one length and a plurality of input/output terminals, wherein said input/output terminals are at similar locations along each said same edge,

one of said functional blocks being fixed within said device and the others of said functional blocks being variable within said device,

wherein a ratio of the length of one of said functional blocks to that of another thereof along the same one direction is approximately m/n, where m and n are positive integers and m is less than n,

said semiconductor device further comprising:

a main functional block of said plurality of functional blocks: and

a plurality of sub functional blocks, of said plurality of functional blocks, operatively connected to each other, at least one of said sub functional blocks being operatively connected to said main functional block,

wherein said sub functional blocks are operatively connected to each other such that adjacent sub functional blocks of said plurality of sub functional blocks are closely connected,

connections between blocks being performed by a batting method.

5,616,940

SEMICONDUCTOR SEMICUSTOM-MADE INTEGRATED CIRCUIT DEVICE HAVING COMPONENT TRANSISTORS VARIABLE IN GAIN FOR FORMING BASIC CELL

Hiroyuki Kato, and Takaharu Ito, both of Kanagawa, Japan, assignors to NEC Corporation, Tokyo, Japan

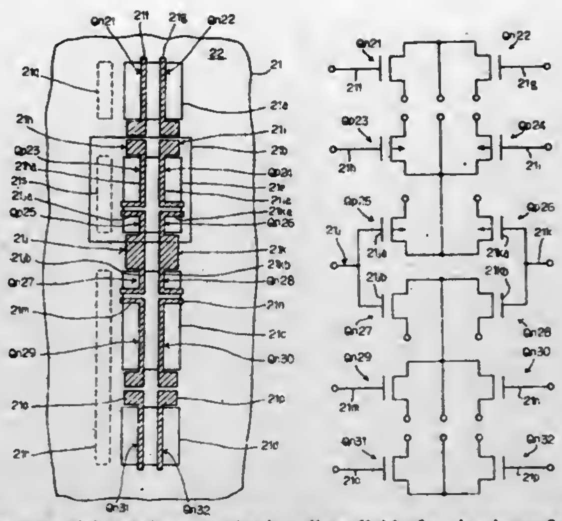
Filed Jun. 27, 1995, Ser. No. 495,000

Claims priority, application Japan, Jun. 27, 1994, 6-144224

Int. Cl.⁶ H01L *27/02;27/10*

U.S. Cl. 257—206 **11 Claims**

1. A semiconductor semicustom-made integrated circuit device fabricated on a semiconductor substrate of a first conductivity type



and comprising at least one basic cell available for circuit configurations different from one another,

said at least one basic cell including:

a first source and drain area formed in a first area of said semiconductor substrate and having a first sub-area of a second conductivity type opposite to said first conductivity type and a second sub-area of said second conductivity type contiguous to said first sub-area;

a first pair of gate electrodes provided over said first sub-area for forming a first pair of transistors having a first common impurity region shared between transistors of said first pair;

a second pair of gate electrodes provided over said second sub-area for forming a second pair of transistors different in channel width from said first pair of transistors and having a second common impurity region shared between transistors of said second pair and contiguous to said first common impurity region;

a well of said second conductivity type formed in a second area of said semiconductor substrate spaced from said first source and drain area;

a second source and drain area of said first conductivity type formed in said well and having a third sub-area and a fourth sub-area contiguous to said third sub-area;

a third pair of gate electrodes provided over said third sub-area for forming a third of transistors having a third common impurity region shared between transistors of said third pair, gate electrodes of said third pair being respectively connected to gate electrodes of said second pair; and

a fourth pair of gate electrodes provided over said fourth sub-area for forming a fourth pair of transistors different in channel width from said third pair of transistors and having a fourth common impurity region shared between transistors of said fourth pair.

5,616,941

ELECTRICALLY PROGRAMMABLE READ-ONLY MEMORY CELL

Scott S. Roth, and Howard C. Kirsch, both of Austin, Tex., assignors to Motorola Inc., Schaumburg, Ill.

Division of Ser. No. 296,908, Aug. 29, 1994, Pat. No. 5,543,339. This application Sep. 20, 1995, Ser. No. 531,357

Int. Cl.⁶ H01C *29/788;27/148*

U.S. Cl. 257—315 **15 Claims**

7. An electrically programmable read-only memory cell comprising:

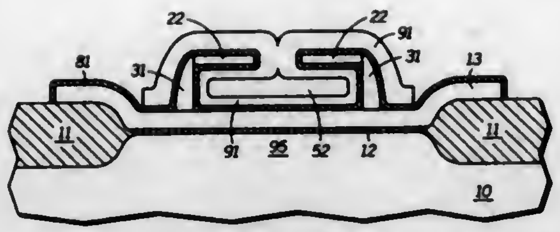
a semiconductor substrate;

a floating gate overlying the substrate, wherein:

the floating gate includes a cavity;

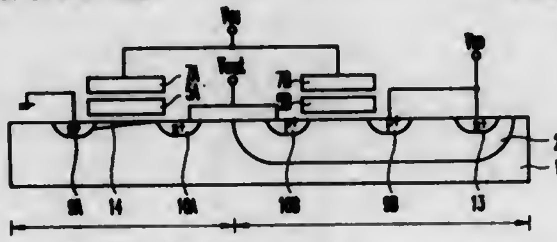
the floating gate includes a first member, a second member, and a third member;

the first member overlies the substrate;



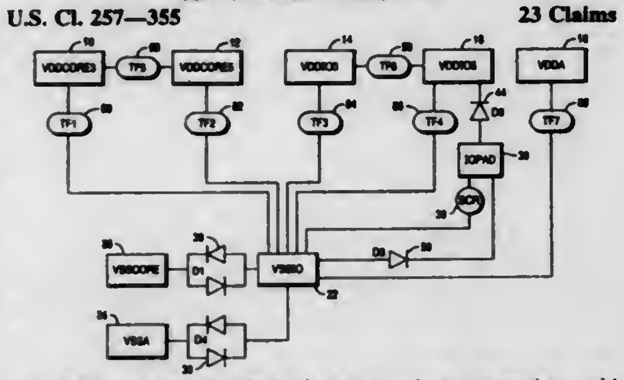
the second member overlies and is spaced apart from the first member;
the third member is a spacer, wherein the third member lies adjacent an end of the first member and has a vertical surface that is adjacent to the second member;
the cavity is defined by portions of surfaces of the first, second, and third members; and
an opening that extends through at least one of the second and third members to the cavity;
an intergate dielectric layer lying within the cavity and adjacent to the floating gate; and
a control gate, wherein at least a portion of the control gate lies within the cavity of the floating gate and is spaced apart from the floating gate by the intergate dielectric layer.

5,616,942
FLASH EEPROM CELL AND MANUFACTURING METHODS THEREOF
Bok N. Song, Kyungki-Do, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Kyungki-Do, Rep. of Korea
Filed Mar. 27, 1996, Ser. No. 622,757
Claims priority, application Rep. of Korea, Mar. 28, 1995, 95-6666
Int. Cl.^{6} H01L *29/788;29/76*
U.S. Cl. 257—316 **1 Claim**



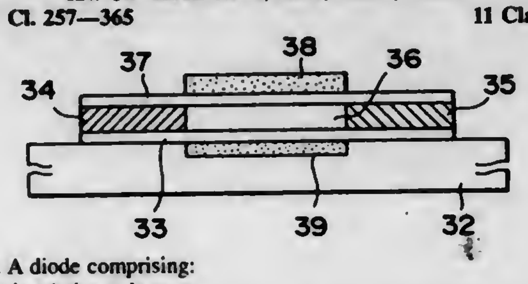
1. A flash EEPROM cell, comprising:
a first source and a first drain formed in a p-type silicon substrate:
a second source and a second drain formed in an n-well of said p-type silicon substrate, with said second source connecting to said first drain;
a first tunnel oxide and a second tunnel oxide formed on said p-type silicon substrate between said first source and said first drain, and said p-type silicon substrate between said second source and said second drain respectively;
a first floating gate and a second floating gate formed on said first and second tunnel oxides, respectively, wherein said first floating gate is connected to said second floating gate;
a first insulating film and a second insulating film formed on said first and second floating gates, respectively; and
a first control gate and a second control gate formed on said first and second insulating films, respectively, with said first control gate connecting to said second control gate.

5,616,943
ELECTROSTATIC DISCHARGE PROTECTION SYSTEM FOR MIXED VOLTAGE APPLICATION SPECIFIC INTEGRATED CIRCUIT DESIGN
Hoang P. Nguyen, Fort Collins, and John D. Walker, Colorado Springs, both of Colo., assignors to AT&T Global Information Solutions Company, Dayton, Ohio; Hyundai Electronics America, San Jose, Calif., and Symbios Logic Inc., Fort Collins, Colo.
Continuation-in-part of Ser. No. 129,224, Sep. 29, 1993, abandoned. This application Jun. 13, 1994, Ser. No. 259,240
Int. Cl.^{6} H01L *23/62;27/10*
U.S. Cl. 257—355 **23 Claims**



1. An integrated circuit having over-voltage protection, said circuit comprising:
a plurality of power input terminal sets, at least two of said plurality of power input terminal sets operable by a different one of a plurality of power voltages, each of said plurality of power input terminal sets including a ground terminal and a V_{DD} terminal operated at a potential more positive than its respective ground terminal; and
a plurality of active, over-voltage protection devices electrically connected to provide electrostatic discharge conduction paths among pairs of V_{DD} terminals and ground terminals,
wherein a first subgroup of said plurality of over-voltage protection devices provide multiple electrostatic discharge conduction paths between a V_{DD} terminal and a ground terminal of a first one of said plurality of power input terminal sets.

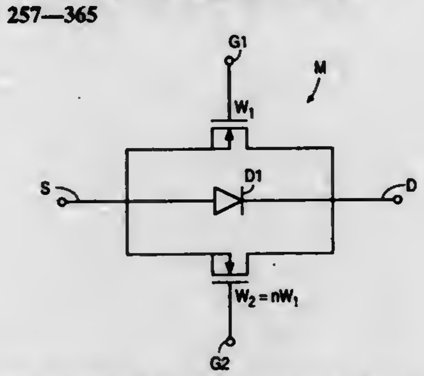
5,616,944
DIODE AND SEMICONDUCTOR DEVICE HAVING A CONTROLLED INTRINSIC OR LOW IMPURITY CONCENTRATION REGION BETWEEN OPPOSITE CONDUCTIVITY TYPE SEMICONDUCTOR REGIONS
Hidemasa Mizutani, Sagamihara, and Toru Koizumi, Machida, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 24,106, Feb. 23, 1993, abandoned, which is a continuation of Ser. No. 702,377, May 20, 1991, abandoned. This application Nov. 28, 1994, Ser. No. 348,198
Claims priority, application Japan, May 21, 1990, 2-129304
Int. Cl.^{6} H01L *29/76;29/94;31/075;31/105*
U.S. Cl. 257—365 **11 Claims**



1. A diode comprising:
an insulating substrate;
a first control electrode provided on said insulating substrate;
a first insulating layer provided on said first control electrode;
a semiconductor layer extending beyond an area over said first control electrode on said insulating substrate, said semiconductor layer comprising a first semiconductor region of a first

conductivity type, a second semiconductor region of a conductivity type opposite to the first conductivity type, and a third semiconductor region formed of one of an intrinsic region and an impurity region which has an impurity concentration lower than impurity concentrations of said first and second semiconductor regions, said third semiconductor region being arranged to oppose said first control electrode;
a second insulating layer formed at least on said third semiconductor region; and
a second control electrode arranged correspondingly to said third semiconductor region and separated from said third semiconductor region by said second insulating layer, said third semiconductor region being sandwiched between said first and second control electrodes,
wherein said first and second semiconductor regions are each adjacent to said third semiconductor region, said first and second semiconductor regions each having an impurity concentration not less than 10^{19} cm^{-3}, said third semiconductor region having an impurity concentration not greater than 10^{14} cm^{-3}, and said semiconductor layer having a thickness less than a maximum thickness of a depletion region, so that in said first and second semiconductor regions, (a) the depletion region extends to said third semiconductor region at a floating state of said second control electrode, and (b) the depletion region extends into a whole of said third semiconductor region at a driving state of said second control electrode.

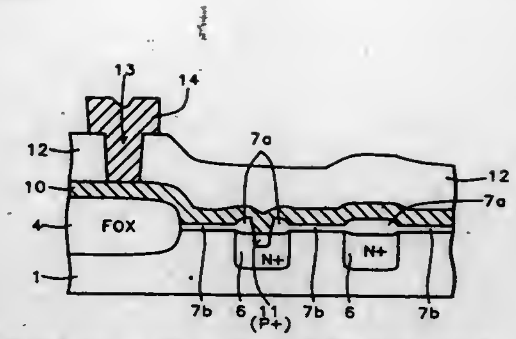
5,616,945
MULTIPLE GATED MOSFET FOR USE IN DC-DC CONVERTER
Richard K. Williams, Cupertino, Calif., assignor to Siliconix Incorporated, Santa Clara, Calif.
Filed Oct. 13, 1995, Ser. No. 542,611
Int. Cl.^{6} H01L *27/108;29/76*
U.S. Cl. 257—365 **1 Claim**



1. A multiple gated MOSFET comprising a source, a drain, a body, first and second gates, and a gate control, said first gate having a gate width that is different from a gate width of said second gate, said first gate being connected to an output terminal of said gate control, said second gate being connected to said output terminal through a switch, said first and second gates being electrically isolated from each other when said switch is open.

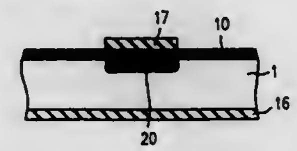
5,616,946
VLSI ROM PROGRAMMED BY SELECTIVE DIODE FORMATION
Chen-Chung Hsu, Taichung, and Gary Hong, Hsinchu, both of Taiwan, assignors to United Microelectronics Corporation, Hsin-Chu, Taiwan
Division of Ser. No. 374,967, Jan. 19, 1995, Pat. No. 5,550,075. This application Apr. 25, 1996, Ser. No. 597,542
Int. Cl.^{6} H01L *27/112*
U.S. Cl. 257—390 **4 Claims**

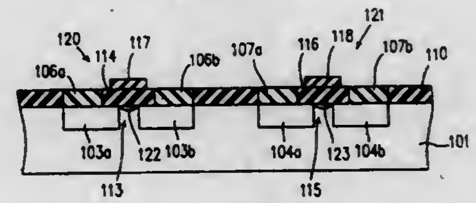
1. A read only memory, (ROM), device structure, comprising:
a device region on a surface of a semiconductor substrate;
alternate rows of N+ regions in said device region;



alternate rows of non-N+ regions in said device region;
thick oxide layers on said N+ regions;
thin oxide layers on said non N+ regions;
a contact hole, in one of said thick oxide regions, to one of said N+ regions;
P-type polysilicon within said contact hole forming a P/N junction with said one of said N+ regions; and
a polysilicon gate structure overlying said thick field oxide and contacting said P-type polysilicon within said contact hole.

5,616,947
SEMICONDUCTOR DEVICE HAVING AN MIS STRUCTURE
Akiyoshi Tamura, Suita, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Continuation of Ser. No. 380,122, Jan. 30, 1995. This application May 31, 1996, Ser. No. 651,322
Claims priority, application Japan, Feb. 1, 1994, 6-010246; Sep. 28, 1994, 6-233833
Int. Cl.^{6} H01L *29/78*
U.S. Cl. 257—410 **6 Claims**

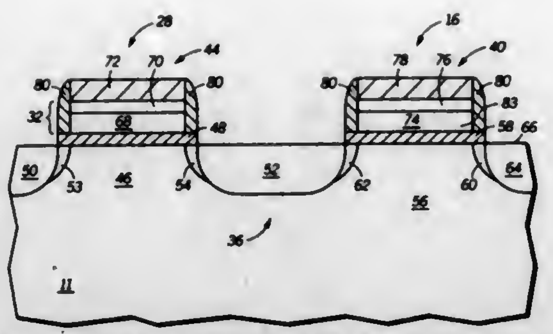




1. A semiconductor device comprising:
a GaAs semiconductor substrate;
an insulating layer which is made of material consisting essentially of MgS, MgSSe or CaZnS and is formed on the GaAs substrate; and
a conductive electrode formed on the insulating layer.

5,616,948
SEMICONDUCTOR DEVICE HAVING ELECTRICALLY COUPLED TRANSISTORS WITH A DIFFERENTIAL CURRENT GAIN
James R. Pfiester, Austin, Tex., assignor to Motorola Inc., Schaumburg, Ill.
Filed Jun. 2, 1995, Ser. No. 459,198
Int. Cl.^{6} H01L *29/76;27/11*
U.S. Cl. 257—412 **12 Claims**

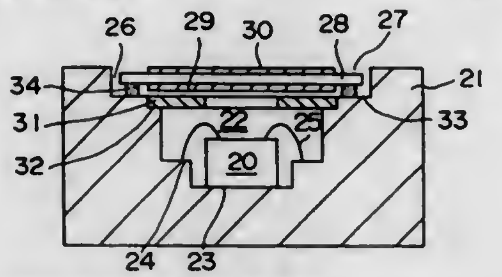
1. A static-random-access memory cell comprising:
a semiconductor substrate having an active region therein;
a first channel region and a second channel region in the active region, the first and second channel regions having a first carrier concentration therein;



a doped region electrically coupling the first channel region and the second channel region;
a gate dielectric layer overlying the first and second channel regions;
a pass gate electrode overlying the first channel region and separated therefrom by the gate dielectric layer;
a first interface layer in the pass gate electrode contacting the gate dielectric layer, the first interface layer having a second carrier concentration;
a driver gate electrode overlying the second channel region and separated therefrom by the gate dielectric layer; and
a second interface layer in the driver gate electrode contacting the gate dielectric layer, the second interface layer having a third carrier concentration,

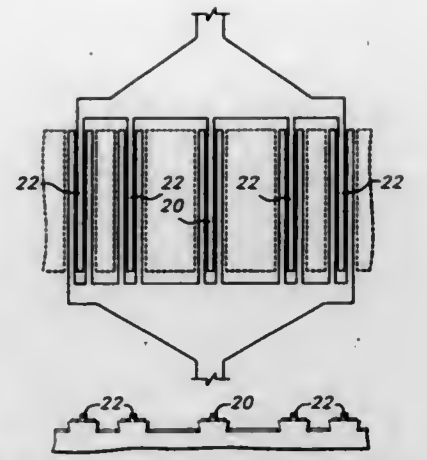
wherein the third carrier concentration is greater than the second carrier concentration, and wherein the gate dielectric layer has substantially equal thickness at the pass and driver gate electrodes.

5,616,949
SOLID-STATE IMAGE SENSING DEVICE
Zensaku Watanabe, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan
Filed Apr. 7, 1994, Ser. No. 224,373
Claims priority, application Japan, Apr. 9, 1993, 5-82281
Int. Cl.[6] H01L *31/0203;23/02*
U.S. Cl. 257—434 **5 Claims**



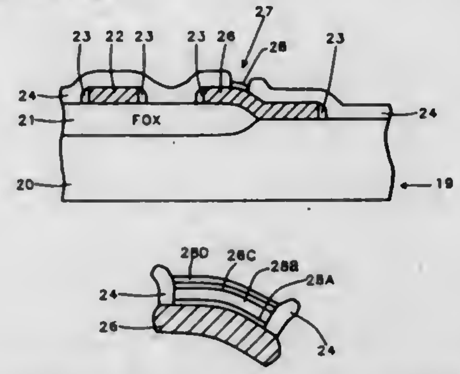
1. A semiconductor device comprising:
a semiconductor element; and
a film provided over the semiconductor element, the film containing borosilicate glass and potassium oxide, said potassium oxide being present in an amount of 0.1 weight percent or less.

5,616,950
THERMALLY UNIFORM TRANSISTOR
William U. Liu, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Division of Ser. No. 150,742, Nov. 12, 1993, which is a continuation of Ser. No. 891,315, May 29, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 475,157
Int. Cl.[6] H01L *29/70;29/772*
U.S. Cl. 257—469 **13 Claims**



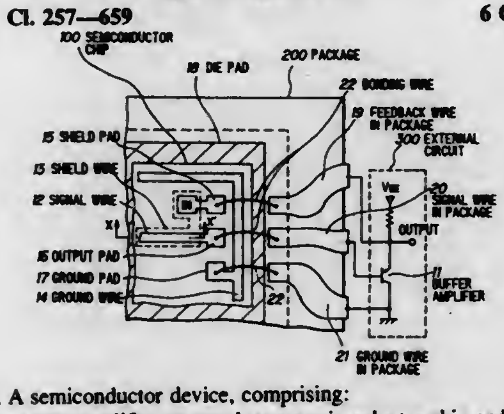
1. A transistor comprising a plurality of active regions arranged about a center point in a semiconductor substrate, each of said active regions adjacent one another and evenly spaced from said center point and comprising an elongate control structure having a length and a width, wherein said width of said control structure is progressively greater in said plurality for active regions further from said center point.

5,616,951
DIELECTRIC AS LOAD RESISTOR IN 4T SRAM
Mong-Song Liang, Hsin-chu, Taiwan, assignor to Taiwan Semiconductor Manufacturing Company Ltd., Hsin-chu, Taiwan
Division of Ser. No. 270,756, Jul. 5, 1994, Pat. No. 5,461,000. This application Aug. 24, 1995, Ser. No. 519,066
Int. Cl.[6] H01L *27/11*
U.S. Cl. 257—536 **7 Claims**



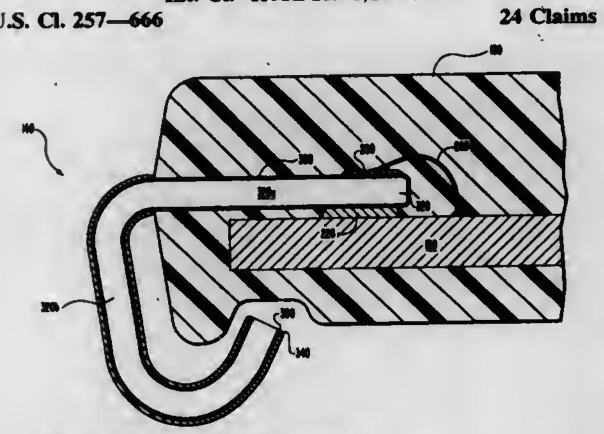
1. A semiconductor device on a semiconductor substrate including:
an SRAM cell with a resistor,
a patterned and etched first polysilicon layer on said semiconductor substrate, said first polysilicon layer having a top surface,
an interpolysilicon layer over said first polysilicon layer patterned with an opening through said interpolysilicon layer to a contact area on the top surface of said first polysilicon layer,
a lead resistor having a top surface and a bottom surface, said lead resistor being formed in said opening upon said contact area on said top surface of said first polysilicon layer,
said lead resistor having a temperature coefficient between about 10 ppm/° C. and about 50 ppm/° C., and
a second polysilicon layer on said device over said lead resistor, over said interpolysilicon layer.

5,616,952
SEMICONDUCTOR DEVICE WITH STRUCTURE TO DECREASE WIRING CAPACITANCE
Takashi Nakano, and Yukio Tanji, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan
Filed Apr. 26, 1996, Ser. No. 638,163
Claims priority, application Japan, Apr. 27, 1995, 7-125678
Int. Cl.[6] H01L *23/552*
U.S. Cl. 257—659 **6 Claims**



1. A semiconductor device, comprising:
an output amplifier mounted on a semiconductor chip and sealed in a package,
a buffer amplifier positioned in an outside of said package, an input terminal of which is supplied with an output voltage of said output amplifier, and input and output voltages of which have nearly same phases and amplitudes,
a signal wire in said semiconductor chip, which connects said output terminal of said output amplifier to an output pad near a side end of said semiconductor chip, and
a shield wire in said semiconductor chip, which is positioned under or over said signal wire and communicates with only said output terminal of said buffer amplifier.

5,616,953
LEAD FRAME SURFACE FINISH ENHANCEMENT
Jerrold L. King; Syed S. Ahmad, both of Boise, and Jerry M. Brooks, Caldwell, all of Id., assignors to Micron Technology, Inc., Boise, Id.
Filed Sep. 1, 1994, Ser. No. 300,695
Int. Cl.[6] H01L *23/48;29/40*
U.S. Cl. 257—666 **24 Claims**



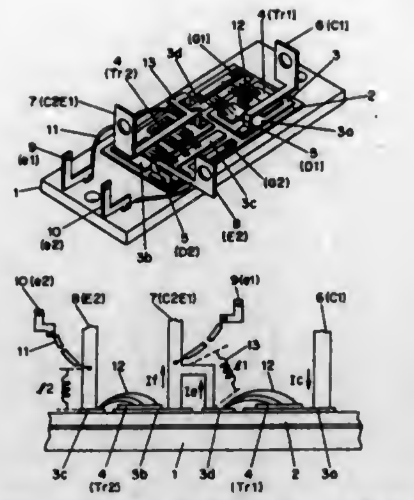
1. A semiconductor package comprising:
a semiconductor die;
a lead frame having a conductivity IACS rating of less than or equal to about 3.0%, comprising a frame and a lead finger;
a plate, composed of at least 97.5% copper substantially covering the lead frame;
means for electrically interconnecting the semiconductor die and the lead frame; and
a compound substantially encapsulating the semiconductor die, the lead frame, and the means for electrically interconnecting the semiconductor die and the lead frame, the lead finger having an end on the frame inside and covered by the compound and an opposite free end extending from the frame outside and uncovered by the compound.

5,616,954
FLAT PACKAGE FOR SEMICONDUCTOR IC
Hiromori Tobase, Kumamoto, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Aug. 16, 1995, Ser. No. 515,600
Claims priority, application Japan, Aug. 16, 1994, 6-192613
Int. Cl.[6] H01L *23/495;23/52;23/04*
U.S. Cl. 257—668 **7 Claims**

1. A semiconductor device comprising:
a package including:
a substrate having first, second, third and fourth corner portions,
first, second, third and fourth leads attached respectively to said first, second, third and fourth corner portions of said substrate,
a first internal wiring buried in said substrate, said first internal wiring including a rectangular portion having first, second, third and fourth corners, a first portion extending from said first corner of said rectangular portion to said first corner portion of said substrate to electrically connect said rectangular portion to said first lead, and a second portion extending from said second corner of said rectangular portion to said second corner portion of said substrate to electrically connect said rectangular portion to said second lead,
a cavity selectively formed in said substrate to expose a part of said rectangular portion of said first wiring,
a metallized portion formed on said substrate along a periphery of said cavity to surround said cavity,
a second internal wiring provided independently of said first internal wiring and extending from a part of said metallized portion to said third corner portion of said substrate to electrically connect said metallized portion to said third lead, and
a third internal wiring provided independently of said first internal wiring and extending from another part of said metallized portion to said fourth corner portion of said substrate to electrically connect said metallized portion to said fourth lead;
a semiconductor chip mounted on said part of said rectangular portion of said first internal wiring; and
a cap attached to said metallized portion to seal said semiconductor chip.

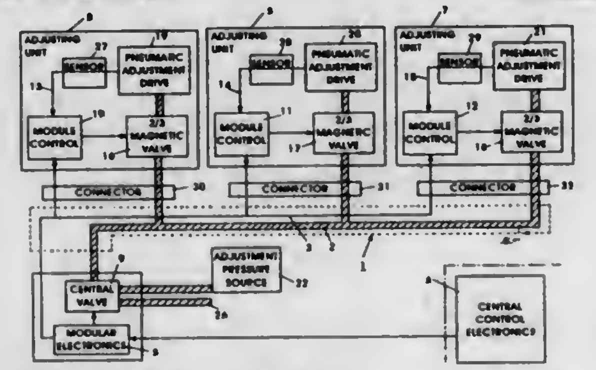
5,616,955
POWER TRANSISTOR MODULE WIRING STRUCTURE
Toshifusa Yamada; Shin Soyano; Etsuo Arai; Manabu Watanabe, all of Nagano, and Seiki Igarashi, Tokyo, all of Japan, assignors to Fuji Electric Co., Ltd., Tokyo, Japan
Filed Apr. 22, 1994, Ser. No. 231,338
Claims priority, application Japan, Apr. 23, 1993, 5-097434; Jul. 27, 1993, 5-184267; Oct. 28, 1993, 5-269353
Int. Cl.[6] H01L *23/52;23/528*
U.S. Cl. 257—690 **8 Claims**

1. A power transistor module comprising:
a circuit substrate;
at least one pair of power transistor chips on the circuit substrate, respectively comprising a first (Tr1) and a second (Tr2) power transistor electrically interconnected in series as upper and lower arms of a bridge circuit;



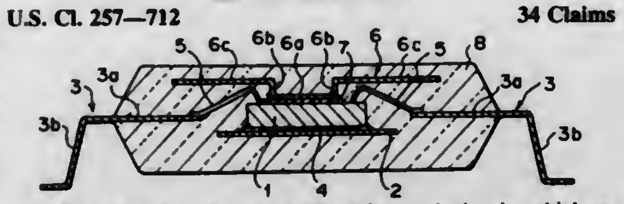
first (D1) and second (D2) freewheel diodes connected antiparallel to the first (Tr1) and second (Tr2) power transistor, respectively;
separate first and second circuit patterns on the circuit substrate for the respective first (Tr1) and second (Tr2) power transistors, the first circuit pattern comprising a first emitter pattern and the second circuit pattern comprising a second collector pattern;
first (C1), second (C2E1) and third (E2) output terminals, and first (G1) and second (G2) gate terminals taken out from the first and second circuit patterns;
a bridge shaped internal connecting terminal interconnecting the first emitter pattern and the second collector pattern; and
a signal terminal (e1) connected to the internal connecting terminal as an auxiliary emitter terminal, at a point at which a desired internal wiring inductance is provided between the internal connecting terminal and the first emitter pattern.

5,616,956
CIRCUIT SUBSTRATE INCLUDING INSULATING LAYER OF ALUMINUM NITRIDE AND ELECTRICALLY CONDUCTIVE LAYER OF CONDUCTIVE COMPONENT, ALUMINUM NITRIDE AND OTHER COMPONENTS, AND SEMICONDUCTOR DEVICE CONTAINING SAME
Akihiro Horiguchi; Jun Monma; Kazuo Kimura; Katsuyoshi Oh-Ishi, all of Kanagawa-ken; Fumio Ueno, Tokyo; Mitsuo Kasori, Kanagawa-ken, and Hiroyasu Sumino, Kanagawa-ken, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Sep. 7, 1995, Ser. No. 524,906
Claims priority, application Japan, Sep. 16, 1994, 6-221327
Int. Cl.[6] H01L *23/02;23/48;29/62;* **C04B** *35/58*
U.S. Cl. 257—703 **32 Claims**



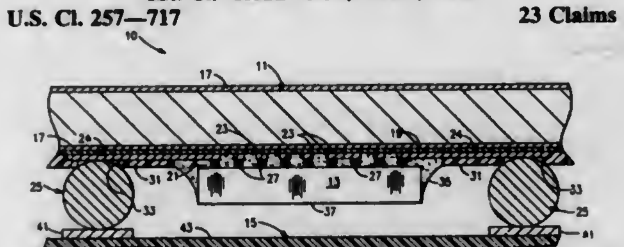
1. A circuit substrate comprising:
an insulating layer composed of a sintered aluminum nitride composition comprising aluminum nitride as a main component, said insulating layer further comprising: a first additive comprising a compound containing a first element which is selected from the group consisting of group IIa elements and group IIIa elements of the periodic table; a second additive comprising either a simple boron or a boron compound; and a third additive comprising either a simple manganese or a manganese compound, and
an electrically conductive layer comprising a conductive component as a main component, said conductive component comprising a metal or an electrically conductive compound for exhibiting electric conductivity, said electrically conductive layer further comprising: an additive aluminum nitride; said first additive; said second additive; and said third additive.

5,616,957
PLASTIC PACKAGE TYPE SEMICONDUCTOR DEVICE
Mamoru Kajihara, Tokyo, Japan, assignor to NEC Corporation, Japan
Filed Apr. 19, 1995, Ser. No. 424,795
Claims priority, application Japan, May 19, 1994, 6-128094
Int. Cl.[6] H01L *23/34*
U.S. Cl. 257—712 **34 Claims**



1. A plastic package type semiconductor device in which an electrode formed on an upper surface of a semiconductor chip at a first area and an inner lead portion of a lead frame are interconnected by means of a conductor, and comprising a heat spreader which is adhered to the upper surface of said semiconductor chip at a second area which differs from said first area, said heat spreader comprising a bottom portion adhered to the upper surface of said semiconductor chip, a lateral wall portion a lower edge of which is connected to an outer edge of said bottom portion, and a top portion an inner edge of which is connected to an upper edge of said lateral wall portions, and having at least one opening provided therethrough, and wherein said semiconductor chip, said inner lead portion, said conductor and said heat spreader are sealed with resin, said electrode is positioned at a peripheral area on the upper surface of said semiconductor chip, and a lower surface of said bottom portion of the heat spreader is adhered to the upper surface of said semiconductor chip at a central area, and said at least one opening is provided said lateral wall portion of the heat spreader.

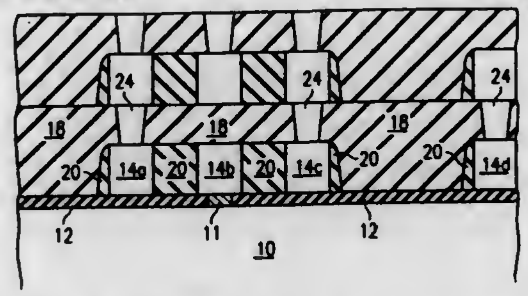
5,616,958
ELECTRONIC PACKAGE
Eric H. Laine, Binghamton, and James W. Wilson, Vestal, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 25, 1995, Ser. No. 378,347
Int. Cl.[6] H01L *23/34;23/495;23/48*
U.S. Cl. 257—717 **23 Claims**



1. An electronic package adapted for being electrically coupled to an electronic structure, said electronic package comprising:
a thermally conductive member;
a thin first dielectric layer of organic material positioned on said themally conductive member;

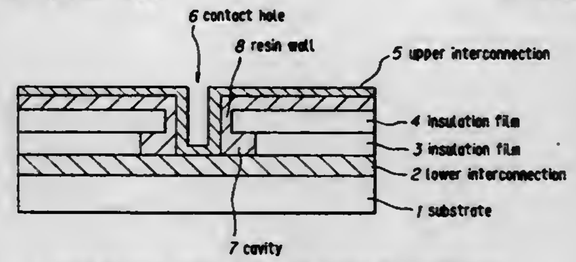
at least one layer of electrical circuitry formed on said first thin dielectric layer and including a first portion having a first circuit density and a second portion including a second circuit density less than said first density, said first and second portions being electrically coupled;
a semiconductor device positioned relative to said first portion of said electrical circuitry and electrically coupled to said first portion;
a plurality of electrically conductive solder conductive members positioned in a predetermined pattern relative to said second portion of said electrical circuitry and electrically coupled to said second portion, said electrically conductive solder members adapted for being electrically coupled to said electronic structure when said electronic package is positioned on said structure; and
a second thin dielectric layer of organic material positioned on selected regions of said layer of electrical circuitry and including openings therein, selected ones of said electrically conductive members being electrically coupled to said second portion of said electrical circuitry through said openings.

5,616,959
PLANARIZED MULTI-LEVEL INTERCONNECT SCHEME WITH EMBEDDED LOW-DIELECTRIC CONSTANT INSULATORS
Shin-Puu Jeng, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Division of Ser. No. 430,095, Apr. 26, 1995, Pat. No. 5,486,495, which is a continuation of Ser. No. 202,057, Feb. 25, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 473,458
Int. Cl.[6] H01L *29/28;23/54*
U.S. Cl. 257—758 **6 Claims**



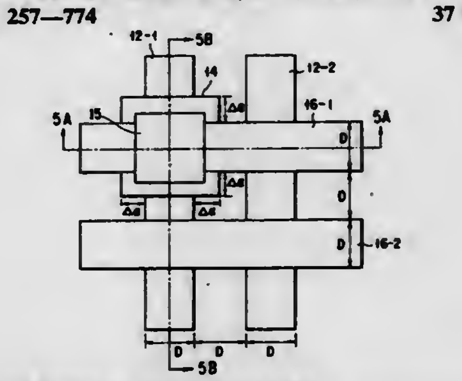
1. A multi-level interconnect structure on a semiconductor body comprising:
a. a first plurality of interconnect lines located on said semiconductor body;
b. a first layer of insulating material having a dielectric constant lower than the dielectric constant of silicon dioxide filling the space between only adjacent interconnect lines of said first plurality having a distance therebetween no greater than a given distance to reduce line-to-line capacitance, said first layer of insulating material having a height not greater than a height of said first plurality of interconnect lines; and
c. a first layer of silicon dioxide covering said first layer of insulating material, said first plurality of interconnect lines, and the space between adjacent interconnect lines of said first plurality having a distance therebetween greater than said given distance.

5,616,960
MULTILAYERED INTERCONNECTION SUBSTRATE HAVING A RESIN WALL FORMED ON SIDE SURFACES OF A CONTACT HOLE
Kazuhiro Noda, Kanagawa; Shinji Nakamura, Tokyo, and Hisao Hayashi, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Jul. 6, 1994, Ser. No. 271,133
Claims priority, application Japan, Jul. 5, 1993, 5-191713
Int. Cl.[6] H01L *23/58*
U.S. Cl. 257—760 **5 Claims**



1. A multilayered interconnection substrate comprising:
a first interconnection layer formed on a substrate;
first and second insulation films formed on said first interconnection layer, said first insulation film being directly formed on said first interconnection layer, said insulation films differing in composition from each other;
at least one contact hole formed in said insulation films to expose a portion of said first interconnection layer, said contact hole being larger in an area of said first insulation film;
a resin wall formed within said contact hole, said resin wall extending to sides of the first insulation film; and
a second interconnection layer formed inside said contact hole along said resin wall and being electrically connected to the first interconnection layer exposed at a bottom portion of the contact hole.

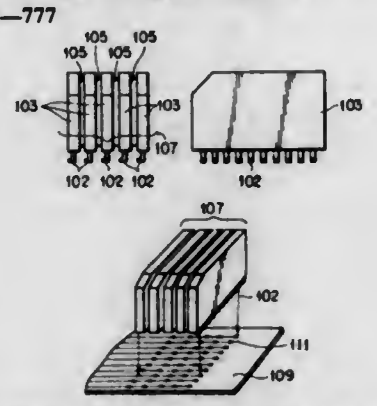
5,616,961
STRUCTURE OF CONTACT BETWEEN WIRING LAYERS IN SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE
Yusuke Kohyama, Yokosuka, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Feb. 21, 1995, Ser. No. 391,516
Claims priority, application Japan, Mar. 3, 1994, 6-033683
Int. Cl.[6] H01L *23/48;23/52;29/40;23/28*
U.S. Cl. 257—774 **37 Claims**



35. A semiconductor device, comprising:
first wiring layers each having a width D and formed with a spacing D therebetween;
an insulating layer formed on said first wiring layers;
second wiring layers each having a width D and formed on said insulating film with a spacing D therebetween; and
a contact formed in a contact hole in said insulating layer for electrically connecting one of said first wiring layers and one of said second wiring layers, a dimension of said contact hole in a direction parallel to the width D of said one first wiring layer being $D+2\Delta\alpha$ and a dimension of said contact hole in a

direction parallel to the width D of said one second wiring layer being D+2Δα, where Δα is an alignment margin for forming said contact.

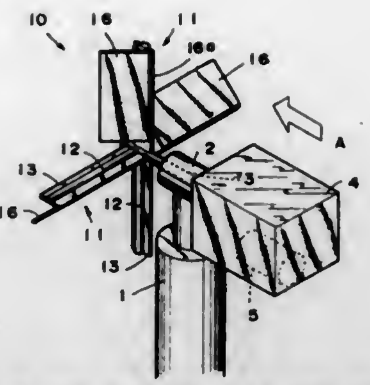
5,616,962
SEMICONDUCTOR INTEGRATED CIRCUIT DEVICES HAVING PARTICULAR TERMINAL GEOMETRY
Toshimitsu Ishikawa, Kawaguchi; Atsushi Kitamura, Tokyo, and Kenji Hirayama, Ooita, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Division of Ser. No. 7,877, Jan. 22, 1993, abandoned. This application Nov. 28, 1994, Ser. No. 348,128
Claims priority, application Japan, Jan. 24, 1992, 4-10441
Int. Cl.^{6} H01L *23/28;23/50*
U.S. Cl. 257—777 **8 Claims**



1. A semiconductor integrated circuit comprising:
a plate-like major portion formed of resin and having four sides and two major faces;
an "L"-shaped connection terminal projected from one of the four sides of the major portion; and
a plurality of connecting projections formed on one of the two major faces, said connecting projections being equal in height, integral with second and third sides of the four sides, perpendicular to said one of the two major faces, and extending along said second and third sides adjacent to said one side from which the connection terminal is projected, wherein said connecting projections are formed so that said semiconductor integrated circuit can be combined with other semiconductor integrated circuits of similar structure to form a block, and said semiconductor integrated circuits are connected together by stacking said connecting projections of said semiconductor integrated circuit on said other semiconductor circuits when at least one connection terminal of each of the semiconductor integrated circuits is bonded to a single substrate.

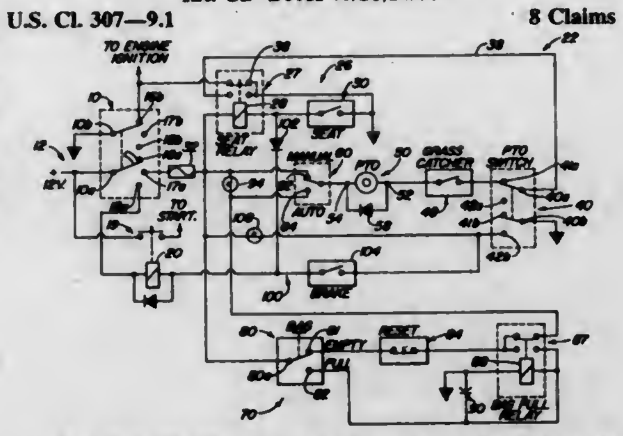
5,616,963
WIND POWER GENERATOR WITH AUTOMATIC REGULATION OF BLADE PITCH IN RESPONSE TO WIND SPEED BY MEANS OF SPRING MOUNTED BLADES
Naomi Kikuchi, 206 Kamiyachi, Niigata, Japan
Filed Jun. 7, 1995, Ser. No. 485,027
Claims priority, application Japan, Nov. 2, 1994, 6-270007
Int. Cl.^{6} F03D *7/04;9/00*
U.S. Cl. 290—55 **3 Claims**

1. A wind power generator comprising:
a main generator,
a power shaft which is horizontally supported, having a horizontal axis of rotation, said rotation being transferred to the main generator;
a plurality of spokes radially extending from said power shaft, each spoke comprising a shaft and a plate, having a protrusion mounted thereto;



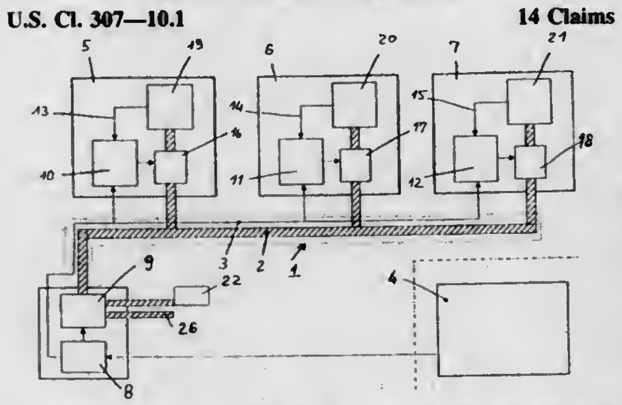
a plurality of wind mill blades, each blade mating with a corresponding one of said plurality of pokes, and having a marginal edge and another protrusion opposite to said protrusion of the spoke;
a plurality of connector shafts, each connecting one of said plurality of blades and one of said plurality of spokes through said opposite protrusions so that each blade can be rotated around the corresponding spoke until the blade is disposed parallel to said axis of rotation of the power, shaft;
a plurality of springs surrounding the connector shafts each spring being sandwiched in a compressed state between the spoke and the blade to bias the blade toward one limit of its rotation,
wherein said blade can be rotated until said marginal edge of the blade abuts on said plate of the spoke along nearly an entire length in parallel to said rotational axis of the blade, thereby defining said one limit of the rotation with an angle of the blade to the power shaft being about 45 degrees.

5,616,964
LAWN AND GARDEN TRACTOR INTERLOCK CIRCUIT
Rudolph A. Peterson, Jr., Beaver Dam, Wis., assignor to Deere & Company, Moline, Ill.
Filed Sep. 19, 1995, Ser. No. 529,968
Int. Cl.^{6} B60K *41/28;28/00*
U.S. Cl. 307—9.1 **8 Claims**



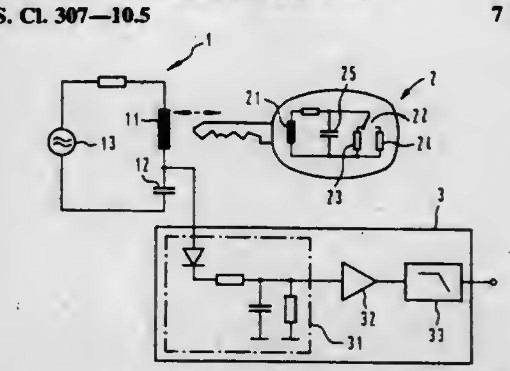
1. In a lawn and garden vehicle having an operator station, an engine with a starter and ignition system, a ground drive system for propelling the vehicle, the ground drive system including brake structure for providing vehicle drive and non-drive conditions, an activatable tool drive such as a power take off (PTO) for powering an accessory, a first switch connected between a source of electrical power on the vehicle and the starter and ignition system and operable for permitting switch controlled starting of the engine when the vehicle is in the non-drive condition, an activatable relay connected to the ignition system, an operator presence switch structure connected to the relay and responsive to the presence of an operator at the operator station for activating the relay and permitting operation of the engine when the operator is present at the operator station and deactivating the relay to ground the ignition system and kill the engine when the operator is away from the operator station, a circuit permitting operation of engine under limited conditions when the operator is away from the operator station, the circuit comprising:
a PTO switch connected to the activatable tool drive, the PTO switch having an on condition for activating the tool drive when the operator is present at the operator station and an off condition for deactivating the tool drive, and wherein the PTO switch includes a grounding terminal having a grounded condition when in the PTO switch is in the off condition; and
a brake switch connected between the grounding terminal of the PTO switch and the operator presence switch structure and having a closed condition when the vehicle is in the non-drive condition, wherein the relay includes an activation coil with a first lead connected to said source of power and a second lead connected to the grounding terminal of the PTO switch through the brake switch so that a closed path to ground is provided from the relay coil to ground when the vehicle is in the non-drive condition and the PTO switch is in the off condition.

5,616,965
ELECTRO-PNEUMATIC BUS
Franz J. Wolf, Bad Soden-Salmünster; Uwe Reichert, Schlüchtern; Walter Decker, Windsbach; Frank Demling, Fürth; Andrew Ogrissek, Nürnberg; Dieter Feichtiger, Aldlingen; Martin Lindmayer, Sulz, and Dieter Heinle, Plüderhausen, all of Germany, assignors to WOCO Franz-Josef Wolf & Co., Bad Soden-Salmünster; Alcatel SEL Aktiengesellschaft, and Mercedes-Benz AG, both of Stuttgart, all of Germany
Filed May 24, 1995, Ser. No. 448,728
Claims priority, application Germany, May 24, 1994, 44 18 055.1
Int. Cl.^{6} F17D *3/00;* **B60L** *1/00*
U.S. Cl. 307—10.1 **14 Claims**



1. Apparatus for controlling and adjusting at least one adjusting unit in a motor vehicle, the at least one adjusting unit being individually addressable, the apparatus comprising:
an electro-pneumatic bus connected both pneumatically and electrically to the at least one adjusting unit,
the electro-pneumatic bus comprising at least one pneumatic adjustment pressure line and at least one electric control signal line transmitting data to the at least one individually addressable adjusting unit.

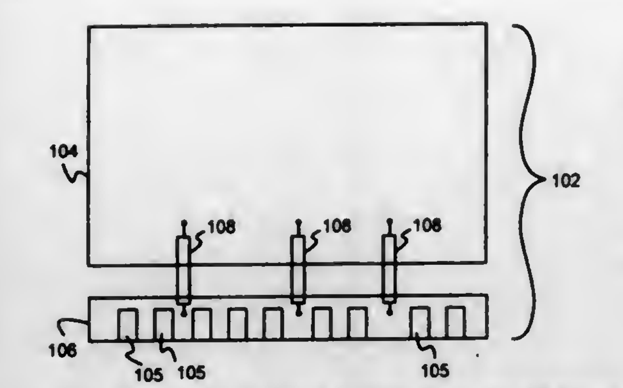
5,616,966
ANTI-THEFT SYSTEM FOR A MOTOR VEHICLE
Armin Fischer, Nuremberg; Stefan Haimerl, Leonberg, and Manfred Glehr, Neutraubling, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany
Filed Nov. 7, 1995, Ser. No. 554,821
Claims priority, application European Pat. Off., Nov. 7, 1994, 94117526
Int. Cl.^{6} E05B *47/00*
U.S. Cl. 307—10.5 **7 Claims**



1. An anti-theft system for a motor vehicle, comprising:
a portable transponder carrying code information;
a stationary transceiver having an oscillator and an oscillating circuit being excited to oscillate by said oscillator at an oscillation being modulated by said transponder in synchronism with the code information;
a demodulator connected to said transceiver for demodulating the modulated oscillation of said oscillating circuit;
a sampling device connected to said demodulator for sampling the oscillation at least at one predetermined sampling time to obtain the code information from the demodulated oscillation;
an arithmetic unit connected to said transceiver and to said sampling device for comparing the code information with command code information and issuing an enable signal if a match occurs; and
a security unit connected to said arithmetic unit for receiving the enable signal;
said sampling device once again sampling the modulated oscillation being at a second predetermined sampling time which is shifted by a predetermined phase angle, if initially no code information is recognized from said demodulator.

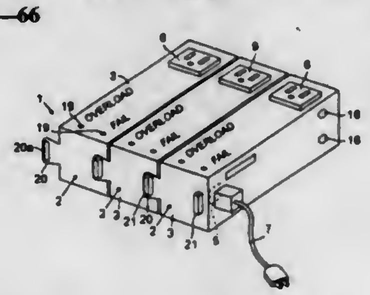
5,616,967
METHOD AND APPARATUS FOR DECOUPLING OF UNUSED POWER SUPPLY PINS OF A PRINTED CIRCUIT BOARD CAPABLE OF OPERATING AT A PLURALITY OF PREDETERMINED VOLTAGES
Sherman Lee, Rancho Palos Verde, and Mark Mah, San Jose, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.
Continuation of Ser. No. 274,871, Jul. 14, 1994, Pat. No. 5,497,037. This application Dec. 6, 1995, Ser. No. 567,976
Int. Cl.^{6} H05K *1/16*
U.S. Cl. 307—42 **12 Claims**

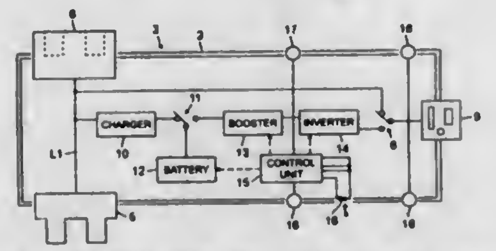
1. A printed circuit board (PCB) capable of operating at a plurality of predetermined voltage levels comprising:
a plurality of metal layers, at least one of the metal layers being divided to provide a plurality of electrically isolated sections, the plurality of electrically isolated sections being on substantially the same plane; at least one of the plurality of electrically isolated sections being associated with one of the predetermined voltage levels and the others of the plurality of electrically isolated sections being associated with the others of the predetermined voltage levels;
a plurality of signal pins coupled to the at least one of the plurality of electrically isolated sections; and



at least one capacitor coupled to a ground plane, the plurality of signal pins and the at least one of the electrically isolated metal sections; wherein an alternating current path is provided.

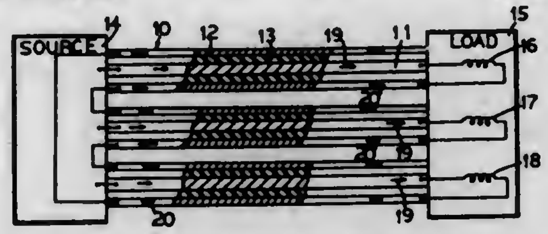
5,616,968
EXPANDABLE AC POWER SUPPLY DEVICE
Hiroshi Fujii, and Shigemitsu Kiso, both of Shizuoka-ken, Japan, assignors to Omron Corporation, Nagaokakyo, Japan
Filed Dec. 23, 1994, Ser. No. 362,404
Claims priority, application Japan, Dec. 24, 1993, 5-345950
Int. Cl.^{6} H02J *7/00*
U.S. Cl. 307—66 **34 Claims**





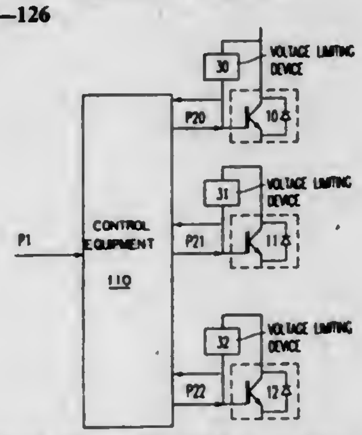
18. An expandable power supply for supplying power to an external load, said expandable power supply comprising a plurality of adjacent power supply modules, each power supply module comprising:
a battery;
a battery charger operating to charge said battery;
a power generator operating to convert an electrical charge stored in said battery to generate output power for the external load;
a power supply plug for receiving external power from an external power source;
a power supply socket configured to couple the external power received from the external power source to an adjacent power supply module;
an external load output socket on which output power is supplied to the external load from one of the external power source and said power generator; and
a connecting terminal selectively coupling the external load output power to the adjacent power supply module.

5,616,969
POWER DISTRIBUTION SYSTEM HAVING SUBSTANTIALLY ZERO ELECTROMAGNETIC FIELD RADIATION
Irena Morava, 12 Strathroy Crescent, Markham, Ontario, Canada
Filed Jul. 11, 1995, Ser. No. 501,147
Int. Cl.^{6} H04B *3/26*
U.S. Cl. 307—91 **8 Claims**



1. A method of substantially eliminating electromagnetic field radiation in an electrical power distribution system having power lines extending over a long distance between an electrical voltage source and a remotely located electrical load, comprising
supplying the voltage from said voltage source to said load with single core coaxial cable members having a main conductor surrounded with an electrically conductive sheath means which is electrically insulated from the main conductor whereby by a main current flows in said main conductor to said load,
supplying a supplementary current to said sheath means, said supplementary current being equal in magnitude and flowing in the opposite direction of said main current, and said supplementary current being provided by an external current source connected to said sheath means.

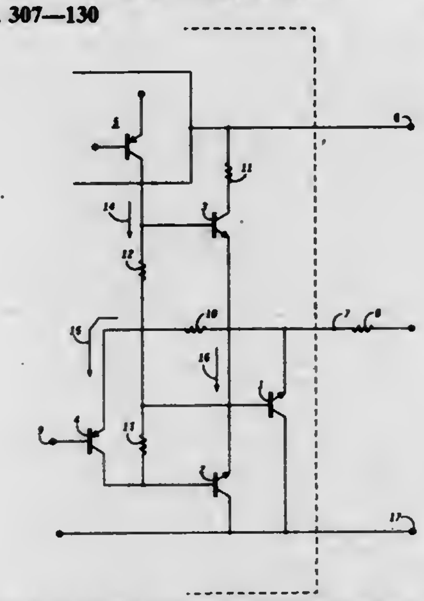
5,616,970
METHOD AND CIRCUIT ARRANGEMENT FOR DRIVING SEMICONDUCTOR SWITCHES IN A SERIES CIRCUIT
Andreas Dittrich, Zürich, Switzerland, assignor to Asea Brown Boveri AG, Baden, Switzerland
Filed Feb. 8, 1995, Ser. No. 385,546
Claims priority, application Germany, Feb. 8, 1994, 44 03 941.7
Int. Cl.^{6} H01H *83/14*
U.S. Cl. 307—126 **6 Claims**



1. A method for driving semiconductor switches connected in a series circuit by equalizing the voltage distribution across the semiconductor switches comprising the steps of:
providing a voltage limiting device for each of said semiconductor switches, each voltage limiting device being connected between the collector and control electrode of the respective semiconductor switch;
detecting the amount of power loss from each of said voltage limiting devices and controlling said power loss to be at a minimum;

generating modified control pulses for controlling each semiconductor switch by means of control equipment, based on the receipt of a common control pulse and the detected power loss;
wherein said semiconductor switches are non-latching semiconductor switches.

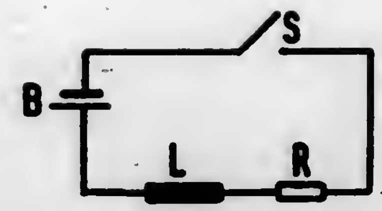
5,616,971
POWER SWITCHING CIRCUIT
Petr Kadanka, Roznov, Czechoslovakia, assignor to Motorola, Inc., Schaumburg, Ill.
Filed Oct. 6, 1995, Ser. No. 539,900
Claims priority, application United Kingdom, Oct. 8, 1994, 9420325
Int. Cl.^{6} H01H *35/00*
U.S. Cl. 307—130 **4 Claims**



1. A power switching circuit comprising a power switching NPN transistor having its collector electrode coupled to a reference potential terminal and its emitter electrode coupled to an output terminal, a driver circuit having an input coupled to a supply terminal and a driving current output coupled to the base electrode of the power transistor, a PNP transistor having its emitter electrode coupled to the output terminal, its base electrode coupled to a reference voltage terminal for receiving, in operation, a voltage which is positive relative to the reference potential and its collector electrode coupled to the base electrode of an NPN transistor, the NPN transistor having its collector electrode coupled to the collector electrode of the power transistor and its emitter electrode coupled to the base electrode of the power transistor.

5,616,972
SWITCHING ARRANGEMENT WITH SWITCHING CONTACTS AND AN INDUCTIVE LOAD
Josef Weiser, Hohenschäftlarn, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany
PCT No. PCT/DE93/00925, § 371 Date Apr. 7, 1995, § 102(e) Date Apr. 7, 1995, PCT Pub. No. WO94/09502, PCT Pub. Date Apr. 28, 1994
PCT Filed Oct. 1, 1993, Ser. No. 416,726
Claims priority, application Germany, Oct. 9, 1992, 42 34 122.1
Int. Cl.^{6} H01H *9/30*
U.S. Cl. 307—137 **8 Claims**

1. A circuit arrangement with a pair of switching contacts, and with an inductive load connected to a DC voltage source via the pair of switching contacts, wherein an arcing time of a breakdown arc between said contacts is determined by a time constant (T)



from the ratio of the inductance (L) and the ohmic resistance (R) in the load circuit as a function of the breaking current (i) according to the following relationship:

$$T|\mu s| = \frac{L}{R} = (10 \pm 5)\left|\frac{\mu s}{A}\right| \cdot i|A|$$

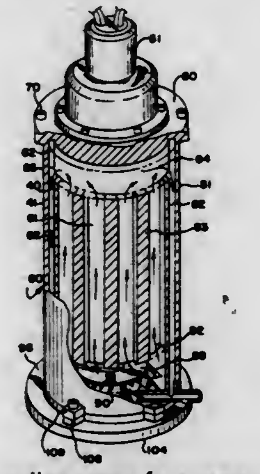
for $1\ A \leqq i \leqq 20\ A$

and

$$200|\mu s| < T|\mu s| = \frac{L}{R} \leqq 10|ms|$$

for $20\ A \leqq i \leqq 30\ A$.

5,616,973
PUMP MOTOR HOUSING WITH IMPROVED COOLING MEANS
Yuri Khazanov, Northbrook, and Wilbur D. Norwood, Chicago, both of Ill., assignors to Yeomans Chicago Corporation, Melrose Park, Ill.
Filed Jun. 29, 1994, Ser. No. 267,968
Int. Cl.^{6} H02K *5/20; 9/19*
U.S. Cl. 310—54 **37 Claims**



1. A closed loop cooling system for a motor operated pump in which the pump has a pump impeller rotatably mounted within a pump casing, the cooling system comprising:
a motor assembly, a housing member surrounding the motor assembly, the housing member having a motor chamber and a coolant reservoir defined therein, said housing member having a circumferential sidewall portion, the sidewall portion having a plurality of first and second passages integrally formed within said housing member, such that the first and second passages are entirely contained within said housing member sidewall portion, said first and second passages extending within said housing member sidewall portion proximate to said motor chamber, the coolant reservoir including means for circulating coolant through said cooling system, the coolant circulation means creating, during operation of said pump, high and low pressure regions in said coolant reservoir, said first passages having entrance ports which communicate with said coolant reservoir at the high pressure regions thereof and

said second passages having exit ports which communicate with said coolant reservoir at said low pressure regions thereof, said first and second passages being interconnected at ends opposite their respective entrance and exit ports.

5,616,974

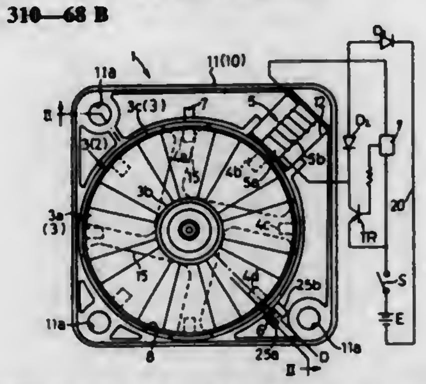
FAN MOTOR

Tadao Yamada, 3-9-9 Inadera, Amagasaki City, Hyogo-ken 655, Japan

Filed Nov. 16, 1994, Ser. No. 340,603

Int. Cl.⁶ H02K *1/18*

U.S. Cl. 310—68 B **4 Claims**



1. I claim, in a fan motor which consists of (i) a rotor (2) which is constructed by positioning a plurality of permanent magnets (4*a*), (4*b*), (4*c*) and (4*d*) at prescribed relative angles on the circumferential rim portion of a vane wheel (3), and (ii) a stator (10) which is constructed by positioning one or more electromagnet(s) (5) and at least one magnetic body to be placed in one of a plurality of recesses on an inside circumferential portion of a casing (11);

and in which a conductive circuit (20) is connected to a field magnetic coil(s) (5*b*) of an aforementioned electromagnet(s) (5), (c) the aforementioned recesses [magnetic body (or bodies (6)] are positioned in a prescribed relatively offset angular position (P_1) or (P_2) with respect to tile aforementioned electromagnet(s) (5) such selection which may be made after installation of such fan motor and such selection which will allow a change of direction of rotation of the vane wheel, (d) a detector (7) which detects when the permanent magnets (4*a*), (4*b*), (4*c*) and (4*d*) of the vane wheel (3) are in the vicinity of the aforementioned relatively offset angular position (P_1) or (P_2), and which accordingly connects the aforementioned conductive circuit (20), is attached to the inside circumferential portion of the aforementioned casing (11);

and which is constructed so that (i) when tile conductive circuit (20) is in an "off" state, the magnetic force of the permanent magnets (4*a*), (4*b*), (4*c*) and (4*d*) of the vane wheel (3) acts respectively on a core (5*a*) of the electromagnet(s) (5) and the magnetic body (or bodies) (6) so that the vane wheel (3) is offset toward the aforementioned relatively offset angular position (P_1) or (P_2) with respect to the electromagnet(s) (5), and (ii) when the conductive circuit (20) is in a conductive state, the repulsive force of the electromagnet(s) (5) acts on the permanent magnets (4*a*), (4*b*), (4*c*) and (4*d*), thus causing the vane wheel (3) to rotate;

the circumferential edge portions of vanes (3*a*) of the aforementioned vane wheel (3) are connected by a circumferential-edge ring (3*c*) across the entire width of said vanes (3*a*) (with respect to the axial direction).

5,616,975

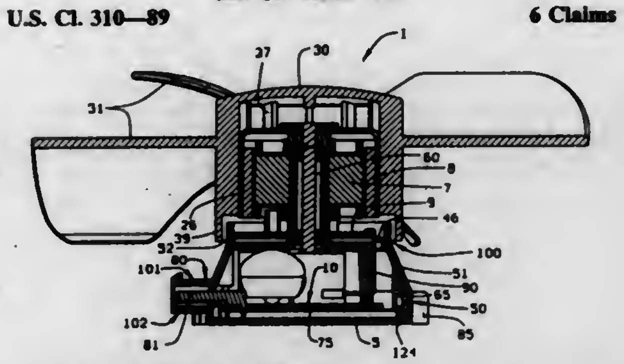
INTEGRAL CONNECTOR AND MOTOR HOUSING

Kevin M. May; S. Duke Snider, and Daniel R. Messner, all of St. Louis County, Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed May 11, 1994, Ser. No. 240,635

Int. Cl.⁶ H02K *5/00*

U.S. Cl. 310—89 **6 Claims**



1. A motor enclosure comprising:

a hollow base-housing with an open mouth defined by at least one side wall, said base defining a predetermined configuration for said open mouth;

a cover-closure for the open mouth of said base, said cover closure having a shape complementary to the configuration of said mouth, said cover closure having a cover receptacle part;

an electrical motor circuit and power conductors electrically connected to said circuit at one end and adapted to be connected to a source of power at another end, said conductors being in the form of spaced, parallel electrical interconnect devices;

a housing receptacle part projecting outwardly of said side wall, said receptacle having a back wall and at least one side wall, said back wall having electrical interconnect device receiving openings formed in it in which said electrical interconnect devices are seated, and at least one intermediate wall, said at least one intermediate wall defining with said side wall, at least two electrical interconnect device receiving channels, said side wall having at least one channel formed in it, opening inwardly, an upper edge of which defines a ledge, said housing receptacle part being open along the open mouth of said base housing, said cover receptacle part having a size and shape to cover said housing receptacle open bottom; and

at least one latching finger attached at one end to said cover closure receptacle part, said latching finger having a free second end, said latching finger having a shape, size and position to extend into said channel, and having an oppositely disposed, outwardly directed leg at the free end of said finger, engaging said ledge so as to hold said cover in place, said finger being deflectable to permit the lip to snap over the ledge in a cover holding position, and to be disengaged manually to permit the cover to be removed.

5,616,976

AUXILIARY BEARING SYSTEM FOR A ROTOR FLOATING-MOUNTED ON A STATOR

Johan K. Fremerey, Bonn, and Jürgen Räbiger, Düren, both of Germany, assignors to Forschungszentrum Julich GmbH, Julich, Germany

PCT No. PCT/DE93/00252, § 371 Date Sep. 26, 1994, § 102(e) Date Sep. 26, 1994, PCT Pub. No. WO93/20362, PCT Pub. Date Oct. 14, 1993

PCT Filed Mar. 20, 1993, Ser. No. 313,038

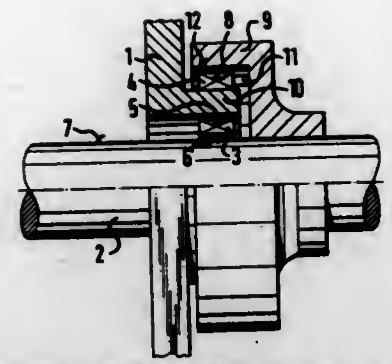
Claims priority, application Germany, Mar. 27, 1992, 42 10 042.9

Int. Cl.⁶ H02K *7/09*; F16C *41/00;32/04*

U.S. Cl. 310—90.5 **10 Claims**

1. An auxiliary bearing system, comprising:

a stator;



a rotor mounted to the stator to float without contact by generation of a magnetic field between the stator and the rotor;

a first auxiliary bearing element attached to the stator and having a contact surface, spaced at a first distance from an outer surface of the rotor, with which the outer surface of the rotor is engageable when the rotor radially jumps out of position;

a second auxiliary bearing element attached to the stator and having a contact surface, spaced at a second distance from an inner surface of the rotor, with which the inner surface of the rotor is engageable when the rotor jumps out of position;

wherein said first and second distances are unequal so that the rotor engages first with the contact surface of one of said first and second auxiliary bearing elements, and then with the contact surface of the other; and

wherein said one of the first and second auxiliary bearing elements is resilient in a radial direction of the rotor.

5,616,977

POLYPHASE ELECTRIC MACHINES WITH PREFABRICATED WINDING LAYERS

Wolfgang Hill, Ortenbergstr. 3 76135, Karlsruhe, Germany

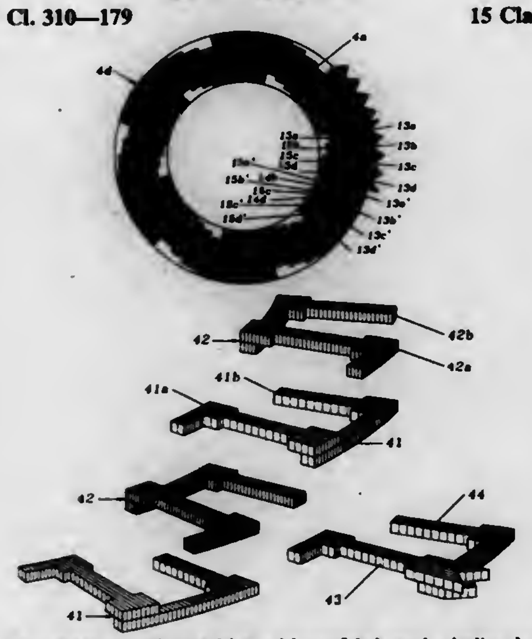
PCT No. PCT/DE92/00617, § 371 Date Jun. 27, 1994, § 102(e) Date Jun. 27, 1994, PCT Pub. No. WO93/03534, PCT Pub. Date Feb. 18, 1993

PCT Filed Jul. 29, 1992, Ser. No. 190,026

Claims priority, application Germany, Jul. 29, 1991, 41 25 044.3

Int. Cl.⁶ H02K *1/00*

U.S. Cl. 310—179 **15 Claims**



1. Polyphase electric machine with prefabricated winding layers comprising a soft magnetic body with grooves, said grooves having a length, a width and a depth, said machine further having a plane surface parallel to a planar gap, parallel to the plane surface and within said grooves are arranged the winding layers, at least one of said winding layers consisting of at least two conductor lanes of different phases, each of said conductor lanes having a cross section, wherein the conductor cross sections vary on both sides outside the soft magnetic body, and wherein said polyphase electric machine further having a conductor lane of a winding layer, said conductor lane having in partial sections arranged outside the soft magnetic body a smaller cross section parallel to the groove depth than in sections lying inside the soft magnetic body.

5,616,978

ELECTROCONDUCTIVE ARTICLE, HAVING PORTIONS WITH VARIABLE RESISTANCE AND A ROTOR PRODUCED THEREFROM

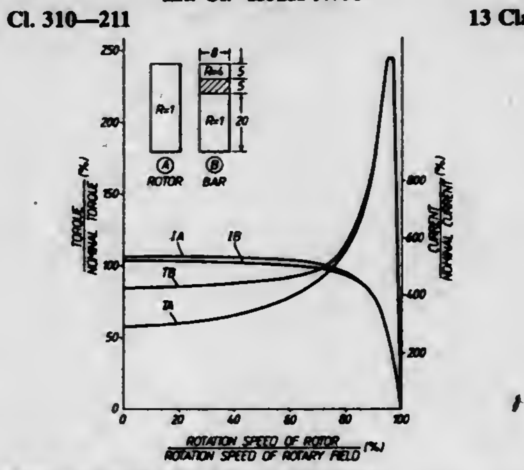
Hitoshi Kanai, Tokyo; Masashi Takahashi, and Yoshiyasu Itoh, both of Kanagawa-ken, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 5, 1993, Ser. No. 26,043

Claims priority, application Japan, Mar. 6, 1992, 4-048979

Int. Cl.⁶ H02K *17/16*

U.S. Cl. 310—211 **13 Claims**



1. An electroconductive article, comprising:

at least one portion in which electrical resistance varies gradually along one dimension,

wherein said article comprises a first region, a second region and a third region located between said first and second regions, and wherein said third region is comprised of a plurality of different alloy materials, and

wherein said alloy materials have been applied in layers and subjected to a heat treatment.

5,616,979

VIBRATION DRIVEN MOTOR APPARATUS

Fumikazu Nishikawa, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 453,574, May 26, 1995, abandoned, which is a continuation of Ser. No. 165,898, Dec. 14, 1993, abandoned. This application Jun. 11, 1996, Ser. No. 661,883

Claims priority, application Japan, Dec. 16, 1992, 4-335842

Int. Cl.⁶ H02N *2/00*

U.S. Cl. 310—316 **17 Claims**

1. A vibration driven motor or actuator apparatus, comprising:

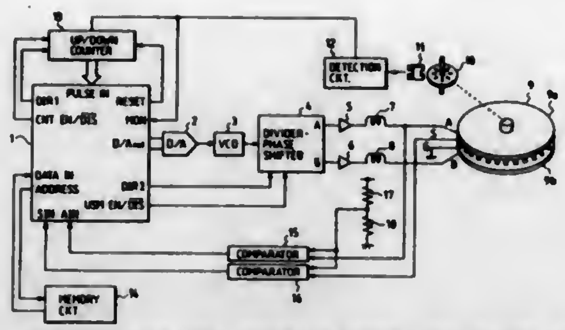
a vibration member;

an electro-mechanical energy converting element provided at the vibration member, for generating a vibration in the vibration member in response to an applied electrical signal having a driving frequency, the vibration being used as a driving force;

speed detection means for detecting a driving speed of the apparatus;

instruction means for setting an instruction for changing the driving frequency; and

driving frequency changing means including a circuit for changing the driving frequency in response to a frequency change



instruction from said instruction means, said driving frequency changing means determining a rate of change of the driving frequency in accordance with the driving speed detected by said speed detection means.

5,616,980

CERAMIC MOTOR

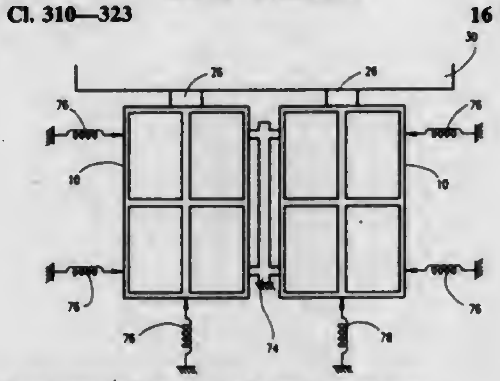
Jona Zumeris, Nesher, Israel, assignor to Nanomotion Ltd., Haifa, Israel

Continuation-in-part of Ser. No. 101,174, Aug. 3, 1993, Pat. No. 5,453,653. This application Jul. 8, 1994, Ser. No. 272,921

Claims priority, application Israel, Jul. 9, 1993, 106296; Apr. 22, 1994, 109399

Int. Cl.⁶ H01L *41/08*

U.S. Cl. 310—323 16 Claims



1. A micromotor for moving a body comprising:
a piezoelectric plate having:
first and second faces, wherein at least a portion of said first face is divided into four quadrants;
long and short edges;
four electrodes attached to said first face, one electrode attached to each quadrant of said first face; and
mounting holes formed in said piezoelectric plate, spaced along an axis which is parallel to said long edges and is situated in the space between adjacent electrodes attached to said first face.

5,616,981

TERMINAL FOR A PIEZOELECTRIC DEVICE

Koichi Nagano; Atsushi Uno; Toshiyuki Baba; Takashi Shimura, and Yuusei Oyama, all of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

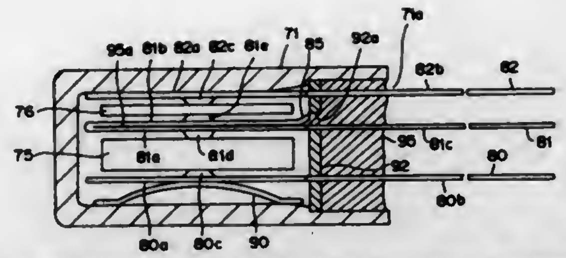
Filed Aug. 16, 1994, Ser. No. 291,126

Claims priority, application Japan, Aug. 20, 1993, 5-205963; Aug. 31, 1993, 5-215400; Sep. 29, 1993, 5-242360; Nov. 18, 1993, 5-288882

Int. Cl.⁶ H01L *41/08*

U.S. Cl. 310—326 20 Claims

1. A terminal for a piezoelectric device, the terminal comprising:
a first electrode portion with a first projection;



a second electrode portion with a second projection, the second electrode portion being folded on the first electrode portion; and
a vibration absorber comprising at least one of oil and a non-volatile component of oil provided between the first electrode portion and the second electrode portion.

5,616,982

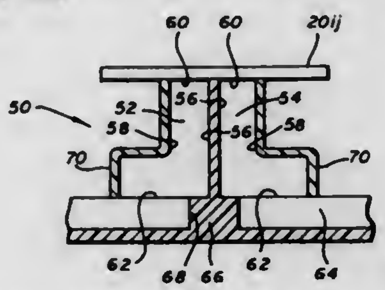
PIEZOELECTRIC ACTUATOR

Gregory Um, Torrance, and Andrei Szilagyi, Rancho Palos Verdes, both of Calif., assignors to Aura Systems, Inc., El Segundo, Calif.

Continuation of Ser. No. 363,210, Dec. 21, 1994, abandoned, which is a continuation of Ser. No. 107,251, Aug. 16, 1993, abandoned, which is a division of Ser. No. 885,727, May 18, 1992, Pat. No. 5,260,798, which is a continuation-in-part of Ser. No. 448,748, Dec. 11, 1989, Pat. No. 5,126,836, which is a continuation-in-part of Ser. No. 429,987, Nov. 1, 1989, Pat. No. 5,150,205. This application Mar. 25, 1996, Ser. No. 622,611

Int. Cl.⁶ H01L *41/08*

U.S. Cl. 310—328 8 Claims



1. An apparatus for tilting the plane of an object comprising:
a substrate;
a pair of members, each of said members fabricated from a piezoelectric material, each of said members having a top surface, a bottom surface, a first side surface and a second side surface, said bottom surface being directly mounted to said substrate, and said first side surface of each of said members being affixed to each other and electrically connected in common, a first one of said members further having a polarization selected so that a voltage of a first polarity applied between said first side surface and said second side surface thereof causes said first one of said members to contract between said top surface and said bottom surface, and further wherein said object is mounted to said top surface of each of said members so that when a voltage is applied to said second side surface of said first one of said members said object tilts toward said first one of said members;
a reflective surface, said reflective surface being mounted on said top surface of said members and perpendicular to said side surfaces; and
a metallization, said metallization being disposed on each of said second side surfaces of said members.

5,616,983

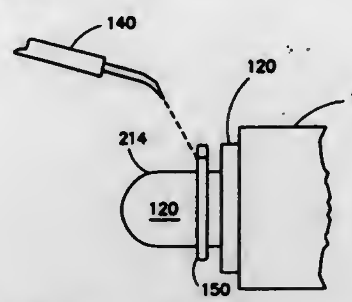
ELECTRODE ASSEMBLY WITH LEAD WIRE ATTACHMENT

Timothy A. Beckwith; William M. Brintz, both of Coon Rapids, and Walter A. Barniskis, New Hope, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 28, 1995, Ser. No. 395,354

Int. Cl.⁶ H01R *4/00*

U.S. Cl. 313—51 11 Claims



1. An electrode assembly comprising:
an electrode consisting of an electrically conductive material and having a closed circumferential outer wall member surrounding, at least in part, a reference axes;
an electrically conductive ring member having an inner shoulder surrounding, at least in part, said circumferential outer wall member, and said inner shoulder exerting a frictional force radially against and in electrical contact with peripheral portions of said circumferential outerwall member of said electrode; and
an electrical wire affixed to and in electrical contact with said ring member.

5,616,984

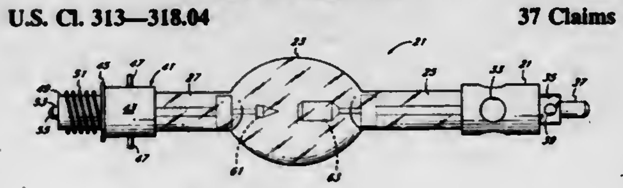
HIGH WATTAGE LAMP FERRULE AND SOCKET SYSTEM

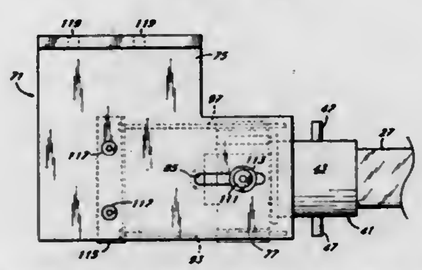
John F. Guthier, Van Nuys, Calif., assignor to Xenotech, Inc., North Hollywood, Calif.

Continuation of Ser. No. 103,350, Aug. 9, 1993, abandoned. This application Apr. 3, 1995, Ser. No. 415,744

Int. Cl.⁶ H01J *5/50*

U.S. Cl. 313—318.04 37 Claims





1. A high current ferrule connector for a lamp comprising:
a ferrule having a straight cylindrical surface for engaging a second cylindrical glass end of a lamp, a circular land continuously abutting and adjacent said straight cylindrical surface and having a common central longitudinal axis with said straight cylindrical surface, and a cylindrical threaded surface adjacent said circular land and having a diameter smaller than that of the circular land and carrying threads thereon.

5,616,985

SHADOW-MASK COLOR CATHODE RAY TUBE

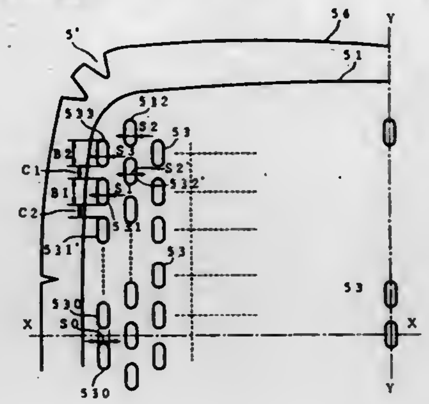
Nobuhiko Hosotani, Mobara, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 8, 1995, Ser. No. 385,654

Claims priority, application Japan, Feb. 8, 1994, 6-014615

Int. Cl.⁶ H01J *29/80*

U.S. Cl. 313—403 16 Claims



1. A shadow-mask color cathode ray tube having a shadow mask for selectively passing a plurality of electron beams coming from an electron gun to land them on their corresponding phosphors of different colors constituting a screen;
wherein the shadow mask is constituted by forming a flat plate into an approximately rectangular shape having an approximately rectangular effective area in which a plurality of slot-like electron-beam passing holes are formed in horizontal and vertical directions and an ineffective area surrounds the effective area, and thereafter, forming a skirt section by press-molding the approximately rectangular plate to bend the ineffective area upward at a margin of the approximately rectangular plate and forming the effective area into an approximately rectangular dome and welding the dome to a mask frame;
wherein an electron-beam passing hole which is located at an end of a vertical-directional outermost line at a horizontal-directional section in the effective area is defined as a first-end electron-beam passing hole, an electron-beam passing hole which is located adjacent to the first-end electron-beam passing hole in the horizontal direction and at an end of a vertical-directional line adjacent to the vertical-directional outermost line is defined as a second-end electron-beam passing hole, an electron-beam passing hole which is located adjacent to the second-end electron-beam passing hole in the vertical directional line is defined as a third-end electron-beam passing hole, an electron-beam passing hole which is located adjacent to the first-end electron-beam passing hole in the vertical-directional outermost line is defined as a fourth-end electron-beam passing hole, and an electron-beam passing hole which is located at a central portion of the vertical-directional outermost line is defined as a fifth-end electron-beam passing hole; and
wherein an opening shape of a slot type electron-beam passing hole formed in the effective area has a major axis in the vertical-direction, and inequalities S3<S2, S3<S2', and S3<S1 are satisfied, where S3 is a slot width of the first-end electron-beam passing hole, S2 is a slot width of the second-end electron-beam passing hole, S2' is a slot width of the third-end electron-beam passing hole, and S1 is a slot width of the fourth-end electron-beam passing hole.

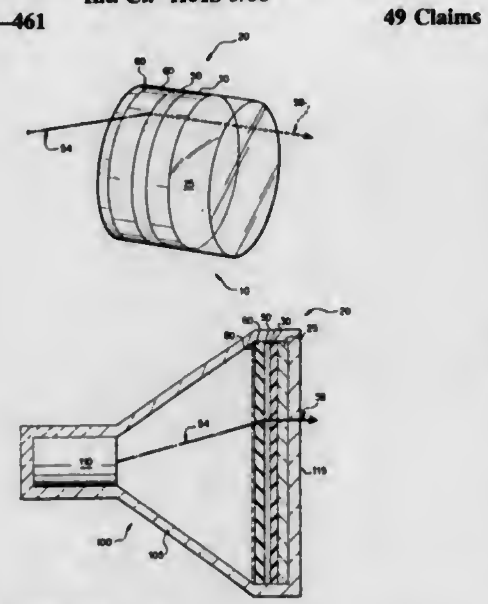
5,616,986
RESONANT MICROCAVITY DISPLAY

Stuart M. Jacobsen; Steven M. Jaffe; Hergen Eilers, all of Athens, and Michleal L. Jones, Winterville, all of Ga., assignors to University of Georgia Research Foundation, Inc., Athens, Ga.

Continuation of Ser. No. 94,767, Jul. 20, 1993, Pat. No. 5,469,018. This application Aug. 18, 1995, Ser. No. 516,944

Int. Cl.[6] H01S *3/08*

U.S. Cl. 313—461 49 Claims



1. A device comprising:
a cavity with an active region;
said active region including a material capable of having spontaneous light emission; and
said device capable of controlling the spontaneous light emission from said active region.

5,616,987
ELECTRON MULTIPLIER

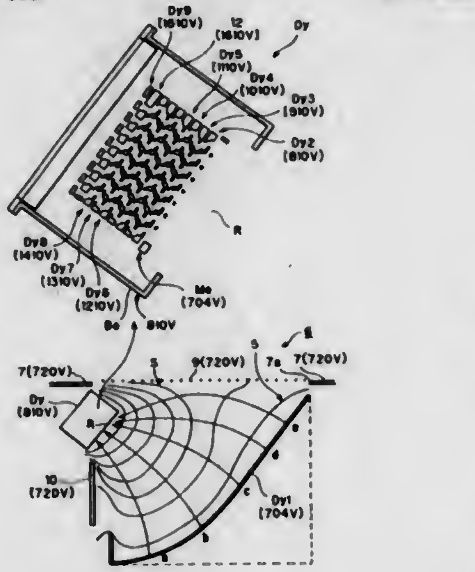
Takayuki Ohmura; Tomoyuki Okada; Hiroyuki Kyushima, and Yousuke Oohashi, all of Hamamatsu, Japan, assignors to Hamamatsu Photonics K.K., Shizuoka-ken, Japan

Filed Nov. 17, 1995, Ser. No. 560,122

Claims priority, application Japan, Nov. 18, 1994, 6-285069

Int. Cl.[6] H01J *43/20*

U.S. Cl. 313—533 27 Claims



24. An electron multiplier for multiplying incident electrons and for outputting the multiplied electrons, the electron multiplier comprising:
a mesh electrode provided at a first incident opening for receiving electrons to be multiplied;
an electron multiplication portion for multiplying, in cascade manner, the incident electrons having passed through the first incident opening;
an anode for collecting the electrons multiplied by the electron multiplication portion,
wherein the electron multiplication portion includes:
a first dynode, applied with a predetermined electric voltage, for receiving the electrons having passed through the first incident opening to thereby emit secondary electrons;
a second dynode, provided in confrontation with the first dynode, for receiving the secondary electrons from the first dynode to emit secondary electrons accordingly, the second dynode having a second incident opening for allowing the secondary electrons from the first dynode to pass therethrough to impinge the second dynode, the second dynode being applied with an electric voltage higher than that applied to the first dynode; and
an auxiliary electrode provided in a space located between the first and second dynodes to extend in a direction substantially orthogonal to the mesh electrode, the mesh electrode and the auxiliary electrode being applied with an intermediate electric voltage which is higher than the electric voltage applied to the first dynode and which is lower than the electric voltage applied to the second dynode, the second incident opening being located in a gap between the mesh electrode and the auxiliary electrode.

5,616,988
HIGH ENERGY-SAVING CIRCUIT FOR A DISPLAY APPARATUS

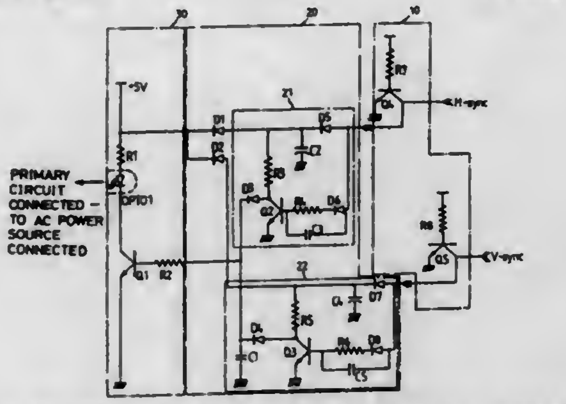
Hyo J. Kim, Kyoungki-do, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Kyoungki-do, Rep. of Korea

Filed May 31, 1995, Ser. No. 454,872

Claims priority, application Rep. of Korea, Aug. 19, 1994, 94-20524; Aug. 29, 1994, 94-21446

Int. Cl.[6] G06F *1/32*

U.S. Cl. 315—1 15 Claims



1. A high energy-saving circuit for a display apparatus comprising:
a sensing portion for receiving a horizontal sync signal and a vertical sync signal respectively supplied from a computer;
an operation-controlling circuit portion including a first switch having a first transistor turned on upon the receipt of said horizontal sync signal from said sensing portion, and a second switch having a second transistor turned on upon the receipt of said vertical sync signal, said first and second switches having a common output;
an output portion including a third transistor for turning on a light-emitting portion of a photo-coupler when said operation-controlling circuit portion is turned on; and
an output operating portion connected to a gate of a triac and being interlinked to said light-emitting portion of said photo-coupler for allowing a light-receiving portion of said photo-coupler to selectively turn on and off an AC input at one end of a primary circuit of one of a monitor and peripheral equipment;
whereby said high energy-saving circuit controls the power of said primary circuit of said one of said monitor and said peripheral equipment;
wherein a data channel power voltage from a hard disc of said computer is directly supplied to a collector of said third transistor for turning on said light-emitting portion of said photo-coupler.

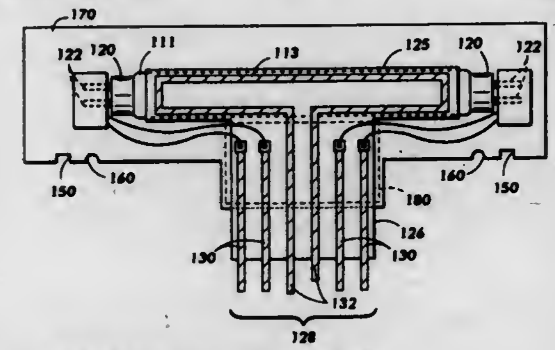
5,616,989
FLUORESCENT LAMP SYSTEM INCLUDING AN INTEGRATED HEATER/POWER HARNESS

Joseph P. Taillie, Pittsford; Richard A. Beck; Robert W. Raus, Sr., both of Fairport; Douglas E. Proctor, Rochester, and Jack K. Fullerton, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 28, 1995, Ser. No. 580,215

Int. Cl.[6] H01J *61/52*

U.S. Cl. 315—32 17 Claims



1. A lamp harness assembly, comprising:
a heating element; and
an electrically insulating substrate;
said electrically insulating substrate having formed thereon said heating element and heating element power traces;
said electrically insulating substrate including,
a lamp portion having said heating element formed thereon, and
a tail portion having said heating element power traces formed thereon;
said tail portion extending away from said lamp portion to provide an electrical connection to a power source.

5,616,990
BALLAST SCHEME FOR A FLUORESCENT LAMP WITH PREHEATED FILAMENTS

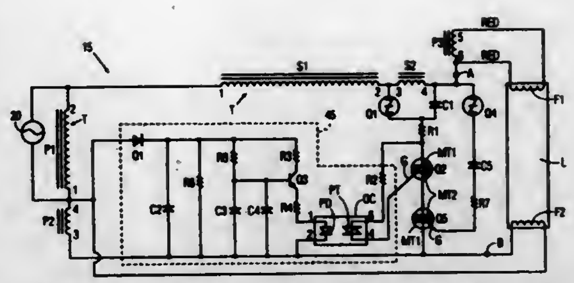
Glenn D. Garbowicz, Rosemont; Patrick E. Troy, Chicago, and Janis L. Wetterich, Newark, all of Ill., assignors to Philips Electronics North America Corporation, New York, N.Y.

Filed Aug. 23, 1995, Ser. No. 518,405

Int. Cl.[6] H05B *37/00*

U.S. Cl. 315—103 14 Claims

1. A ballast which when connected to a power source is operable for powering a lamp having filaments, comprising:
a pair of output terminals;
means for providing energy for heating the lamp filaments;
an ignitor which includes a first bilateral switching device for enabling the ignitor and a second bilateral switching device coupled to the first bilateral switching device for deactivating the ignitor based on a voltage across the output terminals; and
a control circuit including a timer and an optocoupler coupled to the ignitor, the optocoupler being responsive to the timer for



turning on the ignitor whenever the timer has timed out, wherein the timer times out only after the filaments have been heated for a prefixed period of time and the first bilateral switching device enables the ignitor in response to the conductive state of the optocoupler.

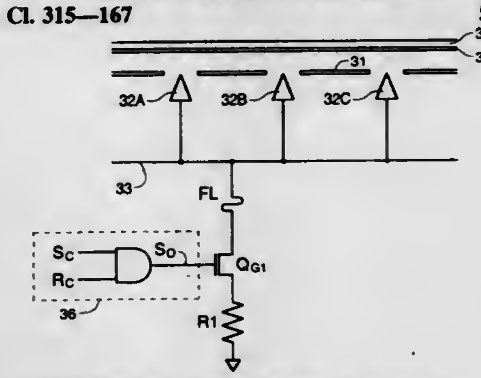
5,616,991
FLAT PANEL DISPLAY IN WHICH LOW-VOLTAGE ROW AND COLUMN ADDRESS SIGNALS CONTROL A MUCH HIGHER PIXEL ACTIVATION VOLTAGE

Stephen L. Casper; Glen E. Hush, and Thomas W. Voshell, all of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation of Ser. No. 209,579, Mar. 11, 1994, abandoned, which is a continuation-in-part of Ser. No. 11,927, Feb. 1, 1993, Pat. No. 5,357,172, which is a continuation-in-part of Ser. No. 864,702, Apr. 7, 1992, Pat. No. 5,210,472, which is a continuation-in-part of Ser. No. 458,853, Jun. 2, 1995, abandoned, which is a continuation of Ser. No. 138,535, Oct. 15, 1993, abandoned, which is a continuation-in-part of Ser. No. 77,181, Jun. 15, 1993, Pat. No. 5,410,218, which is a continuation-in-part of Ser. No. 11,927, Feb. 1, 1993, Pat. No. 5,357,172, which is a continuation-in-part of Ser. No. 864,702, Apr. 19, 1992, Pat. No. 5,210,472, which is a continuation-in-part of Ser. No. 311,971, Sep. 26, 1994, abandoned, which is a continuation of Ser. No. 60,111, May 11, 1993, abandoned, which is a continuation-in-part of Ser. No. 305,107, Sep. 13, 1994, abandoned, which is a continuation of Ser. No. 102,598, Aug. 5, 1993, abandoned, which is a continuation-in-part of Ser. No. 60,111, May 11, 1993, abandoned. This application Sep. 19, 1995, Ser. No. 530,562

Int. Cl.[6] H05B *33/12;41/36;41/392*

U.S. Cl. 315—167 5 Claims



1. An improved field emission display comprising:
multiple row address lines;
multiple column address lines;
said row address lines intersecting said column address lines, with the intersection of a single row address line with a single line being associated with a single pixel within said display;
a grid which is common to the entire display, and which is held at a first potential;
a plurality of pixels, wherein each pixel includes
a group of field emission cathodes, wherein connecting the cathodes to a potential sufficiently low relative to said first potential will induce field emission;
a logical AND gate circuit having an output and first and second inputs for receiving first and second input signals, respectively, one of said inputs being coupled to that pixel's

respective row address line, and the other input being coupled to that pixel's column address line, wherein the logical AND gate circuit produces at its output a signal which is a logical AND of the first and second input signals;

a first transistor having gate, drain, and source terminals, the gate being connected to the output of the gate circuit, and the drain being connected to the field emission cathodes in said group; and

a resistance connected between a second potential and the source terminal of the first transistor, the second potential being less than said potential sufficient to induce field emission;

wherein said logical AND gate circuit comprises a high logic voltage coupled to the gate of said first transistor through a pair of series-coupled field effect control transistors, one of which is gated by the column address signal line associated with that particular pixel, and the other of which is gated by the row address signal line associated with that particular pixel.

5,616,992

ELECTRONIC STARTER CIRCUIT FOR FLUORESCENT LAMP

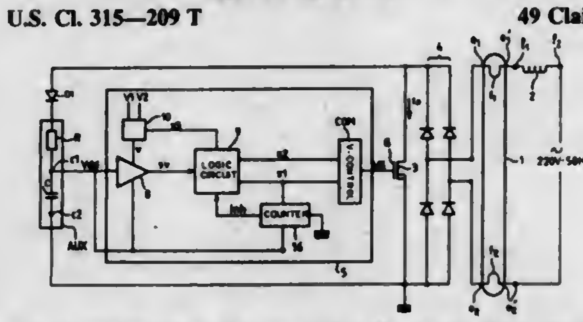
Marco Bildgen, Provence, France, assignor to SGS-Thomson Microelectronics S.A., Saint Genis Poullly, France

Filed Oct. 30, 1995, Ser. No. 551,226

Claims priority, application France, Oct. 28, 1994, 94 13009

Int. Cl.[6] H05B *37/02*

U.S. Cl. 315—209 T **49 Claims**



1. A starting circuit for use with a fluorescent lamp which is connected through an inductor to AC power, comprising:

a power supply capacitor, operatively connected to be charged through an isolation diode by rectified DC outputs taken from terminals of the lamp, and to provide a logic supply voltage output;

a hysteretic comparator powered from said logic supply voltage output, and operatively connected to turn on an electronically controlled solid-state switch which is operatively connected to short first and second lamp terminals together, only while said logic supply voltage output is within a defined range of voltages.

5,616,993

METHOD AND APPARATUS FOR SWITCHING A MOTOR BETWEEN BIPOLAR AND UNIPOLAR MODE

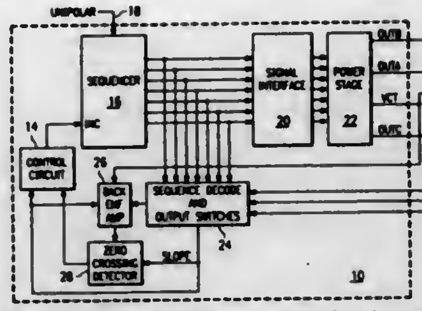
Li-Hsin D. Lu, San Jose, and Karl M. Schlager, Campbell, both of Calif., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Oct. 27, 1994, Ser. No. 331,370

Int. Cl.[6] H02P *6/00*

U.S. Cl. 318—254 **13 Claims**

1. A method of switching a motor between a bipolar mode and a unipolar mode, wherein the motor comprises a center tap and a plurality of coils and wherein, during each phase of said bipolar mode, one of said coils comprises a floating coil having a back emf, the method comprising the steps of:



first receiving a mode change signal requesting a change between the bipolar mode and the unipolar mode;

second, monitoring said back emf across said floating coils;

third, detecting a point in time when said back emf equals said center tap voltage; and

fourth, switching between the bipolar mode and the unipolar mode at a point in time after said point in time but before a second point in time where said back emf equals said center tap voltage.

5,616,994

DRIVE CIRCUIT FOR BRUSHLESS MOTOR

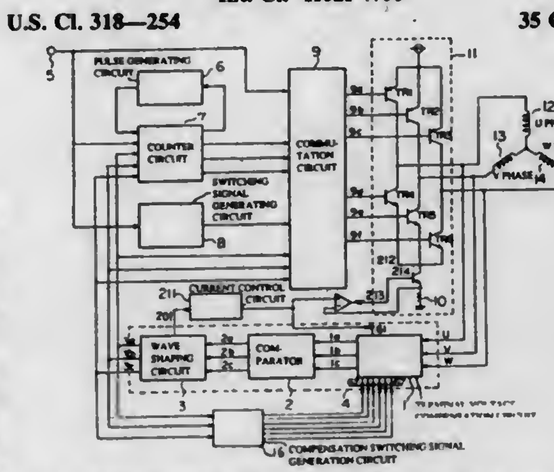
Hidetada Nagaoka; Atsuo Onoda; Yukio Izumi; Keiichi Nishikawa; Yuuji Oomura, all of Kanagawa; Mitinaga Suzuki, and Kiyotaka Hoshi, both of Fukushima, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 6, 1995, Ser. No. 370,575

Claims priority, application Japan, Jan. 12, 1994, 6-001637; Sep. 6, 1994, 6-212656

Int. Cl.[6] H02P *7/00*

U.S. Cl. 318—254 **35 Claims**



1. A brushless motor driving circuit for driving a plurality of armature windings of a brushless motor, comprising:

a plurality of the terminal voltage detectors, each being coupled to a respective one of the plurality of armature windings so that the plurality of terminal voltage detectors provide a plurality of terminal voltages corresponding to the plurality of armature windings;

a terminal voltage compensation circuit having a plurality of inputs, each of the plurality of inputs receiving a respective one of the plurality of terminal voltages, the terminal voltage compensation circuit modifying at least one of the plurality of terminal voltages by a compensation value to generate a plurality of compensated terminal voltages, said compensation value being determined by a winding current of the brushless motor; and

a comparator having inputs that receive the plurality of compensated terminal voltages, the comparator comparing the plurality of compensated voltages with one another to generate a rotor location signal;

said armature windings being driven by said rotor location signal generated by said comparator.

5,616,995

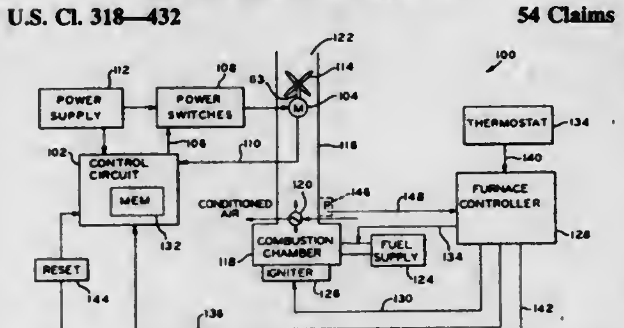
SYSTEMS AND METHODS FOR CONTROLLING A DRAFT INDUCER FOR A FURNACE

Robert K. Hollenbeck, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Continuation-in-part of Ser. No. 25,371, Feb. 26, 1993, Pat. No. 5,418,438, Ser. No. 299,528, Sep. 1, 1994, Pat. No. 5,557,182, Ser. No. 352,393, Dec. 8, 1994, and Ser. No. 397,686, Mar. 1, 1995, abandoned, which is a continuation-in-part of Ser. No. 25,371, Ser. No. 299,528, and Ser. No. 352,393, said Ser. No. 299,528is a continuation-in-part of Ser. No. 25,371, said Ser. No. 352,393is a continuation of Ser. No. 23,790, Feb. 22, 1993, abandoned. This application Mar. 9, 1995, Ser. No. 402,998

Int. Cl.[6] F23L *17/00;* H02P *7/00*

U.S. Cl. 318—432 **54 Claims**



1. A draft inducer apparatus for use with a furnace that includes a combustion chamber producing combustion gases and an exhaust outlet for venting exhaust combustion gases from the furnace and that also includes at least one heat exchanger for extracting heat from exhaust combustion chamber gases and transferring heat to conditioned air, and for use with a fan for moving the combustion chamber gases through the exhaust outlet for inducing a draft in the combustion chamber that causes a pressure drop across the heat exchanger, said furnace being operable in at least two operating states wherein the density of the combustion chamber gases flowing across the heat exchanger and the fan differs from a first operating state to a second operating state, said apparatus comprising:

a motor including a shaft for driving the fan in response to a motor control signal so that different motor speeds result as a function of the density of the combustion chamber gases flowing across the fan;

a speed circuit providing a speed signal representative of the motor speed;

a circuit for defining first and second sets of speed/torque curves corresponding to a desired pressure across the heat exchanger; and

a control circuit responsive to the speed signal for generating the motor control signal as a function of the first set of speed/torque curves until the speed signal indicates that the motor speed has reached a predetermined speed and for generating the motor control signal as a function of the second set of speed/torque curves after the speed signal indicates that the motor speed has reached the predetermined speed whereby the motor will operate in accordance with one or more of the first speed/torque curves when the furnace is in the first operating state and in accordance with one or more of the second speed/torque curves when the furnace is in the second operating state.

5,616,996

MODEL REFERENCE FOLLOWING COMMUTATION CIRCUIT AND ADJUSTING METHOD THEREOF

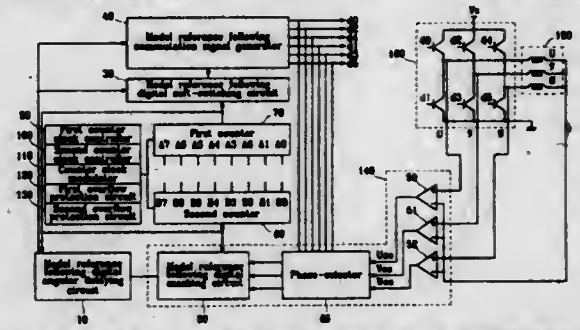
Shi-Ming Tang, and Sang-Yong Lee, both of Puchon-shi, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed May 22, 1996, Ser. No. 651,491

Claims priority, application Rep. of Korea, Aug. 28, 1995, 95-26171

Int. Cl.[6] H02P *7/00*

U.S. Cl. 318—439 **49 Claims**



1. A circuit for controlling commutation in an electric motor, comprising:

first and second counters which count time elapsed during intervals between zero crossings of back-emf detected during rotation of said electric motor, said first counter acting as a model reference counter and said second counter acting as a model following counter during odd ones of said intervals, said second counter acting as said model reference counter and said first counter acting as said model following counter during even ones of said intervals;

first and second detectors which detect center points of said odd and even intervals, respectively, when said model following counter counts up to half of a result stored in said model reference counter, said first and second detectors respectively outputting first and second delaying signals when said center points have been detected;

a commutation timing generator which receives said first and second delaying signals, and which generates and outputs a commutation timing signal based thereon; and

a commutation signal generator which receives said timing signal from said commutation timing generator and generates a commutation sequence to control commutation in said electric motor according to said commutation timing signal.

5,616,997

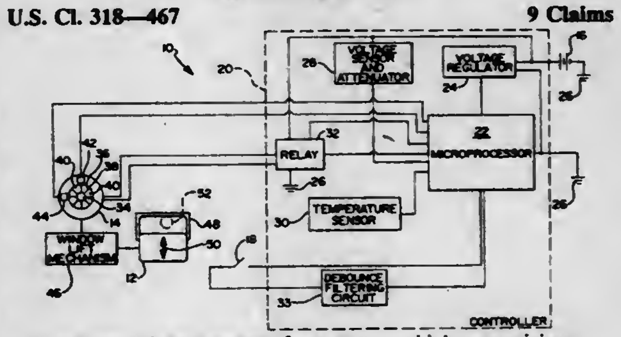
AUTO UP WINDOW WITH OBSTACLE DETECTION SYSTEM

James A. Jackson, Dayton, and Roy A. McCann, Kettering, both of Ohio, assignors to ITT Automotive Electrical Systems, Inc., Auburn Hills, Mich.

Filed Oct. 10, 1995, Ser. No. 540,696

Int. Cl.[6] H02P *3/00*

U.S. Cl. 318—467 **9 Claims**



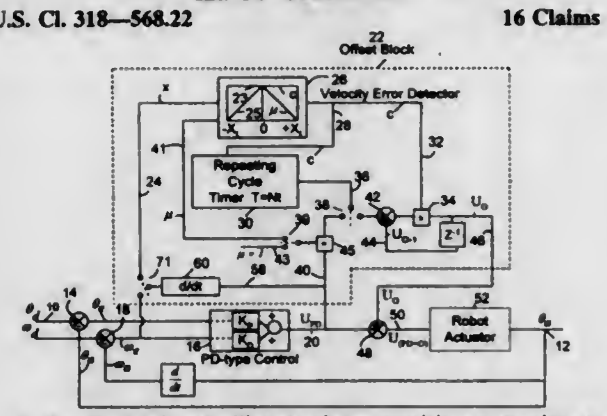
1. A power closure system for a motor vehicle comprising:

a closure;

a closure frame defining a seated position of the closure;

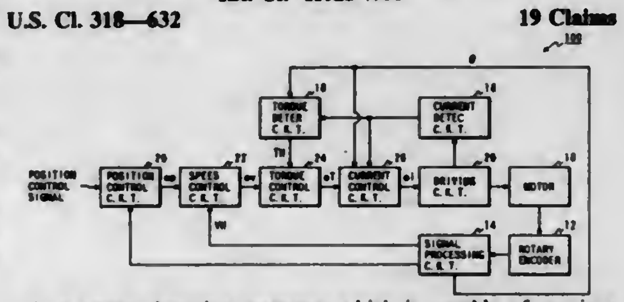
a control switch;
an electrical power source including a battery;
an electric motor with an output shaft drivingly connected to the closure and selectively electrically connected to the power source;
a first displacement sensor operably generating a signal indicative of one of closure movement and output shaft rotation;
a second displacement sensor operably generating a signal indicative of one of closure movement and output shaft rotation;
means for sensing a temperature;
means for sensing a voltage of the power source; and
a microprocessor electrically connected to the control switch, the electric motor, the first and second displacement sensors, the means for sensing a temperature and the means for sensing a voltage of the power source, and including
means for electrically connecting the motor with the power source responsive to a condition of the control switch;
means for converting signals from the displacement sensors into a predetermined number of closure positions;
means for converting temperature sensed to an electrical signal indicative of the temperature at one of the closure positions;
means for converting voltage sensed to an electrical signal of power source voltage at the one of the closure positions;
means for calculating a velocity of one of the closure and the motor as the closure approaches the one of the closure positions;
means for calculating a compensated velocity for the one of the closure positions using the calculated velocity and the voltage signal and the temperature signal; and
means for comparing the compensated velocity with a reference velocity for the one of the closure positions and electing to reverse the motor when the compensated velocity is less than the reference velocity.

5,616,998
PROPORTIONAL DERIVITIVE CONTROL SYSTEM WITH LOW SPEED OFFSET COMPENSATION
Nariman Sepehri, Winnipeg; Todd A. Corbet, Nanaimo, and Peter D. Lawrence, Vancouver, all of Canada, assignors to The University of British Columbia, Vancouver, and The University of Manitoba, Winnipeg, both of Canada
Filed Sep. 5, 1995, Ser. No. 524,388
Int. Cl.^{6} G05B *13/02*
U.S. Cl. 318—568.22 **16 Claims**



1. A method of controlling a robot comprising generating an error signal X related to a velocity error signal ω_e, generating robot control signal U_{PD} based in part on said velocity error signal ω_e, activating an offset signal system when said error signal X is less than a preselected maximum X_L, said offset signal system actuating a repeating cycle timer and enabling a bypass means, said timer enabling an updating means at the end of each time cycle T defined by the repeating cycle timer to deliver said robot control signal U_{PD} to a first adder when said updating means is enabled, said first adder outputting an offset signal U_O which when said bypass means is enabled delivers said offset signal U_O to a second adder and to a storer which stores the then current offset signal U_O for one time cycle T of said repeating cycle timer and delivers said stored offset signal U_O to said first adder as the previous offset signal U_{O-1} where it is added to the then current said control signal U_{PD} at the next time cycle to define the next offset signal U_O as the summation of the then current U_{PD} signal and the previous offset signal U_{O-1}, delivering the then current offset signal U_O to a second adder and adding said then current offset signal U_O to said then current control signal U_{PD} to provide and output control signal U_{PD+O} and controlling said robot in accordance with said output signal U_{PD+O}.

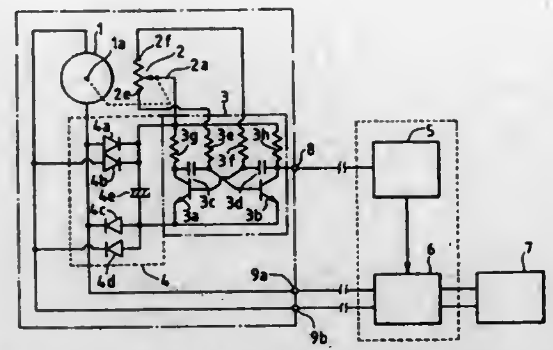
5,616,999
TORQUE DETECTING APPARATUS FOR REDUCING TORQUE RIPPLE IN AN AC MOTOR
Masafumi Matsumara, Kariya, and Sigeyuki Itou, Nagoya, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Filed Feb. 10, 1995, Ser. No. 386,498
Claims priority, application Japan, Feb. 10, 1994, 6-016635
Int. Cl.^{6} H02P *7/00*
U.S. Cl. 318—632 **19 Claims**



1. A torque detecting apparatus which is capable of use in a motor torque control circuit for controlling torque of a motor based on a difference between a target motor torque and a measured motor torque during rotation of said motor, comprising:
current detecting means for detecting phase currents flowing through all phase windings of said motor;
angular position detecting means for detecting an angular position of said motor; and torque correcting means for determining said measured motor torque during rotation of said motor and correcting said measured motor torque in accordance with a predetermined relationship between said phase currents detected by said current detecting means so as to reduce ripples in said measured motor torque, said torque correcting means including:
first means for selecting one of said phase currents having a maximum current value as detected by said current detecting means during rotation of said motor, and
second means for correcting said selected phase current using a correction value which is based on said angular position of said motor detected by said angular position detecting means and which corresponds to one of said phase windings through flows said selected phase current, said corrected selected phase current being used to correct said measured motor torque according to said predetermined relationship.

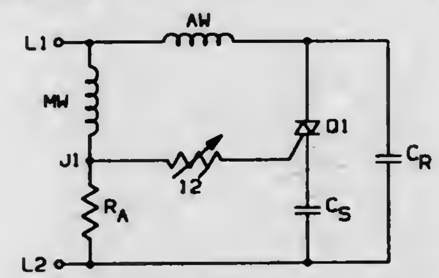
5,617,000
APPARATUS FOR DETECTING AND CONTROLLING THE ROTATIONAL POSITION OF A MOTOR SHAFT
Ken Mizuta, Miyagi-ken; Toshihiko Kawata, Sendai; Ken Shibazaki, and Yukio Miura, both of Furukawa, all of Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan
Filed Apr. 13, 1995, Ser. No. 421,717
Int. Cl.^{6} B60N *2/06*
U.S. Cl. 318—663 **9 Claims**

1. An apparatus for detecting a rotational position of a motor shaft, the motor shaft being driven to rotate by a motor in response to a drive signal, the apparatus comprising:



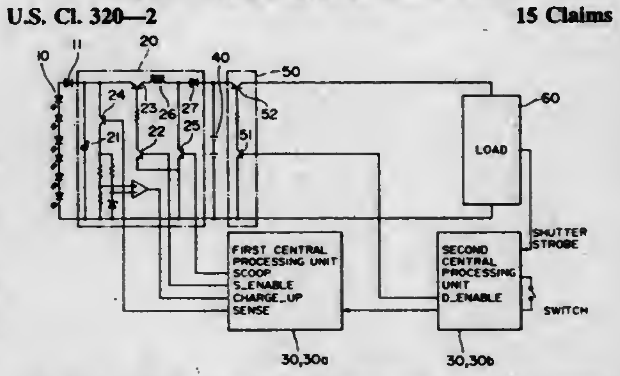
a potentiometer having a rotor mechanically linked to the motor shaft for generating a position signal having a voltage level determined by an absolute rotational position of the motor shaft; and
an astable multivibrator connected to the potentiometer for generating a pulse signal, the pulse signal including at least one pulse having a duty ratio determined by the voltage level of the position signal.

5,617,001
A.C. MOTOR STARTING CONTROL CIRCUIT UTILIZING TRIGGERABLE SEMICONDUCTOR SWITCHING DEVICE
Stanley J. Nacewicz, Plainville, and Stephen P. Geishecker, East Walpole, both of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Feb. 13, 1995, Ser. No. 387,998
Int. Cl.^{6} H02D *1/00*
U.S. Cl. 318—788 **8 Claims**



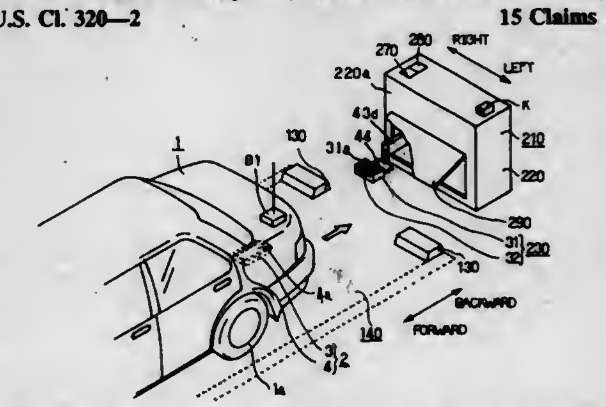
1. A system for controlling the operation of an induction motor having a main winding and an auxiliary winding comprising:
a triggerable semiconductor current switching device having main terminals and a gate terminal, the switching device being connectable in series with the auxiliary winding across an AC power source, conduction between the main terminals being initiated by applying a triggering current above a threshold level to the gate terminal and being terminated when the triggering current is reduced below a predetermined triggering level,
resistor means having a first terminal for connection with the main winding and forming a voltage divider junction and a second terminal for connection to line voltage so that the resistor means and the main winding are connected in series across the AC power source, and
a PTC thermistor having a low resistance state and a high resistance state above an anomaly point connected to the gate terminal and to the voltage divider junction, the resistance level of the low resistance state selected so that the voltage drop at the gate terminal under starting and overload conditions is sufficient to cause triggering current until the PTC thermistor goes into its high resistance state but during normal running conditions the voltage at the gate is below the predetermined triggering level and will terminate the triggering current.

5,617,002
METHOD OF AND APPARATUS FOR CHARGING NONAQUEOUS ELECTROLYTIC BATTERY
Yoshiaki Sakamoto, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Nov. 1, 1994, Ser. No. 333,317
Claims priority, application Japan, Nov. 2, 1993, 5-274595
Int. Cl.^{6} H01M *10/44;10/46;10/32;4/50*
U.S. Cl. 320—2 **15 Claims**



13. An apparatus for charging a nonaqueous electrolytic battery connected to a camera which consumes electricity at every photographing, comprising:
a solar battery for converting light energy into electric energy;
a condenser for storing the electric energy obtained by said solar battery;
electric power transmitting means for transmitting the electric energy stored in said condenser to said nonaqueous electrolytic battery; and
control means detecting a quantity of the electric energy stored in said condenser to activate said electric power transmitting means every time said quantity reaches a predetermined level, and then stopping said electric power transmitting means, whereby charging said nonaqueous electrolytic battery intermittently.

5,617,003
METHOD AND APPARATUS FOR CHARGING A BATTERY OF AN ELECTRIC VEHICLE
Yasuharu Odachi, and Norimoto Minoshima, both of Aichi-ken, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan
Filed Mar. 22, 1996, Ser. No. 621,024
Claims priority, application Japan, Mar. 24, 1995, 7-066470; Jun. 28, 1995, 7-162522
Int. Cl.^{6} H02J *7/00;* **H01M** *10/44;10/46*
U.S. Cl. 320—2 **15 Claims**

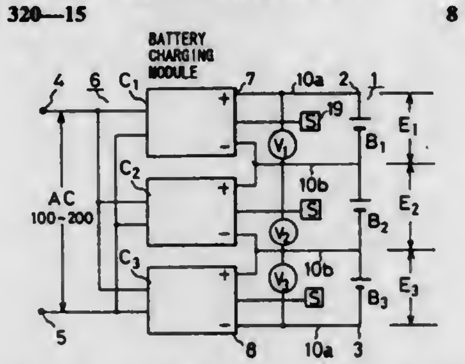


1. Method of charging a battery of an electric vehicle by coupling a primary inductive device having a core and a primary coil with a secondary inductive device having a core and a secondary coil and carried by the electric vehicle, said primary inductive device being movable for positioning thereof relative to said secondary inductive device, said method comprising:

supplying an electric power to one of said primary and secondary coils;
moving said primary inductive device relative to said secondary inductive device so that a variable electromotive force is induced in the other of said primary and secondary coils;
monitoring a change of electric power in one of said primary and secondary coils; and
stopping said primary inductive device at a position where said primary inductive device is located substantially closest to said secondary inductive device on the basis of information of said change of electric power.

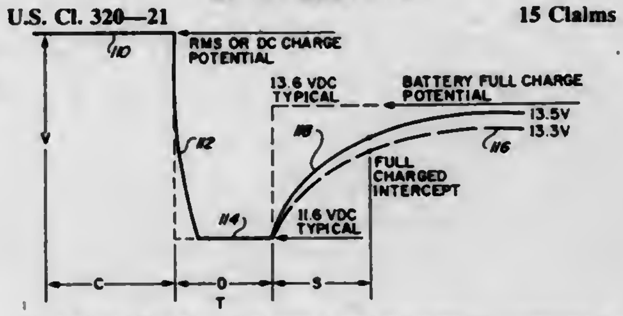
3. Apparatus for charging a battery for an electric vehicle by coupling a primary inductive device having a core and a primary coil with a secondary inductive device having a core and a secondary coil and carried by the electric vehicle and then flowing a charging current in said primary coil thereby to induce an electromotive force in said secondary coil, said apparatus comprising:
means for supplying electric power to one of said primary and secondary coils;
means for moving said primary inductive device relative to said secondary inductive device so that a variable electromotive force is induced in the other of said primary and secondary coils;
means for monitoring a change of electric power in one of said primary and secondary coils; and
means for controlling said moving means on the basis of information of said change of electric power so that said primary inductive device is stopped at a position where said primary inductive device is located substantially closest to said secondary inductive device.

5,617,004
BATTERY CHARGING APPARATUS FOR SERIES BATTERY
Akira Kaneko, Shirakawa, Japan, assignor to Integran, Inc., Tokyo, Japan
Filed Jul. 14, 1995, Ser. No. 502,085
Claims priority, application Japan, Jul. 18, 1994, 6-187851
Int. Cl.⁶ H01M *10/46*
U.S. Cl. 320—15 **8 Claims**



1. A battery charging apparatus for a column of batteries connected in series, comprising:
battery charging modules connected in series with the column of batteries and forming a column of battery charging modules, the number of said modules being the same as the number of batteries which form the column of batteries, adjacent series-connected battery charging modules being connected to one another via respective output terminals of different polarity, the terminals of different polarity joining at a respective junction point, the column of battery charging modules having two column output terminals,
said column output terminals of said column of battery charging modules being respectively connected with a beginning and an ending terminal of the column of batteries,
wherein the respective junction point between adjacent series-connected battery charging modules is connected to a junction between adjacent series-connected batteries, such that each battery has a corresponding respective battery charging module, and
wherein each of said battery charging modules further includes:
a detector for detecting a charged state of a corresponding battery,
a control unit for outputting a control signal which varies based upon the charged state of the corresponding battery detected by said detector, and
a charging voltage supply unit connected to said control unit for charging the corresponding battery, each battery charging module supplying a continuously variable charging voltage from its charging voltage supply unit to the corresponding battery in accordance with the control signal.

5,617,005
METHOD AND APPARATUS FOR CHARGING LEAD ACID BATTERIES
Fon R. Brown, Jr., 1557 E. Grandview, Mesa, Ariz. 85203, and Robert C. Nelson, 1360 E. Brown Rd. #35, Mesa, Ariz. 85203-9931
Filed Aug. 4, 1994, Ser. No. 285,831
Int. Cl.⁶ H01M *10/44*
U.S. Cl. 320—21 **15 Claims**

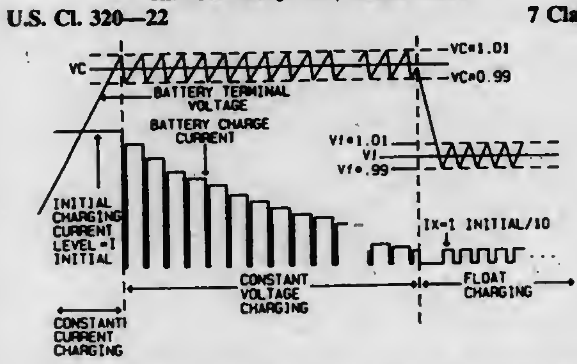


1. A method for pulse charging a lead acid battery comprising in combination the steps of:
1) providing dc voltage for charging the battery;
2) pulsing the dc voltage for a predetermined period of time to charge the battery;
3) discharging the battery after a charging pulse;
4) sensing the voltage across the battery after discharging the battery by taking two samples of the battery voltage after discharging the battery;
5) comparing the sensed voltage to a predetermined value to determine the charge state of the battery; and
6) repeating steps 1 through 5 until the sensed voltage indicates that the desired charge state of the battery has been reached.

5,617,006
RECHARGE PROFILE FOR SPACECRAFT NI/H$_2$ BATTERIES
Stephen J. Lenhart, Mountain View; John C. Hall, Saratoga, and Anthony Z. Applewhite, Atherton, all of Calif., assignors to Space Systems/Loral, Inc., Palo Alto, Calif.
Filed Apr. 24, 1996, Ser. No. 637,171
Int. Cl.⁶ H01M *12/06;* **H02J** *7/00*
U.S. Cl. 320—21 **20 Claims**

13. A method of charging a rechargeable nickel-hydrogen battery comprising the step of:
(a) reaching a substantially full state of charge in a battery at a temperature T_1 between approximately −10° C. and −30° C. which is lower than a temperature T_2, in the range of approximately −10° C. to +5° C., at which discharge begins;
(b) discharging the battery from the full state of charge thereof; and
(c) after a substantially full state of charge for the battery has been achieved in step (a) and approximately 10 to 60 minutes before the onset of step (b), applying to the battery a boost charging current at a rate in the range of approximately C to C/20 for a duration of approximately 10 to 60 minutes.

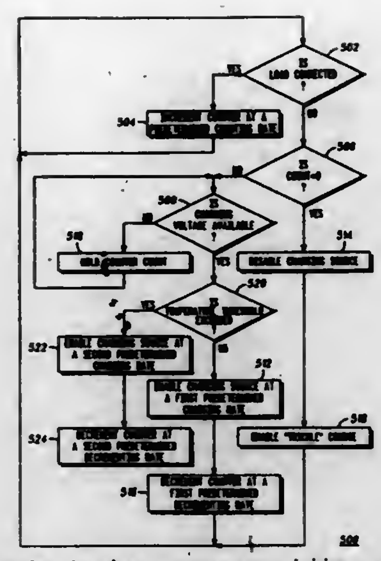
5,617,007
BATTERY CHARGING METHOD AND APPARATUS USING CURRENT CONTROL
Steven D. Keidl; Jeffrey S. Rotter, and Steven W. Steele, all of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Aug. 17, 1994, Ser. No. 291,990
Int. Cl.⁶ H02J *7/00;* **H01M** *10/44*
U.S. Cl. 320—22 **7 Claims**



1. A method for charging a battery using current control with a switching power supply charging circuit coupled to the battery comprising the steps of:
applying a predetermined charging current to the battery during a first charging phase;
applying a sequence of charging current pulses to the battery during a second charging phase; and responsive to a battery charging current equal to said predefined minimum amplitude threshold value for continuing with a third charging phase; and
applying predetermined charging current pulses to the battery during said third charging phase, said predetermined charging current pulses having a selected amplitude value substantially less than an amplitude value of said predetermined charging current applied during said first charging phase.

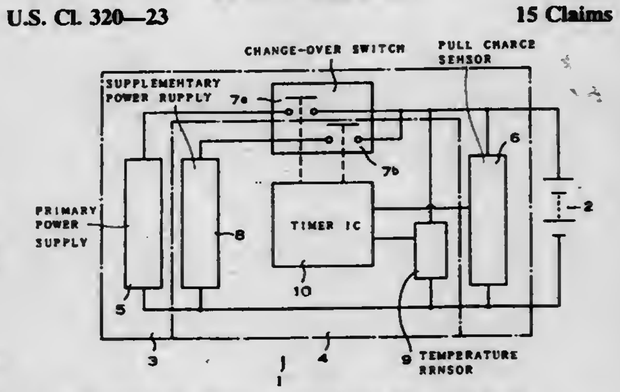
5,617,008
METHOD, APPARATUS, AND COMMUNICATION DEVICE FOR CHARGING A CHARGE STORAGE DEVICE WHICH IS MOMENTARILY CONNECTED TO A FIXED LOAD
Bruce C. Eastmond, Downers Grove, and Rachid M. Alameh, Schaumburg, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Jun. 20, 1995, Ser. No. 492,552
Int. Cl.⁶ H01M *10/46*
U.S. Cl. 320—22 **12 Claims**

9. An apparatus for charging a charge storage device which is momentarily connected to a fixed load, the apparatus comprises:
a charging voltage source for providing a voltage signal;
a charge controller, powered by the voltage signal, for monitoring when the fixed load is connected to the charge storage device, and determining a direction and rate of a count;
a clock, operably coupled to the charge controller, for receiving the rate of the count and providing a clock signal;
a counter, operably coupled to the clock and the charge controller, for counting the cycles of the clock signal in the direction determined by the charge controller, wherein the counter increments a count based on a discharge time, the discharge time occurring at a first predetermined rate when the charge storage device is connected to the fixed load; and
a charging current source, operably coupled to the charge controller and charging voltage source, for charging the charge storage device when the direction of count is decreasing,



wherein the charging current source initiates a charge at a second predetermined rate that is less than the first predetermined rate of the charge storage device for a charge time when the fixed load is disconnected, and the length of the charge time is based on the count.

5,617,009
RECHARGEABLE BATTERY CHARGING CIRCUIT WHICH SETS SUPPLEMENTAL CHARGING CAPACITY ACCORDING TO AMBIENT TEMPERATURE
Mitsunori Takao; Toshiharu Kokuga, both of Sumoto; Takanao Matsumoto, and Hiroaki Sakurai, both of Itano-gun, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan
Filed Jun. 1, 1994, Ser. No. 251,941
Claims priority, application Japan, Jun. 16, 1993, 5-144885
Int. Cl.⁶ H01M *10/46*
U.S. Cl. 320—23 **15 Claims**



1. A rechargeable battery charging circuit comprising:
a primary charging circuit means for performing primary charging of the battery; and,
a supplementary charging circuit means for performing supplementary charging of the battery at a supplemental charging capacity after completion of the primary charging;
wherein said supplementary charging circuit means includes a temperature sensing means for detecting an ambient temperature of the battery during the primary charging, and a supplementary charge capacity setting means for setting the supplementary charging capacity corresponding to the ambient temperature detected by said temperature sensing means according to a predetermined relation between the supplemental charging capacity and the ambient temperature.

5,617,010

OVERCHARGE AND OVERDISCHARGE PROTECTION FOR A CHARGEABLE ELECTRIC CELL OPERABLE WITH A REDUCED CURRENT CONSUMPTION

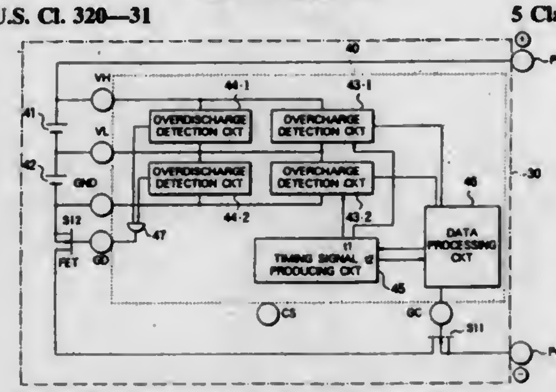
Yasuhisa Higashijima, and Masaru Takeuchi, both of Atsugi, Japan, assignors to Mitsumi Electric Co., Ltd., Tokyo, Japan

Filed Jun. 27, 1995, Ser. No. 495,721

Claims priority, application Japan, Jul. 6, 1994, 6-154573

Int. Cl.[6] H02J *7/06*

U.S. Cl. 320—31 **5 Claims**



1. A protection circuit for an electric cell, comprising:

an overcharge detection circuit coupled to a chargeable electric cell, said overcharge detection circuit detecting an overcharged condition of said chargeable electric cell and outputting an overcharge detection signal responsive thereto;

an overdischarge detection circuit coupled to said chargeable electric cell, said overdischarge detection circuit detecting an overdischarged condition of said chargeable electric cell and outputting an overdischarge detection signal responsive thereto;

a switch inserted in a power supply line of said chargeable electric cell, said switch being activated responsive to the output of said overcharge and overdischarge detection signals to thereby respectively inhibit one of a charging operation and a discharging operation of said chargeable electric cell;

a timing signal supplying means, coupled to at least said overcharge detection circuit, for supplying a first timing signal having a first operation timing duration t1, said timing signal supplying means cyclically supplying said first timing signal at a time interval tO, wherein t1<<t0; and

a processing circuit for processing an output signal of said overcharge detection circuit activated by said first timing signal to judge a presence or an absence of an overcharged condition, said processing circuit activating said switch upon judgment of the presence of said overcharged condition.

5,617,011

METHOD AND SYSTEM FOR LIMITING GENERATOR FIELD VOLTAGE IN THE EVENT OF REGULATOR FAILURE IN AN AUTOMOTIVE VEHICLE

Kathleen M. Hammer, West Bloomfield, and David P. Kaminski, Warren, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jun. 6, 1995, Ser. No. 466,172

Int. Cl.[6] H02J *7/14*

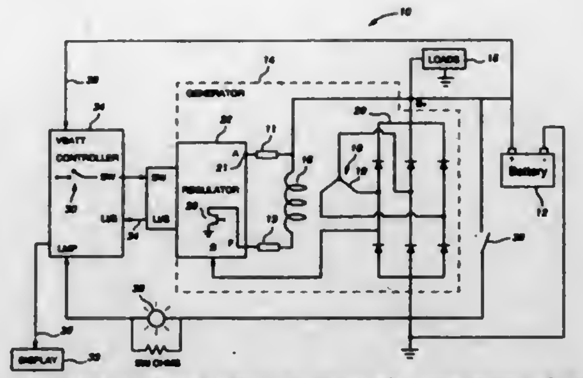
U.S. Cl. 322—28 **7 Claims**

1. For use with a power supply system of an automotive vehicle including a battery, a generator, and a regulator, the generator for providing a nominal voltage for electronic components of the vehicle, and the regulator for controlling the voltage provided by the generator a method for limiting the voltage provided by the generator in the event of a failure of the regulator, the method comprising:

sensing the voltage provided by the generator and generating a corresponding voltage signal;

determining whether the voltage signal exceeds a predetermined voltage threshold; and

if the voltage signal exceeds the predetermined voltage threshold, generating an alternative nominal voltage provided by the



generator so as to protect the electronic components of the vehicle from over-voltage damage.

5,617,012

POWER CONVERTER PROTECTING APPARATUS FOR ELECTRIC POWER SYSTEM

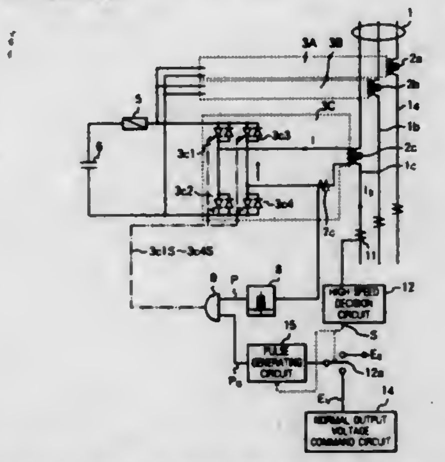
Shotaro Murakami, Tokyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 26, 1996, Ser. No. 592,463

Claims priority, application Japan, Jun. 27, 1995, 7-161153

Int. Cl.[6] H02H *7/125*

U.S. Cl. 323—207 **10 Claims**



1. A power converter protecting apparatus for an electric power system, comprising:

a plurality of series transformers, each transformer being connected in series to a respective phase power line of the electric power system;

a plurality of power converters, each power converter being connected in a secondary winding of a respective one of said plurality of series transformers;

first current detecting means for detecting system currents flowing through the phase power lines;

second current detecting means for detecting converter currents flowing to said power converters from the secondary windings of said plurality of series transformers;

fault decision means for outputting a fault decision signal upon decision of occurrence of a system fault in said electric power system on the basis of the system currents;

output voltage command means for issuing an output voltage zero command responsive to said fault decision signal; and

control signal output means for supplying control signals to said power converters for setting to zero the outputs of said power converters in response to said output voltage zero command at a time point when the converter current as detected during occurrence of said system fault decreases below an allowable breaking current of said power converters.

5,617,013

POWER SUPPLY WITH POWER FACTOR CORRECTION AND PROTECTION AGAINST FAILURES OF THE POWER FACTOR CORRECTION

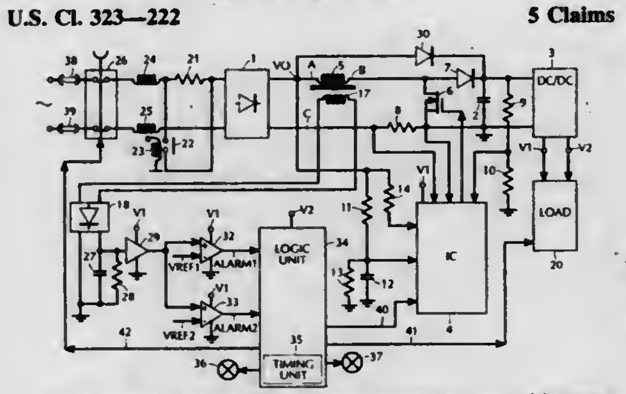
Daniele Cozzi, Nerviano-Milan, Italy, assignor to Bull HN Information Systems Italia S.p.A., Turin, Italy

Filed Mar. 23, 1995, Ser. No. 409,187

Claims priority, application European Pat. Off., Jun. 13, 1994, 94830289

Int. Cl.[6] G05F *1/613*

U.S. Cl. 323—222 **5 Claims**



1. Power supply of the "boost" pre-regulation type with power supply factor correction comprising:

a first rectifying bridge having an input and an output feeding a tank capacitor through an inductor and a first diode series connected to said capacitor, modulation means of the current in said inductor periodically switching on a switch shorting said inductor on the output of said first bridge,

an auxiliary winding magnetically coupled to said inductor, and

a second rectifying bridge having inputs coupled to said auxiliary winding and outputs,

further comprising:

an integrating capacitor coupled to the outputs of said second bridge and shunted by a discharging resistor, and

first means coupled to said integrating capacitor for comparing the charge voltage of said integrating capacitor with a first reference voltage and asserting a first signal indicative of the missing operation of said current modulation means when said charge voltage is lower than said first reference voltage.

5,617,014

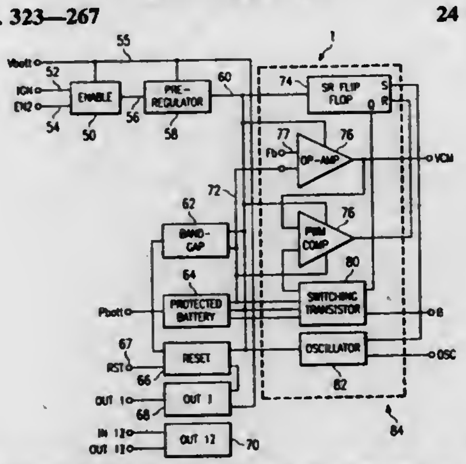
MULTIFUNCTION VOLTAGE REGULATOR

Eric J. Danstrom, Farmington Hills, Mich., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Jul. 29, 1994, Ser. No. 283,073

Int. Cl.[6] G05F *1/40*

U.S. Cl. 323—267 **24 Claims**



1. A multifunction voltage regulator implemented in an integrated circuit comprising:

an enable circuit having a plurality of inputs and having an output, for generating an enable signal on the output responsive to the inputs;

a voltage preregulator connected to the output of said enable circuit for receiving the enable signal, wherein said voltage preregulator has a battery voltage input and a Vcc voltage output for converting the battery voltage into the Vcc voltage;

a voltage bus connected to the output of the voltage preregulator for distributing said Vcc voltage; and

a plurality of current source function blocks each having an input connected to said voltage bus for receiving said Vcc voltage, wherein the function blocks convert the Vcc voltage into a plurality of different bias currents to drive respective particular functions implemented by the function blocks.

5,617,015

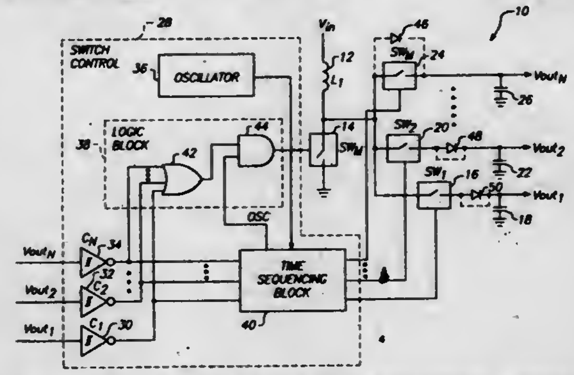
MULTIPLE OUTPUT REGULATOR WITH TIME SEQUENCING

Dimitry Goder, Sunnyvale, and Hendrik Santo, Milpitas, both of Calif., assignors to Linear Technology Corporation, Milpitas, Calif.

Filed Jun. 7, 1995, Ser. No. 477,455

Int. Cl.[6] G05F *1/56*

U.S. Cl. 323—282 **21 Claims**



1. A circuit for providing a plurality of independently regulated output voltages, said circuit comprising:

a main switch and an inductive element coupled in series with a source of electric potential;

a first auxiliary switch coupled at a first end to a node between said main switch and said inductive element, and coupled at a second end to produce a first output;

a second auxiliary switch coupled at a first end to a node between said main switch and said inductive element, and coupled at a second end to produce a second output; and

a switch control coupled to drive the ON and OFF switching of said main switch and said first and second auxiliary switches, said switch control gating the switching of said main switch only when one or more of said outputs falls below its predetermined threshold, and said switch control generating control signals for said auxiliary switches to charge one or more of said outputs in a predetermined sequence.

5,617,016

BUCK CONVERTER WITH OPERATING MODE AUTOMATICALLY DETERMINED BY THE LOAD LEVEL

Maria R. Borghi, Marcallo con Casone, and Paolo Sandri, Milan, both of Italy, assignors to SGS Microelectronics, S.r.l., Agrate Brianza, Italy

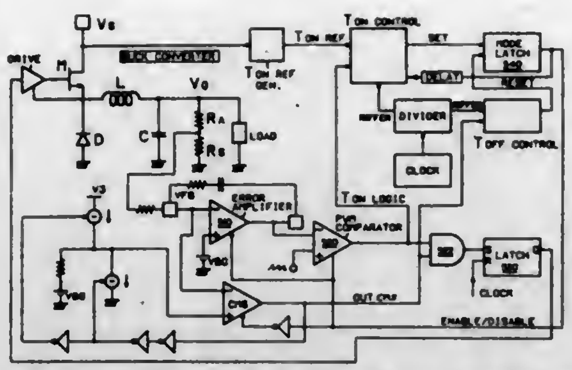
Filed Oct. 20, 1994, Ser. No. 326,504

Claims priority, application Italy, Oct. 22, 1993, VA93A0022

Int. Cl.[6] G05F *1/56*

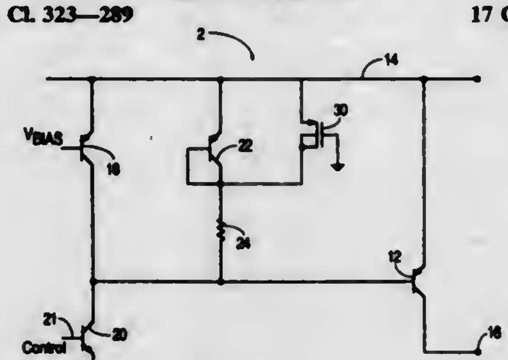
U.S. Cl. 323—284 **10 Claims**

1. A DC-to-DC converter having a power section comprising



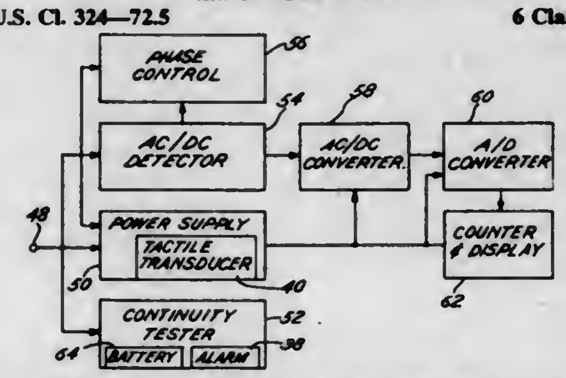
a switch having a first node and a second node and capable of switching at a frequency established by a timing signal;
an output buffer capacitor coupled between said second node and a reference potential;
a recirculation diode coupled between said second node and said reference potential;
a control and voltage stabilization section coupled between said second node and a control terminal of said switch comprising
a first control loop having an error amplifier coupled to said second node and a PWM control comparator coupled to said error amplifier for controlling the duty-cycle of said switch in function of the output voltage,
a second control loop having a threshold comparator coupled to said first control loop for controlling the turning-on and turning-off of said switch in function of the output voltage; and
means for monitoring the load level of the converter, for disabling said first control loop and enabling said second control loop when the load level of the converter drops below a preset threshold, and for enabling said first control loop and disabling said second control loop when the load level rises above a preset threshold.

5,617,017
VOLTAGE REGULATOR HAVING MOS PULL-OFF TRANSISTOR FOR A BIPOLAR PASS TRANSISTOR
James C. Moyer, San Jose, Calif., assignor to Micrel, Incorporated, San Jose, Calif.
Filed May 17, 1995, Ser. No. 442,848
Int. Cl.⁶ G05F *3/20*
U.S. Cl. 323—289 **17 Claims**



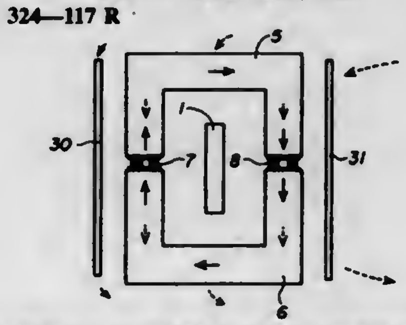
1. An output circuit comprising:
a bipolar output transistor, said output transistor having a base coupled to a base drive terminal, a first current handling terminal connected to a first voltage, and a second current handling terminal coupled to an output terminal of said output circuit for providing an output voltage and an output current;
a serial connection of a resistor and a diode connected between said base of said output transistor and said first voltage; and
an MOS transistor connected in parallel with said diode, said MOS transistor having a gate coupled to a second voltage, wherein said MOS transistor turns on when said first voltage equals a predetermined voltage to pull said base of said output transistor towards said first voltage sufficient to cause said output transistor to be in an off state.

5,617,018
DEVICE FOR MEASURING A WIDE RANGE OF VOLTAGES AND FOR DETERMINING CONTINUITY
Kent L. Earle, Woodridge, Ill., assignor to Etcon Corporation, Burr Ridge, Ill.
Division of Ser. No. 99,145, Jul. 29, 1993, Pat. No. 5,477,133. This application Sep. 18, 1995, Ser. No. 529,760
Int. Cl.⁶ G01R *31/02*
U.S. Cl. 324—72.5 **6 Claims**



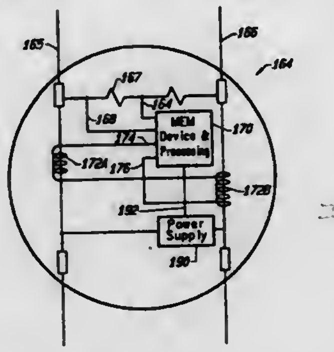
1. A device for testing electrical conductors, said conductors having placed thereon an alternating voltage with substantially repetitive phases, comprising, in combination:
a phase control for monitoring said alternating voltage and responsively providing a phase enable signal for a predetermined segment of said phases of said alternating voltage;
a voltage sensor, interconnected to said phase control, for measuring said voltage of said electrical conductors and responsively producing a voltage signal;
a display for receiving said voltage signal and responsively displaying said voltage of said electrical conductors; and
a power supply receiving said phase enable signal from said phase control and powering said display.

5,617,019
INDUCTIVE MEASURING DEVICE FOR MEASURING ALTERNATING CURRENT COMPONENTS SUPERPOSED TO A HIGH DIRECT CURRENT
Marcel Etter, Troinex, Switzerland, assignor to Liaisons Electroniques-Mecaniques LEM S.A., Plan-Les-Quates, Switzerland
Filed Feb. 21, 1996, Ser. No. 604,673
Claims priority, application Switzerland, Feb. 23, 1995, 525/95
Int. Cl.⁶ G01R *19/00;33/00*
U.S. Cl. 324—117 R **12 Claims**



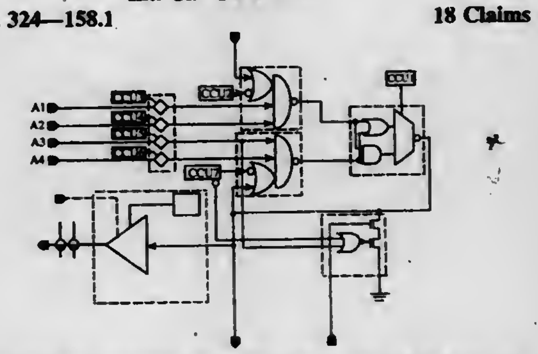
1. An inductive measuring device for measuring alternating current components superposed to a high direct current flowing in a conductor, comprising a magnetic circuit which is substantially symmetrical with respect to at least one cross-sectional plane thereof and is arranged for surrounding said conductor, said magnetic circuit having two air-gaps of same dimensions formed on either side of said plane of symmetry, said device further comprising two substantially identic measuring coils coupled with said magnetic circuit and an electric measuring circuit coupled to said two coils, said measuring circuits comprising adding means for adding the voltages induced, respectively, in said two measuring coils by the said alternating current components, and an integrating circuit connected to said adding means for receiving a current representative of the sum of said induced voltages.

5,617,020
MICROELECTROMECHANICAL-BASED POWER METER
Gregory A. Campbell, Pleasanton, and Richard M. White, Berkeley, both of Calif., assignors to Regents of the University of California, Oakland, Calif.
Filed Jun. 7, 1995, Ser. No. 487,292
Int. Cl.⁶ G01R *11/32*
U.S. Cl. 324—142 **19 Claims**



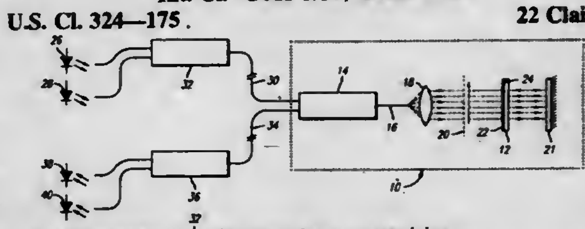
14. A power meter, comprising:
a microelectromechanical resonating structure responding to
a first electric field generated by a current signal carried by a metered line so as to produce a first induced variable frequency voltage signal corresponding to said current signal, and
a second electric field generated by a voltage signal carried by a metered line so as to produce a second induced variable frequency voltage signal corresponding to said voltage signal;
self-excitation circuitry connected to said microelectromechanical resonating structure to
process said first induced variable frequency voltage signal and produce a first variable frequency voltage signal in a resonant frequency band of interest that is applied to said resonating structure to augment the effect of said first electric field on said resonating structure, and
process said second induced variable frequency voltage signal and produce a second variable frequency voltage signal in a resonant frequency band of interest that is applied to said resonating structure to augment the effect of said second electric field on said resonating structure; and
a circuit to convert said first variable frequency voltage signal and said second variable frequency voltage signal into an address that is used to access a memory location that specifies a corresponding watt signal.

5,617,021
HIGH SPEED POST-PROGRAMMING NET VERIFICATION METHOD
F. Erich Goetting, Cupertino; Wade K. Peterson, Campbell, and David P. Schultz, San Jose, all of Calif., assignors to Xilinx, Inc., San Jose, Calif.
Continuation-in-part of Ser. No. 234,764, Apr. 28, 1994, abandoned, which is a division of Ser. No. 919,491, Jul. 23, 1992, Pat. No. 5,319,254. This application Aug. 4, 1995, Ser. No. 511,574
Int. Cl.⁶ G01R *31/02*
U.S. Cl. 324—158.1 **18 Claims**



1. A method of verifying the connection layout of an array of conducting segments and programmable interconnects on an integrated circuit after the circuit is programmed in accordance with a desired layout, said method comprising the steps of:
programming a selected set of said programmable interconnects to
connect selected ones of said conducting segments;
altering the voltage level at a first of said selected ones of said conducting segments to a selected level;
measuring the voltage levels at a selected plurality of said selected ones of said conducting segments;
verifying the accuracy of the connection layout by comparing the voltage levels at said plurality of said selected ones of said conducting segments to a set of voltage levels representing a desired connection layout for said selected plurality of said selected ones of said conducting segments.

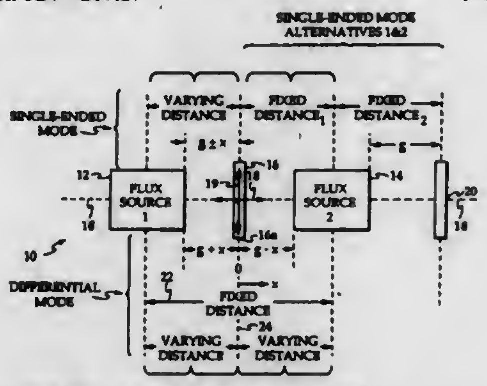
5,617,022
FIBEROPTIC VELOCITY TRANSDUCER INCLUDING DIELECTRIC COATING FOR FILTERING AND VELOCITY DETERMINATION
Ezra Baruch, Pasadena, Calif., assignor to Hydro-Aire Division of Crane Company, Burbank, Calif.
Filed May 1, 1995, Ser. No. 431,905
Int. Cl.⁶ G01P *3/36;* **G01D** *5/34*
U.S. Cl. 324—175 **22 Claims**



1. A fiberoptic velocity transducer comprising:
means for propagating light energy having a plurality of light energy wavelengths;
means for polarizing the light energy from said propagating means;
means for causing a Faraday rotation in said light energy;
means for selectively passing a first pre-determined range of wavelengths of the polarized light energy from said propagating means through said Faraday rotation means and for selectively reflecting a second pre-determined range of wavelengths of the polarized light energy to prevent the second pre-determined range of wavelengths of light from passing through said Faraday rotation means; and

means for reflecting the light energy passing through said Faraday rotation means.

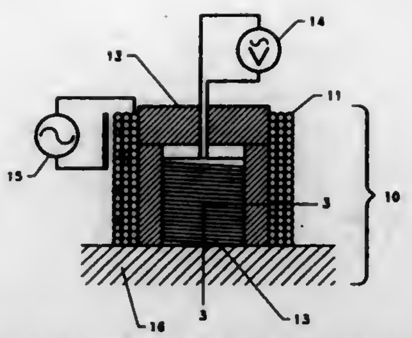
5,617,023
INDUSTRIAL CONTACTLESS POSITION SENSOR
Clement A. Skalski, Avon, Conn., assignor to Otis Elevator Company, Farmington, Conn.
Filed Feb. 2, 1995, Ser. No. 382,775
Int. Cl.⁶ G01B *7/14*
U.S. Cl. 324—207.17 **9 Claims**



1. A contactless position sensor, comprising:
a first magnetic flux source at a distance g from a referent, for providing magnetic flux alone an axis;
a second magnetic flux source for providing additional magnetic flux along said axis, at a same distance g from said referent as said first magnetic flux source but in an opposite direction;
an object, located between said first and second flux sources at a varying position x having a positive or negative sense relative to said same referent, responsive to said magnetic flux from both said first and second magnetic flux sources;
a sensing means, responsive to said magnetic flux from both said first magnetic flux source and said second magnetic flux source, for providing a sensed signal V_{OUT} depending on said varying position x; and
signal processing means, responsive to said sensed signal V_{OUT}, for providing a position signal indicative of said varying position x,
wherein said said first magnetic flux source and said second magnetic flux source each comprise a driven coil wound on a respective first core and a second core for excitation by a sinusoidal electrical source for providing said magnetic flux, and wherein said sensing means comprises a first sensing coil and a second sensing coil respectively wound on said first core and said second core, thereby providing that said first sensing coil and second sensing coil remain fixed relative to said first driven coil and second driven coil respectively, and wherein said sensed signal V_{OUT} is indicative of said object at said varying position x relative to said first magnetic flux source and said second magnetic flux source according to a relation $1/(g+x)-1/(g-x)$.

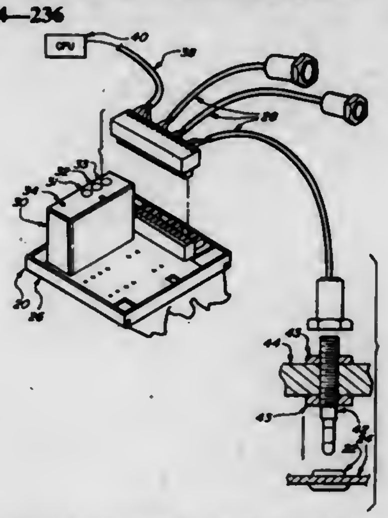
5,617,024
FLUX FOCUSING EDDY CURRENT PROBE
John W. Simpson, Tabb; C. Gerald Clendenin, Williamsburg; James P. Fulton, Hampton; Russell A. Wincheski, Williamsburg; Ronald G. Todhunter, Grafton; Min Namkung, Yorktown, all of Va., and Shridhar C. Nath, Gaithersburg, Md., assignors to The United States of America as represented by the United States National Aeronautics and Space Administration, Washington, D.C.
Continuation of Ser. No. 134,444, Oct. 12, 1993, abandoned.
This application May 8, 1996, Ser. No. 649,851
Int. Cl.⁶ G01N *27/90;* **G01R** *33/12*
U.S. Cl. 324—209 **17 Claims**

1. A flux-focusing eddy current probe for non-destructive evaluation of an electrically conductive material comprising:



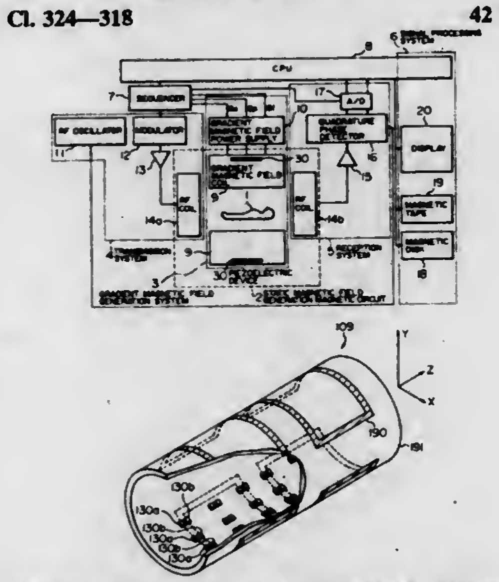
(a) an excitation coil for inducing eddy currents within the electrically conductive material, the excitation coil having windings wherein the excitation coil's longitudinal axis is perpendicular to the surface of the electrically conductive material;
(b) a pick-up coil having an outer edge and having windings which are surrounded by the windings of the excitation coil; and
(c) a tubular flux focusing lens disposed between the excitation coil and the pick-up coil, composed of a conductive material having a high magnetic permeability, having a first opening opposite the surface of the electrically conductive material and having a second opening adjacent to the surface of the electrically conductive material and which prevents magnetic coupling between the excitation coil and the pick-up coil when said probe is placed above an unflawed electrically conductive material and which produces high flux density at the outer edge of the pick-up coil.

5,617,025
SIDE PART SENSOR FOR DETERMINING THE PRESENCE OR ABSENCE OF A NUT AND A HOLE DISPOSED ADJACENT THE NUT
John T. Taylor, Saline; Richard R. Johnson, Ann Arbor, and William B. Ezell, Jackson, all of Mich., assignors to Syron Engineering & Manufacturing Corporation, Saline, Mich.
Filed Oct. 19, 1994, Ser. No. 325,487
Int. Cl.⁶ G01N *27/72;* **G01B** *7/06*
U.S. Cl. 324—236 **27 Claims**



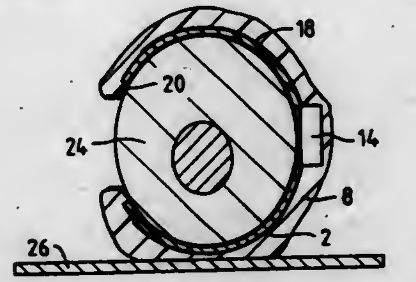
1. A method for determining the presence or absence of a nut at a hole in a metal plate comprising the steps of:
a) providing a probe which generates a radially outwardly directed magnetic field, said probe having an associated impedance, and providing means to prevent said probe from being forced against a metal plate, if said probe is not aligned with a hole in the metal plate;
b) moving said probe toward a metal plate, said means to prevent further movement preventing said probe from being crushed against said metal plate if said probe is not aligned with a hole in said metal plate;
c) inserting said probe into a hole in a metal plate;
d) generating said magnetic field, and sensing the mass radially outwardly of said probe;
e) measuring changes in the impedance of said probe;
f) comparing the impedance of said probe to a predetermined impedance value; and
g) generating a signal indicative of the presence or absence of said nut at the hole in the metal plate, by monitoring the mass based upon said comparison of said impedance of said probe.

5,617,026
QUIET MAGNETIC RESONANCE IMAGING APPARATUS
Hitoshi Yoshino, and Hiroshi Nishimura, both of Kashiwa, Japan, assignors to Hitachi Medical Corporation, Tokyo, Japan
Filed Sep. 16, 1994, Ser. No. 307,242
Claims priority, application Japan, Sep. 17, 1993, 5-253634; Apr. 6, 1994, 6-068732; Jul. 29, 1994, 6-179193; Aug. 2, 1994, 6-181560
Int. Cl.⁶ G01V *3/00;3/14*
U.S. Cl. 324—318 **42 Claims**



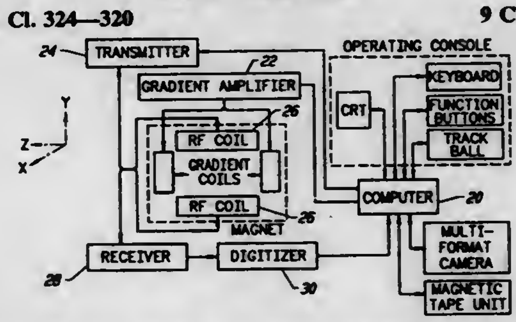
1. A quiet MRI (magnetic resonance imaging) apparatus comprising:
static magnetic field generation means for generating a static magnetic field in a space in which an inspection object is placed;
gradient magnetic field generation means for generating a gradient magnetic field in said space, equipped with at least one gradient magnetic field coil and a retaining member for said coil, wherein said retaining member of said coil undergoes deformation and vibration by electromagnetic force when a current is caused to flow through said coil;
transducer means fixed to said retaining member of said coil, for generating a force inhibiting deformation of said retaining member to inhibit substantially vibration of said retaining member;
means for applying a radio frequency magnetic field to said inspection object;
means for detecting nuclear magnetic resonance signals from said inspection object; and
means for reconstructing an image expressing said inspection object on the basis of said magnetic resonance signals.

5,617,027
LOCAL ANTENNA FOR NUCLEAR MAGNETIC RESONANCE DIAGNOSTICS
Guenther Decke, Hembofen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany
Filed Mar. 12, 1996, Ser. No. 613,723
Claims priority, application Germany, Mar. 13, 1995, 195 09 020.9
Int. Cl.⁶ G01V *3/00*
U.S. Cl. 324—318 **8 Claims**



1. A local antenna for nuclear magnetic resonance diagnostics comprising:
a vacuum pillow having an air tight sheath with a connection for a suction conduit;
a plurality of solid plastic balls filling said sheath; and
a flexible antenna conductor arrangement forming a structural unit with said vacuum pillow.

5,617,028
MAGNETIC FIELD INHOMOGENEITY CORRECTION IN MRI USING ESTIMATED LINEAR MAGNETIC FIELD MAP
Craig H. Meyer, Palo Alto, and Pablo Irarrazabal, Stanford, both of Calif., assignors to Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.
Filed Mar. 9, 1995, Ser. No. 401,591
Int. Cl.⁶ G01R *33/20*
U.S. Cl. 324—320 **9 Claims**



1. A method for correcting magnetic resonance image distortion in an imaged volume due to magnetic field inhomogeneity comprising the steps of
a) acquiring a magnetic field map which is local in said imaged volume,
b) estimating a linear magnetic field map based on said magnetic field map,
c) obtaining magnetic resonance image data for said volume, and
d) reconstructing said data based on said linear magnetic field map by assigning all data points to skewed locations in k-space based on said linear magnetic field map.

5,617,029

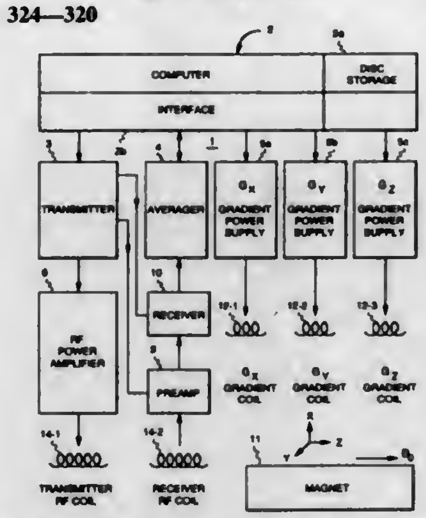
METHOD OF MAGNET SHIMMING

Erika Schneider, Rexford, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 14, 1995, Ser. No. 572,850

Int. Cl.^{6} G01V *3/00*

U.S. Cl. 324—320 **8 Claims**



1. A method of rapid, in-vivo shimming of a magnetic field produced by a magnet employing shim coils over a desired volume of a subject comprising the steps of:

a) acquiring an inhomogeneity map [I] indicating magnetic field intensity differences over a volume in said subject;

b) calculating a partial derivative [dL] of a generalized 3 dimensional (3D) infinite series polynomial expressed in a coordinate system having at least one radial dimension, with respect to the radial dimension;

c) determining a derivative [dI] of the inhomogeneity map [I] by calculating a change in magnetic field intensity differences with a change in the radial dimension of step (b);

d) fitting the derivative of the 3D polynomial [dL] to the derivative of the inhomogeneity map [dI] to determine coefficients of the derivative inhomogeneity map [dI_c];

e) acquiring a derivative calibration matrix [dM] describing the change in magnetic fields produced by each shim coil with a change in the same radial dimension as in step (b);

f) determining an inverse derivative matrix [dM^{-1}] such that [dM]×[dM^{-1}]=1;

g) multiplying coefficients of derivative inhomogeneity map [dI_c] by the inverse derivative matrix [dM^{-1}] to determine shim current values [C]; and

h) passing currents determined by values [C] through the respective shim coils to produce a more homogeneous magnetic field.

5,617,030

METHOD AND APPARATUS FOR GRADIENT POWER SUPPLY FOR A NUCLEAR MAGNETIC RESONANCE TOMOGRAPHY APPARATUS

Hubertus Fischer, Bamberg; Stefan Nowak, Braeuningshof, and Franz Schmitt, Erlangen, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 26, 1996, Ser. No. 621,622

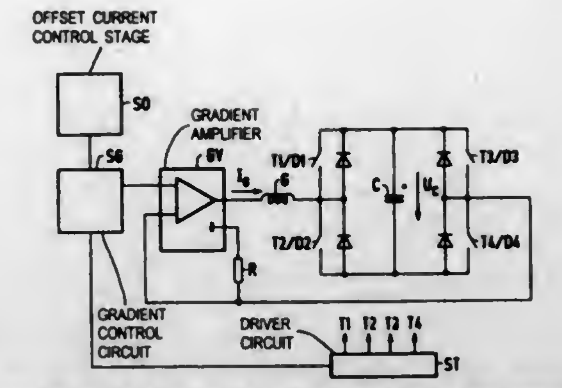
Claims priority, application Germany, Mar. 30, 1995, 19511832.4

Int. Cl.^{6} G01V *3/00*

U.S. Cl. 324—322 **7 Claims**

1. A method for generating a gradient offset current in a nuclear magnetic resonance tomography apparatus comprising the steps of:

providing a bridge circuit having four switches, four unbiased diodes respectively connected in parallel with said four switches, a first bridge diagonal, and a second bridge diagonal containing a capacitor;



providing a gradient coil and a controllable gradient amplifier and connecting said gradient coil to an output of said gradient amplifier through said first bridge diagonal, said capacitor and said gradient coil thereby forming a resonant circuit;

operating said four switches in a sequence for producing an alternating current through said gradient coil as a gradient current having alternating positive and negative half-waves, said gradient current being conducted across said capacitor and periodically charging and discharging said capacitor with a same voltage polarity;

generating an offset current through said gradient coil superimposed on said gradient current by operating said four switches for incompletely discharging said capacitor at every other half-wave of said gradient current, the incomplete discharge of said capacitor producing a voltage at said gradient coil; and

operating said gradient amplifier for compensating for an ohmic voltage drop across said gradient coil and said bridge circuit and for compensating for said voltage at said gradient coil produced by incompletely discharging said capacitor.

5,617,031

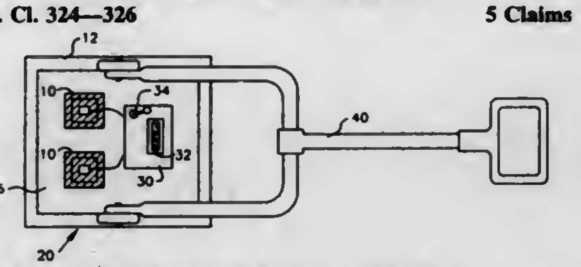
BURIED PIPE LOCATOR UTILIZING A CHANGE IN GROUND CAPACITANCE

John E. B. Tuttle, Falls Church, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 16, 1996, Ser. No. 658,903

Int. Cl.^{6} G01V *3/08;3/10;* **G01R** *19/00*

U.S. Cl. 324—326 **5 Claims**



1. A device for locating buried objects comprising:

means for generating a low frequency sinusoidal signal; means for injecting said low frequency sinusoidal signal into the ground through two spatially separated antenna means, each said antenna means comprising a flat plate antenna;

means for measuring and differentially combining the ground path impedance directly beneath each said antenna means;

a conductive plate connected to said means for generating a low frequency sinusoidal signal, said conductive plate being larger than said antenna means and having an insulator plate interposed between said antenna means and said conductive plate; and

means for processing and displaying said differentially combined impedance measurements to provide an indication of a buried object.

5,617,032

MISFIRE DETECTING DEVICE FOR INTERNAL COMBUSTION ENGINE

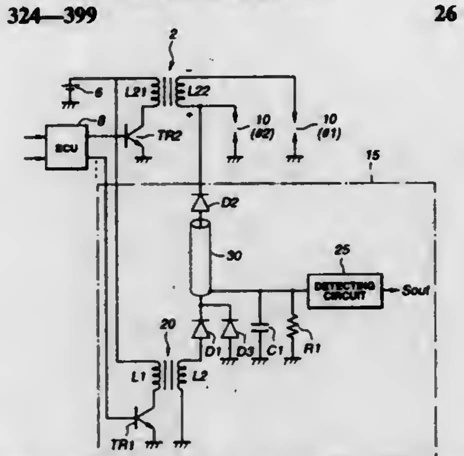
Hiroshi Inagaki, Komaki, Japan, assignor to NGK Spark Plug Co., Ltd., Negoya, Japan

Filed Jan. 17, 1996, Ser. No. 587,927

Claims priority, application Japan, Jan. 17, 1995, 7-005105; Jun. 13, 1995, 7-146350

Int. Cl.^{6} F02P *17/00*

U.S. Cl. 324—399 **26 Claims**



1. A misfire detecting device for an internal combustion engine having an ignition system for interrupting flow of primary current through a primary winding of an ignition coil and thereby inducing a high voltage for ignition in a secondary winding of the ignition coil, and applying the high voltage for ignition to a spark plug provided to an internal combustion engine, the misfire detecting device comprising:

high voltage pulse producing means for producing, after spark discharge of the spark plug, a high voltage pulse which is not so high as to cause the spark plug to discharge;

voltage applying means for applying said high voltage pulse to a conductive path connecting between the secondary winding of the ignition coil to the spark plug, by way of a reverse current preventing diode and a leakage preventing diode connected to said conductive path;

voltage dividing means for dividing a voltage at a side of said reverse current preventing diode nearer to said conductive path to obtain a divided voltage;

misfire detecting means for detecting a misfire on the basis of a decay characteristic of said divided voltage obtained after application of said high voltage pulse;

wherein said reverse current preventing diode and said leakage preventing diode are connected by means of a shielding wire having an outer conductor for shielding.

5,617,033

METHOD AND APPARATUS FOR ELECTRICALLY TESTING MULTI-CORE CABLE

Tohru Kashioka; Shogo Tanno, and Etsuro Mamishin, all of Hyogo-ken, Japan, assignors to Mitsubishi Cable Industries, Ltd., Hoygo-ken, Japan

Filed Apr. 3, 1995, Ser. No. 415,214

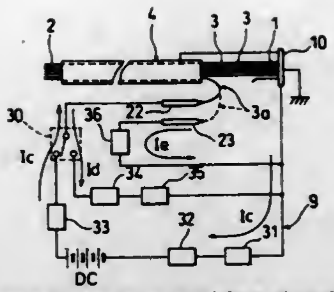
Claims priority, application Japan, Apr. 5, 1994, 6-093140

Int. Cl.^{6} G08B *21/00*

U.S. Cl. 324—540 **5 Claims**

1. An apparatus for electrically testing a multi-core cable having a plurality of cores which are each covered with an insulation cover layer, are collectively conducted at first ends thereof to a collective conducting part and are isolated from one another at second ends thereof, said apparatus comprising:

a disc-shaped rotary member having at an outer periphery thereof at least one groove with which the cores of the first ends are engageable one by one, the disc-shaped rotary member relatively rotating and moving with respect to the collectively conducted cores so as to pick up them by sequentially engaging them with the groove one by one;



electric separating means for electrically separating, from the collective conducting part, the picked-up core engaging with the groove of the disc-shaped rotary member;

a blade electrode provided along a path on which the disc-shaped rotary member moves, said blade electrode being capable of cutting the insulation cover layer of the electrically separated picked-up core and being contactable with a conductor of the electrically separated picked-up core by being elastically thrusted toward the disc-shaped rotary member;

an intermittent operating motor which intermittently operates for rotating and moving the disc-shaped rotary member to contact the picked-up core which has been electrically separated by the electric separating means with the blade electrode, stopping the rotation and movement of the disc-shaped rotary member for a set time while keeping the picked-up core in contact with the blade electrode, and then rotating and moving the disc-shaped rotary member again;

a charging circuit part for electrically charging the picked-up core through the blade electrode within the set time when the disc-shaped rotary member is stopped, said charging circuit part being connected to the blade electrode; and

a discharging circuit part for discharging the electric charge applied to the picked-up core by the charging circuit part with the set time when the disc-shaped rotary member is stopped, said discharging circuit part being connected to the blade electrode.

5,617,034

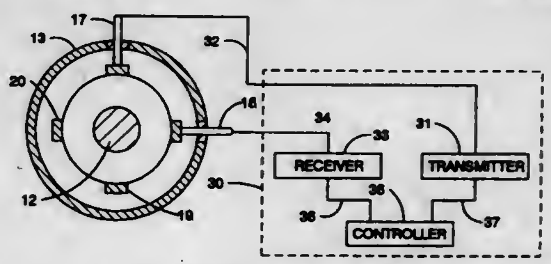
SIGNAL IMPROVEMENT IN THE SENSING OF HYDRAULIC CYLINDER PISTON POSITION USING ELECTROMAGNETIC WAVES

Wayne W. Lark, Joliet, Ill.; Denny Morgan, San Diego, Calif., and James R. Turba, Joliet, Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed May 9, 1995, Ser. No. 437,735

Int. Cl.^{6} G01R *33/32;27/04*

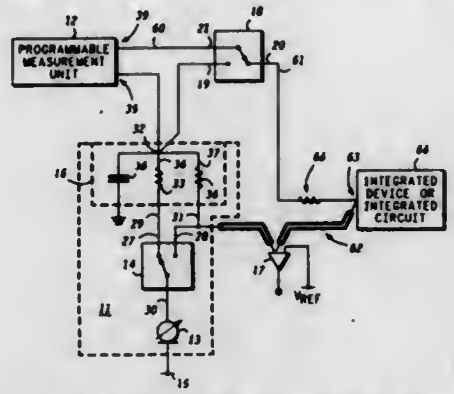
U.S. Cl. 324—635 **20 Claims**



1. In a hydraulic cylinder, piston and rod combination with a piston location sensing system of the type wherein signals indicative of the resonance frequency of electromagnetic waves are introduced into and sensed in the fluid of the cylinder through input and output probes extending to the outside of the cylinder, the improvement comprising:

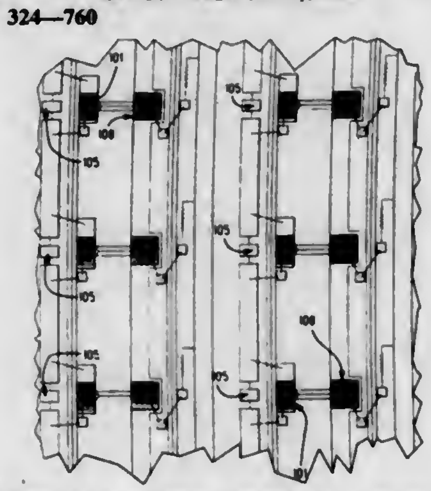
said input and output probes into said cylinder being positioned with approximately 90 degree separation on the circumferential periphery of said cylinder.

5,617,035
METHOD FOR TESTING INTEGRATED DEVICES
Mavin C. Swapp, Gilbert, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.
Division of Ser. No. 143,949, Nov. 1, 1993, Pat. No. 5,467,024. This application Nov. 2, 1995, Ser. No. 552,518
Int. Cl.^{6} G01R *1/04;31/28*
U.S. Cl. 324—711 **13 Claims**



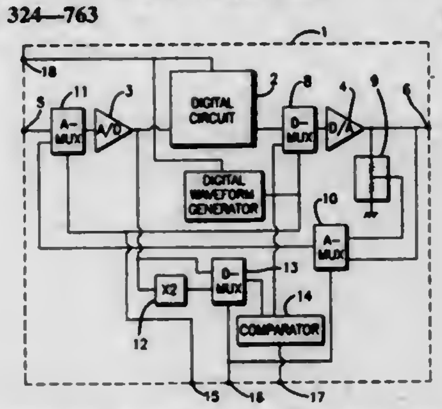
1. A method of delivering an electrical signal to an integrated device, comprising the steps of:
delivering an AC electrical signal to the integrated device, wherein the step of delivering an AC electrical signal comprises the steps of:
applying a first voltage to a drive circuit; transmitting the first voltage to the integrated device;
removing the first voltage;
applying a second voltage to the drive circuit; and
transmitting the second voltage to the integrated device; and
delivering a DC electrical signal to the integrated device, wherein the step of delivering a DC electrical signal comprises the steps of:
applying the DC electrical signal to the drive circuit;
transmitting the DC electrical signal to the integrated device; and
measuring a resulting DC electrical signal transmitted to the integrated device.

5,617,036
LASER/PIN ASSEMBLY WITH INTEGRATED BURN-IN ASSEMBLY
Robert W. Roff, Westfield, N.J., assignor to The Whitaker Corporation, Wilmington, Del.
Continuation of Ser. No. 393,961, Feb. 24, 1995, abandoned. This application Jul. 1, 1996, Ser. No. 674,305
Int. Cl.^{6} G01R *31/02;31/28*
U.S. Cl. 324—760 **7 Claims**



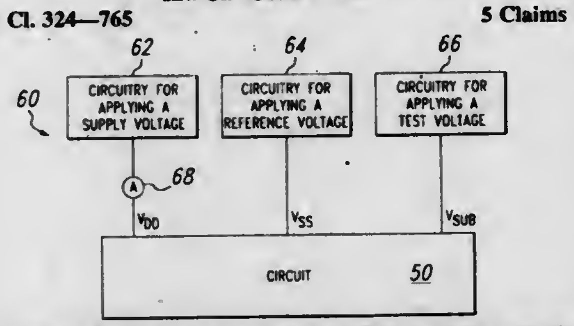
1. An apparatus for burn-in testing photo emitting devices, comprising:
a. a substrate having a top surface, a bottom surface and a selected thickness therebetween;
b. a plurality of photodectors mounted on said top surface, said photodetectors electrically connected another in parallel;
c. a plurality of photoemitters mounted on said top surface of said substrate, each of said photoemitters in optical communication with one of said photodetectors, each of said photodetectors monitoring one of said photoemitters during burn-in testing, and each of said photoemitters electrically connected in series to one another;
d. a plurality of electronic devices electrically connected in series to one another, and a selected one of said devices electrically connected in parallel to a selected one of said photoemitters; and
e. a source of constant current connected electrically to said plurality of light emitters, thereby enabling burn-in testing of said photoemitters.

5,617,037
MIXED ANALOG AND DIGITAL INTEGRATED CIRCUIT HAVING A COMPARATOR TO COMPARE ORIGINAL DIGITAL DATA WITH DATA HAVING UNDERGONE SUCCESSIVE D/A AND A/D CONVERSION AND LEVEL SHIFTING
Hiroshi Matsumoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Aug. 28, 1995, Ser. No. 520,128
Claims priority, application Japan, Aug. 31, 1994, 6-206436
Int. Cl.^{6} G01R *31/28*
U.S. Cl. 324—763 **8 Claims**



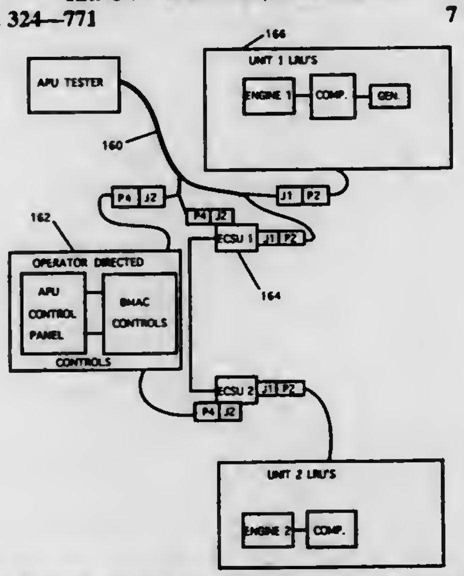
1. An integrated circuit comprising, on a single semiconductor chip, a D/A converter receiving first digital data and converting said first digital data into a first analog signal having a first amplitude representative of a first value of said first digital data, first means operatively coupled to said D/A converter to receive said first analog signal for producing a second analog signal having a second amplitude that is K times as large as said first amplitude, said K being other than one, an A/D converter operatively receiving said second analog signal and converting said second analog signal into a second digital data having a second value representative of said second amplitude of said second analog signal, second means operatively coupled to said A/D converter to receive said second digital data for producing third digital data having a third value that is 1/K times as large as said second value of said second digital data, and a comparator operatively coupled to receive said first and third digital data and comparing said first digital data with said third digital data.

5,617,038
METHOD AND SYSTEM FOR SCREENING RELIABILITY OF SEMICONDUCTOR CIRCUITS
Theodore W. Houston, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Division of Ser. No. 224,226, Apr. 7, 1994, Pat. No. 5,521,524, which is a division of Ser. No. 909,874, Jul. 7, 1992, Pat. No. 5,325,054. This application Jun. 7, 1995, Ser. No. 482,067
Int. Cl.^{6} G01R *31/26*
U.S. Cl. 324—765 **5 Claims**



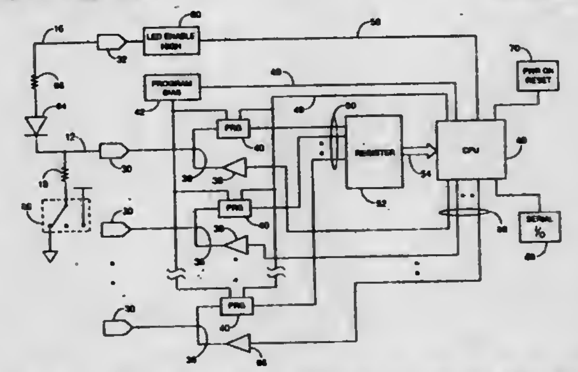
1. A system for testing a semiconductor which includes a circuit having a plurality of transistors, said circuit further including a supply voltage node, a reference node and a substrate node, said system comprising:
circuitry for applying a supply voltage to said supply voltage node of said circuit;
circuitry for applying a reference voltage to said reference node of said circuit;
circuitry for applying a test voltage to said substrate node of said circuit;
circuitry for measuring a current flowing to said supply node such that the current flowing to the supply node can be compared to a predetermined current criterion to obtain performance information about said circuit.

5,617,039
AUXILIARY POWER UNIT TESTING DEVICE
Burton M. Kuck, and Danial T. Thomas, both of Escondido, Calif., assignors to Applied Data Technology, San Diego, Calif.
Filed Nov. 10, 1994, Ser. No. 337,044
Int. Cl.^{6} F01R *31/00;* **G06F** *15/20*
U.S. Cl. 324—771 **7 Claims**



1. An auxiliary power unit testing device for testing aircraft auxiliary power units having an operator directed control station connected, by a first multiwire electrical cable having at least one multipin connector, to an electronic sequencing control unit, ESCU, which is connected, by a second multiwire electrical cable having at least one multipin connector, to at least one set of compressor and generating equipment comprising line replaceable units, LRU's, said testing device comprising:
A) a APU testing case,
B) an open-short circuit testing means contained in said testing case for testing for open and short circuits in LRU electrical circuits by subjecting said LRU electrical circuits with short electrical pulses and detecting the resulting flowing current,
C) an electrical cabling means extending from said testing case for electrically imposing said open short-circuit testing means in between said operator directed control station and said ESCU and in between said ESCU and said LRU's, and
D) a selector means located on said testing case for selecting electrical circuits for electrical monitoring, said selector means comprising:
1) at least one selector switch and
2) at least one test jack means for connecting electrical monitoring equipment such as voltmeters and oscilloscopes.

5,617,040
PROGRAMMABLE OUTPUT DEVICE WITH INTEGRATED CIRCUIT
Wallace E. Matthews, Richardson, Tex., assignor to Benchmarq Microelectronics, Inc., Dallas, Tex.
Continuation of Ser. No. 450,220, May 25, 1995, Pat. No. 5,477,166, which is a continuation of Ser. No. 52,134, Apr. 22, 1993, abandoned. This application Dec. 19, 1995, Ser. No. 575,096
Int. Cl.^{6} H03K *19/177*
U.S. Cl. 326—38 **2 Claims**



1. An integrated circuit with input/output pins for operating with multiple functions, comprising:
at least one multi-functional output pin for output control signals to an output load device having an associated impedance in a normal operating mode, and receiving program signals in a program mode;
a driver for driving said multi-functional output pin in said normal operating mode;
an internal program buffer for continuously determining from the electrical characteristics of said multi-functional output pin in said program mode whether a fixed program impedance is present on and connected directly to said multi-functional output pin between said multi-functional output pin and an external voltage reference which provides a first program state, or no program impedance is present on and connected directly to said multi-functional output pin between said multi-functional output pin and an external voltage reference which provides a second program state, thus determining which of said first and second program states is present; and
a controller for selecting said program mode or said normal operating mode, said controller in said program mode operable to read the output of said program buffer and, in said normal operating mode, to control said driver to control said multi-functional output pin to generate said output control signals that are output to said output load device, said program impedance remaining directly connected to said muli-

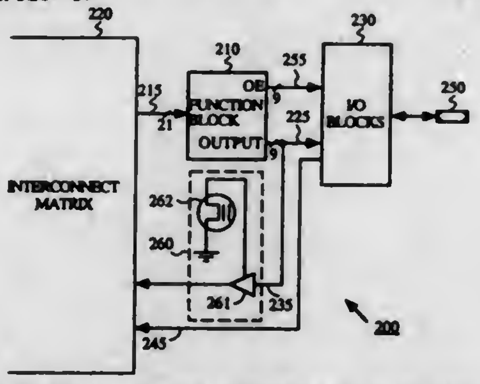
functional output while said driver is controlling said multi-functional output pin in said normal operating mode.

5,617,041
METHOD AND APPARATUS FOR REDUCING COUPLING SWITCHING NOISE IN INTERCONNECT ARRAY MATRIX

Napoleon W. Lee, Milpitas; Wei-Yi Ku; Hy V. Nguyen, both of San Jose, and Sholeh Diba, Los Gatos, all of Calif., assignors to Xilinx, Inc., San Jose, Calif.

Filed Jun. 2, 1995, Ser. No. 459,236
Int. Cl.⁶ H03K *19/177*

U.S. Cl. 326—39 **2 Claims**



1. A method for reducing coupling noise in an interconnect matrix of an erasable programmable logic device (EPLD), the interconnect matrix including a plurality of intersecting wordlines and bitlines, the EPLD also including a function block having inputs connected to the bitlines of the interconnect matrix, the function block including an AND array and a plurality of macro-cells, the wordlines of the interconnect matrix receiving feedback signals from the macrocells and device input signals from input/output pins of the EPLD, the feedback signals and device input signals being associated with a logic function implemented by the EPLD, the method comprising the steps of:

selecting a signal from the feedback signals and the device input signals associated with the logic function;

identifying an unused macrocell of the EPLD which is not used to implement the logic function;

programming the identified unused macrocell to produce a feed-back signal which is opposite in sense to the selected signal.

5,617,042
MULTIPLE ARRAY PROGRAMMABLE LOGIC DEVICE WITH A PLURALITY OF PROGRAMMABLE SWITCH MATRICES

Om P. Agrawal, Los Altos, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

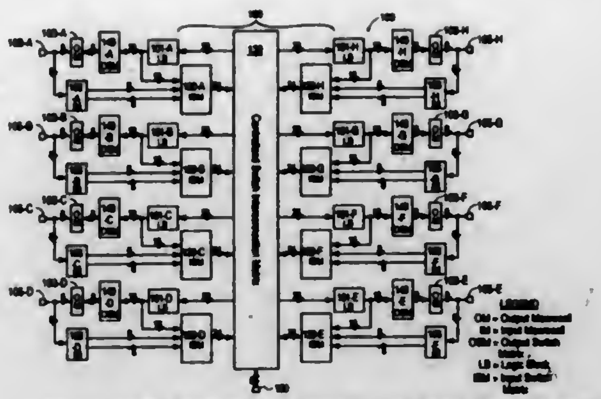
Continuation of Ser. No. 924,267, Aug. 3, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 483,623
Int. Cl.⁶ H05K *19/177*

U.S. Cl. 326—39 **52 Claims**

1. An integrated circuit having a plurality of pins comprising:

a plurality of programmable logic blocks, each programmable logic block having a plurality of input lines and a plurality of output lines so that said plurality of programmable logic blocks has pluralities of input lines and pluralities of output lines;

a programmable input switch interconnection matrix, operatively coupled to each of said programmable logic blocks, comprising a plurality of programmable input switch matrix banks with each programmable input switch matrix bank having a plurality of input lines and a plurality of output lines so that said plurality of programmable input switch matrix banks has pluralities of input lines and pluralities of output lines;



wherein input lines in said plurality of input lines of said programmable input switch matrix bank are coupled to output lines in said plurality of output lines of one programmable logic block; and

further wherein said programmable input switch matrix bank selectively connects and disconnects at least one of said input lines in said plurality of input lines of said programmable input switch matrix bank to at least two different output lines in said plurality of output lines of said programmable input switch matrix bank; and

a programmable centralized switch interconnection matrix, operatively coupled to each of said programmable logic blocks and to said programmable input switch interconnection matrix, having a plurality of input lines and a plurality of output lines;

wherein input lines in said plurality of input lines of said programmable centralized switch interconnection matrix are coupled to said pluralities of output lines of said plurality of programmable input switch matrix banks; and

further wherein said programmable centralized switch matrix selectively connects and disconnects signals on said plurality of input lines of said programmable centralized switch interconnection matrix to said pluralities of input lines of said plurality of programmable logic blocks.

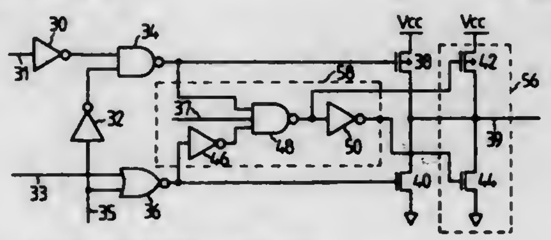
5,617,043
OUTPUT BUFFER WITH REFERENCE VOLTAGE CIRCUIT FOR INCREASING SPEED

Gwang M. Han, and Dae Y. Moon, both of Kyoungki-do, Rep. of Korea, assignors to Hyundai Electronics Industries Co., Ltd., Kyoungki-do, Rep. of Korea

Continuation of Ser. No. 174,135, Dec. 28, 1993, abandoned. This application Dec. 20, 1995, Ser. No. 575,234

Claims priority, application Rep. of Korea, Dec. 31, 1992, 92-27075
Int. Cl.⁶ H03K *19/017;19/0948*

U.S. Cl. 326—83 **11 Claims**



1. A data output buffer comprising:

a first input means for receiving a true data;

second input means for receiving a complementary data;

pull-up control impedance means connected between a first power supply and an output line and being driven by said first input means according to said true data;

pull-down control impedance means connected between a second power supply and said output line and being driven by said second input means according to said complementary data;

reference logic voltage generation means for supplying a reference logic voltage to said output line; and

control means for driving said reference logic voltage generation means, by said first input means according to said true data and said second input means according to said complementary data, to be complementary to said pull-up control impedance means and said pull-down control impedance means.

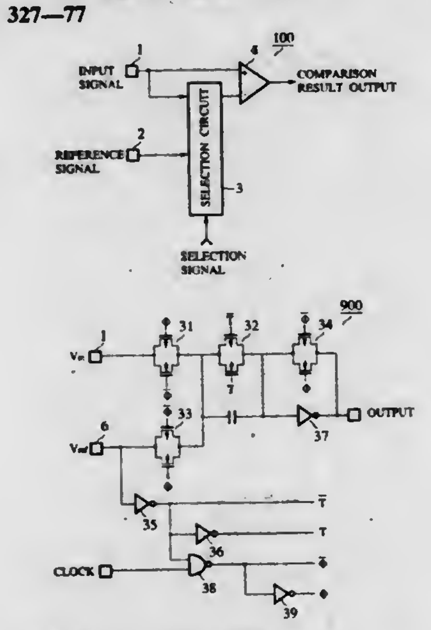
5,617,044
COMPARATOR CIRCUIT

Masahiro Takamoto, Kanagawa-ken, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 28, 1996, Ser. No. 623,215

Claims priority, application Japan, Mar. 31, 1995, 7-075911; Mar. 25, 1996, 8-068273
Int. Cl.⁶ H03K *5/153;5/22*

U.S. Cl. 327—77 **23 Claims**



1. A comparator circuit comprising:

a selection circuit for receiving an input signal, a reference signal, and a selection signal, for generating an inverted input signal which is made by inverting the input signal, for selecting the reference signal during a normal operation mode and selecting the inverted input signal during a test operation mode according to a level of the selection signal; and

a comparator section for receiving the reference signal or the inverted input signal selected by the selection circuit and for receiving the input signal, for comparing the selected signal and the received signal, and for transmitting a comparison result to outside of the comparator circuit.

5,617,045
INPUT CIRCUIT FOR PROCESSING SMALL AMPLITUDE INPUT SIGNALS

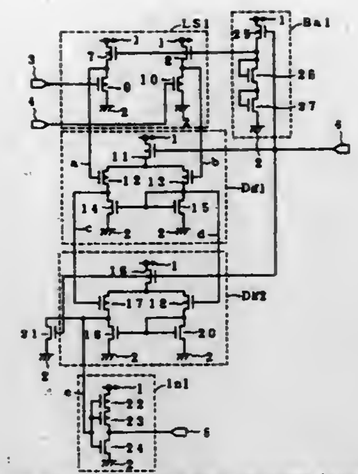
Katsushi Asahina, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 11, 1993, Ser. No. 104,570

Claims priority, application Japan, Sep. 18, 1992, 4-249257
Int. Cl.⁶ H03K *19/0185;19/017*

U.S. Cl. 327—89 **21 Claims**

11. An input circuit for a semiconductor integrated circuit device which receives a binary signal for outputting a first potential or a



second potential higher than said first potential in response to said binary signal, said input circuit comprising:

an input terminal receiving said binary input signal;

a reference voltage input terminal receiving a reference voltage serving as a reference for distinction of logical states;

a voltage changer circuit connected to said input terminal and said reference voltage input terminal for performing voltage change so that said input signal and said reference voltage are shifted a predetermined amount of voltage, respectively, to output signals;

at least one cascaded differential amplifier circuit having first and second differential inputs receiving the output signals of said voltage changer circuit. respectively, for amplifying a difference between said input signal and said reference voltage to output the amplified difference;

a CMOS inverter circuit having an input connected to the output of said differential amplifier circuit and an output for outputting said first or second potential in response to the output of said differential amplifier circuit; and

an output terminal connected to said output of said CMOS inverter circuit;

said input circuit being adjusted such that said CMOS inverter circuit outputs said first or second potential when said input signal is higher than said reference voltage and said CMOS inverter circuit outputs said second or first potential when said input signal is lower than said reference voltage,

wherein said differential amplifier circuit includes a differential amplifier circuit characterized so that its common-mode gain divided by its differential-mode gain is less than the ratio of the amplitude of said input signal to variation of said reference voltage.

5,617,046
GENERATION OF A DIAGNOSTIC SIGNAL WHEN THE CURRENT THROUGH A POWER TRANSISTOR REACHES A LEVEL CLOSE TO A LIMIT CURRENT

Sergio Palara, Acitrezza, and Stefano Sueri, Catania, both of Italy, assignors to SGS-Thomson Microelectronics, S.r.l., Agrate Brianza, and Consorzio per la Ricerca sulla Microelettronica nel Mezzogiorno, both of Italy

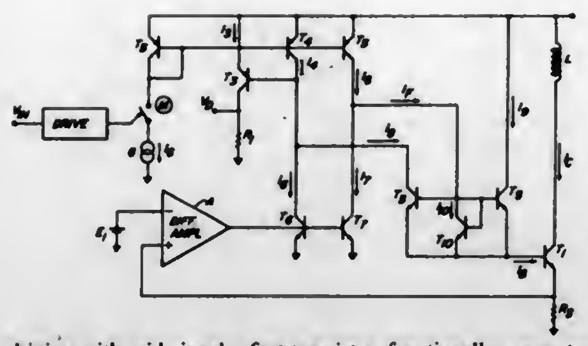
Filed Jul. 8, 1994, Ser. No. 272,786

Claims priority, application European Pat. Off., Nov. 29, 1993, 93830473
Int. Cl.⁶ H03K *19/082*

U.S. Cl. 327—110 **22 Claims**

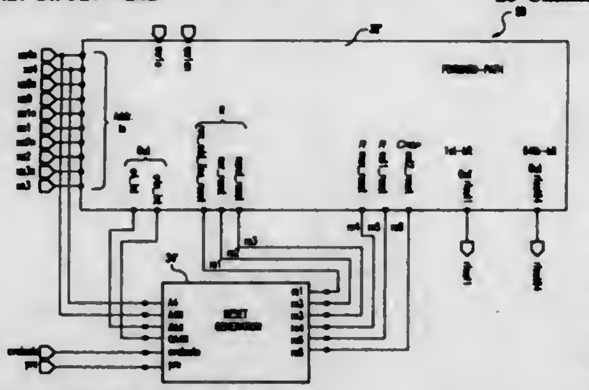
1. A method for generating a diagnostic signal, indicative of the reaching of a predefined value, lower than a maximum limit value, by the current flowing through a power transistor, comprising the steps of:

generating a signal, which is function of the difference between a reference voltage and a voltage produced on a sensing resistance through which said current flows;



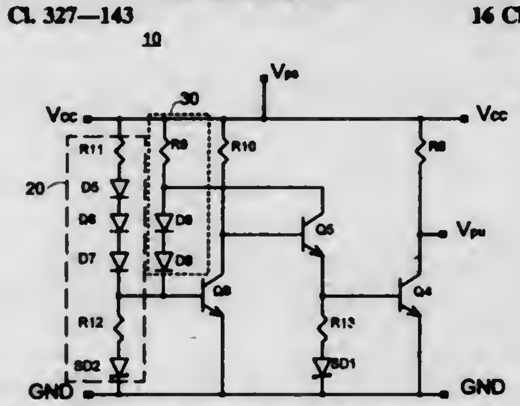
driving with said signal a first transistor, functionally connected to subtract part of a driving current delivered to said power transistor; and
driving with said signal a second transistor;
forcing through said second transistor a current lower than said subtracted current, for saturating the second transistor; and
using a signal present across said saturated second transistor for triggering the generation of said diagnostic signal so as to signal the reaching of said predefined value.

5,617,047
RESET AND PULSE WIDTH CONTROL CIRCUITS FOR HIGH-PERFORMANCE MULTI-PORT MEMORIES AND REGISTER FILES
Walter H. Henkels, Putnam Valley; Wei Hwang, Armonk, and Rajiv V. Joshi, Yorktown Heights, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jun. 6, 1995, Ser. No. 468,173
Int. Cl.⁶ H03K *3/01*
U.S. Cl. 327—142 **23 Claims**



1. A logic macro including:
a forward path comprising
means for receiving externally-generated pulsed evaluation signals and comprising a plurality of serially-connected dynamic logic circuits, each of said circuits having means for receiving an input pulse and means for generating an output pulse in response thereto, and each of said logic circuits having means for receiving a reset pulse and means for resetting a respective logic circuit to an inactive state in response to said reset pulse, and
means for generating and outputting a trigger pulse in response to one of said received pulsed evaluation signals; and
a control circuit for generating a plurality of reset pulses, each of said plurality of reset pulses being input to at least one of said means for receiving a reset pulse in each of said plurality of serially-connected dynamic logic circuits, said plurality of said reset pulses being sequentially timed with respect to one another, said control circuit comprising
means for receiving said trigger pulse, and at least two branches for propagation of said trigger pulse, each of said at least two branches having a different propagation time than the other and each having means responsive to a propagated trigger pulse for outputting at least one of said plurality of reset pulses.

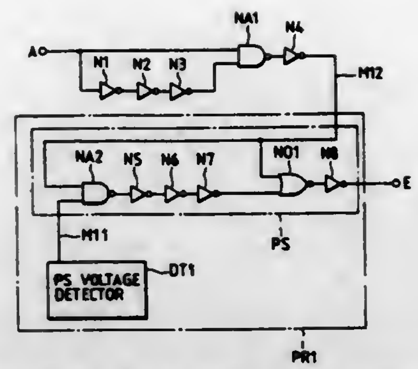
5,617,048
HYSTERETIC POWER-UP CIRCUIT
Michael G. Ward, Saco; Roy L. Yarbrough, Hiram, and Jay R. Chapin, South Portland, all of Me., assignors to National Semiconductor Corporation, Santa Clara, Calif.
Continuation of Ser. No. 308,148, Sep. 19, 1994, abandoned. This application Mar. 13, 1996, Ser. No. 614,911
Int. Cl.⁶ H03K *3/037*
U.S. Cl. 327—143 **16 Claims**



1. A power-up circuit for synchronizing the activation of one or more components of an extended logic circuit, said power-up circuit comprising:
a. a switching transistor coupled to output means;
b. a first control path including a first diode means set having two or more diode means coupled between a high-potential power rail and a control node of said switching transistor; and
c. a second control path including a second diode means set having one or more diode means coupled between said high-potential power rail and said control node of said switching transistor, wherein a node between said second diode means set and said high-potential power rail is coupled to said output means;
wherein said output means is an output transistor set including a first bipolar transistor and a second bipolar transistor, and said switching transistor is a third bipolar transistor having a collector node coupled to a base node of said second bipolar transistor, wherein an emitter node of said second bipolar transistor is coupled to a base node of said first bipolar transistor, and wherein a collector node of said first bipolar transistor is coupled to an output node of said power-up circuit.

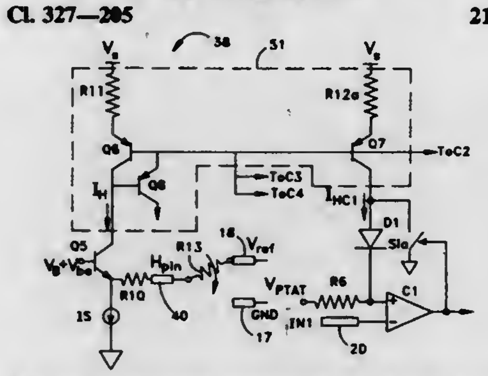
5,617,049
PULSE SIGNAL GENERATOR AND REDUNDANCY SELECTION SIGNAL GENERATOR
Hiroshige Hirano, Nara, and Takashi Taniguchi, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Continuation of Ser. No. 247,835, May 23, 1994, abandoned, which is a division of Ser. No. 930,966, Aug. 17, 1992, Pat. No. 5,418,406, which is a division of Ser. No. 674,999, Mar. 26, 1991, Pat. No. 5,163,168. This application Jul. 31, 1995, Ser. No. 508,758
Claims priority, application Japan, Mar. 30, 1990, 2-086553; Apr. 20, 1990, 2-105615
Int. Cl.⁶ H03K *3/017*
U.S. Cl. 327—172 **9 Claims**

1. An apparatus comprising:
means for detecting a magnitude of a power supply voltage and outputting a representation of the magnitude of the power supply voltage;



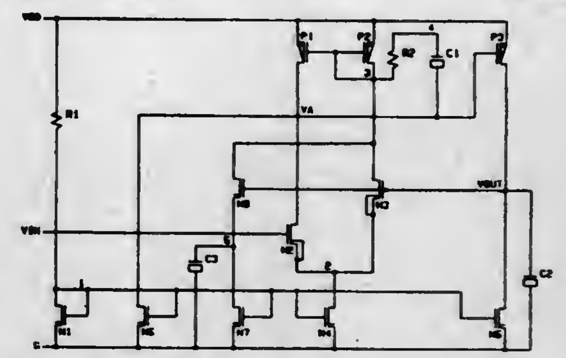
means for adjusting a pulse width of an input pulse signal and converting the input pulse signal into a control pulse signal having a pulse width adjusted to differ from the pulse width of the input pulse signal in response to the output signal from the detecting means;
means for generating a redundancy selection signal in response to an address signal; and
means responsive to the control pulse signal for selectively activating and deactivating the generating means at times corresponding to starting and ending times of the control pulse signal;
wherein said means for adjusting a pulse width varies the pulse width of the control pulse signal responsive to variation of the power supply voltage from a predetermined value for changing the pulse width of the input pulse signal.

5,617,050
CIRCUIT FOR PROVIDING PROGRAMMABLE HYSTERESIS LEVELS
Andrew Jenkins, San Jose; Peter S. Henry, Fremont, and Gaylin M. Yee, Stanford, all of Calif., assignors to Analog Devices, Inc., Norwood, Mass.
Filed Jun. 5, 1995, Ser. No. 460,992
Int. Cl.⁶ H03K *5/24*
U.S. Cl. 327—205 **21 Claims**



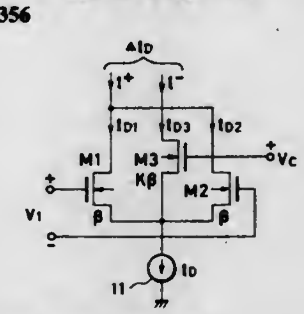
1. A circuit for providing programmable hysteresis levels, comprising:
a sensing circuit for producing an output signal when an input signal crosses a set point;
a hysteresis circuit for establishing a reference hysteresis level in said output signal;
an adjustment circuit for adjusting said reference hysteresis level to different preset hysteresis levels, said reference and preset hysteresis levels and said set point being independent of each other; and
a programmable input to said adjustment circuit that responds to the application of an external signal to select one of said preset hysteresis levels and selects said reference hysteresis level in the absence of an external signal.

5,617,051
VOLTAGE OVERSHOOT LIMITER
David Bingham, San Jose, Calif., assignor to Maxim Integrated Products, Sunnyvale, Calif.
Filed Jun. 22, 1995, Ser. No. 493,493
Int. Cl.⁶ H03K *17/16;5/08*
U.S. Cl. 327—317 **19 Claims**



1. A circuit comprising:
an output circuit having an output node;
a first circuit portion with a first node having a voltage subject to slewing; and
an overshoot compensation circuit coupled between the output circuit and the first circuit portion, said overshoot compensation circuit is responsive to a change in voltage at the output node greater than a predetermined change and a rate of change in the voltage at the output node greater than a predetermined rate to limit the slewing of the voltage at the first node without substantially effecting the DC and low frequency response of the circuit.

5,617,052
TRANSCONDUCTANCE-VARIABLE ANALOG MULTIPLIER USING TRIPLE-TAIL CELLS
Katsuji Kimura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Apr. 8, 1996, Ser. No. 629,132
Claims priority, application Japan, May 16, 1995, 7-141284
Int. Cl.⁶ G06F *7/44*
U.S. Cl. 327—356 **5 Claims**



1. An analog multiplier comprising:
(a) a first squarer applied differentially with a first input signal and a second input signal to be multiplied in opposite phases, said first squarer containing a first triple-tail cell;
said first triple-tail cell including first, second and third transistors whose emitter or sources are coupled together and driven by a single tail current;
said first and second transistors forming a differential transistor pair;
bases or gates of said first and second transistors forming input ends of said first squarer to be applied with said first and second input signals;
collectors or drains of said first and second transistors being coupled together to form one of output ends of said first squarer;
a collector or drain of said third transistor forming the other of said output ends of said first squarer;

a base or gate of said third transistor forming an input end to be applied with a bias signal;

(b) a second squarer applied differentially with said first input signal and said second input signal in the same phase, said second squarer containing a second triple-tail cell;

said second triple-tail cell including fourth, fifth and sixth transistors whose emitter or sources are coupled together and driven by a single tail current;

said fourth and fifth transistors forming a differential transistor pair;

bases or gates of said fourth and fifth transistors forming input ends of said second squarer to be applied with said first and second input signals;

collectors or drains of said fourth and fifth transistors being coupled together to form one of output ends of said second squarer;

a collector or drain of said sixth transistor forming the other of said output ends of said second squarer;

a base or gate of said sixth transistor forming an input end to be applied with said bias signal;

(c) said coupled collectors or drains, of said first and second transistors forming one of said output ends of said first squarer being connected to said collector or drain of said sixth transistor forming the other of said output ends of said second squarer, thereby forming one of output ends of said multiplier;

(d) said collector or drain of said third transistor forming the other of said output ends of said first squarer being connected to said coupled collectors or drains of said fourth and fifth transistors forming one of said output ends of said second squarer, thereby forming the other of said output ends of said multiplier; and

(e) the multiplication result of said first and second input signals being taken out from said output ends of said multiplier.

5,617,053

COMPUTATIONAL CIRCUIT

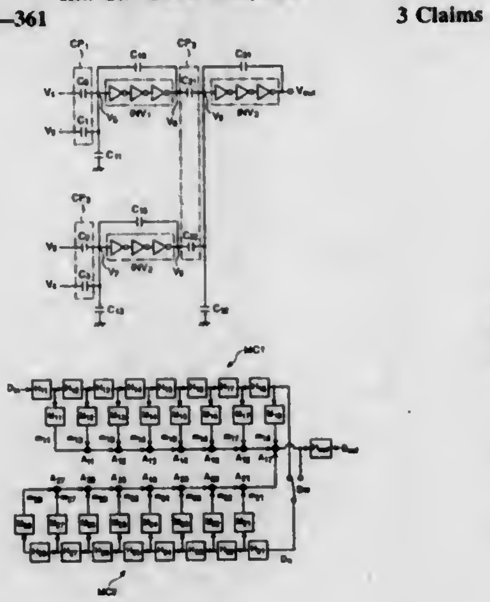
Guoliang Shou; Sunao Takatori, and Makoto Yamamoto, all of Tokyo, Japan, assignors to Yozan, Inc., Tokyo, and Sharp Corporation, Osaka, both of Japan

Division of Ser. No. 262,759, Jun. 20, 1994, abandoned. This application Jun. 6, 1995, Ser. No. 468,762

Claims priority, application Japan, Jun. 17, 1993, 5-171041; Jun. 18, 1993, 5-172551; Jun. 18, 1993, 5-172552; Jun. 19, 1993, 5-174713; Jun. 24, 1993, 5-177362; Jun. 30, 1993, 5-187215; Sep. 20, 1993, 5-256355; Sep. 20, 1993, 5-256359; Sep. 20, 1993, 5-256367; Sep. 20, 1993, 5-256518; Sep. 20, 1993, 5-256557; Sep. 20, 1993, 5-256558; Apr. 1, 1994, 6-087720

Int. Cl.^{6} G06G *7/14;7/16*

U.S. Cl. 327—361 **3 Claims**



1. A computational circuit comprising:

a first capacitive coupling including a plurality of first capacitors which are operatively connected to a plurality of first analog input voltages, said first capacitors being commonly connected to a first output terminal;

a first inverter having an first input and a first output, said first input of said first inverter being operatively connected to said first output terminal;

a connecting capacitance operatively connected to said first output of said first inverter;

a second inverter having a second input and a second output, said second input being operatively connected to said first output of said first inverter through said connecting capacitance;

a first feed back capacitance operatively connecting said first output of said first inverter to said input thereof;

a second feed back capacitance operatively connecting said second output of said second inverter to said input thereof; and

a plurality of additional capacitances, wherein a first additional capacitance is operatively connected between ground and said first capacitive coupling and a second additional capacitance is operatively connected between said ground and said connecting capacitance, wherein capacitance values of said first and said second additional capacitances are selected such that a closed-loop gain of said first inverter and a closed-loop gain of said second inverters are substantially equal.

5,617,054

SWITCHED CAPACITOR VOLTAGE ERROR COMPENSATING CIRCUIT

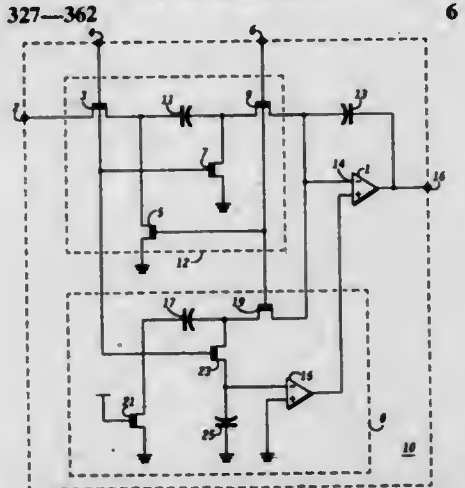
Vladimir Koifman, Rama-Gan, and Yachin Afek, Kfar Saba, both of Israel, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 14, 1995, Ser. No. 572,318

Claims priority, application United Kingdom, Nov. 23, 1994, 9423631

Int. Cl.^{6} G06G *7/12*

U.S. Cl. 327—362 **6 Claims**



1. A compensating circuit for use with a switched capacitor arrangement, the arrangement including a switched capacitor and an op-amp having an inverting input coupled to the switched capacitor, a non-inverting input and an output, the compensating circuit comprising:

sampling means for sampling an error signal at the inverting input of the op-amp,

amplifier means coupled to receive the sampled error signal and for providing a compensation signal in dependence upon the sampled error signal,

wherein the compensation signal provides an offset signal for the non-inverting input of the op-amp, such that propagation of the error signal to the output of the op-amp is substantially reduced.

5,617,055

ELECTRONIC SWITCH HAVING REDUCED BODY EFFECT

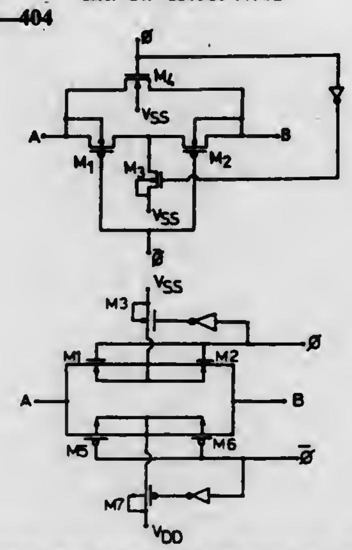
Pierangelo Confalonieri, Bergamo, and Germano Nicollini, Piacenza, both of Italy, assignors to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, Italy

Filed Jul. 31, 1995, Ser. No. 509,304

Claims priority, application European Pat. Off., Jul. 29, 1994, 948303870

Int. Cl.^{6} H03K *17/62*

U.S. Cl. 327—404 **29 Claims**



1. An electronic switch having a reduced body effect, comprising:

first and second switch terminals;

a first transistor of a first type having a control terminal, a first substrate, and first and second drive terminals respectively coupled to said first and second switch terminals;

a second transistor of a second type having a control terminal, a second substrate, a first drive terminal coupled to said second substrate and to said first switch terminal, and a second drive terminal;

a third transistor of a second type having a control terminal, a third substrate, a first drive terminal coupled to said second drive terminal of said second transistor, and a second drive terminal coupled to said third substrate and to said second switch terminal; and

a fourth transistor having a control terminal, a fourth substrate, a first drive terminal coupled to said second drive terminal of said second transistor, and a second drive terminal coupled to said fourth substrate and a first voltage level.

5,617,056

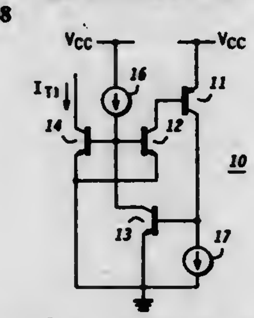
BASE CURRENT COMPENSATION CIRCUIT

William E. Main, Mesa; David K. Lovelace, Chandler, and Jesus S. Pena-Finol, Gilbert, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 5, 1995, Ser. No. 498,038

Int. Cl.^{6} G05F *1/10*

U.S. Cl. 327—538 **16 Claims**



1. A base current compensation circuit, comprising:

a first bipolar transistor having a base electrode, an emitter electrode, and a collector electrode, the emitter electrode coupled for receiving a first voltage;

a first current conducting element coupled to the collector electrode of the first bipolar transistor;

a first transistor having a control electrode, a first current conducting electrode, and a second current conducting electrode, the first current conducting electrode coupled for receiving a second voltage and the second current conducting electrode coupled to the base electrode of the first bipolar transistor;

a second current conducting element coupled to the control electrode of the first transistor;

a second transistor having a control electrode, a first current conducting electrode, and a second current conducting electrode, the control electrode coupled to the collector electrode of the first bipolar transistor, the first current conducting electrode coupled for receiving a third voltage, and the second current conducting electrode coupled to the control electrode of the first transistor; and

a third transistor having a control electrode, a first current conducting electrode, and a second current conducting electrode, the control electrode coupled to the control electrode of the first transistor, the first current conducting electrode coupled to the first current conducting electrode of the first transistor, and the second current conducting electrode coupled for current output.

5,617,057

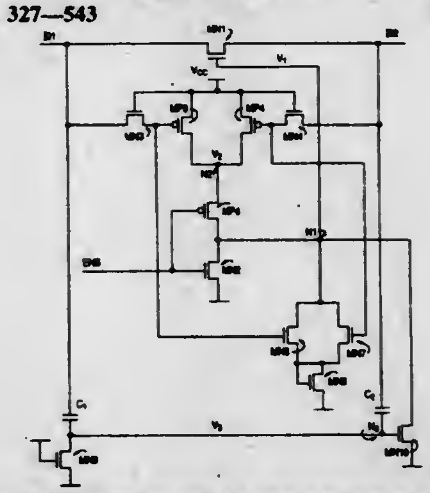
PASS TRANSISTOR VOLTAGE CONTROL CIRCUIT

David B. Rees, Basingstoke, United Kingdom, and Martin J. Steadman, London, England, assignors to Cypress Semiconductor, Inc., San Jose, Calif.

Filed Jan. 30, 1996, Ser. No. 594,256

Int. Cl.^{6} G05F *1/10*

U.S. Cl. 327—543 **10 Claims**



1. In a CMOS circuit including a pass transistor of one channel type having its source and drain connected to respective first and second nodes, circuit means for preventing malfunctioning due to excessive voltages on said first node and said second node, comprising:

a third node connected to the gate of said pass transistor;

a pair of transistors of said one channel type having their sources respectively connected to said first and second nodes and their gates connected to supply voltage VCC;

a pair of transistors of the opposite channel type having their sources connected to supply voltage VCC and their gates respectively connected to the drains of said transistors of said one channel type; and,

inverter means, comprising a first transistor of said one channel type and a second transistor of said opposite channel type with their gates coupled to an ENB signal and their drains connected to said third node, and with the source of said second transistor connected to the drains of said pair of transistors of said opposite channel type, for coupling said

supply voltage VCC to said third node and decreasing the voltage on said third node in response to increases in the voltages on said first and second nodes.

5,617,058

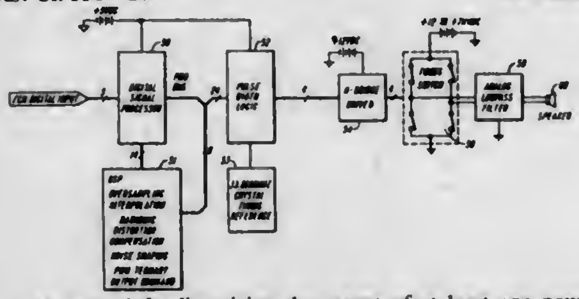
DIGITAL SIGNAL PROCESSING FOR LINEARIZATION OF SMALL INPUT SIGNALS TO A TRI-STATE POWER SWITCH

Andrew A. Adrian, Melrose; Michael S. Danielson, Wrentham; David B. Meyers, Walpole, and Leo Spiegel, Sharon, all of Mass., assignors to Apogee Technology, Inc., Norwood, Mass.

Filed Nov. 13, 1995, Ser. No. 556,615

Int. Cl.⁶ H03F *3/38*

U.S. Cl. 330—10 **18 Claims**



1. A method for linearizing the output of at least one power switch having switch timing error in an amplifier receiving an input signal and providing a switched output signal, said method comprising the steps of:

producing a compensated composite waveform by modulating said input signal with a bi-state compensating pulse waveform; and

effecting common mode cancellation of said switch timing error by passing said compensated composite waveform through said at least one power switch having switch timing error to provide said switched output signal.

5,617,059

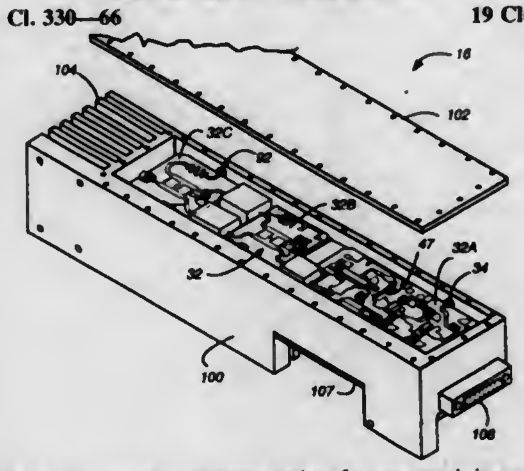
POWER AMPLIFIER, AND ASSOCIATED METHOD, FOR A MICROWAVE REPEATER STATION

Brian E. Eggleston, Pittstown, N.J., assignor to SSB Technologies, Inc., Union, N.J.

Filed Jul. 7, 1995, Ser. No. 499,635

Int. Cl.⁶ H03F *1/30;* **H04B** *3/36*

U.S. Cl. 330—66 **19 Claims**



17. In a microwave repeater station for retransmitting microwave signals received at the station, a method for amplifying the microwave signals between a microwave receiver and a microwave transmitter, the method comprising the steps of:

forming a heat-dissipative housing to be adapted for positioning in the repeater station, said heat-dissipative housing having a first side, a second side opposing said first side, a first end, and a second end opposing said first end;

applying the microwave signals received at the microwave repeater station to an input element positioned at the first side of the heat-dissipative housing;

transmitting the microwave signals applied to the input element along an input microstrip transmission line positioned between the input element and at least one transistor-amplifier element;

amplifying the microwave signals with the at least one transistor-amplifier element;

transmitting the microwave signals amplified by the at least one transistor-amplifier along an output microstrip transmission line;

applying the microwave signals transmitted along the output microstrip transmission line to an output element positioned at the first side of the heat-dissipative housing, in-line with the input element; and

dissipating heat energy generated during said first and second steps of applying, said first and second steps of transmitting, and said step of amplifying, through the heat-dissipative housing.

5,617,060

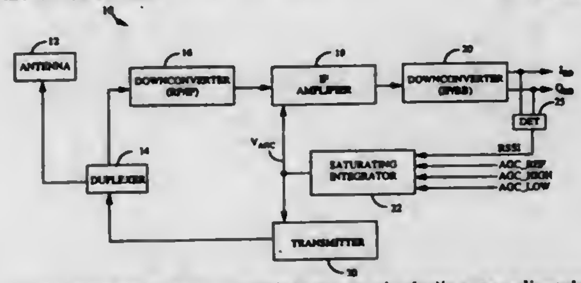
METHOD AND APPARATUS FOR AUTOMATIC GAIN CONTROL AND DC OFFSET CANCELLATION IN QUADRATURE RECEIVER

Nathaniel B. Wilson, San Diego, Calif.; Peter J. Black, St. Lucia, Australia, and Paul E. Peterzell, San Diego, Calif., assignors to QUALCOMM Incorporated, San Diego, Calif.

Continuation of Ser. No. 235,812, Apr. 28, 1994, abandoned. This application Apr. 13, 1995, Ser. No. 423,332

Int. Cl.⁶ H03G *3/20*

U.S. Cl. 330—129 **21 Claims**



1. An automatic gain control apparatus including an adjustable gain amplifier, the adjustable gain amplifier having an input port for receiving an input signal, a control port for receiving a gain control signal, and an output port for providing an output signal, the automatic gain control apparatus comprising:

a downconverter coupled to said output port for downconverting frequency of said output signal to a baseband frequency so as to produce a baseband signal, said downconverter being operative to map a carrier frequency of said output signal to a baseband frequency offset by a predetermined margin from D.C.;

a D.C. feedthrough suppression loop, disposed to receive said baseband signal, for suppressing D.C. feedthrough signals produced by said frequency downconverter and for providing a compensated baseband signal;

means for generating a received power signal based on power of said compensated baseband signal; and

saturating integrator means for comparing said received power signal to a reference signal and for generating an error signal in response to a result of the comparison, said saturating integrator means including means for providing said gain control signal by selectively integrating said error signal based on values of said error and gain control signals.

5,617,061

FEED-FORWARD AMPLIFIER

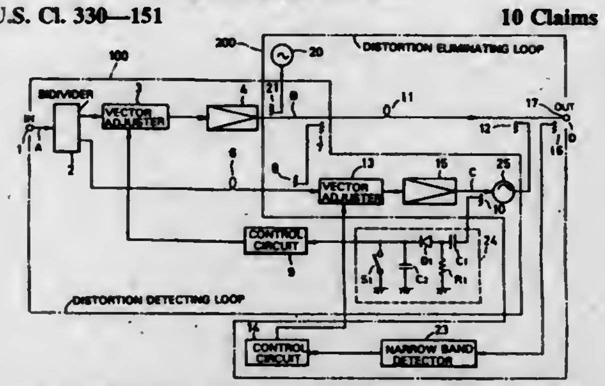
Akio Fukuchi, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Aug. 31, 1995, Ser. No. 521,632

Claims priority, application Japan, Aug. 31, 1994, 6-205854

Int. Cl.⁶ H03F *1/26;3/66*

U.S. Cl. 330—151 **10 Claims**



1. A feed-forward amplifier, comprising: a main amplifier for amplifying multi-carrier input signals; means for branching a part of the output of the main amplifier and synthesizing the branched part with said input signals; an auxiliary amplifier for amplifying this synthesized output; peak detecting means for extracting a part of the input to or the output from said auxiliary amplifier and detecting its peak value; first control means for controlling the input to said main amplifier so as to minimize the detection output of said peak detecting means; synthesizing means for synthesizing the output of said auxiliary amplifier with that of said main amplifier to cancel any distortion occurring in said main amplifier; level detecting means for extracting a part of the amplified output from said main amplifier and detecting its level; and second control means for controlling the input to said auxiliary amplifier so as to minimize the detection output of said level detecting means.

5,617,062

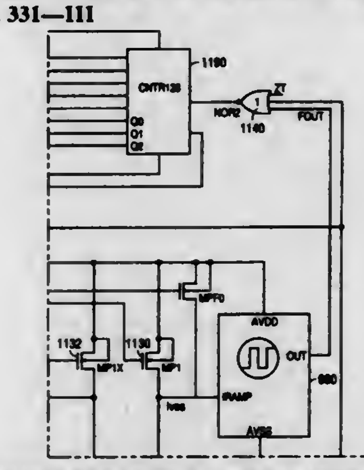
TIMING CIRCUIT WITH RAPID INITIALIZATION ON POWER-UP

Timothy G. O'Shaughnessy, Colorado Springs, Colo., and David G. Brown, Pocatello, Id., assignors to American Microsystems, Inc., Pocatello, Id.

Filed Jun. 7, 1995, Ser. No. 479,300

Int. Cl.⁶ H03B *5/24;* **H03K** *3/0231;* **H03L** *1/00*

U.S. Cl. 331—111 **12 Claims**



1. An initialization circuit for reducing settling time of a system timing signal using a core oscillator, the circuit comprising:

means for disabling the core oscillator in a power-down mode and re-enabling the core oscillator upon termination of the power-down mode; and

digital means coupled to the core oscillator for digitally storing an indication of an oscillation frequency essentially immediately preceding the power-down mode the storing means receiving the indication of an oscillation frequency from the core oscillator.

5,617,063

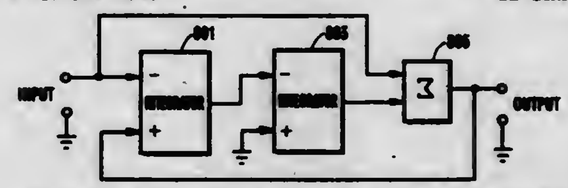
MATCHED FILTERS FOR PROCESSING RELATED SIGNAL COMPONENTS

Naom Chaplik, San Diego, Calif., assignor to Pacific Communication Sciences, Inc., San Diego, Calif.

Filed Dec. 13, 1995, Ser. No. 571,596

Int. Cl.⁶ H03C *3/00;* **H04L** *27/12;27/20;27/36*

U.S. Cl. 332—103 **12 Claims**



1. A circuit for processing related signal components, adapted to be coupled to a signal source which provides at least two related signal components, including:

(a) a first low pass filter, having two imaginary zeros, adapted to be coupled to the signal source for receiving from the signal source the first of the two related signal components, including:

(1) a first integrator having a positive input, a negative input, and an output;

(2) a second integrator having at least a negative input and an output, the negative input of the second integrator being coupled to the output from the first integrator; and

(3) a summing circuit having at least two inputs and an output, the first input being coupled to the negative input to the first integrator, the second input being coupled to the output from the second integrator, and the output being coupled to the positive input to the first integrator; and

(b) at least a second low pass filter, having two imaginary zeros, adapted to be coupled to the signal source for receiving from the signal source the second of the two related signal components;

(1) a first integrator having a positive input, a negative input, and an output;

(2) a second integrator having at least a negative input and an output, the negative input of the second integrator being coupled to the output from the first integrator; and

(3) a summing circuit having at least two inputs and an output, the first input being coupled to the negative input to the first integrator, the second input being coupled to the output from the second integrator, and the output being coupled to the positive input to the first integrator.

5,617,064

ACTIVE RESISTOR FOR STABILITY COMPENSATION

James L. Gorecki, Hillsboro, Oreg., assignor to Lattice Semiconductor Corporation, Hillsboro, Oreg.

Continuation-in-part of Ser. No. 396,994, Mar. 1, 1995. This application Mar. 14, 1995, Ser. No. 403,352

Int. Cl.⁶ H03H *11/00*

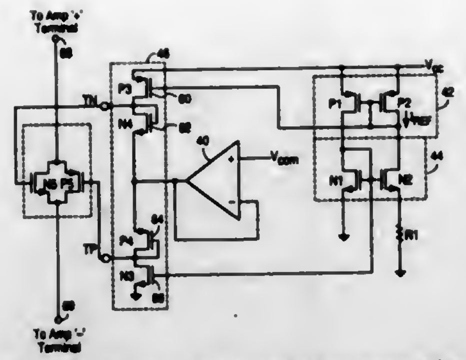
U.S. Cl. 333—22 R **6 Claims**

1. An active termination resistor circuit comprising

first and second active termination resistor circuit terminals;

an active termination resistor coupled between the first and second active termination resistor circuit terminals, the active termination resistor providing a resistance based upon a bias voltage, the active termination resistor including

a first transistor having a first transistor first current handling terminal coupled to the first active termination resistor circuit terminal, a first transistor second current handling



terminal coupled to the second active termination resistor circuit terminal and a first transistor control terminal coupled to the bias voltage, and

a second transistor having a second transistor first current handling terminal coupled to the first active termination resistor circuit terminal, a second transistor second current handling terminal coupled to the second active termination resistor circuit terminal and a second transistor control terminal coupled to the bias voltage; and,

a termination resistor bias generator coupled to the active termination resistor, the termination resistor bias generator including a bias resistor having a bias resistance, the termination resistor bias generator providing the bias voltage based upon the bias resistance of the bias resistor.

5,617,065

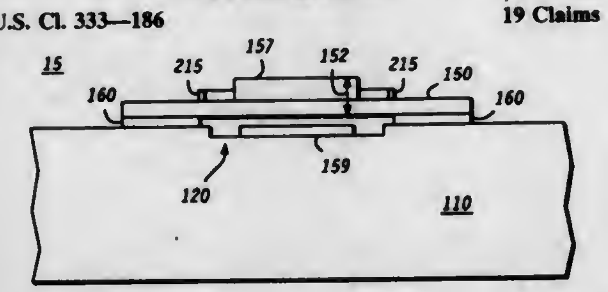
FILTER USING ENHANCED QUALITY FACTOR RESONATOR AND METHOD

Michael Dydyk, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 29, 1995, Ser. No. 496,837

Int. Cl.^{6} H03H *9/00*

U.S. Cl. 333—186 **19 Claims**



1. A filter using an enhanced quality factor resonator, said filter comprising:

a first resonator coupled in shunt with a first port;

a first bridging network coupled between said first port and a first node;

a second resonator coupled in shunt with said first node; and

a second port coupled to said first node, wherein said first and second resonators each comprise acoustic resonators and said first bridging network has an electrical length Θ at a frequency ω in a system having a characteristic admittance Y in accordance with $\omega C_o = Y\cot\Theta$, where C_o is a shunt capacitance including a clamping capacitance of said first resonator and ω is a center frequency of said filter.

5,617,066

POLARIZED ELECTROMAGNETIC RELAY

Michael Dittmann, Berlin; Heinz Stadler, München, and Herbert Mitschik, Geretsried, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

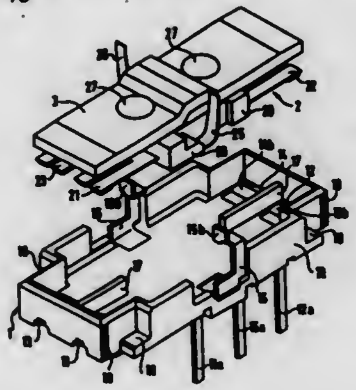
PCT No. PCT/DE94/00288, § 371 Date Sep. 25, 1995, § 102(e) Date Sep. 25, 1995, PCT Pub. No. WO94/22156, PCT Pub. Date Sep. 29, 1994

PCT Filed Mar. 16, 1994, Ser. No. 525,674

Claims priority, application Germany, Mar. 24, 1993, 43 09 619.0; Jul. 23, 1993, 43 24 857.8

Int. Cl.^{6} H01H *51/22*

U.S. Cl. 335—78 **19 Claims**



1. A polarized electromagnetic relay, comprising:

a base which is made of insulating material, defines a basic plane with its bottom side and in which are secured at least two stationary mating contact elements as well as two metallic bearing supports for an armature, said bearing supports being at sides of said armature,

a coil, which is secured on the base and has an axis parallel to the basic plane, a core and two pole shoes connected to ends of the core,

a permanent magnet arrangement which forms, in a region of the coil center, a center pole having a first pole direction and produces at each of the pole shoes poles having a pole direction opposite to said first pole direction,

a flat rocker armature, which is arranged approximately parallel to the coil axis between the base on one hand and the coil and the permanent magnet arrangement on another hand and is pivotably mounted in the center thereof about a center axis which is parallel to the basic plane, and

a contact arrangement, which is permanently connected to the armature, has at least two movable contact elements, which are embedded in an insulating material carrier and optionally cooperate with in each case one of the mating contact elements, and have two bearing elements which are embedded in the insulating material carrier, said bearing elements being at opposite sides of the armature and are connected to the bearing supports,

wherein the bearing elements are flat bearing strips which extend at least with a securing section at right angles to the basic plane, said flat bearing strips having no significant portions extending parallel to said basic plane, said flat bearing strips each being embedded in lateral projections of said insulating material carrier, issue from said insulating material carrier in a direction parallel to the longitudinal direction of the armature, are bent in a direction at right angles to the basic plane and are secured on the bearing supports extending parallel to said direction and the bearing supports form vertical bearing faces, against which the securing sections of the bearing strips lie flat, and are secured in a vertical position which can be set in a continuously variable manner.

5,617,067

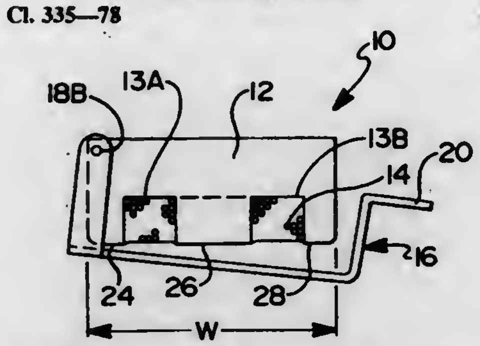
ELECTROMAGNETIC ACTUATOR HAVING A LOW ASPECT RATIO STATOR

Ram S. Arora, Farmington Hills; Walter K. O'Neil, Birmingham, and Bryce A. Buuck, Bellevue, all of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Dec. 7, 1995, Ser. No. 568,841

Int. Cl.^{6} H01H *51/22*

U.S. Cl. 335—78 **6 Claims**



1. An electromagnetic actuator comprising:

a stator having two parallel channels formed therein, where said stator has length and width and a height where said length is at least 1.6 times said width and where said width is at least 2.0 times said height, said channels being coaxial with said length;

a coil adapted to engage said channels for inducing a magnetic field in said stator upon application of an electrical current into said coil;

an armature hinged to said stator to contact said stator upon application of said electrical current and to swing away from said stator upon removal of said electrical current.

5,617,068

Patent Not Issued For This Number

5,617,069

MICROCHIP FUSE WITH A CASING CONSTRUCTED FROM UPPER AND LOWER MEMBERS AND A HOLLOW PORTION IN THE CASING

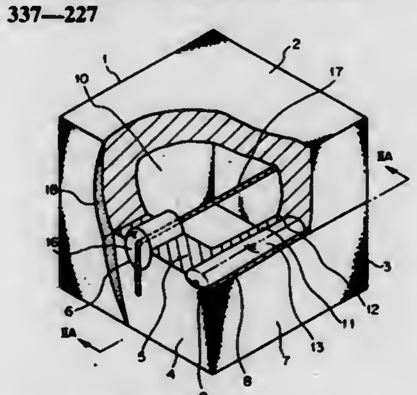
Hiroo Arikawa, Tokyo; Akihiko Kanehara, Kanagawa-ken; Manabu Furusawa, Kanagawa-ken, and Koh Ishimura, Kanagawa-ken, all of Japan, assignors to Soc Corporation, Tokyo, Japan

Filed Jun. 6, 1995, Ser. No. 466,977

Claims priority, application Japan, Oct. 3, 1994, 6-239027

Int. Cl.^{6} H01H *85/143; 85/165*

U.S. Cl. 337—227 **7 Claims**



1. A microchip fuse, comprising:

an upper member comprising

a pair of upper end surface members disposed opposite to each other with a given space therebetween and having respective opposite side portions, upper and lower edge portions and outer end surfaces,

a pair of upper side members connecting said opposite side portions of said pair of upper end surface members and having upper and lower edge portions, and

an upper lid member covering said upper edge portions of said pair of upper end surface members and said pair of upper side members,

said upper member comprising an electrically insulating material;

a lower member comprising

a pair of lower end surface members disposed opposite to each other with a given space therebetween and having respective opposite side portions, upper and lower edge portions and outer end surfaces,

a pair of lower side members connecting said opposite side portions of said pair of lower end surface members and having upper and lower edge portions, and

a lower lid member covering said lower edge portions of said pair of lower end surface members and said pair of lower side members,

said lower member comprising an electrically insulating material;

electrode sections provided at said outer end surfaces of said pair of upper end surfaces members of said upper member and said pair of lower end surface members of said lower member by sintering so as to adhere electrically conductive paste thereto;

wherein said lower edge portions of said upper end surface members and said upper edge portions of said lower end surface members, and said lower edge portions of said upper side members and said upper edge portions of said lower side members, are joined such that said outer end surface of each one of said upper end surface members forms one planar surface together with one of said lower end surface members, and such that an enclosed space is defined in said upper member and said lower member; and

a wire-like fusible element sandwiched between said lower edge portions of said upper end surface members and said upper edge portions of said lower end surface members and extending through said enclosed space, said fusible element having respective end portions connected to respective said electrode sections.

5,617,070

GAS/ELECTRIC OVEN THERMOSTAT WITH SELF CLEANING TEMPERATURE CALIBRATION MECHANISM

Michael Bodnar, West Chicago, Ill., assignor to Harper-Wyman Company, Aurora, Ill.

Filed May 5, 1995, Ser. No. 435,811

Int. Cl.^{6} H01H *37/12*

U.S. Cl. 337—323 **11 Claims**

1. A thermostat for use with an oven of an electric or gas range comprising:

a first electrical contact;

a second electrical contact;

a switch spring arm for moving the electrical contacts into and out of engagement;

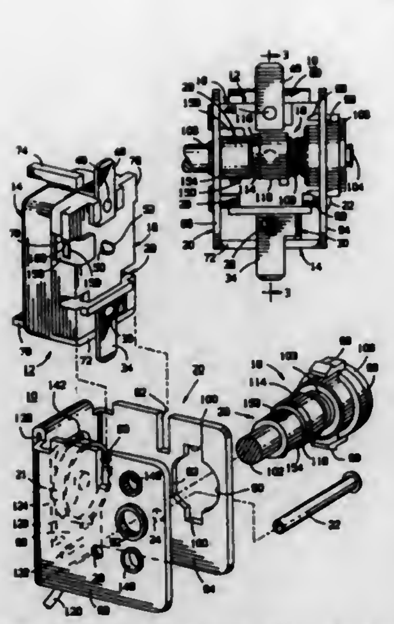
a pair of actuators for coupling forces to said switch spring arm;

an enclosure for enclosing said switch spring arm and said first and second electrical contacts, said enclosure having axially aligned channels extending through opposed walls for slidably receiving said actuators;

a temperature responsive subassembly including means for movement responsive to changes in oven temperature;

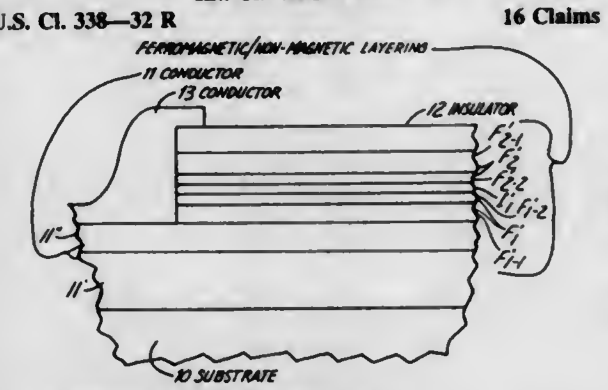
a spindle subassembly including means for movement responsive to manual rotation of a spindle;

a frame for supporting said enclosure and for supporting both said temperature responsive subassembly and said spindle subassembly in operative position with respect to said actuators; and



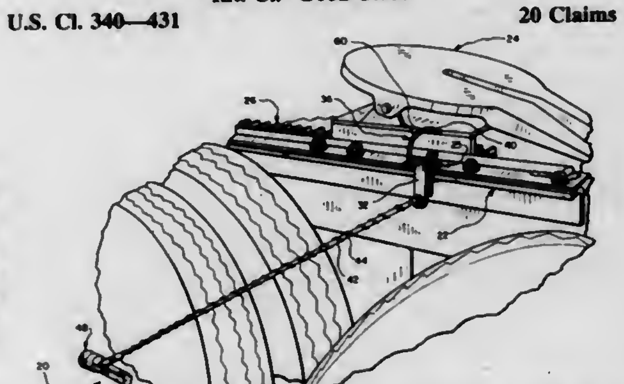
self cleaning temperature calibration means for selecting a self cleaning oven temperature setting; said self cleaning temperature calibration means comprising cooperating means coupled to said spindle and said enclosure; wherein said cooperating means coupled to said spindle and said enclosure include a calibration set screw received for adjustable movement through a corresponding threaded aperture within said spindle.

5,617,071
MAGNETORESISTIVE STRUCTURE COMPRISING FERROMAGNETIC THIN FILMS AND INTERMEDIATE ALLOY LAYER HAVING MAGNETIC CONCENTRATOR AND SHIELDING PERMEABLE MASSES
James M. Daughton, Edina, Minn., assignor to Nonvolatile Electronics, Incorporated, Eden Prairie, Minn.
Continuation-in-part of Ser. No. 182,614, Jan. 18, 1994, which is a continuation-in-part of Ser. No. 976,905, Nov. 16, 1992, abandoned. This application Feb. 6, 1995, Ser. No. 384,647
Int. Cl.[6] H01L *43/00*
U.S. Cl. 338—32 R **16 Claims**



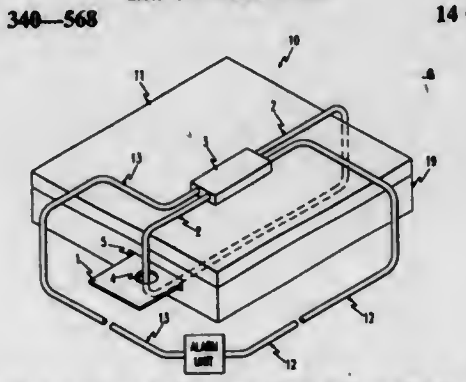
1. A magnetic field sensor comprising:
a substrate having a major surface portion;
a pair of magnetoresistive thin-film layered structures provided on said substrate electrically connected to one another and with each also being electrically connected to an interconnection means suited for electrical connection to a source of electrical energy; and
a group comprising three permeable material masses provided on said substrate with one of said two layered structures being positioned adjacent a first gap between a first and second of said permeable material masses in said group thereof, and with that layered structure remaining positioned (a) adjacent a side of a third of said permeable material masses in said group thereof which side faces said substrate as supported thereon, but (b) spaced apart from said first gap and from a second gap between said second and third permeable masses in said group thereof in a direction at least in part paralleling an axis substantially parallel to said substrate passing through both of said second and third permeable material masses and said second gap.

5,617,072
POSITION SIGNALING APPARATUS
Dennis D. McNeal, Las Vegas, Nev., assignor to Rockin' Chair Truckers Co., Sugar Land, Tex.
Filed Dec. 7, 1994, Ser. No. 354,562
Int. Cl.[6] G08B *21/00*
U.S. Cl. 340—431 **20 Claims**



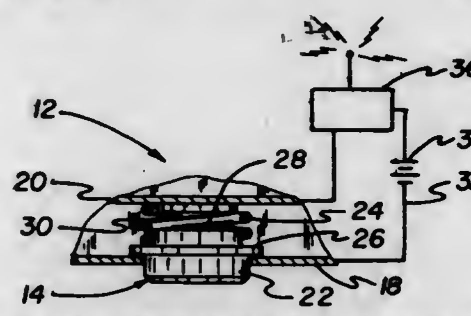
1. A position signaling apparatus for providing a signal to a vehicle driver upon achieving a desired positioning of vehicle components, comprising:
a switch coupled to a first vehicle component;
a trigger mechanism to actuate the switch, the trigger mechanism being coupled to a second vehicle component, the first vehicle component being movable relative to the second vehicle component;
a signaling device operatively coupled to the switch to provide a vehicle operator with a signal upon achieving one of a plurality of desired positions of the first vehicle component relative to the second vehicle component;
wherein the first vehicle component comprises a fifth wheel assembly and the second vehicle component comprises a vehicle frame portion adjacent the fifth wheel assembly.

5,617,073
METHOD AND APPARATUS FOR LINKING AN OBJECT WITH A SLOT TO A CABLE
Edwin P. Wilson, Allison Park, Pa., assignor to Minatronics Corporation, Allison Park, Pa.
Filed Jan. 5, 1996, Ser. No. 583,571
Int. Cl.[6] G08B *13/06*
U.S. Cl. 340—568 **14 Claims**



1. An apparatus for linking an object with a slot to a cable comprising:
a plate adapted for engagement within the slot of the object, said plate having a hole disposed therethrough;
a connection member having at least a first channel and a second channel for holding cable ends in communication with each other; and
a cable member having a first end and a second end, said cable member having a length which allows it to snugly encircle the object passing through the hole of the plate in the slot with the first and second ends secured within the first and second channels, respectively, to form a circuit, removal of the cable member from around the object can only occur by a break occurring in the circuit.

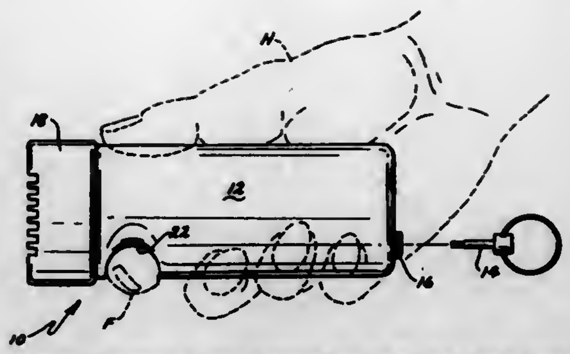
5,617,074
CHILD FINDER
Marvin D. White, 175 Telegraph Rd., Stafford, Va. 22554
Filed Nov. 2, 1995, Ser. No. 552,336
Int. Cl.[6] G08B *23/00*
U.S. Cl. 340—573 **3 Claims**



1. A child finder constructed as a watch to be worn on the child's body, said child finder comprising:
transmitter means for sending a monitoring signal to a receiver means for receiving said monitoring signal, said receiver means being typically positionable at a location remote from said transmitter means, said transmitter means being concealingly retained within said watch;
switch means for effecting an operation of said transmitter means, said switch means being concealingly mounted on said watch, said switch means being mounted to protrude exteriorly from a body portion of said watch and is reciprocally operable to activate said transmitter means, said switch means being formed in a cylindrical configuration and fabricated of electrically conductive material; and
said transmitter means being in a deactivated mode when said switch means is in an outward protruding position relative to said body portion of said watch and is in an activated mode when said switch means is depressed so as to move inwardly into said body portion of said watch, the wearing of said watch causing said switch means to move inwardly into said body portion of said watch, thereby activating said transmitter means.

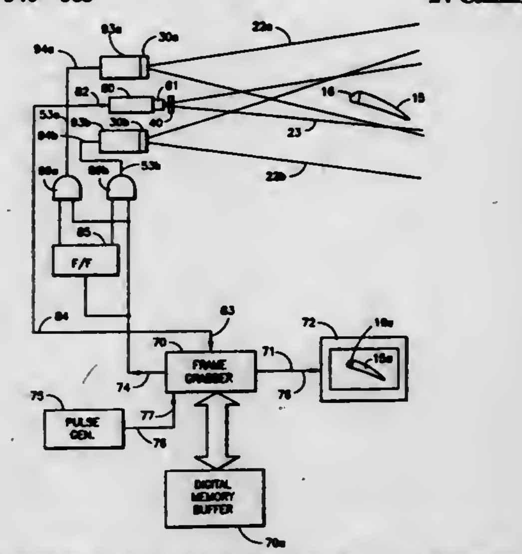
5,617,075
PERSONAL ALARM SECURITY DEVICE
Sharon L. Worth, and Tracy J. Worth, both of 17600 43rd Ave. N., Plymouth, Minn. 55446
Filed Apr. 28, 1995, Ser. No. 430,826
Int. Cl.[6] G08B *13/00*
U.S. Cl. 340—574 **15 Claims**

1. A personal alarm security device, comprising:
a housing;
first switch means mounted in said housing operable between open and closed positions;
electrical circuit means within said housing electrically connected to said first switch means;



a speaker mounted to said housing for producing a high decibel sound, said speaker being connected to said electrical circuit means;
a power source mounted within said housing and connected to said electrical circuit means;
photoelectric switch means mounted on said housing and operable between open and closed positions, said electrical circuit means including means for energizing said speaker upon closing both said first switch means and said photoelectric switch means, for maintaining power to said speaker until said first switch means is opened; and
an indent in said housing cooperative with said photoelectric switch means, said indent having a first side and a second side, whereby the user of the personal alarm security device may position a finger in said indent, maintaining said photoelectric switch means in said open position.

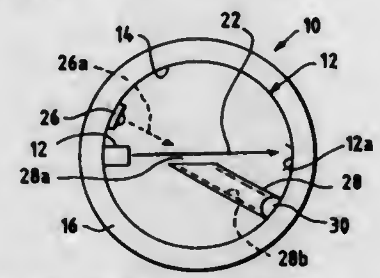
5,617,076
SYSTEM FOR DETECTING ICE OR SNOW ON SURFACE WHICH SPECULARLY REFLECTS LIGHT
Howard Stern, Greenlawn, N.Y., assignor to Robotic Vision Systems, Inc., Hauppauge, N.Y.
Continuation of Ser. No. 357,875, Dec. 16, 1994, which is a continuation-in-part of Ser. No. 963,840, Oct. 20, 1992, Pat. No. 5,475,370. This application Feb. 6, 1996, Ser. No. 597,722
Int. Cl.[6] G08B *19/02*
U.S. Cl. 340—583 **24 Claims**



1. A method for detecting on a surface which specularly reflects light, a presence of a polarization altering substance comprising the steps of:
transmitting light over a transmitting path to said surface;
receiving said transmitted light over a receiving path for said transmitted light from said surface and from said substance alternately in optical isolator and optical non-isolator states;
measuring a first intensity of light received in said optical non-isolator state;

measuring a second intensity of light received in said optical isolator state;
detecting a difference between said first and second intensities of light wherein an absence of said substance is indicated; and
detecting a substantial sameness of said first and second intensities of light wherein the presence of said substance on said surface is indicated.

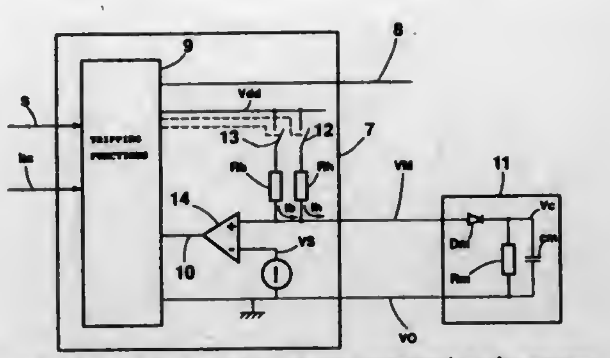
5,617,077
TESTABLE PHOTOELECTRIC DETECTOR
James F. Wiemeyer, Homer Township, and Mark Bohanon, Lisle, both of Ill., assignors to Pittway Corporation, Chicago, Ill.
Filed May 3, 1995, Ser. No. 434,567
Int. Cl.^{6} G08B *17/10*
U.S. Cl. 340—628 **5 Claims**



1. A photoelectric smoke detector comprising:
a housing which defines an internal volume;
a radiant energy element carried by said housing wherein said element includes a source of radiant energy, a part of said radiant energy is directed into said volume, and an attached photodetector wherein another part of said radiant energy from said source is incident on said detector thereby providing an electrical signal indicative of said radiant energy with said element including a common casing for said source and said photodetector;
a sensor of radiant energy spaced from said element, carried in said housing, and oriented to detect substantially only radiant energy from said source which has been scattered by ambient smoke; and
control circuitry coupled to said element and said sensor wherein said control circuitry energizes said source, at least intermittently, and wherein said control circuitry includes circuitry to monitor said electrical signal from said photodetector to verify proper operation of said source so as to provide a test enabling signal on a selected electric line to permit a test of said sensor only in response to proper operation of said source.

5,617,078
ELECTRONIC TRIP DEVICE COMPRISING A STORAGE DEVICE
Ghislain Durif, Meylan, France, and Allistair Morfey, Cambridgeshire, Great Britain, assignors to Schneider Electric SA, France
Filed Apr. 4, 1995, Ser. No. 416,345
Claims priority, application France, Apr. 21, 1994, 94 04923
Int. Cl.^{6} G08B *21/00*
U.S. Cl. 340—652 **5 Claims**

1. An electronic trip device comprising a processing unit producing a tripping signal when currents of a power system to be protected exceed preset thresholds or preset times, and a trip storage device connected to the processing unit, said storage device comprising:
a storage circuit for simulating a cooling of the power system comprising two terminals, a diode connected in series with a capacitor between said terminals and a resistor connected in parallel with said capacitor;



means for injecting a strong current, connected to the storage circuit, to quickly charge the capacitor to a voltage representative of a thermal state of the power system via the diode before tripping;
means for injecting a weak current, connected to the storage circuit, when the trip device is put into operation; and
means or measuring the voltage at the terminals of the storage circuit when sad weak current is injected into the capacitor via the diode, said voltage being representative of a thermal state of the power system.

5,617,079
APPARATUS FOR REPLACING A BATTERY IN A BATTERY POWERED DEVICE
Frank Harrison, P.O. Box 411824, Kansas City, Mo. 64141
Filed Mar. 12, 1996, Ser. No. 614,243
Int. Cl.^{6} G08G *1/01*
U.S. Cl. 340—693 **12 Claims**

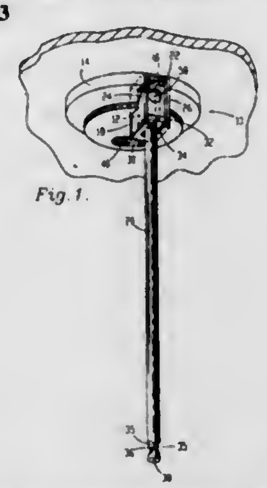
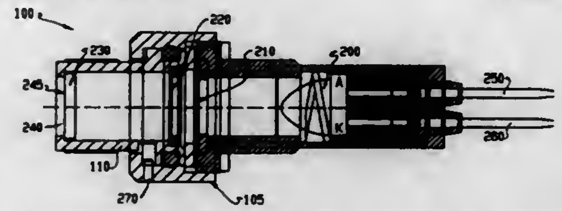


Fig. 1.

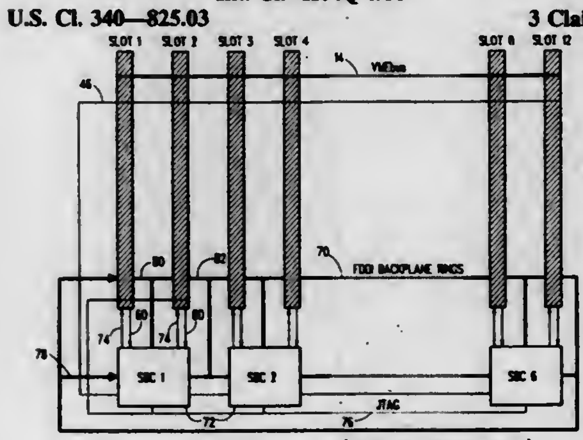
1. An apparatus for replacing a battery in a battery powered device having a battery connector, the apparatus comprising:
a battery housing for receiving a battery therein, the battery housing presenting an upper end adjacent the battery connector, a lower end spaced from the device, and a side opening; and
means for inserting and removing the battery through the side opening of the battery housing, the means including
an elongated rod, and
a battery carriage having a lower end attached to one end of the rod, an upper end, and a battery-carrying chamber for carrying the battery, the battery carriage being adapted for sliding in and out of the side opening of the battery housing for permitting a battery to be inserted into and removed from the battery housing.

5,617,080
COVERT LIGHT INDICATOR
Robert S. Morich, Crystal Lake, Ill., assignor to Electrodynamics, Inc., Rolling Meadows, Ill.
Filed Oct. 11, 1994, Ser. No. 320,727
Int. Cl.^{6} G08B *5/36*
U.S. Cl. 340—815.57 **20 Claims**



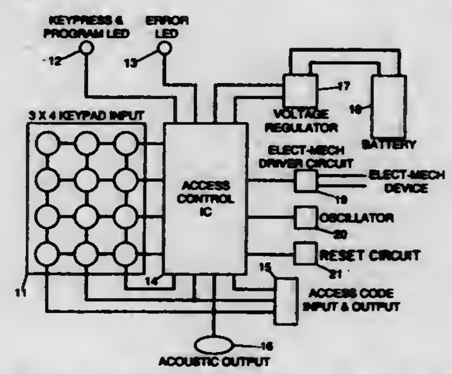
1. A light indicator for use in a panel display of an equipment comprising:
means responsive to said equipment for generating light radiation as a visual indication of system information;
first and second polarization means for polarizing incident light radiation from said means for generating light radiation, said first and second polarization means arranged such that said second polarization means is selectively rotatable with respect to said first polarization means for correspondingly limiting the intensity of the light radiation from said means for generating light radiation; and
filter means coupled optically to said first and second polarization means for substantially eliminating infrared radiation incident thereon from said means for generating light radiation.

5,617,081
METHOD AND APPARATUS FOR LIVE INSERTION AND REMOVAL OF ELECTRONIC SUB-ASSEMBLIES
Jay L. Madnick, Derry, N.H., and Stephen A. Hauser, Burlington, Mass., assignors to 3COM Corporation, Santa Clara, Calif.
Division of Ser. No. 191,391, Feb. 2, 1994, Pat. No. 5,584,030, which is a division of Ser. No. 738,581, Jul. 31, 1991, Pat. No. 5,317,697. This application Mar. 3, 1995, Ser. No. 398,112
Int. Cl.^{6} H04Q *1/00*
U.S. Cl. 340—825.03 **3 Claims**


(System Backplane)

1. Method for routing selected signals among sub-assembly slots and around at least one unused slot in a backplane in an electronic assembly having at least two slots, said method comprising the steps of:
establishing a first communication path between a first slot input path and a bypass circuit;
establishing a second communication path between a second slot output path and said bypass circuit;
establishing a third communication path between a first slot output path, a second slot input path and said bypass circuit;
sensing a first control signal indicative of the presence of a first sub-assembly in a first slot;
sensing a second control signal indicative of the presence of a second sub-assembly in a second slot; and
receiving selected signals at said first slot input path and routing said selected signals to one of said first slot output path and said bypass circuit in accordance with said first control signal, said selected signals routed to said bypass circuit being routed therethrough around said first slot via said third communication path to said second slot input path.

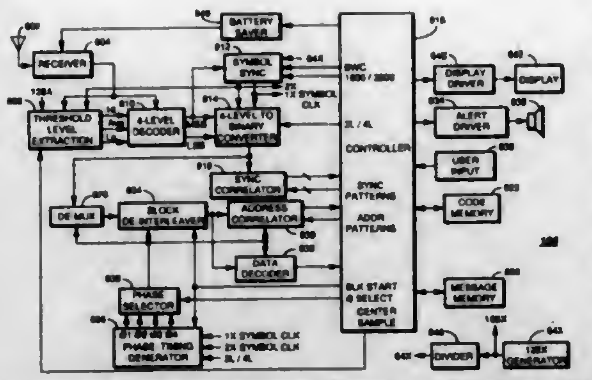
5,617,082
ELECTRONIC ACCESS CONTROL DEVICE UTILIZING A SINGLE MICROCOMPUTER INTEGRATED CIRCUIT
William D. Denison, Palos Hills; Lawrence C. Brownfield, Downers Grove, and Bradley S. Silvers, Oswego, all of Ill., assignors to Micro Enhanced Technology, Inc., Palos Hills, Ill.
Filed Nov. 15, 1994, Ser. No. 339,555
Int. Cl.^{6} E05B *49/00*
U.S. Cl. 340—825.31 **32 Claims**



1. An electronic access control device comprising: an input device adapted to receive a value input via the input device; a storage device containing at least one access code; means for output; a processor; a comparator electrically connected to said processor for comparing the at least one access code to the value input received via the input device; said processor activating the means for output when the access code equals the value input received via the input device; said processor having at least one port which serves both as an input and an output, and said processor connected to said input device and said means for output, said processor activating the output when the input device is not receiving the value input, and said processor multiplexing the input device and the means for output by connecting said means for output with said input device by way of:
(1) a first electrical connection of the input device to the at least one port of the processor; and
(2) a second electrical connection of the means for output to the at least one port of the processor.

5,617,083
DATA COMMUNICATION RECEIVER HAVING VARIABLE LENGTH MESSAGE CARRY-ON
Robert J. Schwendeman, Pompano Beach, and David R. Petreye, Lake Worth, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Continuation of Ser. No. 891,363, May 29, 1992, abandoned. This application Aug. 8, 1994, Ser. No. 286,891
Int. Cl.^{6} G08B *5/22*
U.S. Cl. 340—825.44 **18 Claims**

1. A data communication receiver assigned for receiving message signals within one or more message transmission frames transmitted in a predetermined sequence, the message signals arranged in transmission frame queues having a predetermined length, the transmission frame queues including address information and message information associated therewith, and information designating one or more additional consecutive and non-



consecutive message transmission frames to which the data communication receiver is responsive for receiving additional address information and message information associated therewith when the predetermined length of a transmission frame queue for an assigned message transmission frame is exceeded, the data communication receiver comprising:

a receiver for receiving the message signals;

decoding means, coupled to said receiver, for decoding address information and designating information received during reception of the assigned message transmission frame;

memory means, responsive to the address information decoded, for storing the message information associated therewith which is received during the assigned message transmission frame,

said decoding means being further responsive to the designating information, for decoding additional address information received during the reception of the one or more additional consecutive and non-consecutive message transmission frames designated by the designating information when the transmission frame queue for the assigned message transmission frame is full,

said memory means further storing the message information associated therewith which is received during the reception of the one or more additional consecutive and non-consecutive message transmission frames; and

means for displaying the message information stored.

5,617,084

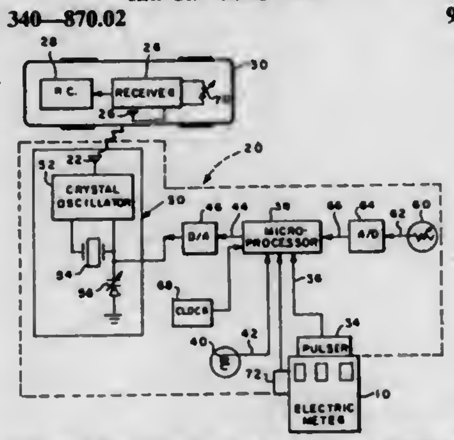
APPARATUS FOR COMMUNICATING UTILITY USAGE-RELATED INFORMATION FROM A UTILITY USAGE LOCATION TO A UTILITY USAGE REGISTERING DEVICE

Lawrence M. Sears, 45006 Mather La., Hunting Valley, Ohio 44022

Continuation of Ser. No. 119,986, Sep. 10, 1993, abandoned. This application Oct. 24, 1995, Ser. No. 547,408

Int. Cl.⁶ G08C *19/00*

U.S. Cl. 340—870.02 **9 Claims**



1. An apparatus for communicating utility usage information at a utility usage location to a utility usage registering device comprising first means adapted to be located at a utility usage location providing a first signal indicative of utility usage information, transmitter means responsive to said first signal for periodically transmitting at a pseudo-random transmission interval, a second signal which is indicative of the utility usage information, receiver means adapted to be located remote from said utility usage location for receiving said second signal, and a utility usage registering device associated with said receiver means for storing the information in said second signal which is indicative of the utility usage information, said transmitter means including a temperature compensated crystal oscillator for generating said second signal at an accurate, stable frequency, and further including temperature sensitive means for generating a temperature signal indicative of the temperature of said crystal oscillator, microprocessor means for storing therein data indicative of a plurality of temperature compensated signals, one of which is to be directed to said crystal oscillator to enable said crystal oscillator to generate said second signal at an accurately predetermined frequency, said microprocessor means receiving said temperature signal and generating a temperature compensated signal to be directed to said crystal oscillator from said data in said microprocessor means.

5,617,085

METHOD AND APPARATUS FOR MONITORING THE SURROUNDINGS OF A VEHICLE AND FOR DETECTING FAILURE OF THE MONITORING APPARATUS

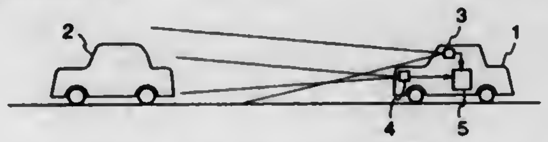
Kazumichi Tsutsumi; Shigekazu Okamura, and Tatsuji Irie, all of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 30, 1996, Ser. No. 652,683

Claims priority, application Japan, Nov. 17, 1995, 7-300214

Int. Cl.⁶ G08G *1/16*

U.S. Cl. 340—903 **11 Claims**



1. A surroundings monitoring apparatus for monitoring the surroundings of a vehicle comprising:

a camera having an optical axis, said camera being mounted on said vehicle for detecting an image of a road;

a lane detecting means for detecting coordinates of a lane wherein said vehicle is located by processing image signals output from said camera onto a display image having coordinate axes;

a beam-scan type laser radar mounted on said vehicle and installed such that an optical axis center thereof is coincident with the optical axis of said camera;

a coordinate transforming means for transforming the coordinates of an object detected by said laser radar in conformity with the coordinate axes of said display image to provide transformed coordinates; and

a forward vehicle detecting means for separating objects detected within said lane from objects detected outside said lane by comparing said transformed coordinates with the coordinates of said lane.

5,617,086

TRAFFIC MONITORING SYSTEM

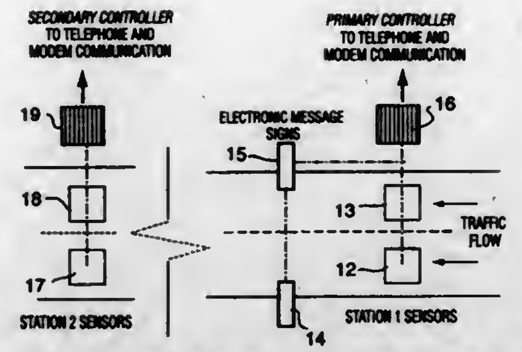
Rod Klashinsky, and Terry Bergan, both of Saskatoon, Canada, assignors to International Road Dynamics, Saskatoon, Canada

Filed Oct. 31, 1994, Ser. No. 332,552

Int. Cl.⁶ G08G *1/08*

U.S. Cl. 340—907 **9 Claims**

1. A traffic monitoring system comprising:



(i) a set of sensors which are disposed in a traffic lane approaching a hazard for providing signals indicative of the speed, and also indicative of at least the weight of a vehicle traversing the set of sensors;

(ii) a processor having a memory for storing site-specific dimensional data related both to the hazard and to signals from said set of sensors; and

(iii) a traffic signalling device associated with said traffic lane and disposed downstream of said set of sensors, said traffic signalling device being controlled by said processor;

said processor being responsive to said signals from said set of sensors for computing a computed vehicle speed and a derived maximum vehicle speed, said derived maximum vehicle speed being derived from said site-specific dimensional data and from at least said weight of said vehicle, said derived vehicle speed being a maximum speed for said vehicle to negotiate said hazard, said processor comparing said computed vehicle speed with said derived maximum vehicle speed and operating said traffic signalling device if said computed vehicle speed exceeds said derived maximum vehicle speed.

5,617,087

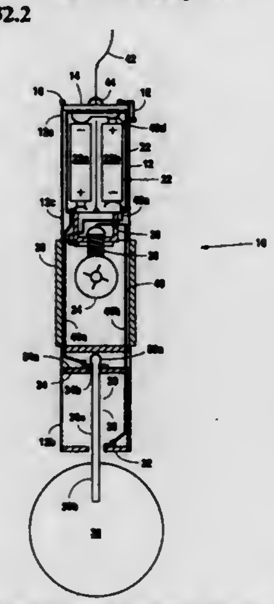
PARKING AID FOR PARKING VEHICLES IN A COVERED GARAGE

Thomas J. Scott, 1225 Cherry Creek Blvd., Spring Branch, Tex. 78070

Filed Jul. 21, 1995, Ser. No. 505,565

Int. Cl.⁶ B60Q *1/48*

U.S. Cl. 340—932.2 **19 Claims**



1. A parking aid device for vehicles entering a ceiling-covered parking space, the device comprising:

a housing having walls and including a non-opaque lens, the housing containing therein:

a power supply;

a lamp including a bulb;

a wiring harness, including wiring and switch means for opening and closing the circuit, for connecting in circuit the switch means to the lamp and the power supply;

means for suspending said housing from the ceiling of the parking space such that a vehicle entering the parking space will, upon contacting said device, cause the switch means to energize said lamp, thereby providing a visual indication of the position of the vehicle; and

the switch means comprising conductive plates and a hanging member suspended through the center of said plates, the switch means energizing the lamp upon the hanging member being struck in any direction.

5,617,088

SAMPLING FREQUENCY CONVERTING DEVICE AND MEMORY ADDRESS CONTROL DEVICE

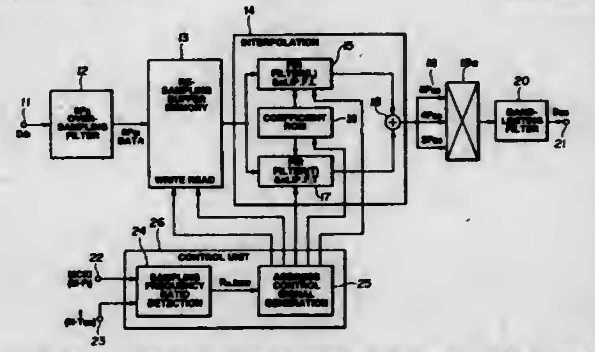
Nobuyuki Yasuda, Chiba, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jan. 23, 1995, Ser. No. 377,115

Claims priority, application Japan, Jan. 26, 1994, 6-007124; Jan. 28, 1994, 6-008366; Jan. 28, 1994, 6-008367

Int. Cl.⁶ H03M *7/00*

U.S. Cl. 341—61 **31 Claims**



1. A device for converting a sampling frequency of an input signal into an arbitrary sampling frequency, comprising;

storage means for storing the input signal;

interpolation means for interpolating the signal read out from said storage means; and

control means for generating a current sampling frequency ratio between the sampling frequency of the input signal and the arbitrary sampling frequency and a new sampling frequency ratio between the sampling frequency of the input signal and the arbitrary sampling frequency based on the current sampling frequency ratio for suppressing jitter components and for performing sampling frequency conversion, said control means generating a control signal for controlling an address signal of said storage means and interpolation factors of said interpolation means and effecting sampling frequency conversion by controlling said storage means and said interpolation means based on the generated control signal controlling the address signal.

5,617,089

HUFFMAN CODE DECODING CIRCUIT

Shigenori Kinouchi, and Akira Sawada, both of Tokyo, Japan, assignors to NEC Corporation, Japan

Filed Mar. 7, 1995, Ser. No. 399,752

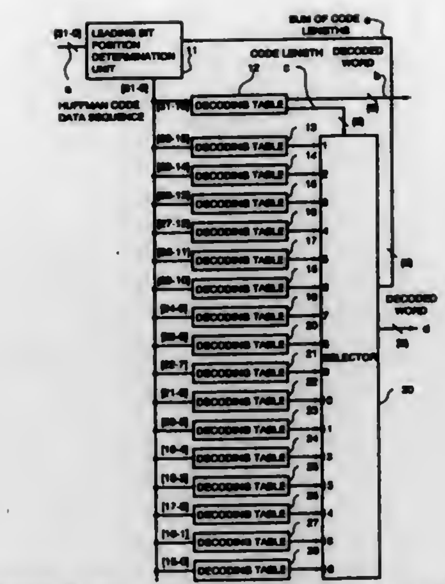
Claims priority, application Japan, Mar. 9, 1994, 6-064422

Int. Cl.⁶ H03M *7/40*

U.S. Cl. 341—65 **12 Claims**

1. A Huffman code decoding circuit comprising:

leading bit position determination means for determining a leading bit position of a Huffman code to be taken out of a Huffman code data sequence to take in a given number of bits



starting at said determined leading bit position of said Huffman code data sequence;

first decoding information storage means for inputting a first data sequence composed of a predetermined number of bits starting with the leading bit of said Huffman code data sequence output from said leading bit position determination means to output a first decoded word and a first code length corresponding to said first data sequence applied as an address;

a plurality of 2nd to n-th decoding information storage means for respectively inputting 2nd to n-th data sequences each composed of a predetermined number of bits starting at a different bit position different of said Huffman code data sequence output from said leading bit position determination means to output a decoded word and a code length corresponding to the 2nd to n-th data sequences applied as addresses; and

selection means for selecting one of the outputs of said 2nd to n-th decoding information storage means in response to the first code length output by said first decoding information storage means as a select signal to output a second decoded word and a second code length;

wherein said second code length output from said selection means is supplied to said leading bit position determination means and said leading bit position determination means determines a leading bit position of a Huffman code data sequence to be taken in based on said second code length.

5,617,090

MULTI-CHANNEL SIGMA-DELTA A/D CONVERTERS WITH IMPROVED THROUGHPUT

Fan Y. Ma, Singapore, Singapore, and John J. Kornblum, Indialantic, Fla., assignors to Harris Corporation, Melbourne, Fla.

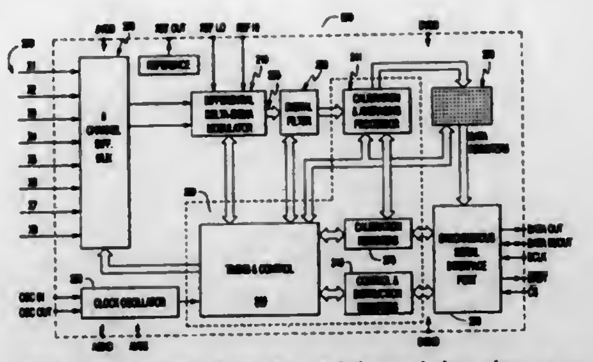
Filed May 10, 1995, Ser. No. 438,251

Int. Cl.[6] H03M *1/00*

U.S. Cl. 341—141 **21 Claims**

1. A method for converting analog signals to digital signals in the presence of line noise, for filtering line noise of a known line noise frequency (F_{line}) and for increasing the throughput of conversion of an analog to digital converter having a first number of internal time slots conversion channels selectively connectable to a first number of external channels comprising the steps of:

(a) selecting an integral number of sets (N_{set}) of internal time slot conversion channels, each set comprising a number of internal time slot channels $N_{set\ channels}$) equally spaced within a line noise quarter cycle and equally spaced across a line



noise quarter cycle boundary each internal time slot conversion channel connected to one of the selected external channels:

(b) convening the internal time slot channels of each of the sets four (4) times during each line noise cycle;

(c) synchronizing the conversions to the line noise quarter cycle; and

(d) taking the moving average of the latest $4N_{set}$, conversions of each set for performing noise filtered convertions at a throughput rate of $4N_{set\ channels} X F_{line}$.

5,617,091

RESISTANCE LADDER, D-A CONVERTER, AND A-D CONVERTER

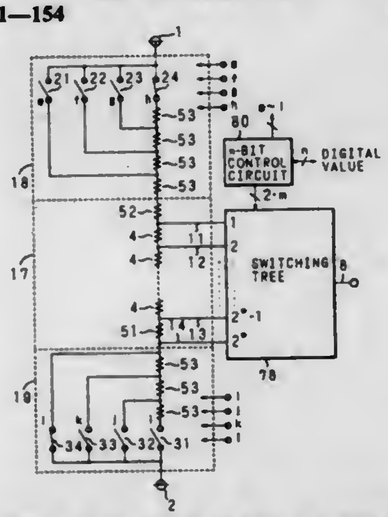
Nobuya Uda, Itami, Japan, assignor to Lowe, Price, LeBlanc & Becker, Alexandria, Va.

Filed Jun. 14, 1995, Ser. No. 490,270

Claims priority, application Japan, Sep. 2, 1994, 6-209919

Int. Cl.[6] H03M *1/78*

U.S. Cl. 341—154 **48 Claims**



1. A resistance ladder which divides a potential difference between first and second reference voltage sources into 2^n levels, comprising:

a first resistance group comprising: a string of resistors in which plural resistors are connected in series with a total sum of resistances being (2^m-1). R (where n> m); and 2^m ladder taps respectively connected to nodes of the resistors and one end of said string of the resistors to take out respective division voltages of the potential difference between said first and second reference voltage sources;

a second resistance group comprising: a string of resistors in which 2^{n-m} resistors each having a resistance of $R/2^{n-m}$ are connected in series; and connecting means for selectively connecting one end of said string of the resistors or one of the nodes of the resistors to said first reference voltage source which supplies a higher voltage, the other end of said series of the resistors being connected to said first resistance group; and

a third resistance group comprising: a string of resistors in which $(2^{n-m}-1)$ resistors each having a resistance of $R/2^{n-m}$ are connected in series; and connecting means for selectively connecting either ends of said string of the resistors or one of the nodes of the resistors to said second reference voltage source, the one end of said string of the resistors being connected to said first resistance group.

5,617,092

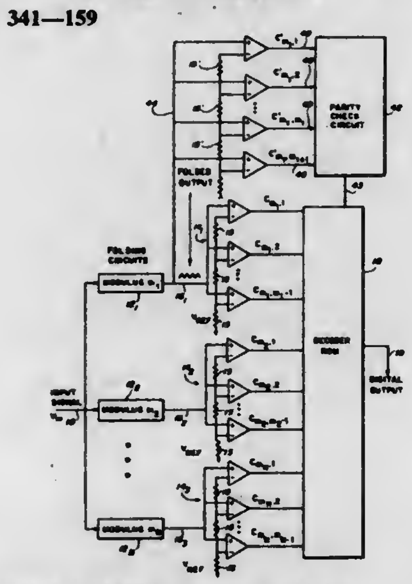
HIGH RESOLUTION ENCODING CIRCUIT AND PROCESS FOR ANALOG TO DIGITAL CONVERSION

Phillip E. Pace, Castroville, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 28, 1995, Ser. No. 395,331

Int. Cl.[6] H03M *1/14*

U.S. Cl. 341—159 **7 Claims**



1. An analog to digital converter comprising:

means for receiving an input;

means for directing said input to N folding circuits, said N being an integer greater than or equal to 2, each of said N folding circuits being effective for folding said input in accordance with a corresponding N preselected folding functions, each of said folding circuits having an associated integer modulus m_n, $n=1, \ldots, N$;

wherein the folding period of each of said folding circuits is $2m_n$; and

all moduli m_n are relatively prime with respect to one another.

5,617,093

SWITCHED CAPACITOR ANALOG CIRCUITS WITH LOW INPUT CAPACITANCE

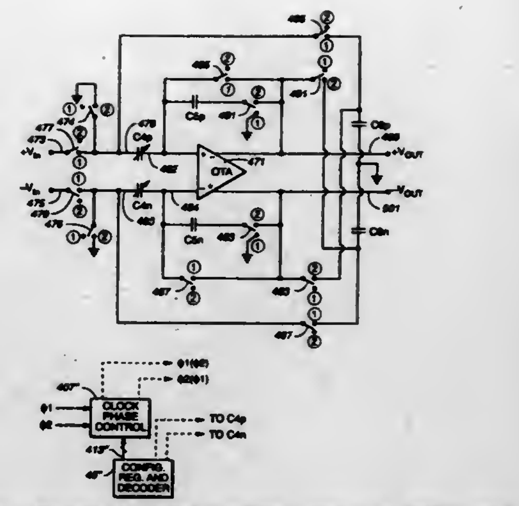
Hans W. Klein, Pleasanton, Calif., assignor to IMP, Inc., San Jose, Calif.

Filed Sep. 30, 1994, Ser. No. 315,478

Int. Cl.[6] H03M *1/00*

U.S. Cl. 341—172 **24 Claims**

1. In a method of transferring packets of electronic charge through a circuit having an input capacitor connected to be periodically charged by an input signal and that charge transferred to another capacitor from which an output signal of the circuit is derived, the improvement of charging the input capacitor from a source of charge in addition to the input signal to a level approximating that of a current sample of the input signal, thereby to



reduce the amount of charge required from the input signal, whereby the input impedance of the circuit is maintained high.

5,617,094

INVERSE QUANTIZER

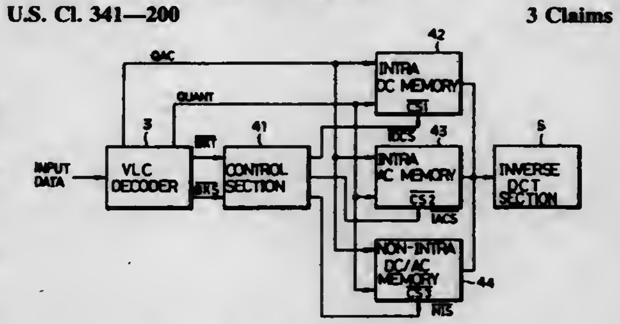
Si J. Kim, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Nov. 30, 1993, Ser. No. 158,998

Claims priority, application Rep. of Korea, Nov. 30, 1993, 92-22803

Int. Cl.[6] H03M *1/00*

U.S. Cl. 341—200 **3 Claims**



1. An inverse quantizing device comprising:

a plurality of memories for receiving input quantized coefficients and quantization levels as address data thereof and storing resultant data of inverse quantization in groups; and

control means for discriminating the group of an input data to be inverse-quantized in accordance with input block-type and block-strobe signals and providing a selection control signal for selecting one of said plurality of memories storing said resultant data of the discriminated group;

whereby said resultant data stored at the address of the selected one of said plurality of memories assigned by said quantized coefficients and said quantization levels is provided,

wherein said resultant data of inverse quantization are grouped into block data of intra DC, intra AC and non-intra, respectively, and said plurality of memories are an intra DC memory, an intra AC memory and a non-intra DC/AC memory.

5,617,095
HYBRID TYPE WIDE BAND ELECTROMAGNETIC WAVE ABSORBER

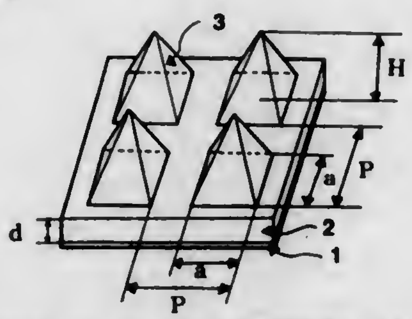
Dong-Young Kim, and Yeon-Choon Chung, both of Daejeon-Si, Rep. of Korea, assignors to Korea Research Institute of Standards & Science, Rep. of Korea

Filed Oct. 18, 1995, Ser. No. 543,260

Claims priority, application Rep. of Korea, Jul. 14, 1995, 95-20682

Int. Cl.⁶ H01Q *17/00*

U.S. Cl. 342—1 **11 Claims**



1. A hybrid type wide band electromagnetic wave absorber comprising: a metal plate; a sintered ferrite plate disposed on the metal plate; and a plurality of spaced apart tapered cone members formed of a ferrite or ferrite composite material arranged in a regular square form on the sintered ferrite plate.

5,617,096
BROAD-BAND RADIO WAVE ABSORBER

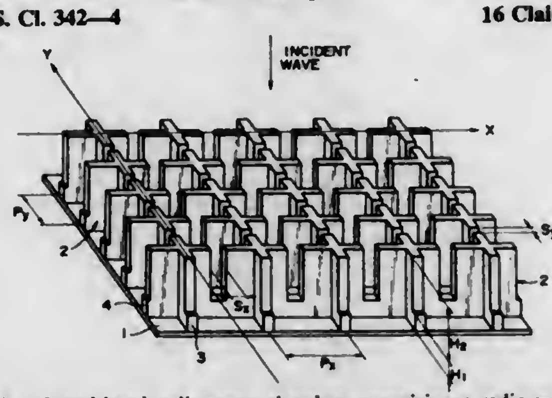
Michiharu Takahashi, 390-190, Takatsu, Yachiyo-shi, Chiba-ken, Japan

Filed Oct. 21, 1994, Ser. No. 327,387

Claims priority, application Japan, Jul. 25, 1994, 6-192885

Int. Cl.⁶ H01Q *17/00*

U.S. Cl. 342—4 **16 Claims**



1. A broad-band radio wave absorber comprising a radio wave reflecting surface, and a plurality of magnetic members provided on said reflecting surface and arranged in columns and rows in the directions of the X-axis and Y-axis, respectively,

each of said magnetic members including a first section extending in parallel with the Y-axis and a second section in contact with said first section throughout the height thereof and extending in parallel with the X-axis, such that said first sections of respective magnetic members in each row are aligned and said second sections of respective magnetic members in each column are aligned and that said first sections in each column are spaced apart from each other at a distance P_x and said second sections in each row are spaced apart from each other at a distance P_y,

each of said first and second sections being composed of a plurality of portions superimposed in turn in a stepwise manner,

one portion of said plurality of portions of each of said first sections having a length along the Y-axis of L_y and a thickness along the X-axis of T_x, and

one portion of said plurality of portions of each of said second sections having a length along the X-axis of L_x and a thickness along the Y-axis of T_y,

wherein L_y, P_y, T_y, L_x, P_x and T_x meet with the following conditions:

$T_y<L_y<P_y$ and

$T_x<L_x<P_x$.

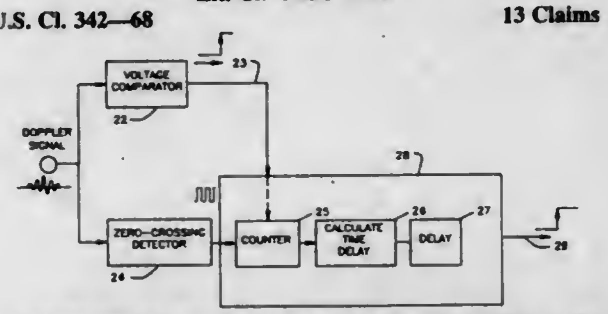
5,617,097
LOW-COST NEAR-SURFACE BURST (NSB) CAPABILITY FOR PROXIMITY FUZES

Stratis Gavnoudias, Laurel, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 16, 1995, Ser. No. 390,457

Int. Cl.⁶ F42C *13/04*

U.S. Cl. 342—68 **13 Claims**



1. A process for providing a near surface burst capability to the existing option fuze for artillery wherein said option fuze is modified with the addition of

a zero-crossing detector to square up the signal and

a subroutine to the existing micro-controller so that height of bursts can be calculated to occur one to three meters from the ground.

5,617,098
MULTICHANNEL RADAR SYSTEM FOR MOTOR VEHICLES

Takurou Koyanagi; Hiroyuki Andou, and Takaaki Nagai, all of Saitama-ken, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

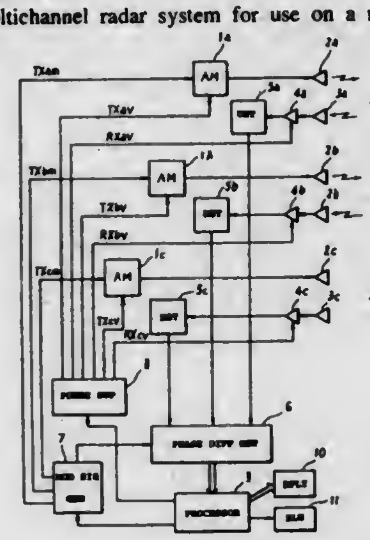
Filed Nov. 9, 1995, Ser. No. 555,800

Claims priority, application Japan, Nov. 10, 1994, 6-301428

Int. Cl.⁶ G01S *13/93*

U.S. Cl. 342—70 **10 Claims**

1. A multichannel radar system for use on a motor vehicle,



comprising:

a plurality of transmission and reception channels each composed of an AM signal generator for generating an AM signal including a carrier which is amplitude-modulated by a modulation signal, an antenna for radiating the generated AM signal and receiving a return signal reflected by an obstacle, an amplifier for amplifying the received return signal, and a detector for detecting the amplified return signal;

a power supply for supplying DC voltages respectively to the AM signal generators and the amplifiers of the respective transmission and reception channels in a time-division multiplex manner at successive times; and

a range calculator for calculating a distance up to the obstacle based on the phase difference between the detected return signals and the modulation signals in the respective transmission and reception channels.

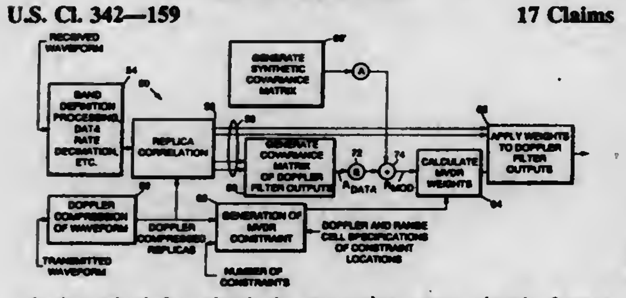
5,617,099
ADAPTIVE FILTERING OF MATCHED-FILTER DATA

Ronald W. Warren, Downey, Calif., and Ben R. Breed, Austin, Tex., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jan. 22, 1996, Ser. No. 589,806

Int. Cl.⁶ G01S *13/53*

U.S. Cl. 342—159 **17 Claims**



1. A method for adaptively processing return signals from a transmitted waveform in the presence of non-white noise or clutter return, comprising the following steps:

forming a plurality of Doppler compressed replicas of the transmitted waveform;

performing correlation of a version of the received waveform with the Doppler compressed replicas to provide matched filtering of the version of the received waveform and produce a plurality of range-Doppler filter outputs;

generating a covariance matrix from the range-Doppler filter outputs over time;

determining a set of weights in dependence on the covariance matrix;

applying the weights to selected ones of the range-Doppler filter outputs to produce the processor output signal.

5,617,100
ACCURATE POSITION MEASURING SYSTEM

Masami Akiyoshi, Fukuoka, and Yuji Mitsunaga, Dazaifu, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

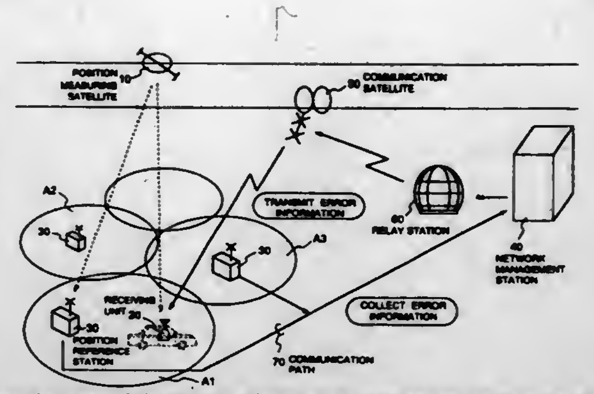
Filed Mar. 31, 1995, Ser. No. 414,588

Claims priority, application Japan, Apr. 7, 1994, 6-069488; Apr. 8, 1994, 6-071001

Int. Cl.⁶ G01S *5/02*

U.S. Cl. 342—357 **27 Claims**

7. A position measuring device for use in an accurate position measuring system which includes a communication satellite for transmission, a position measuring satellite for transmitting position measurement data necessary for position measurement calculations, a plurality of position reference stations for receiving the position measurement data from said position measuring satellite to calculate their own station positions and for calculating positional error information on the basis of their own station positions



and for transmitting the positional error information, and a network station for collecting the positional error information transmitted from the plurality of position reference stations to prepare wide-area positional error information and for transmitting the wide-area positional error information to said communication satellite, and said position measuring device, wherein said position measuring device comprises:

position measuring means for receiving the position measurement data from said position measuring satellite and calculating the position of said position measuring device, receiving means for receiving the wide-area positional error information from said communication satellite, and calculation means for correcting the calculated position of said position measuring device using the wide-area positional error information.

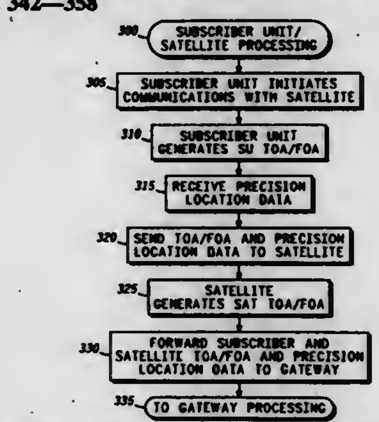
5,617,101
SATELLITE-BASED GEOLOCATION CALIBRATION SYSTEM AND METHOD

Kristine P. Maine, Phoenix; Dean P. V. Heuvel, and Brent M. McKay, both of Chandler, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 27, 1994, Ser. No. 363,854

Int. Cl.⁶ H04B *7/185;1/60;17/00*

U.S. Cl. 342—358 **9 Claims**



1. In a radio telecommunication system employing accurate location data of a user for communication routing and access control, a method of calibrating said radio telecommunication system to generate said accurate location data from measured signal parameters as measured by said user and modified by variance data stored in a gateway, said method comprising the steps of:

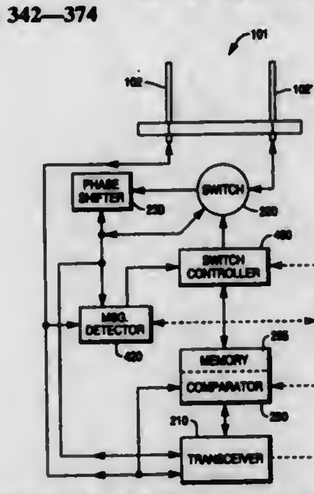
(a) generating measured signal parameters between a satellite and a calibration subscriber unit;

(b) receiving precision location data from an alternate location source at said calibration subscriber unit;

(c) forwarding said measured signal parameters and said precision location data to said gateway from said satellite; and

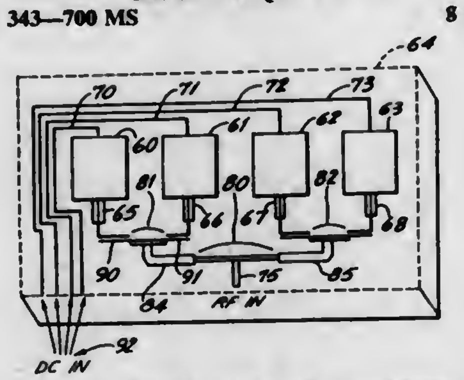
(d) generating said variance data to be used to correct subsequent location processing at said gateway.

5,617,102
COMMUNICATIONS TRANSCEIVER USING AN ADAPTIVE DIRECTIONAL ANTENNA
James S. Prater, Fort Collins, Colo., assignor to AT&T Global Information Solutions Company, Dayton, Ohio; Hyundai Electronics America, San Jose, Calif., and Symbios Logic Inc., Fort Collins, Colo.
Filed Nov. 18, 1994, Ser. No. 342,328
Int. Cl.[6] H01Q *3/02*
U.S. Cl. 342—374 **26 Claims**



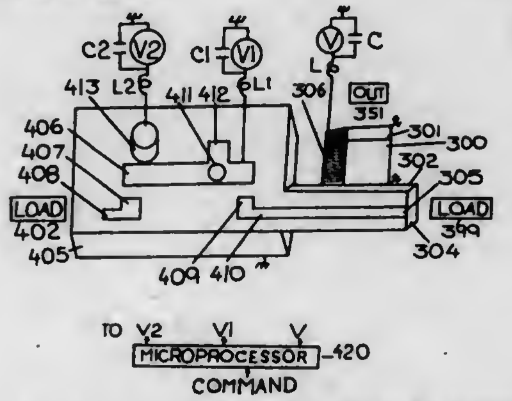
1. A directionally adaptive antenna system for use with a portable communications transceiver for communicating with a base station in a communications network, said system comprising:
(a) at least two antennae, connected to said transceiver, for receiving a first signal from said base station;
(b) circuitry coupled to one of said antennae to enable said antennae to generate together a plurality of antenna patterns having mutually exclusive directionality;
(c) a switch, operable with said transceiver, for selecting one of said plurality of antenna patterns which provides a maximum signal strength of said first signal received from said base station; and
(d) a switch operator for operating the switch to select the one of said plurality of antenna patterns, wherein said switch operator operates the switch to periodically select each of said antenna patterns to determine which one of said antenna patterns provides said maximum signal strength of said first signal received from said base station.

5,617,103
FERROELECTRIC PHASE SHIFTING ANTENNA ARRAY
Thomas E. Koscica, Clark; Michael Tadross, Marlboro, and William C. Drach, Tinton Falls, all of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Jul. 19, 1995, Ser. No. 504,163
Int. Cl.[6] H01Q *1/38*
U.S. Cl. 343—700 MS **8 Claims**



1. A ferroelectric antenna comprising a rectangular antenna patch, an input source of Rf energy, a ferroelectric component having one end connected to said patch and a second end connected to said input source of Rf energy, a DC control source for varying the dielectric constant of said ferroelectric component, and a dielectric substrate support for supporting said antenna patch and said ferroelectric component; said rectangular antenna patch having at least two non-coincident resonant modes; said DC control source connected to a side of said rectangular antenna patch which is at least close to or coincident with a voltage null position of one of said resonant modes.

5,617,104
HIGH TC SUPERCONDUCTING TUNABLE FERROELECTRIC TRANSMITTING SYSTEM
Satyendranath Das, P.O. Box 574, Mt. View, Calif. 94042-0574
Continuation of Ser. No. 39,575, May 31, 1995, and Ser. No. 36,827, Mar. 28, 1995. This application Mar. 15, 1996, Ser. No. 616,337
Int. Cl.[6] H01Q *1/38;* **H03B** *5/18*
U.S. Cl. 343—700 MS **1 Claim**

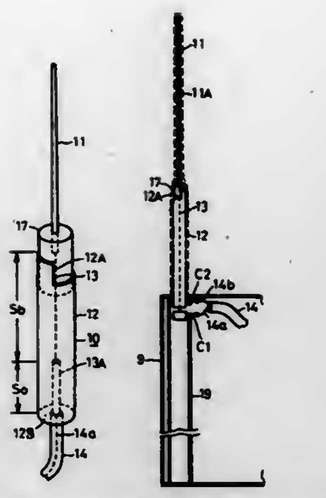


1. A high Tc superconducting tunable ferroelectric transmitting system containing an oscillator and a tunable antenna, ferroelectric resonator whose permittivity is a function of a bias field applied across it and a tuning frequency, a Curie temperature, dielectric material, input, output, and an operating frequency and comprising:
a tunable ferroelectric resonator (TFR) oscillator comprising:
a single crystal dielectric substrate;
a main first microstrip line on said single crystal dielectric substrate;
a negative resistance diode being connected across one end of said main first microstrip line;
a quarter wavelength long, at a second harmonic of an operating frequency of the tunable transmitting system, open circuit second microstrip line being connected at said negative resistance diode end of said main first microstrip line to provide a short circuit at even harmonics of an operating frequency of said tunable transmitting system;
a single crystal tunable ferroelectric first resonator, having said permittivity, being coupled to said main first microstrip line having an appropriate separation between the negative resistance diode and said single crystal tunable ferroelectric resonator;
said main first microstrip line being coupled to two quadrature coupled filters one at the input and one at the output end of the tunable oscillator and comprising:
a quarter wavelength long, at an operating frequency of the transmitting system, third microstrip line being coupled to and separate from said main first microstrip transmission line at its input;
a 50 ohm fourth microstrip line being connected to and being not a part of said quarter wavelength long third microstrip line;
said fourth microstrip line being terminated, at the input end, in a matched load;

a quarter wavelength long, at an operating frequency of the transmitting system, fifth microstrip line being coupled to and separate from said main first microstrip transmission line at its output;
a 50 ohm sixth microstrip line being connected to and being not a part of said quarter wavelength long fifth microstrip line;
means for applying a bias voltage to said single crystal ferroelectric first resonator for changing its resonant frequency;
means for applying a bias voltage to said diode for obtaining a negative resistance characteristics;
a tunable ferroelectric resonator (TFR) antenna comprising:
a seventh microstrip line being connected to and being an extension of said sixth microstrip line;
a conducting film deposited on the reverse side or said single crystal dielectric substrate;
a single crystal tunable ferroelectric second resonator antenna, having said permittivity, being located on top of said conducting film on said reverse side of said single crystal dielectric substrate;
a hole, below said second resonator antenna, in the conducting film deposition on said reverse side of said single crystal dielectric substrate for coupling energy from said seventh microstrip line to said single crystal tunable ferroelectric second resonator antenna;
said conducting film on said reverse side of said single crystal dielectric substrate being grounded;
said seventh microstrip line being terminated, at the output end, in a matched load;
means for applying a bias voltage to said single crystal tunable ferroelectric second resonator antenna for changing its resonant frequency;
said microstrip lines being comprised of films of a single crystal high Tc superconductor;
all bias voltages being synchronized by a microprocessor for proper operation of said tunable transmitting system;
said tunable transmitting system having a very high quality factor (Q) and having a power handling capability of 0.5 MW;
means for keeping the ferroelectric transmitting system at a high Tc superconducting temperature slightly above said Curie temperature to avoid hysterisis and to obtain a maximum change of permittivity.

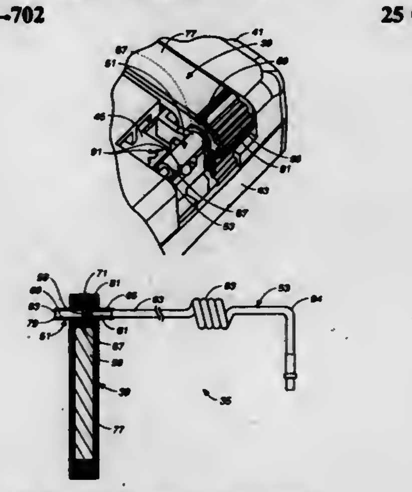
5,617,105
ANTENNA EQUIPMENT
Koichi Tsunekawa, and Seiji Hagiwara, both of Yokosuka, Japan, assignors to NTT Mobile Communications Network, Inc., Tokyo, Japan
Filed Sep. 23, 1994, Ser. No. 311,160
Claims priority, application Japan, Sep. 29, 1993, 5-243207; Oct. 13, 1993, 5-255974; Oct. 13, 1993, 5-255986; Feb. 9, 1994, 6-015134
Int. Cl.[6] H01Q *1/24;1/36;21/00*
U.S. Cl. 343—702 **31 Claims**

1. An antenna equipment comprising:
a rod antenna element;
a metal cylinder provided at one end of said rod antenna element and axially aligned therewith, said metal cylinder having a first predetermined length in its axial direction, said first predetermined length being an integral multiple of a quarter-wavelength;
an inner conductor connected to one end of said rod antenna element and extended substantially along the center axis of said metal cylinder to form a coaxial line in combination therewith; and
a feeder having a core conductor connected to said inner conductor and an outer conductor connected to said metal cylinder at one end thereof opposite from said rod antenna element;



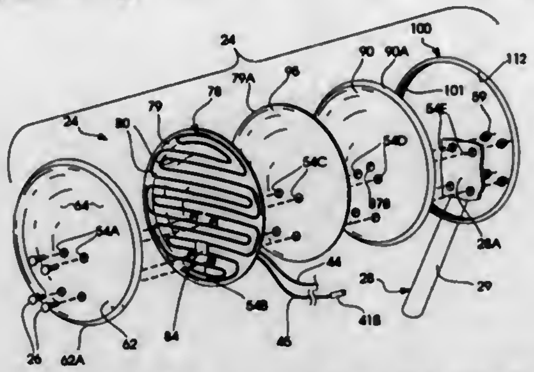
said coaxial line forming a coaxial impedance converter and said metal cylinder having a notch formed by cutting out a part of its periphery a second predetermined length in its axial direction from its marginal edge at the side of said rod antenna element, whereby impedance of said coaxial impedance converter is matched with said rod antenna element at first and second different frequencies, respectively.

5,617,106
PIVOTABLE ANTENNA AND ELECTRICAL DEVICE HAVING A PIVOTABLE ANTENNA
Mohammed Tahmassebpur, Vancouver, Canada, assignor to Sierra Wireless, Inc., Richmond, Canada
Filed Apr. 20, 1995, Ser. No. 425,745
Int. Cl.[6] H01Q *1/24;1/50*
U.S. Cl. 343—702 **25 Claims**



15. A pivotable antenna assembly, comprising:
a pivot rod having an axial opening therein at a first end thereof and a radial opening extending to the axial opening;
an antenna having an antenna element and a portion through which a portion of the pivot rod extends such that the radial opening of the pivot rod is inside the portion of the antenna; and
a coaxial cable having a first end, the coaxial cable including a central conductor, a dielectric material around the conductor, a shielding material around the dielectric material, and a jacket around the dielectric material, the first end of the coaxial cable extending into the axial opening of the pivot rod, the shielding being attached to an interior wall of the pivot rod, and the conductor extending through the radial opening and being attached to the antenna element.

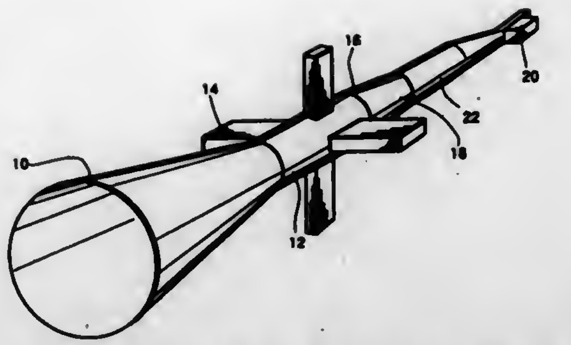
5,617,107
HEATED MICROWAVE ANTENNA
Terry L. Fleming, Roland, Ark., assignor to Perfect Ten Antenna Co. Inc., Jacksonville, Ark.
Filed Sep. 1, 1995, Ser. No. 522,693
Int. Cl.⁶ H01Q *1/02*
U.S. Cl. 343—704 **11 Claims**



1. A heated microwave antenna receiving system comprising:
a dish adapted to be aimed at a source of microwave signals, said dish comprising:
a reflector for focusing signals, said reflector having a shape comprising a generally concave front surface and a generally convex rear surface;
a generally concave, electrically resistive grid coupled directly to said convex reflector rear surface in thermal conductive relation thereto, said grid configured substantially the same shape as said reflector;
a generally concave thermal insulator configured substantially the same shape as said reflector and attached directly behind said grid;
a backing plate configured substantially the same shape as said reflector attached to the rear of said reflector to forcibly sandwich the grid between said reflector and said insulator to maximize thermal transfer between said grid and said reflector through thermal conduction; and,
trim ring means for forcibly securing said reflector, said grid and said plate together in abutting, sandwiched relation;
low voltage means for activating said grid in response to a preselected temperature;
low noise amplifier means for receiving signals projected towards it by said dish;
means for securing said low noise amplifier means in position aimed at said dish; and,
means for securing said antenna to a supporting structure.

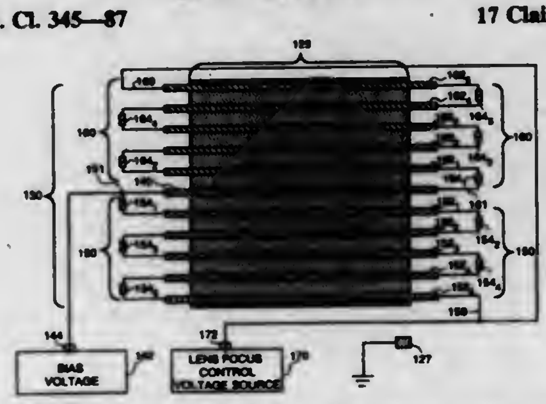
5,617,108
SIMPLIFIED TRACKING ANTENNA
Robert E. Silinsky, Lakewood; Frank Boldissar, Jr., Redondo Beach; Gary S. Campbell, Torrance, and Raghbir S. Tahim, Buena Park, all of Calif., assignors to Hughes Electronics, Los Angeles, Calif.
Continuation of Ser. No. 215,237, Mar. 21, 1994, abandoned. This application Jun. 9, 1995, Ser. No. 489,098
Int. Cl.⁶ H01Q *13/00*
U.S. Cl. 343—786 **19 Claims**

1. An antenna pointing detection system for use with circularly polarized electromagnetic radiation comprising:
a) a horn for receiving circularly polarized electromagnetic radiation in a primary mode from a source;
b) a waveguide coupled to the horn for receiving the received circularly polarized electromagnetic radiation from the horn, and that is dimensioned to support only radiation in the primary mode and the next order TE mode, and excluding the TM mode;
c) at least one mode switching arm extending from the waveguide for stimulating only radiation of the next order TE mode in the waveguide, the arm having a switchable plurality



of different effective lengths for causing a phase alteration in said next order TE mode radiation to thereby cause a deflection of the effective pointing direction of the horn.

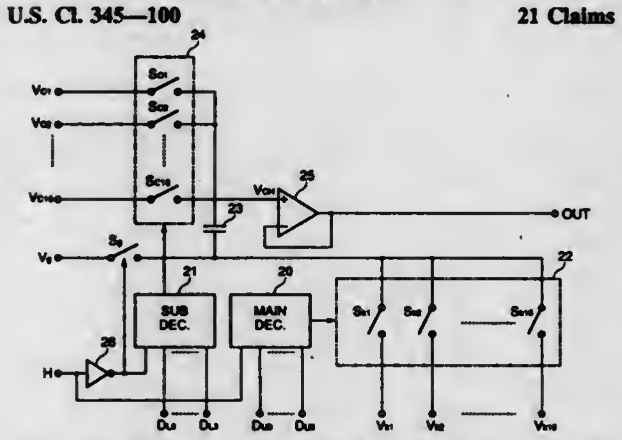
5,617,109
THREE TERMINAL LIQUID CRYSTAL LENS CELL
Michael C. DeJule, and Nabeel A. Riza, both of Clifton Park, N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed Dec. 2, 1994, Ser. No. 348,404
Int. Cl.⁶ G09G *3/36*
U.S. Cl. 345—87 **17 Claims**



1. A three-terminal liquid crystal (LC) lens cell comprising a center-biased quadratic electrode network, said quadratic electrode network comprising:
a center electrode electrically coupled to a bias voltage terminal so as to be maintained at a bias voltage, said center electrode being disposed at the optical axis of said LC cell;
a first network electrode circuit coupled to said center electrode, said first network electrode circuit comprising respective first through nth first series LC biasing electrodes electrically coupled together in series and a plurality of respective first network electrode circuit quadratic gradient network biasing resistors, each of said first network electrode circuit LC biasing electrodes being electrically coupled to an adjoining first network electrode circuit LC biasing electrode via a stage of said quadratic network biasing resistors; and
a second network electrode circuit coupled to said center electrode, said second network electrode circuit comprising respective first through nth second series LC biasing electrodes electrically coupled together in series and a plurality of respective quadratic gradient network biasing resistors, each of the second network electrode circuit LC biasing electrodes being electrically coupled to an adjoining second network electrode circuit LC biasing electrode via a stage of said quadratic network biasing resistors;
each of said first and second network electrode circuits further comprising a respective control voltage terminus coupled to an LC cell lens focus control terminal, such that a control voltage applied via said lens focus control terminal generates a symmetric quadratic LC biasing voltage pattern extending between said center biasing electrode and the respective nth LC biasing electrodes in said first and second network electrode circuits.

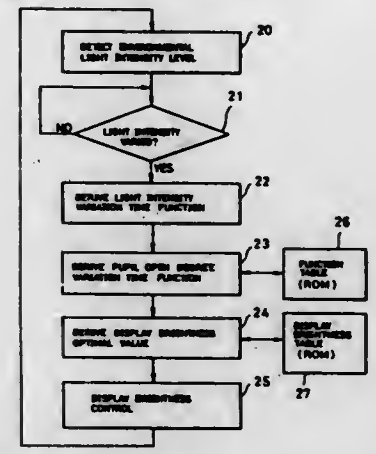
5,617,110
Patent Not Issued For This Number

5,617,111
CIRCUIT FOR DRIVING LIQUID CRYSTAL DEVICE
Sei Saitoh, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Continuation of Ser. No. 161,733, Dec. 2, 1993, abandoned. This application Jul. 9, 1996, Ser. No. 680,552
Claims priority, application Japan, Dec. 2, 1992, 4-349886
Int. Cl.⁶ G09G *3/36*
U.S. Cl. 345—100 **21 Claims**



1. A liquid crystal device driving circuit receiving a "m"-bit digital image signal, where "m" is an integer not less than 2, for being divided into a first bit group including the least significant bit of the digital image signal and a second bit group including the most significant bit of the digital image signal, the circuit comprising:
capacitor means;
means for supplying a plurality of first predetermined voltages;
means for supplying a plurality of second predetermined voltages;
first charging means, having means for receiving said first bit group of said digital image signal and means for receiving said plurality of first predetermined voltages, and having means for selecting from said plurality of first predetermined voltages one first predetermined voltage in accordance with a bit content of said first bit group, and having means for supplying and charging the selected first predetermined voltage to said capacitor means during a first period of each one horizontal period; and
second charging means, having means for receiving said second bit group of said digital image signal and means for receiving said plurality of second predetermined voltages, and having means for selecting from said plurality of second predetermined voltages one second predetermined voltage in accordance with a bit content of said second bit group, and having means for additionally charging the selected second predetermined voltage to said capacitor means, in a superimposed manner during a second period of said each one horizontal period, said each one horizontal period comprising said first period followed by said second period,
whereby a superimposed voltage appears on said capacitor means and is supplied as a liquid crystal device driving voltage.

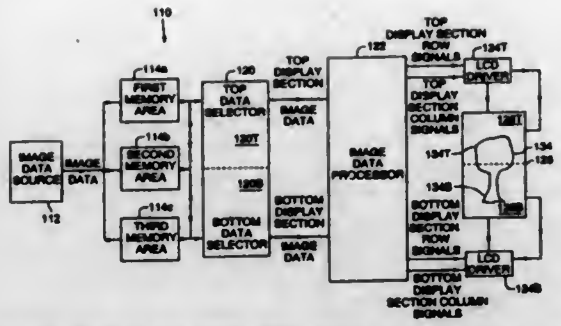
5,617,112
DISPLAY CONTROL DEVICE FOR CONTROLLING BRIGHTNESS OF A DISPLAY INSTALLED IN A VEHICULAR CABIN
Toshio Yoshida, and Michitaka Sisido, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan
Filed Dec. 21, 1994, Ser. No. 360,958
Claims priority, application Japan, Dec. 28, 1993, 5-334558
Int. Cl.⁶ G09G *3/36*
U.S. Cl. 345—102 **6 Claims**



1. A display device, comprising:
display means for displaying a character and/or graphic pattern;
light detecting means for detecting an environmental light intensity and generating a detection signal depending upon the detected light intensity;
light intensity variation time function calculating means responsive to said detection signal for calculating a time function of variation of the light intensity:
display brightness determining means for determining a display brightness of said display means preliminary set by predicting a time function of variation of a human pupil open degree corresponding to the derived light intensity variation time function; and
display control means for performing brightness control of said display means according to the determined display brightness,
wherein said display brightness determining means includes a pupil open degree variation time function table set by preliminarily predicting time function of variation of human pupil open degree variation corresponding to said light intensity variation time function and a display brightness table preliminarily storing display brightness information indicative of optimal display brightness of said display means corresponding to said pupil open degree variation time function.

5,617,113
MEMORY CONFIGURATION FOR DISPLAY INFORMATION
Dennis W. Prince, Banks, Oreg., assignor to In Focus Systems, Inc., Wilsonville, Oreg.
Filed Sep. 29, 1994, Ser. No. 316,086
Int. Cl.⁶ G09G *3/36*
U.S. Cl. 345—103 **17 Claims**

1. A method for addressing a display including first and second display sections that display different parts of a single image corresponding to image data received by the display during an input frame period, each display section including independently overlapping first and second electrodes positioned on opposite sides of a display material to define an array of pixels that display during respective first- and second-display-section-output frame periods information patterns corresponding to the image, the method comprising:



storing during a first input frame period in a first memory area display information corresponding to a first portion of a first image;

applying to the first display section during a first first-display-section-output frame period addressing signals corresponding to the display information stored in the first memory area and storing during the first input frame period in a second memory area display information corresponding to a second portion of a first image;

applying to the second display section during a first second-display-section-output frame period addressing signals corresponding to the display information stored in the second memory area and storing during a second input frame period in a third memory area display information corresponding to a first portion of a second image;

applying to the first display section during a second first-display-section-output frame period addressing signals corresponding to the display information stored in the third memory area and storing during the second input frame period in the first memory area information corresponding to a second portion of a second image;

applying to the second display section during a second second-display-section-output frame period addressing signals corresponding to the display information stored in the first memory area and storing during a third input frame period in the second memory area display information corresponding to a first portion of a third image; and

applying to the first display section during a third first-display-section-output frame period addressing signals corresponding to the display information stored in the second memory area and storing during the third input frame image in the third memory area image corresponding to a second portion of a third image.

5,617,114

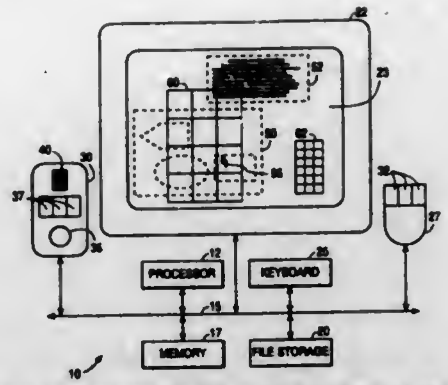
USER INTERFACE HAVING CLICK-THROUGH TOOLS THAT CAN BE COMPOSED WITH OTHER TOOLS

Eric A. Bier, Mountain View, Calif.; William A. S. Buxton, Toronto, Canada, and Maureen C. Stone, Los Altos, Calif., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 95,445, Jul. 21, 1993, abandoned. This application May 24, 1995, Ser. No. 449,584
Int. Cl.⁶ G09G *5/00*
U.S. Cl. 345—113 **28 Claims**

1. A method of operating a computer system where a program displays a representation of data and a user interacts with the data through the use of displayed tools and a displayed cursor, the user activating a particular tool by positioning the cursor within a tool-defining region associated with the particular tool and generating an event with the cursor so positioned, the method comprising the steps of:

displaying first and second click-through tools, each click-through tool having the property that when the event occurs within the click-through tool at a given location relative to the click-through tool, the result of an operation on the data depends on the location of the event relative to the displayed representation of the data; and



positioning the second click-through tool so as to at least partially overlap the first click-through tool; and

generating a particular event within a region of overlap of the first and second click-through tools; and

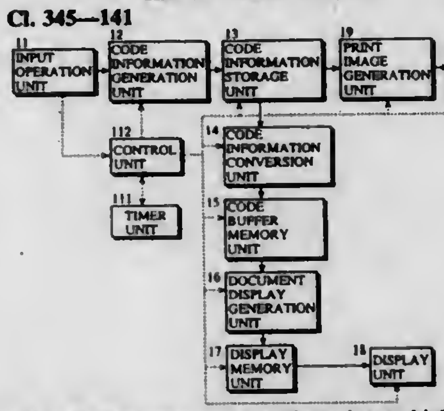
in response to the particular event, performing a composite operation that is specified at least in part by the first and second click-through tools.

5,617,115

WORD PROCESSING UNIT WITH DOCUMENT DISPLAY FUNCTION

Akira Itoh, Nagaokakyo; Hideo Terai, Kyoto, and Kazuhiro Shiraga, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 12, 1994, Ser. No. 304,234
Claims priority, application Japan, Sep. 10, 1993, 5-225506
Int. Cl.⁶ G09G *5/22; 1/14*
U.S. Cl. 345—141 **33 Claims**



33. A word processor unit for displaying at high speed documents which had been input with code information and which can prim high quality images of the inputted documents, comprising:

input means for inputting an operator's document display instructions;

document storage means for storing a document as a collection of character information, said character information comprising a combination of a character code and an attribute information for each character in the document:

retrieval means for retrieving the character information from the document storage means;

display character code conversion means for extracting character codes from the character information retrieved by the retrieval means, for detecting character code rows which are sets of extracted character codes for which a selected attribute is identical, for adding the selected attribute to each detected character code row and for outputting the appended character code rows as display character code rows;

a code buffer memory for storing the display character code rows;

display image generation means for retrieving the display character code rows from the code buffer memory and generating display image data;

display means for displaying the generated display image data;

control means for activating, when document display instructions have been inputted, the retrieval means to retrieve the document from the document storage means, activating the display character code conversion means to convert the document into display character code rows to be stored in the code buffer memory, and activating the display image generation means to generate the display image data at a specified speed and to display a display image; and

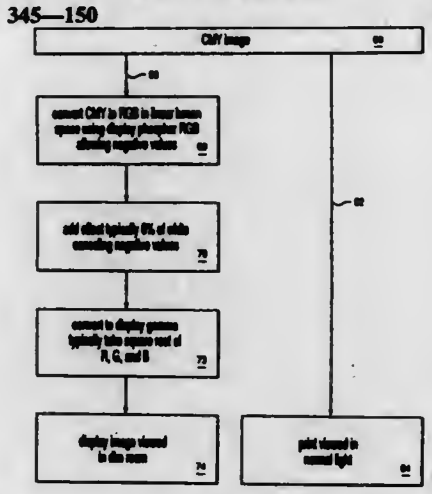
a print image generation means for generating a print image of a document stored in the document storage means, wherein the print image is generated from all the operator's document display instructions.

5,617,116

SYSTEM AND METHOD FOR SACRIFICIAL COLOR MATCHING USING BIAS

Albert D. Edgar, Travis, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 16, 1994, Ser. No. 358,227
Int. Cl.⁶ G09G *5/02*
U.S. Cl. 345—150 **18 Claims**



1. A method for use in a computer display system displaying an image on said display system matching a display of said image displayed on a medium comprising:

storing from said image displayed on said medium comprised of a reflection print generating a total flare a plurality of digitized pixels;

adding biasing proportional to said total flare to said pixels including removing a portion of said biasing from selected ones of said pixels;

displaying said image on said display system from said biased pixels, wherein black is displayed as non-zero light, said displaying including displaying negative relative brightness comprised of a brightness less than a working black grayscale brightness above zero in response to said removing a portion of said bias; and

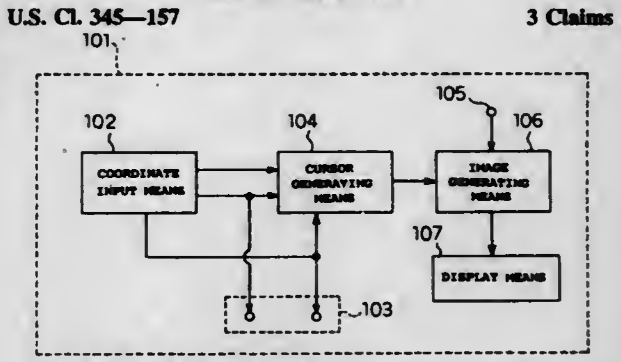
extending relative color gamut of said display as a function of said relative negative brightness.

5,617,117

INPUT DEVICE

Mitsuteru Kataoka, Katano; Takeshi Imanaka, Nara; Atsushi Tanaka, Neyagawa, and Sozo Yamamoto, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 29, 1995, Ser. No. 412,735
Claims priority, application Japan, Mar. 30, 1994, 6-060763; Jun. 13, 1994, 6-130015
Int. Cl.⁶ G09G *5/08*
U.S. Cl. 345—157 **3 Claims**



1. An input device comprising:

coordinate input means for outputting one- or higher-dimensional absolute coordinates of an object placed in close proximity thereto or in contact therewith, pressed or not-pressed information indicating whether said object is pressed or not pressed thereon, and coordinate detected or not-detected information indicating whether the coordinates of said object are detected or not,

cursor generating means for accepting at inputs thereof said coordinates, said pressed or not-pressed information, and said coordinate detected or not-detected information output from said coordinate input means, and for outputting an image containing therein a cursor representing said coordinates,

area definition generating means for accepting at an input thereof said coordinate detected or not-detected information output from said coordinate input means, and for outputting an image containing therein an area definition defining a movable area of said cursor when said coordinate detected or not-detected information indicates the detection of said coordinates, and

image generating means for accepting at inputs thereof the image output from said area definition generating means and the image output from said cursor generating means, and for producing an image by superimposing said input images one over the other for output,

wherein said cursor generating means repositions said cursor in accordance with said input absolute coordinates and also changes the external appearance of said cursor on the basis of said pressed or not-pressed information and said coordinate detected or not-detected information.

5,617,118

MODE DEPENDENT MINIMUM FIFO FILL LEVEL CONTROLS PROCESSOR ACCESS TO VIDEO MEMORY

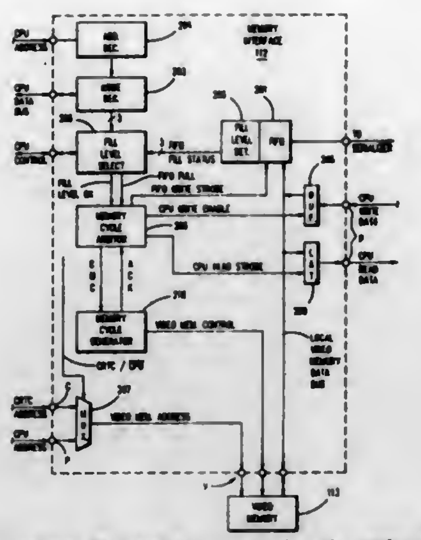
Stephen P. Thompson, Delray Beach, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 188,346, Jan. 27, 1994, abandoned, which is a continuation of Ser. No. 712,786, Jun. 10, 1991, abandoned. This application Apr. 16, 1996, Ser. No. 633,851
Int. Cl.⁶ G09G *3/00*
U.S. Cl. 345—200 **8 Claims**

1. A video adapter, comprising in combination:

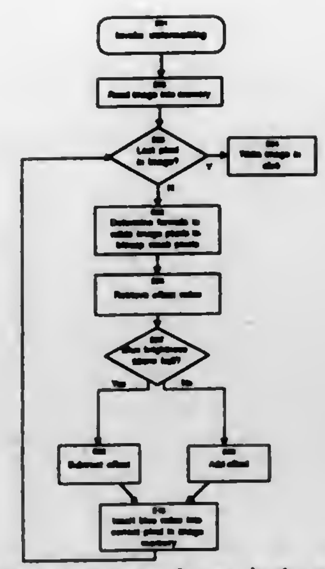
a video memory;

a first in, first out video buffer ("FIFO") having an input coupled to said video memory and an output coupled to a video output port, said FIFO receiving video data from said video memory and transferring the video data to said video output port;



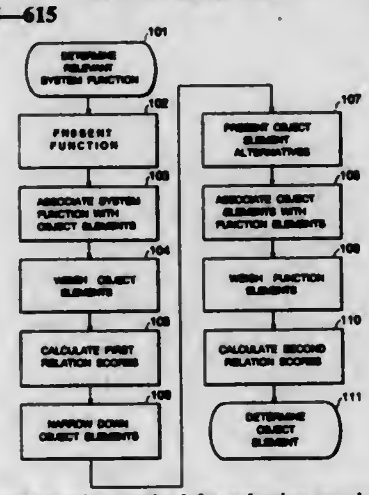
a mode register for storing a code that determines both the operating mode of said video adapter and a minimum fill level of said FIFO;
fill level detection and selection means coupled to said FIFO and said mode register for detecting and selecting a minimum fill level of said FIFO, said minimum fill level being determined by the code stored in said mode register;
a CRT controller;
a CPU access port;
a memory cycle generator, coupled to said video memory, for generating video memory cycles to cause data stored in said video memory to be transferred to said FIFO; and
a memory cycle arbitor coupled to said memory cycle generator and said fill level detection and selection means and having at least three states, a first state in which no video memory cycles are generated, a second state in which CRT video memory cycles are generated, and a third state in which CPU video memory cycles are generated, said arbitor remaining in said first state in response to said FIFO being full and no pending CPU access requests, said arbitor moving from said first to said second state in response to said FIFO being not full and no pending CPU access request or in response to said FIFO fill level being below said minimum fill level, and said arbitor moving from said first to said third state in response to said FIFO fill level being above said minimum fill level and a CPU access request.

5,617,119
PROTECTION OF AN ELECTRONICALLY STORED IMAGE IN A FIRST COLOR SPACE BY THE ALTERATION OF A DIGITAL COMPONENT IN A SECOND COLOR SPACE
Robert Briggs, Annandale; Carmen Iannacone; James Rothey, both of Fairfax, and David Evans, Falls Church, all of Va., assignors to Systems Research & Applications Corporation
Division of Ser. No. 255,379, Jun. 8, 1994, Pat. No. 5,493,677. This application Jun. 7, 1995, Ser. No. 478,401
Int. Cl.⁶ G06F *17/30*
U.S. Cl. 345—611 **1 Claim**
1. A computer-implemented process of protecting an electronically stored image from unauthorized use in a first color space, comprising:
storing the image in a second color space;
altering a constituent second color space component of the stored image responsive to relative magnitude of said component to form an altered image such that the altered image is usable in the second parameter space and such that the altered image is not usable in the first parameter space; and



distributing the altered image for use in the second parameter space.

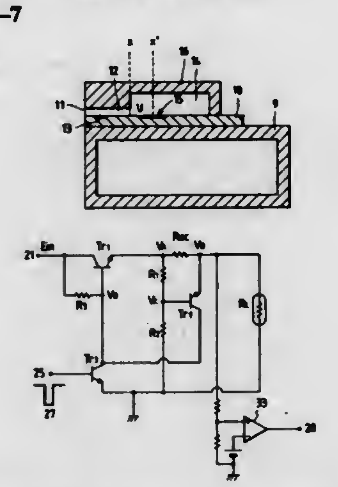
5,617,120
TWO-RELATION ICON RANKING AND SELECTING METHOD
Satomi Kaneko, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan
PCT No. PCT/JP92/00366, § 371 Date Jan. 12, 1993, § 102(e) Date Jan. 12, 1993, PCT Pub. No. WO92/17834, PCT Pub. Date Oct. 15, 1992
PCT Filed Mar. 26, 1992, Ser. No. 938,152
Claims priority, application Japan, Mar. 29, 1991, 3-065164
Int. Cl.⁶ G06F *17/30*
U.S. Cl. 395—615 **8 Claims**



1. An object selecting method for selecting an object that comprises a pictorial pattern for use in designing a pictorial symbol representing a system function, said method comprising the steps of:
associating a system function with a plurality of objects representing pictorial symbols;
calculating a first relation of each associated object and said system function;
separating objects that strongly relate to said system function from other objects that weakly relate to the system function and removing said other objects from consideration in accordance with a predetermined criterion based on the strength of said first relation;
associating said separated objects with a functional element;
calculating a second relation of each associated functional element and said separated object with which it is associated; and

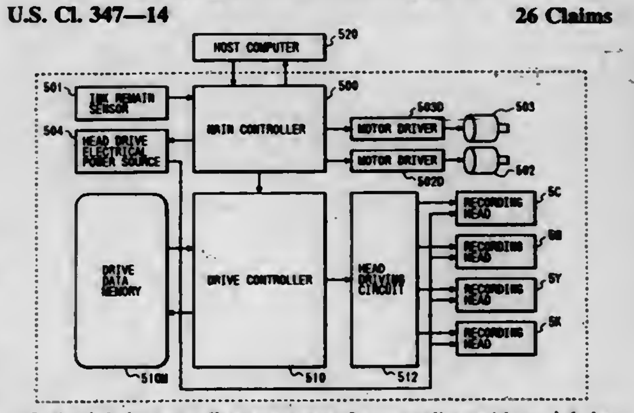
selecting one object of said separated objects to be associated with said system function in accordance with a predetermined criterion based on said second relation and determining said one object representing said system function.

5,617,121
INK JET RECORDING WITH INK DETECTION
Masayoshi Tachihara, Chofu, and Yasuyuki Tamura, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 77,949, Jun. 18, 1993, abandoned, which is a continuation of Ser. No. 659,698, Feb. 25, 1991, abandoned. This application May 30, 1995, Ser. No. 452,866
Claims priority, application Japan, Feb. 26, 1990, 2-46289; Jun. 8, 1990, 2-148551
Int. Cl.⁶ B41J *2/175*
U.S. Cl. 347—7 **45 Claims**



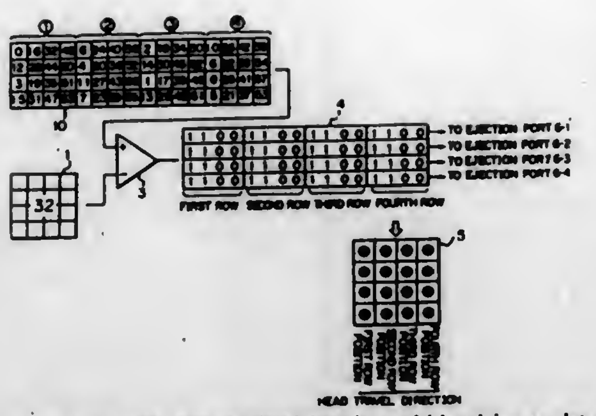
1. A recording head attachable to a recording apparatus, said recording head comprising:
an ink discharge section having a plurality of recording elements for discharging ink;
a common liquid chamber in communication with said ink discharge section for storing ink to be supplied to said ink discharge section, with said common liquid chamber connecting said ink discharge section with an ink storage container; and
a heat generating element provided within said common liquid chamber for receiving a predetermined electrical signal output at a predetermined time from a control section of the recording apparatus, wherein said heat generating element is an electrical resistor which generates heat by conducting electricity and has an electrical resistance varying with temperature, and wherein said heat generating element breaks if no ink exists in the vicinity of said heat generating element, and does not break if ink exists in the vicinity of said heat generating element.

5,617,122
RECORDING APPARATUS AND METHOD FOR CONTROLLING RECORDING HEAD DRIVING TIMING
Yasuhiro Numata, Kawasaki; Yoshiaki Takayanagi; Akira Katayama, both of Yokohama; Nobuyuki Kuwabara; Isao Ebisawa, both of Kawasaki, and Tsuyoshi Ohtani, Machida, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 9, 1993, Ser. No. 163,770
Claims priority, application Japan, Dec. 10, 1992, 4-330531; Mar. 12, 1993, 5-052225; Mar. 30, 1993, 5-071749; Aug. 4, 1993, 5-193665
Int. Cl.⁶ B41J *29/38;23/00;* **G05B** *5/00*
U.S. Cl. 347—14 **26 Claims**



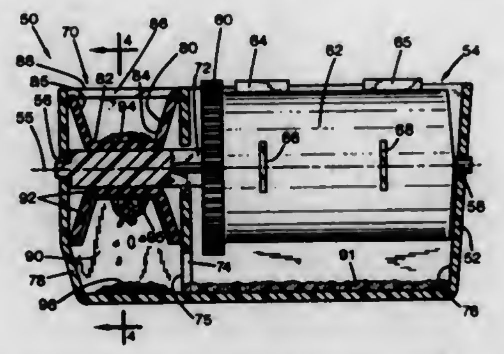
1. An ink jet recording apparatus for recording with an ink jet recording head by discharging ink onto a recording medium, said apparatus comprising:
a carriage having the ink jet recording head mounted thereon;
scanning means for causing said carriage to reciprocate relative to the recording medium;
recording control means for driving the ink jet recording head for reciprocal recording while said carriage is scanned by said scanning means;
first measuring means for measuring a backlash amount of a driving system of said carriage;
storage means for storing the backlash amount measured by said first measuring means as backlash correction data;
second measuring means for measuring weight changes of said carriage;
modification means for modifying the backlash correction data in accordance with the weight changes measured by said second measuring means; and
means for adjusting a timing of the reciprocal recording of the recording head in accordance with the backlash correction data modified by said modification means.

5,617,123
IMAGE PROCESSING METHOD UTILIZING MULTIPLE BINARIZING AND RECORDING AGENT DEPOSITING STEPS
Makoto Takaoka, Tokyo; Susumu Sugiura, Atsugi; Kentaro Matsumoto, Kurume; Toyokazu Uda, and Masami Uda, both of Sagamihara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 61,665, May 14, 1993, abandoned, which is a division of Ser. No. 684,498, Apr. 15, 1991, Pat. No. 5,252,986, which is a continuation of Ser. No. 519,323, May 7, 1990, abandoned, which is a continuation of Ser. No. 195,648, May 18, 1988, abandoned. This application Jun. 5, 1995, Ser. No. 465,617
Claims priority, application Japan, May 20, 1987, 62-121148; May 20, 1987, 62-121149
Int. Cl.⁶ B41J *2/205*
U.S. Cl. 347—15 **5 Claims**
1. An image processing method comprising the steps of:
an input step of inputting multi-level image data pixel by pixel;



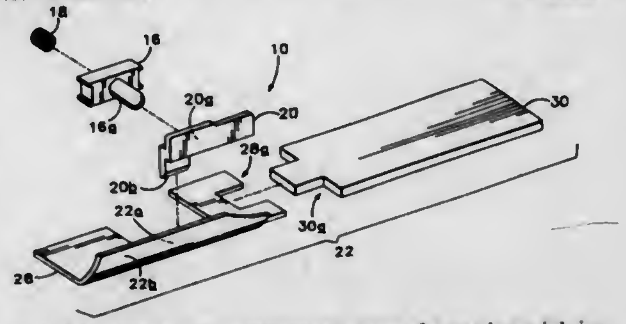
a first binarizing step of binarizing the multi-level image data and outputting first binary data;
a first storing step of storing, in a memory, a plurality of first binary data, each of which is for each of a plurality of recording means, respectively;
a first depositing step of depositing a recording agent onto a recording medium in accordance with the first binary data stored in said first storing step by using the plurality of recording means;
a second binarizing step of binarizing the multi-level image data and outputting second binary data;
a second storing step of storing, in a memory, a plurality of second binary data, each of which is for each of the plurality of recording means, respectively; and
a second depositing step of depositing a recording agent onto the recording medium in accordance with the second binary data stored in the second storing step by using the plurality of recording means, wherein the first binarizing step and the second binarizing step respectively effect binarizing based on the same multi-level image data.

5,617,124
SELF-CLEANING SERVICE STATION FOR INKJET PRINTING MECHANISMS
Bret Taylor, and William S. Osborne, both of Vancouver, Wash., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed Mar. 25, 1994, Ser. No. 218,391
Int. Cl.⁶ B41J *2/165*
U.S. Cl. 347—35 **7 Claims**



1. A service station for an inkjet printing mechanism having an ink printhead for selectively dispensing ink which is occasionally purged from the printhead, the service station comprising:
a moveable platform having a surface positionable to receive ink purged from the printhead without contacting the printhead with the platform surface for purging, wiping or capping, wherein the moveable platform comprises an endless belt having a surface which is conformable to a convex shape and to a concave shape;
a drive mechanism coupled to move the platform between a first position where the purged ink is received by the platform and a second position where the purged ink is discharged from the platform;
an ink removal device positioned to remove the purged ink from the platform surface at the second position, wherein the ink removal device comprises a discharge spindle engaging the belt at the second position with the discharge spindle being configured to conform the belt surface into the convex shape to remove the ink from the belt; and
a first spindle configured to conform the belt surface into the concave shape to receive the purged ink.

5,617,125
SPITTOON SYSTEM FOR INK-JET PRINTERS
Chee C. Chew, Singapore, Singapore, assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Mar. 15, 1994, Ser. No. 214,712
Int. Cl.⁶ B41J *2/165*
U.S. Cl. 347—36 **13 Claims**

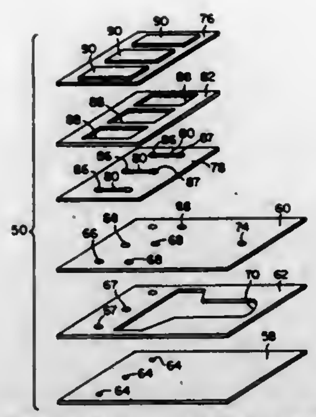


1. A high-capacity ink-contaimnent system for use in an ink-jet printer to absorb ink spitted at the system from a printhead of the printer, the system comprising:
a serial assemblage of sorbent pads defining therebetween plural direct-contact interface regions, the sorbent pads having plural characteristics including hardness and sorbency, said plural direct-contact interface regions promoting wicking action between each pair of pads, wherein at least one of said plural direct-contact interface regions is maintained by spring-biasing one pad against another, said assemblage taking a serpentine path generally away from a region adjacent the printhead when the printhead is in a service position for spitting.

5,617,126
Patent Not Issued For This Number

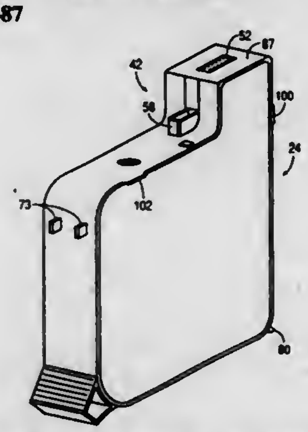
5,617,127
ACTUATOR HAVING CERAMIC SUBSTRATE WITH SLIT(S) AND INK JET PRINT HEAD USING THE ACTUATOR
Yukihisa Takeuchi, Aichi-ken; Hideo Masumori, Anjo, and Nobuo Takahashi, Owariasahi, all of Japan, assignors to NGK Insulators, Ltd., and Seiko Epson Corporation, both of Japan
Filed Dec. 1, 1993, Ser. No. 159,922
Claims priority, application Japan, Dec. 4, 1992, 4-350873; Nov. 18, 1993, 5-289257
Int. Cl.⁶ B41J *2/045*
U.S. Cl. 347—71 **15 Claims**

1. An actuator comprising:
a ceramic substrate including a spacer plate having a first major surface opposite a second major surface and at least one



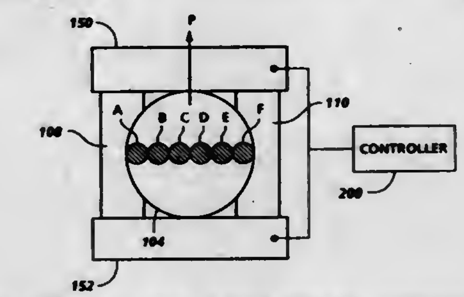
window, a closure plate superposed on the first major surface of said spacer plate, and a connecting plate superposed on the opposite second major surface of said spacer plate, said closure plate and said connecting plate extending over and substantially closing said at least one window thereby forming at least one pressure chamber in the ceramic substrate, said connecting plate having a slit which corresponds to said at least one pressure chamber, said spacer plate, said closure plate and said connecting plate being formed from respective ceramic green sheets which are laminated on each other and fired into an integral ceramic structure as said ceramic substrate; and
at least one piezoelectric/electrostrictive element disposed on a portion of said closure plate opposite said at least one pressure chamber, for deforming said portion to change a pressure within the at least one pressure chamber, said piezoelectric/electrostrictive element comprising a pair of electrodes and a piezoelectric/electrostrictive layer, which are formed by a film-forming method on an outer surface of said closure plate of said ceramic substrate, such that said piezoelectric/electrostrictive element is interposed between said pair of electrodes.

5,617,128
ALIGNMENT OF MULTIPLE NOZZLE MEMBERS IN A PRINTER
Jeffrey A. Thoman, Corvallis, Oreg.; David W. Swanson, Escondido; Mindy A. Hamlin, San Diego, both of Calif.; Robert R. Beeson, Corvallis; Corrina Hall, Blodgett, both of Oreg.; James G. Salter, San Diego, and W. Wistar Rhoads, Escondido, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Division of Ser. No. 56,556, Apr. 30, 1993, Pat. No. 5,408,746. This application Apr. 24, 1995, Ser. No. 427,387
Int. Cl.⁶ B41J *2/175*
U.S. Cl. 347—87 **11 Claims**



1. An apparatus for use in a printer, said apparatus comprising:
a first print cartridge having a print cartridge body;
a scanning carriage supporting said first print cartridge;
a nozzle member having a pattern of orifices formed therein and having a reference target formed therein, said nozzle member being secured to said print cartridge body so as to have a fixed position relative to said print cartridge body, said nozzle member being misaligned with respect to said print cartridge body by greater than a first tolerance; and
one or more datums formed on said print cartridge body and contacting portions of said scanning carriage, each of said one or more datums having a geometry such that said one or more datums cause said reference target to be aligned in a predetermined manner with respect to said scanning carriage to within a second tolerance, wherein said first tolerance is greater than said second tolerance, such that said geometry of said one or more datums mitigates misalignment of said nozzle member with respect to said print cartridge body.

5,617,129
IONOGRAPHIC PRINTING WITH A FOCUSED ION STREAM CONTROLLABLE IN TWO DIMENSIONS
Joseph A. Chizuk, Jr., Penfield; Richard F. Bergen, Ontario, and Robert W. Gundlach, Victor, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Oct. 27, 1994, Ser. No. 329,817
Int. Cl.⁶ B41J *2/415;2/06*
U.S. Cl. 347—123 **3 Claims**



1. An ionographic image printing apparatus, comprising:
an ion source;
a charge receptor;
a substrate, disposed between and spaced from the ion source and the charge receptor, having an aperture defined therein for passage of ions therethrough;
a pinch electrode, disposed on the substrate, including a conductive surface facing the ion source;
a displacing electrode, associated with the aperture at a first location along a length thereof, including a conductive surface facing the charge receptor, and having an edge uniformly spaced relative to a portion of an edge of the aperture;
a first focusing electrode and a second focusing electrode, each focusing electrode in a form of a conductor spaced from the displacing electrode along the aperture and defining a conductive surface facing the charge receptor, and the first focusing electrode defining an edge parallel to an edge of the second focusing electrode; and
control means for applying a selected potential to the displacing electrode so that the displacing electrode displaces an ion stream passing through the aperture to a selected extent through a first displacement path;
wherein the control means apply a selected potential equally to the first focusing electrode and the second focusing electrode, said selected potential being a function of said selected extent of displacement of the ion stream through the first displacement path.

5,617,130

IMAGE SMOOTHING METHOD AND APPARATUS

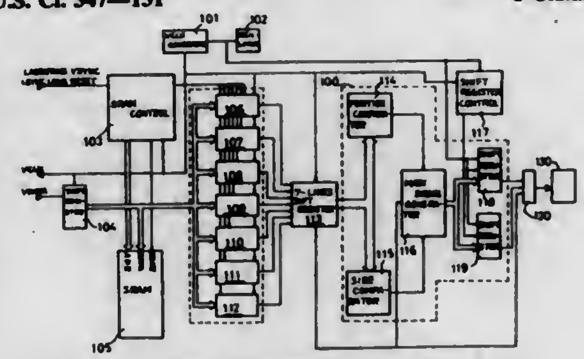
Yasufumi Uchiyama; Masaru Kawarazaki, and Jun-ichi Shirai, all of Tokyo, Japan, assignors to Kyocera Corporation, Kyoto, Japan

Continuation of Ser. No. 779,923, Oct. 21, 1991, abandoned. This application Dec. 20, 1993, Ser. No. 170,681

Claims priority, application Japan, Jul. 11, 1991, 3-196118

Int. Cl.⁶ B41J *2/47;* **H04N** *1/21;1/23;* **G06F** *17/00*

U.S. Cl. 347—131 **8 Claims**



1. An image smoothing method, comprising:

providing a video clock defining a first plurality of pulses,

generating divided video data, the divided video data comprising a plurality of pulses equal in number to the first plurality of pulses,

forming at least one of first smoothed video data and second smoothed video data, the first smoothed video data being formed by shifting the divided video data a second plurality of pulses according to an instruction signal, the second smoothed video data being formed by subjecting the divided video data to a Boolean conjunction operation with a mask pattern,

providing a plurality of shift registers, the shift registers comprising a center bit area for normal divided video data, the center bit area having a number of bit storage locations corresponding in number to the first plurality of pulses, and an extended shifting area at each end of the center bit area, the extended shifting area having a number of bit storage locations corresponding in number to not less than the second plurality of pulses,

transferring at least one of the first smoothed video data, the second smoothed video data, and the divided video data into the shift registers in synchronization with the video clock, wherein the data transferred into the shift registers includes adjoining smoothed video data in one said extended shifting area of each of the shift registers,

transferring the at least one of the first smoothed video data, the second smoothed video data, and the divided video data from the shift registers to a print engine, and

subjecting the adjoining smoothed video data to a Boolean disjunction operation with each other during the step of transferring the at least one of each of the first smoothed video data, the second smoothed video data, and the divided video data to the print engine.

5,617,131

IMAGE DEVICE HAVING A SPACER WITH IMAGE ARRAYS DISPOSED IN HOLES THEREOF

Shunji Murano, Yokaichi; Kouji Miyauchi, Oumihachiman; Akira Taguchi, Oumihachiman, and Kazuhiko Shirao, Oumihachiman, all of Japan, assignors to Kyocera Corporation, Kyoto, Japan

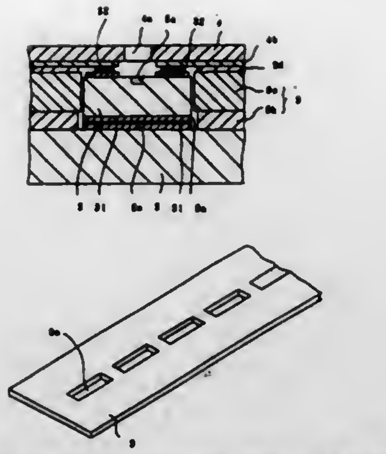
Filed Oct. 27, 1994, Ser. No. 331,354

Claims priority, application Japan, Oct. 28, 1993, 5-294468; Nov. 11, 1993, 5-281569; Nov. 11, 1993, 5-281570; Nov. 12, 1993, 5-283013; Dec. 24, 1993, 5-247438; Feb. 17, 1994, 6-019752

Int. Cl.⁶ B41J *2/447;* **H01L** *27/14*

U.S. Cl. 347—233 **10 Claims**

1. An image device comprising:



a lens unit comprising a plurality of lenses, a light unit, and a support member supporting the lens unit and the light unit, the lens unit and the light unit being substantially mutually parallel, the light unit comprising:

a first substrate having a common electrode wiring pattern,

a second substrate having an individual electrode wiring pattern,

a plurality of image arrays disposed on the first substrate between the first substrate and the second substrate, each of the plurality of image arrays comprising:

a first surface,

a second surface,

a plurality of light elements on the first surface, each of the plurality of light elements comprising one of a light emitter and a light receiver,

a plurality of individual electrodes connected to the light elements and connected to the individual electrode wiring pattern by flip chip connection,

a common electrode on the second surface of the image array, the common electrode being connected to the common electrode wiring pattern,

the second substrate having a light passage window facing the plurality of light elements, and

a plate-like spacer comprising a metallic layer having two main surfaces and insulating layers laminated on both of the two main surfaces, the spacer being disposed between and connected to the first substrate and the second substrate and having a plurality of boles in which the plurality of image arrays are received.

5,617,132

METHOD AND APPARATUS FOR ADJUSTING THE PIXEL PLACEMENT IN A RASTER OUTPUT SCANNER

Tibor Fisli, Los Altos Hills, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 1, 1994, Ser. No. 352,781

Int. Cl.⁶ B41J *2/47;* **G11B** *7/00;7/08;* **H04N** *1/23*

U.S. Cl. 347—235 **27 Claims**

1. A method for adjusting pixel placement in a raster scanning system, the method comprising the steps of:

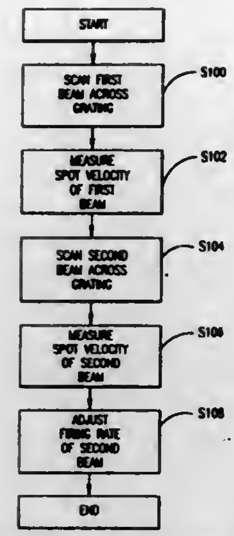
measuring a spot velocity of a first beam based on a position in a fast scan direction as the first beam scans in the fast scan direction;

measuring a spot velocity of a second beam based on a position in the fast scan direction as the second beam scans in the fast scan direction;

determining pixel placements of the fast beam relative to the position along the fast scan direction from the spot velocity of the first beam;

determining pixel placements of the second beam relative to the position along the fast scan direction from the spot velocity of the second beam; and

adjusting a firing rate of at least the second beam based on the position along the fast scan direction to appropriately adjust



pixel placements of the second beam along the fast scan direction to desired pixel placements.

5,617,133

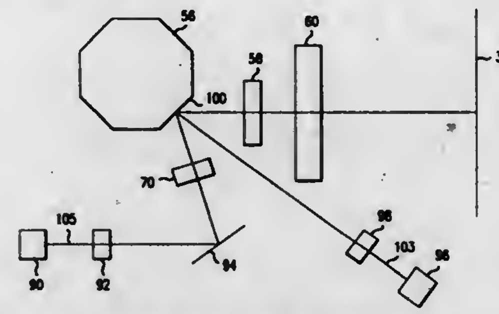
METHOD AND APPARATUS FOR ADJUSTING ORIENTATION OF LIGHT BEAMS IN A RASTER SCANNING SYSTEM

Tibor Fisli, Los Altos Hills, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 24, 1994, Ser. No. 327,872

Int. Cl.⁶ G02B *26/08;* **B41J** *2/47;2/435;* **G01D** *15/14*

U.S. Cl. 347—261 **27 Claims**



1. A raster scanning optical system comprising:

at least one light emitting device that emits a light beam;

a rotatable reflecting device that reflects the light beam to form a scan line;

an optic device including at least a collimator lens located in a path of the light beam between the light emitting device and the reflecting device; and

a planar light transmissive plate separate from the optic device, located in a path of the light beam between the optic device and the reflecting device, the planar light transmissive plate receiving the light beam having a fixed width from the optic device, the light beam passing through said planar light transmissive plate without altering the fixed width of the light beam, the planar light transmissive plate changing at least one of a sagittal orientation and a tangential orientation of the light beam as the light beam passes through the planar light transmissive plate to the reflecting device.

5,617,134

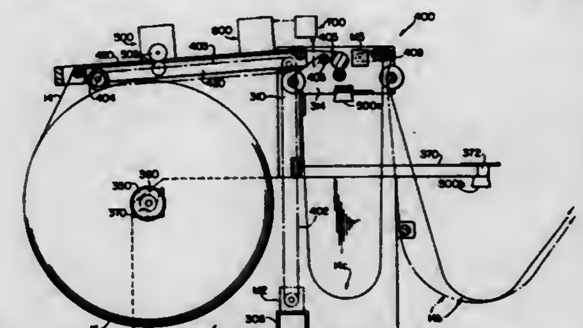
MACHINE FOR MANIPULATING AND WORKING ON WEB MATERIAL

Richard P. Lamothe, Burlington, Conn., assignor to Energy Saving Products and Sales Corporation, Burlington, Conn.

Continuation-in-part of Ser. No. 218,512, Mar. 25, 1994, Pat. No. 5,505,401. This application Dec. 7, 1995, Ser. No. 488,506

Int. Cl.⁶ B41J *2/435*

U.S. Cl. 347—264 **5 Claims**



1. Machine for manipulating web material between a roll of the web material and a utilization device, said machine comprising, a frame, a beam pivotally supported in said frame, a driven member rotatably supported in said beam and engageable with said roll to rotate the roll, web guiding means for the web material moving between the utilization device and the roll, said web guiding means including web supporting surfaces on said beam to provide a generally straight run of web material across the top of said beam, and means mounted on said beam for working on the web material as the web material travels along said straight run.

5,617,135

MULTI-POINT VISUAL COMMUNICATION SYSTEM

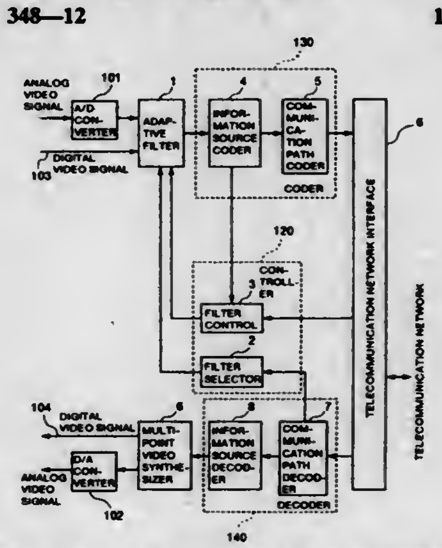
Fumio Noda, Palo Alto, Calif.; Koichi Shibata, Kokubunji, and Taizo Kinoshita, Musashimurayama, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 2, 1994, Ser. No. 299,633

Claims priority, application Japan, Sep. 6, 1993, 5-220852

Int. Cl.⁶ H04N *7/10;7/14*

U.S. Cl. 348—12 **18 Claims**

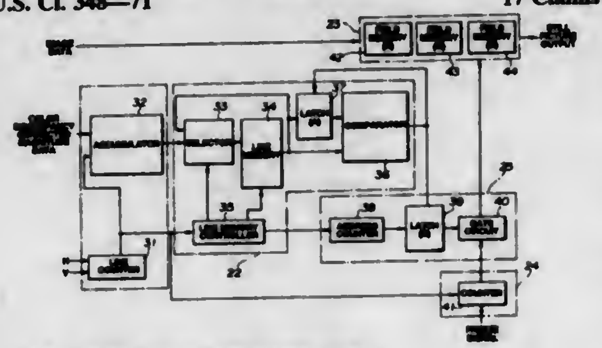


1. A multi-point visual communication system installed within a visual communication terminal for communicating video information with a plurality of other video sites via a communication network, comprising:

a filter for operatively producing output video signals having different qualities relative to each other by processing an input video signal to be transmitted to said other video sites;

a coder for converting said output video signals into coded output video signals;
interface means for selectively transmitting said coded output video signals to said other video sites through said communication network and for receiving coded video signals and request signals generated by said other video sites from said communication network;
a decoder for converting coded video signals received from said communication network by said interface means into video signals;
means for synthesizing said video signals converted by said decoder into a field or frame of a video signal; and
a controller for controlling said filter depending upon a request from one of said other sites so as to adapt a quality of said output video signals to said request.

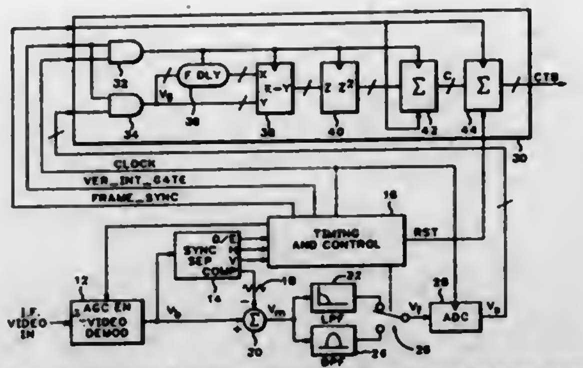
5,617,136
IMAGE FREEZING UNIT FOR OBTAINING STILL IMAGE AT A PRECISE TIMING FROM IMAGE DATA OBTAINED BY THE IMAGING MEANS
Ryouichi Iso, Hachioji, and Kazunari Nakamura, Hino, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Mar. 17, 1995, Ser. No. 405,991
Claims priority, application Japan, Apr. 22, 1994, 6-084851
Int. Cl.⁶ A61B *13/00;1/04*
U.S. Cl. 348—71 **17 Claims**



1. An image freezing unit comprising:
an imaging means for imaging an object;
an image data storing means for storing image data consisting of a plurality of still images obtained by said imaging means;
a variation calculation means for calculating the variation based on a relative position of said object and said imaging means on the basis of said still images consisting of said image data stored in said image data storage means;
a variation latch means for holding said variation calculated by said variation calculation means;
an image detection means for detecting said still image based on said variation held by said variation latch means; and
a control means for controlling said image data storage means on the basis of the detected result of said image detection means.

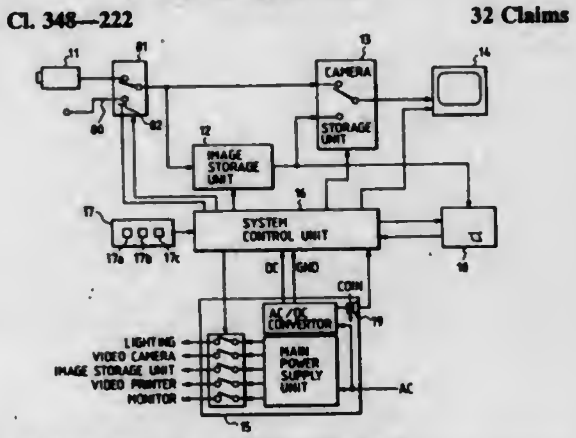
5,617,137
IN-SERVICE MEASUREMENT OF COMPOSITE TRIPLE BEATS IN A CABLE TELEVISION SYSTEM
Dana E. Whitlow, Aloha, Oreg., assignor to Tektronix, Inc., Wilsonville, Oreg.
Filed May 30, 1995, Ser. No. 452,782
Int. Cl.⁶ H04N *17/00;17/02*
U.S. Cl. 348—193 **11 Claims**

1. A method of in-service measuring composite triple beats in a cable television system comprising the steps of:
demodulating a selected channel from the cable television system having a visual carrier to produce a baseband video signal;



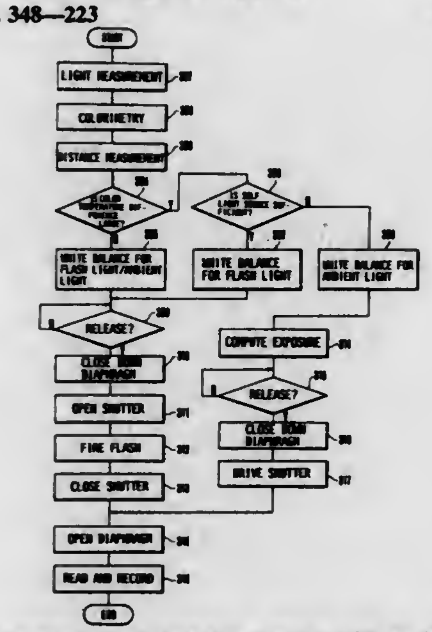
for each frame of the baseband video signal sampling the baseband video signal during a specified measurement interval in a frequency bandwidth about the visual carrier;
time averaging the squares of the differences between samples from consecutive frames of the baseband video signal to obtain a measure of the composite triple beats for the selected channel as a triple beat value.

5,617,138
PHOTOGRAPHY BOOTH WITH MULTIPLE VIDEO INPUT AND CONFIRMING IMAGE DISPLAY
Kan Ito, Machida; Tomishige Taguchi, Urawa; Shozo Endo, Kawasaki; Atsushi Inagaki, Yokohama, and Hiroyuki Kawahara, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 26,181, Mar. 1, 1993, abandoned, which is a division of Ser. No. 788,302, Nov. 5, 1991, abandoned. This application Nov. 14, 1994, Ser. No. 339,880
Claims priority, application Japan, Nov. 8, 1990, 2-304958; Dec. 25, 1990, 2-405794; Dec. 25, 1990, 2-405832; Jan. 9, 1991, 3-000992; Oct. 24, 1991, 3-277887
Int. Cl.⁶ H04N *5/228*
U.S. Cl. 348—222 **32 Claims**



1. An image processing apparatus comprising:
image pick-up means for converting picked-up image information into an image signal;
input means for inputting an image signal of image information;
selection means for selecting the image signal from one of said image pick-up means and said input means;
storage means for storing the image signal selected by said selection means;
display means for selectively performing a display of image information in accordance with the image signal from said selection means and a display of image information in accordance with the image signal from said storage means; and
output means for outputting the image signal stored in said storage means.

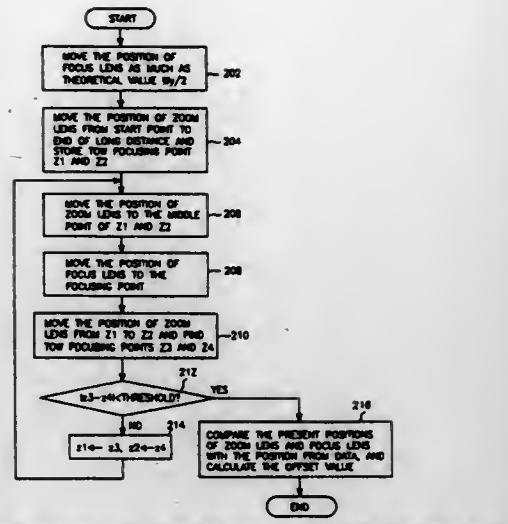
5,617,139
IMAGE PICKUP APPARATUS
Tadashi Okino, Kanagawa-ken, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 896,893, Jun. 10, 1992, abandoned, which is a continuation of Ser. No. 240,927, Sep. 6, 1988, abandoned. This application Apr. 4, 1994, Ser. No. 222,327
Claims priority, application Japan, Sep. 10, 1987, 62-225374; Oct. 27, 1987, 62-269329
Int. Cl.⁶ H04N *9/73*
U.S. Cl. 348—223 **10 Claims**



1. An image pickup apparatus coupled with an illuminating apparatus which illuminates an object while ambient light exists, comprising:
(a) image pickup means for generating a plurality of electrical color image signals from an optical image;
(b) detecting means for detecting a first color temperature information of ambient existing light;
(c) comparing means for comparing said first color temperature information with a second color temperature information relative to illumination of said illuminating apparatus and for discriminating the difference between said first color temperature information and said second color temperature information; and
(d) control means for controlling color balance of said plurality of electrical color image signals according to said difference discriminated by said comparing means.

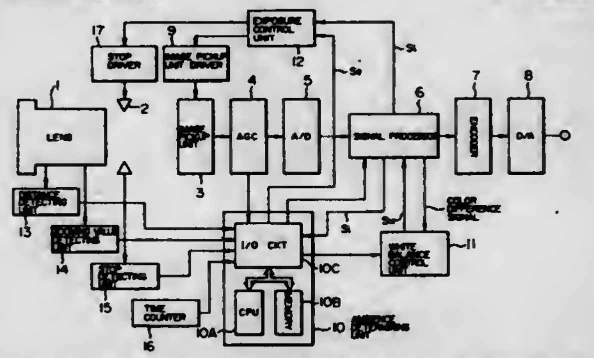
5,617,140
METHOD FOR ADJUSTING LENS OFFSET OF A VIDEO CAMERA
Byeong-Sun Jeong, Seoul, Rep. of Korea, assignor to LG Electronics Inc., Seoul, Rep. of Korea
Filed Dec. 20, 1995, Ser. No. 575,619
Claims priority, application Rep. of Korea, Dec. 22, 1994, 36073/1994
Int. Cl.⁶ H04N *5/232*
U.S. Cl. 348—347 **3 Claims**

1. A method for adjusting a lens offset of a video camera comprising;
a first step for seeking first focusing points i.e., first and second positions z1 and z2 of a zoom lens, by moving a position of a focus lens by as much as a predetermined theoretical value away from a start point, and moving a position of the zoom lens toward a first long-distance position encompassing the first focus points from the start point moved position;
a second step for seeking a first focusing point by moving the focus lens toward a second long-distance position encompass-



ing the second focus point after moving the zoom lens to a middle point between the first and second positions of the zoom lens;
a third step for seeking second focusing points i.e., the third and fourth positions z3 and z4, of the zoom lens by moving the zoom lens from the first position z1 to the second position z2; and
a fourth step for calculating an absolute value by subtracting the value of the fourth position z4 from the value of the third position z3, calculating an offset value by comparing the absolute value with a predetermined threshold value, and moving the positions of the zoom lens and focus lens in accordance with said offset value.

5,617,141
IMAGE PICKUP DEVICES HAVING AN IMAGE QUALITY CONTROL FUNCTION AND METHODS OF CONTROLLING AN IMAGE QUALITY IN IMAGE PICKUP DEVICES
Ryuji Nishimura, Yokohama, and Takuya Imaide, Fujisawa, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Apr. 23, 1993, Ser. No. 52,094
Claims priority, application Japan, Apr. 28, 1992, 4-110347
Int. Cl.⁶ H04N *5/238*
U.S. Cl. 348—366 **22 Claims**



1. An image quality control method in an image pickup device including image pickup means for converting an optical image of a subject to an image signal and a signal processor for producing a video signal on the basis of the image signal, said method comprising the steps of:
(a) determining image pickup ambience of the subject based on illumination of the subject and on at least one of distance to the subject and time of day, the illumination of the subject being determined by obtaining current instantaneous value of illumination of the subject; comparing the obtained current instantaneous illumination value and a most recent previous instantaneous illumination value; subtracting a predetermined

value from said most recent previous instantaneous illumination value when said current instantaneous illumination value is smaller than said most recent previous instantaneous illumination value and utilizing the result of the subtracting as the illumination value of the subject; and

(b) controlling image quality of the video signal produced by said signal processor in accordance with the determined image pickup ambience.

5,617,142

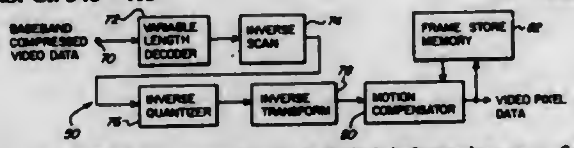
METHOD AND APPARATUS FOR CHANGING THE COMPRESSION LEVEL OF A COMPRESSED DIGITAL SIGNAL

Jeffrey S. Hamilton, Doylestown, Pa., assignor to General Instrument Corporation of Delaware, Chicago, Ill.

Filed Nov. 8, 1994, Ser. No. 335,650

Int. Cl.^{6} H04N *11/02*

U.S. Cl. 348—405 **26 Claims**



1. A method for recompressing digital information at a first compression level to a second compression level, wherein said digital information at said first compression level has already been compressed by a compression scheme that included a transformation step for providing transform coefficients followed by a quantization step for quantizing said transform coefficients to provide quantized transform coefficients at a first resolution, said method comprising the steps of:

inverse quantizing said already compressed digital information to recover the transform coefficients;

requantizing the recovered transform coefficients at a second resolution, said first resolution being different than said second resolution; and

using the requantized transform coefficients to provide said digital information at said second compression level;

wherein said second compression level is different than said first compression level.

5,617,143

MOVEMENT DETECTION DEVICE AND ENCODING APPARATUS USING THE SAME

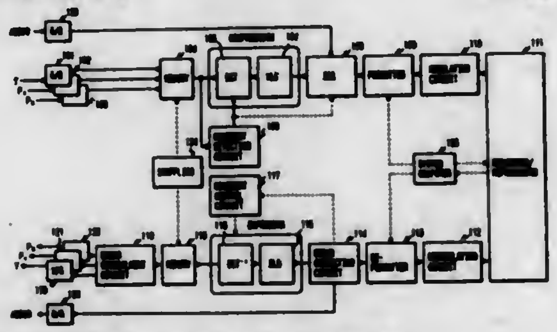
Makoto Shimokoriyama, Kawasaki; Izumi Matsui, Tokyo; Akiyoshi Hamanaka, Hachioji, and Yukinori Yamamoto, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 24, 1994, Ser. No. 217,281

Claims priority, application Japan, Mar. 29, 1993, 5-093555; Mar. 29, 1993, 5-093558; Mar. 30, 1993, 5-095609; Mar. 31, 1993, 5-096861

Int. Cl.^{6} H04N *7/30*

U.S. Cl. 348—407 **31 Claims**



1. A movement detection device comprising:

a) first detection means for detecting a high-frequency component of an image signal in units of blocks each consisting of a plurality of pixel data;

b) second detection means for detecting a low-frequency component of the image signal in units of blocks; and

c) discrimination means for discriminating a movement of the image signal in accordance with the outputs from said first and second detection means.

5,617,144

IMAGE PROCESSING SYSTEM USING PIXEL-BY-PIXEL MOTION ESTIMATION AND FRAME DECIMATION

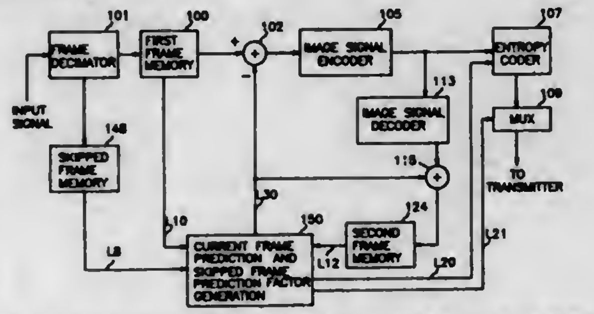
Min-Sub Lee, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed May 25, 1995, Ser. No. 452,627

Claims priority, application Rep. of Korea, Mar. 20, 1995, 95-5869

Int. Cl.^{6} H04N *7/32*

U.S. Cl. 348—416 **4 Claims**



1. An image processing system for processing a video signal including means for encoding the video signal to provide a coded signal and means for decoding the coded signal to provide a reconstructed video signal, characterized in that said encoding means comprises:

means for selecting a plurality of frames, inclusive of a current frame and a previous frame, from the video signal, wherein N frames are skipped between the previous frame and the current frame, said N being a positive integer;

means for estimating displacements between the previous frame and the current frame to provide a first set of motion vectors representative of the estimated displacements and initially compensating the previous frame through the use of the first set of motion vectors to provide a predicted current frame on a pixel-by-pixel basis;

means for subtracting the predicted current frame from the current frame to provide a difference signal and encoding the difference signal and the set of motion vectors, to thereby provide an encoded difference signal and an encoded first set of motion vectors;

means for further compensating the previous frame by using the first set of motion vectors multiplied by M number of skipped frame prediction factors to provide M number of candidate frames, said M being a positive integer larger than N; and

means for comparing each of the N skipped frames with each of the candidate frames to transmit one of the skipped frame prediction factors for each of the N skipped frames tc the decoding means;

and that said decoding means comprises:

means for decoding the encoded difference signal and the encoded first set of motion vectors, to thereby recover the difference signal and the first set of motion vectors;

means for initially compensating the previous frame by using the recovered first set of motion vectors to reconstruct the predicted current frame;

means for adding the reconstructed predicted current frame with the recovered difference signal to thereby reconstruct the current frame; and

means for further compensating the previous frame by using the recovered first set of motion vectors and each of the transmitted skipped frame prediction factors for each of the N skipped frames, to thereby construct each of the N skipped frames between the previous frame and the reconstructed current frame.

5,617,145

ADAPTIVE BIT ALLOCATION FOR VIDEO AND AUDIO CODING

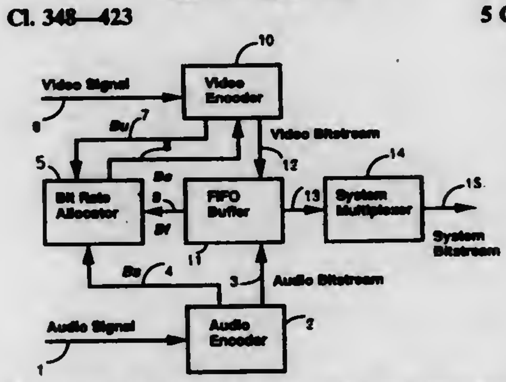
Si J. Huang, and Ah P. Tan, both of Singapore, Singapore, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 22, 1994, Ser. No. 361,438

Claims priority, application Japan, Dec. 28, 1993, 5-336975

Int. Cl.^{6} H04N *7/24*

U.S. Cl. 348—423 **5 Claims**



1. A dynamic bit rate controlled video and associated audio coding system that makes use of bit saving by audio coding to increase video coding bit rate so as to improve picture coding quality, said system comprising:

a bit rate allocator (BRA);

a variable bit rate audio encoder for encoding an audio input signal and providing bit saving for video encoder use, the variable bit rate audio encoder including means for audio detection and identification (ADI), audio prediction analysis means, the ADI and the audio prediction analysis means determining whether an audio frame may be skipped, and an appropriate bit rate to be used for coding of an audio frame, and means for computation of a total audio bit rate saving B_s) during a previous picture coding period, the bit rate saving computation means supplying and sending B_s to the BRA, the ADI analyzing frequency and energy content of the input audio signal to determine the energy level and the energy distribution thereof, classifying audio signal type based upon the energy level and energy distribution as silence or predominantly unvoiced and voiced signals, and estimating tolerable coding inaccuracy and quantization noise for generating a bit rate for audio coding;

a variable bit rate video encoder for encoding an input video sequence in a picture rate in a certain number of pictures per second, the variable bit rate video encoder including means for dynamically controlling the picture rate according to available bits for current picture coding, means for dynamically controlling picture coding modes, and means for dynamically allocating bits to a relatively small Dart of a picture according to picture activity of the small part;

a FIFO buffer;

the bit rate allocator dynamically allocating the amount of bits available for a current picture to be coded,

the BRA including means for calculating an available bit amount for current picture coding according to the B_s, previous picture bit usage (B_u), and FIFO buffer fullness (B_f), the value of B_s and B_f being sent to the BRA when a request signal is made to the audio encoder and the FIFO buffer;

the FIFO buffer buffering both the coded audio and video bitstreams and providing a constant bit rate bitstream for combined video and associated audio; and

a multiplexer for multiplexing the audio and video bitstreams with added time stamps for synchronizing of an output audio and video signal.

5,617,146

SYSTEM FOR CONTROLLING UPDATES OF EXTENDED DATA SERVICES (EDS) DATA

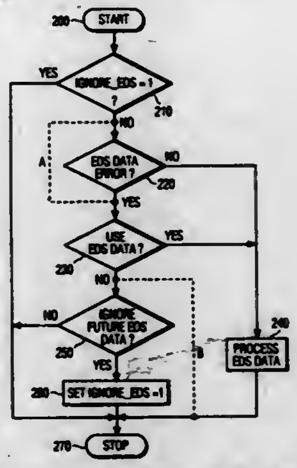
David J. Duffield, Indianapolis; Michael D. Landis, Fishers, and Gabriel A. Edde, Indianapolis, all of Ind., assignors to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed May 23, 1995, Ser. No. 450,955

Claims priority, application United Kingdom, Jul. 18, 1994, 9414446

Int. Cl.^{6} H04N *7/08*

U.S. Cl. 348—460 **19 Claims**



1. A system for processing a television signal including a video information component and including a data component, said system comprising:

first means for processing said data component to produce first data representing first temporal information;

second means for generating second data representing second temporal information, and for producing a modification of said second data in response to said first data;

control means for processing said first and second data to determine a time difference between first and second times represented by said first and second temporal information, respectively, being responsive to a control signal for preventing said modification of said second data if said time difference is in a first range, and for preventing said modification of said second data independent of said control signal if said time difference is in a second range exclusive of said first range; and

means for generating said control signal.

5,617,147

TRANSMISSION SYSTEM FOR AN ASPECT-AREA-RATIO POSITION ID SIGNAL

Tadashi Ezaki, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 230,424, Apr. 19, 1994, abandoned, which is a continuation of Ser. No. 904,584, Jun. 26, 1992, abandoned. This application Aug. 8, 1995, Ser. No. 512,372

Claims priority, application Japan, Jun. 28, 1991, 3-159092

Int. Cl.^{6} H04N *7/00;7/01;7/087*

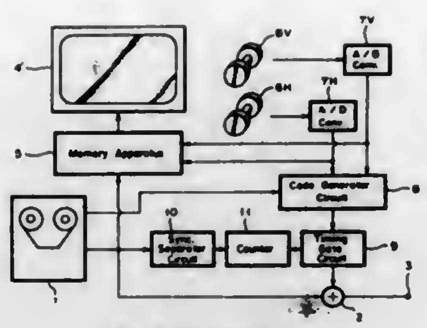
U.S. Cl. 348—461 **7 Claims**

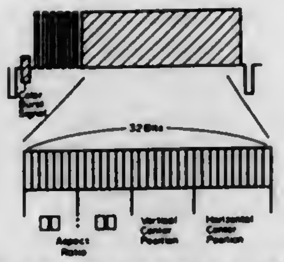
1. A video signal recording apparatus comprising:

input means for receiving a video signal having a first aspect ratio;

detecting means for detecting a predetermined horizontal scanning line in the vertical blanking period of each frame of said video signal having said first aspect ratio;

positioning means including a jog dial, said positioning means being provided for generating an output signal for setting a portion of said video signal having said first aspect ratio to display on a monitor which displays video signals having a second aspect ratio, said portion of said video signal having said first aspect ratio being moveable to any one of a plurality





of contiguous positions along an axis defining said video signal having said first aspect ratio in response to said output signal;

generating means for generating a clock synchronization signal and a position code signal corresponding to the position of said portion;

adder means for adding said clock synchronization signal and said position code signal onto each frame of said predetermined horizontal scanning line to produce a superimposed video signal having said first aspect ratio; and

output means for receiving said superimposed video signal having said first aspect ratio.

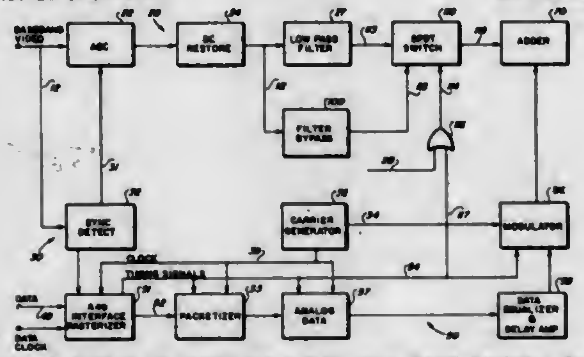
5,617,148
FILTER BY-PASS FOR TRANSMITTING AN ADDITIONAL SIGNAL WITH A VIDEO SIGNAL

Gerald D. Montgomery, Mesa, Ariz., assignor to WavePhore, Inc., Tempe, Ariz.

Continuation of Ser. No. 75,888, Jun. 14, 1993, abandoned, which is a continuation-in-part of Ser. No. 947,134, Sep. 18, 1992, Pat. No. 5,387,941, which is a continuation-in-part of Ser. No. 715,920, Jun. 14, 1991, Pat. No. 5,327,237. This application Mar. 31, 1995, Ser. No. 415,163

Int. Cl.[6] H04N *7/087;7/08*

U.S. Cl. 348—473 **14 Claims**



11. A method of combining a first video signal having a frequency spectrum and blanking intervals separating active video lines including a second signal present during only a part of at least some blanking intervals with a third signal, the method comprising:

attenuating a portion of the spectrum of the combined signal during some time intervals when the second signal is not present; and

injecting the third signal into the first signal when the second signal is not present;

wherein attenuation is accomplished by a filter filtering the first video signal and wherein the method further includes bypassing the filter during said time intervals when the first signal is present.

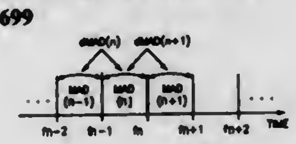
5,617,149
APPARATUS AND METHOD FOR DETECTING SCENE CHANGES USING THE DIFFERENCE OF MAD BETWEEN IMAGE FRAMES

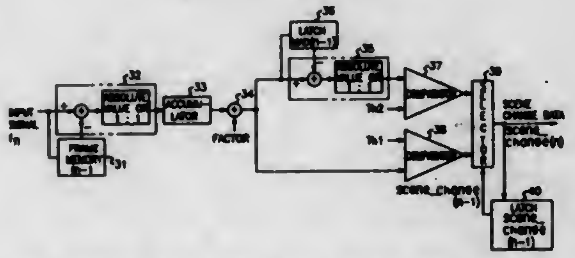
Hyun J. Lee; Sang M. Lee, and Yong H. Kim, all of Daejeon, Rep. of Korea, assignors to Electronics and Telecommunications Research Institute, and Korea Telecommunication Authority, both of Rep. of Korea

Filed Nov. 22, 1994, Ser. No. 343,235

Int. Cl.[6] H04N *7/32*

U.S. Cl. 348—699 **3 Claims**





1. An apparatus for detecting scene change using difference of mean absolute difference(dMAD) between image frames, the apparatus comprising:

frame memory for saving input signal f_n;

first absolute difference calculation means for calculating absolute difference between said input signal f_n and output signal f_{n-1} of said frame memory:

accumulation means for accumulating said absolute difference;

multiplication means for multiplying output of said accumulation means by a constant factor, thereby obtaining mean absolute difference(MAD);

first latch means for saving the MAD from said multiplication means during a frame time;

second absolute difference calculation means for calculating dMAD(n) between output of said multiplication means, MAD(n), and output of said first latch means, MAD (n−1);

first comparison means for comparing absolute difference from said second absolute calculation means with a second threshold value so as to judge scene change;

second comparison means for comparing only the MAD of corresponding frame from said multiplication means with a first threshold value;

selection means for selecting either said first comparison means or said second comparison means to be used and outputting scene change data; and

second latch means for saving the scene change data from said selection means and providing the scene change data corresponding previous frame to said selection means so as to select said first or second comparison means.

5,617,150
VIDEO BIT RATE CONTROL METHOD

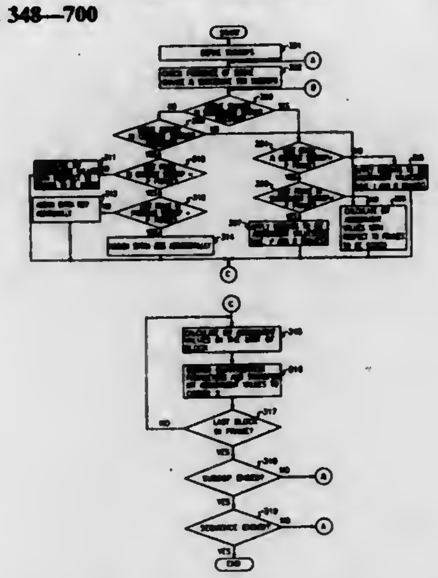
Jae Y. Nam; Sang G. Park; Young S. Lee, and Chie T. Ahn, all of Daejeon, Rep. of Korea, assignors to Electronics and Telecommunication Research Institute, Daejeon, Rep. of Korea

Filed Jun. 19, 1995, Ser. No. 492,158

Claims priority, application Rep. of Korea, Dec. 2, 1994, 94-32590

Int. Cl.[6] H04N *7/36*

U.S. Cl. 348—700 **5 Claims**



1. A video bit rate control method for a video bit rate control apparatus which comprises video frame input means for inputting a video frame, coding means for coding the video frame inputted by said video frame input means, buffering means for storing temporarily the coded result from said coding means; and video bit rate control means for controlling an output bit rate of said coding means according to a storage level of said buffering means to prevent an overflow or an underflow of said buffering means, said method comprising the steps of:

(a) defining a plurality of SUBGOPs in a group of pictures (GOP) and checking whether a scene change is present in successive two of said SUBGOPs, the successive two SUBGOPs being current and subsequent SUBGOPs;

(b) checking whether last frames in the current and subsequent SUBGOPs are predicted frames, if it is checked at said step (a) that the scene change is present in the subsequent SUBGOP, and calculating assignment bits with respect to frames to be coded or applying weights to the assignment bits in accordance with the checked result;

(c) checking whether the last frame in the current GOP and a last frame in a previous SUBGOP are the predicted frames, if it is checked at said step (a) that the scene change is not present in the subsequent SUBGOP, and calculating the assignment bits with respect to the frames to be coded or assigning extra bits additionally to the assignment bits in accordance with the checked result; and

(d) calculating assignment bits in the unit of block according to the calculated assignment bits by frames and the storage level of said buffering means at the time point that blocks are coded, obtaining quantization parameters as a result of the calculation of the assignment bits in the unit of block, transferring the resultant assignment bits to said coding means and performing repeatedly the above operation up to a last one of said blocks.

5,617,151
AUTOMATIC BROADCASTING CHANNEL SELECTION METHOD AND TELEVISION RECEIVER ADOPTING THE SAME

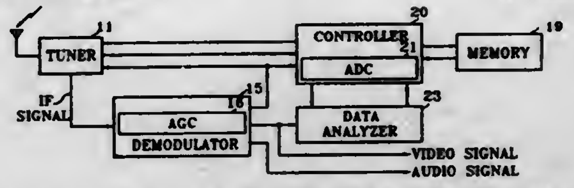
Taek-ho Lee, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Dec. 29, 1995, Ser. No. 581,255

Claims priority, application Rep. of Korea, Dec. 31, 1994, 94-40281

Int. Cl.[6] H04N *5/50*

U.S. Cl. 348—731 **6 Claims**



1. A television receiver for automatically selecting broadcast channels within all television broadcast bands, on the basis of television signals to be transmitted with broadcasting station identification codes, at an area where a plurality of broadcast channels corresponding to an identical broadcasting station are received, the television receiver comprising;

a memory;

tuning means for performing a tuning operation according to applied respective channel data, and outputting a television signal of an individual broadcast channel which is received by the tuning operation;

demodulation means for demodulating the television signal supplied from said tuning means, outputting a video signal as a result of demodulation, and generating an automatic gain control value for said supplied television signal;

detection means, receiving the video signal from said demodulation means, for detecting the broadcasting station identification codes in the video signal; and

control means, sequentially supplying each of a plurality of channel data, which partition all television broadcast bands into a predetermined interval, to said tuning means, and receiving said automatic gain control value and said broadcasting station identification codes, for controlling storage of the plurality of channel data, the broadcasting station identification codes and the automatic gain control value which respectively correspond to each of broadcast channels to receive the television signal output from said tuning means, in said memory, and for determining channel data having the lowest automatic gain control value among a plurality of channel data corresponding to identical broadcasting station identification codes stored in said memory, as the optimum channel data for a corresponding broadcasting station.

5,617,152
PROJECTOR SYSTEM FOR VIDEO AND COMPUTER GENERATED INFORMATION

Adi Stolov, Herzliya, Israel, assignor to UNIC View Ltd., Herzliya, Israel

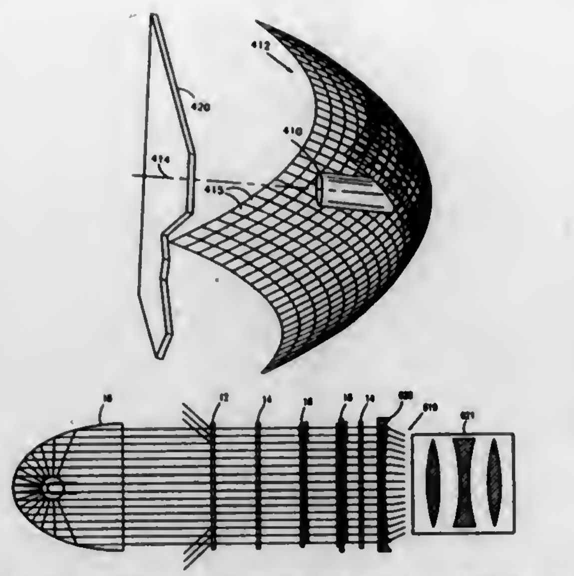
Continuation-in-part of Ser. No. 178,024, Jan. 6, 1994. This application Jun. 20, 1994, Ser. No. 262,624

Claims priority, application Israel, Jun. 20, 1993, 106068; Aug. 29, 1993, 106834; Dec. 29, 1993, 108226; May 20, 1994, 109710

Int. Cl.[6] H04N *9/31;5/74;* **G03B** *21/22;* **G02F** *1/1335*

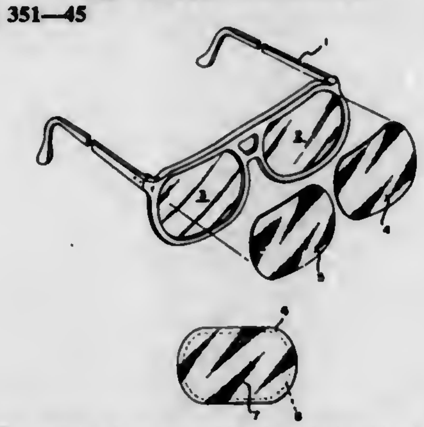
U.S. Cl. 348—761 **11 Claims**

1. A radiation reflector for providing generally homogeneous illumination in a plane perpendicular to an axis, the reflector comprising a generally curved reflecting surface formed of a multiplicity of flat surface units, the multiplicity of flat surface



units being configured and arranged such that the projection of each of said multiplicity of flat surface units onto a plane perpendicular to said axis is generally identical.

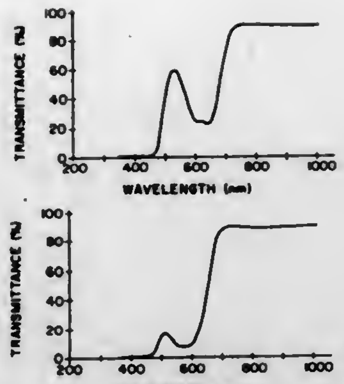
5,617,153
EYEGLASS LENS SHIELD HAVING PERIPHERAL BAND
Lawrence L. Allen, and Thomas E. Wilkins, both of P.O. Box 1165, Thomaston, Ga. 30286
Filed Feb. 8, 1996, Ser. No. 598,341
Int. Cl.⁶ G02C *7/16;7/10;9/00*
U.S. Cl. 351—45 **3 Claims**



1. A lens shield for an eyeglass lens comprising, a thin sheet of flexible material substantially corresponding to the shape of said eyeglass lens, said sheet overlying said eyeglass lens and being held in place by means of natural adhesion, a band extending around the periphery of said lens shield, said band being chemically fused to said lens shield, and the molecular structure of said band corresponding to the molecular structure of said eyeglass lens.

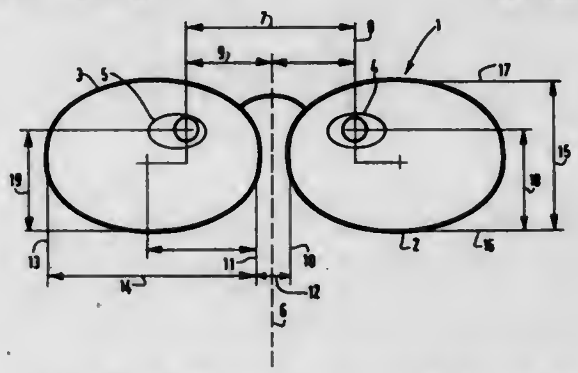
5,617,154
LIGHT FILTERING CONTACT LENS
William C. Hoffman, Lakewood, Colo., assignor to Flexlens, Englewood, Colo.
Filed Oct. 28, 1994, Ser. No. 331,328
Int. Cl.⁶ G02C *7/04*
U.S. Cl. 351—162 **28 Claims**

1. A tinted contact lens comprising:
(a) a matrix polymer which is shaped to form a contact lens, at least a portion of which is tinted; and



(b) a plurality of colorants for tinting said lens or a portion thereof;
said colorants imparting to said lens or portion thereof (I) an essentially zero transmittance of radiation having wavelengths from 200 to about 500 nanometers, (ii) a variable and wavelength-dependent transmittance of radiation having wavelengths from about 550 to 700 nm wherein transmittance of radiation over a bandwidth of at least 50 nm in the range from 550 to 700 nm is less than 50%.

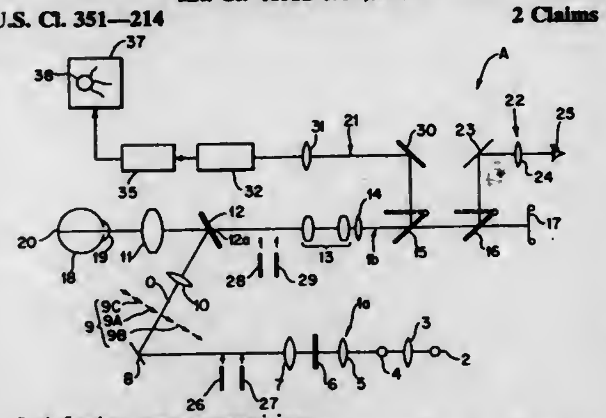
5,617,155
METHOD FOR DETERMINING MEASUREMENT PARAMETERS FOR A SPECTACLE WEARER
Christian Ducarouge; Richard Grisel; Nicholas Girand, all of Lyons; Helene Sottocasa, Verrieres; Alain Chansavoir, Saint-Maur, and Ahmed Haddadi, Draveil, all of France, assignors to Essilor International, France
Filed Apr. 27, 1995, Ser. No. 429,971
Claims priority, application France, May 3, 1994, 94 05400
Int. Cl.⁶ A61B *3/10;3/00*
U.S. Cl. 351—204 **20 Claims**



1. A method for determining measurement parameters for a spectacle wearer comprising the steps of:
generating an image of a spectacle wearer provided with a spectacle frame;
determining automatically, on said image, by luminance gradient analysis, where a plurality of horizontal and vertical straight lines tangential to said frame would be positioned;

determining automatically, on said image, by luminance gradient analysis, where the center of each pupil of the eyes of said wearer would be positioned; and
calculating the values of said measurement parameters from said positions.

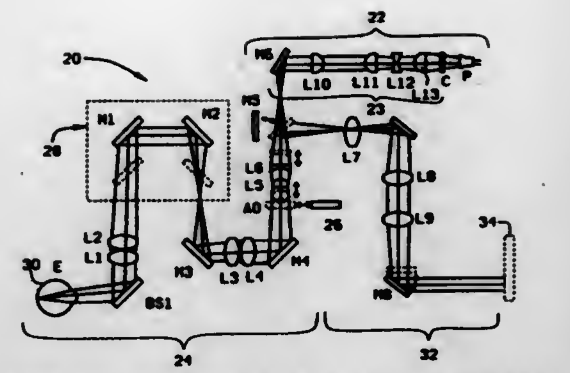
5,617,156
FUNDUS CAMERA
Eiichi Sano, and Hiroshi Minegishi, both of Tokyo, Japan, assignors to Kabushiki Kaisha Topcon, Tokyo, Japan
Continuation of Ser. No. 162,799, Dec. 7, 1993, abandoned, which is a continuation of Ser. No. 798,334, Nov. 26, 1991, abandoned. This application Feb. 10, 1995, Ser. No. 386,350
Claims priority, application Japan, Nov. 27, 1990, 2-323718
Int. Cl.⁶ A61B *3/14;3/10*
U.S. Cl. 351—214 **2 Claims**



1. A fundus camera comprising:
an illuminating optical system for illuminating a fundus for observation and for exciting a fluorescent agent therein to enable taking a photograph of the fundus by fluorescence;
said illuminating optical system having an optical path and comprising:
an illumination field diaphragm, disposed at a position substantially conjugate with the fundus, having regions each being of predetermined size, shape, and disposition with different respective transmittances of light; and
said illumination field diaphragm being displaceable in the optical path of said illuminating optical system and in a direction perpendicular to the optical path and thereby being disposed in the optical path so that a region of said diaphragm with a higher transmittance corresponds to a disordered part of the fundus and a region of said diaphragm with a lower transmittance corresponds to parts of said fundus other than said disordered part.

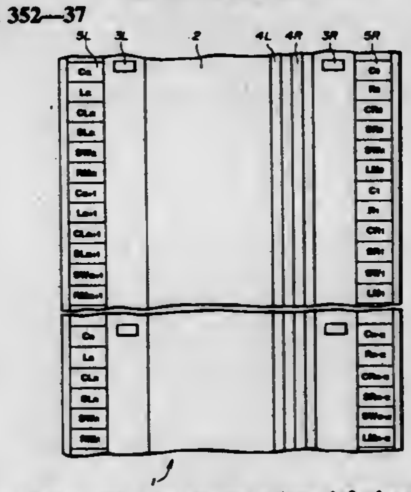
5,617,157
COMPUTER CONTROLLED SUBJECTIVE REFRACTOR
Tadmor Shalon, Brentwood; Marvin L. Pund, Chesterfield; Susan L. Bragg, University City; James D. Houseman, Lake Saint Louis, and Steven W. Free, Bridgeton, all of Mo., assignors to Metaphase Ophthalmic Corp., St. Louis, Mo.
Filed Jun. 15, 1994, Ser. No. 260,027
Int. Cl.⁶ A61B *3/02*
U.S. Cl. 351—222 **21 Claims**

1. A subjective refractor for determining refractive corrections for each of the patient's eyes, said subjective refractor comprising:
(a) a plurality of optical elements contained in an enclosure, said enclosure being adapted for positioning entirely above the patient's eye level, said optical elements including a beam splitter extending downwardly from said enclosure and adapted for positioning in the patient's line of sight through which the patient may view his surroundings as said subjective refractor is used;
(b) a movable near vision mirror contained in the enclosure for each of the patient's eyes for reflecting light off a near vision



testing object and through at least one of said optical elements into the patient's eyes;
(c) distance measuring means extending externally from the enclosure for determining a distance between the near vision testing object and the patient's eyes;
(d) a target projector for projecting a target through said plurality of optical elements and into said patient's eyes, said projector being located in said enclosure;
(e) a plurality of motors for moving at least some of said optical elements;
(f) a motor controller electrically coupled to said motors for monitoring and controlling said motors to thereby adjust positions of said optical elements, said positions corresponding to said refractive corrections; and
(g) a control unit electrically coupled to said motor controller for an operator to enter commands to adjust said projected target and said optical element positions in response to the patient's responses.

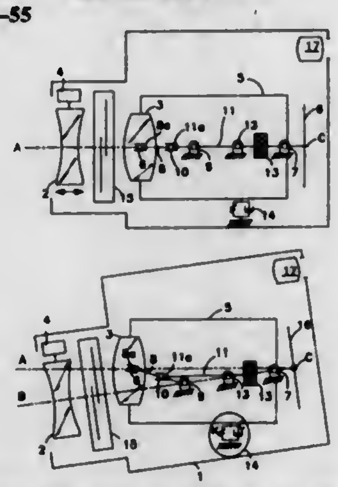
5,617,158
DIGITAL SOUND RECORDING ON MOTION PICTURE FILM
Shinji Miyamori; Masatoshi Ueno, both of Tokyo; Matayasu Kubo, Kanagawa; Kenji Takanashi, Kanagawa; Toshiaki Setogawa, Kanagawa, all of Japan; Michael J. Kohut, and Jeffrey E. Taylor, both of Culver City, Calif., assignors to Sony Corporation, Tokyo, Japan, and Sony Cinema Products Inc., Culver City, Calif.
Filed Nov. 30, 1994, Ser. No. 352,022
Claims priority, application Japan, Dec. 7, 1993, 5-306895; Dec. 7, 1993, 5-306896; Jan. 25, 1994, 6-006673
Int. Cl.⁶ G03B *31/02*
U.S. Cl. 352—37 **24 Claims**



1. A motion picture film having at least left-channel and right-channel digital sound tracks extending along a film running direction, and left-channel and right-channel audio data recorded on the sound tracks, wherein said audio data of the temporally same left and right channel audio signals are respectively recorded on the

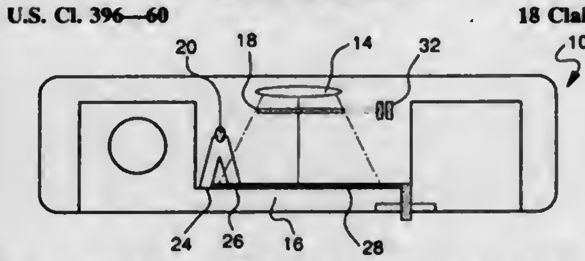
left-channel and right-channel digital sound tracks with a spatial shift of a pre-set distance along the film running direction.

5,617,159
IMAGE BLUR SUPPRESSION DEVICE WITH INERTIAL PENDULUM SYSTEM FOR A CAMERA
Yasushi Sakagami, Tokyo, and Tadao Kai, Kawasaki, both of Japan, assignors to Nikon Corporation, Tokyo, Japan
Filed Dec. 5, 1995, Ser. No. 567,745
Claims priority, application Japan, Dec. 5, 1994, 6-300931
Int. Cl.⁶ G03B *39/00*
U.S. Cl. 396—55 **15 Claims**



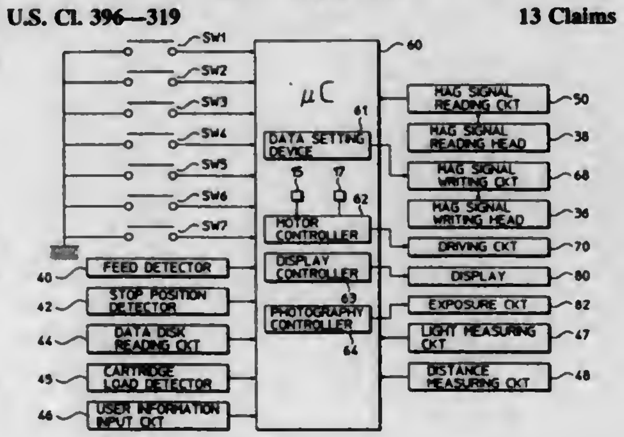
14. An image blur suppression device for use in an optical device having a main optical axis, the image blur suppression device comprising:
- a compensation optical system having an optical axis, the compensation optical system being adapted to have the optical axis moved with respect to the main optical axis;
- a balance member that balances said compensation optical system; and
- an oscillation mechanism unit that supports said compensation optical system and said balance member so that they are able to oscillate such that a center of oscillation of said balance member differs from a center of oscillation of said compensation optical system.

5,617,160
CAMERA WITH MULTI-FORMAT SELECTION
Stanley Stephenson, III, Spencerport; Dennis R. Zander, Penfield, and Harold J. Barrett, Brockport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Feb. 15, 1995, Ser. No. 388,783
Int. Cl.⁶ G03B *17/24*
U.S. Cl. 396—60 **18 Claims**



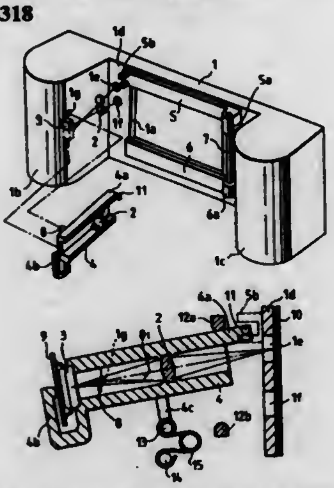
1. A photographic camera for making pseudo photographs on film exposure areas upon opening of camera shutter means, said camera including a camera body and also including a format indicating means for selecting from a range of pseudo fields of view for exposures, the camera characterized by:
- a light emitting diode disposed in said camera body for directly illuminating one or more positions on the film;
- an aperture disposed in said camera body between said light emitting diode and film for controlling illumination by said light emitting diode to provide a predetermined coded pattern of exposure on said one or more positions of the film;
- a lever positionable between said aperture and film to cover or uncover said aperture to regulate film exposure by the light passing through said aperture upon camera shutter opening; and
- an electronic flash circuit for actuating said light emitting diode upon full shutter opening, said electronic flash circuit having flash synchronizing contacts, said flash synchronizing contacts being used to pulse said light emitting diode whether or not the flash is activated; said electronic flash circuit powering said light emitting diode at a current level beyond continuous use operating limits of said diode to improve illumination of said film.

5,617,161
CAMERA PROVIDED WITH A MAGNETIC RECORDING DEVICE
Yasuaki Serita, Sakai; Kenji Tsuji, Kashiwara, and Hiroyuki Okada, Sakai, all of Japan, assignors to Minolta Co., Ltd., Osaka, Japan
Filed Jun. 6, 1995, Ser. No. 463,640
Claims priority, application Japan, Jun. 8, 1994, 6-126491
Int. Cl.⁶ G03B *17/24*
U.S. Cl. 396—319 **13 Claims**



1. A camera comprising:
- a data generating device which generates a plurality of kinds of data;
- a data designating device which designates a kind of data to be recorded among the generated plurality of kinds of data;
- a record data setting device which sets the kind of data designated by the data designating device as record data when the data designating device designates it, and sets a predetermined kind of data as record data when the data designating device designates no kind of data; and
- a recording device which records the set record data on a film mounted on the camera.

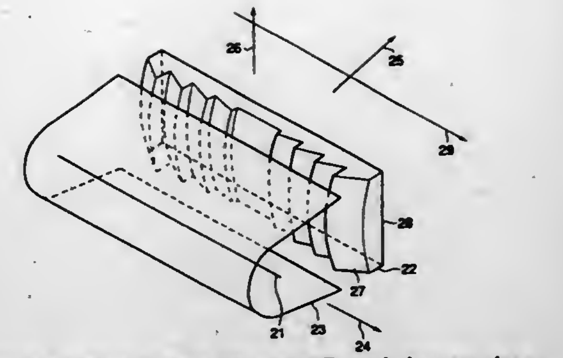
5,617,162
DATA IMPRINTING DEVICE FOR A CAMERA HAVING CHANGEABLE IMAGE SIZE
Koji Kato; Hiroyuki Ando; Yukihiko Sugita, all of Tokyo; Hideaki Ichikawa, Nagano; Akira Inoue, and Satoshi Miyazaki, both of Tokyo, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 226,561, Apr. 12, 1994. This application May 30, 1996, Ser. No. 656,408
Claims priority, application Japan, Apr. 13, 1993, 5-86461
Int. Cl.⁶ G03B *17/24*
U.S. Cl. 396—318 **6 Claims**



1. A camera in which a photographic image field size is switchable from regular size to panoramic size by shielding upper and lower portions of the regular field size, said camera having a body and comprising:
- data producing means for producing light of optical data to be imprinted on a film surface;
- projecting means for projecting the light of optical data from the data producing means to the film surface; and
- sleeve-like holding means for holding said data producing means and said projecting means, said holding means being mounted in front of the film surface and at a position where a photographic light flux of a photographing lens is not shielded by said holding means, said holding means being mounted for angular movement on the body of the camera so that a front side thereof is movable between two positions close to and away from a photographic optical axis of the camera and for changing position of data imprinting on the film surface in response to switching of the photographic image field size.

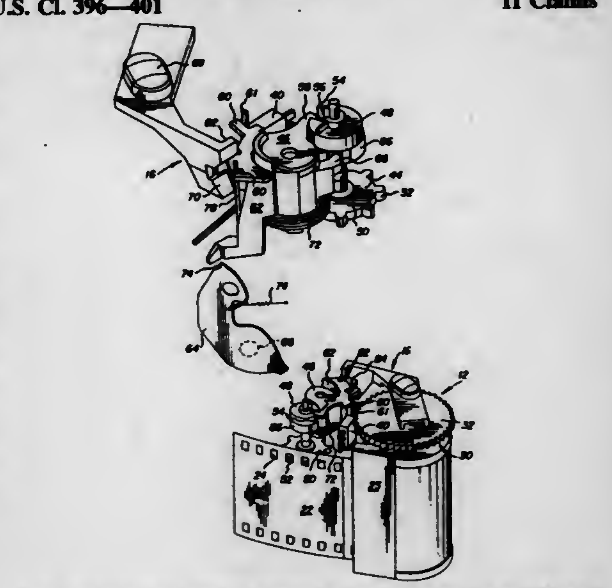
5,617,163
CAMERA WITH ILLUMINATING OPTICAL SYSTEM
Motoyuki Ohtake, Ohmiya, Japan, assignor to Nikon Corporation, Tokyo, Japan
Continuation of Ser. No. 356,970, Dec. 16, 1994, abandoned. This application Jun. 20, 1996, Ser. No. 667,335
Claims priority, application Japan, Dec. 22, 1993, 5-325029; Mar. 29, 1994, 6-082453
Int. Cl.⁶ G03B *15/03*
U.S. Cl. 396—176 **10 Claims**

1. A camera provided with an illuminating optical system for illuminating a phototaking range of a phototaking lens, wherein:
- said illuminating optical system comprises a light source emitting a light beam, and a Fresnel lens refracting said light beam, said Fresnel lens having a first surface without a Fresnel structure, and a second surface having a cylindrical envelope plane having a Fresnel structure comprising plural Fresnel elements, each Fresnel element having a truncated conical plane; and



- wherein a cross-section of said plural Fresnel elements along a rotary central axis of said cylindrical envelope plane has said Fresnel structure.

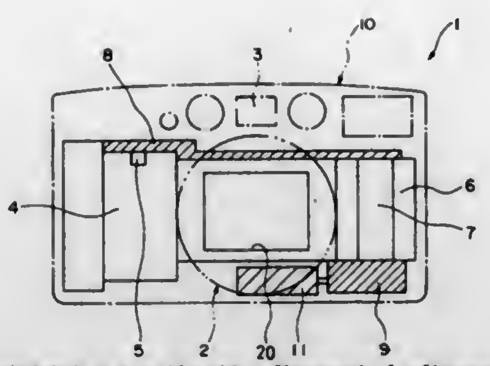
5,617,164
CAMERA USING INTERFERENCE BETWEEN EXPOSURE ACTUATOR AND METERING LINKAGE TO CONTROL MOTOR
Roger A. Sieklerski, Webster, and Charles W. Greene, Clarence Center, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Nov. 30, 1995, Ser. No. 565,508
Int. Cl.⁶ G03B *1/18*
U.S. Cl. 396—401 **11 Claims**



6. A photographic camera having a film exposing cycle followed by a camera setting cycle, said camera including a moveable actuator for initiating said cycles and an electric film advancing motor operated only during said setting cycle; characterized in that:
- movement of said actuator from a first position to a second position initiates said film exposing cycle, and from said second position to said first position initiates said camera setting cycle.

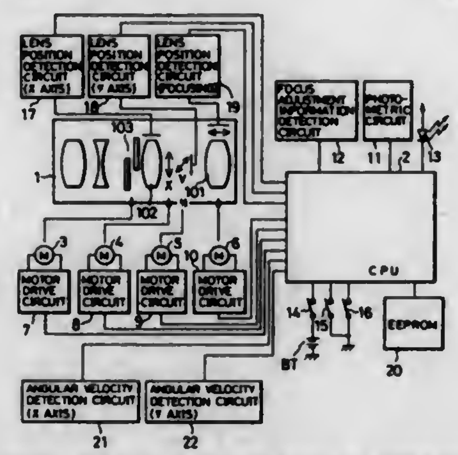
5,617,165
FILM DRIVING MECHANISM OF A CAMERA
Yasuhiko Endoh, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 25, 1996, Ser. No. 639,304
Claims priority, application Japan, May 2, 1995, 7-132912
Int. Cl.⁶ G03B *1/18; 1/00*
U.S. Cl. 396—418 **16 Claims**

1. A film driving mechanism of a camera, comprising:



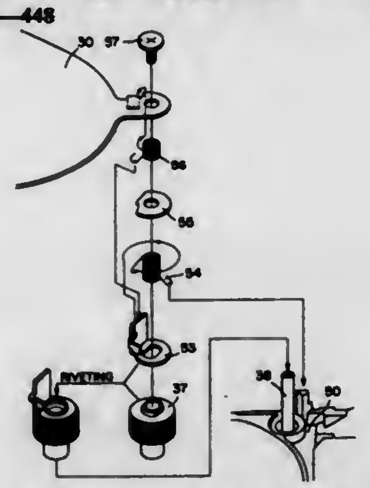
a rewind fork engageable with a film spool of a film cartridge when said film cartridge is inserted into a film chamber of said camera;
a film take-up spool for winding a film from said film cartridge, said film take-up spool being made of a hollow cylindrical member;
a motor for selectively driving one of said rewind fork and said film take-up spool, said motor being disposed outside said film take-up spool;
first power transmitting means for transmitting a rotation of said motor to said film take-up spool; and
second power transmitting means for transmitting said rotation of said motor to said rewind fork, wherein said second power transmitting means comprises a power transmitting member positioned inside said film take-up spool.

5,617,166
CAMERA CAPABLE OF REDUCING IMAGE BLUR
Tatsuo Amanuma, Ageo; Sueyuki Ohishi, Tokyo; Yoshio Imura, Kawasaki, and Toshiyuki Nakamura, Tokyo, all of Japan, assignors to Nikon Corporation, Tokyo, Japan
Filed Jan. 20, 1995, Ser. No. 375,688
Claims priority, application Japan, Feb. 3, 1994, 6-011670; Feb. 3, 1994, 6-011671
Int. Cl.⁶ G03B *17/00*
U.S. Cl. 396—55 **20 Claims**



1. A camera capable of image blur reduction, comprising:
a command device that outputs a photography preparation command by an operation for photography preparation and outputs a photography starting command by an operation for photography;
a camera vibration detection device that detects a value of physical quantity related to an amount of camera vibration in response to said photography preparation command;
an image blur reduction device that, in response to said photography starting command, performs an image blur reduction operation based upon an output of said camera vibration detection device in order to reduce blurring of a photographic image caused as a result of camera vibration;
an operation control device that prevents an operation of said image blur reduction device until a first predetermined time period from starting of operation of said camera vibration detection device elapses and operates said image blur reduction device in response to said photography starting command after said first predetermined time period has elapsed; and
a photographing control device that prevents photography until a second predetermined time period from starting of operation of said image blur reduction device elapses and performs photography after said second predetermined time period has elapsed.

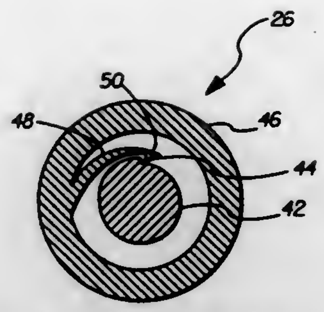
5,617,167
LENS COVER DRIVE MECHANISM FOR A CAMERA
Hidenobu Kaji, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan
Filed Aug. 7, 1995, Ser. No. 511,862
Claims priority, application Japan, Aug. 31, 1994, 6-207143
Int. Cl.⁶ G03B *17/00*
U.S. Cl. 396—448 **19 Claims**



1. A lens cover mechanism which drives a lens cover to cover a surface of a lens, said lens cover drive mechanism comprising:
a drive source to generate a drive force;
a transmission member to receive the drive force from the drive source;
an urging member to receive the drive force from said transmission member;
a buffer member to receive the drive force from said urging member and, in response, rotating the lens cover to one of cover and uncover the surface of the lens if there is no external force of a given amount preventing movement of the lens cover and preventing the drive force from being transmitted from said urging member to the lens cover if the external force prevents movement of the lens cover; and
a shaft, on which an axis of rotation of the lens cover, said urging member and said buffer member are arranged.

5,617,168
CAMERA WITH SPOOL POSITIONING MECHANISM
Stanley W. Stephenson, III, Spencerport, and Tom M. Seamans, Corfu, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed May 1, 1995, Ser. No. 432,412
Int. Cl.⁶ G03B *1/00*
U.S. Cl. 396—413 **8 Claims**

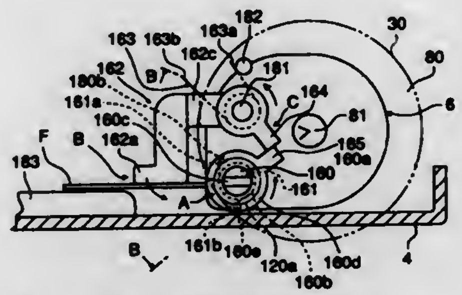
1. A photographic camera comprising:
a body including a chamber sized for receiving a film cassette having an enclosed spool with photosensitive film wound thereon and first locating means for determining the rotational position of the spool when the cassette is removed from the chamber;



an internal spool driver for driving the spool;
an external rewind drive connectable with the spool driver for turning the spool in a rewind direction; and
a one-way clutch between said spool driver and said rewind drive, is characterized in that:
said spool driver is connectable with said spool at only a first phase angle, said spool drive having a key-shaped engagement member for engaging a keyway of said spool;
said clutch engages both said rewind drive and said spool driver at only a second phase angle for rotation in a rewind direction and said clutch permits free rotation in the opposite direction of said rewind drive relative to said spool driver; and
wherein said camera includes second locating means for determining at least one position of said spool when said clutch is engaged.

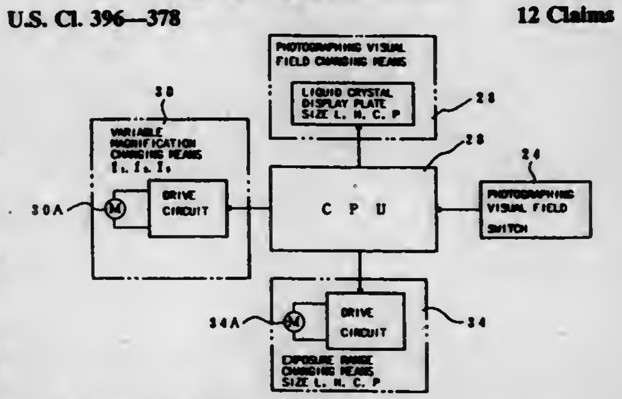
5,617,169
FILM DETECTION MEMBER FOR A SINGLE-USE CAMERA
Tetsufumi Takaba; Masami Fujita; Masaru Yamazaki; Hiroshi Kibayashi; Kazuyoshi Sugano, all of Hino, and Shizuo Ishii, Hachioji, all of Japan, assignors to Konica Corporation, Japan
Filed Dec. 18, 1995, Ser. No. 572,888
Claims priority, application Japan, Dec. 19, 1994, 6-335035; Mar. 22, 1995, 7-062708
Int. Cl.⁶ G03B *1/00*
U.S. Cl. 396—284 **12 Claims**

1



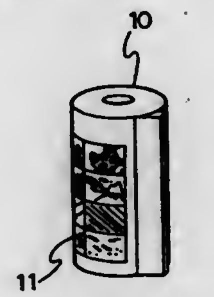
1. A single-use camera, comprising:
a film cartridge, having a light-shielding cover on a film gate, for accommodating a photographic film;
a film-winding knob, capable of rotating, for winding said photographic film;
a film detection member for detecting said photographic film at a position outside said film cartridge in said single-use camera by having contact only with an end portion of said photographic film; and
a mechanism for moving said light-shielding cover to a closed position where said light-shielding cover closes said film gate when said film detection member detects absence of said photographic film at said position.

5,617,170
CAMERA
Takeshi Watanabe, and Tsutomu Tanaka, both of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Aug. 2, 1995, Ser. No. 510,308
Claims priority, application Japan, Aug. 2, 1994, 6-180998
Int. Cl.⁶ G03B *13/10;17/24*
U.S. Cl. 396—378 **12 Claims**



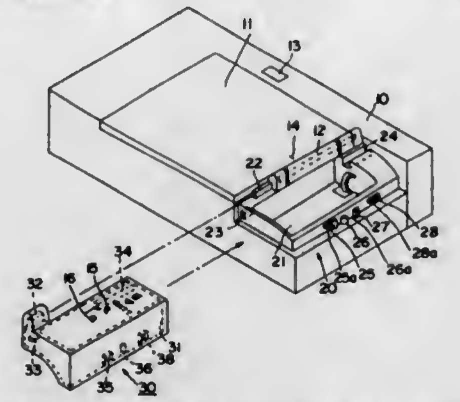
1. A camera, comprising:
a finder capable of displaying a plurality of photographing visual fields;
a switch for changing said photographing visual fields;
photographing visual field changing means for sequentially selecting each one of said plurality of photographing visual fields at a predetermined interval to display sequentially each one of said photographing visual fields within said finder when said switch is turned on and for stopping a sequential changing of said photographing visual fields when said switch is turned off.

5,617,171
PHOTOGRAPHIC PROCESSING METHOD
Masazumi Ishikawa, and Toru Tanibata, both of Wakayama, Japan, assignors to Noritsu Koki Co., Ltd., Wakayama, Japan
Continuation of Ser. No. 213,064, Mar. 15, 1994, abandoned. This application Jun. 5, 1996, Ser. No. 658,387
Claims priority, application Japan, Apr. 2, 1993, 5-076879
Int. Cl.⁶ G03B *17/26*
U.S. Cl. 396—512 **2 Claims**



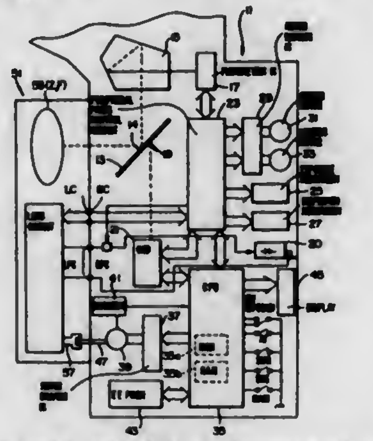
1. A photographic processing method comprising the steps of: providing a cartridge containing exposed film, drawing the exposed film from the cartridge, subjecting the film to film development, making an index print from the developed film, the index print representing images from the developed film, winding the developed film into a cartridge; and affixing the index print to the cartridge containing the developed film.

5,617,172
CAMERA BATTERY COVER STRUCTURE
Hidefumi Ohta, Kawasaki, and Kiyosada Machida, Urawa, both of Japan, assignors to Nikon Corporation, Tokyo, Japan
Filed Jan. 2, 1996, Ser. No. 581,921
Claims priority, application Japan, Feb. 8, 1995, 7-020778
Int. Cl.⁶ G03B *17/02*
U.S. Cl. 396—539 **15 Claims**



1. A camera battery cover structure suitable for a camera with a rear cover hinge, comprising:
a battery cover; and,
a guide extended from an end of the rear cover hinge to slidably guide said battery cover during attachment and removal of said battery cover.

5,617,173
CAMERA SYSTEM HAVING POWER ZOOM LENS
Masahiro Kawasaki; Hiroyuki Takahashi, and Yoshinari Tanimura, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 136,120, Oct. 13, 1993, abandoned, which is a continuation of Ser. No. 886,794, May 21, 1992, abandoned. This application Feb. 17, 1995, Ser. No. 390,431
Claims priority, application Japan, May 21, 1991, 3-218146; Nov. 29, 1991, 3-342123
Int. Cl.⁶ G03B *13/36*
U.S. Cl. 396—78 **14 Claims**

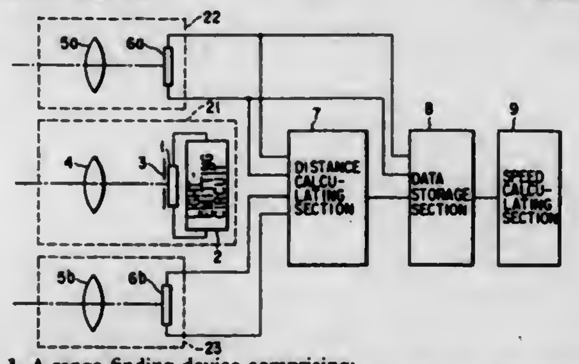


1. A constant image magnification ratio zooming control apparatus of a zoom lens, comprising:
means for detecting a focal length of said zoom lens;
means for detecting an amount by which a focus lens of said zoom lens advances from a predetermined position;
means for selecting a constant image magnification mode from among a plurality of photographing modes, said constant image magnification mode being selected by a predetermined manipulation of a magnification setting switch that is settable by a photographer;
means for storing focal length information detected by said focal length detecting means and an advancement amount of said focus lens that is detected by said focus lens advancement amount detecting means when said magnification setting switch is set and when said constant image magnification mode is selected;
means for determining a target focal length when said constant image magnification mode is set, according to the following formula:

$f = x_0 \cdot f_0 / x$; and

means for driving said zoom lens to said target focal length when said constant image magnification mode is set, wherein
f equals the target focal length,
x_0 equals the advancement amount of said focus lens detected by said focus lens advancement amount detecting means and stored in said storing means,
f_0 equals the focal length information detected by said focal length detecting means and stored in said storing means, and
x equals a lens advancement amount for an object to be photographed in an in-focus condition.

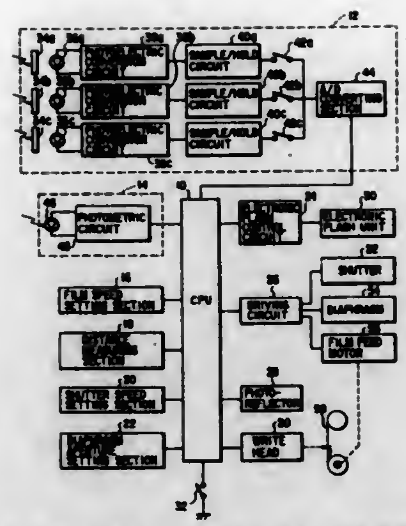
5,617,174
ACTIVE RANGE FINDING DEVICE
Kazuo Mikami, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed May 18, 1995, Ser. No. 443,444
Claims priority, application Japan, May 27, 1994, 6-115321
Int. Cl.⁶ G03B *13/36*
U.S. Cl. 396—95 **13 Claims**



1. A range-finding device comprising:
light-projecting means for projecting range-finding light beams toward an object;
a plurality of light-receiving means for receiving light beams reflected from the object; and
calculating means for calculating a distance to the object and a condition of range-finding light beams reflected by the object on the basis of a plurality of outputs from the light-receiving means.

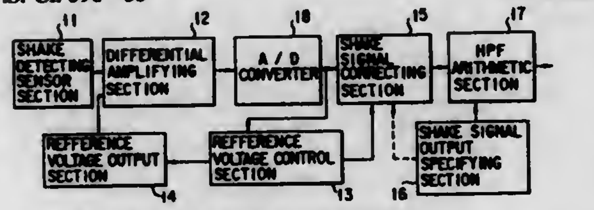
5,617,175
CAMERA HAVING ELECTRONIC FLASH UNITS
Yasuo Asakura, and Tatsuya Suzuki, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 97,535, Jul. 27, 1993. This application Nov. 18, 1994, Ser. No. 341,695
Claims priority, application Japan, Jul. 29, 1992, 4-202487; Aug. 24, 1992, 4-224010
Int. Cl.⁶ G03B *7/08*
U.S. Cl. 396—166 **6 Claims**

1. A camera, in which a film having a data recording portion can be loaded, said camera comprising:
colorimetric means having three light receiving portions differing in spectral sensitivity, for measuring a tone of light surrounding an object to be photographed based on an output



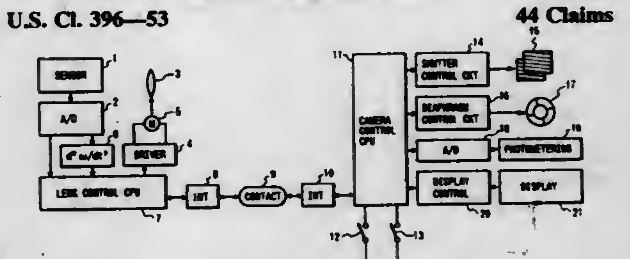
from the three light receiving portions, said light receiving portions being arranged on a front portion of the camera and arranged so as to receive light at a range larger than an angle of a photographed view;
color correction amount determining means for determining a color correction amount during a printing operation based on an output of said colorimetric means;
recording means for recording data as to the determined color correction amount, on the data recording portion of the film;
flash light emission means for radiating flash light onto the object during an exposure operation of the camera;
photometric means for measuring a brightness of said object at one of a range roughly equal to the angle of the photographed view and a range of a part of the angle of the photographed view, and for outputting brightness data of the object;
ratio determining means for determining a ratio of surrounding light to said flash light with respect to the object during the exposure operation which employs the flash light emission means, by using one of the brightness data and data based on said brightness data; and
color correction amount changing means for changing an output of said color correction amount determining means in accordance with the determined ratio of the surrounding light to the flash light.

5,617,176
SHAKE DETECTING AND DRIFT COMPONENT REMOVAL APPARATUS
Yoshinori Matsuzawa; Junichi Itoh, both of Hachioji, and Yasuo Tanbara, Hino, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Mar. 14, 1995, Ser. No. 404,302
Claims priority, application Japan, Mar. 15, 1994, 6-043655
Int. Cl.⁶ G03B *7/08*
U.S. Cl. 396—55 **32 Claims**



14. A shake detecting apparatus comprising:
a shake detecting sensor means for detecting a shake and for outputting a shake detection signal responsive to the detected shake;
a reference voltage output means for outputting a reference voltage;
a differential amplifying means for amplifying a difference between the shake detection signal output by said shake detecting sensor means and the reference voltage output by said reference voltage output means, and for outputting a differential amplified signal;
an A/D converter means for digitizing the differential amplified signal output by said differential amplifying means, and for outputting a digitized differential amplified signal;
a reference voltage control means for modifying the reference voltage output by said reference voltage output means according to one of the differential amplified signal output by said differential amplifying means and the digitized differential amplified signal output by said A/D converter means;
a shake signal correcting means for correcting the digitized differential amplified signal output by said A/D converter means according to the modified reference voltage output by said reference voltage output means, and for outputting a corrected differential amplified signal;
a high pass filter arithmetic means for executing high pass filter arithmetic operations on the corrected differential amplified signal output by said shake signal correcting means; and
a shake signal output setting means for setting an initial value and a timing of operation of at least one of said shake high-pass filter arithmetic means and said shake signal correcting means.

5,617,177
CAMERA HAVING FUNCTION OF CORRECTING SHAKE
Kazuharu Imafuji, Kawasaki, and Nobuhiko Terui, Ichikawa, both of Japan, assignors to Nikon Corporation, Tokyo, Japan
Continuation of Ser. No. 207,261, Mar. 8, 1994, abandoned, which is a continuation of Ser. No. 132,913, Oct. 7, 1993, abandoned. This application Dec. 26, 1995, Ser. No. 578,394
Claims priority, application Japan, Oct. 9, 1992, 4-271288
Int. Cl.⁶ G03B *7/08;17/00*
U.S. Cl. 396—53 **44 Claims**



5. A camera having a function of correcting shake, comprising:
shake velocity detection means for detecting a velocity of a shake caused by unintentional movement during a phototaking operation;
differentiating means for differentiating twice a detection signal of the shake detected by said shake velocity detection means in order to obtain an amount of change in the acceleration of the shake per unit of time;
a shake correcting lens which can be driven to correct the shake;
shake correction amount calculating means for calculating an amount of shake correction based on the detection signal from said shake velocity detection means;
correcting lens drive means for driving said shake correcting lens in a proper direction according to the amount of correction calculated by said shake correction amount calculating means so that a blurred image is not obtained; and
means for correcting an output from said shake velocity detection means in accordance with an output from said differentiating means.

5,617,178

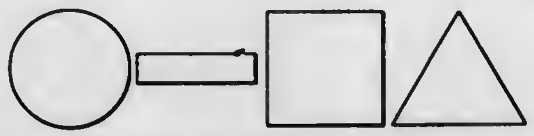
METHOD OF PRODUCING MULTIDIMENSIONAL LITHOGRAPHIC SEPARATIONS FREE OF MOIRE INTERFERENCE

Timothy P. Goggins, Nashota, Wis., assignor to National Graphics, Inc., Brookfield, Wis.

Continuation of Ser. No. 237,074, May 3, 1994, Pat. No. 5,488,451. This application Jan. 29, 1996, Ser. No. 593,252

Int. Cl.⁶ G03B *35/14;27/32*

U.S. Cl. 355—22 **3 Claims**



1. A method of producing a multidimensional lithographic separation void of moire and screen interference, the separation comprising a plurality of segments created from a plurality of electronic frames and from which a multidimensional lithograph can be produced and printed on a lenticular lens of a predetermined line count, the method comprising the steps of:

A. Creating a plurality of electronic frames;

B. Ordering the frames into a desired sequence;

C. Rasterizing each frame at a nonbinary pixel resolution according to the formula

$$\text{resolution}=l \text{ times } f$$

in which l is the lenticular line count and f is the number frames in the lithographic separation;

D. Compressing each frame such that each frame is compressed according to the formula

$$\text{Compression}=1/f$$

in which f is the number of frames in the separation;

E. Converting the nonbinary pixels of the compressed frames to individual color plates of binary pixels;

F. Interlacing the frames in the desired sequence of step (B);

G. Outputting the interlaced frames to an imaging device;

H. Producing a lithographic separation from the imaging device of step G; and

I. Printing a multidimensional lithograph directly on the lenticular lens from the lithographic separation.

5,617,179

RECORDING APPARATUS FOR SELECTIVELY RECORDING AND RETRIEVING OBJECT IMAGES ON A PLURALITY OF RECORDING MEDIA

Yoshihiko Yoshihara, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 4, 1994, Ser. No. 317,529

Claims priority, application Japan, Oct. 8, 1993, 5-275980

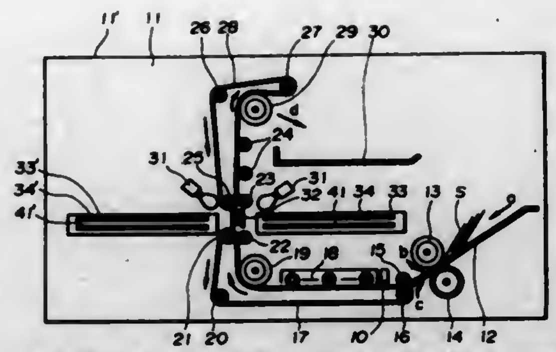
Int. Cl.⁶ G03B *27/32;27/465*

U.S. Cl. 355—40 **19 Claims**

1. A recording apparatus for recording images on a plurality of recording media, said apparatus comprising:

image recording means for recording images on the plurality of recording media; and

control means for controlling said image recording means to sequentially record images on one recording medium of the plurality of recording media, and for controlling said image recording means to record at least one image on each of the one recording medium and at least one other recording



medium of the plurality of recording media after recording a predetermined number of images on the one recording medium.

5,617,180

APPARATUS FOR CONVEYING PHOTOGRAPHIC FILM

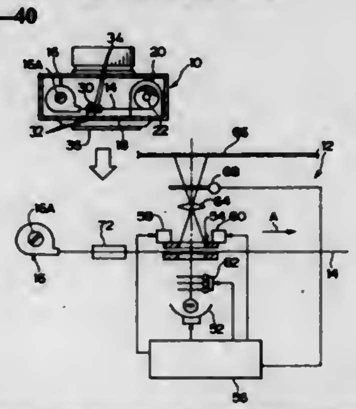
Sumio Yoshikawa, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 6, 1995, Ser. No. 499,772

Claims priority, application Japan, Jul. 7, 1994, 6-155901; Jul. 7, 1994, 6-155906; Jul. 7, 1994, 6-155910

Int. Cl.⁶ G03B *27/46*

U.S. Cl. 355—40 **16 Claims**



1. An apparatus for conveying a photographic film, in which the photographic film incudes perforations formed at predetermined intervals and a predetermined number of perforations are provided with respect to the area of one image frame, the photographic film, in which respective images are photographed so that relative positions between the perforation and the image are constant, is conveyed so that said image frames are successively positioned at a predetermined position, comprising:

a conveying device which conveys said photographic film in a longitudinal direction;

a perforation detection sensor which detects said perforations;

a recognizing device which, on the basis of the positions of the perforations detected by said perforation detection sensor, recognizes the image frame position onto which the image is to be recorded;

an image frame determining device which determines whether an image exists in the image frame at the position onto which said image is to be recorded; and

a controller which, when the perforations corresponding to an empty image frame recording area, which is determined by said image frame determining device to not have an image frame, are detected by said perforation detection sensor, controls the conveying device such that positioning of said empty image frame recording area at said predetermined position is canceled and the conveying device advances the film to a next image frame.

5,617,181

EXPOSURE APPARATUS AND EXPOSURE METHOD

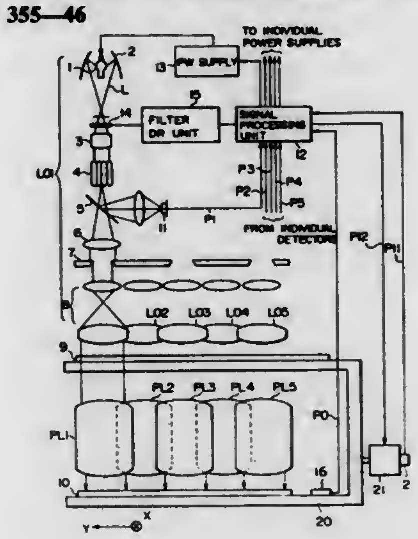
Masamitsu Yanagihara; Hiroshi Shirasu, both of Yokohama, and Tetsuo Kikuchi, Tokyo, all of Japan, assignors to Nikon Corporation, Japan

Continuation of Ser. No. 430,074, Apr. 27, 1995, abandoned. This application Mar. 15, 1996, Ser. No. 618,735

Claims priority, application Japan, Apr. 28, 1994, 6-114781

Int. Cl.⁶ H01L *21/027;* **G03B** *27/72*

U.S. Cl. 355—46 **25 Claims**



1. An exposure apparatus for transcribing a pattern on a mask onto a photosensitive substrate, which comprises:

a first illumination optical system, having a first light source, for applying a light beam from said first light source to a part of a pattern area on the mask;

a second illumination optical system, having a second light source, for applying a light beam from said second light source to a part of the pattern area on the mask;

a first projection optical system for projecting a light beam from said first illumination optical system onto a first projection area on the photosensitive substrate;

a second projection optical system for projecting a light beam from said second illumination optical system onto a second projection area on the photosensitive substrate, a part of an area on the photosensitive substrate exposed by said first projection optical system and a part of an area on the photosensitive substrate exposed by said second projection optical system overlapping with each other;

a scanning mechanism for making said first and second projection areas scan an area on the photosensitive substrate by moving the mask and the photosensitive substrate synchronously as against said first and second projection optical systems;

a light intensity changing device for changing at least one of a light intensity of a light beam of said first illumination optical system and a light intensity of a light beam of said second illumination optical system;

a light intensity detector for detecting effects of said first and second projection optical systems in a superimposed exposure area formed by superimposition in said first and second projection areas; and

a controller for controlling said light intensity changing devices on the basis of a result from said light intensity detector.

5,617,182

SCANNING EXPOSURE METHOD

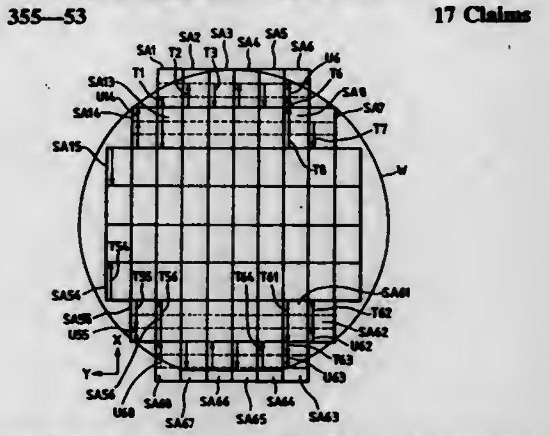
Shinji Wakamoto, Tokyo; Hidemi Kawai, Chiba, and Fuyuhiko Inoue, Kawasaki, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Nov. 21, 1994, Ser. No. 345,424

Claims priority, application Japan, Nov. 22, 1993, 5-291838; Aug. 26, 1994, 6-201946

Int. Cl.⁶ G03B *27/53;* **H01L** *21/027*

U.S. Cl. 355—53 **17 Claims**



1. A step-and-scan exposure method in which a photosensitive substrate and a mask having first and second patterns arranged sequentially in a mask scanning direction are scanned synchronously to expose an image of one or both of said patterns on each of a plurality of shot areas of said photosensitive substrate, comprising:

a step (a) in which, in synchronism with scanning of said mask in said mask scanning direction by an amount corresponding to a first dimension of said first pattern in said mask scanning direction, said photosensitive substrate is scanned by an amount corresponding to said first dimension, said first pattern being illuminated in the course of said mask scanning in step (a);

a step (b) in which, in synchronism with scanning of said mask in said mask scanning direction by an amount corresponding to a second dimension of both of said first and second patterns in said mask scanning direction, said photosensitive substrate is scanned by an amount corresponding to the second dimension, each of said patterns being illuminated in the course of said mask scanning in step (b); and

wherein step (a) is performed for some shot areas and step (b) is performed for other shot areas.

5,617,183

PHOTOMETRIC SYSTEM STRUCTURE

Kimitoshi Saito, Saitama-ken, and Takashi Yamamoto, Kanagawa, both of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 9, 1995, Ser. No. 513,178

Claims priority, application Japan, Sep. 7, 1994, 6-214107

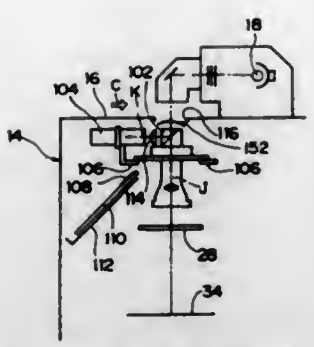
Int. Cl.⁶ G03B *27/72;27/74;27/16;27/70*

U.S. Cl. 355—71 **23 Claims**

1. A photometric system structure used in a printer section in which an image of a photographic film is printed onto a photosensitive material through a lens system, the printer section having a structure in which the lens system can be removed from an optical axis of light emitted from a light source and can be replaced by another lens system, comprising:

a beam splitter associated with each lens system for changing a direction of an optical axis of at least a part of the light emitted from the light source, each beam splitter moving integrally with the associated lens system;

a photometric device for measuring the light whose optical axis direction has been changed and which is used as photometric light and



an optical-path correction lens disposed on the optical axis of photometric light whose optical axis direction has been changed, the beam splitter associated with one of the lens systems is mounted on a same base as said optical-path correction lens so that the relative position therebetween is fixed, said optical-path correction lens adjusting and correcting, to a predetermined length, an optical-path length between the light source and a position at which the photometric light is measured.

5,617,184

APPARATUS FOR TURNING A NEGATIVE FILM CARRIER

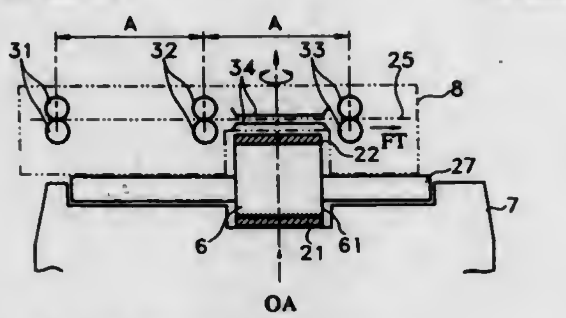
Masahiko Kuwayama, Urawa, and Yoshihiro Yamamoto, Tokyo, both of Japan, assignors to Samsung Aerospace Industries, Ltd., Changwon, Rep. of Korea

Filed Sep. 23, 1994, Ser. No. 311,405

Claims priority, application Japan, Sep. 24, 1993, 5-56528 U

Int. Cl.⁶ G03B *27/62;27/48*

U.S. Cl. 355—75 **2 Claims**



1. A film carrier turning apparatus comprising:

a film carrier for supporting a film;

a carrier supporting table for supporting and transferring said film carrier so that said carrier can be turned;

a turntable rotatably installed on the upper portion of said carrier supporting table;

a light diffusion box fixed through said turntable for diffusing illuminance light to uniformly illuminate a film range which is to be printed; and

a plurality of pairs of film transferring rollers arranged in said carrier along the path of film transfer,

wherein said film carrier and said light diffusion box are supported by said turntable and said light diffusion box is fixed on the upper portion of said light diffusion box.

5,617,185

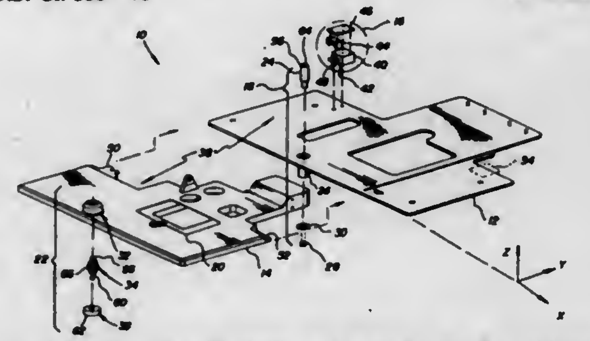
METHOD AND APPARATUS FOR POSITIONING FILM IN A PHOTOGRAPHIC FILM PRINTER

Stephen P. North, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 7, 1994, Ser. No. 335,280

Int. Cl.⁶ G03B *27/62*

U.S. Cl. 355—75 **6 Claims**



1. Apparatus for positioning photographic film for printing, comprising:

a removable film gate having an insertion end and a handling end;

a stationary docking frame for accepting said removable film gate, said docking frame including a back end and a front end;

a locator connector assembly including a male connector subassembly mounted on said handling end of said removable film gate and a female connector subassembly mounted on said front end of said stationary docking frame, wherein said locator connector assembly provides alignment of said removable film gate with said stationary docking frame and prevents movement of said removable film gate relative to said docking frame; and

a force-responsive clamp mounted on said back end of said docking frame for restraining movement of said removable film gate at said insertion end relative to said stationary docking frame

wherein said male connector subassembly comprises:

a locator plunger housing a threaded screw connected to a knob, wherein said knob provides a means for pushing said threaded screw toward said female connector subassembly and provides a means for rotating said threaded screw;

a locator bushing mounted on said removable film gate at said handling end for housing said locator plunger, said locator plunger being spring biased in a direction away from said stationary docking frame during insertion; and

a locator seat including a recessed area for aligning with said female connector subassembly, said threaded screw passing through said locator seat.

5,617,186

FILM CARRIER OF PHOTOGRAPHIC PRINTER WITH ADJUSTABLE MASK

Takekazu Yanagimoto, Kaisei-machi, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 28, 1995, Ser. No. 580,204

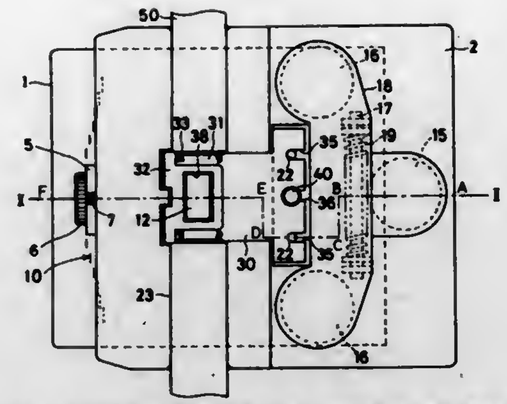
Claims priority, application Japan, Feb. 27, 1995, 7-038271

Int. Cl.⁶ G03B *27/53*

U.S. Cl. 355—75 **5 Claims**

1. A film carrier of a photographic printer which has a pair of upper and lower masks for holding a photographic film to be printed therebetween, said film carrier comprising:

film guide means for guiding the photographic film to a position where it is to be held between said upper and lower masks; and



position adjusting means capable of moving one of said masks relative to the other mask, which is secured to said photographic printer, in a direction perpendicular to a film feed direction in a film plane, together with said film guide means.

5,617,187

IMAGE READING APPARATUS, COPYING APPARATUS, IMAGE PROCESSING APPARATUS, AND IMAGE PROCESSING METHOD

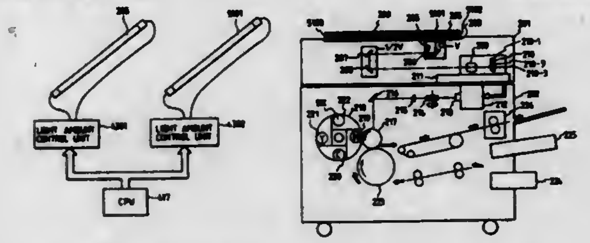
Toshio Hayashi, Kawasaki; Shinobu Arimoto, Yokohama; Kazuo Yoshinaga, Machida; Takehiko Nakai, Tokyo; Tsutomu Utagawa, Yokohama; Tetsuya Nagase, Kawasaki, and Nobuatsu Sasanuma, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 139,172, Oct. 21, 1993, Pat. No. 5,471,281. This application Aug. 22, 1995, Ser. No. 517,609

Claims priority, application Japan, Oct. 23, 1992, 4-286351; Oct. 23, 1992, 4-286379; Oct. 23, 1992, 4-286382

Int. Cl.⁶ G03G *21/04*

U.S. Cl. 399—32 **18 Claims**



1. An image reading apparatus which comprises first illumination means for radiating a visible light, second illumination means, different from the first illumination means, for radiating non-visible light, and detection means for detecting light obtained from an image in accordance with the visible and non-visible light radiated onto the image from the first illumination means and the second illumination means, said apparatus comprising:

first reference means for reflecting a first reference light, in accordance with the radiation from the first illumination means, to correct at least one of the first illumination means and the detection means; and

second reference means, different from the first reference means, for reflecting a second reference light, in accordance with the radiation from the second illumination means, to correct at least one of the second illumination means and the detection means, wherein

said first and second illumination means time-divisionally radiate the visible light and the non-visible light, respectively.

5,617,188

DEVELOPING APPARATUS PROVIDED WITH A PORTABLE DEVELOPING UNIT FOR SUPPORTING A PLURALITY OF DEVELOPING DEVICES

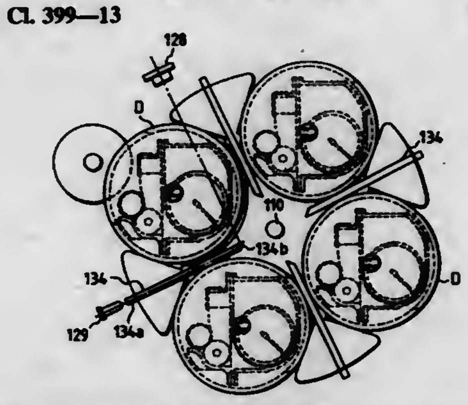
Mitsugu Inomata, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 198,509, Feb. 18, 1994, abandoned. This application Nov. 1, 1995, Ser. No. 551,575

Claims priority, application Japan, Feb. 24, 1993, 5-059749; Apr. 30, 1993, 5-124742

Int. Cl.⁶ G03G *15/00*

U.S. Cl. 399—13 **9 Claims**



1. A developing apparatus comprising:

a rotatable developing unit having detachably mounted thereon a plurality of developing cartridges, said developing cartridges each having a containing portion for containing a developer therein and a carrying member for carrying the developer;

a light emitting element provided outside said developing unit and for irradiating light toward said developing unit;

a light receiving element provided outside said developing unit; and

deflection members provided at said developing unit relative to each of said developing cartridges and outside of said developing cartridges for deflecting light having passed through said developing cartridge to direct the light to said light receiving element.

5,617,189

DEVELOPING UNIT FOR THOROUGHLY SUPPLYING MIXED TONER IN AN ELECTROSTATOGRAPHIC PRINTER

Etienne M. De Cock; Lucien A. De Schamphelaere, both of Edegem; Bart J. Van Dessel, St.-Antonius, and Daniël L. Van Hoogten, Heist-Op-Den-Berg, all of Belgium, assignors to Xeikon N.V., Mortsel, Belgium

Filed Mar. 6, 1995, Ser. No. 398,906

Claims priority, application European Pat. Off., Mar. 11, 1994, 94301784

Int. Cl.⁶ G03G *15/06*

U.S. Cl. 399—254 **23 Claims**

1. A developing unit for use in an electro-statographic printer comprising:

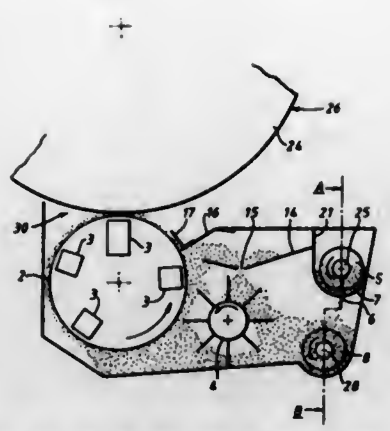
(i) a housing having an opening defining a developing zone and an extension protruding beyond one side of said developing zone, said extension having first and second channels, said first channel located above said second channel;

(ii) an applicator for applying particulate carrier/toner developer through said opening towards an electrostatographic image to be developed;

(iii) agitator means for agitating developer within said housing, for scooping up developer from within said housing and projecting scooped-up developer towards said applicator;

(iv) supply means located outside the width of said development zone for supplying toner to said housing;

(v) primary conveyance means for conveying developer from said supply means across the width of said development zone



in one direction, an end part of said primary conveyance means extending into said first channel of said extension;

(vi) secondary conveyance means for receiving said developer from said primary conveyance means across the width of said development zone and for conveying developer across the width of said development zone in a direction opposite and substantially parallel to the conveyance direction of said primary conveyance means, an end part of secondary conveyance means extending into said second channel of said extension;

wherein said primary and secondary conveyance means each define a respective developer transport path interconnected by a passageway outside the width of said development zone enabling the return of developer from said secondary to said primary conveyance means.

5,617,190

DEVELOPING DEVICE FOR AN IMAGE FORMING APPARATUS WHICH REDUCES TONER CONSUMPTION AND WASTE

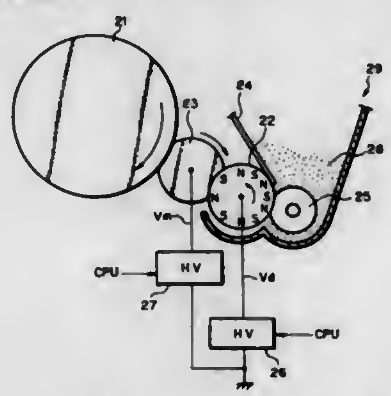
Eiji Takenaka, and Mugijiroh Uno, both of Isehara, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Oct. 18, 1994, Ser. No. 325,124

Claims priority, application Japan, Oct. 18, 1993, 5-259934

Int. Cl.^{6} G03G *15/08*

U.S. Cl. 399—159 **12 Claims**



1. A developing device for an image forming apparatus having a photoconductive element, comprising:

first conveying means for conveying a toner having high electric resistance and charged by one of friction and charge injection;

second conveying means for receiving the toner from said first conveying means and developing an electrostatic latent image formed on the photoconductive element with said toner;

first bias applying means for applying a first bias to said second conveying means; and

second bias applying means for applying a second bias to said first conveying means;

wherein said first and second biases applied to said first and second conveying means, respectively, are individually charged such that a first difference between said first and second biases before printing and a second difference between said first and second biases at a time of printing are equal to each other.

5,617,191

TONER CONVEYOR ROLLER AND IMAGE FORMING APPARATUS HAVING THE SAME

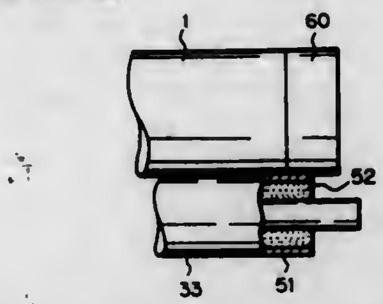
Eisaku Murakami, Hiratsuka; Kazuhiro Yuasa, Zama; Shuichi Endoh, Isehara; Iwao Matsumae, Tokyo; Yoshiaki Tanaka, Kawasaki; Hiroshi Hosokawa, Yokohama; Mugijiroh Uno, Isehara; Hiroshi Saitoh, Ayase; Eiji Takenaka, Atsugi; Toshihiro Sugiyama; Tetsuo Yamanaka, both of Tokyo, and Satoru Komatsubara, Atsugi, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 4, 1995, Ser. No. 566,894

Claims priority, application Japan, Dec. 16, 1994, 6-313461; Aug. 18, 1995, 7-210549

Int. Cl.^{6} G03G *15/08;15/09*

U.S. Cl. 399—286 **11 Claims**



1. In a toner conveyor roller contacting an image carrier, and for conveying single-ingredient type high resistance toner deposited on said toner conveyor roller to said image carrier, said toner conveyor roller is covered with a dielectric layer forming an outermost layer and having a thickness which is greater at opposite end portions than at an intermediate portion.

5,617,192

MULTICOLOR ELECTROSTATIC RECORDING APPARATUS AND ELECTROSTATIC LATENT IMAGE RECORDING APPARATUS USED THEREFOR

Yoshihiro Tonomoto; Kenji Fuke; Katsumi Sugimoto; Eiji Suzuki; Keiko Tonai; Shozo Tonai, all of Kawasaki; Hitoshi Yoshii; Tsutomu Kawai, both of Kato-gun; Kunihiko Sato, and Katsuya Shimatsu, both of Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

PCT No. PCT/JP95/00494, § 371 Date Nov. 16, 1995, § 102(e) Date Nov. 16, 1995, PCT Pub. No. WO95/25988, PCT Pub. Date Sep. 28, 1995

PCT Filed Mar. 17, 1995, Ser. No. 537,857

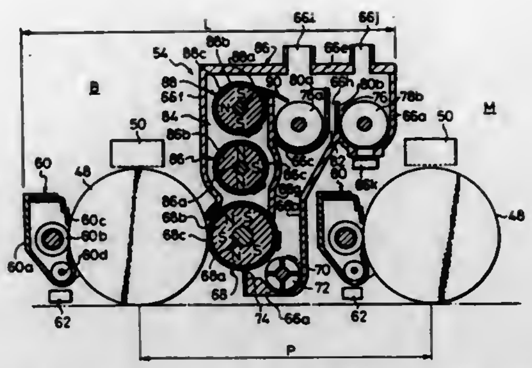
Claims priority, application Japan, Mar. 18, 1994, 6-049549

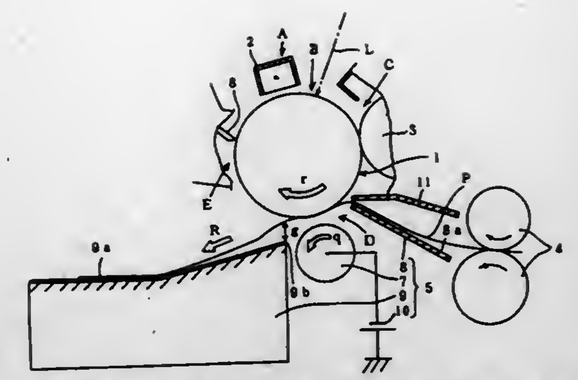
Int. Cl.^{6} G03G *15/08*

U.S. Cl. 399—263 **22 Claims**

1. A multicolor electrostatic recording apparatus comprising a plurality of electrostatic recording units disposed in series along a recording medium movement path, each electrostatic recording unit comprising:

an electrostatic latent image carrier disposed in the recording medium movement path; a developing means provided in the upstream of the recording medium movement path with respect to the electrostatic latent image carrier; and a cleaning means provided in the downstream of the recording medium movement path with respect to the electrostatic latent image carrier,





the developing means having a developer holding container including a developer storage portion and a developer agitating portion disposed at an upper position of the developer storage portion, the developer agitating portion being connected with the developer storage portion via a communicating path, so that a portion of the developer held in the developer agitating portion is successively supplied to the developer storage portion,

the developing means further including a developer carrier provided in the developer storage portion, the developer carrier being partially exposed so that the developer carrier can be opposed to the electrostatic latent image carrier, and the developer carrier conveys developer from the developer storage portion to an opposing region in which the developer carrier is opposed to the electrostatic latent image carrier so as to develop an electrostatic latent image on the electrostatic latent image carrier, and

the developing means further including a developer lifting means for lifting the developer conveyed to the opposing region by the developer carrier to the developer agitating portion of the developer holding container,

characterized in that the cleaning unit of one of the two adjacent electrostatic recording units is disposed being adjacent to the developer storage portion of the developer holding container which forms a portion of the developing means of the other electrostatic recording unit; and

wherein a cleaning means of one of the two adjacent electrostatic recording units is adjacent to the developer storage portion of the developer holding container comprising a portion of the developing means of the other electrostatic recording unit and disposed under the developer agitating portion.

5,617,193

IMAGE TRANSFERRED SHEET CONVEYING GUIDE FOR USE IN AN IMAGE FORMING APPARATUS

Keiji Ban; Tetsuro Tomoe; Masami Fuchi; Hiroaki Tsuchiya; Osamu Yoshimura, and Shinichi Tanaka, all of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Japan

Filed Jul. 18, 1994, Ser. No. 276,784

Claims priority, application Japan, Jul. 29, 1993, 5-187729

Int. Cl.^{6} G03G *15/14*

U.S. Cl. 399—316 **10 Claims**

1. An image forming apparatus comprising:

an image carrier having a moving surface for carrying an image formed by charged toner;

transferring means for transferring a toner image carried on the image carrier onto a transfer sheet adhering to the moving surface of the image carrier, the transferring means being arranged below the image carrier; and

a sheet conveying guide for conveying a transfer sheet onto which an image has been transferred by the transferring means, the sheet conveying guide having

an electric resistance higher than an electric resistance of the transfer sheet,

a plurality of guide ribs formed along an upper surface of the sheet conveying guide in a direction in which the transfer sheet is conveyed, the plurality of guide ribs serving as a conveying path for the transfer sheet, and

an upstream end, the upstream end of the upper surface being located lower than a position at which the transfer sheet is separated from the moving surface of the image carrier, such that a difference between a height of the upstream end of the upper surface and a height of the position at which the transfer sheet is separated from the surface of the image carrier is at least 1 mm and at most 3 mm.

5,617,194

CLEANING UNIT INCLUDING A CLEANING ROLLER AND A SEPARATOR PLATE WHICH SEPARATES A CLEANING CHAMBER FROM A TONER STORAGE AND WHICH COMES WITHIN A PREDETERMINED SPACING FROM THE CLEANING ROLLER

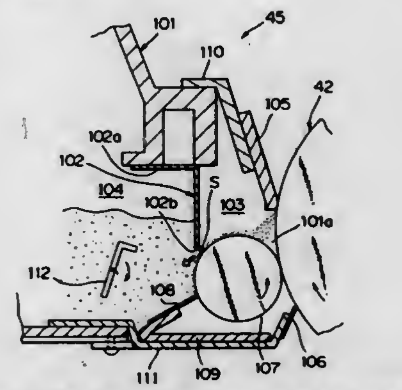
Hiroki Morishita; Susumu Taniguchi, and Shinichi Kotera, all of Osaka, Japan, assignors to Mita Industrial, Co., Ltd., Osaka, Japan

Filed Mar. 6, 1995, Ser. No. 398,784

Claims priority, application Japan, Mar. 15, 1994, 6-044220

Int. Cl.^{6} G03G *21/00*

U.S. Cl. 399—349 **3 Claims**



1. A cleaning unit for removing residual toner present on a periphery of a photoconductive drum after toner image transfer, said unit comprising:

a cleaning housing having an opening facing opposite the photoconductive drum;

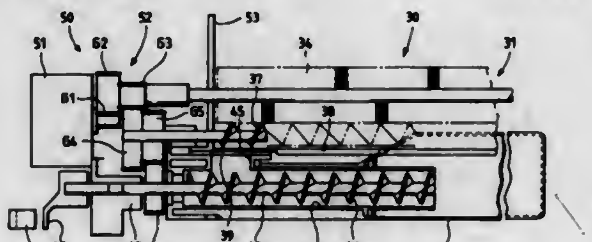
a blade member disposed above said opening and abutting against the periphery of the photoconductive drum for scraping toner adhering on the periphery of the photoconductive drum;

a cleaning roller for receiving toner scraped by said blade member, said cleaning roller abutting against the periphery of the photoconductive drum through said opening and thereby rotating in association with rotation of the photoconductive drum; and

a separator plate, disposed in said cleaning housing with one edge thereof being retained close to a periphery of said cleaning roller, for separating a cleaning chamber where toner

is scraped from the periphery of the photoconductive drum and a toner storage for storing therein scraped toner;
wherein a spacing formed between said one edge of said separator plate and said periphery of said cleaning roller is adjusted to a predetermined spacing amount, so that toner transportation pressure for transporting toner to said toner storage through the spacing can be increase,
said predetermined spacing amount being 1 mm to 2 mm.

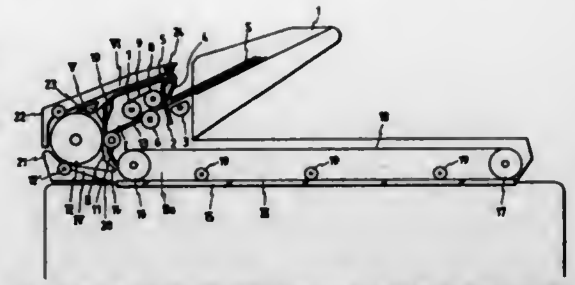
5,617,195
CLEANING UNIT AND TONER RECOVERY SYSTEM FOR IMAGE FORMATION UNIT
Satoru Torimaru; Junichirou Sameshima; Norio Hokari; Yukio Hayashi; Mikio Kobayashi; Shuji Iseki, and Ryouichi Tsuruoka, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan
Filed Sep. 6, 1995, Ser. No. 523,828
Claims priority, application Japan, Sep. 7, 1994, 6-239546; Apr. 14, 1995, 7-113728
Int. Cl.^{6} G03G *21/00*
U.S. Cl. 399—27 **7 Claims**



1. A cleaning unit for an image formation unit, comprising;
a main unit frame removably insertable into the image formation unit;
a transfer module supporting a paper support element;
a cleaning member placed in contact with the paper support element;
a toner storage vessel for storing waste toner;
a guide member located to receive toner dropping from a bottom of said cleaning member and to direct the received toner to said toner storage vessels;
a screw member having a portion located outside of said toner storage vessel and movable in said toner storage vessel; and
a sensor located on the outside of said toner storage vessel for sensing rotation of said screw member
wherein said transfer module, said cleaning member and said toner storage vessel form an integral unit, the integral unit being swingable from said main unit frame when said main unit frame is removed from the image formation unit.

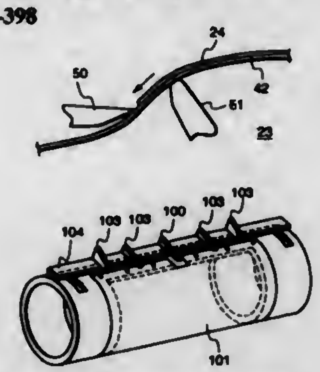
5,617,196
ORIGINAL FEEDING METHOD WITH ORIGINALS MOUNTED SIDE BY SIDE
Noriyoshi Ueda; Masaaki Sato, both of Yokohama, and Katsuaki Hirai, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 223,138, Apr. 5, 1994, abandoned, which is a continuation of Ser. No. 750,398, Aug. 27, 1991, abandoned. This application Dec. 26, 1995, Ser. No. 578,393
Claims priority, application Japan, Aug. 29, 1990, 2-228583; Jul. 12, 1991, 3-172301; Jul. 16, 1991, 3-175167
Int. Cl.^{6} G03G *15/00*
U.S. Cl. 399—379 **34 Claims**

1. An original feeding method for resting a plurality of stacked originals on a platen side-by-side by using a recycle original feeding apparatus having a tray, the originals being fed from a stack of originals comprising a plurality of sets, each set including at least two originals, said method comprising the steps of:



(a) replacing an initial page sequence of a set of originals by (i) resting the set of originals in the initial page sequence from the tray on said platen within the set, and then (ii) returning the set of originals to the tray from said platen so that the set is in a reverse page sequence within the set opposite to the initial page sequence;
(b) repeating the (a)(i) resting and (a)(ii) returning steps for remaining sets of originals to change a stack sequence of the plurality of originals per the set on the tray;
(c)(i) resting the set of originals in the reverse page sequence per the set from tray onto the platen side-by-side in the feeding direction, and then (ii) discharging the originals from the platen; and
(d) repeating said (c)(i) resting and (ii) discharging steps for the remaining sets of originals.

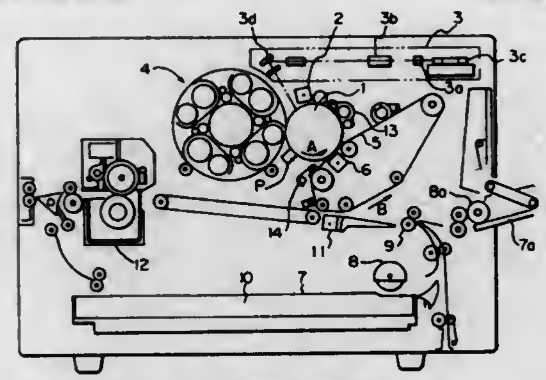
5,617,197
IMAGE FORMING APPARATUS HAVING A DEVICE FOR STRIPPING A TRANSFER MEMBER CARRIED ON A TRANSFER DRUM
Takashi Kawabata; Nobuo Hyakutake; Fumio Furusawa; Masaaki Tokunaga, and Ryoichi Tsuruoka, all of Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan
Filed Dec. 12, 1995, Ser. No. 570,945
Claims priority, application Japan, Dec. 19, 1994, 6-315295; Nov. 20, 1995, 7-301379
Int. Cl.^{6} G03G *15/01*
U.S. Cl. 399—398 **13 Claims**



1. An image forming apparatus, comprising:
an image carrier on which a plurality of toner images having different colors from each other are successively formed;
a transfer member to which said plurality of toner images formed on said image carrier are transferred;
a transfer member carrier on which said transfer member is carried in such a condition that said plural toner images are successively overlapped with each other to thereby form an image; and
a pawl-shaped stripping member for stripping said transfer member from said transfer member carrier while being made in contact with a surface of said transfer member carrier at a predetermined timing; wherein
a volume electric resistance value of at least a portion of said pawl-shaped stripping member, which is made in contact with the transfer member, is selected to be greater than, or equal to 10 Ω.cm, and smaller than, or equal to 10^7 Ω.cm; otherwise

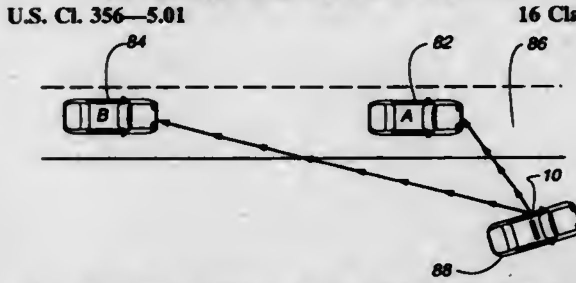
a surface electric resistance value thereof is selected to be greater than, or equal to 10 Ω/cm, or smaller than, or equal to 10^7 /cm.

5,617,198
IMAGE FORMING APPARATUS HAVING ROTARY DEVELOPING DEVICE
Tomoji Ishikawa; Kazuyuki Sugihara, both of Yokohama, and Katsuhiro Kosuge, Tokyo, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Filed Apr. 20, 1995, Ser. No. 425,985
Claims priority, application Japan, Apr. 22, 1994, 6-107780; Apr. 22, 1994, 6-107781; Mar. 21, 1995, 7-088886
Int. Cl.^{6} G03G *15/01*
U.S. Cl. 399—27 **15 Claims**



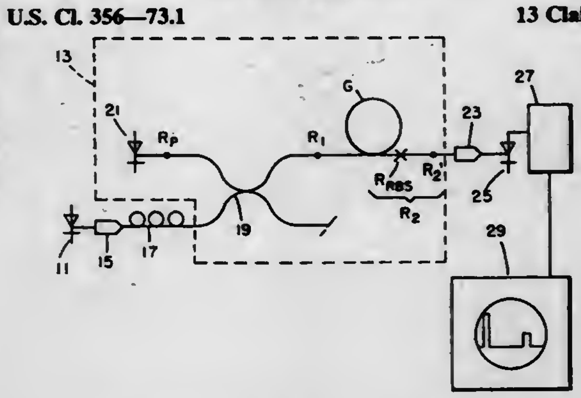
1. An image forming apparatus comprising:
a rotary developing unit adjoining an image carrier and comprising at least one developing section having a toner inlet, and a removable toner container storing toner to be replenished into said developing section and formed with a toner outlet;
drive means for causing said developing unit to rotate; and
control means for interrupting, when image formation is repeated more than a predetermined number of times, said image formation and causing said drive means to locate said developing unit in a predetermined angular range of rotation;
wherein only when said developing unit is positioned in said predetermined angular range, said toner is replenished from said toner container into said developing section or into a portion communicated to said developing section via said toner outlet and said toner inlet.

5,617,199
DEVICE, AND ASSOCIATED METHOD, FOR DETERMINING DISTANCES BETWEEN MOVING OBJECTS
Jeremy G. Dunne, Littleton, Colo., assignor to Laser Technology, Inc., Englewood, Colo.
Filed Apr. 26, 1995, Ser. No. 429,110
Int. Cl.^{6} G01C *3/08;* **G01P** *3/36;* **B60T** *7/16*
U.S. Cl. 356—5.01 **16 Claims**



1. A device for determining a value that is representative of a separation distance that separates first and second moving objects, said device comprising:
a range determiner positioned at a remote position remote from the first and second moving objects, said range determiner for determining a first range between the remote position and the first moving object wherein said first range is determined at a first time, and for determining a second range between the remote position and the second moving object wherein said second range is determined at a second time;
a speed determiner for determining values of speed of at least one of the first moving object and the second moving object; and
calculating circuitry operative responsive to the first range and the second range determined by said range determiner, the values of speed determined by said speed determiner, and an elapsed time interval between the first time and the second time at which the determinations of the first range and the second range are determined by said range determiner, said calculating circuitry for calculating values representative of the separation distance that separates the first and second moving objects.

5,617,200
PULSE METHOD FOR MEASUREMENT OF RELATIVE SECONDARY PATH INTENSITIES IN OPTICAL WAVEGUIDE SYSTEMS
Miles E. Vance, Corning, N.Y., assignor to Corning Incorporated, Corning, N.Y.
Filed Dec. 27, 1995, Ser. No. 579,417
Int. Cl.^{6} G01N *21/88*
U.S. Cl. 356—73.1 **13 Claims**



1. A method for measuring the relative secondary path intensity of an optical unit, said unit having a first end and a second end, said method comprising:
(a) applying a pulse of light from a light source to the first end of the unit;
(b) detecting the intensity of the light at the second end of the unit as a function of time using a detector;
(c) identifying a first time segment of the detected light and a second time segment of the detected light, the second time segment being later in time than the first time segment;
(d) determining a first optical energy for the first time segment;
(e) determining a second optical energy for the second time segment; and
(f) determining the ratio of the second optical energy to the first optical energy, said ratio being indicative of the relative secondary path intensity of the optical unit.

5,617,201

METHOD FOR REFRACTOMETER MEASURING USING MATHEMATICAL MODELLING

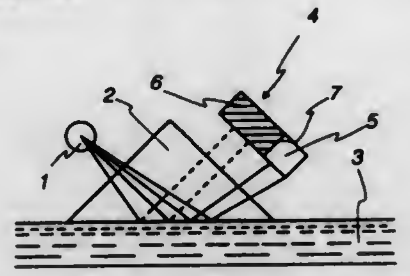
Jan Kåhre, Helsinki, Finland, assignor to Janesko Oy, Finland

Filed Sep. 1, 1994, Ser. No. 299,752

Claims priority, application Finland, Sep. 1, 1993, 933830

Int. Cl.^{6} G01N *21/41*

U.S. Cl. 356—135 **5 Claims**



1. A method for measuring a critical angle of total reflection of a liquid using a refractometer, said method comprising the steps of:
transmitting a beam of rays from a light source to an interface between said liquid and an optical window of said refractometer, whereby part of said beam is reflected back from said liquid and part of said beam is absorbed into said liquid, said reflected back part of said beam projecting an image onto a plurality of linearly arranged light detectors, each of said light detectors producing an output related to intensity of a portion of said image projected onto said light detector, said image having a light area and a dark area and a transition area therebetween;
constructing a mathematical model representing said image based on said outputs of said light detectors taken while the window of said refractometer is in contact with said liquid said mathematical model comprising a mathematical representation of said light area and a mathematical representation of said transition area; and
determining said critical angle of total reflection based upon the relationship of said representations of said light area and transition area of said mathematical model constructed for said liquid.

5,617,202

DIODE LASER CO-LINEAR AND INTERSECTING LIGHT BEAM GENERATOR

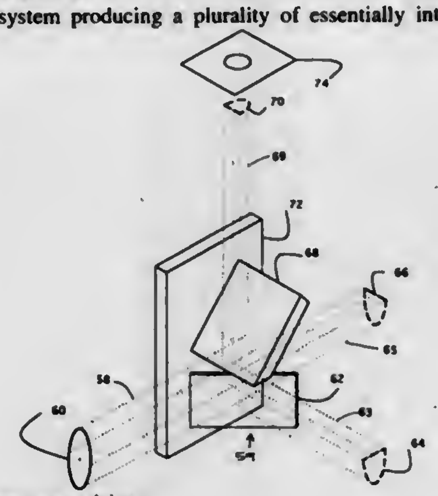
Joseph F. Rando, Los Altos Hills, Calif., assignor to Levelite Technology, Inc., Mountain View, Calif.

Continuation-in-part of Ser. No. 311,671, Sep. 23, 1994, Pat. No. 5,500,524, and Ser. No. 248,517, May 24, 1994, Pat. No. 5,459,932. This application Jun. 7, 1995, Ser. No. 482,732

Int. Cl.^{6} G01B *11/26*

U.S. Cl. 356—138 **15 Claims**

11. A system producing a plurality of essentially intersecting



light beams, comprising:
a diode laser source providing a beam which diverges at two substantially different rates on two perpendicular beam axes,
lens means for converting the diverging beam into a substantially collimated beam of substantially different dimensions on the two axes, a greater dimension on a long axis and a smaller dimension on a short axis,
at least one reflective surface positioned in the path of the substantially collimated beam obliquely to the path of the beam, said reflective surface having an edge which is positioned to divide the substantially collimated beam through its greater dimension to reflect only a portion of the beam from the reflective surface, thereby producing two beams of light, in different directions.

5,617,203

OPTICAL DETECTOR EMPLOYING AN OPTICALLY-ADDRESSED SPATIAL LIGHT MODULATOR

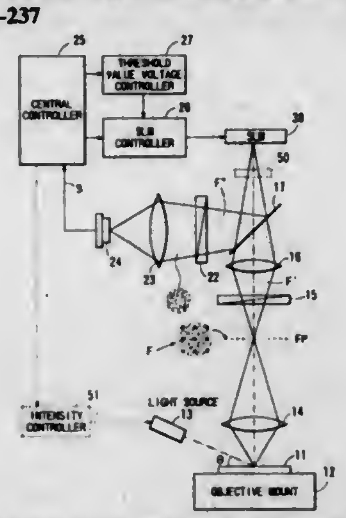
Yuji Kobayashi; Narihiro Yoshida; Naohisa Mukohzaka; Haruyoshi Toyoda, and Tsutomu Hara, all of Hamamatsu, Japan, assignors to Hamamatsu Photonics K.K., Shizuoka-ken, Japan

Continuation-in-part of Ser. No. 316,478, Oct. 3, 1994, Pat. No. 5,546,181. This application Dec. 29, 1995, Ser. No. 581,224

Claims priority, application Japan, Oct. 1, 1993, 5-246902

Int. Cl.^{6} G01N *21/00;* **G02B** *27/42*

U.S. Cl. 356—237 **8 Claims**



1. An optical detector for detecting an abnormal portion in a periodic pattern in an objective, the optical detector comprising:
a light source for irradiating coherent light onto an objective;
a lens for receiving light diffracted at and scattered by the objective, for Fourier transforming the light to generate a Fourier image on its Fourier plane, and for imaging the light on its image plane, the Fourier image having a high intensity spectral component corresponding to the periodic pattern on the objective and a low intensity spectral component corresponding to the abnormal portion;
an optically-addressed spatial light modulator located on the Fourier plane, the spatial light modulator having an optically-addressing part and a light modulating part, both the optically-addressing part and the light modulating part receiving the Fourier image;
driving control means for controlling the spatial light modulator to develop first and second birefringence states in the light modulating part at regions where the high and low intensity spectral components are incident, the first and second birefringence states modulating the high and low intensity spectral components by corresponding first and second degrees; and
selection means for receiving the Fourier image modulated in the light modulating part of the spatial light modulator and for selecting the low intensity spectral component modulated in the second degree.

5,617,204

METHOD FOR INSPECTING NECK PORTION OF MOLDED BOTTLE

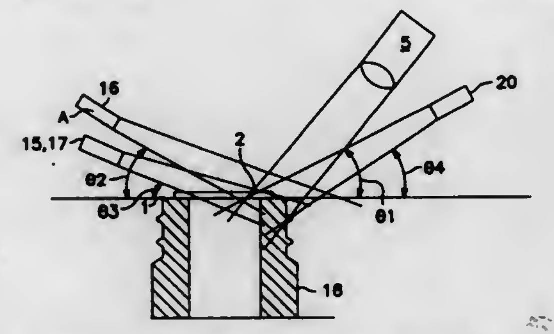
Kunio Hinata, 665-1-126, Nobacho, Konan-ku, Yokohama, Kanagawa Prefecture, Japan

Filed Apr. 19, 1995, Ser. No. 425,058

Claims priority, application Japan, Apr. 19, 1994, 6-104831

Int. Cl.^{6} G01N *21/90*

U.S. Cl. 356—240 **9 Claims**



1. A method for detecting a defect in a lip of a bottle, said method comprising the steps of:
positioning a CCD image sensor and a first light source located on the same side as the CCD image sensor, a second light source located on the opposite side of the CCD image sensor, a third light source located on the right side of the second light source, and a fourth light source located on the left side of the second light source, around a bottle to be inspected, said CCD image sensor and said first, second, third, and fourth light sources being disposed at an angle above the lip of the bottle looking down toward an inside edge of the lip;
energizing said light sources;
receiving on said image sensor light beams reflected from said lip energizing from the second light source for detecting a double pulse image profile, a wider single beam image, and a weak double pulse image, from both the second light source and the first light source for detecting a double-pulse image profile, and from the second, third and fourth light sources for detecting a triple-pulse image profile;
comparing a width and pulse of an output signal from said image sensor with a prestored reference value;
judging a bottle to be a defective bottle when said output signal has a width greater than said reference value or said output signal contains multiple pulses.

5,617,205

SPECTRAL MEASURING METHOD AND SPECTRAL MEASURING APPARATUS

Xiaoming Dou; Yoshinori Yamaguchi; Harumi Uenoyama, and Yung X. Wang, all of Kyoto, Japan, assignors to Kyoto Dai-Ichi Kagaku Co., Ltd., Kyoto, Japan

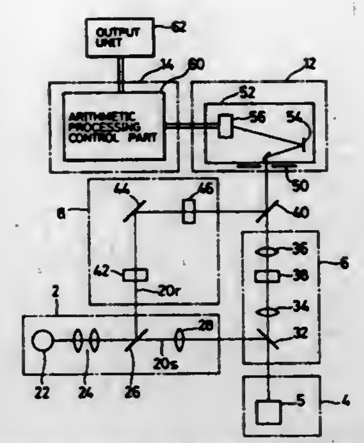
Filed Jun. 26, 1996, Ser. No. 672,027

Claims priority, application Japan, Jun. 28, 1995, 7-186340

Int. Cl.^{6} G01N *21/64;21/65*

U.S. Cl. 356—301 **10 Claims**

1. A spectral measuring method comprising steps of: dividing excitation light of a single wavelength into a sample beam and a correction beam;
irradiating a sample with said sample beam;
selectively receiving at least either fluorescence or Raman scattered light as target light from light being obtained from said sample by said irradiation with said sample beam after removing the same wavelength component as said excitation light;
simultaneously introducing received said target light and said correction beam into a single spectroscope as a single light beam and separating the light beam into spectral components thereby obtaining a spectrum;



finding a spectral intensity at a prescribed wavelength or an integral value in a proper wavelength range from said spectrum as a measured value; and
correcting said measured value on the basis of a detected intensity of an excitation light component in said spectrum.

5,617,206

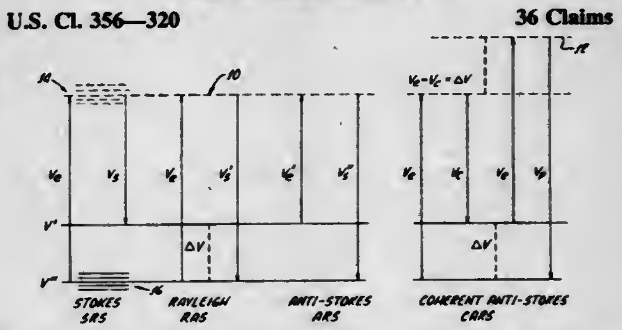
COMPACT LASER DIODE MONITOR USING DEFINED LASER MOMENTUM VECTORS TO CAUSE EMISSION OF A COHERENT PHOTON IN A SELECTED DIRECTION

Theodore D. Fay, Mission Viejo, Calif., assignor to PHI, Applied Physical Sciences International, Mission Viejo, Calif.

Filed Dec. 4, 1995, Ser. No. 566,965

Int. Cl.^{6} G01J *3/42;3/44*

U.S. Cl. 356—320 **36 Claims**



35. A method for monitoring concentrations of individual atomic and molecular species in both gases and semitransparent fluids, said method comprising the steps of:
directing a first laser having a frequency resonant with a first selected electronic transition of a specific atomic or molecular species into a sample comprising the specific atomic or molecular species;
simultaneously directing a second laser into said sample in order to cause the selected atomic or molecular species to emit a coherent photon signal in a selected direction, said second laser having a frequency resonant with a second selected electronic transition of the specific atomic or molecular species, a difference between said first and second laser resonant frequencies being equal to a vibrational energy level difference of the specific atomic or molecular species; and
detecting the emitted coherent photon signal.

5,617,207

APPARTATUS AND METHOD FOR MEASURING A CHANGE IN AN ENERGY PATH LENGTH

Monty Glass, Dulwich Hill, and Timothy P. Dabbs, West Ryde, both of Australia, assignors to Commonwealth Scientific and Industrial Research Organisation, Australian Capital Territory, Australia

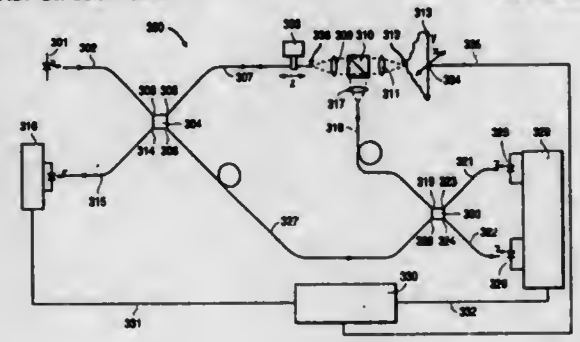
PCT No. PCT/AU91/00154, § 371 Date Dec. 4, 1992, § 102(e) Date Dec. 4, 1992, PCT Pub. No. WO91/16597, PCT Pub. Date Oct. 31, 1991

PCT Filed Apr. 23, 1991, Ser. No. 938,165

Claims priority, application Australia, Apr. 23, 1990, PJ9777; Feb. 21, 1991, PK4716

Int. Cl.⁶ G01B *9/02*

U.S. Cl. 356—345 **26 Claims**



1. An apparatus for measuring a change in an energy path length comprising:

(a) an energy source having,

(i) means for emanating a first energy beam, unguided and substantially uncollimated, wherein at least a portion of the first energy beam is substantially coherent, and

(ii) means for coherently guiding a second energy beam to an energy interferometer;

(b) a coherent energy director;

(c) an energy collector;

wherein the coherent energy director is operatively associated with both the means for emanating and the energy collector, thereby coherently directing at least a portion of the first energy beam from the means for emanating to the energy collector;

wherein the energy collector is operatively associated with the interferometer thereby coherently directing at least a portion of the first energy beam collected by the energy collector to the interferometer whereby the collected first energy beam interferes with the second energy beam thereby producing an output signal;

(d) means for changing an energy path length of the unguided and substantially uncollimated first energy beam between the means for emanating and the coherent energy director, thereby changing a phase of the unguided and substantially uncollimated first energy beam at the coherent energy director, the means for changing being operatively associated with the means for emanating; and

(e) a calculator operatively associated with the interferometer to determine the change in the energy path length between the means for emanating and the coherent energy director from a change in phase of the output signal.

5,617,208

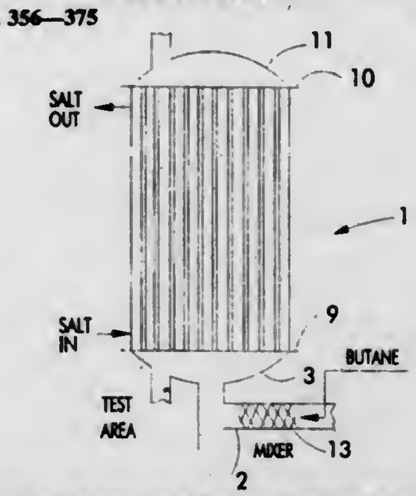
IGNITION DETECTION METHOD AND DEVICE FOR A REACTION VESSEL

William H. Alumbaugh, and Gregory J. Hill, both of Pensacola, Fla., assignors to Huntsman Petrochemical Corporation, Salt Lake City, Utah

Filed Feb. 3, 1995, Ser. No. 383,000

Int. Cl.⁶ G01B *11/00*

U.S. Cl. 356—375 **22 Claims**



1. A method for detecting a source of ignition in a zone containing a combustible gas by optical measurement of the progress of a flame front generated by the ignition, the method comprising the steps of:

sensing the ignition and measuring the time thereof;

sensing the entry of said flame front into the view aperture of each of a plurality of photosensors and measuring the time of entry of the flame front into each of said view apertures, said plurality of photosensors being so arrayed within said zone that the view aperture of each photosensor of said plurality is spaced from said point of ignition;

for each of said plurality of photosensors, determining the difference between the time of ignition and the time of entry of the flame front into the view aperture thereof;

from said time difference for each of said photosensors determining a function relating a surface in which the point of ignition must lie to the velocity of the flame front; and

by comparison of said functions determining a common location comprising intersections of said surfaces which satisfy all of said functions, said common location constituting the measured location of said ignition.

5,617,209

METHOD AND SYSTEM FOR TRIANGULATION-BASED, 3-D IMAGING UTILIZING AN ANGLED SCANING BEAM OF RADIANT ENERGY

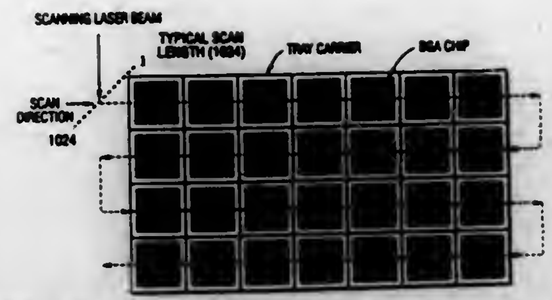
Donald J. Svetkoff, Ann Arbor; Donald K. Rohrer, Whitmore Lake, both of Mich.; David A. Noblett, Agoura, and Robert L. Jackson, Moorpark, both of Calif., assignors to View Engineering, Inc., Simi Valley, Calif.

Filed Apr. 27, 1995, Ser. No. 429,543

Int. Cl.⁶ G01B *11/24*

U.S. Cl. 356—376 **15 Claims**

1. In a method for the automated high-speed, 3-D imaging of an object at a vision station to develop dimensional information associated with the object, the object having a first set of inspection sites, the method including the steps of scanning a focused beam of radiant energy to create a scanning beam in the form of a scan line having a predetermined orientation and to create a plurality of points on corresponding surfaces of the first set of inspection sites and relatively translating the scanning beam with respect to the first set of inspection sites in a first direction defining a first axis of motion to generate corresponding reflected light signals sensing the amount of energy in the reflected light signals to generate corresponding electrical signals and processing the electrical signals to



obtain a first set of data representing the dimensional information, including the heights of the plurality of points on the corresponding surfaces, the improvement comprising:

the predetermined orientation of the scan line is at a predetermined acute angle with respect to the first direction and wherein the step of translating occurs during the step of scanning.

5,617,210

METHOD OF DETECTING WHETHER AT LEAST ONE DIE IS CENTERED ABOUT A THREAD HELD TAUGHT BETWEEN TWO FIXED POINTS

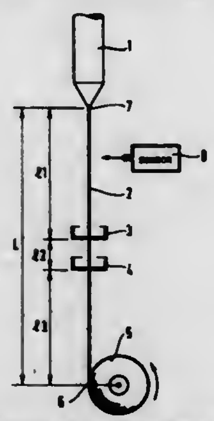
Philippe Darbon, Soisy Sous Montmorency; Bernard Floch, Chaumont En Vexin, and Max Matau, Villeneuve La Garenne, all of France, assignors to Alcatel Fibers Optques, Bezons Cedex, France

Filed Oct. 13, 1995, Ser. No. 543,108

Claims priority, application France, Oct. 17, 1994, 94 12352

Int. Cl.⁶ G01B *11/00*

U.S. Cl. 356—399 **2 Claims**



1. A method of detecting whether at least one die is axially centered about a thread held taut between two fixed points separated by a distance L, said method comprising:

exciting the thread transversely into vibration;

measuring the frequency F of vibration of said thread;

ascertaining the corresponding length l of vibrating chord of said thread between one of said two fixed points consisting of a "reference" fixed point and another "contact" point; and

comparing said length l with length L and with the length of a segment of thread between said reference fixed point and said at least one die, so as to determine:

either that the thread is touching said die, if length l corresponds to the length of the segment, and said contact point is then situated at said die;

or else that the thread is not touching said die, if length l is equal to the length L between said two fixed points, in which case said die is properly centered, and said contact point coincides with the other one of said two fixed points.

5,617,211

EXPOSURE APPARATUS

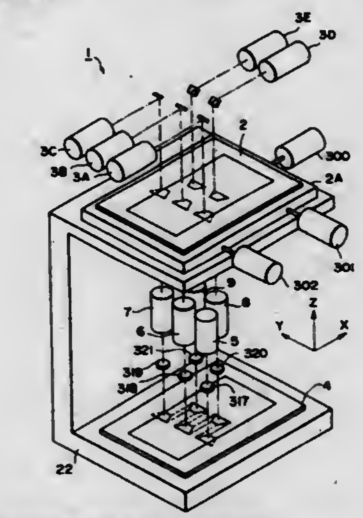
Kei Nara, Yokohama; Toshio Matsuura; Muneyasu Yokota, both of Tokyo; Yukio Kakizaki, Yokohama; Yoshio Fukami, Yokohama; Seiji Miyazaki, Yokohama, and Tsuyoshi Narabe, Omiya, all of Japan, assignors to Nikon Corporation, Japan

Filed Aug. 16, 1995, Ser. No. 515,783

Claims priority, application Japan, Aug. 16, 1994, 6-215310; Aug. 16, 1994, 6-215311; Aug. 16, 1994, 6-215312

Int. Cl.⁶ G01B *11/00;* **G01U** *21/86;* **G06K** *7/015;* **G03B** *27/52*

U.S. Cl. 356—401 **19 Claims**



15. An exposure apparatus comprising:

an illumination optical system for illuminating a plurality of partial areas of a mask;

a plurality of projection optical systems for projecting images onto a photosensitive substrate, the light beam passing through each of said partial areas of said mask being partially overlapping;

a scanning mechanism for synchronously scanning said mask and said photosensitive substrate with respect to said projection optical systems in a predetermined direction;

a block having a mask reference mark arranged on a surface corresponding to said mask surface according to the overlapping part of said light beam and a substrate reference mark arranged on a surface corresponding to said photosensitive substrate surface according to the overlapping part of said light beam; and

a displacement amount measurement unit for measuring a displacement between an image of one of said mask reference mark and said substrate reference mark, which image is formed through said projection optical system, and the other of said mask reference mark and said substrate reference mark.

5,617,212

OPEN-PATH GAS MONITORING

Derek Stuart, Sheppfield, United Kingdom, assignor to Land Instruments International Limited, Dronfield, England

Filed Mar. 20, 1995, Ser. No. 407,572

Claims priority, application United Kingdom, Mar. 19, 1994, 9405434

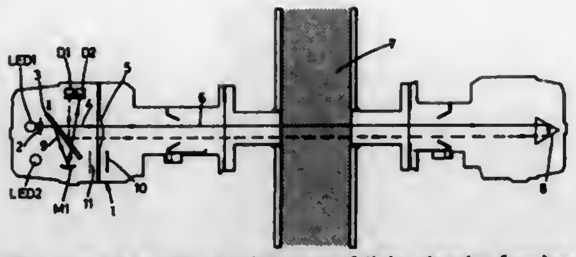
Int. Cl.⁶ G01N *21/61*

U.S. Cl. 356—438 **5 Claims**

1. An instrument for monitoring gases passing through a stack and comprising a transceiver unit adapted to be mounted on one side of the stack; a passive reflector adapted to be mounted on the other side of the stack; and electronic control circuitry, said transceiver unit comprising:

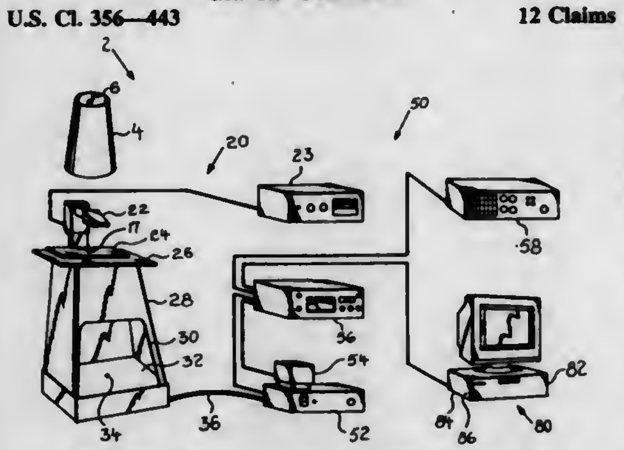
(i) first and second light detectors;

(ii) a first light source adapted for projecting a beam of light along an optical path;



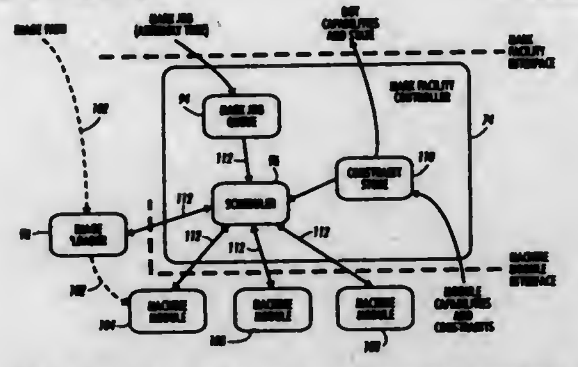
(iii) means for splitting said beam of light, thereby forming a portion of said beam of light, and directing said portion of said beam of light to said second light detector;
(iv) a second light source adapted for flooding said first and second detectors with a second light, said second light not passing through the gases;
(v) means to automatically alternate activation of said first and second light sources at a predetermined frequency so that any light detected by said first and second detectors at any instant originates from either said first light source or said second light source, but not both, said automatic alternate activation removing D.C. offsets and correcting for short term differential gain changes between said first and second light detectors.

5,617,213
SPOT MICRODENSITOMETER FOR SPECTRAL DENSITY ANALYSIS OF FILM
Sun-Fu Shih, 2208 NW. 29th St., Gainesville, Fla. 32605
Filed Mar. 22, 1995, Ser. No. 408,207
Int. Cl.⁶ G01N 21/00
U.S. Cl. 356—443 **12 Claims**



1. A spot densitometer system comprising
a viewing assembly comprising a flat spectrum lamp, a means for removing infrared light from the light emitted from said flat spectrum lamp, a means for supporting film, and a means for focusing light emitted by said flat spectrum lamp, whereby density of an entire width of a film emulsion being viewed through said viewing assembly is measured;
a photodetection apparatus comprising a means for converting light signals from said flat spectrum lamp into analog electrical signals;
a computer interface electrically connected to said means for converting light signals from said flat spectrum lamp into analog electrical signals;
wherein said means for supporting film comprises an upper plate rotatably attached to a lower plate, an upper plate aperture in said upper plate, a lower plate aperture in said lower plate, a housing comprising a housing top aperture and a viewing spot, said lower plate being attached to said housing; and
a vertical height adjustment means for said film wherein said lower plate is attached to a plurality of lower plate supports, each said lower plate support comprising a lower plate support slot, each said lower plate support being attached to said housing by means of a bolt sized to freely fit through said lower plate support slot, whereby the vertical position of said lower plate is adjustable by loosening the bolt, repositioning said lower plate, and then re-tightening said bolt, thereby allowing the vertical position of said lower plate to be adjusted.

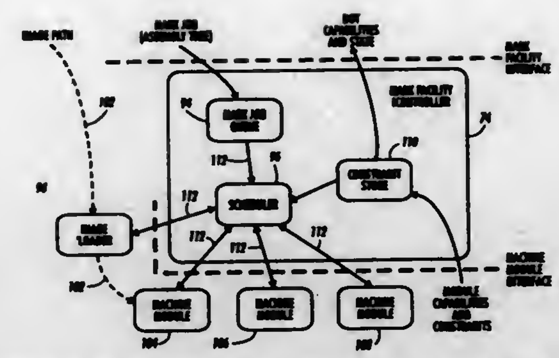
5,617,214
COMMITMENT GROUPS TO GENERALIZE THE SCHEDULING OF INTERDEPENDENT DOCUMENT OUTPUT TERMINAL CAPABILITIES
Marc W. Webster, Rochester; Paul A. Rulli, Webster; Daniel L. McCue, III, Rochester, all of N.Y.; Vijay A. Saraswat, Fremont, and Markus P. J. Fromherz, Palo Alto, both of Calif., assignors to Xerox Corporation, Stamford, Conn.
Filed Nov. 28, 1995, Ser. No. 563,817
Int. Cl.⁶ H04N 1/00; 1/32; G06F 15/00
U.S. Cl. 358—296 **11 Claims**



1. In an electronic image processing apparatus comprising a controller and a plurality of arbitrary resources, each of the resources including operating modules and an associated processor, each of the processors storing data related to operational capabilities of the associated resource, a bus for interconnecting the processors to the controller for directing the operation of the resources, a method of operation of the image processing apparatus to complete tasks comprising the steps of:
determining the geometrical configuration of the interconnection of the resources,
recognizing a request to complete a first task,
in response to recognizing the request to complete a first task, defining a set of modules of the resources to complete the task,
initiating by the controller of status ready requests to the processors of said set of modules to complete the task,
receiving from each of the processors of the set of modules status ready to status not ready signals to complete the task, and
in response to receiving status ready signals from each processor of the set of modules, committing each resource of the set of modules to completing the task.

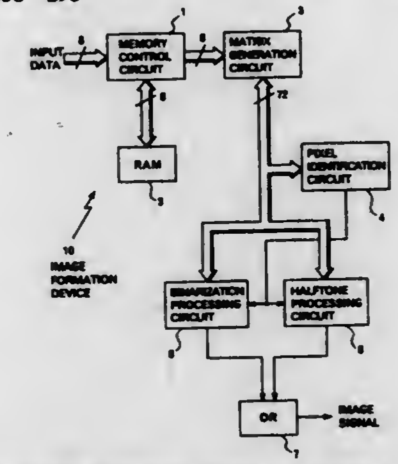
5,617,215
ASSEMBLY TREES FOR CANONICAL REPRESENTATION OF DOCUMENTS AND BLENDING MULTIPLE FUNCTIONS
Marc W. Webster; Daniel L. McCue, III, both of Rochester; Paul A. Rulli, Webster; John O. Walker, Rochester, and William K. Stumbo, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Dec. 6, 1995, Ser. No. 567,978
Int. Cl.⁶ H04N 1/00; G01M 1/00; G06F 15/00
U.S. Cl. 358—296 **20 Claims**

1. In an electronic image processing apparatus comprising a controller and a plurality of resources, the resources being in an arbitrary configuration, each of the resources including an associated processor, each of the processors storing data related to operational constraints of the associated resource, a bus for inter-



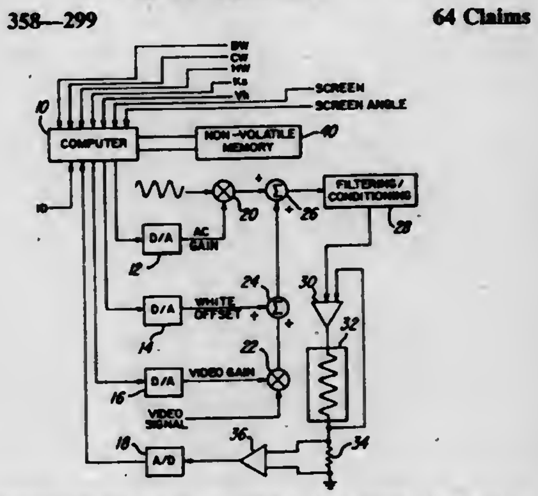
connecting the processors to the controller for directing the operation of the resources, the controller being connected to a network and to a document scanner, a method of driving the image processing apparatus in response to a given job request comprising the steps of:
receiving a first portion of the job request from the network,
defining the first portion of the job request as a first assembly tree for processing by the electronic image processing apparatus,
receiving a second portion of the job request from the document scanner,
defining the second portion of the job request as a second assembly tree for processing by the electronic image processing apparatus,
merging the first and second portions of the job request into a third assembly tree, and
providing said third assembly tree to the processing apparatus for processing.

5,617,216
IMAGE FORMATION DEVICE WITH BINARY/HALFTONE PIXEL DETERMINATION
Koji Wada, Tokyo, Japan, assignor to NEC Corporation, Japan
Filed Jul. 6, 1994, Ser. No. 271,082
Claims priority, application Japan, Jul. 7, 1993, 5-192954
Int. Cl.⁶ H04N 1/40; 1/29
U.S. Cl. 358—298 **12 Claims**



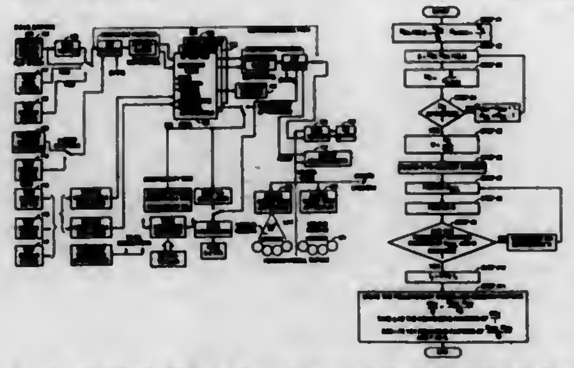
1. In an electrophotographic printer for forming a visible image based on an image signal including a plurality of pulse signals, an image formation device for forming the image signal based on input pixel signals each having a predetermined number of bits, the image formation device comprising:
matrix formation means for forming a data matrix window having a predetermined number of pixels in the primary scanning direction and the predetermined number of pixels in the secondary scanning direction, the data matrix window shifting successively in units of a pixel;
pixel identification means for determining whether an objective pixel at a predetermined location of the data matrix window is a binary or a halftone, based on an objective pixel signal and surrounding pixel signals in the data matrix window;
first conversion means for converting the objective pixel signal to a pulse signal with a pulse width obtained by binarization processing if the objective pixel is determined to be a binary by the pixel identification means;
second conversion means for converting the objective pixel signal to a pulse signal with a pulse width obtained by halftone processing if the objective pixel is determined to be a halftone by the pixel identification means; and
synthesizing means for synthesizing the plurality of pulse signals generated by the first and second conversion means to form the image signal;
the pixel identification means including:
first determination means for determining whether each pixel signal in the data matrix window is a binary or a halftone; and
second determination means for determining whether the objective pixel is a binary or a halftone using the determination results obtained by the first determination means.

5,617,217
ENGRAVING METHOD AND APPARATUS FOR GENERATING ENGRAVING DRIVE SIGNALS FOR ENGRAVING ENGRAVED AREAS OF ACCURATELY CONTROLLED SIZE IN THE SURFACE OF A WORKPIECE USING COEFFICIENT VALUES AND ASSOCIATED SET UP PARAMETER VALUES
Matthew C. Brewer, Dayton; Eric J. Serenius, Springboro, and David M. Reese, Dayton, all of Ohio, assignors to Ohio Electronic Engravers, Inc., Dayton, Ohio
Continuation-in-part of Ser. No. 22,127, Feb. 25, 1993, Pat. No. 5,424,845, Ser. No. 38,679, Mar. 26, 1993, Pat. No. 5,438,422, and Ser. No. 125,938, Sep. 23, 1993, Pat. No. 5,440,398, which is a continuation-in-part of Ser. No. 38,679. This application Feb. 27, 1995, Ser. No. 394,722
Int. Cl.⁶ B41C 1/04
U.S. Cl. 358—299 **64 Claims**



1. A method for generating an engrave drive signal for use in an engraver, comprising the steps of:
entering setup parameters for at least one cell into a computer;
determining a coefficient value associated with said setup parameters; and
using said coefficient value and setup parameters to generate said engrave drive signal.

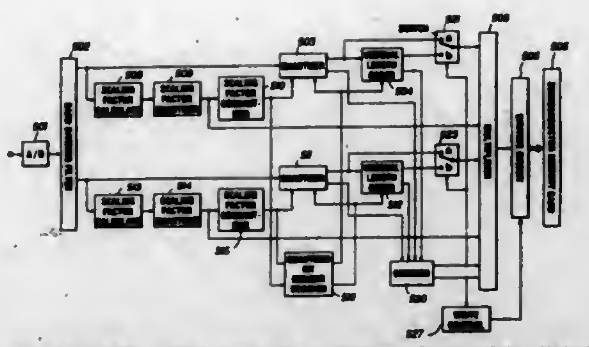
5,617,218
BI-DIRECTIONAL TELEVISION AND MOTION PICTURE FILM TO MAGNETIC TAPE FORMAT DIGITAL SIGNAL CONVERTER
Charles W. Rhodes, Alexandria, Va., assignor to Advanced Television Test Center, Alexandria, Va.
Continuation-in-part of Ser. No. 404,190, Sep. 7, 1989, abandoned. This application May 6, 1993, Ser. No. 57,495
Int. Cl.[6] H04N *5/76*
U.S. Cl. 386—129 **16 Claims**



1. An apparatus for bi-directionally converting a motion picture film image signal between a first film image signal format and a second signal format, the second signal format compatible with a digital tape recorder, the first film image signal format having a first frame rate and the second signal format having a first field rate, the apparatus comprising:
a memory for storing first lines of data, the first lines of data stored in an arrangement representing both the first film image signal format and the second signal format;
first means, responsive to the first frame rate, for generating a first synchronizing signal;
second means, responsive to the first field rate, for generating a second synchronizing signal; and
control means, coupled to the memory and responsive to the first synchronizing signal and the second synchronizing signal, for storing the first lines of data in the memory in synchronism with the first synchronizing signal and for reading the first lines of data from the memory in synchronism with the second synchronizing signal when the first film image signal format is being converted to the second signal format, and for storing the first lines of data in the memory in synchronism with the second synchronizing signal and for reading the first lines of data from the memory in synchronism with the first synchronizing signal when the second signal format is being converted to the first film image signal format.

5,617,219
APPARATUS AND METHOD FOR DATA COMPRESSION AND EXPANSION USING HYBRID EQUAL LENGTH CODING AND UNEQUAL LENGTH CODING
Yoshiaki Oikawa, Kanagawa, Japan, assignor to Sony Corporation, Japan
Continuation of Ser. No. 222,574, Apr. 4, 1994, which is a continuation of Ser. No. 937,968, Aug. 28, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 486,316
Claims priority, application Japan, Aug. 29, 1991, 3-244522; Aug. 30, 1991, 3-244847
Int. Cl.[6] H04N *5/76;7/12;* G11B *5/00*
U.S. Cl. 386—111 **10 Claims**

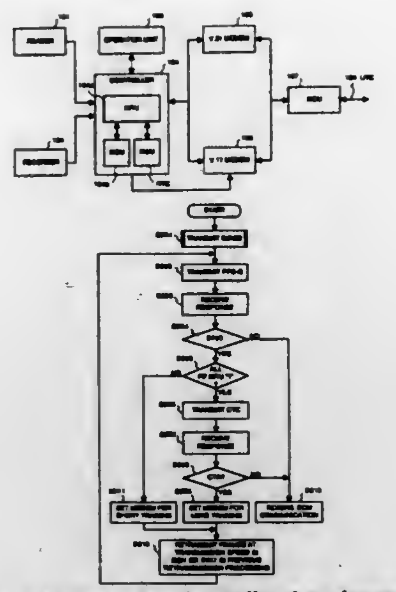
1. An apparatus for compressing a digital input signal divided into frames to provide a recording signal for real-time recording on a recording medium capable of being recorded at a variable bit rate as a record medium, the apparatus comprising:
quantizing means for coding a frame of the digital input signal to provide a coded frame including a predetermined number of bits;



variable length coding means for coding the frame of the digital input signal to provide a coded frame including a variable number of bits;
comparator means for comparing the variable number of bits with the predetermined number of bits, and for providing a decision signal having a first state and a second state, the decision signal being in the first state when the variable number of bits is greater than the predetermined number of bits, and being in the second state when the variable number of bits is less than the predetermined number of bits, the comparator means receiving data indicating the variable number of bits from the variable length coding means;
selecting means for including the coded frame including the predetermined number of bits in the recording signal when the decision signal is in the first state, and for including the coded frame including the variable number of bits in the recording signal when the decision signal is in the second state, wherein the selecting means provides a recording signal comprising a plurality of frames, each frame including a number of bits, the number of bits in each frame being variable;
a write control means for generating a write control signal in response to the number of bits in a frame of the recording signal; and
a writing means for receiving the frame of the recording signal from the selecting means and for writing the frame of the recording signal into the recording medium at a variable bit rate determined by the write control signal according to the number of bits in the frame.

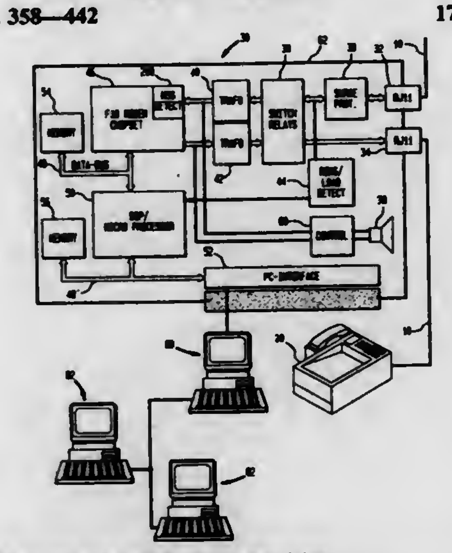
5,617,220
FACSIMILE APPARATUS
Yasuhide Ueno, Fuchu, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 30, 1992, Ser. No. 969,361
Claims priority, application Japan, Nov. 7, 1991, 3-291123
Int. Cl.[6] H04B *15/00*
U.S. Cl. 358—434 **26 Claims**

1. A facsimile apparatus comprising:
a modem which trains a corresponding modem in a receiving facsimile apparatus by using a long training sequence or a short training sequence before sending image data to the receiving facsimile apparatus;
receiving means for receiving a retransmission request from the receiving facsimile apparatus, the retransmission request indicating a number of errors in a reception by the receiving facsimile apparatus;
analyzing means for determining the number of errors from the retransmission request received by said receiving means; and
selecting means for selecting the long training sequence of said modem if the number of errors determined by said analyzing means exceeds a predetermined value or the short training sequence of said modem if the number of errors determined



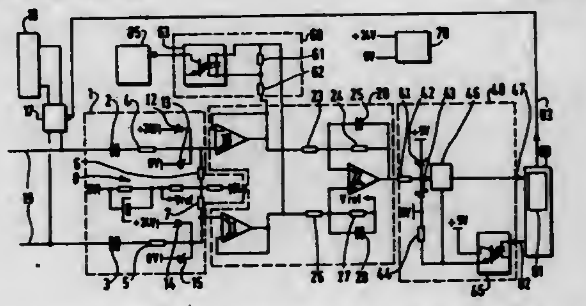
by said analyzing means is smaller than the predetermined value, said modem performing the selected training sequence.

5,617,221
FACSIMILE MODEM FOR PASSING IMAGE INFORMATION TO A FACSIMILE MACHINE AND COMPUTER
Hans DeVries, 117-119, Schoolstraat, Voorschoten, Netherlands, and Suresh Ramamurthi, P.O. Box 9436, Lyndhurst, N.J. 07071
Filed Nov. 4, 1993, Ser. No. 148,072
Int. Cl.[6] H04N *1/32*
U.S. Cl. 358—442 **17 Claims**



1. A facsimile modem device comprising:
means for passing a facsimile data signal from a telephone line to a local fax machine;
a high impedance connected to said means for passing the facsimile data signal and configured to divert a sample signal related to said facsimile data signal without significantly affecting the facsimile data signal simultaneously passing to the local fax machine;
a non-standard format demodulator, including:
a. an input connected to the high impedance and connected to receive a portion of the facsimile signal received by the facsimile demodulator:
b. a signal processor connected to the input and configured to convert the signal to a digital signal;
c. at least two quadrature demodulators in parallel connection with an output of the signal processor, each quadrature demodulator having a different demodulation frequency;
d. a memory containing predetermined demodulation information; and
e. a comparator connecting the quadrature demodulators and the memory, the comparator connected to compare an output of the quadrature demodulators and the predetermined demodulation information;
a decoder connected to receive the demodulated signal and produce a fax image signal; and
an output connected to the decoder and configured to output the fax image to a computer.
6. A non-standard format facsimile decoding device, comprising
a. an input for receiving at least a portion of a facsimile signal;
b. a signal processor connected to the input for converting the signal to a digital signal;
c. at least two quadrature demodulators in parallel connection with the signal processor, each quadrature demodulator having a different demodulation frequency;
d. a memory containing predetermined demodulation information; and
e. a comparator connected to the quadrature demodulators and the memory, comparator means comparing an output of the quadrature demodulators with the predetermined demodulation information.

5,617,222
CIRCUIT FOR ADAPTING FACSIMILE MACHINE TO BE CONNECTED TO A DATA TRANSMISSION LINE AND INCLUDING A DIFFERENTIAL AMP WITH TWO HIGH IMPEDANCE LINE INPUTS
Jean-Paul Auffray, Vaureal, and Michel Mesure, Cerey, both of France, assignors to Societe D'Applications Generales D'Electricite et de Mecanique Sagem, France
Filed May 4, 1994, Ser. No. 237,670
Claims priority, application France, May 4, 1993, 93 05295
Int. Cl.[6] H04N *1/32*
U.S. Cl. 358—442 **5 Claims**



1. A circuit for adapting a facsimile machine to be connected to a data transmission line (19) which it shares with a terminal (18), comprising connecting means (1, 20, 40) adapted to be connected, at the input, to the line (19) and to transmit, to a data processing interface (80) of the facsimile machine, differential signaling signals of the line (19) in order, as a function of these signals, to connect the interface (80) directly to the line (19), characterized by the fact that the connecting means (1, 20, 40) comprise a differential amplifier (20) connected to the line (19) by two inputs of high impedance.

5,617,223

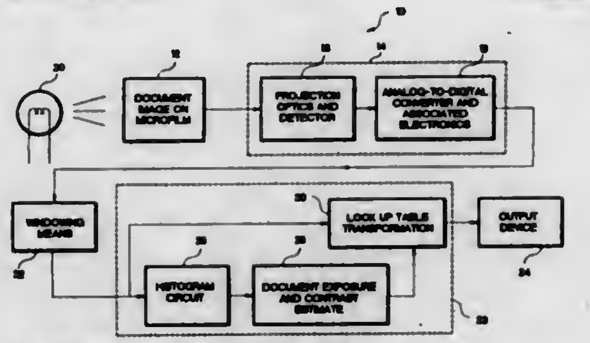
IMAGE SCANNER SYSTEM AND METHOD FOR IMPROVED MICROFILM IMAGE QUALITY

Peter D. Burns, and John E. Redden, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 843,675, Feb. 28, 1992, abandoned. This application Jun. 28, 1995, Ser. No. 496,276

Int. Cl.⁶ H04N *1/46*

U.S. Cl. 358—527 **2 Claims**



1. A microfilm retrieval system, comprising:
a) a scanner for scanning a microfilm to produce a digital image;
b) means for forming a statistic s_{sc} representing the central tendency of the digital image;
c) a plurality of predetermined tone reproduction function look up tables;
d) means responsive to the statistic s_{sc} for selecting one of the look up tables; and
e) means for performing a pixel by pixel transformation of the digital image using the selected look up table.

5,617,224

IMAE PROCESSING APPARATUS HAVING MOSAIC PROCESSING FEATURE THAT DECREASES IMAGE RESOLUTION WITHOUT CHANGING IMAGE SIZE OR THE NUMBER OF PIXELS

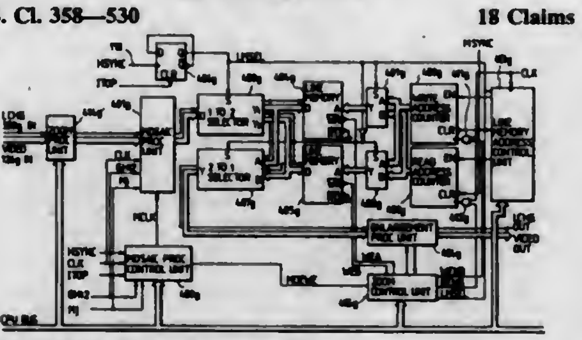
Hiroyuki Ichikawa; Yoshinori Ikeda, both of Tokyo; Koichi Katoh, Yokohama; Mitsuru Kurita; Yasumichi Suzuki, both of Tokyo, and Toshiyuki Kitamura, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 936,723, Aug. 31, 1992, abandoned, which is a continuation of Ser. No. 519,840, May 4, 1990, abandoned. This application Feb. 3, 1994, Ser. No. 191,146

Claims priority, application Japan, May 8, 1989, 1-115685; May 10, 1989, 1-117054

Int. Cl.⁶ H04N *1/58*

U.S. Cl. 358—530 **18 Claims**



1. A printing apparatus comprising:
a) input means for inputting image data having a predetermined resolution;
b) processing means for performing mosaic processing and normal processing of the image data input of said input means;
c) reproduction means for reproducing an image based on the image data subjected to either the mosaic processing or the normal processing by said processing means;
d) mode setting means for selecting a mosaic processing mode or a normal processing mode; and
e) instruction means for instructing a start of printing, wherein said input means, said processing means and said reproduction means are operated in accordance with a one-time instruction of the start of printing by said instruction means,

wherein said processing means, in the mosaic processing mode, divides the input image data into a plurality of rectangular block areas and paints each rectangular block area with a uniform color based on the image data in the rectangular block area so that the resolution of the image represented by the mosaic-processed image data is lower than the predetermined resolution without changing either a size of the image or a number of pixels for the image, and, in the normal processing mode, outputs processed image data so that the resolution of the image represented by the normal-processed image data is the same as the predetermined resolution.

5,617,225

STEREOSCOPIC DISPLAY APPARATUS AND METHOD

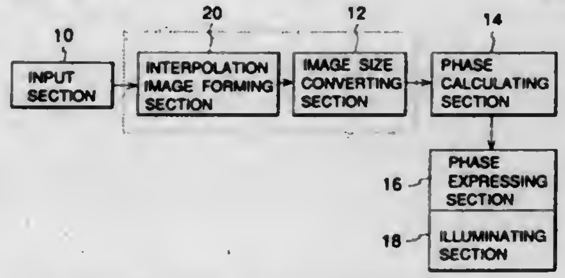
Hirokazu Aritake; Masayuki Kato; Manabu Ishimoto; Noriko Sato, and Masato Nakashima, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Continuation of Ser. No. 88,753, Jul. 8, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 479,838

Claims priority, application Japan, Jul. 20, 1992, 4-191782

Int. Cl.⁶ G03H *1/08*

U.S. Cl. 359—9 **13 Claims**



1. A stereoscopic display apparatus comprising:

input means, including image pickup means, for setting a virtual plane in which a plurality of visual point positions are two-dimensionally arranged for an object to be displayed, for arranging said image pickup means at each of said visual point positions, and for inputting a plurality of 2-dimensional image data obtained by photographing said object, by said image pickup means;

interpolation image forming means for forming 2-dimensional image data between two of said plurality of 2-dimensional image data obtained by photographing the same object from two different positions by an interpolation calculation on the basis of said two 2-dimensional image data;

phase distribution calculating means for dividing a virtual hologram plane which forms a 2-dimensional holographic interference pattern, 2-dimensional phase pattern, in the horizontal and vertical directions, for setting distribution segments, and for calculating segment values of said 2-dimensional holographic interference pattern from said 2-dimensional image data at the corresponding visual point position for each of said distribution segments; and

phase expressing means for irradiating a reproduction light in a state in which the segment value of each of said distribution segments calculated by said phase distribution calculating means is expressed on a hologram forming plane, and for converting said reproduction light into an optical wave front, thereby displaying a stereoscopic image.

5,617,226

POLYMER DISPERSED LIQUID CRYSTAL PROJECTION DISPLAY HAVING POLARIZING MEANS

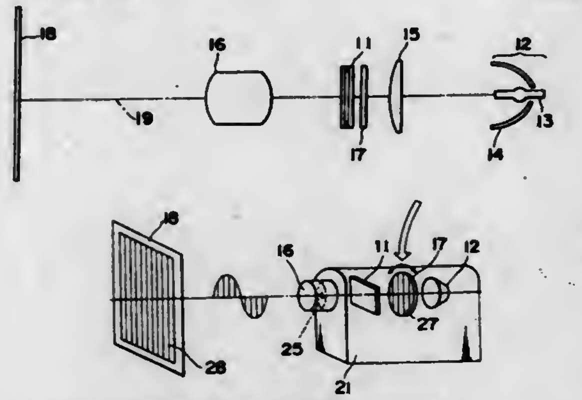
Hideki Ohmae, Suita, and Hiroshi Takahara, Neyagawa, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-Fu, Japan

Filed Dec. 16, 1994, Ser. No. 357,936

Claims priority, application Japan, Dec. 17, 1993, 5-318033

Int. Cl.⁶ G02F *1/1335;1/1333*

U.S. Cl. 349—10 **22 Claims**



1. A liquid crystal projection device, comprising:
a light generating means for generating light;
a liquid crystal panel for forming an optical image as a function of changes in a light scattering condition of said liquid crystal panel, said liquid crystal panel having a light incident side for receiving light from said light generating means;
a polarizing means disposed on said light incident side of said liquid crystal panel for polarizing light incident on said light incident side;
a polarizing screen; and
a projection means for projecting an optical image from light from said liquid crystal panel onto said polarizing screen.

5,617,227

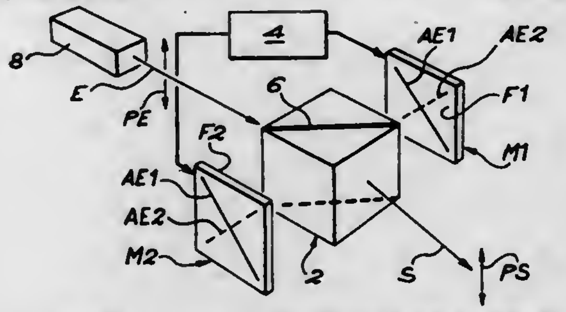
LIGHT DIFFRACTION DEVICE USING RECONFIGURABLE SPATIAL LIGHT MODULATORS AND THE FRACTIONAL TALBOT EFFECT

Jean-Louis De Bougrenet De La Tocnaye, Le Conquet; Habib Hamam, Brest, and Renaud Moignard, Guipronvel, all of France, assignors to France Telecom Etablissement Autonome De Droit Public, Paris, France

Filed Nov. 17, 1995, Ser. No. 560,044

Int. Cl.⁶ G02F *1/1335;1/141;* G03H *1/02*

U.S. Cl. 349—57 **12 Claims**



1. Light diffraction device, characterized in that it comprises:

first (M1) and second (M2) liquid crystal, electrically addressable light spatial modulators on a semiconductor substrate, each of the first and second modulators operating by reflection and making it possible to create a reconfigurable binary hologram, the hologram created with the first modulator being periodic in two perpendicular directions, the period along one of these two directions being equal to double the other period in the other direction and

at least one polarization beam splitter (2; 16, 18; 28), the light being directed from the first to the second modulator by means of said beam splitter, the optical path between the first and second modulators being equal to $(2k+1)Z_T/4^n$, in which k and n are natural integers, n differing from zero, and Z_T being the Talbot distance relative to the hologram obtained by means of the first modulator and at said period,

the first and second modulators being positioned with respect to the polarizing beam splitter so as to obtain a reconfigurable hologram with four phase levels.

5,617,228

POLYMER-DISPERSED LIQUID CRYSTAL DISPLAY DEVICE AND METHOD TO SET LIQUID CRYSTAL LAYER THICKNESS IN ASSOCIATION WITH DRIVING VOLTAGE

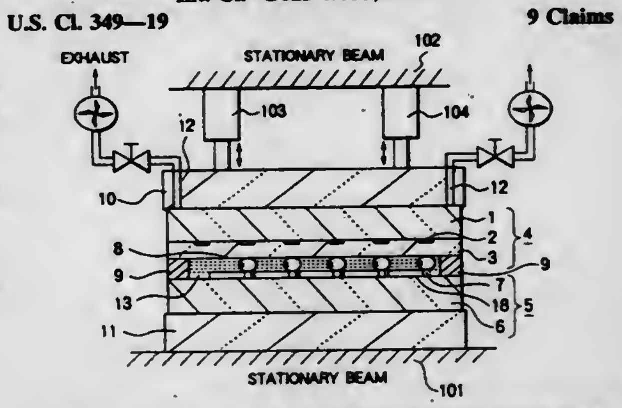
Yoshihiro Watanabe, Yokohama, and Hiroki Nakamura, Chigasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

Filed Jun. 6, 1995, Ser. No. 471,463

Claims priority, application Japan, Jul. 13, 1994, 6-161387

Int. Cl.⁶ G02F *1/133;1/1333*

U.S. Cl. 349—19 **9 Claims**



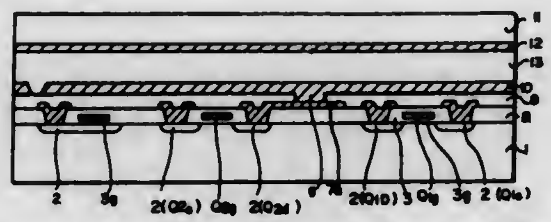
1. A method for producing a polymer-dispersed liquid crystal display device comprising a first substrate having a first electrode formed on a first plate, a second substrate having a second electrode formed on a second plate, and a polymer-dispersed liquid crystal layer held in a space between said first and second substrates, wherein, when it is assumed that the average value of said polymer-dispersed liquid crystal layer thickness D in the display area of said polymer-dispersed liquid crystal display device is Davg, the maximum value of said polymer-dispersed liquid crystal layer thickness D at a variation $|D-\mathrm{Davg}|$ in said display area is ΔDmax, the average value of said polymer-dispersed liquid crystal layer thickness is Davg, and brightness of the brightest display in said display area is determined to be a transmission factor 1 under the above definition, then a liquid crystal drive voltage for achieving a transmission factor 0.5 in said display area is V50avg and the sharpness of a change in the transmission factor with respect to a voltage change at said V50avg is Y50avg, characterized in that said method comprises:

a step for holding a liquid material for said polymer-dispersed liquid crystal layer between said first and second substrates, and

a step for supporting at least one of said first and second substrates by a supporting plate capable of controlling in a normal direction with respect to a principal surface of at least one of said first and second substrates; and

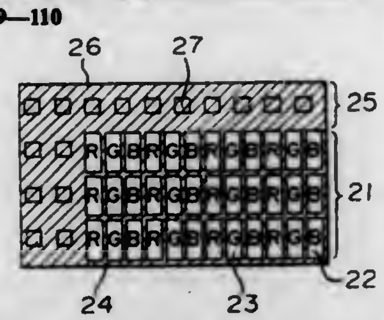
a step for curing the liquid material for said polymer-dispersed liquid crystal layer held in the space between said substrates while controlling said supporting plate in a normal direction with respect to the principal surface of said one substrate so that said ΔDmax falls in a range of $0<\Delta\mathrm{Dmax}<|\mathrm{Davg}/20.\mathrm{Y50avg}.\mathrm{V50avg}|$ to form said polymer-dispersed liquid crystal layer.

5,617,229
FIELD SEQUENTIAL FERROELECTRIC LCD HAVING A SINGLE CRYSTALLINE LAYER IN WHICH A PLURALITY OF CIRCUIT ELEMENTS ARE FORMED
Yoshitaka Yamamoto, Yamatokoriyama, Japan; Akira Tagawa, Oxford, United Kingdom; Yutaka Ishii, Nara, Japan; Mitsuhiro Koden, Nara, Japan, and Tokihiko Shinomiya, Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Aug. 25, 1994, Ser. No. 294,818
Claims priority, application Japan, Aug. 27, 1993, 5-212674
Int. Cl.^{6} G02F *1/136;1/1347;1/1335;1/1333*
U.S. Cl. 349—42 **5 Claims**



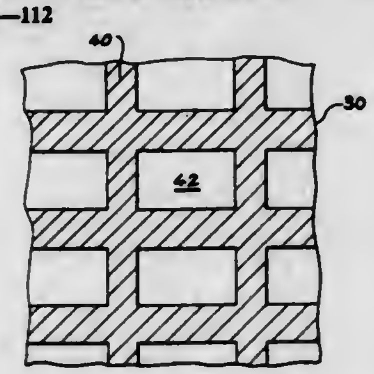
1. A liquid crystal display device comprising: a first substrate baving a single-crystalline silicon layer on one surface thereof; a transparent second substrate disposed opposite the first substrate, the surface of the first substrate having the single-crystalline silicon layer thereon facing the second substrate with a ferroelectric liquid crystal layer sandwiched therebetween; and a plurality of circuit elements formed in the single-crystalline silicon layer in a corresponding relationship to each of a plurality of pixel areas formed on the surface of the first substrate which faces the ferroelectric liquid crystal layer; wherein the liquid crystal display device performs field sequential color display based on successive additive color mixing to obtain desired color at each pixel area.

5,617,230
COLOR LIQUID CRYSTAL DISPLAY DEVICE WITH PERIPHERAL PIXELS IN A LIGHT-SHIELDED STATE
Masao Ohgawara, Yokohama, and Hiroyoshi Tsubota, Tokyo, both of Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan
Continuation of Ser. No. 65,526, May 24, 1993, Pat. No. 5,365,357, which is a continuation of Ser. No. 844,875, Mar. 3, 1992, abandoned, which is a continuation of Ser. No. 337,834, Apr. 19, 1989, abandoned. This application Aug. 9, 1994, Ser. No. 287,430
Claims priority, application Japan, Apr. 21, 1988, 63-96856; Nov. 1, 1988, 63-274462
Int. Cl.^{6} G02F *1/1333;1/1335;1/1343*
U.S. Cl. 349—110 **29 Claims**



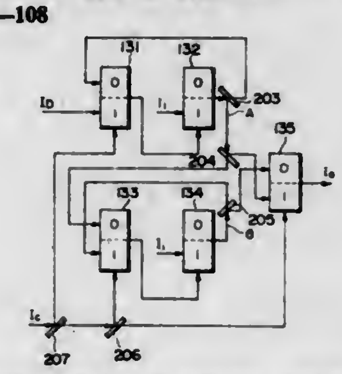
1. A color liquid crystal display device comprising:
a liquid crystal layer having a twist angle of 160° to 300°;
a retardation compensator superposed on said liquid crystal layer so as to compensate elliptical polarization derived from said liquid crystal layer;
a substrate having a display region and a peripheral region;
a group of first mutually opposed electrodes formed on the substrate in the display region;
a first color filter formed in a pixel portion in the display region;
a patterned layer including a first light shielding layer formed in the display region;
a second frame-shaped light shielding layer formed in the peripheral region; and
a second color filter overlapped with said second light shielding layer in the peripheral region.

5,617,231
DIFFUSING MATRIX LIQUID CRYSTAL DISPLAY SCREEN
Bruno Vinouze, Port-Blanc; Martine Guilbert, Trebeurden, and Dominique Bosc, Lannion, all of France, assignors to France Telecom, Paris, France
Filed Jun. 16, 1995, Ser. No. 491,376
Claims priority, application France, Jun. 17, 1994, 94 07450
Int. Cl.^{6} G02F *1/1343*
U.S. Cl. 349—112 **8 Claims**



1. A liquid crystal display screen comprising:
a first transparent plate covered with an electrode array of electrodes;
a second transparent plate covered with a counterelectrode;
a liquid crystal film diffusing ambient light in the absence of electrical excitation and transparent in the presence of electrical excitation, the liquid crystal film being inserted between the first and second plates; and
a material coating diffusing the ambient light with a brightness exceeding a brightness of the liquid crystal film in the absence of excitation, said material coating being deposited on one of the first or second transparent plates and having openings corresponding to the electrodes of the first plate.

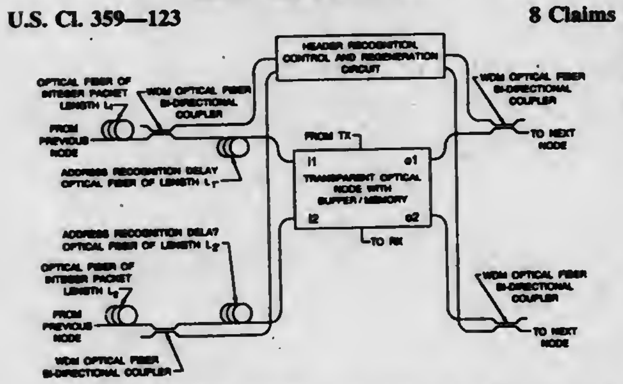
5,617,232
OPTICAL DIGITAL HOLDING APPARATUS
Tamiki Takemori, Hamamatsu, Japan, assignor to Hamamatsu Photonics K.K., Hamamatsu, Japan
Filed Mar. 25, 1994, Ser. No. 217,652
Claims priority, application Japan, Mar. 26, 1993, 5-068687
Int. Cl.^{6} G02F *3/00*
U.S. Cl. 359—108 **22 Claims**



12. An optical digital holding apparatus comprising:

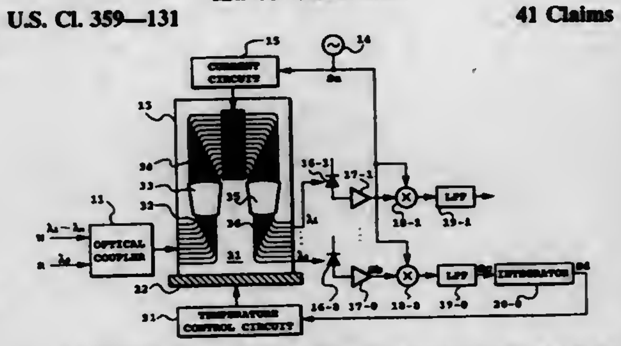
a set of selectors, each for receiving an aggregation of spatially distributed optical digital information signals propagating in a predetermined direction and bearing binary digital information, for receiving an optical control signal bearing binary digital information, and for selectively outputting a portion of an aggregation of the digital information signals received in accordance with a value of the digital information borne by the optical control signal, wherein said selectors are placed in multistage; and
optical connections for providing predetermined interconnection of said selectors with each other, including an optical feedback path for connecting an output optical signal of one of said selectors as an input optical signal of one of the other selectors.

5,617,233
TRANSPARENT OPTICAL NODE STRUCTURE
Raymond K. Boncek, Fayetteville, N.Y., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Sep. 28, 1995, Ser. No. 535,854
Int. Cl.^{6} H04J *4/00;14/00*
U.S. Cl. 359—123 **8 Claims**



1. An electro-optical system for conducting packetized dual wavelength optical signals that each contain a data portion with a first wavelength λ_1, a header portion with a second wavelength λ_2, said electro-optical system comprising:
an optical fiber network which conducts said packetized dual wavelength optical signals:
a means for separating the data portion of the packetized dual wavelength optical signals from the header portion of the packetized dual wavelength optical signals;
a means for synchronizing the data portion and the header portion of the packetized dual wavelength optical signals by delaying the data portion of the packetized dual wavelength optical signals after the separating means for a predetermined delay period:
an output switch which reconstructs the packetized dual wavelength optical signals and directs the packetized dual wavelength signal towards its intended destination as prescribed by the header portion of the packetized dual wavelength signals;
an optical power splitter which splits the header portion of the packetized dual wavelength optical signals into a plurality of address signals;
a plurality of output ports which output the header portion of the packetized dual wavelength optical signals from the optical power splitter only when activated; and
a plurality of photodiode detectors which are each connected between the optical power splitter and one of the plurality of output ports, and which are used to convert optical header signals into electrical header signals.

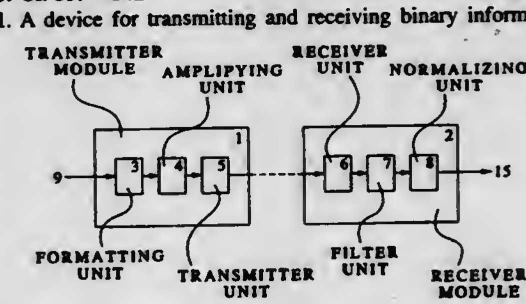
5,617,234
MULTIWAVELENGTH SIMULTANEOUS MONITORING CIRCUIT EMPLOYING ARRAYED-WAVEGUIDE GRATING
Masafumi Koga; Mitsuhiro Teshima, both of Yokosuka; Hitoshi Obara, and Ken'ichi Sato, both of Yokohama, all of Japan, assignors to Nippon Telegraph & Telephone Corporation, Tokyo, Japan
Filed Sep. 21, 1995, Ser. No. 531,980
Claims priority, application Japan, Sep. 26, 1994, 6-230020; Jan. 11, 1995, 7-002913
Int. Cl.^{6} H04S *14/02*
U.S. Cl. 359—131 **41 Claims**



1. A multiwavelength simultaneous monitoring circuit which controls center transmission wavelengths of a plurality of channels on the basis of a reference optical signal of a predetermined wavelength, and simultaneously monitors wavelength errors of individual optical signals Sk (k=1–N, where N is a positive integer) of a WDM (wavelength division multiplexed) signal outputted from the channels, said monitoring circuit comprising:
an AWG (arrayed-waveguide grating) including at least one first channel outputting at least a part of said reference optical signal when said reference optical signal and said WDM signal are inputted, and at least one second channel outputting at least a part of said optical signal Sk for each of said optical signals Sk;
a first photodetecting means for detecting said reference optical signal outputted from said first channel;
a second photodetecting means for detecting said optical signal Sk outputted from said second channel;
control means for stabilizing said center transmission wavelength of said first channel on the basis of an output from said first photodetecting means; and
wavelength error detecting means for producing an error signal indicative of a wavelength error of said optical signal Sk on the basis of an output of said second photodetecting means.

5,617,235
DEVICE FOR OPTICALLY TRANSMITTING AND RECEIVING BINARY INFORMATION
Hans Abrahamson, Stockholm, Sweden, assignor to Pacesetter AB, Solna, Sweden
Continuation of Ser. No. 401,236, Mar. 9, 1995, abandoned. This application Apr. 15, 1996, Ser. No. 631,956
Claims priority, application Sweden, Mar. 10, 1994, 9400824
Int. Cl.^{6} H04B *10/00*
U.S. Cl. 359—142 **9 Claims**

1. A device for transmitting and receiving binary information,



said binary information comprising a predetermined number of

symbols, each assuming the form of either one of two information-carrying symbols dependent on its information content, each information-carrying symbol having an associated symbol interval, and one of said information-carrying symbols having a signal level differing from zero, said device comprising:

transmitter means for optically transmitting a transmission signal containing said binary information via a free medium without a carrier wave, said transmitter means including an on/off transmission element and means for driving said on/off transmission element at a high transmission rate;

formatting means, connected to said transmitter means, for activating said on/off transmission element of said transmitter means only once per symbol interval to continuously emit said transmission signal, the information-carrying symbol having a signal level differing from zero only during a part of said symbol interval;

receiver means for optically receiving said transmission signal via said free medium; and

normalizing means, connected to said receiver means, for recreating, from the transmission signal received by said receiver means, both a symbol corresponding to the transmission signal having a signal level differing from zero throughout its symbol interval and an information-carrying symbol having a signal level not differing from zero throughout its symbol interval in said binary information.

5,617,236

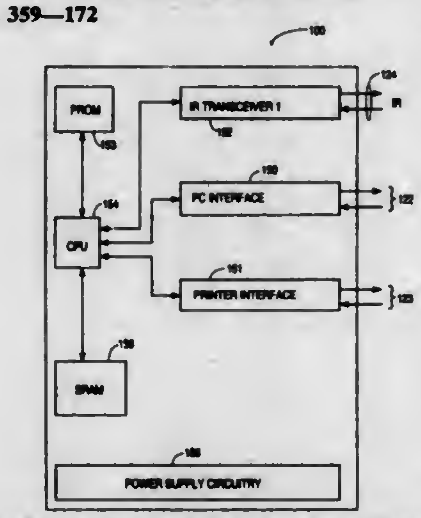
INFRARED COMMUNICATION DEVICE FOR MULTISTANDARD OPERATIONS

Li-Chen Wang, Watsonville, and Keming Yeh, Fremont, both of Calif., assignors to ACTISYS Corporation, Fremont, Calif.

Filed Aug. 15, 1994, Ser. No. 290,330

Int. Cl.⁶ H04B *10/10;10/16*

U.S. Cl. 359—172 **23 Claims**



1. An infrared radiation (IR) interface device, comprising:

a wired port, connecting said IR interface device to a host computer, for receiving from said host computer a first data stream and for providing to said host computer a second data stream;

an IR transceiver for transmitting data modulated for transmission as IR signals, and for receiving modulated data from IR signals detected;

a modulation circuit, coupled to said IR transceiver and receiving a third data stream, modulating said first data stream to provide said data modulated for transmission;

a demodulation circuit coupled to said IR transceiver, receiving from said IR transceiver said received modulated data to provide a fourth data stream;

a program memory for storing a control program for said IR interface device;

a data memory for temporarily storing data; and

a central processing unit, coupled to said wired port, said program memory, said data memory, said modulation circuit, and said demodulating circuit, for executing said control program, so as (i) to store into said data memory said fourth data stream, (ii) to send as said third data stream said first data stream received over said wire port from said host computer to said modulation circuit; (iii) to retrieve said fourth data stream from said data memory and (iv) to send as said second data stream to said host computer said fourth data stream retrieved from data memory.

5,617,237

AUTOMATED SYSTEM, AND CORRESPONDING METHOD, FOR MEASURING TRANSMITTER EXTINCTION RATIO OF ELECTRO-OPTIC MODULES

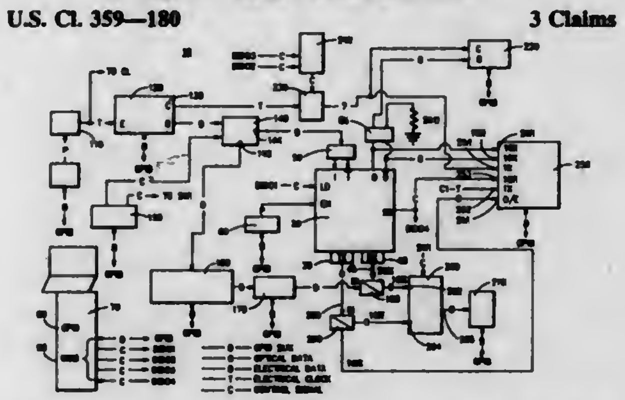
David C. Bogdan, Vestal; Donald L. Pearl, Endwell; David T. Pribula, Port Crane, all of N.Y.; Nancy R. Aulet, Austin, Tex.; Muhammed I. Hussain, Hopewell Junction, and George W. Hutt, Hyde Park, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 13,460, Feb. 4, 1993, Pat. No. 5,546,325.

This application May 23, 1995, Ser. No. 447,577

Int. Cl.⁶ H04B *10/04;* **G01N** *21/00*

U.S. Cl. 359—180 **3 Claims**



1. A method for testing an electro-optic module having an electro-optic transmitter, comprising the steps of:

providing an automated test system that receives electro-optic modules for test; and

initiating a test sequence of the automated test system that performs the steps of

providing uniform, evenly spaced square wave electrical pulses at a transmission speed of interest from the automated test system to the electro-optic transmitter of the electro-optic module, such that the digital optical signal produced by the electro-optic transmitter comprises a sequence of square wave pulses that alternate between a relatively high output power and a relatively low output power,

determining a transmitter extinction ratio defined as the ratio of the measured optical output power produced by the electro-optic transmitter as it switches between the relatively high optical output power and the relatively low optical output power, and

providing a "passed" indication if the electro-optic module produced a transmitter extinction ratio within a predetermined acceptable range of values.

5,617,238

AUTOMATED SYSTEM, AND CORRESPONDING METHOD, FOR MEASURING TRANSMITTER DUTY CYCLE DISTORTION OF ELECTRO-OPTIC MODULES

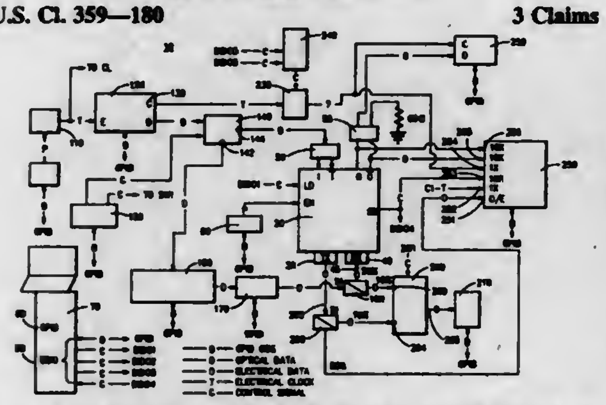
David C. Bogdan, Vestal; Donald L. Pearl, Endwell, and David T. Pribula, Port Crane, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 13,460, Feb. 4, 1993, Pat. No. 5,546,325.

This application May 23, 1995, Ser. No. 450,940

Int. Cl.⁶ H04B *10/08;10/04*

U.S. Cl. 359—180 **3 Claims**



1. A method for testing an electro-optic module having an electro-optic transmitter, comprising the steps of:

providing an automated test system that receives electro-optic modules for test; and initiating a test sequence of the automated test system that performs the steps of

providing uniform, evenly spaced square wave electrical pulses at a transmission speed of interest from the automated test system to the electro-optic transmitter of the electro-optic module, such that the digital optical signal produced by the electro-optic transmitter comprises a sequence of square wave pulses that alternate between a relatively high output power and a relatively low output power, and

determining a transmitter duty cycle distortion defined as the difference in pulse width between a positive optical signal pulse and a negative optical signal pulse, the pulse width measured at a voltage level half-way between the pulse top and the pulse bottom.

5,617,239

OPTICAL SOURCE FOR COMMUNICATIONS SYSTEM

Nigel G. Walker, Ipswich, England, assignor to British Telecommunications public limited comany, London, England

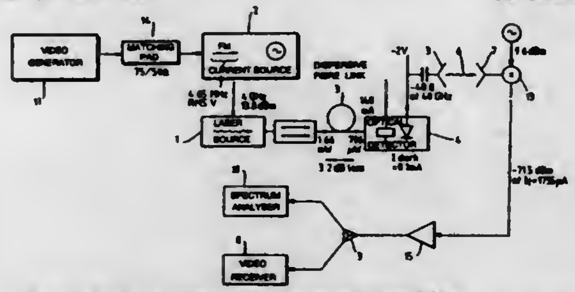
PCT No. PCT/GB93/01353, § 371 Date Jan. 17, 1995, § 102(e) Date Jan. 17, 1995, PCT Pub. No. WO94/00928, PCT Pub. Date Jan. 6, 1994

PCT Filed Jun. 29, 1993, Ser. No. 360,829

Claims priority, application European Pat. Off., Jun. 29, 1992, 92305964; Aug. 5, 1992, 92307150; Sep. 4, 1992, 9218742

Int. Cl.⁶ H04B *10/04;10/12*

U.S. Cl. 359—181 **20 Claims**



1. An optical communications system comprising:

an optical signal source, said source having an optical output, modulation means to produce angle modulation in said optical output at a modulation frequency causing optical sidebands to appear in the optical output,

modifying means to modify a relative characteristic of the optical sidebands in the optical output and allow photodetection of at least one harmonic of said modulation frequency at a receiver receiving said optical output, and

a receiver for receiving and photodetecting said optical output to produce at least one harmonic of said modulation frequency.

5,617,240

AUTOMATIC GAIN CONTROL METHOD AND DEVICE FOR RECEIVING CIRCUITS

Stéphane Hergault, la Meziere, and Patrick Hardy, Baulon, both of France, assignors to Thomson-CSF, Paris, France

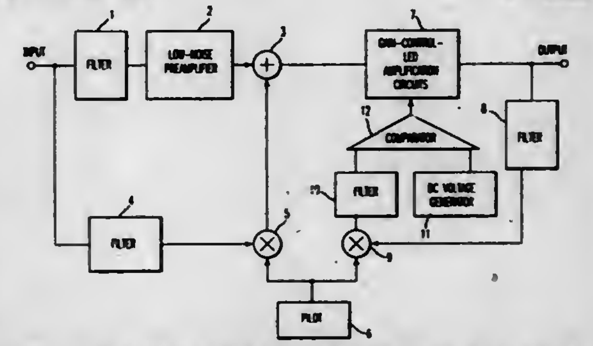
PCT No. PCT/FR95/00221, § 371 Date Oct. 23, 1995, § 102(e) Date Oct. 23, 1995, PCT Pub. No. WO95/23454, PCT Pub. Date Aug. 31, 1995

PCT Filed Feb. 24, 1995, Ser. No. 532,816

Claims priority, application France, Feb. 25, 1994, 94 02194

Int. Cl.⁶ H04B *10/06*

U.S. Cl. 359—194 **10 Claims**



5. Device for automatically controlling the gain of a gain controlled amplification circuit having a signal input, a control input, an output, a band pass and being included in a receiver having an input to receive a received signal incoming from a transmission channel, the received signal having a DC component and a useful component having a frequency spectrum, the transmission channel attenuating the DC component and the useful component, the attenuation of the useful component being in a known relationship with the attenuation of the useful component, the device comprising:

a first filter and a second filter, each having an input and an output, said first filter eliminating frequencies outside the frequency spectrum of the useful component and said second filter being of a low pass type to produce at its output the DC component of the received signal, said input of both filters receiving the received signal;

a pilot signal generator that generates on an output of the generator a frequency within the passband of the gain-controlled amplification circuits of the receiver but outside the frequency spectrum of the useful component;

modulating means receiving the DC component of the received signal from said output of said second filter and said pilot signal from said output of said pilot signal generator and delivering a modulated pilot signal;

an adder receiving said modulated pilot signal, said adder also receiving the useful component of the received signal from said output of said first filter and delivering a resultant signal to the signal input of the gain controlled amplification circuit;

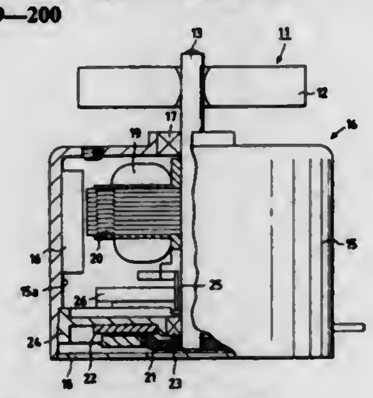
a slaving loop for the gain controlled amplification circuit, said loop including:

a filter coupled to the output of the gain controlled amplification circuit, said filter delivering an amplified modulated pilot signal,

demodulating means receiving said amplified modulated pilot signal from said filter and delivering an amplified DC component level; and

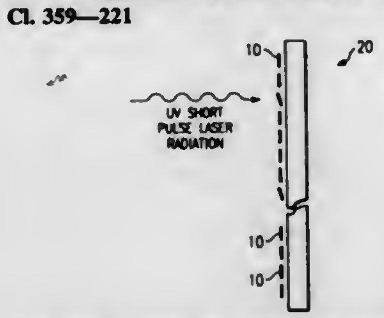
a comparator receiving said amplified DC component level and a reference voltage from a DC voltage generator circuit, the output of said comparator being connected to the control input of the controlled amplification circuit.

5,617,241
OPTICAL BEAM SCANNER
Hideo Kitazawa, Nagano, Japan, assignor to Kabushiki Kaisha Sankyo Seiki Seisakusho, Nagano, Japan
Filed Jun. 28, 1994, Ser. No. 266,705
Claims priority, application Japan, Jun. 29, 1993, 5-04343 U
Int. Cl.⁶ G02B *26/08*
U.S. Cl. 359—200 **4 Claims**



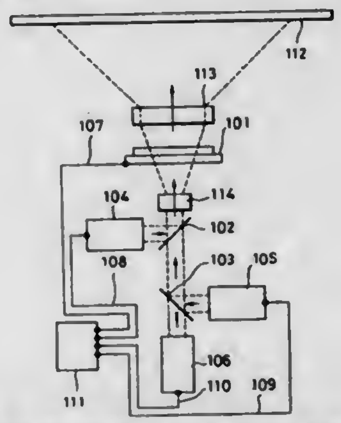
1. An optical beam scanner comprising:
a polygon mirror; and
a motor having a rotating shaft to which said polygon mirror is fixed, said motor including:
a yoke casing having a magnet fixed on an inner circumferential surface thereof and supporting an upper portion of the rotating shaft through a first bearing;
a rotor core secured to the rotating shaft and having a coil wound around salient poles;
a brush holder supporting a lower portion of the rotating shaft through a second bearing;
a commutator connected to the coil fixed to the rotating shaft; and
a brush attached to said brush holder so as to be in pressure contact with said commutator.

5,617,242
REPAIR OF DIGITAL MICROMIRROR DEVICE HAVING WHITE DEFECTS
Douglas J. Weaver, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Jan. 10, 1995, Ser. No. 370,746
Int. Cl.⁶ G09G *3/34;* **G02B** *26/08*
U.S. Cl. 359—221 **10 Claims**



1. A method of repairing a digital micromirror device (DMD) having one or more mirror elements in a "stuck on" position, comprising the steps of:
detecting the location of each mirror element that is "stuck on," thereby obtaining a map of defective mirror elements; and
irradiating each said defective mirror elements with a beam of laser radiation, such that the mirror of the defective mirror element is removed without substantially affecting underlying circuitry of that mirror element or neighboring mirror elements.

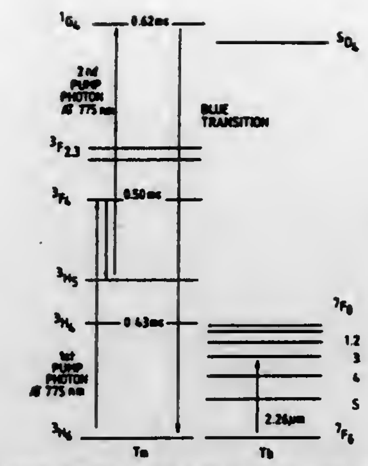
5,617,243
ELECTRO-OPTICAL SYSTEM AND METHOD OF DISPLAYING IMAGES
Shunpei Yamazaki, Tokyo, and Yasuhiko Takemura, Kanagawa, both of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa-ken, Japan
Division of Ser. No. 979,780, Nov. 20, 1992, Pat. No. 5,537,258. This application Jun. 5, 1995, Ser. No. 463,688
Claims priority, application Japan, Nov. 20, 1991, 3-331333; Nov. 29, 1991, 3-340335
Int. Cl.⁶ G02F *1/33*
U.S. Cl. 359—309 **7 Claims**



1. A method of displaying images by means of an electro-optical system comprising a laser capable of emitting pulsed laser beams and a two-dimensional optical switch for modulating said pulsed laser beams, wherein graded images are formed by periodically changing the pulse width of the laser beams before said laser beams enter into said two-dimensional optical switch.

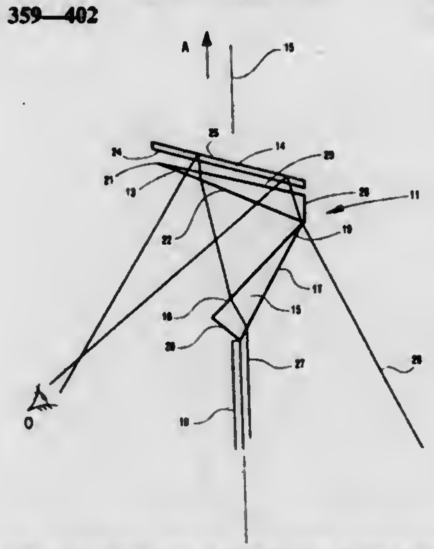
5,617,244
OPTICAL AMPLIFIER AND LASER
Robert M. Percival, Suffolk; Steven T. Davey, Ipswich, and Daryl Szebesta, Suffolk, all of United Kingdom, assignors to British Telecommunications public limited company, London, England
PCT No. PCT/GB94/00279, § 371 Date Sep. 8, 1995, § 102(e) Date Sep. 8, 1995, PCT Pub. No. WO94/22190, PCT Pub. Date Sep. 29, 1994
PCT Filed Feb. 11, 1994, Ser. No. 513,944
Claims priority, application United Kingdom, Mar. 18, 1993, 9305604
Int. Cl.⁶ H01S *3/17;3/14;* **C03C** *3/247*
U.S. Cl. 359—341 **15 Claims**

1. An optical amplifier comprising a fluorozirconate waveguide co-doped with thulium and terbium ions, and an optical pump means coupled to the waveguide for providing an optical pump signal capable of exciting the thulium ions into the $^1G_4$ energy level, whereby the amplifier provides optical gain at about 475 nm,



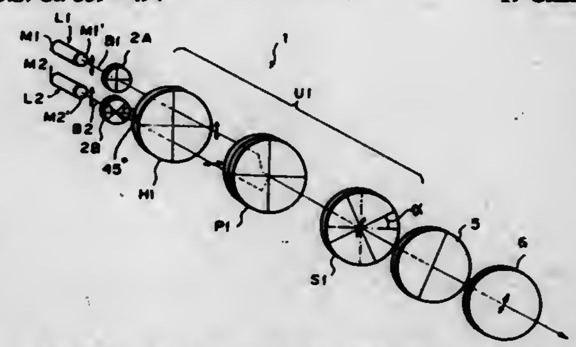
said optical pump means being adapted to provide an optical pump signal having a wavelength in the range of 770 nm to 790 nm.

5,617,245
REAR VIEW MIRROR UNIT
Peter J. Milner, 8 Juliet Close, Nuneaton, Warwickshire CV11 6NS, United Kingdom
PCT No. PCT/GB92/00659, § 371 Date Oct. 27, 1995, § 102(e) Date Oct. 27, 1995, PCT Pub. No. WO92/18353, PCT Pub. Date Oct. 29, 1992
PCT Filed Apr. 10, 1992, Ser. No. 129,194
Claims priority, application United Kingdom, Apr. 10, 1991, 9107551
Int. Cl.⁶ B60R *1/06*
U.S. Cl. 359—402 **19 Claims**



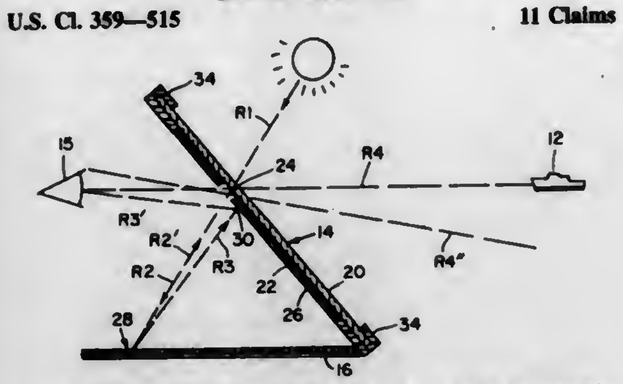
19. A rear view mirror unit in which light from a region behind an observer is directed to the observer's eye by an optical system, comprising:
means for reflecting;
means for refracting having a first refractor and a second refractor;
said first and second refractors being positioned and oriented such that incident light passes through and is refracted by said first and second refractors in turn before being reflected by said means for reflecting and then passes through and is refracted by said second refractor a second time on its way towards the observer;
said second refractor at least substantially compensating for chromatic dispersion of said light introduced upon transmission through said first refractor.

5,617,246
POLARIZED LIGHT COHERENT COMBINING LASER APPARATUS
Hiroyuki Hiiro, Kanagawa-ken, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa-ken, Japan
Filed Jan. 19, 1995, Ser. No. 374,851
Claims priority, application Japan, Feb. 17, 1994, 6-020383
Int. Cl.⁶ G02B *5/30*
U.S. Cl. 359—494 **19 Claims**



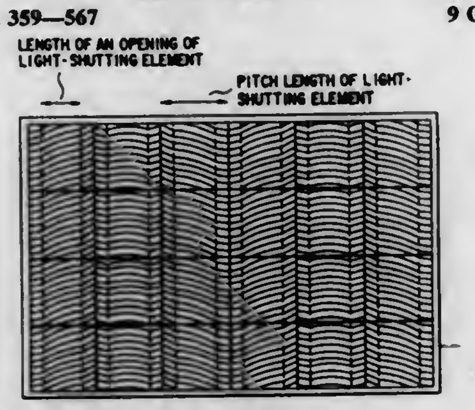
1. A polarized light coherent combining laser apparatus, comprising:
i) a plurality of laser beam sources, located on an approximately identical plane, which radiate a plurality of parallel laser beams having predetermined planes of polarization, said laser beam sources radiating the plurality of the laser beams such that two adjacent laser beams are linearly polarized, travel in a first direction, have a predetermined intensity ratio with respect to each other, and have orthogonal directions of polarization;
ii) at least one unit including,
a) a compensating phase difference plate, receiving two adjacent laser beams from said plurality of laser beam sources, which compensates for phases of said two adjacent laser beams,
b) a polarized light separating element, receiving said two adjacent laser beams from said compensating phase difference plate, which combines said two adjacent laser beams with each other into a single combined laser beam and radiates out said single combined laser beam, and
c) a phase difference plate, receiving said single combined laser beam from said polarized light separating element, said phase difference plate having a phase difference in accordance with said predetermined intensity ratio and principal axes inclined by a predetermined angle with respect to the directions of polarization of said two adjacent laser beams;
iii) a radiating reflecting mirror, receiving said single combined laser beam from said phase difference plate, which reflects said single combined laser beam in a predetermined proportion, such that some of said single combined laser beam is radiated out of the apparatus and some of said single laser beam is reflected in a second direction, opposite said first direction, back to said unit,
wherein said polarized light separating element separates said single laser beam travelling in said second direction into two linearly polarized separated laser beams, said two linearly polarized separated laser beams being parallel to each other and having orthogonal directions of polarization, and radiates out said two linearly polarized separated laser beams in said second direction; and
iv) reflecting mirrors, each of said reflecting mirrors being located in a corresponding laser beam source of said plurality of laser beam sources, each of said reflecting mirrors reflecting a corresponding one of said two linearly polarized separated laser beams travelling in said second direction back to said unit in said first direction.

5,617,247
LIGHT SIGNALING DEVICE
William P. Rowland, Southington, Conn., assignor to Reflexite Corporation, Avon, Conn.
Filed Apr. 19, 1996, Ser. No. 634,980
Int. Cl.[6] G02B *5/12*
U.S. Cl. 359—515 **11 Claims**



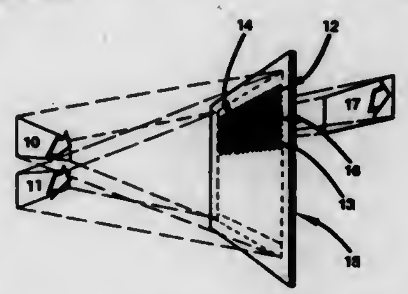
1. A signaling device for signaling a target with light comprising:
a. a mirror having a transparent dielectric substrate with a light reflective material thereon with a first opening in the material, such that some light impinging on the mirror is reflected by the substrate and some passes through the dielectric substrate at the opening;
b. a retroreflector disposed adjacent to the dielectric substrate which retroreflector retroreflects the light passing through the opening; and
c. a specular surface on the light reflective material around the opening, said specular surface reflecting to a user a visible spot produced on the retroreflector in a direction of misalignment in the event the retroreflected light is misaligned with the target, so that the user can readily align the retroreflected light with the target.

5,617,248
DIFFRACTION GRATING ARRAY AND DISPLAY HAVING A DIFFRACTION GRATING
Susumu Takahashi, Matsudo, and Toshiki Toda, Satte, both of Japan, assignors to Toppan Printing Co., Ltd., Tokyo, Japan
Filed Mar. 20, 1995, Ser. No. 406,521
Claims priority, application Japan, Apr. 18, 1994, 6-078870
Int. Cl.[6] G02B *5/18*
U.S. Cl. 359—567 **9 Claims**



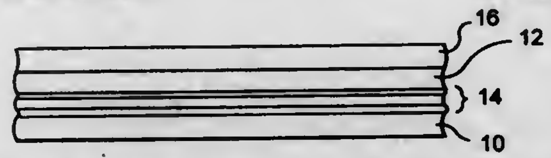
1. A diffraction grating array comprising:
a substrate;
a light-shutting means having at least one light-shutting element; and
a plurality of diffraction grating cells formed over a surface of the substrate, wherein each of said plurality of diffraction grating cells respectively comprises a diffraction grating element having curve portions arranged in a parallel shift relation, wherein
a length of the diffraction grating element in a direction perpendicular to said shift direction of the curve portions is substantially equal to a length of an opening of said at least one light-shutting element of said light-shutting means;
said diffraction grating element is repeated in a direction perpendicular to the shift direction of the curve portions to form said cell; and
a length of the cell in the direction perpendicular to the shift direction of the curve portions is substantially equal to a pitch length of said at least one light-shutting element in the light-shutting means; and
wherein the diffraction grating element is larger in size, but equal in pitch, to said at least one light-shutting element.

5,617,249
FREQUENCY-MULTIPLEXED LOGIC, AMPLIFICATION AND ENERGY BEAM CONTROL
John N. Hait, Missoula, Mont., assignor to Rocky Mountain Research Center, Missoula, Mont.
Continuation-in-part of Ser. No. 357,460, Dec. 16, 1994. This application May 30, 1995, Ser. No. 454,070
Int. Cl.[6] G06G *7/00;* **G06E** *1/04*
U.S. Cl. 359—577 **10 Claims**



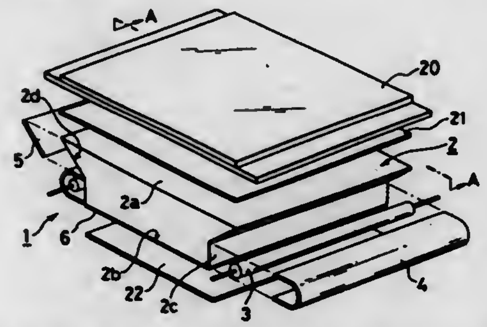
6. A frequency multiplexer for use with wave-type energy, comprising:
a first frequency-multiplexed input means including a first beam set having at least one beam of energy of at least one wavelength modulated with information, and at least one second beam set having at least one beam of energy of at least one other wavelength modulated with information;
a second frequency-multiplexed input means including a third beam set having at least one beam of energy of said at least one wavelength modulated with information, and at least one fourth beam set having at least one beam of energy of said at least one other wavelength modulated with information;
directing means for directing said first, second, third, and fourth beam sets so as to produce a first interference image with said first and third beam sets, and at least one other interference image with said second and fourth beam sets, and
image component separating means for separating energy from at least one location within said first interference image and from at least one location within said at least one other interference image to provide at least one output having energy at said at least one wavelength and said at least one other wavelength.

5,617,250
RADIATION PROJECTION ARRANGEMENT WITH INTEGRATED RADIATION INDICATOR
Erik Hacker, and Hubert Pohlack, both of Jena, Germany, assignors to Jenoptik GmbH, Jena, Germany
PCT No. PCT/EP93/01647, § 371 Date Feb. 15, 1994, § 102(e) Date Feb. 15, 1994, PCT Pub. No. WO94/01793, PCT Pub. Date Jan. 20, 1994
PCT Filed Jun. 28, 1993, Ser. No. 196,077
Claims priority, application Germany, Jul. 1, 1992, 42 21 523.4
Int. Cl.[6] G02B *1/10*
U.S. Cl. 359—582 **16 Claims**



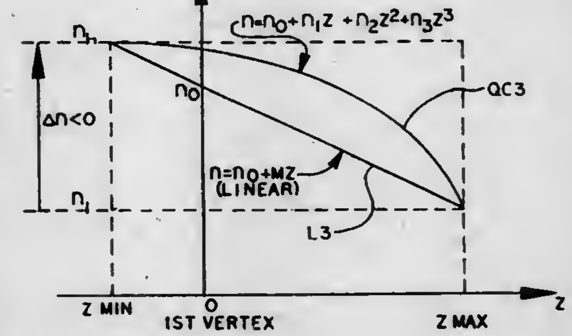
12. Arrangement for protection against electromagnetic radiation of at least one wavelength λ_0 independently of the incident angle, comprising:
a substrate which is transparent at least in the visible spectral range;
absorptive indicator means disposed on said substrate for absorbing electromagnetic radiation of wavelength λ_0 and for indicating absorption of incident radiation energy of wavelength λ_0 exceeding a threshold energy value $Q_{rad,\ min}$ by undergoing a visible transformation; and
backup means disposed on said substrate on a non-incident side of said absorptive indicator means for reflecting incident radiation after at least a partial transformation of said absorptive indicator means in response to incident radiation energy of wavelength λ_0 exceeding said threshold energy value $Q_{rad,\ min}$, said backup means including a plurality of interference layers having different refractive indices, said plurality of interference layers being nonabsorbent at least in the spectral range between 450 nm and 750 nm,
said absorptive indicator means including an absorbent resonator layer arranged in sequence with the interference layers to provide an optical thin-film resonance absorber system with at least one resonant wavelength $\lambda_r=\lambda_0$.

5,617,251
FLAT LIGHTING DEVICE
Kazushige Ohta, Hadano; Koichi Hanasaki, Yokohama, and Satoru Konishi, Hadano, all of Japan, assignors to Stanley Electric Co., Ltd., Tokyo, Japan
Filed Dec. 22, 1995, Ser. No. 577,387
Claims priority, application Japan, Dec. 26, 1994, 6-336571
Int. Cl.[6] G02B *5/02;5/00;* **F21V** *7/04*
U.S. Cl. 359—599 **2 Claims**



1. A flat lighting device comprising a light transmission member formed by transparent material having a high refractive index, said light transmission member having a luminous surface formed on a front side thereof so that the area of the luminous surface is approximately equal to that of a display for lighting, a reflection surface on the rear side of said luminous surface, and an incident surface, a light source and a reflecting mirror in the vicinity of the side perpendicular to said luminous surface, said flat lighting device being characterized in that the thickness of said light transmission member between said luminous and reflection surfaces is increased wider than that of said incident surface, said incident surface of which lower end is in contact with the reflection surface is provided closer to the center of the light transmission member so that the light source and reflecting mirror are inside said luminous surface, an inclined surface is formed by connecting the upper end of said incident surface and the end of the luminous surface, and said inclined surface is provided with a reflection function.

5,617,252
GRADIENT REFRACTIVE INDEX LENS ELEMENTS
Paul K. Manhart; Tilman W. Stuhlinger; Kenneth R. Castle, and Mitchell C. Ruda, all of Tucson, Ariz., assignors to Lightpath Technologies Inc., Albuquerque, N.M.
Continuation of Ser. No. 93,434, Jul. 16, 1993, abandoned. This application Aug. 10, 1995, Ser. No. 513,250
Int. Cl.[6] G02B *3/00*
U.S. Cl. 359—653 **10 Claims**



1. A lens element, comprising:
first and second surfaces formed on an optically transparent material having an axial refractive index gradient, said first and second surfaces arranged on a common optical axis;
said gradient refractive index having a highest value on said first surface and a lowest value on said second surface, and said gradient refractive index varying continuously throughout the lens element according to a predetermined non-linear function of distance measured in a direction parallel to said optical axis;
said gradient refractive index having an index-change defined by an equation

$$\Delta n=n1-nh$$

where nh is the highest value of said gradient refractive index and n1 is the lowest value of said gradient refractive index;
said first surface having a first radius of curvature and said second surface having a second radius of curvature, the lens element having a shape-factor defined as

$$X=(R2+R1)/(R2-R1)$$

where X is said shape-factor, R1 is said first radius of curvature, and R2 is said second radius of curvature;
said shape factor having any value between about 0.5 and 2.0; and
said index-change being between about −0.4 and −0.15, and said predetermined non-linear function selected such that third order spherical aberration of the lens element is substantially corrected.

5,617,253

ZOOM LENS

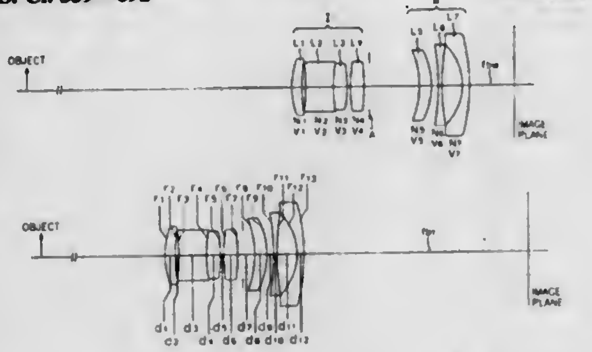
Geon-mo Kang, Kyeongsangnam-do, Rep. of Korea, assignor to Samsung Aerospace Industries, LTD., Kyeongsangnam-do, Rep. of Korea

Filed Nov. 10, 1994, Ser. No. 338,757

Claims priority, application Rep. of Korea, Nov. 11, 1993, 93-23912

Int. Cl.⁶ G02B *15/14*

U.S. Cl. 359—692 **5 Claims**



1. A zoom lens system comprising a first lens group having a positive refractive power and a second lens group having a negative refractive power, a distance between the first lens group and the second lens group being variable during zooming, wherein the first lens group includes a first lens having a positive refractive power and a convex surface toward the object side, a second lens having a negative refractive power and being bi-concave, a third lens having a positive refractive power, being bi-convex, and space from or abutting the second lens, and a fourth lens having a positive refractive power, being bi-convex, and space from the third lens, the second lens group includes a fifth lens of plastic material having a positive refractive power and a concave surface toward the object side, a sixth lens of plastic material having a negative refractive power, and a seventh lens having a negative refractive power, wherein

$$37<(f_I * f_{bT}/D_T * f_{bw})<48;$$

where

f_I: focal length of the first lens group

f_{bT}: back focus distance at a telephoto position

f_{bw}: back focus distance at a wide angle position

D_T: distance between the first lens group and the second lens group at a telephoto position,

wherein

$$N_T<1.65;$$

and

$$V_T>48$$

where

N_T: average of refractive ratio of the lens system as a whole

V_T: average of ABBE number of the lens system as a whole, and wherein

$$0.80<|f_{pII}/f_{NII}|<1.20$$

where

f_{pII}: focal length of plastic lenses having positive refractive power in the second lens group

f_{NII}: focal length of plastic lenses having negative refractive power in the second lens group.

5,617,254

COMPACT ZOOM LENS

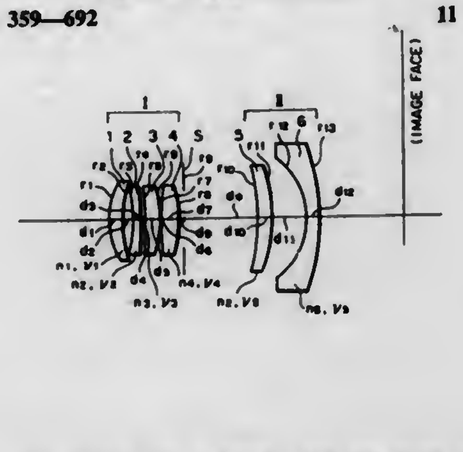
Kazuyasu Ohashi, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Jan. 2, 1996, Ser. No. 581,994

Claims priority, application Japan, Mar. 20, 1995, 7-061381

Int. Cl.⁶ G02B *15/14;3/02*

U.S. Cl. 359—692 **11 Claims**



1. A compact zoom lens in which a first lens group having a positive focal length is arranged on an object side and a second lens group having a negative focal length is arranged on an image side and a zooming operation is performed by changing a clearance between the first and second lens groups;

the first lens group comprising first, second, third and fourth lenses sequentially arranged from the object side such that the first lens is a positive meniscus lens having a convex face directed onto the object side;

the second lens is a negative meniscus lens having a convex face directed onto the image side;

the third lens is a positive meniscus lens having a convex face directed onto the image side; and

the fourth lens is a positive lens having an image side face of large curvature compared to an object side surface of the fourth lens;

the second lens group comprising fifth and sixth lenses sequentially arranged from the object side such that the fifth lens is a positive meniscus lens having a convex face directed onto the image side; and

the sixth lens is a negative meniscus lens having a convex face directed onto the image side;

the zoom lens having an aperture stop arranged just after the first lens group;

an object side face of the fourth lens and an object side face of the fifth lens having aspherical surfaces; and

the following conditions

$$0.60<f_I/f_W<0.75$$

$$-1.10<f_{II}/f_T<-0.90$$

$$EP/f_W<0.25$$

$$AP_W/f_T>-0.16$$

are satisfied when f_W is a focal length of an entire lens system at a short focal end;

f_T is a focal length of the entire lens system at a long focal end;

f_I is a focal length of the first lens group;

f_{II} is a focal length of the second lens group;

EP is a distance from a lens front end to an entrance pupil; and

AP_W is a distance from a lens rear end at the short focal end to an exit pupil.

5,617,255

CAMERA LENS SYSTEM

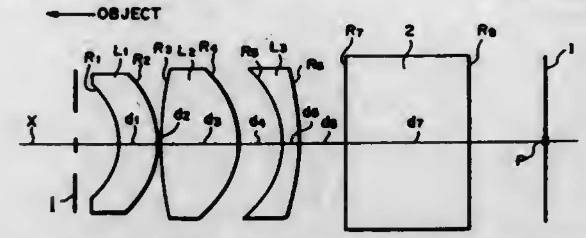
Hiroshi Yamada, Saitama-ken, Japan, assignor to Fuji Photo Optical Co., Ltd., Saitama-ken, Japan

Filed Dec. 15, 1994, Ser. No. 356,586

Claims priority, application Japan, Dec. 15, 1993, 5-314650

Int. Cl.⁶ G02B *9/12*

U.S. Cl. 359—784 **8 Claims**



1. A lens system consisting of first to third lens elements arranged in this order from the object side to an image plane, the first lens element being a meniscus lens having a refractive power and concave toward the object side, the second lens element being a lens having a positive refractive lower and the third lens element being a lens having a negative refractive lower, wherein a stop means for adjusting an aperture of the lens system is disposed on the object side and formula $\nu_3 \leq 40$ is satisfied wherein ν_3 represents the Abbe's number of the third lens element.

5,617,256

BIAXIAL ACTUATOR

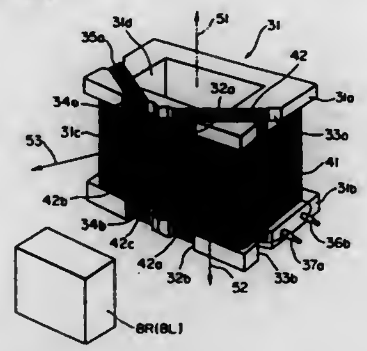
Koji Mitsumori, Chiba, and Hiroyasu Uchida, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 30,121, Mar. 15, 1993, abandoned. This application Feb. 15, 1995, Ser. No. 389,555

Claims priority, application Japan, Mar. 19, 1992, 4-093505

Int. Cl.⁶ G11B *7/095*

U.S. Cl. 359—814 **7 Claims**



1. A biaxial actuator comprising:

a first coil and a second coil wound around a bobbin and disposed opposite to a magnet,

wherein the bobbin has a hollow body with a rectilinear cross-section and has flanges formed at the ends of the body, each flange having coil retaining portions,

and the first coil is wound around the body to define a coil which has a rectilinear cross-section and which has an axis which is perpendicular to the rectilinear cross-section of the body, while the second coil is wound around the coil retaining portions, such that the second coil lies in a first plane and a second plane that both intersect and are non-orthogonal to a third plane in which the magnet lies.

5,617,257

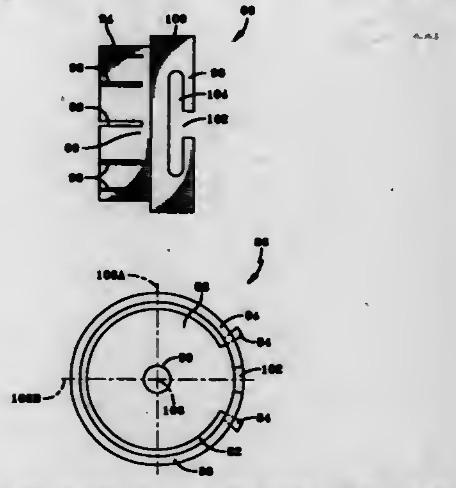
VARIABLE FOCUS ADAPTER

James B. Sheehy, Kintnersville; Kenneth W. Gish, Bensalem; John J. Sprenger, Southampton, and William H. Finkbeiner, Jr., Levittown, all of Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 11, 1995, Ser. No. 501,218

Int. Cl.⁶ G02B *7/02*

U.S. Cl. 359—818 **17 Claims**



17. An adapter for varying the focus and depth of field of an optical instrument having at least one objective lens having forward and aft ends with the forward end facing an object to be focused by said optical instrument, said adapter comprising:

(a) an adapter lens having a predetermined optical power and an optical axis;

(b) a plate having a centrally located aperture with a predetermined diameter and an optical axis; and

(c) a housing having provisions for holding said plate and said adapter lens at said forward end of said at least one objective lens so that said optical axis of said lens is coaxial and in correspondence with said optical axis of said aperture, said housing having means so that said adapter lens and said aperture are placed in close proximity with said objective lens of said optical instrument;

wherein said adapter lens is a +0.25 lens and said aperture has a diameter in the range from 5 mm to 7 mm so that focus of said optical instrument is alterable from an optical infinity exceeding 20 feet to be within a range of seven (7) feet with a depth of field spanning from 5 to 15 feet when said adapter lens and said aperture are placed in close proximity to said objective lens; and

wherein said housing has an optical axis and wherein said provisions include means for holding said plate and said lens so that said optical axis of said adapter lens is coaxial and in correspondence with the optical axis of each of said aperture and said housing.

5,617,258

NON-REUSABLE LENS CELL FOR A SURGICAL LASER HANDPIECE

Charles C. Negus, and Stephen J. Linhares, both of Taunton, Mass., assignors to PLC Medical Systems, Inc., Franklin, Mass.

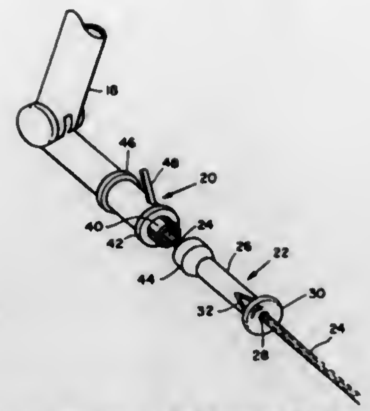
Filed Oct. 25, 1995, Ser. No. 548,270

Int. Cl.⁶ G02B *7/02*

U.S. Cl. 359—819 **8 Claims**

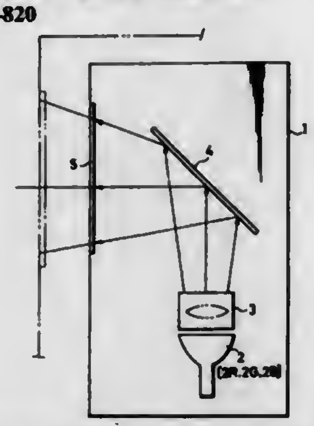
1. A non-reusable lens cell for a surgical laser handpiece having a contact surface with an aperture for exiting a laser beam, comprising:

a housing having a first connector at a first end for engaging a laser source and a second connector at a second end for engaging a handpiece; and



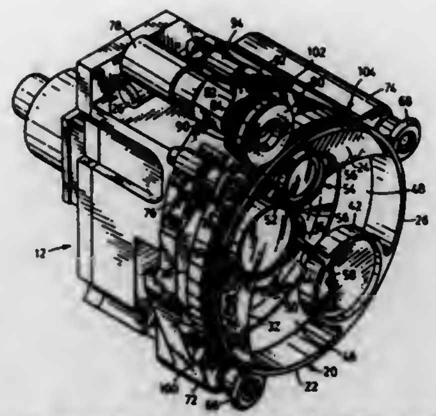
a hydroscopic lens device for focusing the laser beam through the handpiece proximate the aperture and being degradable in the presence of moisture during sterilization to deteriorate the lens device, disrupt the focus and thwart reuse of the lens cell.

5,617,259
PROJECTION TV SET APPARATUS
Tatsuo Inoue, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Mar. 3, 1995, Ser. No. 397,924
Claims priority, application Japan, Mar. 7, 1994, 6-036043
Int. Cl.⁶ G02B *7/02*
U.S. Cl. 359—820 **14 Claims**



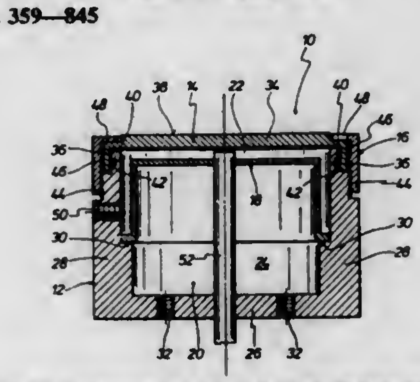
1. A lens automatic focus correction device comprising:
a lens having an optical axis;
an outer tube;
an inner tube arranged within said outer tube for supporting said lens; and
means for moving said inner tube relative to said outer tube along said optical axis direction in response to a change in temperature, wherein
said outer tube has an oblique guide slot formed in a wall portion thereof and said oblique guide slot converts a rotational displacement of said inner tube to a linear displacement thereof along said optical axis direction.

5,617,260
OPTICAL INSTRUMENT WITH ROTATABLE LENS TURRET
J. Peter McNiven, Don Mills, Canada, and Daniel Vukobratovich, Tucson, Ariz., assignors to Wescam Inc., Hamilton, Canada
Filed Apr. 3, 1995, Ser. No. 415,870
Int. Cl.⁶ G02B *7/02;21/00*
U.S. Cl. 359—821 **18 Claims**



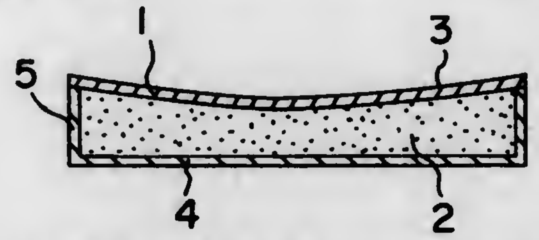
7. A lens turret carrying at least two different optical components and having an outer cylindrical wall, one of said optical components being a rearwardly facing mirror, said lens turret carrying said rearwardly facing mirror within and adjacent to said outer cylindrical wall and carrying the other optical component or components within and adjacent to said outer cylindrical wall substantially diametrically opposite said rearwardly facing mirror, said lens turret having an open area through which light passes within the outer cylindrical wall and adjacent to the rearwardly facing mirror.

5,617,261
MIRROR ARRANGEMENT WITH A DEFORMABLE MIRROR ELEMENT
Klaus Bar, Lauf, and Reinhard Schmiedl, Weissenburg, both of Germany, assignors to Diehl GmbH & Co., Nürnberg, Germany
Filed May 15, 1995, Ser. No. 441,221
Claims priority, application Germany, Feb. 11, 1993, 43 04 059.4
Int. Cl.⁶ G02B *5/08*
U.S. Cl. 359—845 **7 Claims**



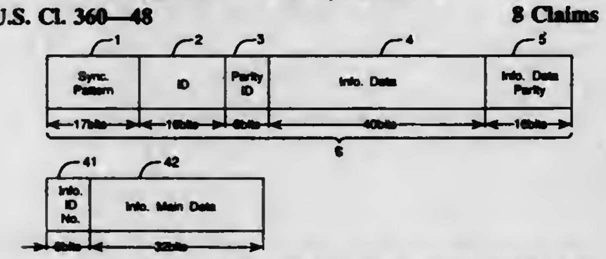
1. A mirror arrangement, including a deformable mirror element having a base plate; a housing; fastening means for attaching the mirror element to said housing; a cooling installation for conducting-off excess heat energy from the mirror arrangement, said cooling installation comprising a cooling chamber located within said housing, said cooling chamber being streamed through by a cooling medium; separator element consisting of a good heat-conductive material being mounted within said housing spaced from said base plate so as to form a second chamber in said housing separated from said cooling chamber, said second chamber being a heat-conductive material filled outer chamber which is located directly behind said base plate of said mirror element, said separator element possessing a planar surface region in said housing extending generally parallel relative to the base plate of said mirror element and dividing said housing into said outer chamber and said cooling chamber such that said outer chamber is of a smaller volume than said cooling chamber, said housing being cup-shaped and having a bottom and a peripheral sidewall extending from said bottom, said mirror element closing off the cup-shaped housing on a side distant from the bottom, said separator element being supported in said housing on a supporting structure formed in the sidewall, and the sidewall including an internal peripheral shoulder forming the supporting structure for the separator element.

5,617,262
BASE BODY OF REFLECTING MIRROR AND METHOD FOR PREPARING THE SAME
Yoshiaki Ise; Hiroyuki Miyazawa, both of Takefu; Hiroyuki Kimura, Fukui; Shinichi Okoshi, Takefu; Tatsumasa Nakamura, Omiya, and Toshiyuki Kato, Kooriyama, all of Japan, assignors to Shin-Etsu Quartz Co., Ltd., Tokyo, Japan
Division of Ser. No. 775,095, Oct. 11, 1991. This application Dec. 5, 1995, Ser. No. 567,165
Claims priority, application Japan, Mar. 30, 1991, 3-93212; May 30, 1991, 3-155593
Int. Cl.⁶ G02B *5/08;* **B32B** *3/26*
U.S. Cl. 359—846 **12 Claims**



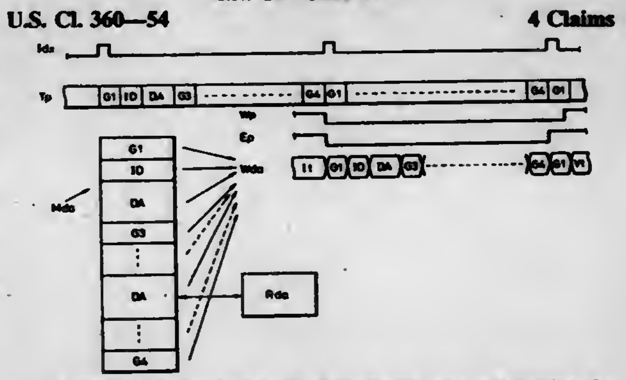
1. A base body of a reflecting mirror which is an integral body comprising:
(A) a front plate having an optically flat or curved surface made from transparent fused quartz glass or high-silica glass; and
(B) a porous foamed body of fused quartz glass or high-silica glass bonded to the surface of the front plate opposite to the optically flat or curved surface, wherein the porous foamed body has a bulk density in the range from 0.1 to 1.1 g/cm^3, and at least 30% by volume of the porosity of the porous foamed body consists of closed cells,
wherein the porous foamed body is bonded to the front plate with a layer of a melt of a finely divided silica powder.

5,617,263
METHOD OF AND APPARATUS FOR RECORDING DATA SUITABLE FOR A DIGITAL RECORDING IN A MULTIPLEXED FASHION
Tetsuya Mizushima, Yawata; Tatsuro Juri, Osaka; Chiyoko Matsumi, and Kazuo Kawakami, both of Suita, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Continuation of Ser. No. 239,046, May 6, 1994, abandoned. This application Oct. 26, 1995, Ser. No. 548,602
Claims priority, application Japan, May 10, 1993, 5-108033; Mar. 17, 1994, 6-046229
Int. Cl.⁶ G11B *5/09;* **H04N** *5/76*
U.S. Cl. 360—48 **8 Claims**



1. A digital data recording method for recording digital input data on juxtaposed tracks of a recording medium, said method comprising:
an information data formulating step of formulating information data comprising an identification number indicative of the contents of the information data and a main information data, which is a predetermined quantity converted from the input data, and an information data parity for use in detecting or correcting an error in the information data;
an ID formulating step of formulating an ID composed of information including position information indicative of a position of the information data relative to the recording medium and an ID parity for use in detecting or correcting an error in the ID;
a sync pattern formulating step of formulating a sync pattern;
a sync block formulating step of formulating a sync block comprised of the sync pattern, the ID, the ID parity, the information data and the information data parity;
a sync block positioning step of formulating a sub-code recording area composed of a plurality of sync blocks connected together; and
a track formulating step for formulating the tracks each having at least the sub-code recording area and an information recording area;
wherein said sync block positioning step forms a plurality of minimum editing units with which recording or reproduction is carried out on or from the recording medium, each of said minimum editing units including a predetermined number of consecutive tracks not smaller than three tracks, said sub-code recording area of each of said consecutive tracks of said minimum editing unit including a plurality of sync blocks formed sequentially therein and having different contents, respectively,
said plurality of sync blocks being distributed over the tracks of the minimum editing unit with the sync blocks in one track offset in position relative to the sync blocks in the neighboring track with respect to the direction of travel of the recording medium.

5,617,264
METHOD AND APPARATUS FOR REWRITING DATA TO A FLOPPY DISK BY STORING REPRODUCED DATA IN A MEMORY
Keiichi Taguchi; Hideho Maeda, and Masaharu Yanaga, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan
Continuation of Ser. No. 243,912, May 17, 1994, abandoned. This application Nov. 13, 1995, Ser. No. 558,050
Claims priority, application Japan, May 19, 1993, 5-117318
Int. Cl.⁶ G11B *5/09*
U.S. Cl. 360—54 **4 Claims**



1. A method of recording and reproducing data comprising the steps of:
reproducing data including gap data, an identification number and a synchronization pattern recorded in a plurality of tracks on a floppy disk by a pre-erase magnetic recording and reproducing head;
synchronizing a floppy disk controller on the basis of the reproduced identification number and the synchronization pattern;
storing reproduced data of at least one of the plurality of tracks in a memory, the stored reproduced data including the gap data and the identification number;
rewriting at least a portion of the reproduced data;

reading out from the memory the stored data including the gap data, the identification number and rewritten data according to an index signal representing a starting portion of a track;
supplying the data read out from the memory including the gap data and the identification number, to the pre-erase magnetic recording and reproducing head; and
controlling a recording operation of the pre-erase magnetic recording and reproducing head using the floppy disk controller so that data of every track read out from the memory, including the gap data and the identification number, is recorded on the floppy disk, the recorded data including gap data at a beginning and an end thereof.

5,617,265

MAGNETIC TAPE RECORDING DEVICE COMPRISING A VARIABLE DATA REGION LENGTH SYSTEM

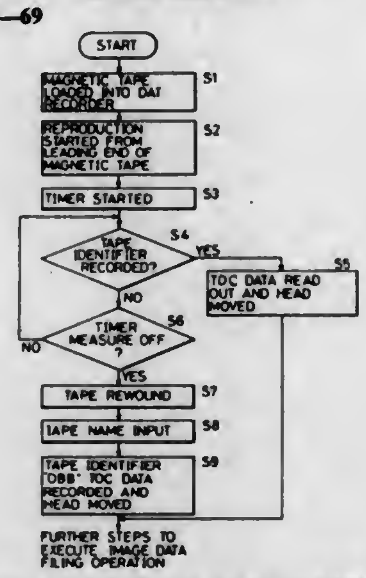
Katsushi Horihata, Kobe, Japan, assignor to Mita Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 945,085, Sep. 15, 1992, abandoned. This application Feb. 24, 1994, Ser. No. 201,140

Claims priority, application Japan, Sep. 20, 1991, 3-241226

Int. Cl.⁶ G11B *15/087*

U.S. Cl. 360—69 **2 Claims**



1. A magnetic tape recording device for recording a plurality of data on a magnetic tape and a first leading portion, a second leading portion following the first leading portion, and a main portion following the second leading portion, the device comprising:
tape identifier recording means for recording a tape identifier on the first leading portion of the magnetic tape, the tape identifier being adapted for identifying whether the magnetic tape is used or new;
administrative data recording means for recording administrative data on the second leading portion of the magnetic tape, the administrative data being adapted for administrating the recording position of data on the magnetic tape;
data recording means for recording subject data on the main portion;
determinator means for determining based on the tape identifier whether the magnetic tape is used or new;
administrative data reader means for reading administrative data recorded on the second leading portion;
section identifier recording means for recording a section identifier representative of a head of a subject data region for receiving subject data to be recorded thereon and to be used for data administration; and
control means, responsive to the determinator means for controlling the data recording means, the tape identifier recording means, the administrative data recording means, the administrative data reader means, and the section identifier recording means, the control means being for:
recording the tape identifier on the first leading portion to indicate that the magnetic is used, the administrative data on the second leading portion, the subject data on the main portion of the magnetic tape, and a section identifier for a next subject data region immediately following a defined data on the main portion when the determinator determines that the magnetic tape is new; and
reading the administrative data from the second leading portion when the determinator determines that the magnetic tape is used.

5,617,266

MOTOR STABILIZING CONTROL APPARATUS FOR USE WITH MOTORS, INCLUDING FOR USE WITH A DRUM MOTOR IN A MAGNETIC TAPE SYSTEM

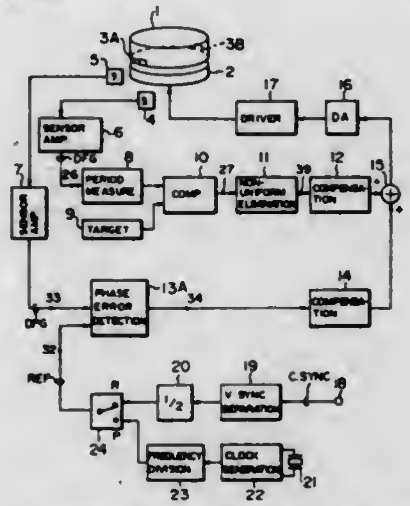
Kouji Kaniwa, Yokohama; Kouji Minabe, Katsuta; Hiroya Abe, Katsuta; Yukinobu Tada, Katsuta, and Yoshio Narita, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 30, 1993, Ser. No. 129,371

Claims priority, application Japan, Nov. 11, 1992, 4-301306

Int. Cl.⁶ G11B *21/04*

U.S. Cl. 360—70 **13 Claims**



13. A magnetic recording and reproducing apparatus comprising:
a magnetic head;
a drum, on which said magnetic head is mounted:
a drum motor, which drives said drum;
a drum motor control means for controlling said drum motor;
a magnetic tape;
a capstan and a capstan motor for forwarding said magnetic tape;
a capstan motor control means for controlling said capstan motor; and
a processing means for recording and reproducing at least either one of image signals and audio signals;
wherein said drum motor control means includes:
a frequency signal generating means for generating a frequency signal proportional to said rotation frequency in response to rotation of the motor;
a period measuring means for measuring a period of said frequency signal;
a signal comparing means comparing the period of said frequency signal with a predetermined control target period, for generating a first speed error signal;
a filter means receiving the first speed error signal, for extracting and eliminating rotation frequency components of the motor and harmonic components both contained in said first speed error signal to output a second speed error signal;

a phase comparing means comparing said frequency signal with a predetermined reference phase signal, for generating a first phase error signal;
an integrating means for accumulating successively both the rotation frequency components of the motor and harmonic components thereof as extracted by said filter means;
a subtracting means for subtracting the rotation frequency components of the motor and the harmonic components thereof both accumulated by said integrating means from said first phase error signal to output a second phase error signal;
an adding means for adding said second speed error signal outputted by said filter means to said second phase error signal outputted by said subtracting means to output an added error signal; and
a signal feedback means for feeding back negatively said added error signal from said adding means to the motor.

5,617,267

SERVO DATA WRITING APPARATUS FOR SUPPORTING THE FREE END OF A ROTATING SHAFT IN A MAGNETIC DISK DEVICE AND METHOD OF WRITING SERVO DATA

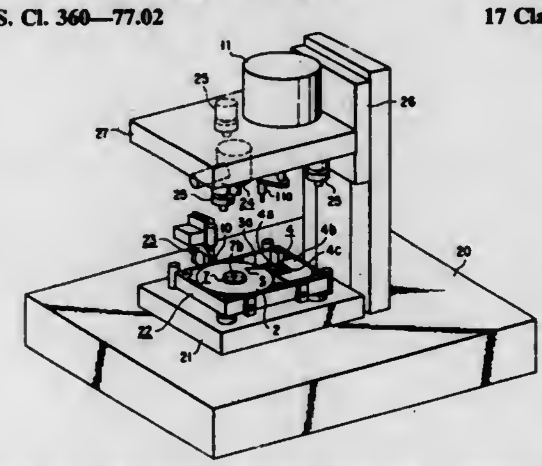
Seiji Kawagoe; Kazuhiko Iwase, and Haruo Shibata, all of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

Filed Dec. 22, 1994, Ser. No. 361,635

Claims priority, application Japan, Dec. 15, 1994, 6-311709

Int. Cl.⁶ G11B *5/596*

U.S. Cl. 360—77.02 **17 Claims**



1. A servo data writing apparatus comprising: a magnetic disk device including a rotation mechanism for rotating a recording medium, said rotation mechanism including a rotation shaft having a free end, a head mechanism for writing servo data as positioning data on said recording medium, and a carriage mechanism for moving said head mechanism;
a base for fixing said magnetic disk device;
head positioning means for positioning said head mechanism; and
first supporting means for supporting the free end of the rotation shaft of said recording medium so as to suppress a vibration caused by a rotation of said rotation mechanism;
wherein said first supporting means includes a piston mechanism for supporting the free end of the rotation shaft of said recording medium, and a lock mechanism for holding a movement of said piston mechanism.

5,617,268

TRACKING CONTROL APPARATUS THAT SWITCHES POLARITY OF TRACKING ERROR SIGNAL ACCORDING TO DETECTED KIND OF PILOT SIGNAL

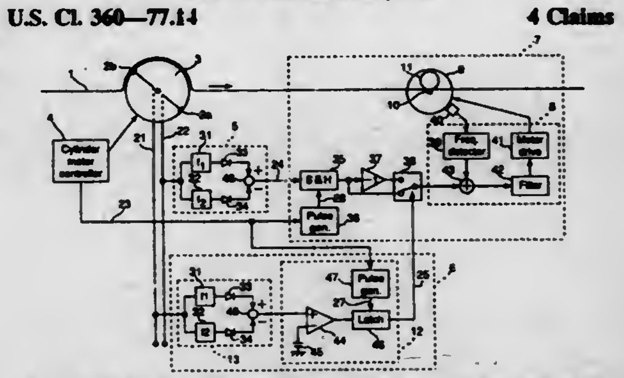
Yoshio Sakakibara, Neyagawa, and Makoto Gotou, Nishinomiya, both of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Filed Sep. 16, 1994, Ser. No. 307,064

Claims priority, application Japan, Sep. 17, 1993, 5-231190; Oct. 13, 1993, 5-255610

Int. Cl.⁶ G11B *5/584;5/58*

U.S. Cl. 360—77.14 **4 Claims**



1. An information playback apparatus that plays back a signal by causing heads that are mounted on a rotary cylinder to trace a tape medium on which at least two different kinds of tracking pilot signals are selectively and periodically recorded with a period of at least 4 tracks, said apparatus comprising:
a first head,
a second head that traces a position shifted from the trace position of said first head by approximately one track,
a pilot detection and identification means that detects respective amplitudes of said tracking pilot signals contained in a playback signal output from said first head and identifies the kind of the tracking pilot signal dominantly contained in the playback signal based on the thus detected respective amplitudes,
a tracking error detecting means that detects respective amplitudes of said tracking pilot signals contained in a playback signal output from said second head and generates a tracking error signal based on the thus detected respective amplitudes, and
a tracking means that switches a polarity of said tracking error signal when a predetermined change has occurred in the kind of the tracking pilot signal identified by said pilot detection and identification means and performs tracking control based on said tracking error signal having the thus switched polarity.

5,617,269

SYSTEM FOR RECORDING TRACK-CENTERING SERVO SIGNALS ON MULTI-TRACK MAGNETIC MEDIUM

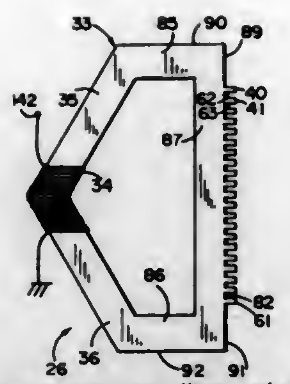
Robert J. M. Gordenker, Ann Arbor; Lawrence J. Tucker, Whitemore Lake, and Michael E. Murphy, Ann Arbor, all of Mich., assignors to Conner Peripherals, Inc., San Jose, Calif.

Continuation of Ser. No. 813,198, Dec. 23, 1991, abandoned. This application Feb. 14, 1994, Ser. No. 195,580

Int. Cl.⁶ G11B *5/584*

U.S. Cl. 360—77.12 **29 Claims**

1. A system for recording a plurality of track-centering servo signals on a multi-track magnetic medium, wherein the medium moves in a first direction during said recording of servo signals and is prone to wander in a substantially transverse, second direction during said recording of servo signals, said system comprising:
a movable first transducer, operatively engageable with the magnetic medium, said first transducer including a corresponding first magnetic core having a first plurality of write-core tips at the ends of fingers projecting from the first magnetic core, the first plurality of write-core tips being aligned one to the next along the second direction and being



spaced apart each from next-adjacent other tips by a corresponding first plurality of magnetic gaps; and

transducer moving means for moving the first transducer along said second direction;

wherein the first transducer simultaneously generates a first plurality of magnetic transitions across the first plurality of magnetic gaps and thereby simultaneously records a first plurality of track-centering servo signals on said magnetic medium when the first transducer is energized and is operatively engaged with the magnetic medium; and

wherein after their recordation, said first plurality of track-centering servo signals are usable for centering a magnetic head relative to a desired track of said multi-track magnetic medium.

5,617,270

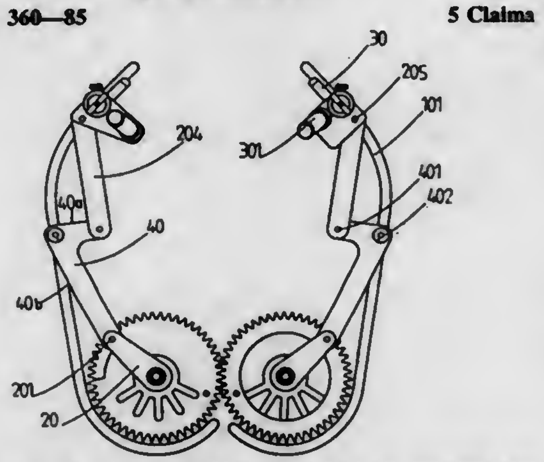
TAPE WINDING LINKAGE OF MAGNETIC RECORDING AND REPRODUCING APPARATUS

Jaw-Horng Tzeng, Kaohsiung; Ming-Jer Chiu, Hsinchu; Yii-Wei Hwang, and Wei-Chi Chang, both of Chiai, all of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu Hsien, Taiwan

Filed Feb. 22, 1995, Ser. No. 391,849

Int. Cl.⁶ G11B *5/027*

U.S. Cl. 360—85 **5 Claims**



1. A kind of tape winding linkage of magnetic recording and reproducing apparatus comprising:

(a) a deck, a gear shaft mounted thereon, a tape loading gear embedded in said gear shaft, and a guiding slot formed on said deck;

(b) a first link having first and second joints, said first link being connected to said gear shaft at said first joint thereof;

(c) a second link having first, second, and third joints, wherein said second link is divided into a first portion and a second portion, and said first and second portions intersect an angle at said second joint of said second link, further wherein said first portion of said second link is connected to said first link at said first joint of said second link, and said second link further comprises a guiding pin located at an under surface of said second joint to be received by and slide along said guiding slot of said deck;

(d) a third link having first and second joints, and said second portion of said second link being connected to said third link at said third joint of said second link and said first joint of said third link;

(e) an inclined pole base connected to said third link at said second joint of said third link; and

(f) an inclined pole base guiding pin provided at an under surface of said inclined pole base to be received by and slide along said guiding slot of said deck.

5,617,271

CASSETTE LOADING APPARATUS

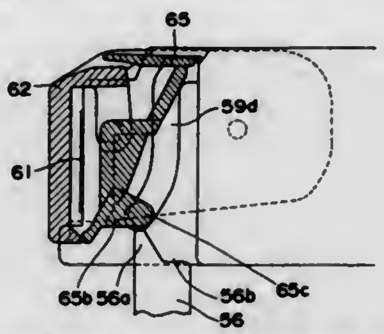
Akihiro Nishimura, Higashiosaka, and Masahiro Yao, Moriguchi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

Division of Ser. No. 634,547, Dec. 27, 1990, Pat. No. 5,390,057. This application Nov. 14, 1994, Ser. No. 339,670

Claims priority, application Japan, Dec. 27, 1989, 1-342047; Jul. 5, 1990, 2-177740; Oct. 5, 1990, 2-269130

Int. Cl.⁶ G11B *15/60*

U.S. Cl. 360—94 **17 Claims**



1. A cassette loading apparatus by which either of a small tape cassette and a large tape cassette is loadable between a cassette loading position and a cassette playing position in a tape player,

each of said small tape cassette and said large tape cassette including a pair of spaced apart reels, a cassette body accommodating the pair of reels, a front lid rotatably mounted to said cassette body for movement between an open position and a closed position, a rear lid rotatably interlocked with said front lid, and a cassette guide groove formed in a bottom face of said cassette body, wherein said rear lid has a protruding portion protruding rearwardly and laterally of the rear lid and engaged with said cassette body for being slidably guided by said cassette body for movement between said open and closed positions thereof,

for each of said small tape cassette and said large tape cassette, said front lid has a bottom end positioned above the level of the bottom face of said cassette body, and a bottom-most edge of said protruding portion of said rear lid is at a level above the bottom end of said front lid when said front and rear lids are in the lid closed condition,

the reels of said small tape cassette being spaced apart from one another by a first distance, and the reels of said large tape cassette being spaced apart from one another by a second distance which is larger than said first distance,

said cassette loading apparatus comprising:

a cassette holding means for holding either of the small and the large tape cassette, and said cassette holding means having a cassette guide protruding part for engaging in said cassette guide groove in either of the small and the large tape cassette for guiding the respective tape cassette onto said cassette holding means;

a moving means connected to said cassette holding means for moving said cassette holding means between the cassette loading position and the cassette playing position;

a lid opening member on said apparatus positioned for being abutted by only said rear lid of the respective tape cassette for raising the rear lid of the respective tape cassette toward an open position and, due to the front and rear lids of the respective tape cassette being rotatably interlocked with each other, thereby raising the front lid toward an open position, when said cassette holding means is moved by said moving means from the cassette loading position to the cassette playing position;

wherein no front lid opening member is provided; and

wherein an urging means is connected to said lids for urging said front and rear lids in a closing direction, said lid opening member being a rigid material having sufficient strength to move said lids against a force of said urging means.

5,617,272

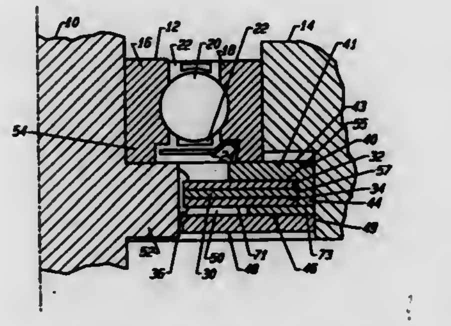
ADHESIVELESS SEAL ASSEMBLY INCORPORATING MAGNETIC SEAL FOR USE WITH DISC DRIVE

Donald J. MacLeod, Santa Cruz; Peter G. Robinson, Capitola, and Long V. Nguyen, San Jose, all of Calif., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Continuation of Ser. No. 236,521, May 2, 1994, abandoned. This application Oct. 23, 1995, Ser. No. 553,960

Int. Cl.⁶ G11B *17/02*

U.S. Cl. 360—99.08 **8 Claims**



1. A magnetic seal comprising a generally L-shaped seal holder having horizontal and vertical leg portions, said magnetic seal comprising upper and lower plates and a permanent magnet sandwiched therebetween, said plates and said permanent magnet extending longitudinally along one horizontal surface of said horizontal leg of said holder with ends abutting said vertical leg portion of said holder, said magnetic seal and said holder being adapted to fill a gap between first and second parallel relatively rotating vertical surfaces, with said vertical leg of said holder lying parallel to and abutting said first one of said vertical surfaces, and the other ends of the magnetic seal sandwich extending near to and separated by a narrow gap from the second of said vertical surfaces, said narrow gap between said other ends of said magnetic seal and said second vertical surface being filled by a magnetic fluid held in place by said magnet, a gasket located below said lower plate and said holder having an edge abutting said one vertical surface to seal any gap between said vertical leg portion of said holder and said vertical surface and a shield pressed against said gasket to compress said gasket against one of said magnetic seal plates and said holder to close any gap between said vertical leg portion said magnetic seal and said vertical wall portion against leakage and held in place against said gasket by a press fit within a bore defined by said first vertical surface.

5,617,273

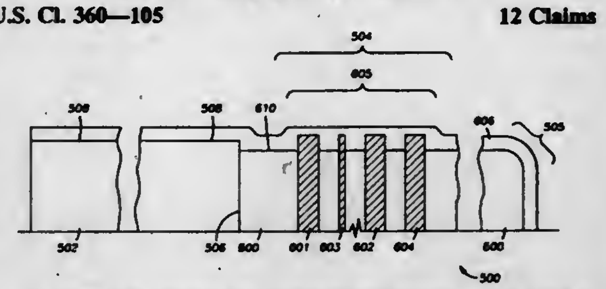
THIN FILM SLIDER WITH PROTRUDING R/W ELEMENT FORMED BY CHEMICAL-MECHANICAL POLISHING

Jeffrey W. Carr, Morgan Hill, and Jeffrey P. Gunder, San Jose, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 7, 1995, Ser. No. 481,574

Int. Cl.⁶ G11B *5/127;5/33;5/60;17/32*

U.S. Cl. 360—105 **12 Claims**



1. A slider for magnetically reading and writing digital data to and from a magnetic recording medium, said slider comprising:

a substrate including a bearing surface and an adjoining deposit end;

an insulator layered on top of the deposit end;

a read/write device, comprising:

a magnetic shield layer embedded in the insulator;

a magnetoresistive stripe layer embedded in the insulator; and

a magnetic pole tip layer embedded in the insulator;

wherein the magnetic shield layer and the magnetoresistive stripe layer both protrude from the bearing surface; and

a protective overlayer deposited over the substrate, insulator and read/write device, said overlayer being reduced in thickness adjacent each protruding layer of the read/write device.

5,617,274

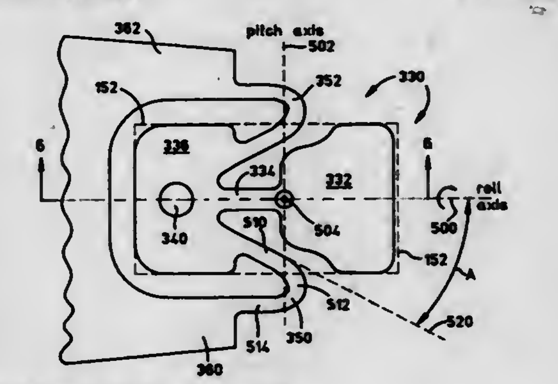
LOW PROFILE INTEGRAL FLEXURE FOR CLOSELY PACKED DISKS IN A DISK DRIVE ASSEMBLY

Oscar J. Ruiz, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 12, 1996, Ser. No. 585,983

Int. Cl.⁶ G11B *5/60*

U.S. Cl. 360—104 **22 Claims**



21. A disk drive unit comprising:

a master controller unit;

a spindle drive controller coupled to the master controller unit;

a plurality of stacked magnetic disks electrically coupled to the spindle drive controller;

a transducer head electrically coupled to the master controller unit;

an actuator drive controller coupled to the master controller unit;

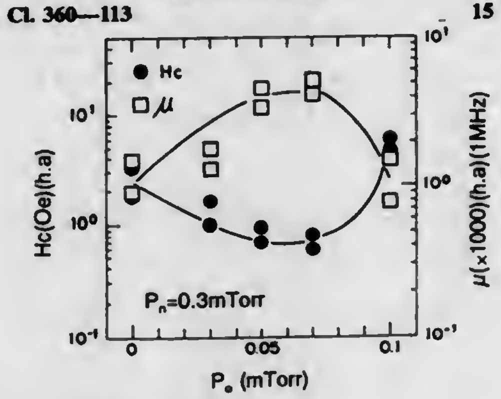
an actuator shaft coupled to the actuator drive controller; and

an actuator assembly coupled to the actuator shaft, comprising:

a comb unit having a plurality of actuator arms and a hub assembly for coupling to the actuator shaft; and

a plurality of head suspension assemblies each coupled to one of said plurality of actuator arms, each head suspension assembly comprising
a transducer head, and
a load beam having a first end coupled to the transducer head and a second end coupled to an actuator arm, said load beam having an integral flexure for coupling to a transducer head and a main body for coupling to one of said actuator arms, comprising
a pair of bending bars including a first bending bar and a second bending bar connected to said main body,
a floating pad connected to said pair of bending bars, said floating pad having a dimple extending downwardly to contact said transducer head,
a torsion bar connected to the floating pad, and
a bonding pad connected to the torsion bar, said bonding pad having a lower surface coupled to said transducer head.

5,617,275
THIN FILM HEAD HAVING A CORE COMPRISING FE-N-O IN A SPECIFIC ATOMIC COMPOSITION RATIO
Takashi Ogura, Daito, and Minoru Kume, Kadoma, both of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan
Filed Apr. 28, 1995, Ser. No. 430,393
Claims priority, application Japan, May 2, 1994, 6-093492
Int. Cl.[6] G11B *5/31*
U.S. Cl. 360—113 **15 Claims**



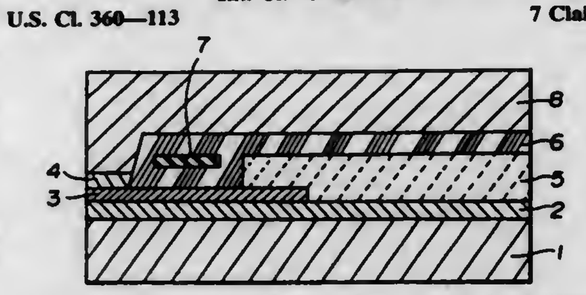
1. A thin film head comprising:
an MR element for reproducing signals, and
an inductive magnetic head element for recording signals having a coil part, and upper and lower cores arranged on upper and lower portions of said coil part respectively, wherein
at least one of said upper and lower cores comprises a soft magnetic alloy film having a composition expressed by a formula of $Fe_XN_YO_Z$ wherein each of X, Y and Z represents an atomic composition ratio, and having phases of Fe_2O_3, Fe_4N, Fe_3N and α-Fe, and wherein X, Y and Z in said composition formula are limited by the following relations:

$$0.005 \leqq Y \leqq 0.12$$

$$0.005 \leqq Z \leqq 0.12$$

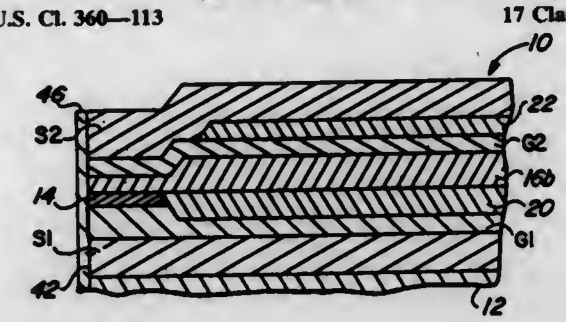
$$X+Y+Z=1.$$

5,617,276
MAGNETO-RESISTANCE EFFECT THIN-FILM MAGNETIC HEAD HAVING A LAMINATED FLUX GUIDE OF PERMALLOY AND TITANIUM FILMS
Akio Takada, Miyagi, and Kazutoshi Asada, Chiba, both of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Jun. 7, 1995, Ser. No. 483,793
Claims priority, application Japan, Jun. 30, 1994, 6-149891
Int. Cl.[6] G11B *5/39*
U.S. Cl. 360—113 **7 Claims**



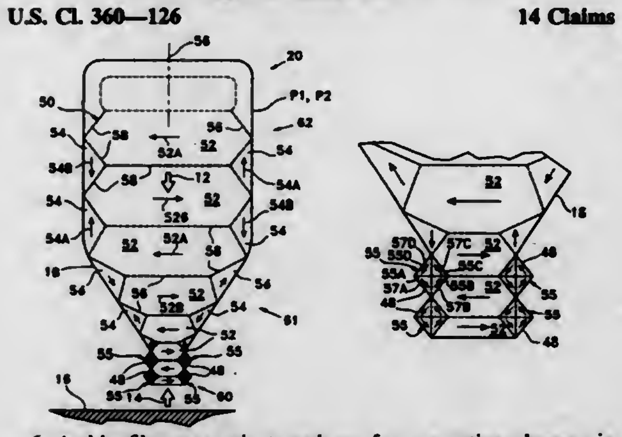
7. A magneto-resistance effect thin-film magnetic head comprising:
a magneto-resistance effect device interposed between a pair of magnetic shield cores,
a bias conductor operatively disposed in overlapping relationship with said magneto-resistance effect device to allow a magnetic bias to be imparted thereto; and
a flux guide interposed between an upper insulation layer and a lower nonmagnetic gap forming layer for efficiently guiding a signal magnetic flux from a magnetic recording medium to a magneto-resistance effect film,
wherein:
said flux guide has a laminated film structure composed of permalloy and Ti films alternated with each other, the number of the permalloy films being two, three, or more,
said flux guide, said upper insulation layer and lower gap forming layer are disposed between said shield cores at a rear end of said head,
said magneto-resistance effect device is interposed between said lower nonmagnetic gap forming layer and an upper nonmagnetic gap forming layer, which in turn are interposed between said shield cores at a forward end of said head,
said flux guide has a layer of Ta underlying the laminated film structure, each permalloy film having a film thickness T1 such that 0 nm<T1<50 nm and each Ti film has a film thickness T2 such that 0 nm<T2<6 nm, and
said flux guide has a sole magnetic domain.

5,617,277
MAGNETORESISTIVE READ HEAD WITH BACK FILLED GAP INSULATION LAYERS
Mao-Min Chen, and Mohamad T. Krounbi, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 369,559, Jan. 4, 1995, abandoned, which is a continuation of Ser. No. 65,098, May 18, 1993, abandoned. This application Jan. 22, 1996, Ser. No. 589,813
Int. Cl.[6] G11B *5/39*
U.S. Cl. 360—113 **17 Claims**



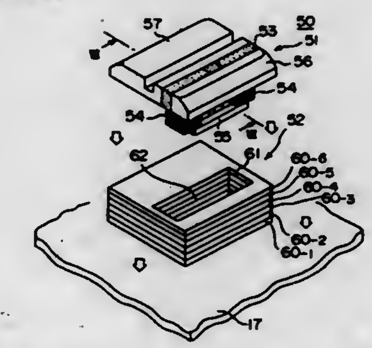
1. A magnetoresistive read transducer having an air bearing surface, comprising:
a magnetic shield layer having an edge exposed at said air bearing surface and extending from said air bearing surface;
a gap layer of insulating material formed on and overlaying said magnetic shield layer;
a magnetoresistive element formed on said gap layer having a first edge exposed at said air bearing surface and a second edge spaced from said air bearing surface, said magnetoresistive element separated from said magnetic shield layer by said gap layer, a portion of said gap layer being removed during formation of the magnetoresistive element;
a back-fill layer of insulating material extending from said magnetoresistive element second edge away from said air bearing surface and overlaying said gap layer, said back-fill layer having a thickness at least as great as the thickness of said portion of said gap layer; and
a pair of conductive leads electrically contacting said magnetoresistive element in spaced relationship extending away from said air bearing surface and overlaying said magnetoresistive element and said back-fill layer, said back-fill layer and said gap layer insulating said conductive leads from said magnetic shield layer.

5,617,278
MAGNETIC HEAD STRUCTURE WITH REDUCTION OF MAGNETIC DOMAIN INSTABILITY
Shih-Cheng Cheng, Milpitas; Hua-Ching Tong, and William C. Cain, both of San Jose, all of Calif., assignors to Read-Rite Corporation, Milpitas, Calif.
Filed Mar. 20, 1995, Ser. No. 413,071
Int. Cl.[6] G11B *5/147*
U.S. Cl. 360—126 **14 Claims**



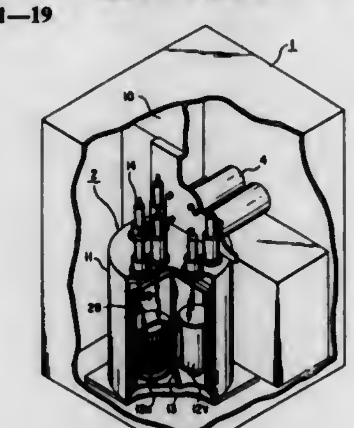
6. A thin film magnetic transducer for converting changes in magnetic flux from a recording medium into electrical signals during an active read mode, and for converting electrical signals into magnetic flux onto the recording medium during an active write mode, and further including a quiescent mode, comprising:
a yoke having first and second magnetic poles, each of said magnetic poles having a closed boundary including a plurality of domain walls defining a magnetic domain pattern, each of said magnetic poles including a tip portion and a body portion; and
means comprising boundary kinks or protrusions integrally formed in said tip portion along said closed boundary of each of said magnetic poles for nucleating said plurality of domain walls, said nucleating means containing said domain walls in each of said magnetic poles, wherein said means for nucleating said domain walls comprise an integral portion of said magnetic layer angularly protruding beyond said boundary, wherein said integral portion of said magnetic pole angularly protruding beyond said boundary includes one half of a quadruple closure domain, such that said domain walls remain substantially intact operating from the active write mode to the quiescent mode, and such that said domain walls remain substantially intact operating from the active write mode to the active read mode.

5,617,279
MAGNETIC HEAD WITH MULTI-LAYER MAGNETIC SHIELDING MEMBER SURROUNDING A CORE AND COIL
Tomohiko Ohsaka, Yamagata, Japan, assignor to Mitsumi Electric Co., Ltd., Japan
Filed Aug. 25, 1994, Ser. No. 295,921
Claims priority, application Japan, Feb. 7, 1994, 6-013727
Int. Cl.[6] G11B *5/10;5/127;5/11;5/187*
U.S. Cl. 360—128 **8 Claims**



1. A magnetic head for use with a magnetic recording medium, said head comprising:
a slider;
two magnetic cores fixed at spaced locations on said slider;
two electrical coils, one of which is wound on each of said two cores, said coils being spaced from each other when so wound, each of said coils having a winding axis about which said electrical coil is wound on said magnetic core, each of said coils having a generally rectangular outline in a cross section taken normal to said winding axis; said rectangular outline being formed by four sides of the coil, each of said coils having one side which faces a side of the other of said coils and having three remaining sides; and
a laminated shielding member for shielding said two coils from an external magnetic field and for supporting said slider, said shielding member comprising a plurality of parallel layers arranged in a stack, said layers being formed of a magnetic material, each layer of said plurality of layers of magnetic material being parallel to a plane perpendicular to said axes about which said coils are wound on said cores, said shielding member being formed with a pair of generally rectangular, spaced cavities with a passage opening into said cavities extending therebetween, said cavities and passage extending into said shielding member in a direction along the winding axes of said coils, said cavities receiving said coils so that the layers of said shielding member are in contiguity with said coils such that said member surrounds the entire three remaining sides of each of said coils and partially surrounds said one side of each of said coils as a result of the opening formed in each of said cavities by said passage, thereby to enhance the shielding effect provided by said shielding member,
said magnetic head coacting with the recording medium to perform a writing of data onto said recording medium or a reading of data previously written on the recording medium.

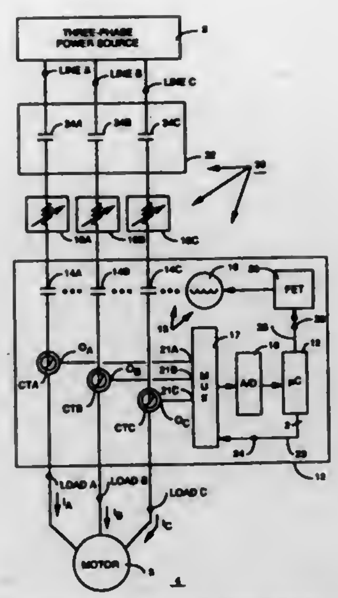
5,617,280
SUPERCONDUCTING FAULT CURRENT LIMITER
Tsukushi Hara, Yono; Takeshi Ohkuma, Tokyo; Takahiko Yamamoto, Tokyo; Daisuke Ito, Tokyo; Kazuyuki Tsurunaga, Tokyo, and Takamitsu Tada, Tokyo, all of Japan, assignors to The Tokyo Electric Power Company, Incorporated, Tokyo, and Kabushiki Kaisha Toshiba, Kawasaki, both of Japan
Continuation of Ser. No. 893,019, Jun. 3, 1992, abandoned. This application Dec. 12, 1994, Ser. No. 355,340
Claims priority, application Japan, Jun. 4, 1991, 3-133064
Int. Cl.⁶ H02H *9/00*
U.S. Cl. 361—19 **11 Claims**



1. A three-phase superconducting fault current limiter, comprising:
plural superconducting current limiting units provided respectively for plural phases constituting an AC electric path, each current limiting unit comprising,
a superconducting current limiting element formed by a non-inductive winding of a superconducting wire having a critical current value that is lower than a limit current value of the electric path and that is higher than a rated current value, and
an additional current limiting element having a fixed impedance value and connected in parallel to said superconducting current limiting element;
a cryostat for containing said superconducting current limiting units and for keeping said superconducting current limiting units at a very low temperature, an inner surface of the cryostat being formed of a superconducting member; and
a separator for electromagnetically separating each of said plural superconducting current limiting units, said separator being formed of one of a superconducting member and a member having a superconducting layer on a surface thereof.

5,617,281
LOW COST CIRCUIT CONTROLLER
James A. Bauer, Asheville; Nelson R. Palmer, Arden, both of N.C.; Kathryn M. Palmer, and Henry A. Wehrli, III, both of Monroeville, Pa., assignors to Eaton Corporation, Cleveland, Ohio
Filed Jun. 1, 1994, Ser. No. 251,873
Int. Cl.⁶ H02H *5/04*
U.S. Cl. 361—27 **3 Claims**

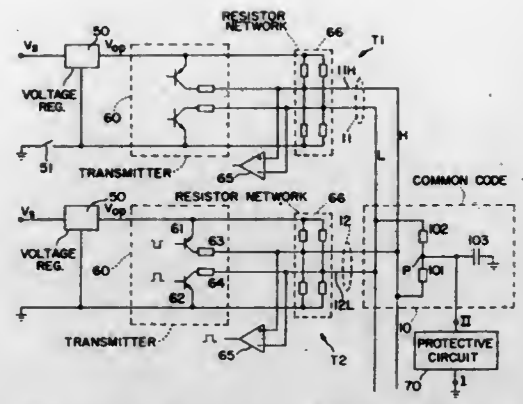
1. A circuit controller apparatus for selectively connecting a power source to a load, said apparatus comprising:
electrical switching means for selectively connecting said power source to said load and switching a current which flows from said power source and through said electrical switching means, said electrical switching means including current sensing means for sensing the current which flows through said electrical switching means and providing a sensed current value, and also including switching control means for disconnecting said power source from said load whenever the sensed current value is above a predetermined current value;



radiant energy dissipating, positive temperature coefficient current limiting means in series with said load for limiting the current which flows through said electrical switching means whenever said power source is selectively connected to said load;
wherein said radiant energy dissipating, positive temperature coefficient current limiting means includes a tungsten conductor which is connected in series with said electrical switching means between said power source and said load;
wherein said tungsten conductor has two ends, and wherein said radiant energy dissipating, positive temperature coefficient current limiting means further includes:
sealed enclosure means for enclosing said tungsten conductor therein, said sealed enclosure means having two conductive ends, each of the two ends of said tungsten conductor being electrically connected to a corresponding one of the two conductive ends within said sealed enclosure means, the two conductive ends of said sealed enclosure means being electrically connected in series with said electrical switching means between said power source and said load;
non-oxidizing gas means enclosed within said sealed enclosure means; and
wherein said sealed enclosure means further includes mandrel means for winding said tungsten conductor thereabout.

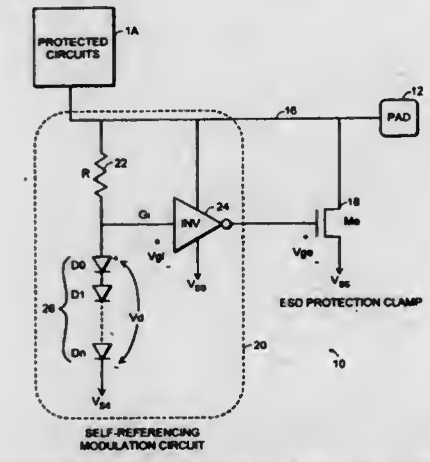
5,617,282
DATA COMMUNICATION SYSTEM
Bernhard Rall, Ulm, and Jürgen Dorner, Wendlingen, both of Germany, assignors to Daimler-Benz AG, Stuttgart, Germany
Filed Feb. 25, 1994, Ser. No. 202,250
Claims priority, application Germany, Mar. 2, 1993, 43 06 361.6
Int. Cl.⁶ H02H *9/00*
U.S. Cl. 361—56 **18 Claims**

1. A data communication system, comprising:
a bus system which includes a symmetrical transmission line having first and second conductors, and an ohmic load impedance connected between the first and second conductors, the load impedance having a center tap; and
a protective circuit having a current-voltage characteristic, the protective circuit being connected between the center tap of the load impedance and a reference potential, the protective circuit including means for dividing the current-voltage characteristic into regions depending on the voltage across the protective circuit, the regions of the current-voltage characteristic including



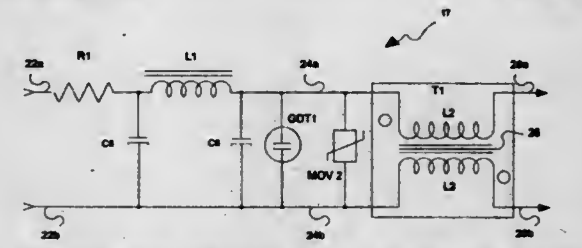
a first region in which no current flows through the protective circuit when the voltage across it is below a threshold voltage, the threshold voltage being higher than a normal voltage on the transmission line during data communication,
a second region in which current through the protective circuit rises steeply with increasing voltage when the voltage across the protective circuit is between the threshold voltage and a knee voltage, and
a third region in which current through the protective circuit is limited when the voltage across it is above the knee voltage.

5,617,283
SELF-REFERENCING MODULATION CIRCUIT FOR CMOS INTEGRATED CIRCUIT ELECTROSTATIC DISCHARGE PROTECTION CLAMPS
David B. Krakauer, Cambridge; Kaizad Mistry, Lincoln; Steven Butler, Marlboro, all of Mass., and Hamid Partovi, Sunnyvale, Calif., assignors to Digital Equipment Corporation, Maynard, Mass.
Continuation of Ser. No. 270,188, Jul. 1, 1994, abandoned. This application Aug. 20, 1996, Ser. No. 697,124
Int. Cl.⁶ H02H *9/04*
U.S. Cl. 361—56 **11 Claims**



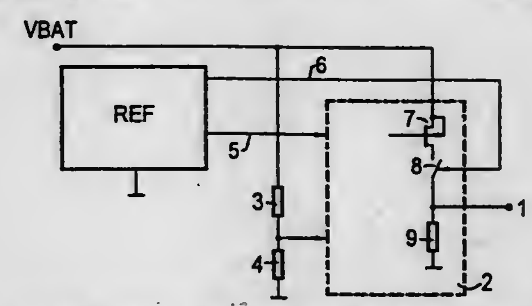
1. An electrostatic discharge (ESD) protection circuit comprising:
an ESD clamp device having first and second terminals and a control terminal, said first terminal coupled to a signal line susceptible to ESD and said second terminal coupled to a ground reference;
a modulation control device having input and output terminals, said output terminal coupled to said control terminal of said ESD clamp device;
a reference voltage generator having a first terminal coupled to said input terminal of said modulation control device and a second terminal coupled to said ground reference;
a resistor having a first end coupled to said signal line and a second end coupled to said input terminal of said modulation control device and said first terminal of said reference voltage generator, wherein said resistor comprises a PMOS transistor having its gate terminal coupled to its drain terminal.

5,617,284
POWER SURGE PROTECTION APPARATUS AND METHOD
Rick Paradise, 515 Wood Forest Ct. NE., Marietta, Ga. 30066
Filed Aug. 5, 1994, Ser. No. 286,520
Int. Cl.⁶ H02H *9/04*
U.S. Cl. 361—58 **9 Claims**



1. In a power surge protection apparatus for protecting circuitry from electrical surges induced in an alternating current power connection to said circuitry, an improvement for optimizing surge suppression with minimal expense and space requirements, the improvement comprising a conductive core with a bifilar winding of a first line and a second line, said first line and said second line being twisted about each other to form a twisted pair and said twisted pair being wrapped about said core in a bifilar winding configuration, said first and second lines comprising an ohmic material having a resistivity of at least 2.8×10^{-8} ohm-meter, whereby electric fields generated by said first line and said second line within said core are in opposite directions so as to compromise each other.

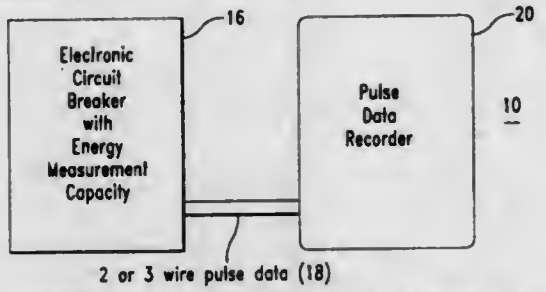
5,617,285
CIRCUIT CONFIGURATION FOR DETECTING UNDERVOLTAGE
Heinz Zitta, Drobollach, Austria, assignor to Siemens Aktiengesellschaft, Munich, Germany
Filed Aug. 24, 1995, Ser. No. 519,123
Claims priority, application Germany, Aug. 24, 1994, 44 30 049.2
Int. Cl.⁶ H02H *3/24*
U.S. Cl. 361—92 **3 Claims**



1. A circuit configuration for undervoltage detection of a voltage source, comprising:
a reference voltage source being fed by a voltage source and having a first output, a second output, and a device for generating an enable signal at said second output only whenever a reference voltage has attained a stable value;
a voltage divider for dividing a voltage furnished by the voltage source and for supplying an output voltage; and
a comparator having a first input connected to said first output of said reference voltage source, a second input receiving the

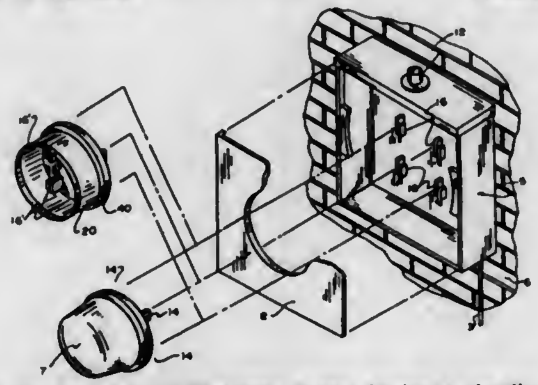
output voltage of said voltage divider, and an output for supplying a detection signal, and a switching device being triggered by the enable signal for enabling said output of said comparator only after the enable signal has been generated.

5,617,286
CIRCUIT BREAKER HAVING DATA RECORDING
Jeffrey A. Jenkins, Fort Collins, Colo., assignor to Siemens Energy & Automation, Inc., Alpharetta, Ga.
Filed Sep. 30, 1994, Ser. No. 315,523
Int. Cl.^{6} H02H 3/00
U.S. Cl. 361—93 **10 Claims**



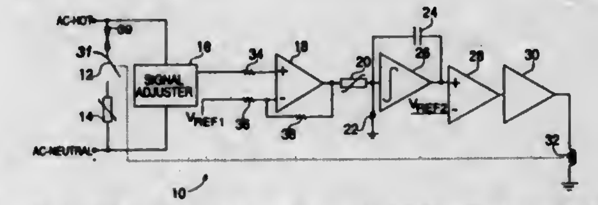
1. Apparatus for providing load related information to a data recorder, comprising:
- a circuit breaker, connectable to a load and having a current interrupting portion therein and a electronic monitoring means therein;
- said electronic monitoring means controlling said current interruption portion and for producing an output signal at output terminals thereat, said output signal related to at least one of the current, voltage and power related characteristics of the load; and
- a data recorder connected to said output terminals for recording said at least one of the current, voltage and power related characteristics of the load and wherein said data recorder is a pulse data recorder and wherein said pulse data recorder sums said output signal over a predetermined period of time and time stamps said summation.

5,617,287
TRANSIENT VOLTAGE SURGE SUPPRESSION (TVSS)
Edward F. Allina, 605 Capri Blvd., Treasure Island, Fla. 33706
Division of Ser. No. 14,377, Feb. 5, 1993, which is a continuation of Ser. No. 532,397, Jun. 1, 1990, abandoned, which is a continuation-in-part of Ser. No. 923,524, Oct. 28, 1986, Pat. No. 4,931,895. This application Apr. 5, 1995, Ser. No. 416,611
Int. Cl.^{6} H02H 9/00
U.S. Cl. 361—118 **20 Claims**



1. Plug-and-jack TVSS adapter means having a plurality of power input terminals and a plurality of power output terminals, removably insertable operably between a conventional watt-hour meter and its socket means in a grounded utility box or panel, comprising
- a non-conductive housing with terminals mating a pair of the power input terminals respectively to a pair of the power output terminals; and
- a plurality of varistor means supported by the housing member, each varistor means including at least one two-faced varistor, electrically connected at one of its faces to the power input terminals via a first path including a fuse link, and electrically connected at its opposite face to the grounded utility box or panel via a second path including an edge connector.

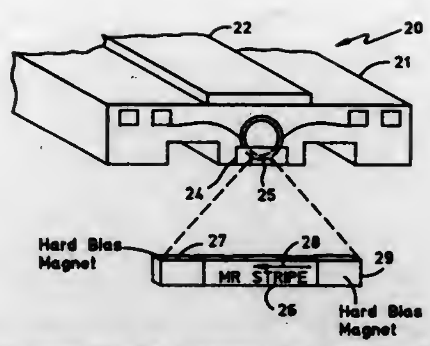
5,617,288
AUTOMATIC SURGE SUPPRESSOR DISCONNECT PROTECTION SYSTEM
Albert Zaretsky, Brooklyn, N.Y., assignor to Leviton Manufacturing Co., In., Little Neck, N.Y.
Filed Jun. 5, 1995, Ser. No. 465,663
Int. Cl.^{6} H02H 1/00
U.S. Cl. 361—127 **21 Claims**



16. A method for protecting a surge suppresser device from predetermined overvoltage conditions, said surge suppresser device connected across a phase and a neutral of an AC source, said method comprising the steps of:
- determining a critical voltage at which said surge suppressor device will sustain damage;
- determining a critical time for which said surge suppressor device may be subjected to said critical voltage without sustaining damage;
- determining whether an overvoltage applied to said surge suppressor device exceeds said critical voltage;
- developing a signal derived from said overvoltage and subsequently subject to a non-linearity proportional to the nonlinear characteristics of said surge suppressor device;
- integrating said signal over time; and
- disconnecting said surge suppressor device from said AC source when said integrated signal exceeds a predetermined threshold.

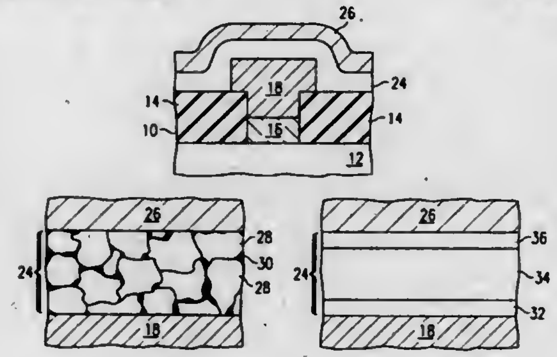
5,617,289
MAGNETIC REINITIALIZATION OF THIN FILM MAGNETORESISTIVE REPRODUCING HEADS AT THE SUSPENSION LEVEL OF MEDIA DRIVE MANUFACTURING
Samir E. Abboud, Hayward, Calif.; Nickolas C. Apuzzo, Rochester, Minn.; Jeffrey B. Brown, Rochester, Minn.; Earl A. Cunningham, Rochester, Minn.; David M. Hannon, Palo Alto, Calif.; Raymond P. Mallette, Shelburne, Vt.; Paul S. Tyler; Steven H. Voss, both of Rochester, Minn., and Albert J. Wallash, Morgan Hill, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
Division of Ser. No. 129,293, Sep. 29, 1993, abandoned. This application Jun. 5, 1995, Ser. No. 463,391
Int. Cl.^{6} H01F 13/00
U.S. Cl. 361—151 **13 Claims**

1. An apparatus for degaussing a media drive suspension assembly with a magnetoresistive device having a initial magnetizing direction being mounted thereon, the apparatus comprising:
- first means for receiving the media drive suspension assembly;
- degaussing pole pieces forming an air gap;
- second means for positioning the first means with respect to the pole pieces to place the media drive suspension assembly in the air gap; and



- means connected to the degaussing pole pieces for inducing a degaussing magnetic field in the air gap.

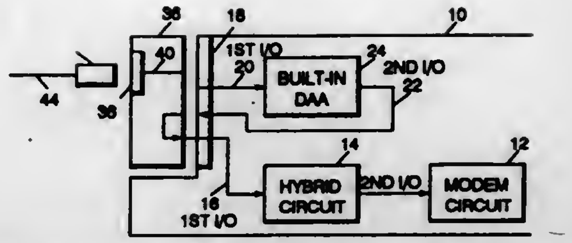
5,617,290
BARIUM STRONTIUM TITANATE (BST) THIN FILMS USING BORON
Bernard M. Kulwicki, North Attleboro, Mass., and Robert Tsu, Plano, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Division of Ser. No. 315,454, Sep. 30, 1994. This application Jun. 7, 1995, Ser. No. 485,258
Int. Cl.^{6} H01G 4/06
U.S. Cl. 361—321.4 **6 Claims**



1. A capacitive structure on a microelectronic device, said capacitive structure comprising:
- (a) first and second conductive electrodes;
- (b) a dielectric laminate dispersed between said first and second electrodes, said dielectric laminate comprising two or mote grains having a perovskite crystal structure, each grain comprising titanium, oxygen, and at least one of barium and strontium, said grains having a median size of between 10 nm and 50 nm; and
- (c) said dielectric laminate further comprising B_2O_3 in boundary regions between said grains in at least a sublayer of said dielectric laminate, said sublayer having a ratio of boron to titanium of between 0.001 and 0.1, whereby said B_2O_3 reduces leakage current through said dielectric laminate.

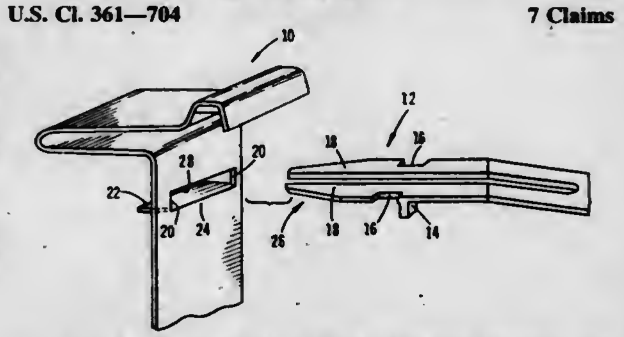
5,617,291
COMPACT MODEM SYSTEM SUITABLE FOR A NOTEBOOK OR OTHER SMALL COMPUTER
Kazuo Fujii, Yokohama; Yukifumi Nakazawa, Ebina, and Takehiko Noguchi, Yokohama, all of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Sep. 7, 1995, Ser. No. 524,856
Claims priority, application Japan, Sep. 7, 1994, 6-213509
Int. Cl.^{6} H05K 7/10
U.S. Cl. 361—686 **1 Claim**

1. A modem system for coupling to a telephone line, said modem system comprising a modem board, a first subcard having



a modem board interface connector and a peripheral connector for connection to a peripheral data access arrangement ("DAA"), and a second subcard having a modem board interface connector and a telephone line connector, said modem board comprising:
- a mating interface connector for connection to said modem board interface connector of one of said first and second subcards;
- a modem circuit;
- a hybrid circuit having a first input/output ("I/O") connected to said mating interface connector, and a second I/O connected to said modem circuit;
- a built-in DAA having first and second I/O's connected to said mating interface connector;
- wherein, when the interface connector of said first subcard is connected to said mating interface connector of said modem board, said first I/O of said hybrid circuit is coupled to said peripheral connector of said first subcard, and said first and second I/O's of said built-in DAA are not connected to said first subcard nor to said hybrid circuit; and
- wherein, when the interface connector of said second subcard is connected to said mating connector of said modem board, said first I/O of said built-in DAA is coupled to said telephone line connector, and said second I/O of said built-in DAA is coupled through said second subcard to said first I/O of said hybrid circuit.

5,617,292
TWO PIECE CLIP FOR HEAT DISSIPATING ASSEMBLIES
Ronald E. Steiner, Agoura Hills, Calif., assignor to International Electronic Research Corporation, Burbank
Filed Sep. 14, 1995, Ser. No. 528,344
Int. Cl.^{6} H05K 7/20
U.S. Cl. 361—704 **7 Claims**



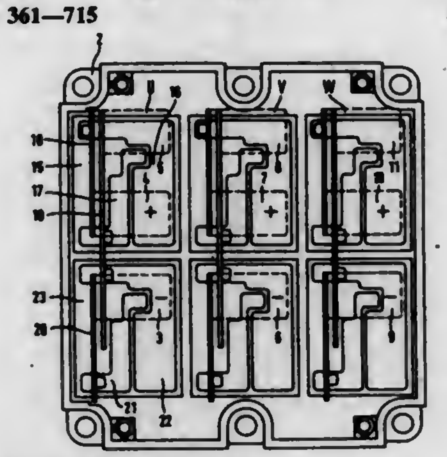
1. A two piece clip for use in a heat dissipating assembly, said heat dissipating assembly including a heat conducting body, said heat conducting body having a heat dissipating surface and a heat receiving surface, said heat conducting body being adapted to being mounted in a heat receiving relationship with an electronic device, said electronic device having a heat discharging surface adapted to being positioned adjacent said heat receiving surface, said heat dissipating surface being generally opposed to said heat receiving surface, and said two piece clip being adapted to removably mount said heat conducting body in said heat receiving relationship with said electronic device, said two piece clip comprising:
- an elongated leaf spring member, said elongated leaf spring member including a leg segment, said leg segment including a mounting element adapted to engage a first mounting location

adjacent a first side of said heat dissipating assembly, said elongated leaf spring member terminating in a free end remote from said mounting element,

a separate leg member, said separate leg member and said free end defining therebetween a leg engaging mechanism, said separate leg member and said free end being hingedly engaged with one another by said leg engaging mechanism, whereby said separate leg member is adapted to pivot hingedly through an arc around said free end, said separate leg member including a second mounting element adapted to engage a second mounting location adjacent a second side of said heat dissipating assembly, and

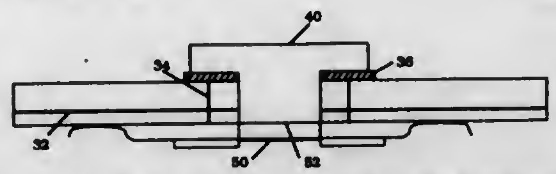
a bearing element mounted on a first one of said free end or separate leg member and positioned to bear against the other of said free end or separate leg member at a location spaced from said first one of said free end or separate leg member, said bearing element being adapted to limit the range of said arc.

5,617,293
BRIDGE MODULE
Gerhard Schulze, Lippstadt; Reinhold Spanke, Bestwig, and Karl-Heinz Sommer, Warstein, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany
Filed Nov. 7, 1995, Ser. No. 554,735
Claims priority, application Germany, Nov. 7, 1994, 44 39 632.5
Int. Cl.^{6} H05K *7/20*
U.S. Cl. 361—715 **5 Claims**



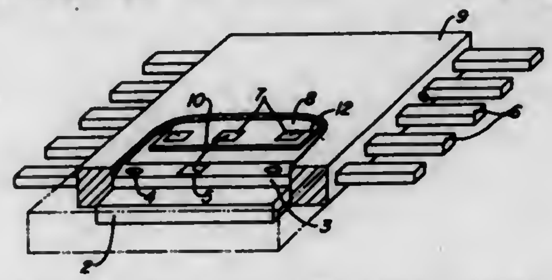
1. A bridge module, comprising:
at least two bridge branches;
at least two respective controllable semiconductor switches for each of said bridge branches;
a metal base plate;
electrically insulating and thermally conductive substrates having conductor tracks and being connected to said metal base plate, said semiconductor switches being electrically conductively mounted on said substrates;
a housing having at least two AC terminals and four DC terminals, said housing being attached to said metal base plate and enclosing said substrates and said semiconductor switches;
AC connection leads electrically connected to said AC terminals and to said semiconductor switches inside said housing;
DC connection leads electrically connected to said DC terminals and to said semiconductor switches inside said housing;
each of said bridge branches having two of said DC connection leads and two of said DC terminals; and
mutually adjacent leads disposed outside said housing, a first one of said adjacent leads electrically connecting all of said DC terminals of one polarity to one another and a second one of said adjacent leads electrically connecting all of said DC terminals of a respectively opposite polarity to one another.

5,617,294
APPARATUS FOR REMOVING HEAT FROM AN INTEGRATED CIRCUIT PACKAGE THAT IS ATTACHED TO A PRINTED CIRCUIT BOARD
Jeff R. Watson; Michael N. Goetsch, both of Phoenix, Ariz.; Jim V. Noval, and Raiyo F. Aspandiar, both of Portland, Oreg., assignors to Intel Corporation, Santa Clara, Calif.
Filed Sep. 29, 1995, Ser. No. 535,974
Int. Cl.^{6} H05K *7/20*
U.S. Cl. 361—719 **7 Claims**



1. An apparatus for cooling an integrated circuit package comprising:
a printed circuit board having a top surface, a bottom surface, at least one metal layer disposed between said top and bottom surfaces, a through opening extending from said top surface to said bottom surface, and a plurality of vias disposed around the periphery of said through opening that are filled with a thermally conductive metal, said vias extending from said top surface to said metal layer; and
a heat slug surface mounted into said through opening of said printed circuit board, said heat slug comprising a top portion, a bottom portion, and a ledge located between said top and bottom portions supporting said heat slug in said through opening, said ledge being attached to said top surface of said printed circuit board such that a thermal conduction path is established between said heat slug and said vias, said bottom portion of said heat slug having a bottom surface for mounting said integrated circuit package.

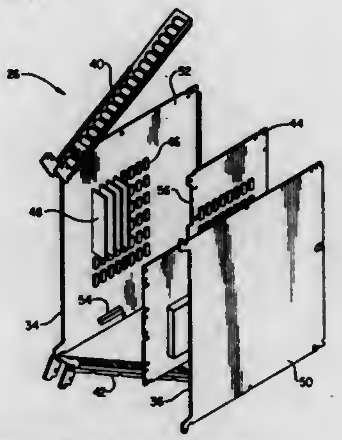
5,617,295
LEADFRAME FOR SUPPORTING INTEGRATED SEMICONDUCTOR DEVICES
Renato Poinelli, Casatenovo; Mauro Mazzola, Treviglio, and Paolo Casati, Sesto, all of Italy, assignors to SGS-Thomson Microelectronics, S.R.L., Agrate Brianza Mi, Italy
Filed Mar. 31, 1995, Ser. No. 414,285
Int. Cl.^{6} H05K *7/20*
U.S. Cl. 361—723 **9 Claims**



1. A packaged electronic semiconductor device comprising:
a heat dissipator having a peripheral boundary;
a semiconductor chip fastened on the dissipator and having on its surface electrical terminals;
a metal bar having a metallized area fastened to the heat dissipator by electroconductive means;
a plurality of conductive leads each having one end adjacent to the semiconductor chip;
connecting wires connected between the electrical terminals of the semiconductor chip and said ends of the conductive leads;
connecting wires connected between an electrical terminal of the semiconductor chip and the metallized area on the metal bar; and
resin shell surrounding the semiconductor chip and the ends of the conductive leads adjacent the semiconductor chip;

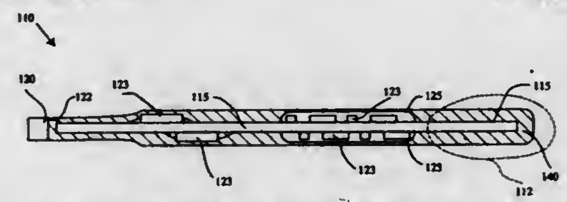
wherein said metallized area is lowered in relation to a top surface of the metal bar.

5,617,296
PRINTED CIRCUIT BOARD COVERS FOR AN ELECTRONICS PACKAGE
James A. Melville, Rochester, and Roger D. Hamilton, Eyota, both of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed May 17, 1995, Ser. No. 443,216
Int. Cl.^{6} H05K *1/14;1/11*
U.S. Cl. 361—736 **17 Claims**



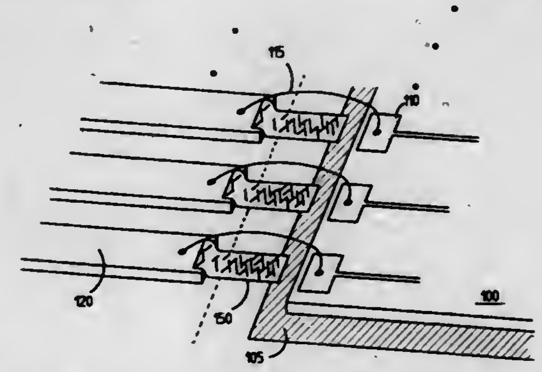
1. A data processing system comprising:
a processor module;
a system backplane contained in the processor module; and
a plurality of electronics packages for enclosure and connection of circuits to the system backplane, wherein each electronic package comprises:
an enclosure having a first side and a second side, wherein each side is formed from a multilayer circuit board having an insulating support layer of a selected thickness, and
a circuit card positioned within the enclosure having a connector positioned on the back that is connected with the system backplane, wherein the circuit card has open portions where electronic components mounted to at least one of the sides extend through.

5,617,297
ENCAPSULATION FILLER TECHNOLOGY FOR MOLDING ACTIVE ELECTRONICS COMPONENTS SUCH AS IC CARDS OR PCMCIA CARDS
Randy Lo, Campbell, and Hem P. Takiar, Fremont, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.
Filed Sep. 25, 1995, Ser. No. 533,118
Int. Cl.^{6} H05K *1/14;1/03*
U.S. Cl. 361—737 **29 Claims**



1. A portable peripheral card for use with an electrical device comprising:
a printed circuit board having electrical components mounted thereon;
an electrical connector attached to the printed circuit board for permitting communications between the electrical components on the printed circuit board and the electrical device;
a solid one-piece package that encapsulates the printed circuit board and the electrical components thereon yet exposes a portion of the electrical connector to facilitate electrical connections between the printed circuit board and the electrical device, the package being formed from a molding compound that includes a resin material and filler materials, the filler materials including organic polymer fibers.

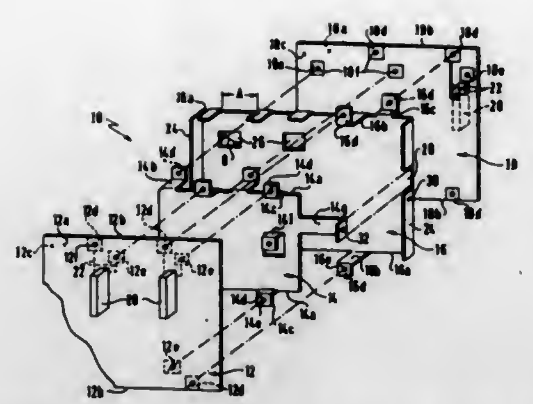
5,617,298
COLLINEAR TERMINATED TRANSMISSION LINE STRUCTURE
John F. Casey, Colorado Springs; Ronald W. Schroeder; Lewis R. Dove, both of Monument, and Philip J. Yearsley, Colorado Springs, all of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Division of Ser. No. 397,594, Mar. 2, 1995, Pat. No. 5,504,986. This application Dec. 20, 1995, Ser. No. 575,423
Int. Cl.^{6} H05K *1/16;* **H01C** *7/00*
U.S. Cl. 361—766 **2 Claims**



1. A collinear terminated transmission line comprising:
a plurality of conductors, printed upon a substrate, having a spacing of a predetermined width between each of said plurality of conductors, said plurality of conductors are substantially parallel; and
a plurality of resistors formed from a swath of thick-film resistor material, each of said plurality of resistors electrically connected to each of said plurality of conductors; wherein the predetermined width is greater than 2 mils and less than 7 mils.

5,617,299
CONNECTING REAR WALL FOR SUBRACKS
Franz-Josef Knoop, Büren-Steinhausen, and Ludger Gockel, Paderborn, both of Germany, assignors to Siemens Nixdorf Informationssysteme Aktiengesellschaft, Paderborn, Germany
PCT No. PCT/DE94/00138, § 371 Date Sep. 25, 1995, § 102(e) Date Sep. 25, 1995, PCT Pub. No. WO94/22283, PCT Pub. Date Sep. 29, 1994
PCT Filed Feb. 10, 1994, Ser. No. 525,675
Claims priority, application Germany, Mar. 22, 1993, 43 09 172.5
Int. Cl.^{6} H05K *7/14*
U.S. Cl. 361—788 **16 Claims**

1. A connecting rear wall comprising:
a first connecting board for making mutual contact with plug-in modules in subracks;
at least two metal plates parallel to and at a distance from one another and the first connecting board and cover the first connecting board at least partially, each metal plate carrying a respective voltage potential;
a plurality of contact areas on the first connecting board operably connected to plug-and-socket devices on the first connecting board;



a plurality of connecting elements on each metal plate, each connecting element being arranged to contact an associated one of the contact areas.

5,617,300

CONNECTING METHOD OF PRINTED SUBSTRATE AND APPARATUS

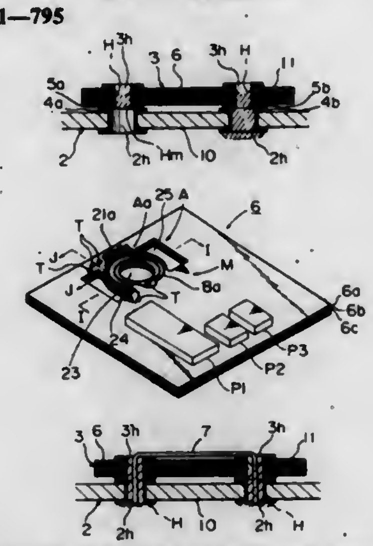
Seiichi Anzawa, and Syoichi Yoda, both of Nagano, Japan, assignors to Nagano Japan Radio Co., Ltd., Nagano-ken, Japan

Filed Apr. 28, 1994, Ser. No. 233,961

Claims priority, application Japan, Aug. 23, 1993, 5-230960; Aug. 23, 1993, 5-230961

Int. Cl.^{6} H05K *1/11*

U.S. Cl. 361—795 **13 Claims**



3. A connecting method for connecting a multi-layer printed substrate having a plurality of laminated unit substrates to a first printed substrate comprising the steps of:

forming a plurality of first connection patterns on the first printed substrate, said first connection patterns having first through holes penetrating the first connection patterns and the first printed substrate;

forming a plurality of second connection patterns, facing the first connection patterns and, on the multi-layer printed substrate;

providing the multi-layer printed substrate with coil patterns on at least two of the plurality of unit substrates;

forming second through holes penetrating the multi-layer printed substrate for allowing the multi-layer printed substrate to be connected to the first printed substrate and penetrating the coil patterns to connect the coil patterns to each other; and

soldering the first connection patterns to the second connection patterns to connect the multi-layer printed substrate to the first printed substrate.

9. An apparatus comprising:

a multi-layer printed substrate having a plurality of laminated unit substrates and coil patterns formed on at least two of the unit substrates;

a first printed substrate;

first connection patterns provided on an upper surface of said first printed substrate;

first through holes penetrating the first connection patterns and the first printed substrate;

second connection patterns, facing the first connection patterns, provided on an under surface of the multi-layer printed substrate; and

second through holes penetrating the second connection patterns and the multi-layer printed substrate for allowing the multi-layer printed substrate to be connected to the first printed substrate and penetrating the coil patterns to connect the coil patterns to each other,

wherein the second through holes are axially aligned with the first through holes,

wherein the multi-layer printed substrate is connected to the printed substrate by soldering the first and second connection patterns.

5,617,301

COMPACT ELECTRONIC APPARATUS AND METHOD OF ASSEMBLING THE SAME

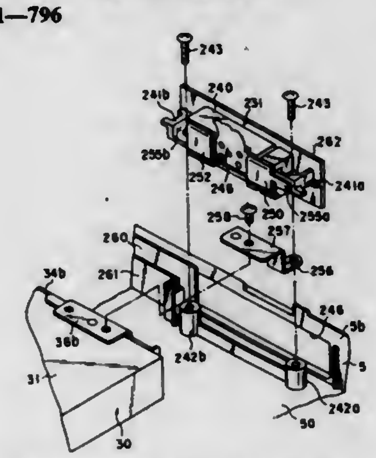
Youji Sato, Yokohama; Yuji Nakajima, Tokyo; Kinji Taki, Tokyo, and Toshikazu Konno, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 107,948, Aug. 16, 1993, Pat. No. 5,455,746. This application Aug. 29, 1995, Ser. No. 520,754

Claims priority, application Japan, Sep. 17, 1992, 4-248361; Sep. 17, 1992, 4-248362; Sep. 30, 1992, 4-262555; Sep. 30, 1992, 4-262556; Mar. 29, 1993, 5-070446

Int. Cl.^{6} H05K *7/14*

U.S. Cl. 361—796 **4 Claims**



1. A compact electronic apparatus comprising:

a substantially rectangular housing having a peripheral wall;

a card storage section having an insertion opening arranged on the peripheral wall and formed in a size capable to store an function expansion card having the largest permissible dimensions conforming to a given standard, for selectively storing one of function expansion cards having different dimensions conforming to said standard; and

a connector conforming to said standard and arranged within the card storage section, for connection with the expansion card stored in the card storage section.

5,617,302

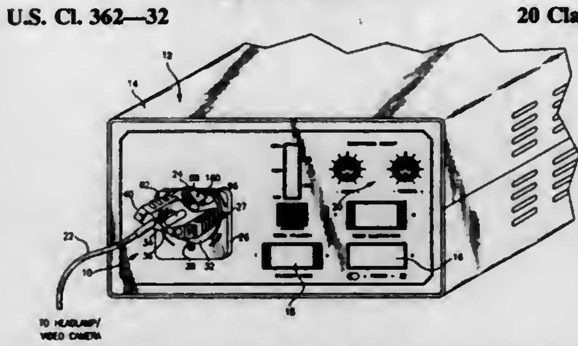
ROTARY MULTIPLE PORT TURRET MECHANISM FOR A FIBEROPTIC ILLUMINATOR

Jacobus F. Kloots, Naples, Fla., assignor to Pilling Weck Incorporated, Research Triangle Park, N.C.

Filed Feb. 7, 1995, Ser. No. 384,927

Int. Cl.^{6} F21V *7/04*

U.S. Cl. 362—32 **20 Claims**



1. In a fiberoptic illuminator including a light source and means defining a housing that encloses the light source and has an aperture for projecting light therefrom, the improvement which includes a multiple port turret mechanism for operably interconnecting the illuminator and a selected one of a like multiple of standard fiberoptic cables, each said cable having a respective end fitting that is distinct from the end fitting of each other said cable, said turret mechanism comprising:

a turret body including a base portion having a first group of at least three port means formed therethrough, each said port means in said first group being adapted for selective and operable interengagement with the end fitting of a corresponding one of the fiberoptic cables, and an elongate tower portion attached to and extending upwardly from said base portion and having a second group of at least two port means formed longitudinally through said tower portion, each port means of said second group being adapted for selective and operable interengagement with the end fitting of corresponding one of the fiberoptic cables;

means for rotatably mounting said turret body to the housing such that said port means are permitted to pass individually in front of the aperture; and

index means for controlling rotation of said body and holding a selected one of said port means in position in front of the aperture such that light from the illuminator is directed through a corresponding fiberoptic cable engaged with said selected port means.

5,617,303

TURN SIGNAL AND HORN ASSEMBLY FOR A BICYCLE

John J. Izzo, Sr., 56 Richmondville Ave., Westport, Conn. 06880

Continuation-in-part of Ser. No. 199,791, Feb. 22, 1994. This application Oct. 24, 1994, Ser. No. 328,035

Int. Cl.^{6} B62J *6/00*

U.S. Cl. 362—72 **10 Claims**

1. A signalling apparatus, for a bicycle, comprising:

(a) a central housing comprising:

a battery assembly; and

a horn assembly attached to the battery assembly;

(b) a horn assembly sound modulation housing attached to the central housing;

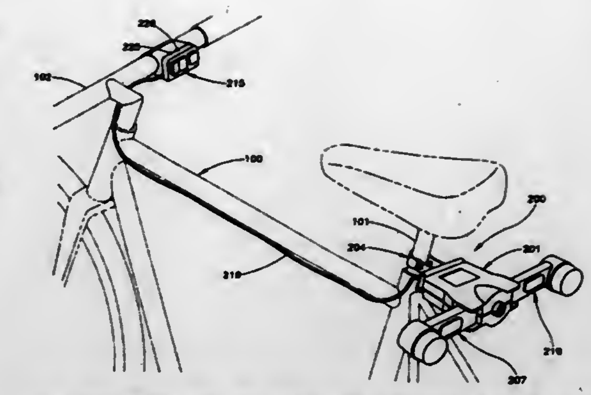
(c) a clamp attachment means removably attached to the central housing and removably attached to a seat post of the bicycle;

(d) a first turn signal light housing hingedly connected to the central housing;

(e) a second turn signal light housing hingedly connected to the central housing;

(f) a first turn signal light in the first turn signal light housing;

(g) a second turn signal light in the second turn signal light housing;



(h) a turn signal light and horn switch assembly housing releasably connected to the bicycle;

(i) a turn signal light and horn activation switching circuit, in the turn signal light and horn switch assembly housing, for selectively controlling intermittent illumination of the first turn signal light and the second turn signal light and to selectively activate the horn assembly to produce sound;

(j) a power source in the battery assembly; and

(k) the turn signal light and horn activation switching circuit being electrically connected to the first turn signal light, to the second turn signal light, to the horn assembly and to the power source.

5,617,304

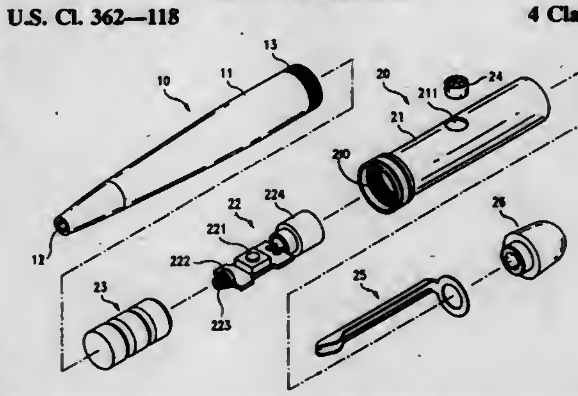
COMBINATION OF LASER POINTER AND BALLPOINT PEN

Chaochi Huang, 9F, No.185, Ta Tung Rd., Sec. 1, Hsi Chih Chen, Taipei Hsien, Taiwan

Filed Jan. 31, 1996, Ser. No. 594,468

Int. Cl.^{6} B43K *29/10*

U.S. Cl. 362—118 **4 Claims**



1. A combination of laser pointer and ballpoint pen, comprising:

a ballpoint pen mounting unit (10), said ballpoint pen mounting unit (10) comprising a metal barrel (11) having a top end, a bottom end, an outer thread (13) made around said top end, and an ink cartridge (12) moved in and out of said bottom end; and

a laser pointer mounting unit (20) fastened to the top end of the metal barrel (11) of said ballpoint pen mounting unit (10), and turned relative to said ballpoint pen mounting unit (10) to move said ink cartridge (12) in and out of the bottom end of the metal barrel (11) of said ballpoint pen mounting unit (10), said laser pointer mounting unit (20) comprising a cylindrical metal shell (21) having an inner thread (210) at one end threaded onto the outer thread (13) of the metal barrel (11) of said ballpoint pen mounting unit (10) and a side hole (211), a transparent end cap (26) fastened to one end of said cylindrical metal shell (21) remote from said ballpoint pen mounting unit (10), a semiconductor laser module (22) mounted in said cylindrical metal shell (21) adjacent to said transparent end cap (26), a battery set (23) mounted in said cylindrical metal

shell (21), and a press button (24) controlled to electrically connect said battery set (23) to said semiconductor laser module (22), causing said semiconductor laser module (22) to emit a laser beam through said transparent end cap (26).

5,617,305

CURRENT RESONANCE TYPE SWITCHING POWER SUPPLY CIRCUIT

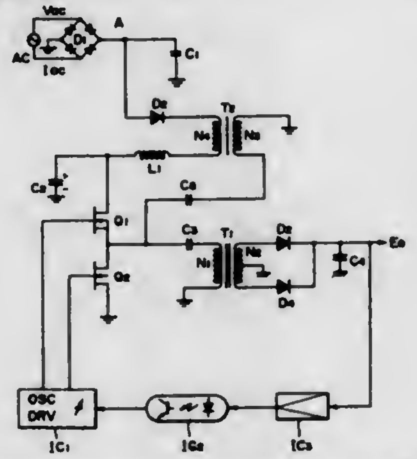
Masato Numata, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sep. 1, 1995, Ser. No. 522,565

Claims priority, application Japan, Sep. 8, 1994, 6-239635; Nov. 16, 1994, 6-305730

Int. Cl.[6] H02M *3/335;3/24;5/42*

U.S. Cl. 363—16 **5 Claims**



1. A current resonance type switching power supply circuit, comprising:

switching elements for interrupting either a voltage or a current and for supplying a switched output to a first side of a primary winding of an isolating transformer and a first side of a primary winding of a non-isolating transformer, a second side of the isolating transformer and a second side of the non-isolating transformer being connected to ground potential; and

a switching power supply circuit for receiving a predetermined alternating voltage from a secondary winding of said isolating transformer and for controlling the switching of said switching elements,

said switching elements being adapted to switch either said voltage or said current input thereto, said voltage or said current being received from a circuit including a DC power supply comprised of a rectifying means for rectifying an AC power supply, a decoupling capacitor arranged at an output side of said rectifying means to eliminate noise, a secondary winding of said non-isolating transformer having a first side and a second side, a diode connected at a first end between said output side of said rectifying means and said decoupling capacitor, the first side of said secondary winding of said non-isolating transformer being connected to a second end of said diode and a second side of said secondary winding of said non-isolating transformer being connected to a first end of a choke coil, a second end of the choke coil being connected to said switching elements, and a smoothing capacitor connected between said choke coil and said switching elements in parallel with said switching elements, said smoothing capacitor being charged by said diode and said choke coil.

5,617,306

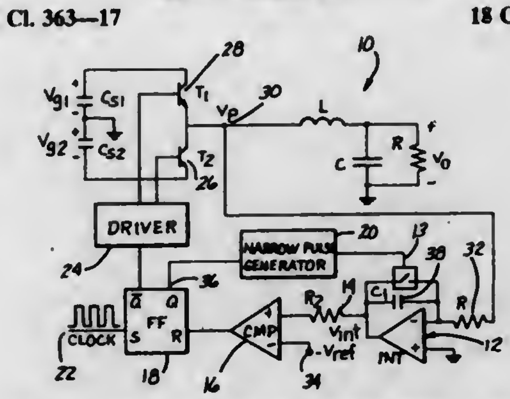
ONE CYCLE CONTROL OF BIPOLAR SWITCHING POWER AMPLIFIERS

Zheren Lai, and Keyue M. Smedley, both of Irvine, Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Mar. 2, 1995, Ser. No. 396,500

Int. Cl.[6] H02M *3/335*

U.S. Cl. 363—17 **18 Claims**



1. An improvement in a bipolar switching amplifier having a controlled switched bipolar variable, v_p, as a switched voltage signal comprising:

an averaging circuit for generating an average value of said controlled bipolar variable, v_p, over a single switched cycle;

a comparator circuit coupled to said averaging circuit for comparing said average of said controlled bipolar variable, v_p, to a reference signal, v_{ref}, to be amplified, said comparator circuit generating an output signal when said average of said controlled bipolar variable, v_p, equals said reference signal, v_{ref}, said comparator circuit being coupled to said switching amplifier to switch said amplifier when said average of said controlled variable v_p is equal to or proportional to said reference signal v_{ref}, and

an offset circuit for adding a predetermined offset voltage v_{os}, to said average of said controlled bipolar variable v_p, to couple a sum of said voltage to said comparator circuit to thereby avoid subharmonic oscillations of said bipolar switching amplifier,

whereby DC-to-AC conversion is obtained with very linear gain, no crossover distortion, low harmonic distortion, excellent power source ripple rejection capability, large dynamic range, and wide bandwidth.

5,617,307

ELECTRONIC VARIABLE SPEED DRIVE

Hervé Guigueno, Saint Maur des Fosses, France, assignor to Schneider Electric SA, Boulogne Billancourt, France

Filed Aug. 14, 1995, Ser. No. 515,003

Claims priority, application France, Sep. 2, 1994, 94 10564

Int. Cl.[6] H02B *1/04*

U.S. Cl. 363—37 **3 Claims**

1. An electronic variable speed drive apparatus comprising:

a rectifier supplied with an alternating current;

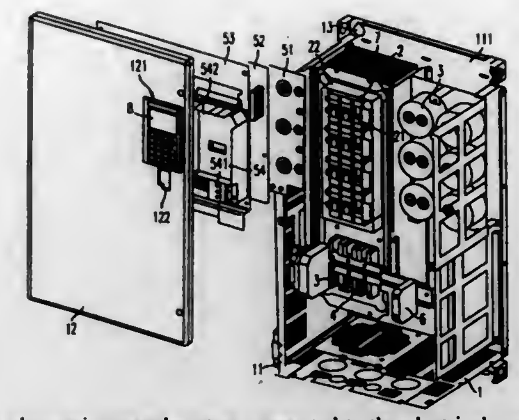
at least one capacitor;

an inverter supplied with a DC voltage from the rectifier through the at least one capacitor, the inverter including a plurality of solid state switch power modules producing an AC voltage;

a plastic material internal enclosure enclosing the power modules of the inverter;

a heatsink connected to the power modules of the inverter;

an electrical connection board electrically connecting the power modules of the inverter to the at least one capacitor such that the heatsink, power modules of the inverter, at least one capacitor and electrical connection board form a non-sealed chamber containing the power modules of the inverter;



an electronic control system connected to the electrical connection board to control the power modules of the inverter.

5,617,308

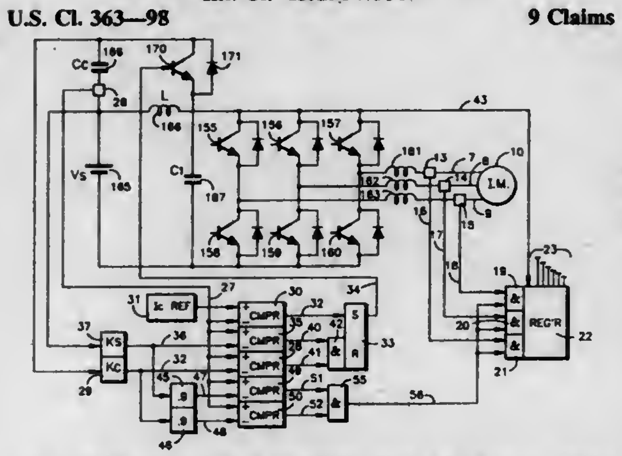
NOISE-IMMUNE, CLAMPED, RESONANT LINK INVERTER

Andrew P. Weise, Columbia, and Donald P. Cornell, Manchester, both of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Filed Nov. 10, 1994, Ser. No. 337,343

Int. Cl.[6] H02M *7/5387*

U.S. Cl. 363—98 **9 Claims**



5. A method of driving a multiphase induction motor by means of a high frequency resonant link inverter having a DC bus with feed switches for connecting each phase of said motor to each side of said DC bus, said resonant link including a frequency determining tank circuit having an inductor in series with said DC bus and a source of DC power and a capacitor in parallel with said DC bus, said resonant link having an active clamp circuit connected across said inductor, said clamp including an electronic switch having an anti-parallel diode connected thereacross, said electronic switch and diode in series with a pre-charged clamp capacitor, comprising:

turning off said electronic switch at a point in time when the current in said inductor is sufficient to drive said bus completely to zero volts thereby causing said DC bus to reduce toward zero volts twice in each cycle at said high frequency;

sampling the current in each phase of current supplied to said induction motor in each cycle of said high frequency; and

momentarily closing at least two of said feed switches to totally short circuit said bus each time that said bus reaches zero volts and immediately thereafter selectively operating said feed switches so as to provide current to said induction motor in accordance with a reference current and in response to the current sampled in said sampling step;

characterized by the improvement in which said step of turning off comprises:

turning off said electronic switch in response to a first magnitude of current flow through said clamp capacitor which bears a first predetermined relationship to the voltage across said clamp capacitor and which also bears a second predetermined relationship to the voltage of said source of DC power.

5,617,309

CONFIGURATION FOR DATA TRANSFER WITH A PARALLEL BUS SYSTEM

Michael Abert, Au; Siegfried Block, Kandel; Johannes Bozenhardt; Franz Leigsnering, both of Ettlingen; Werner Pfattelcher, Pfinztal, and Franz-Clemens Schewe, Karlsruhe, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

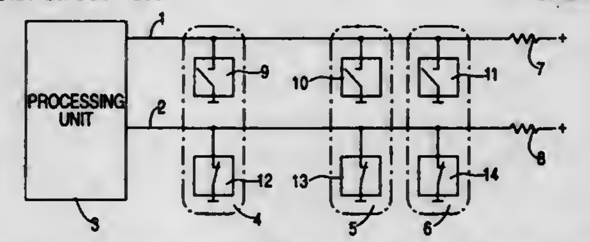
PCT No. PCT/DE93/01037, § 371 Date May 4, 1995, § 102(e) Date May 4, 1995, PCT Pub. No. WO94/10631, PCT Pub. Date May 11, 1994

PCT Filed Oct. 29, 1993, Ser. No. 424,381

Claims priority, application Germany, Nov. 4, 1992, 42 37 259.3

Int. Cl.[6] G06F *19/00*

U.S. Cl. 364—133 **7 Claims**



1. A system for data transfer with a parallel bus system including an address bus, a data bus, and a control bus, the system comprising:

a) a plurality of units;

b) a first control line, interfacing with the several units, for transmitting an acknowledge signal, with which one or more of the plurality of units addressed by a first unit acknowledge accesses during access cycles; and

c) a second control line for transmitting a control signal with which the one or more of the plurality of units indicate to the first unit whether an interfacing unit is being addressed, wherein the control signal has dominant and recessive states and wherein all of the plurality of units generate a dominant state outside the access cycles but only the one or more of the plurality of units addressed by the first unit generate the dominant state during the access cycles.

5,617,310

MULTIPLE OPERATION MODE MICROCONTROLLER

Masato Mitsuhashi, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Mar. 16, 1995, Ser. No. 405,016

Claims priority, application Japan, Apr. 28, 1994, 6-092157

Int. Cl.[6] G05B *11/01*

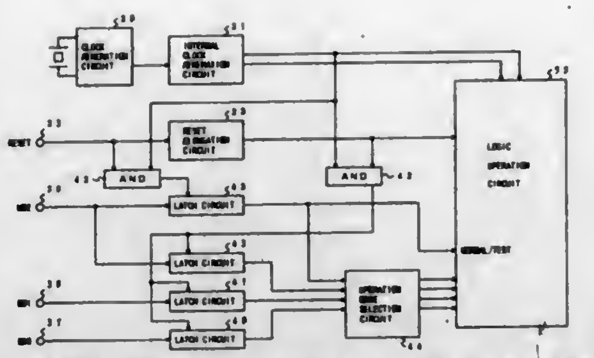
U.S. Cl. 364—140 **14 Claims**

1. A microcontroller capable of operating in any one of operation modes, said microcontroller comprising:

one or more first latch circuits latching first mode signals provided at first external nodes at a first timing;

one or more second latch circuits latching second mode signals provided at said first external nodes at a second timing different from said first timing; and

a logic operation circuit operating in one of said operation modes upon a reset at said second timing, which one is

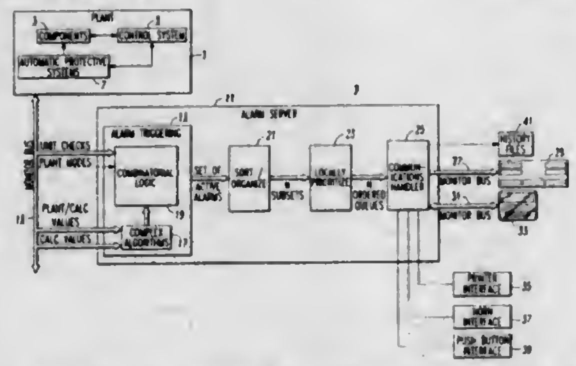


defined by said first mode signals from said one or more first latch circuits and said second mode signals from said one or more second latch circuits.

5,617,311
INFORMATION SYSTEM FOR OPERATING COMPLEX PLANT

James R. Easter, Pittsburgh, and Albert J. Impink, Jr., Murrysville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 6, 1995, Ser. No. 384,058
Int. Cl.⁶ G05B 9/02
U.S. Cl. 364—185 16 Claims



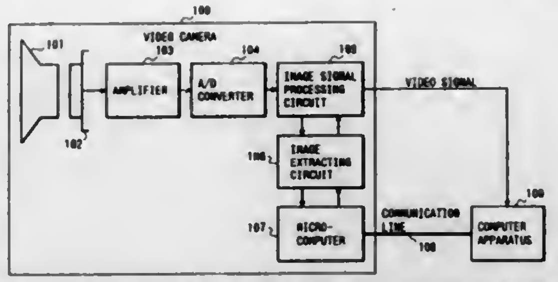
1. An information system for operating a complex plant, said system comprising:
alarm display means displaying in parallel, information regarding an unsuccessful automatic protective actuation initiated in response to certain abnormal process changes; and
accomplished action display means displaying separately from said alarm display means, information regarding another, recently completed automatic protective actuation.

5,617,312
COMPUTER SYSTEM THAT ENTERS CONTROL INFORMATION BY MEANS OF VIDEO CAMERA

Noriyuki Iura, Yokohama; Yoshimichi Kudo, Fujisawa; Kenji Ichige, Chigasaki; Naoki Yamamoto, Yokohama, and Takuya Imaide, Fujisawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 18, 1994, Ser. No. 343,962
Claims priority, application Japan, Nov. 19, 1993, 5-290699
Int. Cl.⁶ G06F 3/00
U.S. Cl. 364—188 4 Claims

3. A video camera comprising:
an imaging device for picking up an image of a subject and generating an image signal representing the image of the subject;
an image extracting circuit for extracting a plurality of areas meeting given conditions from the image signal provided by the imaging device, and providing position data representing positions of extracted areas;

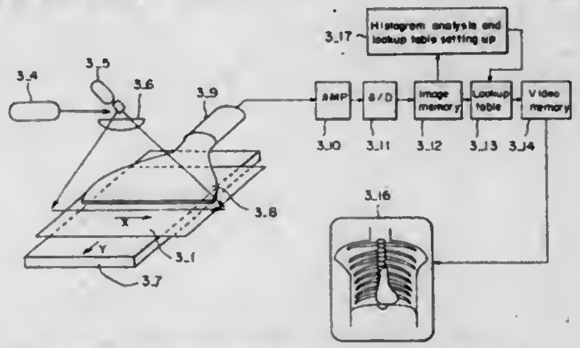


a position examining means for determining whether or not the positions of the extracted areas represented by the position data are within a plurality of predetermined areas, respectively; and
a communication means for sending out operation signals indicating each determination corresponding to each predetermined area made by the position examining means.

5,617,313
IMAGE DISPLAYING METHOD

Fumihiro Namiki, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 26, 1993, Ser. No. 37,373
Claims priority, application Japan, Apr. 22, 1992, 4-103164
Int. Cl.⁶ G06F 15/00
U.S. Cl. 395—263 13 Claims



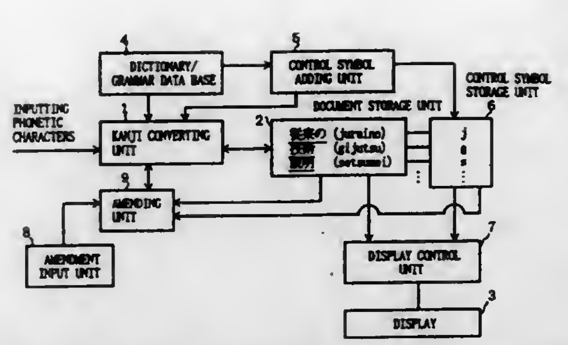
1. An image displaying method comprising the steps of:
storing a plurality of first pixel data, respectively corresponding to a plurality of pixel values which form an image;
obtaining second pixel data by reading out said first pixel data and converting said plurality of pixel values of said first pixel data to a plurality of second pixel values for display;
displaying said image based on said second pixel data, wherein said first pixel data corresponding to a partial area of said image are read out for displaying a partial image corresponding to said partial area of the image, conversion information for converting said first pixel data to said second pixel data in accordance with said first pixel data which has been read out, said first pixel data corresponding to said partial area being converted to said second pixel data in accordance with said conversion information, and an image corresponding to said partial area displayed in accordance with said second pixel data.

5,617,314
KANJI CONVERSATION RESULT AMENDING SYSTEM

Zhang Zhong, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 12, 1994, Ser. No. 302,977
Claims priority, application Japan, Oct. 19, 1993, 5-260613
Int. Cl.⁶ G06F 17/24
U.S. Cl. 395—803 11 Claims

1. A Kanji (Chinese characters) conversion result amending system comprising:

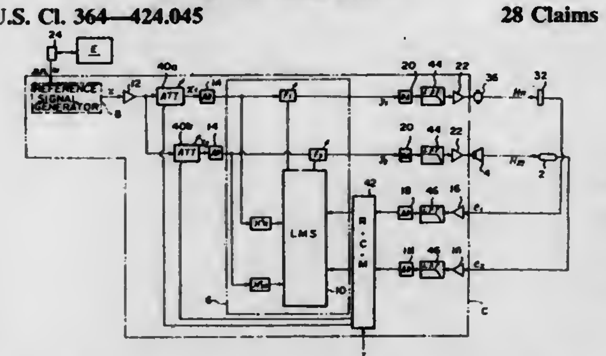


a dictionary/grammar data base means for accumulating a dictionary and a grammar;
Kanji converting means for converting phonetic characters sequentially input for a plurality of Kanji conversion strings into Kanji using the dictionary/grammar data base means;
document storage means for storing converted Kanji as a Kanji conversion result;
means for displaying the converted Kanji;
control symbol adding means for generating a control symbol representing each of said plurality of Kanji conversion strings;
control symbol storage means for storing the control symbol generated by said control symbol adding means in an order of storing the Kanji conversion result in said document storage means;
amendment input means for specifying one of said plurality of Kanji conversion strings to be amended using the control symbol when the Kanji conversion string requires an amendment; and
amending means for amending the Kanji conversion string to be amended and specified by said amendment input means.

5,617,315
ACTIVE VIBRATION DAMPING SYSTEM FOR A VEHICLE

Norihiko Nakao; Yutaka Tukahara; Naoki Ikeda; Shin Takehara; Hirofumi Seni; Shingo Harada, and Chiaki Santo, all of Hiroshima-ken, Japan, assignors to Mazda Motor Corporation, Hiroshima-ken, Japan

Filed Aug. 25, 1993, Ser. No. 111,470
Claims priority, application Japan, Aug. 31, 1992, 4-230749; Sep. 7, 1992, 4-238169; Aug. 6, 1993, 5-195744
Int. Cl.⁶ G10K 11/16
U.S. Cl. 364—424.045 28 Claims

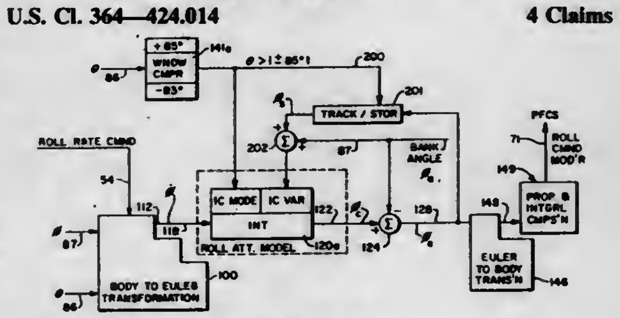


1. A vibration damping system for a vehicle comprising a vibration detecting means which detects vibration of solid elements on the vehicle and vibration of air inside the vehicle, a first vibrator provided in the vehicle body which supports a power unit relative to the vehicle body and directly vibrates the vehicle body, a second vibrator provided in the vehicle body which directly vibrates air inside the vehicle body, a drive control means which performs calculation on the basis of a detecting signal from the vibration detecting means and controls the first and the second vibrators in accordance with the calculation so that the vibration of the solid element and the vibration of air inside the vehicle body are damped, and a ratio changing means which changes a relative vibration control ratio between the first and second vibrators according to a condition of a predetermined factor which affects a magnitude of the vibration of the solid elements and the air within the vehicle body.

5,617,316
MAINTAINING ATTITUDE ERROR CONSTANT IN EULER SINGULARITY PROTECTION

Donald L. Fogler, Jr., Milford, Conn., and James F. Keller, Media, Pa., assignors to Sikorsky Aircraft Corporation, Stratford, Conn.

Filed Mar. 15, 1995, Ser. No. 404,774
Int. Cl.⁶ B64C 11/44
U.S. Cl. 364—424.014 4 Claims

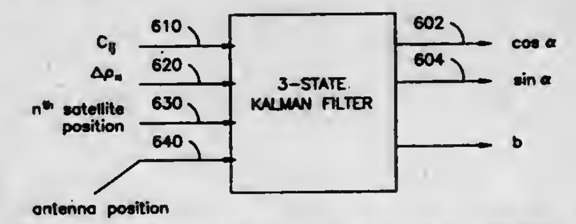


1. A method of controlling an aircraft,
which, when the absolute value of aircraft pitch attitude is less than a predetermined amount, comprises:
integrating an attitude rate command in Euler coordinates, related to a particular attitude axis of the aircraft, to provide an attitude command related to said axis, subtracting actual aircraft attitude about said axis from said attitude command to provide an attitude error, and converting said attitude error to aircraft body coordinates for use in controlling the aircraft;
and which, when the absolute value of aircraft pitch attitude exceeds said predetermined amount, comprises:
converting, to aircraft body coordinates, for use in controlling the aircraft, the last value of said altitude error generated before said pitch attitude exceeded said predetermined amount, and establishing, as the initial value of integrated attitude command to be used in integrating said attitude rate command after said pitch attitude falls below said predetermined amount, the summation of said last value of attitude error and said actual error aircraft attitude.

5,617,317
TRUE NORTH HEADING ESTIMATOR UTILIZING GPS OUTPUT INFORMATION AND INERTIAL SENSOR SYSTEM OUTPUT INFORMATION

Mario B. Ignagni, Arden Hills, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 24, 1995, Ser. No. 378,114
Int. Cl.⁶ G01S 5/02
U.S. Cl. 364—449.9 12 Claims



1. A true north directional heading information apparatus for determining the true north heading of a platform, said apparatus comprising:
global positioning system having,

first and second antennae rigidly fixed to a platform, separated by a known separation distance, and there being a line passing through the positions of said antennae having a known orientation relative to a platform coordinate reference frame, said first and second antennae providing first and second electrical signals, respectively, in response to received satellite information signals transmitted from selected satellites, which form, in part, a satellite based global positioning system, and in which each satellite information signal is comprised of a carrier signal containing coded information therewith,

signal receiver means responsive to said first and second electrical signals for deriving, therefrom, information representative of (i) an estimated geocentric position of said platform at specific measurement times, and (ii) the geocentric position of said plurality of selected satellites at said specific measurement times, and (iii) first satellite-specific relative range values corresponding to the satellite-specific range between said first antenna and each of said selected satellites at said specific measurement times, and (iv) second satellite-specific relative range values corresponding to the satellite-specific range between said second antenna and each of said selected satellites at said specific measurement times;

range difference processor means responsive to said first and second satellite-specific relative range values for determining satellite-specific relative range difference values, where each satellite-specific relative range difference value is related to the difference between (a) the range between said first antenna and a specific satellite transmitting the corresponding satellite information signal and (b) the range between the second antenna and the same satellite, at substantially said specific measurement times;

an inertial sensor system, having a plurality of inertial sensors rigidly fixed to said platform, for providing attitude information related to first, second, and third angles of rotation corresponding to the platform pitch, roll, and heading angles, respectively, of said platform relative to an initially established orthogonal computational coordinate reference frame; and

information processing means for operating on said information representative of

(i) said estimated geocentric position of said platform,
(ii) said geocentric position of said selected satellites,
(iii) said satellite-specific relative range difference values,
(iv) said known antennae separation distance, and
(iv) said attitude information, for determining a heading offset angle, where said heading offset angle is the difference between said platform heading angle and substantially the true north heading angle of said platform whereby said true north heading angle is determined.

5,617,318

DYNAMICALLY RECONFIGURABLE DATA PROCESSING SYSTEM

Stewart A. Clark, Newport Beach, Calif., assignor to Northrop Grumman Corporation, Los Angeles, Calif.

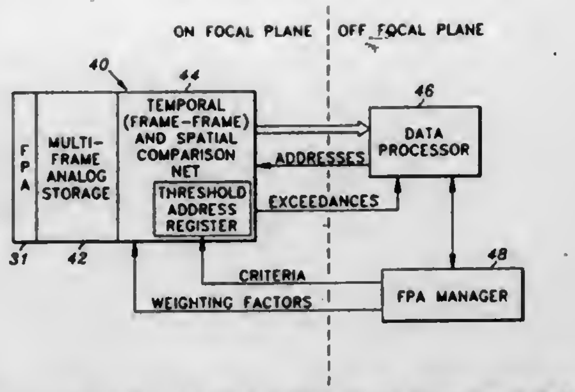
Filed May 8, 1995, Ser. No. 437,293

Int. Cl.⁶ G01J *5/08;* G06F *17/00*

U.S. Cl. 364—516 6 Claims

1. A method for dynamically reconfiguring a space-based data processing system receiving data from infrared detectors, changing the data processing system based upon evaluations of prior data, the method comprising the steps of:

(a) communicating unprocessed data received from infrared detectors into an on-focal-plane storage area;
(b) communicating a first portion of the unprocessed data from the on-focal-plane storage area to an on-focal-plane data processor, upon command from the on-focal-plane data processor;



(c) communicating a second portion of the unprocessed data from the on-focal-plane storage area to a off-focal-plane data processor, upon command from the on-focal-plane data processor;
(d) processing the first portion of unprocessed data in the on-focal-plane data processor and generating first processed data therefrom;
(e) processing the second portion of the unprocessed data in the off-focal-plane data processor;
(f) communicating the first processed data to the off-focal-plane data processor;
(g) evaluating off-focal-plane data processing requirements from the processed and unprocessed data received by the off-focal-plane data processor; and
(h) generating commands to modify the content of the second portion of unprocessed data communicated to the off-focal-plane processor.

5,617,319

NAVIGATION APPARATUS WITH ENHANCED POSITIONAL DISPLAY FUNCTION

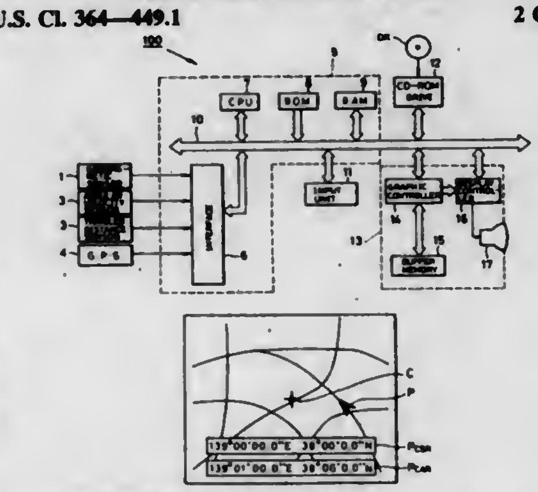
Takeharu Arakawa; Morio Araki; Kenichi Nobe, and Kiyoshi Yamanaka, all of Kawagoe, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. No. 16,292, Feb. 11, 1993, abandoned. This application May 23, 1995, Ser. No. 447,882

Claims priority, application Japan, Feb. 18, 1992, 4-031046; Mar. 30, 1992, 4-074032; Mar. 30, 1992, 4-074033

Int. Cl.⁶ G06F *17/00;* G08G *1/137*

U.S. Cl. 364—449.1 2 Claims



1. A navigation system comprising:

a position detector which detects a vehicle position and outputs vehicle position data;
a storage device which stores map data;
a display;

a display controller which displays a map on said display based on said map data and superimposes the vehicle position on said map displayed on said display based on said vehicle position data;
a position selector which enables a user to select an arbitrary position on said map displayed on said display;
a coordinate calculator which calculates latitude and longitude values as coordinates of an actual location corresponding to said selected position on said map and outputs said values as coordinate data; and
a coordinate display controller which displays said coordinates of said actual location in numerical values in an area superimposed on said map being displayed by said display controller, based on said coordinate data calculated by said coordinate calculator.

5,617,320

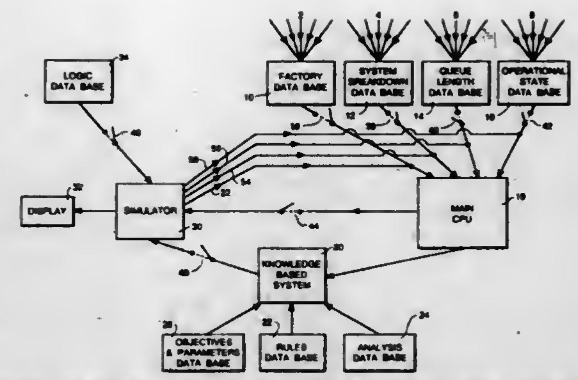
METHOD AND APPARATUS FOR AN AGV INERTIAL TABLE HAVING AN ANGULAR RATE SENSOR AND A VOLTAGE CONTROLLED OSCILLATOR

John A. M. Petersen, Centerville; Gary L. Whatcott, and Paul Carter, both of Salt Lake City, all of Utah, assignors to HK Systems, Inc., New Berlin, Wis.

Continuation of Ser. No. 143,334, Oct. 26, 1993, Pat. No. 5,539,646. This application Apr. 10, 1996, Ser. No. 628,557

Int. Cl.⁶ G01C *21/18;* G06F *9/455*

U.S. Cl. 364—453 20 Claims



1. An inertial table for an automated guided vehicle, said inertial table comprising:

an angular rate sensor, said angular rate sensor being mounted to said automated guided vehicle, said angular rate sensor having an angular rate sensor output, said angular rate sensor output having an angular rate sensor output signal which is a function of an angular rate of said automated guided vehicle; and
an oscillator, said oscillator having
an oscillator input, said oscillator input being electrically coupled to said angular rate sensor output, and
an oscillator output having an oscillator output signal, said oscillator output signal having a frequency which is a function of said angular rate sensor output signal.

5,617,321

METHODS AND APPARATUS FOR THE TESTING, MONITORING AND IMPROVEMENT OF MANUFACTURING PROCESS EFFECTIVENESS

Gerald D. M. Frizelle, St. Albans; Robert G. Jackson, and Eric J. Woodcock, both of Preston, all of Great Britain, assignors to Computer Sciences Corporation, El Segundo, Calif.

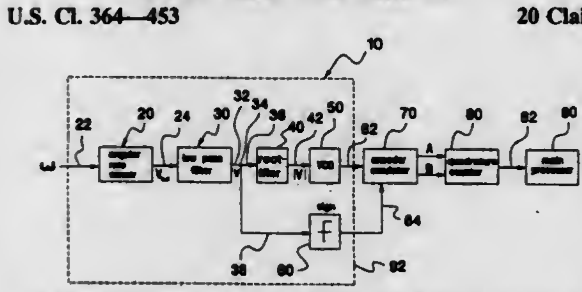
Filed Dec. 22, 1994, Ser. No. 362,263

Claims priority, application Great Britain, Dec. 23, 1993, 9326354

Int. Cl.⁶ G06F *19/00;* G05B *13/04*

U.S. Cl. 364—468.1 5 Claims

1. Apparatus for optimizing the design of a manufacturing process to achieve predetermined goals comprising; a computer simulation model of structural elements of a manufacturing process pre-programmed to operate according to predetermined flow and sequence rules and data describing a required production process;



output means providing output data on request during operation relating to breakdowns and queues at various resources within said manufacturing process; calculating means for calculating first values of complexity and consistent elements thereof from the output data of the computer simulation model and second values of complexity and consistent elements thereof from similar data relating to the real manufacturing process in operation; comparing means for comparing said first and second values; selecting means for selecting improvement data in accordance with the result of said comparison in said comparing means from an improvement rules database, said improvement data being provided to said computer simulation model to modify said simulation model according to said improvement data.

5,617,322

MESH GENERATOR AND GENERATING METHOD

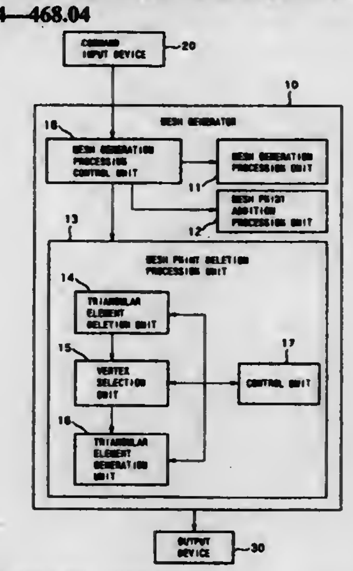
Ikuhiro Yokota, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 30, 1995, Ser. No. 380,807

Claims priority, application Japan, Jan. 31, 1994, 6-009651

Int. Cl.⁶ G06F *19/00;* G06G *7/48*

U.S. Cl. 364—468.04 12 Claims

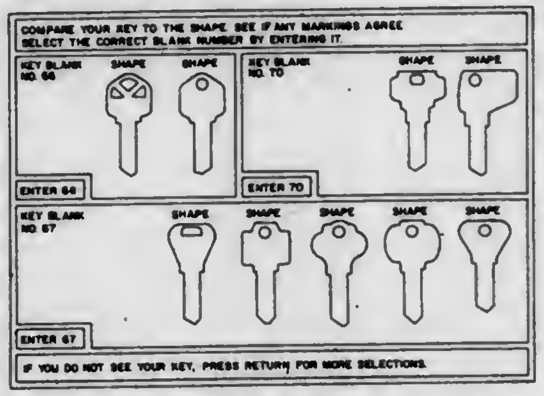


1. A mesh generator comprising:

mesh generating means for setting on a semiconductor device to be analyzed a first two-dimensional triangular mesh satisfying conditions of a Delaunay partitioning;
mesh deleting means for deleting a predetermined mesh node and a mesh edge linking with the mesh node from the set mesh; and
mesh re-generating means for setting, in a polygonal area formed by deleting said mesh node and said mesh edge, a new second triangular mesh which satisfies the conditions of the Delaunay partitioning and is coarser than said first triangular mesh,
said mesh re-generating means comprising:

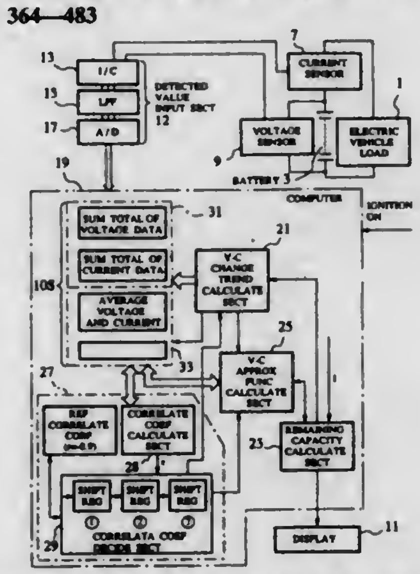
triangular element extracting means for extracting, out of triangles formed by an arbitrary side of said polygonal area generated by deleting the mesh node and the mesh edge and a vertex not included in the side, a triangle, whose circumcircle is the smallest, as a triangular element constituting said second triangular mesh;
said triangular element extracting means comprising:
vertex selecting means for selecting a vertex at which an angles is the largest with a side arbitrarily selected out of said polygonal area formed by deleting the mesh node and the mesh edge; and
triangular element generating means for joining said selected side to a vertex to generate a triangular element.

5,617,323
KEY IDENTIFIER METHOD AND APPARATUS
Warren W. Stansberry, 8421 W. Foothill Dr., Peoria, Ariz. 85382; Bradley D. Carlson, 4115 W. Meadow Dr., Glendale, Ariz. 85308, and Jeffrey C. Heidel, 5110 W. Caribbean La., Glendale, Ariz. 85306
Filed Oct. 31, 1995, Ser. No. 551,164
Int. Cl.⁶ G06F *19/00*
U.S. Cl. 364—474.03 **23 Claims**



1. An electronic key identifier for selecting a key blank functionally compatible with an unknown key having a key blade formed from an electrically conductive material, extending along a longitudinal axis and including first and second parallel, spaced-apart side surfaces, where each side surface is defined by one or more collinear surface segments each having a defined length and a defined position relative to the longitudinal axis, each side surface further including one or more recessed segments offset from the side surfaces and separating and adjacent surface segments, the key identifier comprising:
a. a first surface segment sensor having a flat surface sensor surface including a series of parallel, spaced-apart electrical conductors for contacting the surface segments lying on the first side of the key blade and for directing a flow of current through each sensor conductor in contact with each surface segment;
b. a second segment surface segment sensor having a flat sensor surface including a series of parallel, spaced-apart electrical conductors for contacting the surface segments lying on the second side of the key blade and for directing a flow of current through each sensor conductor in contact with each surface segment;
c. image generating means for identifying the electrical conductors in the first and second surface segment sensors through which current is flowing and for converting those identified electrical conductors into an electronic image of the first and second sides of the key blade; and
d. image matching means including a database of electronic images of the first and second sides of key blades of the known key blanks and for matching the electronic image of the key blade of the unknown key with the electronic image of a known key bank.

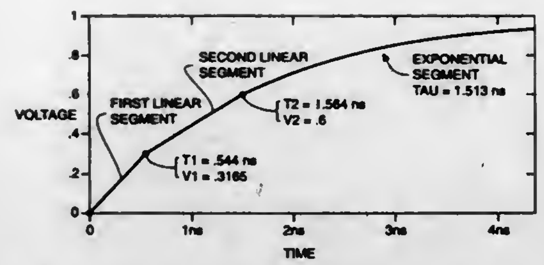
5,617,324
REMAINING BATTERY CAPACITY MEASURING METHOD AND APPARATUS
Youichi Arai, Shizuoka-ken, Japan, assignor to Yazaki Corporation, Tokyo, Japan
Filed Apr. 5, 1996, Ser. No. 628,334
Claims priority, application Japan, Apr. 7, 1995, 7-082375
Int. Cl.⁶ G01R *19/00;* **H02J** *7/04*
U.S. Cl. 364—483 **7 Claims**



1. A remaining battery capacity measuring method, comprising the steps of:
sampling dispersive terminal voltages and dispersive discharge currents of a battery connected to a fluctuating load;
calculating an approximate linear function indicative of a trend of the sampled dispersive terminal voltages and the sampled dispersive discharge currents;
calculating a correlation coefficient between the sampled dispersive terminal voltages and the sampled dispersive discharge currents;
comparing the calculated correlation coefficient with a negative reference value, to discriminate whether the calculated correlation coefficient indicates a strong correlation or not;
discriminating whether the strong correlation is calculated repeatedly by a predetermine number of times or not;
calculating a remaining battery capacity on the basis of a sampled terminal voltage corresponding to a reference discharge current and in accordance with the calculated approximate linear function, only when the strong correlation is calculated repeatedly by the predetermined number of times; and
repeating the above-mentioned steps to update the calculated remaining battery capacity for each predetermined time interval.

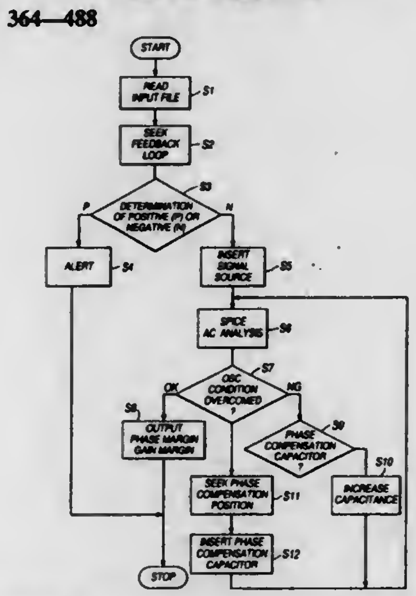
5,617,325
METHOD FOR ESTIMATING INTERCONNECT DELAYS IN INTEGRATED CIRCUITS
Thomas J. Schaefer, Cupertino, Calif., assignor to VLSI Technology, Inc., San Jose, Calif.
Continuation of Ser. No. 542,382, Jun. 22, 1990, abandoned. This application Sep. 4, 1992, Ser. No. 941,763
Int. Cl.⁶ G06F *17/50*
U.S. Cl. 364—488 **24 Claims**

1. For an original circuit having an original driving device connected to an original driving node and another node connected to said original driving node through an impedance network, a method of determining an approximate delay time after said original driving device is turned on at which a voltage at said another node reaches a predetermined value, comprising the steps of:



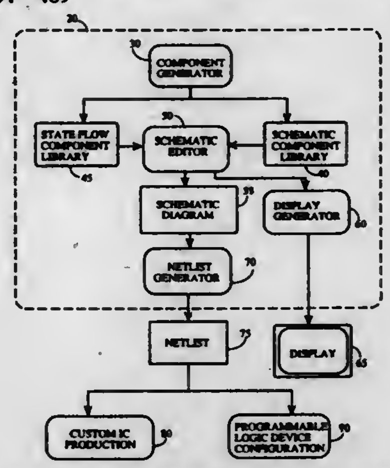
for a substitute circuit having a substitute driving device connected to a substitute driving node and specified by a predetermined set of parameters, determining for a multiplicity of different sets of values of said predetermined set of parameters, using a computer simulator, voltage waveforms expected at said substitute driving node in response to said substitute driving device being turned on, and retrievably storing discrete-time representations of said voltage waveforms;
determining a set of values of said predetermined set of parameters for which delay characteristics of said substitute circuit approximate delay characteristics of said original circuit, and from said discrete-time representations of said voltage waveforms, determining a voltage waveform corresponding to said set of values;
scaling said voltage waveform such that a resulting scaled voltage waveform approximates a voltage waveform expected at said original driving node of said original driving circuit in response to said original driving device being turned on;
determining an approximate analytical expression for said scaled voltage waveform; and
predicting said approximate delay time of said original circuit using said approximate analytical expression.

5,617,326
ELECTRONIC CIRCUIT ANALYZING METHOD WITH AUTOMATIC ADJUSTMENT OF FEEDBACK LOOP EFFECTS
Takeshi Yamamoto, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Mar. 15, 1994, Ser. No. 212,897
Claims priority, application Japan, Mar. 15, 1993, 5-053409
Int. Cl.⁶ G06F *15/00*
U.S. Cl. 364—488 **12 Claims**



1. A method of analyzing an electronic circuit constructed by combining a plurality of active elements and passive elements, the method comprising the steps of:
providing connection information of the electronic circuit;
determining a circuit equation based on a model variable which describes the operation characteristic of each of said active and of each of said passive elements and on said connection information;
simulating the operation of the electronic circuit by solving the determined circuit equation;
automatically seeking, based on the connection information of the electronic circuit, a signal path which forms a feedback loop in the electronic circuit; and
adjusting the electronic circuit to remove effects of the feedback loop from the electronic circuit,
wherein the step of automatically seeking comprises seeking a signal path in the circuit which includes at least some of a transistor, a diode, a resistor, a capacitor, a inductor and a voltage source,
wherein a uni-directional path of the signal path is given by at least one of:
a base-to-collector path of the transistor,
a base-to-emitter path of the transistor, and
an emitter-to-collector path of the transistor,
while a bi-directional path of the signal path is given by a path across a terminal of the diode, the resistor, the capacitor and the inductor, and their path proceeds along the signal path without containing a constant voltage source terminal.

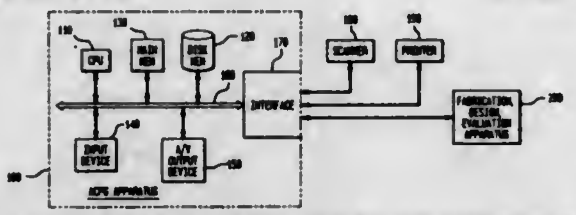
5,617,327
METHOD FOR ENTERING STATE FLOW DIAGRAMS USING SCHEMATIC EDITOR PROGRAMS
Robert G. Duncan, Castroville, Calif., assignor to Xilinx, Inc., San Jose, Calif.
Filed Jul. 30, 1993, Ser. No. 100,521
Int. Cl.⁶ G06F *17/50*
U.S. Cl. 364—489 **18 Claims**



1. In a computer system having a computer memory, a computer implemented process for generating a netlist for a circuit design comprising the computer implemented steps of:
receiving and storing in the computer memory a first portion of the circuit design using at least one state flow component, each state flow component having an associated flow diagram symbol and an underlying circuit design associated with the flow diagram symbol;
receiving and storing in the computer memory a second portion of the circuit design using at least one schematic component linked by signal path segments, each schematic component having an associated schematic symbol;
receiving and storing in the computer memory a signal path segment for transmitting a signal from one of the at least one state flow component to one of the at least one schematic component;
displaying the first portion on a video terminal as a flow diagram representing state flow information as paths between states in the first portion of the circuit design, the second portion as a

schematic diagram and the signal path segment as a line connecting the schematic diagram and the flow diagram; and generating and storing in the computer memory a list of hardware units and connections incorporating the first and second portions of the circuit design and the signal path segment between the state flow component and the schematic component.

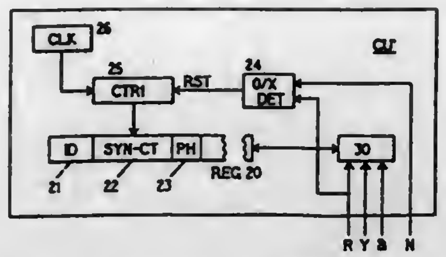
5,617,328
AUTOMATIC CODE PATTERN GENERATOR FOR REPETITIOUS PATTERNS IN AN INTEGRATED CIRCUIT LAYOUT
Chiu-Mei Tsai, Taichung; Mei-Ling Kuo, Kaohsiung, and Kuo-Chih Huang, Hsin-Chu, all of Taiwan, assignors to Winbond Electronics Corporation, Hsinchu, Taiwan
Filed May 23, 1994, Ser. No. 248,068
Int. Cl.[6] H01L *21/70*
U.S. Cl. 364—490 **14 Claims**



1. An apparatus for generating a code layer physical layout of a pre-programmed device containing at least one two-dimensional array of addressed, identical cells to be varied comprising:
a processor which responds to:
(1) one or more instructions specifying a single, identical polygon to be associated with each addressed cell of a given one of said two-dimensional arrays, and
(2) at least one instruction specifying at least one two-dimensionally arrayed pattern of repetitions of said single polygon,
by forming a design of said code layer physical layout, said design formed by said processor locating said repetitions of said single polygon at specific locations of said given two-dimensional array, which locations are specified by said instructions,
said processor also generating a mapping relation, from said at least one instruction specifying said at least one two-dimensional arrayed pattern, which mapping relation relates each polygon of said design with the address of said associated addressed cell of said polygon.

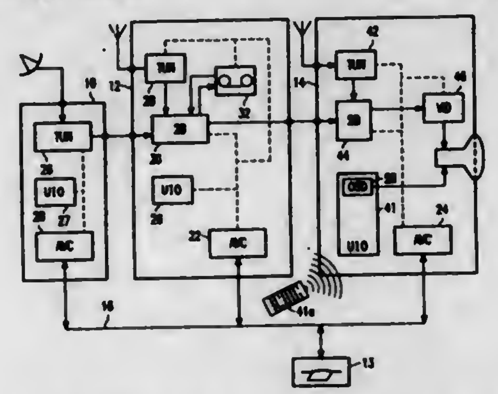
5,617,329
MAINS PHASE DETERMINATION
Robert J. Allison, Basingstoke; Stephen D. Farnsworth, Aylesbury; Edward J. D. Fisher, Sheffield, and David R. Scholefield, Winchester, all of United Kingdom, assignors to Remote Metering Systems Ltd., Hants, United Kingdom
PCT No. PCT/GB94/01392, § 371 Date Mar. 15, 1996, § 102(e) Date Mar. 15, 1996, PCT Pub. No. WO95/00991, PCT Pub. Date Jan. 5, 1995
PCT Filed Jun. 27, 1994, Ser. No. 564,248
Claims priority, application United Kingdom, Jun. 25, 1993, 9313198
Int. Cl.[6] H04B *3/58*
U.S. Cl. 364—492 **12 Claims**

1. A remote metering system comprising a multi-phase mains supply system (10) having a control unit (CS) and a plurality of single-phase consumer meter units (M1–M3) with messages passing between the meter units and the control unit, characterized by phase determining means comprising synchronizing means (CTR1, FIGS. 3 and 4) in the units for synchronizing their message processing to specific phases of the mains supply, and means (17) for determining the relative phases of the control unit and a meter



unit from the timing (SYN-CT) of a message passing between them relative to the phases to which those units are synchronized.

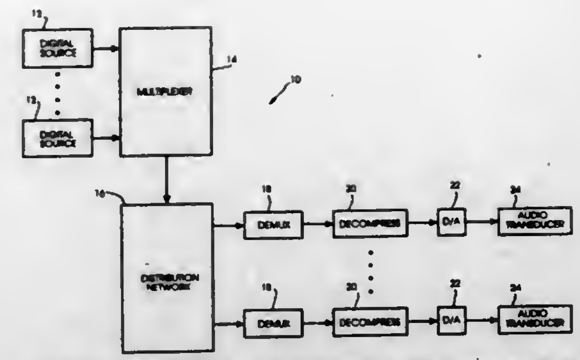
5,617,330
LOCAL COMMUNICATION SYSTEM AND STATION FOR USE IN SUCH A SYSTEM
Andrew J. Stirling, Epsom Downs, England, assignor to D2B Systems Company Limited, Redhill, England
Filed Dec. 9, 1994, Ser. No. 353,043
Claims priority, application United Kingdom, Dec. 10, 1993, 9325299
Int. Cl.[6] G01R *13/00*
U.S. Cl. 364—514 A **19 Claims**



1. A local communication system comprising a plurality of devices interconnected for the communication of messages via one or more data channels, each device including at least one functional subdevice element, the subdevices in the system including a user output subdevice for displaying user-readable messages to a user of the system, a user-readable message being determined by status information of a device, composed into a user-readable message by the subdevice element of that device, and transmitted directly or indirectly to the user output subdevice for display, characterised in that the user output subdevice is operable to display messages in one or more of a plurality of fields and to assign one or more display fields to a received message independently of the originating subdevice of that message.

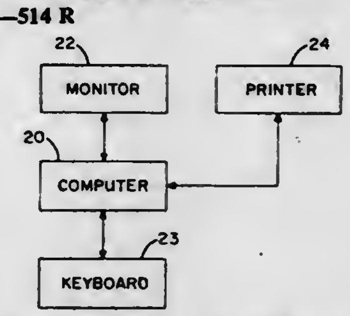
5,617,331
INTEGRATED VIDEO AND AUDIO SIGNAL DISTRIBUTION SYSTEM AND METHOD FOR USE ON COMMERCIAL AIRCRAFT AND OTHER VEHICLES
Bruce M. Wakai, Cypress; John E. Lemmer, Laguna Hills, and William A. Frost, Jr., San Juan Capistrano, all of Calif., assignors to Matsushita Avionics Development Corporation, Irvine, Calif.
Division of Ser. No. 71,218, Jun. 1, 1993. This application Jun. 7, 1995, Ser. No. 480,666
Int. Cl.[6] H04H *1/02*
U.S. Cl. 364—514 A **4 Claims**

1. A passenger entertainment system for use on commercial aircraft and other vehicles comprising:



a plurality of digital audio signal sources for generating a first plurality of compressed digital audio signals;
a plurality of analog audio signal sources for generating a first plurality of analog audio signals;
a plurality of video signal sources for generating a first plurality of analog video signals and a plurality of video sourced analog audio signals;
a plurality of analog-to-digital converters for receiving said first plurality of analog audio signals and said plurality of video sourced analog audio signals and converting those signals to a digital format;
a plurality of digital signal compression circuits for receiving said signals converted to a digital format from said analog-to-digital converters and compressing said signals converted to a digital format to a format compatible with said first plurality of compressed digital audio signals generated by said digital audio signal sources to produce a second plurality of compressed digital audio signals;
a multiplexer for receiving said compressed digital audio signals generated by said digital audio signal sources and said digital signal compression circuits and multiplexing the signals delivered thereto to form a composite digital audio data signal;
a plurality of video signal modulators for receiving said analog video signals generated by said video signal sources and modulating said analog video signals on a plurality of distinct carrier frequencies;
a plurality of RF signal combiners for receiving said modulated analog video signals from said video signal modulators and combining the signals delivered thereto to form a composite RF video signal;
a baseband/RF signal combiner for receiving said composite digital audio data signal and said composite RF video signal and combining said composite digital audio data signal and said composite RF video signal to produce a composite RF video/digital audio data signal;
at least one RF signal separator for receiving said composite RF video/digital audio data signal and separating said composite RF video/digital audio data signal into its respective composite RF video and digital audio data components;
a demultiplexer adapted for receiving said digital audio data component of said RF video/digital audio data signal from said baseband/RF signal separator and selecting a desired digital audio channel from said digital audio data component;
a digital signal decompression circuit for receiving a selected digital audio channel from said demultiplexer and decompressing said selected channel from a compressed digital audio format to an expanded digital audio format;
a digital-to-analog converter for receiving said expanded channel from said digital signal decompression circuit, converting said expanded channel to an analog format, and delivering said converted and expanded channel to an audio transducer; and
an RF tuner for receiving said RF video component of said composite RF video/digital audio data signal from said RF signal separator, selecting a desired video channel from said RF video component, and providing a selected video channel to a video monitor for display;
whereby each of said first plurality of compressed digital audio signals may be delivered to said digital signal decompression circuit without having previously been delivered to an analog-to-digital conversion circuit.

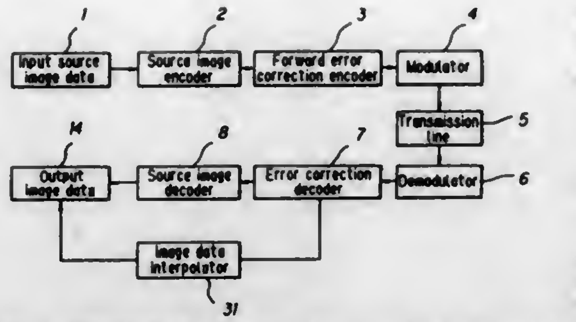
5,617,332
METHOD AND SYSTEM FOR PRODUCING STEREOGRAPHIC IMAGES OF CELESTIAL OBJECTS
Alfred A. Fressola, 40 Todd's Way, Easton, Conn. 06430
Filed Aug. 10, 1988, Ser. No. 230,748
Int. Cl.[6] G06F *17/00*
U.S. Cl. 364—514 R **38 Claims**



1. A method of displaying on a display device, stereographic three-dimensional images of celestial objects, wherein these objects have celestial coordinates on the celestial sphere, comprising the steps of:
1) selecting at least a portion of the celestial sphere to display;
2) determining the celestial coordinates for each celestial object within this portion of the celestial sphere;
3) mapping the celestial coordinates of each celestial object within the selected portion of the celestial sphere into a planar coordinate system forming a first part of the display device so as to be viewable in this first part of the display device;
4) determining the distance from the earth of each celestial object at least within the selected portion of the celestial sphere; and
5) mapping the celestial coordinates of each celestial object within the selected portion of the celestial sphere into a planar coordinate system forming a second part of the display device so as to be viewable in this second part of the display device, wherein each celestial object displayed is offset in at least one coordinate by an amount inversely proportional to its distance from the earth.

5,617,333
METHOD AND APPARATUS FOR TRANSMISSION OF IMAGE DATA
Ouichi Oyamada; Akifumi Arayashiki; Hiroyo Sato, and Eiji Yokokawa, all of Sapporo, Japan, assignors to Kokusai Electric Co., Ltd., Tokyo, Japan
Filed Nov. 23, 1994, Ser. No. 346,922
Claims priority, application Japan, Nov. 29, 1993, 5-320904; Dec. 22, 1993, 5-345626; Dec. 27, 1993, 5-332839; Jul. 25, 1994, 6-192281
Int. Cl.[6] H03M *3/00*
U.S. Cl. 364—514 R **27 Claims**

1. A method for transmission of image data, wherein an input digital image data is transmitted by encoding the source image data, encoding the coded image data for error correction and modulating it transmission over a transmission line, and is recon-



structed by demodulating the image data received over the transmission line, decoding it for error correction and decoding it to the source image, comprising the steps of:

partitioning the input data of a source image into a predetermined number of data blocks each of which including a plurality of picture elements from which the source image can be decoded;

encoding each partitioned block for the source image and also encoding for correction of an error, if any, in the block;

decoding each of the received blocks for error correction to detect any error caused in the block during transmission;

discarding a block of the image data which has been decoded to the source image and contains a transmission-caused error or a block to which the error has been propagated as it is;

interpolating the block of the image data containing the transmission-caused error or the block to which the error has been propagated as it is, with a previously stored substitution block which can be decoded and as set in the place of the block containing the error, and then reconstructing the image data.

5,617,334

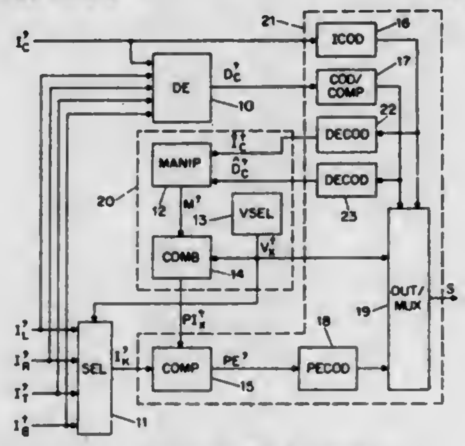
MULTI-VIEWPOINT DIGITAL VIDEO CODER/DECODER AND METHOD

Belle L. Tseng, New York, N.Y., and Dimitris Anastassiou, Tenafly, N.J., assignors to The Trustees of Columbia University in the City of New York, New York, N.Y.

Filed Jul. 21, 1995, Ser. No. 505,051

Int. Cl.⁶ G06F *17/00*

U.S. Cl. 364—514 R **46 Claims**



1. A multi-viewpoint video encoder comprising:

a depth estimator;

a predictor connected to the depth estimator; and

a comparator connected to the predictor.

5,617,335

SYSTEM FOR AND METHOD OF RECOGNIZATING AND TRACKING TARGET MARK

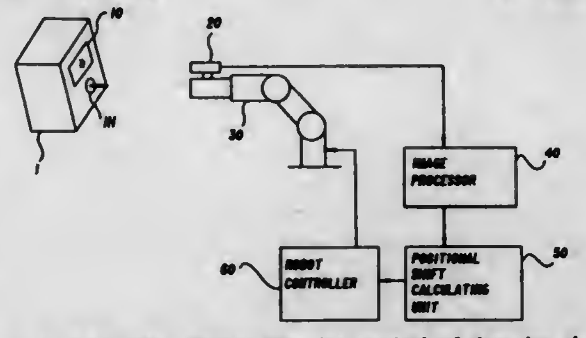
Masayoshi Hashima; Fumi Hasegawa; Keijū Okabayashi; Ichiro Watanabe; Shinji Kanda; Naoyuki Sawasaki, and Yuichi Murase, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 119,228, Sep. 28, 1993, Pat. No. 5,521,843. This application Jan. 18, 1996, Ser. No. 588,320

Claims priority, application Japan, Jan. 30, 1992, 4-015557; Jun. 26, 1992, 4-193457; Aug. 18, 1992, 4-219029; Oct. 29, 1992, 4-291628; Nov. 17, 1992, 4-307015

Int. Cl.⁶ G01S *5/00*

U.S. Cl. 364—516 **20 Claims**



1. A target mark attitude detecting method of detecting the attitude of a target mark to detect the attitude of an object about the direction of a camera based on an image produced by the camera of a target mark which is composed of at least a triangle of a particular shape, comprising the steps of:

determining projected histograms in X and Y directions of the image of the triangle of said target mark;

determining the positions of the centers of gravity in the X and Y directions of the image of the triangle of said target mark in said projected histograms;

determining maximum histogram values and X- and Y-axis values in said projected histograms;

determining which of classified and preset attitude patterns the attitude of the triangle of said target mark belongs to based on the positions of the centers of gravity, the maximum histogram values, the X- and Y-axis values, and known geometrical data of said target mark; and

calculating the attitude of the triangle of the target mark in the determined attitude pattern about the direction of the camera.

5,617,336

METHOD FOR CHECKING TOP AND END OF TAPE FOR DATA RECORDING AND REPRODUCING APPARATUS

Sang Y. Lee, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Oct. 28, 1994, Ser. No. 330,564

Claims priority, application Rep. of Korea, Nov. 2, 1993, 23131/1993

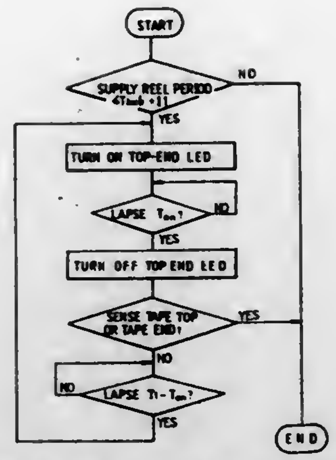
Int. Cl.⁶ G11B *15/00;15/08*

U.S. Cl. 364—550 **8 Claims**

1. A method for checking for an end of a tape fed from a supply reel to a take-up reel, comprising the steps of:

detecting a tape supply reel rotation period;

comparing the detected supply reel rotation period to a preset value; and



only when the detected supply reel rotation period is not longer than the preset value, checking for the tape end at a predetermined checking period thereby performing efficient checking for the tape end.

5,617,337

METHOD AND DEVICE FOR MONITORING SENSOR FUNCTIONS

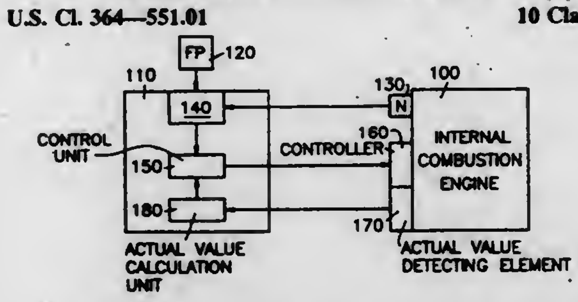
Franz Eidler, Vaihingen; Werner Zimmermann, Stuttgart, and Thomas Rüping, Lenningen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Oct. 13, 1994, Ser. No. 322,638

Claims priority, application Germany, Oct. 20, 1993, 43 35 700.8

Int. Cl.⁶ G01D *18/00;3/02;* **G05B** *23/00*

U.S. Cl. 364—551.01 **10 Claims**



1. A method for monitoring a sensor comprising the steps of:

(a) detecting a measured value and storing the measured value as a reference value when one of a plurality of specified operating states exists at a first time;

(b) detecting a measurable value when one of the plurality of specified operating states exists at a second time after the detecting and storing in step (a);

(c) comparing the measurable value detected in step (b) with the reference value to determine a magnitude of a difference between the measurable value and the reference value; and

(d) determining a fault when the magnitude of the difference determined in step (c) is greater than a tolerance value, wherein the one of the plurality of operating states includes when a control mechanism is positioned at an end limit stop of the control mechanism.

5,617,338

METHOD OF AND SYSTEM FOR ELECTRICALLY PROCESSING VACUUM PRESSURE INFORMATION SUITABLE FOR USE IN VACUUM UNIT

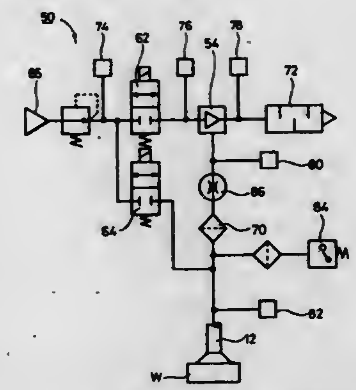
Shigeru Sugano; Takashi Takebayashi; Shigekazu Nagai; Yoshiharu Ito; Mitsuhiro Saito; Hiroshi Matsushima, and Akio Saitoh, all of Ibaraki-ken, Japan, assignors to SMC Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 345,340, Nov. 21, 1994, abandoned, which is a continuation of Ser. No. 941,219, Sep. 4, 1992, abandoned. This application Mar. 18, 1996, Ser. No. 618,273

Claims priority, application Japan, Sep. 6, 1991, 3-226310

Int. Cl.⁶ G01L *9/00*

U.S. Cl. 364—558 **9 Claims**



1. A method of electrically processing vacuum pressure information, which is suitable for use in a vacuum unit in which a workpiece is attracted or released under suction, said method being executed by a vacuum control apparatus and comprising the steps of:

providing a plurality of pressure sensors disposed at different positions in the vacuum unit;

detecting pressure values at said different positions in the vacuum unit upon attraction and release of the workpiece;

displaying a desired pressure value on a displaying means in digital form, said desired pressure value being lower than a highest vacuum pressure value of a plurality of sequential pressure values detected by at least one of said pressure sensors;

storing said desired pressure value in a storing means;

converting each of said sequential pressure values into digital signals, said sequential pressure values being detected by a pressure detecting element held in front of a passage which communicates with a vacuum port, and thereafter digitally displaying the converted digital signals on said displaying means;

comparing said desired pressure value stored in said storing means with each of said sequential pressure values;

determining improper operation of said vacuum unit based on a result of the comparison of said desired pressure value stored in said storing means with each of said sequential pressure values; and

after the improper operation of said vacuum unit has been determined at said determining improper operation step, said method comprises the step of:

determining a failure point in said vacuum unit which includes the steps of:

(a) detecting a further pressure value at a position upstream from a component in said vacuum unit through one of said plurality of pressure sensors located at said position upstream from said component in the vacuum unit;

(b) detecting a further pressure value at a position downstream from said component through a further one of said plurality of pressure sensors located at said position downstream from said component;

(c) determining a differential pressure between the detected further pressure values upstream and downstream from said component; and

(d) comparing said differential pressure with a predetermined threshold value; and

displaying information about said failure point on said displaying means based on a result of said comparison of said differential pressure with said predetermined threshold value.

5,617,339

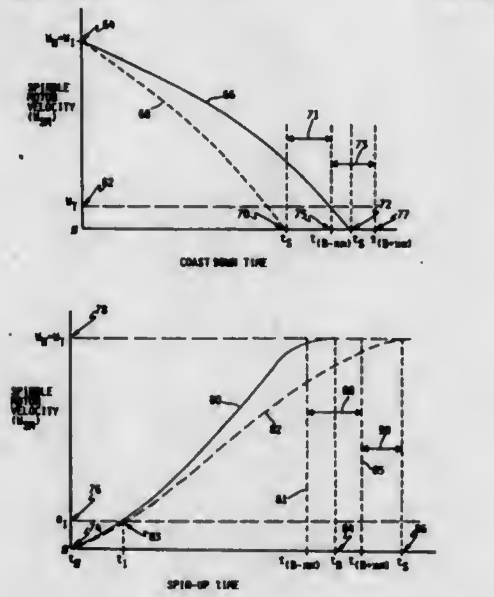
METHOD AND APPARATUS FOR DETECTING DEGRADATION IN DATA STORAGE SYSTEM SPINDLE MOTOR PERFORMANCE

Gordon J. Smith, Rochester, Minn., assignor to International Business Machines Corpoation, Armonk, N.Y.

Filed Dec. 2, 1994, Ser. No. 348,470

Int. Cl.⁶ G11B *27/36*

U.S. Cl. 364—569 **20 Claims**



1. A method of detecting degradation in the performance of a data storage device having a data storage disk for storing data mounted to a spindle motor for rotating the data storage disk, a transducer for transferring data to and from the disk, an actuator for moving the transducer across the disk, and a controller for coordinating the transfer of data to and from the disk, the performance degradation detection method comprising the steps of:

rotating the spindle motor at an initial velocity;

rotating the spindle motor at a test velocity;

computing a duration of time for the spindle motor to transition between the initial velocity and test velocity; and

comparing the computed transition time with a predetermined transition time;

wherein a degradation in spindle motor performance is indicated by a deviation between the computed transition time and the predetermined transition time.

5,617,340

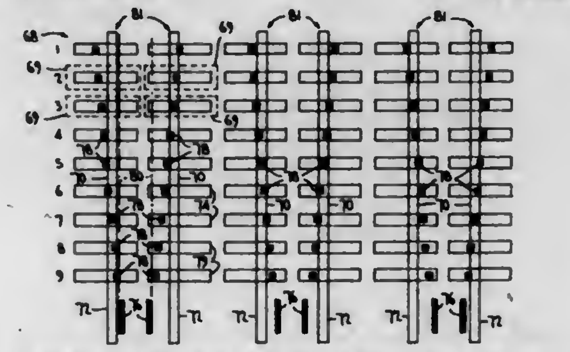
METHOD AND REFERENCE STANDARDS FOR MEASURING OVERLAY IN MULTILAYER STRUCTURES, AND FOR CALIBRATING IMAGING EQUIPMENT AS USED IN SEMICONDUCTOR MANUFACTURING

Michael W. Cresswell, Frederick; Richard A. Allen, Germantown; Joseph J. Kopanski, Takoma Park, and Loren W. Linholm, Ijamsville, all of Md., assignors to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Continuation-in-part of Ser. No. 236,202, Apr. 28, 1994. This application Feb. 3, 1995, Ser. No. 382,973

Int. Cl.⁶ G01B *11/27;* **G01D** *18/00*

U.S. Cl. 364—571.01 **36 Claims**



1. A method for calibrating an imaging instrument with respect to measurements of distance between features of a structure formed in a sequence of steps on a substrate, measurements made by said imaging instrument being susceptible to one or both of tool-induced shift (TIS) and wafer-induced shift (WIS), comprising the steps of:

forming a structure comprising components formed in a sequence of steps on a substrate, said components of said structure each comprising first artifacts the spacing of which is measurable using said imaging instrument, and also comprising second artifacts the spacing of which is analyzable using electrical measurement techniques not susceptible to TIS or WIS, said first and second artifacts being in defined physical relation to one another;

measuring the spacing of said first artifacts employing said imaging instrument;

analyzing the spacing of said second artifacts employing said electrical measurement technique; and

calibrating said imaging instrument responsive to comparison of said measurements and analyses.

5,617,341

METHOD OF DETERMINING A PITCH ARRANGEMENT OF A TIRE

Yukio Nakajima, Tokyo, Japan, assignor to Bridgestone Corporation, Tokyo, Japan

Filed Jun. 10, 1994, Ser. No. 258,567

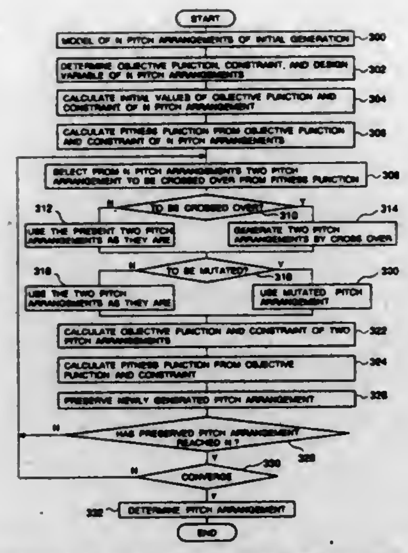
Claims priority, application Japan, Jun. 10, 1993, 5-138786; Mar. 25, 1994, 6-055622

Int. Cl.⁶ B60C *11/11*

U.S. Cl. 364—578 **12 Claims**

10. A method of determining a pitch arrangement of a tire which selects a pitch arrangement having an optimum value of an objective function among a plurality of pitch arrangements after determining a plurality of the pitch arrangements corresponding to a plurality of initial arrangements by repeating, in each of predetermined initial arrangements, the steps of:

(a) determining a model of a noise pulse generated in each pitch of the tire, the objective function representing a physical amount for evaluating noise performance of the tire, a design variable for determining the pitch arrangement, and a constraint for constraining the pitch arrangement;



(b) determining a value of the design variable which gives the optimum value of the objective function while satisfying the constraint; and

(c) designing the pitch arrangement on the basis of the design variable which gives the optimum value of the objective function; wherein, in the initial arrangement, the pitches are arranged to change length step wise in order and the number of the pitch belonging to each step is predetermined, in step (a), a model of the noise pulse generated in each pitch and the objective function representing the physical amount for evaluating noise performance are determined, in step (b), the numbers of the pitches belonging to the steps between different steps are changed, and the pitch arrangement is determined by executing step (c) on the basis of the number of the pitches in each step which gives the optimum value of the objective function.

5,617,342

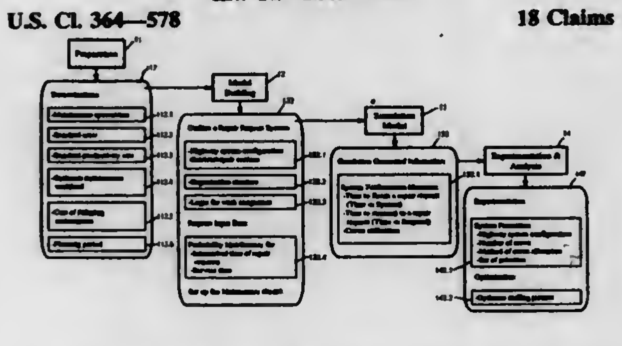
DISCRETE-EVENT SIMULATION-BASED METHOD FOR STAFFING HIGHWAY MAINTENANCE CREWS

Ashraf M. Elazouni, 1, Farakha St., Elmontaza, Zagazig, Egypt

Filed Nov. 14, 1994, Ser. No. 337,886

Int. Cl.⁶ G06F *17/10*

U.S. Cl. 364—578 **18 Claims**



The Stages of the Maintenance Management System

1. A method for determining a staffing pattern that specifies a number of maintenance crews to be recruited by a highway maintenance department to adequately and efficiently handle work of a maintenance speciality and allocates said number of maintenance crews to divisions of said highway maintenance department, using a discrete-event simulation and an optimization technique, whereby resources can be utilized most effectively to render a state highway network of a predetermined performance level comprising the steps of:

making determinations that includes the steps of identifying said maintenance speciality, establishing a standard crew for said maintenance speciality, estimating a standard productivity rate for said standard crew, establishing an optimum maintenance workload for said standard crew, estimating costs of delaying maintenance of said maintenance speciality, and determining a planning period,

building a model for said maintenance speciality that considers the steps of outlining a repair request system, preparing input data, and setting up said model,

providing a change control mechanism to select and control effects of changes within said repair request system to control the execution of said discrete-event simulation,

outputting information from said discrete-event simulation including performance measures of said repair request system,

and performing the optimization which includes using said optimization technique to determine said number of maintenance crews for said maintenance speciality.

5,617,343

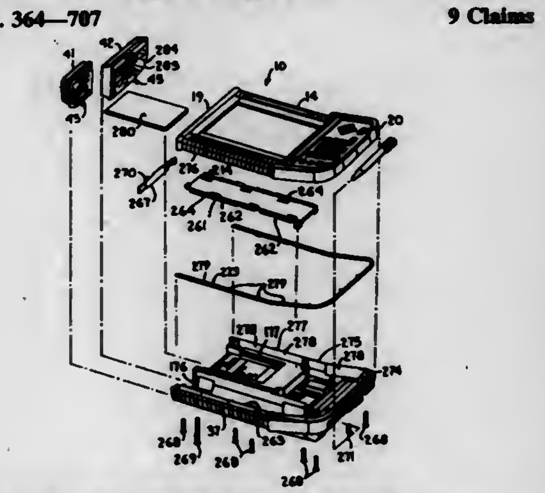
PORTABLE WORK STATION AND DATA COLLECTION TERMINAL INCLUDING SWITCHABLE MULTI PURPOSE TOUCH SCREEN DISPLAY

Arvin D. Danielson, Solon; Darald R. Schultz, Cedar Rapids, both of Iowa; Dennis Silva, San Jose, Calif.; Darrell L. Boatwright, Cedar Rapids, Iowa; Rickey G. Austin, Lisbon, Iowa, and Daniel E. Alt, Cedar Rapids, Iowa, assignors to Norand Corporation, Cedar Rapids, Iowa

Continuation of Ser. No. 226,516, Apr. 12, 1994, Pat. No. 5,488,575, which is a continuation-in-part of Ser. No. 48,873, Apr. 16, 1993, abandoned, which is a continuation-in-part of Ser. No. 948,034, Sep. 21, 1992, abandoned, which is a continuation of Ser. No. 347,602, May 3, 1989, abandoned, which is a continuation-in-part of Ser. No. 23,840, Feb. 26, 1993, abandoned, which is a continuation-in-part of Ser. No. 728,667, Jul. 11, 1991, abandoned, said Ser. No. 347,602is a continuation-in-part of Ser. No. 346,771, May 2, 1989, abandoned. This application Dec. 18, 1995, Ser. No. 573,974

Int. Cl.⁶ G06F *1/32*

U.S. Cl. 364—707 **9 Claims**



1. A portable data collection terminal comprising:

a) a housing including a non-volatile memory and a memory card door having a locked configuration:

b) a power management circuit having means for saving electrical states, including input and output device states, to said non-volatile memory wherein said means for saving electrical states includes means for trapping input-output instructions and for shadow writing such trapped input-output instructions to said non-volatile memory during normal operations of the portable data collection terminal; and

c) means for signaling said power management circuit means as to movement of said memory card door from said locked configuration.

5,617,344

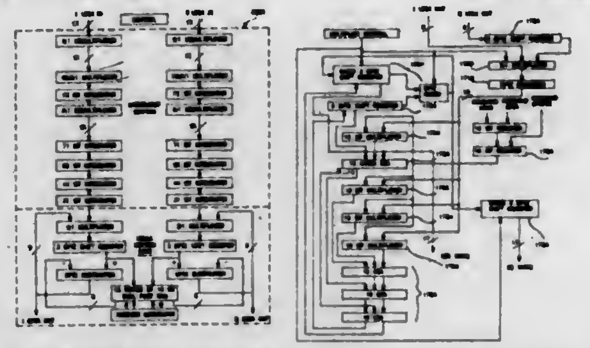
FIXED COEFFICIENT HIGH DECIMATION FILTER

William R. Young, and David B. Chester, both of Palm Bay, Fla., assignors to Harris Corp., Melbourne, Fla.

Division of Ser. No. 930,170, Aug. 14, 1992, Pat. No. 5,493,581. This application Jun. 1, 1995, Ser. No. 457,234

Int. Cl.[6] G06F *15/31*

U.S. Cl. 364—724.1 **12 Claims**



1. A digital filter, comprising:

(a) a decimation filter with a first filter input, a first filter output, and an adjustable decimation rate input, with the decimation rate of said decimation filter dependent upon said decimation rate input and with the gain of said decimation filter dependent upon said decimation rate;

(b) a multiplier with a multiplier input, a multiplicand input, and a product output, said multiplicand input coupled to said first filter output and said multiplier input with the reciprocal of said gain; and

(c) a fixed coefficient filter with second filter input coupled to said product output and with a second filter output.

5,617,345

LOGICAL OPERATION CIRCUIT AND DEVICE HAVING THE SAME

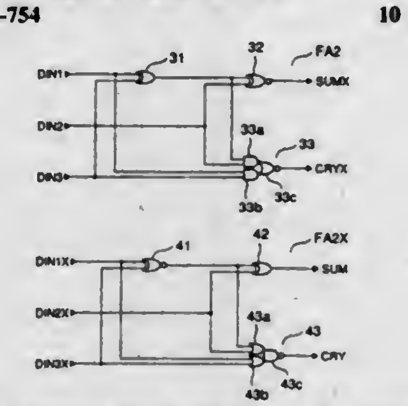
Shunsuke Kamijo, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 24, 1995, Ser. No. 518,715

Claims priority, application Japan, Sep. 29, 1994, 6-235735

Int. Cl.[6] G06F *7/52;7/50*

U.S. Cl. 364—754 **10 Claims**



1. A logical operation circuit performing a logic operation on inputs, said logical operation circuit comprising:

a plurality of adders arranged in a tree structure,

said plurality of adders including first-type adders and second-type adders,

the first-type adders being adders which receive positive-logic inputs and output negative-logic outputs,

the second-type adders being adders which receive negative-logic inputs and output positive-logic outputs.

5,617,346

MULTIPLICATION DEVICE USING SEMICONDUCTOR MEMORY

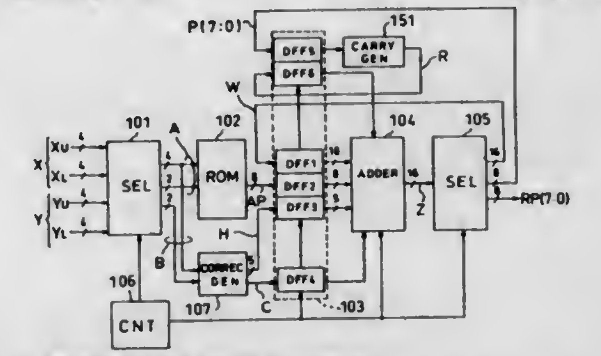
Genichiro Inoue, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 5, 1995, Ser. No. 462,901

Claims priority, application Japan, Jun. 7, 1994, 6-125025

Int. Cl.[6] G06F *7/52*

U.S. Cl. 364—757 **10 Claims**



1. A multiplication device comprising:

means for storing a plurality of approximate products and for retrieving an approximate product from said stored plurality of approximate products corresponding to a first numeric and a part of a second numeric,

said first numeric having a first plurality of bits and said second numeric having a second plurality of bits and a third plurality of bits,

each said plurality of approximate products being stored according to an address having said first numeric merged with said second plurality of bits;

means for generating a correction value from said first numeric and said third plurality of bits;

means for computing a product of said first numeric and said second numeric by performing an addition operation of said retrieved approximate product and said generated correction value.

5,617,347

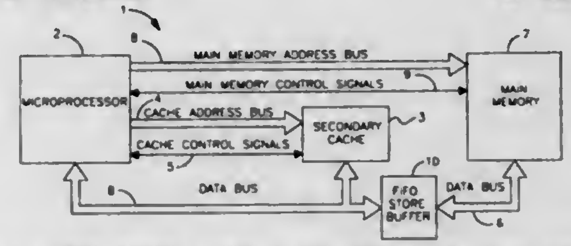
CACHE MEMORY SYSTEM AND METHOD THEREOF FOR STORING A STAGED MEMORY ITEM AND A CACHE TAG WITHIN A SINGLE CACHE ARRAY STRUCTURE

Mogens Lauritzen, Los Altos, Calif., assignor to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 17, 1995, Ser. No. 406,305

Int. Cl.[6] G11C *15/00*

U.S. Cl. 365—49 **26 Claims**



1. A cache memory system for providing memory items staged from an external memory to a logic unit, comprising:

at least one single cache array structure comprising a plurality of cache entries for storing complete memory items and complete corresponding cache tags, each of the cache entries comprising a memory item section for storing a portion of each such memory item and a cache tag section for storing a portion of the corresponding cache tag, each such cache tag identifying at least one of the cache entries, the at least one single cache array structure being responsive to address signals for reading out the contents of the cache entries;

a logic circuit responsive to memory requests for generating the address signals and comprising means for comparing the cache tags to the memory requests for a predetermined relationship;

an address bus interconnecting the at least one single cache array structure and the logic circuit for carrying the address signals to the at least one single cache array structure; and

a data bus interconnecting the at least one single cache array structure and the logic circuit for carrying the cache tags and the memory items between the at least one single cache array structure and the logic circuit.

5,617,348

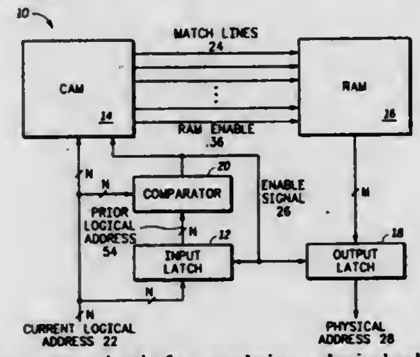
LOW POWER DATA TRANSLATION CIRCUIT AND METHOD OF OPERATION

Jeffrey E. Maguire, Austin, Tex., assignor to Motorola, Schaumburg, Ill.

Filed Jul. 24, 1995, Ser. No. 506,305

Int. Cl.[6] G11C *15/00*

U.S. Cl. 365—49 **28 Claims**



1. A low power circuit for translating a logical address to a corresponding physical address, the low power circuit comprising:

an input latch for receiving a logical address;

a content addressable memory (CAM), for receiving the logical address and producing a corresponding match signal when the logical address matches an entry stored in the CAM;

a random access memory operably coupled to the content addressable memory, the random access memory stores a plurality of physical adresses, and upon receipt of an enable signal and the corresponding match signal, the random access memory produces a corresponding physical address;

an output latch operable coupled to the random access memory, wherein the output latch stores the corresponding physical address; and

a comparator operably coupled to the input latch, the content addressable memory, and the random access memory, the comparator receives the logical address, and a prior logical address, wherein the comparator compares the logical address with the prior logical address, and the comparator asserts the enable signal when the logical address does not match the prior logical address, wherein the random access memory is maintained in a low power consumption state if the enable signal is de-asserted.

5,617,349

FERROELECTRIC MEMORY AND METHOD FOR CONTROLLING OPERATION OF THE SAME

Hiroki Koike, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

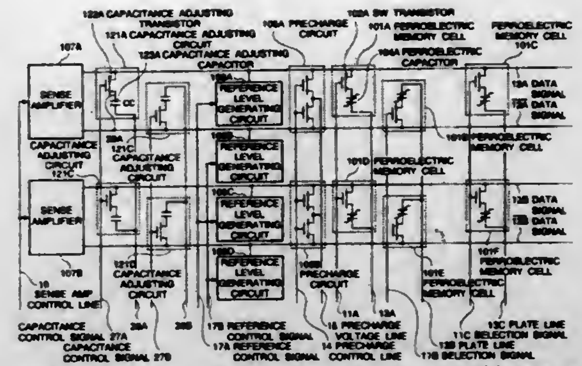
Filed Jan. 4, 1996, Ser. No. 582,960

Claims priority, application Japan, Jan. 4, 1995, 7-000064

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—145 **33 Claims**

1. A ferroelectric memory comprising a plurality of pairs of data signal lines for outputting and receiving data, a plurality of selection signal lines selected in accordance with an address signal, and



a plurality of memory cells, wherein each memory cell is arranged along a corresponding pair of data signal lines of said plurality of pairs of data signal lines, wherein said memory cell is controlled by a corresponding one of said selection line signals, and wherein each said memory cells includes

at least one ferroelectric capacitor having a capacitor dielectric comprising a ferroelectric material disposed between a pair of opposing electrodes, at least one switching means connected to said ferroelectric capacitor and one data signal line of said corresponding pair of data signal lines,

wherein polarized conditions of said ferroelectric capacitor correspond to conditions of stored data in said ferroelectric capacitor, and

wherein when a first voltage is applied between the opposing electrodes of said ferroelectric capacitor, a current flows between said ferroelectric capacitor and the corresponding data signal line, depending upon the polarized condition of said ferroelectric capacitor, and a voltage appears on the corresponding pair of data signal lines due to the current and said voltage is detected for the purpose of reading out the stored data;

a means connected to the corresponding one pair of data signal lines for detecting a voltage difference appearing between the corresponding pair of data signal lines; and

a means connected to at least one data signal line of the corresponding pair of data signal lines for temporarily controlling a parasitic capacitance of said at least one data signal line of the corresponding pair of data signal lines to obtain an optimum capacitance value when said stored data is read out from a memory cell, and wherein said optimum value minimizes a variation of the voltage on said data signal line caused by factors other than the current flowing between said ferroelectric capacitor and said data signal line.

5,617,350

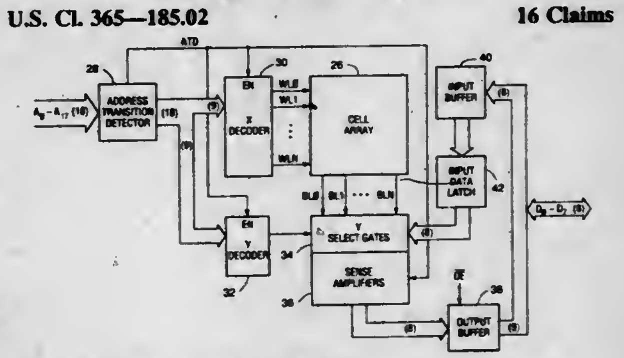
FLASH MEMORY SYSTEM HAVING REDUCED DISTURB AND METHOD

Frankie F. Roohparvar, 5855 Bollinger Rd., Cupertino, Calif. 95014

Filed Aug. 1, 1995, Ser. No. 509,876

Int. Cl.[6] G11C *11/34*

U.S. Cl. 365—185.02 **16 Claims**



1. A flash memory system comprising:

an array of flash memory cells arranged into a multiplicity of rows and columns, with all of the cells located in one of rows having a control gate connected to a common word line and with all of the cells in a column having a drain connected to a common bit line:

control means for carrying out memory operations, with the control means comprising

(1) program means for programming cells of the array based upon a program input address;

(2) read means for reading cells of the array based upon a read input address, with the read means functioning to apply a read voltage to a selected one of the word lines of the array as determined by the read input address; and

disturb limit means for limiting a time period that the read means applies the read voltage to the selected one of the word lines.

5,617,351

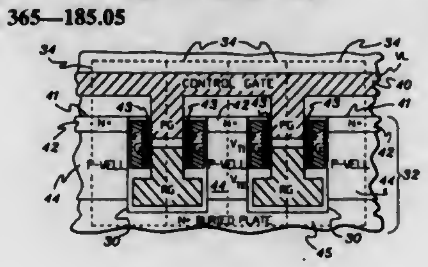
THREE-DIMENSIONAL DIRECT-WRITE EEPROM ARRAYS AND FABRICATION METHODS

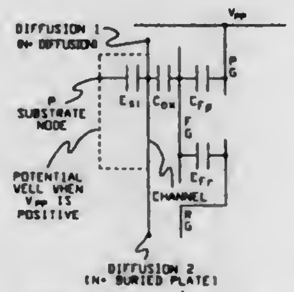
Claude L. Bertin, South Burlington, Vt.; Donelli J. DiMaria, Ossining, N.Y.; Makoto Miyakawa, and Yoshinori Sakaue, both of Tokyo, Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 850,734, Mar. 12, 1992, Pat. No. 5,467,305. This application Jun. 5, 1995, Ser. No. 464,018

Int. Cl.⁶ G11C *16/04*

U.S. Cl. 365—185.05 23 Claims





1. A direct-write EEPROM memory array formed in a semiconductor substrate, said memory array comprising:

a first elongated trench formed in the semiconductor substrate;

multiple vertical direct-write EEPROM cells disposed in said first elongated trench, one of said EEPROM cells being paired within said first elongated trench with another of said EEPROM cells such that paired EEPROM cells are disposed in said first elongated trench, the paired EEPROM cells being disposed on respective opposing walls of the elongated trench; and

at least one control gate disposed within said first elongated trench, said paired EEPROM cells sharing a control gate of said at least one control gate, at least a portion of the shared control gate of said at least one control gate comprising a single electrically continuous gate structure disposed in the trench between, and in operative relationship with, the paired EEPROM cells, the shared control gate of the at least one control gate being in electrical contact with a line structure crossing the first elongated trench to thereby operate each EEPROM cell of the paired EEPROM cells; and

an electrically continuous diffusion structure associated with said first elongated trench, said electrically continuous diffusion structure comprising either a source node or a drain node for each of at least two vertical direct-write EEPROM cells of said multiple vertical direct-write EEPROM cells disposed in said first elongated trench.

5,617,352

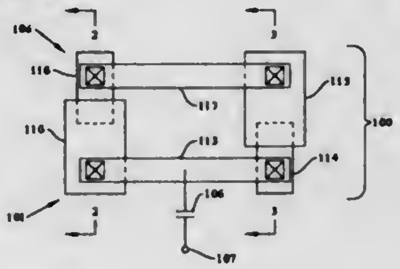
NON-VOLATILE, BIDIRECTIONAL, ELECTRICALLY PROGRAMMABLE INTEGRATED MEMORY ELEMENT IMPLEMENTED USING DOUBLE POLYSILICON

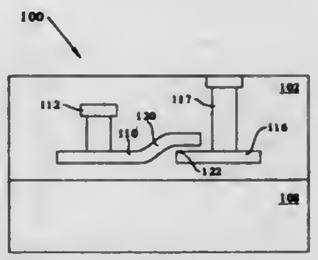
Patrick A. Shoemaker, Lemon Grove, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 13, 1995, Ser. No. 572,205

Int. Cl.⁶ G11C *11/34*

U.S. Cl. 365—185.08 14 Claims





1. A non-volatile, bidirectional, integrated memory element, comprising:

a substrate;

a dielectric structure supported by said substrate;

a programming terminal supported by said dielectric structure which includes:

a first polysilicon structure;

a second polysilicon structure; and

an electrically conductive first interconnect which electrically connects said first polysilicon structure to said second polysilicon structure;

a floating gate structure supported by said dielectric structure which includes:

a third polysilicon structure which partially overlies and is separated from a section of said first polysilicon structure by said dielectric structure;

a fourth polysilicon structure which is overlain and separated from a section of said second polysilicon structure by said dielectric structure; and

an electrically conductive second interconnect which electrically connects said third polysilicon structure to said fourth polysilicon structure;

a bias capacitor having a first plate formed by a portion of said floating gate structure and a second plate; and

a bias terminal electrically connected to said second plate of said bias capacitor.

5,617,353

NONVOLATILE SEMICONDUCTOR MEMORY DEVICE

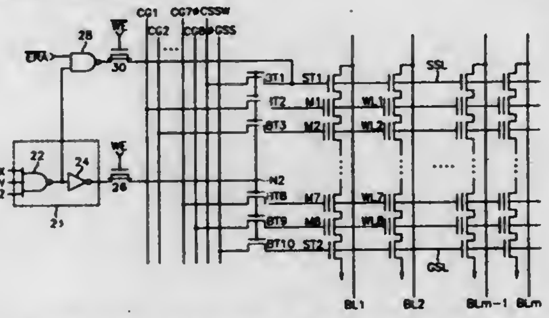
Young-Ho Lim, and Kang-Deog Suh, both of Kyungki-do, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Division of Ser. No. 350,162, Nov. 30, 1994. This application Jun. 5, 1996, Ser. No. 658,438

Claims priority, application Rep. of Korea, Nov. 30, 1994, 25961/1993

Int. Cl.⁶ G11C *11/40*

U.S. Cl. 365—185.17 1 Claim



1. A method for reading data in an electrically erasable and programmable nonvolatile semiconductor memory device comprising;

a memory block including a predetermined number of NAND cell strings, each of said NAND cell strings including a predetermined number of memory cells having their channels serially connected one to another and their gates controlled by corresponding word lines, and each of said memory cells having a control gate and a floating gate,

said NAND cell strings being connected to a bit line and a ground voltage via string selection means and ground selection means respectively and sharing the word lines, wherein a string selection signal and a ground voltage selection signal are respectively applied to said string selection means and said ground selection means of each of said NAND cell strings, and wherein said word lines receive control gate driving signals from control gate driving means via corresponding transfer transistors, said method comprising the steps of:

charging respective junction capacitors between gate and source of said transfer transistors to a first voltage by applying a block selection signal having said first voltage to a common node connected to the gates of said transfer transistors, and by applying respective control gate driving signals having a reference potential to one end of the channel of said transfer transistors; and,

applying a first reference potential to the gate of a selected one of said transfer transistors corresponding to a selected word line, and applying a second voltage to the gates of said transfer transistors other than said selected one of said transfer transistor, such that said common node rises to said second voltage, wherein said second voltage is higher than said first voltage.

5,617,354

SENSING CIRCUIT TO ENHANCE SENSING MARGIN

Byoung K. Cha, and Chang W. Ha, both of Kyungki-Do, Rep. of Korea, assignors to Hyundai Electronics Industries Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Dec. 21, 1995, Ser. No. 576,563

Claims priority, application Rep. of Korea, Dec. 29, 1994, 94-38577

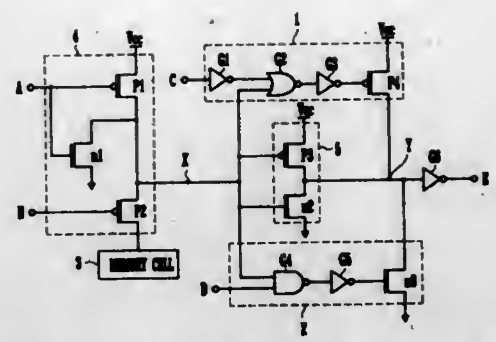
Int. Cl.⁶ G11C *7/00*

U.S. Cl. 365—185.21 5 Claims

1. A sensing circuit to enhance sensing margin comprising:

a memory cell;

a memory cell enable circuit for supplying an operation voltage for said memory cell based on first and second enable signals;



a detection circuit for detecting a threshold voltage of said memory cell during a normal read-out operation;

a first verification circuit for pulling up the output from said detection circuit based on the threshold voltage of said memory cell and a first control signal; and

a second verification circuit for pulling down the output from said detection circuit based on the threshold voltage of said memory cell and a second control signal.

5,617,355

SEMICONDUCTOR MEMORY DEVICE HAVING POSITIVE FEEDBACK SENSE AMPLIFIER

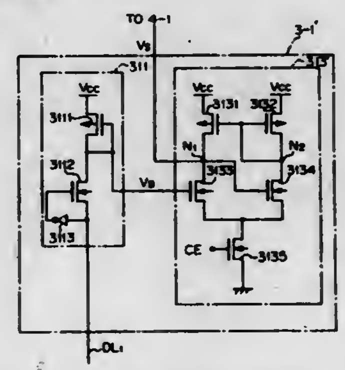
Takaki Kohno, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 18, 1996, Ser. No. 588,372

Claims priority, application Japan, Jan. 20, 1995, 7-026177

Int. Cl.⁶ G11C *11/34;7/02*

U.S. Cl. 365—185.21 11 Claims



1. A semiconductor memory device comprising:

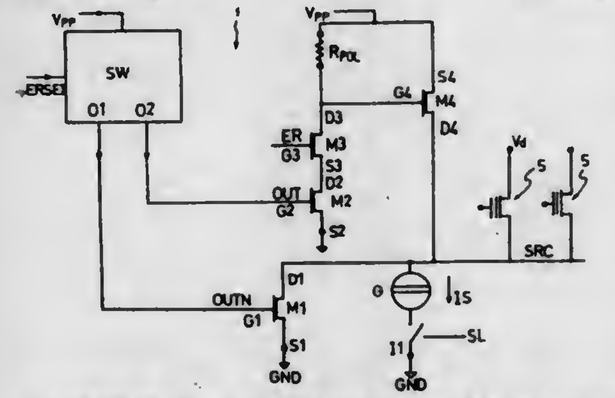
a memory cell array including a plurality of read-only memory cells;

a digit line, connected to said memory cell array, for receiving read data from a selected one of said read-only memory cells;

a bias circuit, connected to said digit line, for amplifying a voltage at said digit line; and

a differential amplifier having a positive phase input, a negative phase input, a positive phase output and a negative phase output, one of said positive phase input and said negative phase input being connected to an output of said bias circuit, the other of said positive phase input and said negative phase input being connected to one of said positive phase output and said negative phase output in-phase.

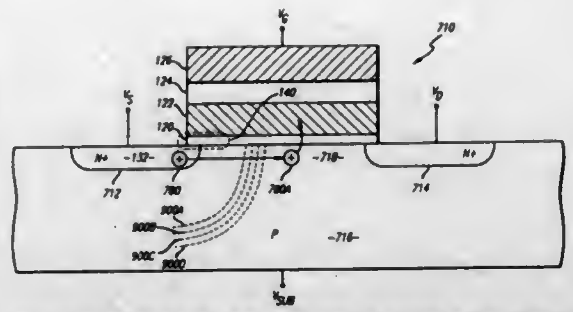
5,617,356
REGULATION CIRCUIT AND METHOD FOR THE ERASING PHASE OF NON-VOLATILE MEMORY CELLS
Carla Golla, Sesto San Giovanni; Silvia Padoan, Rimini, and Marco Olivo, Bergamo, all of Italy, assignors to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, Italy
Filed Feb. 21, 1995, Ser. No. 395,361
Claims priority, application European Pat. Off., Feb. 21, 1994, 94830077
Int. Cl.⁶ G11C ***16/02***
U.S. Cl. 365—185.25 **23 Claims**



1. A regulating circuit for discharging non-volatile memory cells in an electrically programmable memory device, which comprises:
a first switch connected between a programming voltage reference and a line shared by source terminals of transistors forming the memory cells;
a first discharge connection between the line and a ground voltage reference, comprising:
a current generator for driving in a controlled manner the current flowing through the connection to discharge the line at a slow rate, the current generator being connected in the first discharge connection, and
a second, normally open, switch connected in the first discharge connection,
a second discharge connection, wherein a discharging transistor is connected in the second discharge connection, and wherein in the current generator is in parallel with the discharging transistor,
a logic circuit connected to the line to compare the voltage value present thereon with a predetermined threshold value, and
a third switch connected to the programming voltage reference and to the discharging transistor and operated by a signal produced by the logic circuit to turn on the discharging transistor.

5,617,357
FLASH EEPROM MEMORY WITH IMPROVED DISCHARGE SPEED USING SUBSTRATE BIAS AND METHOD THEREFOR
Sameer S. Haddad, San Jose, and Hao Fang, Cupertino, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.
Filed Apr. 7, 1995, Ser. No. 420,989
Int. Cl.⁶ G11C ***11/40***
U.S. Cl. 365—185.27 **28 Claims**

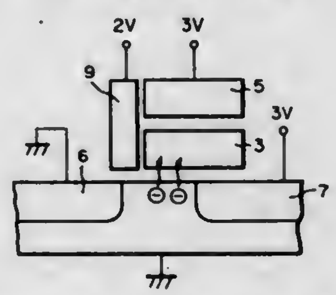
1. A floating gate memory device comprising:
an array of memory cells formed at least in part in a core semiconductor region of a predetermined conductivity type; and
a control circuit for selectively charging, discharging and generating indicia of a charge state of each of the cells of the array;
each cell comprising
first and second semiconductor regions of a conductivity type opposite the conductivity type of the core region,
a channel semiconductor region of the same conductivity type as the core region, and



a selectively chargeable gate structure including a first dielectric overlying the channel region, a floating gate overlying the first dielectric and a control gate,
the first, second and channel semiconductor regions being formed in the core region, with the first and second semiconductor regions defining a controlled current path through the channel region which tends to be rendered conductive in response to a voltage greater than a gate threshold level being applied to the control gate;
the gate threshold level being a function of the charge state of the floating gate, such that conduction of the cell in response to application to the control gate of a predetermined voltage is indicative of the logical state of the cell, and
the cell being dischargeable by movement of electrons from the floating gate through the first dielectric to the first semiconductor region to remove the charge on the floating gate;
the control circuit composing a circuit for effecting selective discharge of the cell by, during discharge operations only, selectively applying a first predetermined positive voltage to the first semiconductor region, a high impedance to the second semiconductor region, a first predetermined negative voltage to the selectively chargeable gate structure, and a second predetermined negative voltage to the core semiconductor region;
whereby, during discharge operations only, hot holes are injected from the channel region through the first dielectric to the floating gate to increase the rate of discharge of the cell.

5,617,358
NONVOLATILE SEMICONDUCTOR MEMORY DEVICE CAPABLE OF CONVERGING THRESHOLD VOLTAGE WITH LOW POWER SUPPLY VOLTAGE
Noriaki Kodama, Tokyo, Japan, assignor to NEC Corporation, Japan
Filed Mar. 10, 1995, Ser. No. 402,037
Claims priority, application Japan, Mar. 11, 1994, 6-066427
Int. Cl.⁶ G11C ***11/34***
U.S. Cl. 365—185.29 **8 Claims**

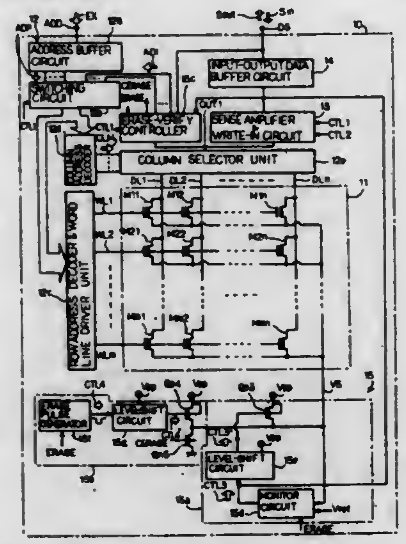
Vth CONVERGENCE MODE



1. A nonvolatile semiconductor memory device comprising:
a semiconductor substrate of a first conductivity type;
a first gate insulating layer formed on said semiconductor substrate;
a floating gate formed on said first gate insulating layer;
a second gate insulating layer formed on said floating gate;
a control gate formed on said second gate insulating layer;

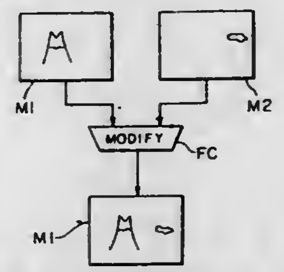
a source region of a second conductivity type opposite to said first conductivity type, formed within said semiconductor substrate adjacent to said floating gate;
a drain region of said second conductivity type, formed within said semiconductor substrate adjacent to said floating gate and opposite to said source region;
electron expelling means for expelling electrons from said floating gate to one of said source and drain regions by Fowler-Nordheim tunneling;
electron injecting means for injecting hot electrons of a channel current flowing between said source region and said drain region into said floating gate, after an operation of said electron expelling means is completed;
enhancing means for enhancing said channel current; and
wherein said semiconductor substrate is of a P-type, and said electron injecting means applies a ground potential, a first positive voltage and a second positive voltage to said source region, said control gate and said drain region, respectively.

5,617,359
ELECTRICALLY ERASABLE AND PROGRAMMABLE READ ONLY MEMORY DEVICE WITH SOURCE VOLTAGE CONTROLLER FOR QUICKLY ERASING DATA
Kazuhisa Ninomiya, Tokyo, Japan, assignor to NEC Corporation, Japan
Filed Oct. 12, 1995, Ser. No. 542,176
Claims priority, application Japan, Oct. 12, 1994, 6-245737
Int. Cl.⁶ G11C ***11/34***
U.S. Cl. 365—185.29 **11 Claims**



1. A semiconductor memory device comprising:
a memory cell array having a plurality of memory cells each implemented by a floating gate type field effect transistor changed between an erased state and a write-in state depending upon a data bit stored therein;
a write-in means for writing data bits into memory cells selected from said plurality of memory cells;
a read-out means for reading said data bits from memory cells selected from said plurality of memory cells;
an addressing system responsive to address signals so as to select a memory cell from said memory cell array;
a source line connected to source nodes of said plurality of memory cells; and
an erase and verify system enabled in an erase and verify mode having a first phase and a second phase next to said first phase, and including
a first erasing means supplying an erasing signal of an active level to said source line in said first phase and monitoring a potential level on said source line for maintaining said erasing signal in said active level until said source line reaches a reference level close to said active level,
a second erasing means intermittently supplying an erasing pulse signal of said active level to said source line for changing said plurality of memory cells to said erased state, and
a verify means checking said plurality of memory cells to determine whether or not said plurality of memory cells enter into said erased state while said erasing pulse signal is staying in an inactive level.

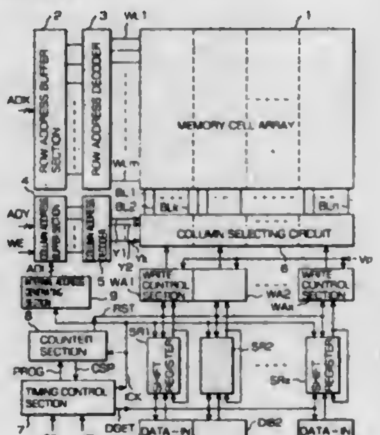
5,617,360
MEMORY DEVICE
Koichi Kimura, Yokohama; Toshihiko Ogura, Ebina; Hiroaki Aotsu, Yokohama; Mitsuru Ikegami, Kanagawa-ken; Tadashi Knwabara, Yokohama; Hiromichi Enomoto, and Tadashi Kyoda, both of Hadano, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Continuation of Ser. No. 458,480, Jun. 2, 1995, Pat. No. 5,523,973, which is a continuation of Ser. No. 435,959, May 5, 1995, Pat. No. 5,493,528, which is a continuation of Ser. No. 294,407, Aug. 23, 1994, Pat. No. 5,448,519, which is a continuation of Ser. No. 855,843, Mar. 20, 1992, Pat. No. 5,450,342, which is a continuation-in-part of Ser. No. 349,403, May 8, 1989, Pat. No. 5,175,838, which is a continuation of Ser. No. 240,380, Aug. 29, 1988, now Re. 33,922, which is a continuation of Ser. No. 779,676, Sep. 24, 1985, abandoned, said Ser. No. 855,843is a continuation-in-part of Ser. No. 816,583, Jan. 3, 1992, which is a continuation of Ser. No. 314,238, Feb. 22, 1989, Pat. No. 5,113,487, which is a continuation of Ser. No. 864,502, May 19, 1986, abandoned, said Ser. No. 816,583is a continuation-in-part of Ser. No. 349,403. This application Jan. 18, 1996, Ser. No. 588,232
Claims priority, application Japan, Oct. 5, 1984, 59-208266; May 20, 1985, 60-105844; May 20, 1985, 60-105845; May 20, 1985, 60-105847; May 20, 1985, 60-105850
Int. Cl.⁶ G11C ***13/00***
U.S. Cl. 365—189.01 **5 Claims**



1. A one-chip memory device, comprising:
a memory element; and
an access portion including:
a first external terminal for inputting data, and
a second external terminal for inputting an indication signal indicating a mode of writing data from said first external terminal into said memory element, and
selection indication means for selecting a mode among a plurality of modes based on said indication signal indicating a mode of writing input from said second external terminal, said access portion inputting data input from said first external terminal and data read out of said memory element, and executing a write operation into said memory element under said mode indicated with said indication signal;
wherein said access portion repeats execution of said write operation when an indication signal indicating a specific mode is input to said second external terminal and repeats execution of a different write operation when an indication signal indicating a different write operation is inputted to said second external terminal, and wherein said indication signal is inputted in said second external terminal without being accompa-

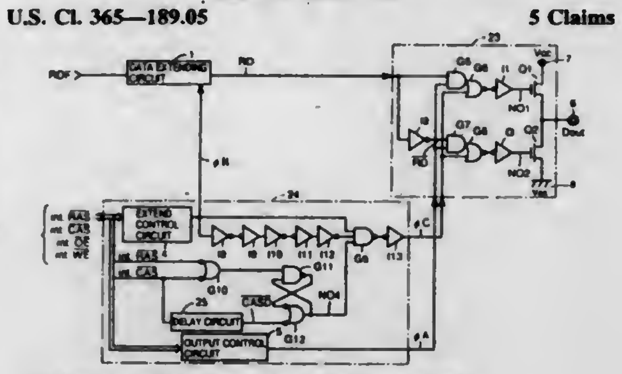
nied by a write operation into said memory element prior to any one of said write operation of said specific mode and said different mode.

5,617,361
NON-VOLATILE SEMICONDUCTOR MEMORY DEVICE
Hiroshi Sugawara, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Apr. 1, 1996, Ser. No. 625,830
Claims priority, application Japan, Mar. 31, 1995, 7-75134
Int. Cl.⁶ G11C *16/04*
U.S. Cl. 365—189.01 **3 Claims**



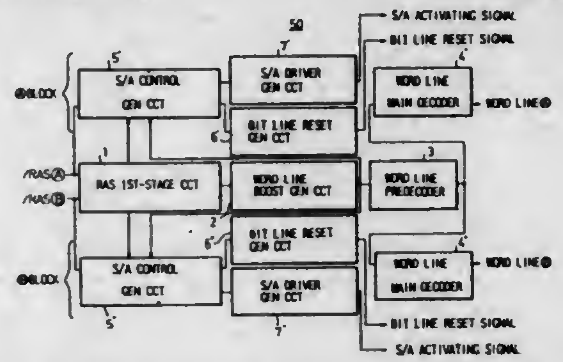
1. A non-volatile semiconductor memory device comprising:
a semiconductor substrate;
a memory cell array formed on said semiconductor substrate and including at least one block having a plurality of memory cell transistors arranged in a matrix, each of said memory cell transistors having a floating gate for storage of electric charge;
a plurality of word lines disposed for each row of said plurality of memory cell transistors;
a plurality of bit lines disposed for each column of said plurality of memory cell transistors and including a first bit line and a last bit line;
a row selection section for selecting one of said word lines during a write operation mode;
a column selection section for selecting said plurality of bit lines one by one in said block during said write operation mode;
a timing control section for controlling said column selection section to select each of said plurality of bit lines for a first period; and
a write control section for providing electric charge in accordance with a data signal for said first period to said floating gate of each specified one of said memory cell transistors corresponding to said word line and said bit lines selected by said row selection section and column selection section,
wherein said timing control section includes a timing signal generating section for generating an internal address signal in response to a start signal for said write operation mode, said internal address signal specifying said plurality of bit lines in cyclic order, and a counter section starting to count pulses of said internal address signal in response to said start signal for generating a stop signal for said timing signal generating section.

5,617,362
SEMICONDUCTOR MEMORY DEVICE HAVING EXTENDED DATA OUT FUNCTION
Shigeru Mori; Tomio Suzuki, and Masanori Hayashikoshi, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 345,758, Nov. 22, 1994, Pat. No. 5,532,961. This application Apr. 9, 1996, Ser. No. 629,682
Claims priority, application Japan, Dec. 21, 1993, 5-321557
Int. Cl.⁶ G11C *7/00*
U.S. Cl. 365—189.05 **5 Claims**



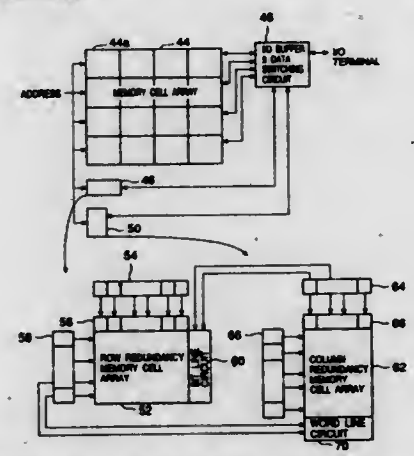
1. A semiconductor memory device comprising:
an output terminal,
a plurality of memory cells, each storing data of a first or second logic level therein,
read out means for reading out sequentially data stored in said memory cells,
extending means for extending each data read out from said read out means,
providing means responsive to extended data from said extending means for providing output data sequentially to said output terminal, and
intermediate level rendering means for rendering a potential of said output terminal to an intermediate level which is a level between the first and second logic levels before each output data is provided by said providing means.

5,617,363
DYNAMIC RANDOM ACCESS MEMORY HAVING SENSE AMPLIFIER CONTROL CIRCUIT SUPPLIED WITH EXTERNAL SENSE AMPLIFIER ACTIVATING SIGNAL
Fuminori Yumitori, and Yasuhiro Fujii, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Division of Ser. No. 186,609, Jan. 26, 1994, Pat. No. 5,471,425. This application Aug. 22, 1995, Ser. No. 517,762
Claims priority, application Japan, Mar. 10, 1993, 5-049379
Int. Cl.⁶ G11C *7/00*
U.S. Cl. 365—190 **5 Claims**



1. A dynamic random access memory (DRAM) comprising:
a plurality of memory cells selected by word lines and bit lines;
sense amplifiers connected to each one of said bit lines;
a word line (WL) boost signal-generating circuit activating at least one of said word lines by a one shot pulse in synchronism with the rising and breaking edges of each one of a plurality of row address strobe (/RAS) signals; and
a sense amplifier control signal-generating circuit controlling said sense amplifiers so as to activate or deactivate said sense amplifier in a synchronism with said row address strobe (/RAS) signals.

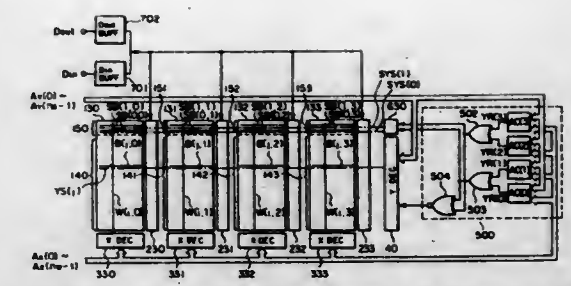
5,617,364
SEMICONDUCTOR MEMORY DEVICE
Atsushi Hatakeyama, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
Filed Mar. 9, 1995, Ser. No. 401,762
Claims priority, application Japan, Jun. 30, 1994, 6-150226
Int. Cl.⁶ G11C *29/00*
U.S. Cl. 365—200 **12 Claims**



1. A semiconductor memory device comprising:
a memory cell array having memory cells connected to word lines and bit lines;
a redundant memory cell array having either a row redundancy array which is commonly provided to the memory cells and has redundant word lines for saving faulty word lines, or a column redundancy array which is commonly provided to the memory cells and has redundant bit lines for saving faulty bit lines; and
a redundancy saving circuit including either one or more row redundancy array saving bit lines for saving one or more bit-line faults occurring in the row redundancy array or one or more column redundancy array saving word lines for saving one or more word-line faults occurring in the column redundancy array.

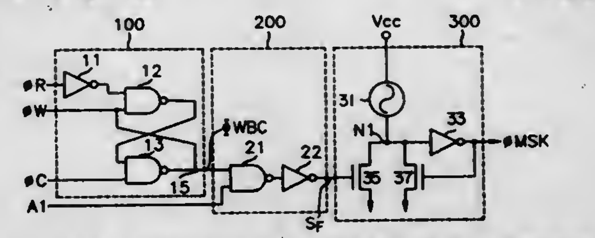
5,617,365
SEMICONDUCTOR DEVICE HAVING REDUNDANCY CIRCUIT
Masashi Horiguchi, Kawasaki; Jun Etoh, Hachioji; Masakazu Aoki, Tokorozawa, and Kiyoo Itoh, Higashikurume, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Continuation of Ser. No. 155,848, Nov. 23, 1993, abandoned, which is a division of Ser. No. 818,434, Dec. 27, 1991, Pat. No. 5,265,055, which is a continuation of Ser. No. 419,399, Oct. 10, 1989, abandoned. This application Sep. 27, 1995, Ser. No. 535,574
Claims priority, application Japan, Oct. 7, 1988, 63-252028; Oct. 31, 1988, 63-275375
Int. Cl.⁶ G11C *29/00;7/00*
U.S. Cl. 365—200 **25 Claims**

1. A semiconductor memory comprising:
a first memory mat and a second memory mat each having a plurality of word lines, a plurality of bit lines and a first spare bit line;



a spare bit line selection circuit having a first spare bit line selection line for selecting said first spare bit line of said first and second memory mats;
a first logical OR gate having an output coupled to said spare bit line selection circuit;
a first address comparing circuit for comparing a first defective address stored therein with a portion of an access address and having an output coupled to an input of said first logical OR gate; and
a second address comparing circuit for comparing a second defective address stored therein with said portion of the access address and having an output coupled to an input of said first logical OR gate,
wherein each of said first defective address and said second defective address contains a column address indicative of a defective one of the plurality of bit lines of a respective one of said first and second memory mats and a part of a row address indicating selection of one of said first and second memory mats.

5,617,366
METHOD AND APPARATUS FOR A TEST CONTROL CIRCUIT OF A SEMICONDUCTOR MEMORY DEVICE
Jei-Hwan Yoo, Kyungki-do, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea
Filed Dec. 12, 1995, Ser. No. 570,868
Claims priority, application Rep. of Korea, Dec. 13, 1994, 33913/1994
Int. Cl.⁶ G11C *7/00*
U.S. Cl. 365—201 **8 Claims**



8. A test control circuit of a semiconductor memory device, comprising:
mode signal generating means for receiving and logically combining external input signals in order to provide a mode signal;
fusing signal generating means for receiving the mode signal and an address signal and provide a fusing signal in response to the address signal and the mode signal;
blocking signal generating means comprising a fuse capable of being electrically blown, the blocking signal generating means for generating a blocking signal having a first logic level when the fuse is active and the memory is in a parallel test mode, and having a second logic level when the fuse is blown; and
test signal generating means for generating a parallel test enable signal instructing the performance of a parallel test, based on the blocking signal and the external input signals,
wherein the fusing signal instructs the blocking signal generating means to blow the fuse in the blocking signal generating means upon advancing to a normal operation mode, and

wherein the test signal generating means disables the parallel test enable signal when the blocking signal is of the second logic level, thus stopping any further parallel testing.

5,617,367

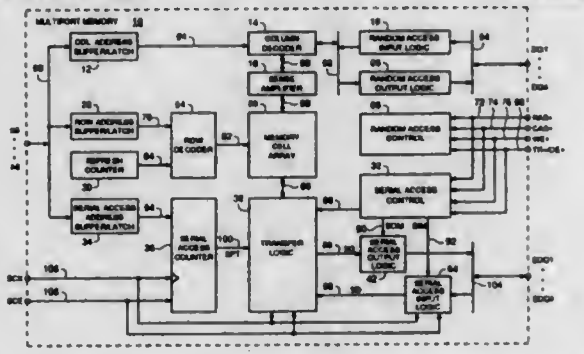
CONTROLLING SYNCHRONOUS SERIAL ACCESS TO A MULTIPORT MEMORY

Stephen D. Holland, and Charles L. Ingalls, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation of Ser. No. 115,487, Sep. 1, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 485,804

Int. Cl.⁶ G11C 7/00

U.S. Cl. 365—219 2 Claims



1. A serial synchronous memory circuit responsive to an external continuous clock signal having an active edge and an external enable signal, comprising:

a plurality of memory cells arranged in at least one row and at least one column;

means for random read and write access of the plurality of memory cells;

a parallel port connected to the means for random read and write access;

a clock input capable of receiving continuous clock signal and a clock enable input connected to gate the clock input signal and capable of receiving the external enable signal;

a counter connected to the clock input and enable input, the counter having an output which produces a count value in response to the external continuous clock signal on the clock input and the external clock enable signal on the clock enable input;

a register connected to the counter and to at least one column of the plurality of memory cells;

a delay element connected between a serial port and the register and having a delay value selected to synchronize the active edge of the external continuous clock signal with data values of a serial data signal on the serial port;

serial control means connected to the register and responsive to a first direction signal for shifting the data values into the register from the delay element port in response to the count value and in synchrony with the external continuous clock signal and for loading the data values into the plurality of memory cells, and;

the serial means further responsive to a second direction signal for shifting the contents of the register out the serial port in response to the count value and in synchrony with the external continuous clock signal.

5,617,368

SEMICONDUCTOR MEMORY DEVICE EQUIPPED WITH SERIAL DATA READING CIRCUIT AND METHOD OF OUTPUTTING SERIAL DATA FROM SEMICONDUCTOR MEMORY

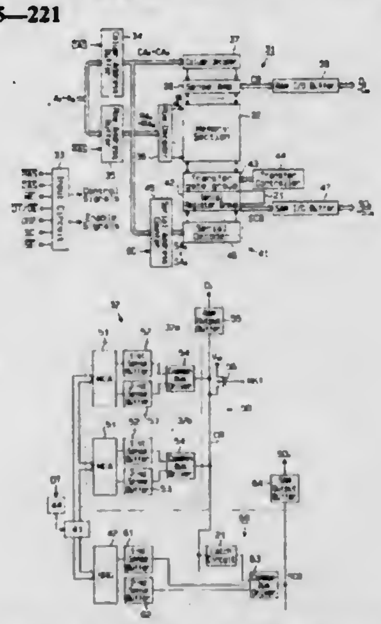
Yoshiyuki Ishida, Kasugai, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 26, 1995, Ser. No. 533,788

Claims priority, application Japan, Oct. 6, 1994, 6-243134

Int. Cl.⁶ G11C 7/00

U.S. Cl. 365—221 9 Claims



1. A semiconductor memory device including a memory cell array having a plurality of memory cells connected to a plurality of word lines, said device comprising:

a random access data reading circuit, coupled to said memory cell array, for reading cell data from a memory cell selected based on a row address signal and a column address signal, said reading circuit including a random access sense buffer and a random access common bus driver, coupled to said memory cell array, and a random access output buffer connected via a common bus to said random access common bus driver; and

a serial access data reading circuit, coupled to said memory cell array, for reading cell data from memory cells, connected to a word line of the memory cell array selected based on the row address signal in a read transfer mode, wherein said serial access data reading circuit includes:

a serial address counter;

a plurality of serial registers for storing data supplied from individual memory cells as read from said selected word line;

a serial access sense buffer, coupled to said plurality of serial registers, for receiving data signal selectively supplied from said serial registers in accordance with an address value of said serial address counter;

a latch circuit, connected to said common bus of said random access data reading circuit, for latching an initial data signal placed on said common bus by said random access common bus driver in said read transfer mode;

a serial access output buffer; and

a serial access common bus driver, coupled to said serial access sense buffer, said latch circuit and said serial access output buffer, for supplying said initial data signal latched in said latch circuit to said serial access output buffer first, and then supplying data signals from said serial registers to said serial access output buffer via said serial access sense buffer.

5,617,369

DYNAMIC SEMICONDUCTOR MEMORY DEVICE HAVING EXCELLENT CHARGE RETENTION CHARACTERISTICS

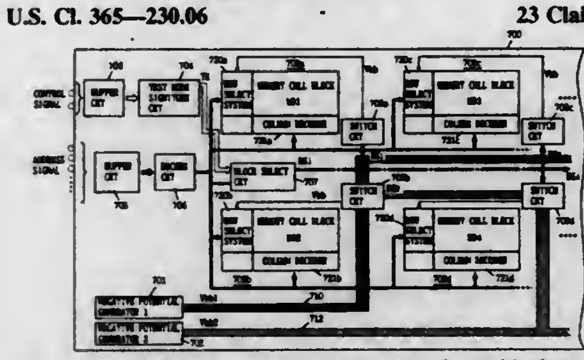
Shigeki Tomishima, and Kazutami Arimoto, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 10, 1995, Ser. No. 438,730

Claims priority, application Japan, May 11, 1994, 6-097511

Int. Cl.⁶ G11C 8/00

U.S. Cl. 365—230.06 23 Claims



1. A semiconductor memory device operating with first and second power source voltages different in logic from each other comprising:

a memory cell array having a plurality of memory cells arranged in a matrix of rows and columns, each of the memory cells formed at a substrate region supplied with a bias potential of a first polarity and including an enhancement type field effect transistor;

a plurality of word lines provided corresponding to the respective rows, each of the word lines connected to the field effect transistors of the memory cells on a corresponding row; and

a plurality of drive means provided corresponding to said plurality of word lines, respectively, each of the drive means including a first drive element transmitting a voltage signal of a second polarity different from said first polarity onto the corresponding word line when the corresponding word line is specified by an address signal, and a second drive element transmitting a voltage signal of said first polarity onto the corresponding word line when said address signal specifies a word line other than said corresponding word line, the difference between the voltage signals of the first and second polarities being greater than that between the first and second power source voltages.

5,617,370

SEMICONDUCTOR MEMORY DEVICE WITH CONTROLLABLE CHARGING CHARACTERISTICS OF COLUMN LINES

Kimiyasu Ishikawa, Kumamoto, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 27, 1995, Ser. No. 549,388

Claims priority, application Japan, Oct. 28, 1994, 6-265568

Int. Cl.⁶ A11C 8/00

U.S. Cl. 365—233.5 5 Claims

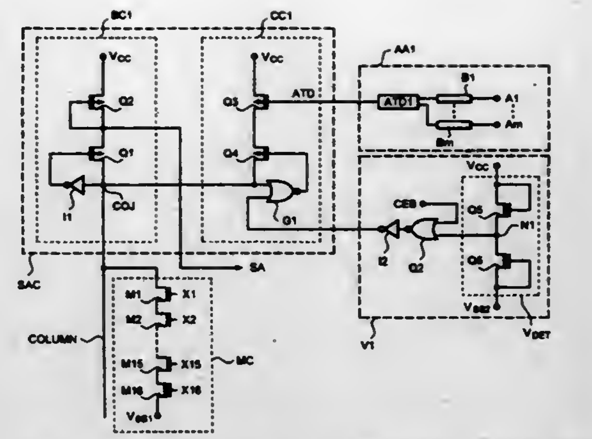
1. A semiconductor device comprising:

a power supply terminal and a ground potential terminal;

a bias circuit which, while a first power supply voltage or a second power supply voltage higher than said first power supply voltage is supplied from said power supply terminal, supplies a bias voltage to memory cells connected in parallel to column lines;

an address transition detecting circuit which generates pulse signals by detecting changes in address signals;

a charging circuit which is connected in parallel with said bias circuit and which, while said second power supply voltage is being supplied and is in an activated state, compensates said



bias voltage supplied to said column lines in response to said pulse signals generated from said address transition detecting circuit; and

a control circuit having a supply voltage detection circuit which is connected between said power supply terminal and said ground potential terminal, and which generates a control signal for enabling said charging circuit when used under said first power supply voltage, said supply voltage detection circuit operating such that, when a power supply voltage is switched from one to the other between said first power supply voltage and said second power supply voltage, the switched voltage, if this voltage is said first power supply voltage, inactivates said charging circuit and, if the voltage is said second power supply voltage, activates said charging circuit.

5,617,371

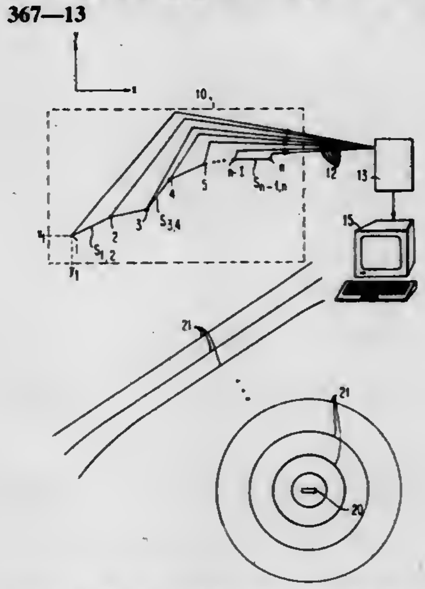
METHOD AND APPARATUS FOR ACCURATELY DETERMINING THE LOCATION OF SIGNAL TRANSDUCERS IN A PASSIVE SONAR OR OTHER TRANSDUCER ARRAY SYSTEM

Jack R. Williams, Anaheim, Calif., assignor to Diagnostic/Retrieval Systems, Inc., Oakland, N.J.

Filed Feb. 8, 1995, Ser. No. 385,442

Int. Cl.⁶ H04B 17/00; G01S 3/80

U.S. Cl. 367—13 22 Claims



1. A method for determining the two-dimensional relative physical locations of a plurality of sensors comprising the steps of:

receiving first and second reference signals at said sensors from first and second sources, respectively, the locations of said first and second sources being unknown;

calculating delays associated with said first and second reference signals; and

analyzing said delays to determine the two-dimensional relative physical location of said sensors.

5,617,372

UNALIASED SPATIAL TRACE INTERPOLATION IN THE F-K DOMAIN

Necati Gulunay, Missouri City, and Ronald E. Chambers, Houston, both of Tex., assignors to Western Atlas International, Inc., Houston, Tex.

Filed Aug. 14, 1996, Ser. No. 696,466

Int. Cl.⁶ G01V *1/28*

U.S. Cl. 367—38 **8 Claims**

1. A computer-aided method for de-aliasing spatially aliased signals representative of acoustic wavefields propagating from a plurality of spatially-separated source stations that have been visited in a preferred ordered sequence by an acoustic source, comprising:

at a signal-sampling station, receiving and sampling at preselected discrete time intervals, the signals representative of the respective acoustic wavefields;

formatting the received and sampled signals, propagating from the plurality of source locations, as a recorded gather including a corresponding plurality of serially-ordered time-scale traces;

transforming the recorded gather of odd- and even-numbered time-scale traces from the time-space (t–x) domain to the frequency-wavenumber (f–k) domain to form a known transform matrix over the range $f(0, F_N)$, $k(-K_N, +K_N)$, F_N and K_N being the temporal and spatial Nyquist frequencies;

forming a first transform matrix from the odd-numbered traces of the known transform matrix over the range of $f(0, F_N/2)$ and $k(-K_N/2, +K_N/2)$;

forming a second transform matrix from the even numbered traces of the known transform matrix over the range $f(0, F_N/2)$ and $k(-K_N/2, +K_N/2)$;

forming third and fourth transform matrices by stretching the the first and second transform matrices along their temporal frequency axes by interpolation from the range $f(0, F_N/2)$ to range $f(0, F_N)$;

forming fifth and sixth transform matrices by stretching the third and fourth transform matrices across their spatial wavenumber axes from the range $k(-K_N/2, +K_N/2)$ to range $k(-K_N, +K_N)$;

forming the f–k transform of an interpolation operator from the ratio between the sixth and the fifth transform matrices;

multiplying the f–k transform of the interpolation operator point-by-point with said known transform matrix to form a complex product;

inversely transforming said complex product from the f–k domain into the t–x domain to provide a calculated gather of time scale traces; and

interleaving the respective traces of said calculated gather between the time scale traces of said recorded gather.

5,617,373

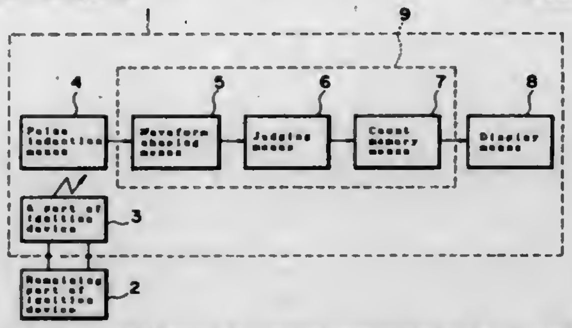
TIME TOTALING METER AND UNIT OF THE SAME FOR INTERNAL COMBUSTION ENGINE

Norio Kawai, and Shigeo Take, both of Yokosuka, Japan, assignors to Oppama Industry Co., Ltd., Kanagawa-ken, Japan

Filed Oct. 13, 1995, Ser. No. 543,218

Int. Cl.⁶ G04F *8/00; 10/00*

U.S. Cl. 368—5 **9 Claims**



1. A time totaling meter for internal combustion engines, capable of being attachable and detachable to a working machine with an ignition device having an ignition circuit wherein induced voltage generated synchronously with rotation of said internal combustion engine of the working machine is charged to a charge/discharge capacitor for ignition, discharged current from this charge/discharge capacitor is output at the pre-determined timing to an ignition plug via an ignition coil or a high voltage is output to the ignition plug via the ignition coil by allowing the primary short-circuit current induced by the ignition coil to flow to a transistor and then by shortening that primary short-circuit current at the pre-determined timing, capable of detecting ignition pulses generated by said ignition device and capable of counting total operation time of said internal engine, characterized in comprising a part of the ignition device to pass said ignition pulses toward outside said ignition device, pulse induction means to electromagnetically induce ignition pulses flowing in said part of the ignition device, waveform shaping means to shape the waveform of pulses electromagnetically induced by said pulse induction means, judging means to determine whether the output pulses from said waveform shaping means are of operation of said internal combustion engine or not, count memory means to count and store total operation time of said internal combustion engine from the initial operation thereof based on said output pulses selected by said judging means, and display means to display total operation time of the internal combustion engine counted by said count memory means.

5,617,374

SIGNAL DETECTION DEVICE AND CLOCK RECOVERY DEVICE USING THE SAME

Shinichiro Ohmi; Hitoshi Takai, both of Toyono-gun, and Yoshio Urabe, Ibaraki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 9, 1995, Ser. No. 489,276

Claims priority, application Japan, Jun. 14, 1994, 6-132245

Int. Cl.⁶ G04B *47/00;* **H03K** *5/13;* **H04L** *7/10*

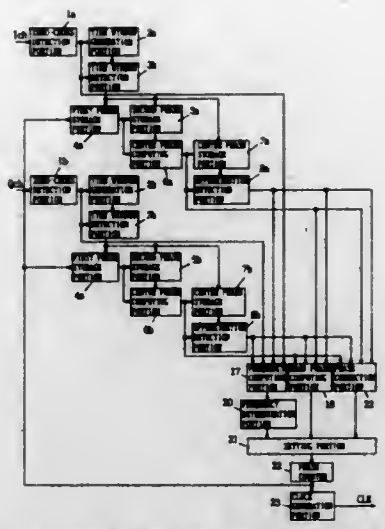
U.S. Cl. 368—10 **19 Claims**

1. A signal detection device for detecting whether a data signal is included in an input signal or not, comprising:

zero-cross detection means for extracting a zero-cross timing of said input signal to generate and output a zero-cross detection pulse;

time window generating means for generating and outputting a time window signal defining a time window with a certain period on the basis of said zero-cross detection pulse for time reference;

time window detection means for extracting said zero-cross detection pulse which passes the time window defined by said time window signal and outputting it as a time window detection pulse;



frequency computing means for computing detection frequency of said time window detection pulse relative to said zero-cross detection pulse; and

frequency determination means for determining whether a data signal is included in said input signal or not on the basis of the detection frequency of said time window detection pulse.

5,617,375

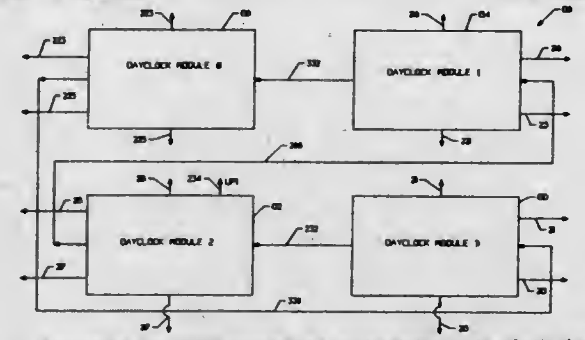
DAYCLOCK CARRY AND COMPARE TREE

Mitchell A. Bauman, Circle Pines, and James L. Federici, Shoreview, both of Minn., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Dec. 4, 1995, Ser. No. 577,908

Int. Cl.⁶ G04B *47/00;* **G06F** *1/04; 1/12*

U.S. Cl. 368—10 **22 Claims**



1. A modular dayclock system for maintaining a dayclock time in a data processing system wherein the dayclock time is stored as a number of dayclock bits and wherein a predetermined elapse time is stored as a number of compare bits, comprising:

a. a number of dayclock modules wherein each of the number of dayclock modules stores a predetermined number of the dayclock bits and stores a predetermined number of the compare bits;

b. advancing means coupled to said number of dayclock modules for advancing the dayclock time by altering the number of dayclock bits in each of the number of dayclock modules according to a predetermined scheme, said advancing means providing a predetermined advance control signal between predetermined ones of the number of dayclock modules wherein the predetermined advance control signal is transmitted between the predetermined ones of the number of dayclock modules in a bit serial fashion;

c. comparing means coupled to said number of dayclock modules for comparing the dayclock time with the predetermined elapse time by comparing the number of dayclock bits in each of the number of dayclock modules with the number of corresponding compare bits in each of the number of dayclock modules, said comparing means providing a predetermined compare control signal between predetermined ones of the number of dayclock modules wherein the predetermined compare control signal is transmitted between the predetermined ones of the number of dayclock modules in a bit serial fashion; and

d. output means coupled to said comparing means for providing an output signal when said comparing means determines that said dayclock time has a predetermined relationship with the predetermined elapse time.

5,617,376

GEAR TRAIN STRUCTURE OF AN ELECTRONIC WATCH

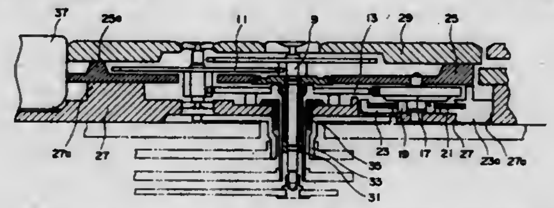
Toyoshige Honzawa; Kuniharu Natori, and Nobuhiro Koike, all of Nagano-ken, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Division of Ser. No. 157,912, Nov. 24, 1993. This application Apr. 12, 1995, Ser. No. 420,423

Claims priority, application Japan, Dec. 2, 1992, 4-323380

Int. Cl.⁶ G04B *19/04; 19/06*

U.S. Cl. 368—80 **7 Claims**



1. A gear train structure for an electronic watch, the gear train structure comprising:

a gear train pocket in which a plurality of gears are rotatably supported by a base plate and at least one gear train bridge, and

a power supply pocket for receiving a power supply to supply electric power to said gear train pocket, wherein

said base plate and said gear train bridge have projection portions and are stacked so that said gear train pocket and said power supply pocket are separated from each other by said projection portions as a partition.

5,617,377

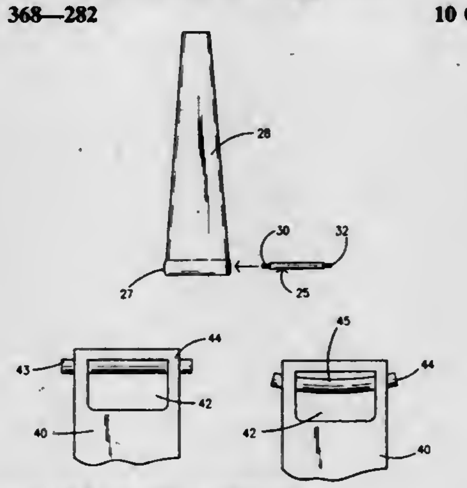
WATCHBAND CONNECTOR PIN UTILIZING SHAPE MEMORY MATERIAL

Gerard A. Perret, Jr., 16014 Penwood Dr., Tampa, Fla. 33647

Filed Dec. 13, 1995, Ser. No. 571,595

Int. Cl.⁶ A44C *5/00;* **G04B** *37/00*

U.S. Cl. 368—282 **10 Claims**



1. A wrist watch assembly, comprising:

first and second connector pins, each connector pin having a first and a second pin end, each connector pin being formed of a single piece of shape memory metal alloy;

first and second wristband straps, each of said wristband straps having a proximal end adapted for receiving a connector pin for connecting said wristband strap to a watch casing and a distal end for connecting said wristband strap to the other of said wristband straps; and

a watch casing having a first and a second pair of connector pin receptacles defined therein for receiving the pin ends of said first and second connector pins, wherein said shape memory alloy has a shape memory effect which allows the alloy to return from a deformed shape to a preset shape after being heated above a transition temperature, said transition temperature being a temperature at which said shape memory alloy transforms from a martensitic state into an austenitic state.

5,617,378

MAGNETO-OPTICAL DISC SYSTEM HAVING AN OBJECTIVE LENS WITH A NUMERICAL APERTURE RELATED TO THE THICKNESS OF THE PROTECTIVE LAYER

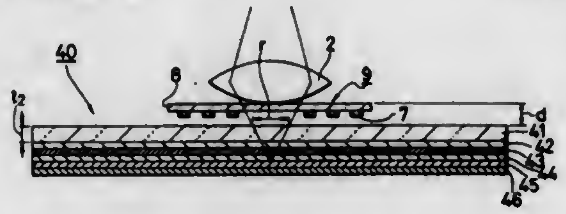
Tetsu Watanabe, and Yoshio Aoki, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 383,351, Feb. 3, 1995. This application Jul. 7, 1995, Ser. No. 499,347

Claims priority, application Japan, Jan. 31, 1990, 2-21210

Int. Cl.^{6} G11B *11/00*

U.S. Cl. 369—13 **2 Claims**



1. A magneto-optical recording and/or reproducing apparatus using a magneto-optical recording medium having a light-transmitting cover layer capable of transmitting a light beam and a recording layer provided substantially parallel to one surface of the light-transmitting cover layer, the apparatus comprising:

a light source for generating a light beam; and

an objective lens for converging the light beam radiated from the light source onto the recording layer through the light-transmitting cover layer,

wherein the apparatus is characterized in that a minimum diameter ($2\omega_0$) of the convergent light beam when the light beam is converged by the objective lens is represented by:

$$2\omega_0 = 0.82\ \lambda/NA,$$

wherein the numerical aperture of the objective lens is 0.55 and the wavelength of the light beam generated from the light source is 680 nm.

5,617,379

MAGNETO-OPTICAL DISK APPARATUS UTILIZING A LEAKAGE MAGNETIC FIELD FROM A MAGNETIC DRIVING MECHANISM

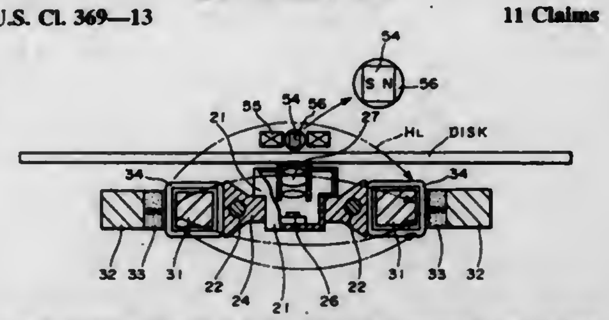
Shimpei Shinozaki; Suguru Takishima, and Hiroshi Yamamoto, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 31, 1995, Ser. No. 522,088

Claims priority, application Japan, Sep. 1, 1994, 6-230189; Sep. 1, 1994, 6-230190

Int. Cl.^{6} G11B *11/00*

U.S. Cl. 369—13 **11 Claims**



1. A magneto-optical disk apparatus for recording and erasing data onto and from a magneto-optical disk that stores data by magnetization perpendicular to a data recording surface thereof, comprising:

an optical pickup including an optical head and a magnetic driving mechanism for moving the optical head along a radial direction of the magneto-optical disk; and

an external magnetic field generating device for applying, to the magneto-optical disk, an external magnetic field perpendicular to the data recording surface, the external magnetic field generating device including:

a rotatably mounted permanent magnet which is oriented in a predetermined direction by a leakage magnetic field of the magnetic driving mechanism; and

means for generating a magnetic field for changing the orientation of the rotatably mounted permanent magnet.

5,617,380

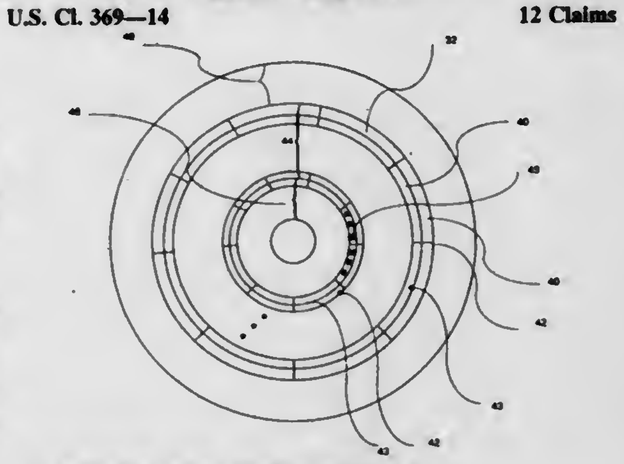
APPARATUS AND METHOD FOR DRIVE MANAGEMENT FOR MULTI-PASS STORAGE DEVICES

David Holmstrom, Morgan Hill, Calif., assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jan. 4, 1995, Ser. No. 368,605

Int. Cl.^{6} G11B *13/00*

U.S. Cl. 369—14 **12 Claims**



1. An optical storage medium comprising:

a user data area having a plurality of sectors; and

a map having first and second indicators corresponding to a portion of the plurality of sectors, the first indicator having a first logic state indicating that a corresponding sector contains stored data and having a second logic state indicating that the corresponding sector does not contain stored data, the second indicator having a first logic state indicating that a corresponding sector is to be erased, the first indicator being indicative of a number of erase and write sequences for storing data on the user data area and the second indicator providing for a pre-erase of the corresponding sector.

5,617,381

REPRODUCING SYSTEM FOR AUTOMATICALLY REPRODUCING OPTICAL DISCS

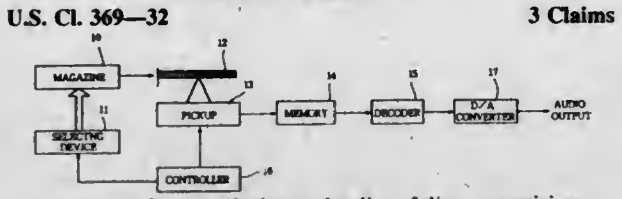
Shinichi Suzuki; Yoshiya Nonaka, and Kenichi Takahashi, all of Saitama-ken, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jan. 18, 1995, Ser. No. 374,172

Claims priority, application Japan, Jan. 20, 1994, 6-004586

Int. Cl.^{6} G11B *17/22*

U.S. Cl. 369—32 **3 Claims**



1. A system for reproducing a plurality of discs comprising:

storage means storing a plurality of discs on each of which program data and identification data are recorded;

selecting means for selecting one of the discs;

reading means for reading the program data and the identification data on a selected first disc;

memory means for storing data read out by the reading means;

control means for controlling the reading of the data so as to intermittently read the program data of the first disc, to intermittently store the read out data in the memory means, to read identification data of another disc during a period between a temporary stop of reading of the first disc and a restart of reading the first disc, in order to continuously reproduce the stored program data.

5,617,382

OPTICAL INFORMATION ACCESSING SYSTEM CAPABLE OF RELIABLE JUMP-BACK CONTROL

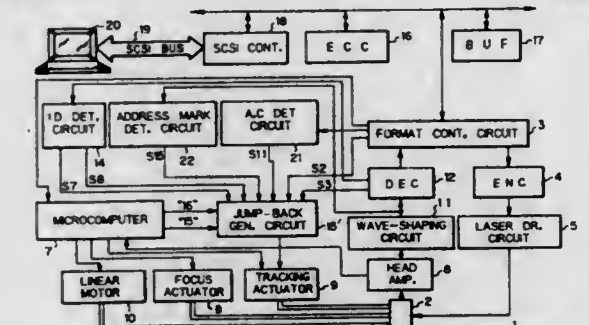
Hideki Kobunaya, Tokyo; Yutaka Ishikawa; Yoshimori Yamasaki, both of Kanagawa, and Takayoshi Chiba, Tokyo, all of Japan, assignors to NEC Corporation, and Sony Corporation, both of Japan

Filed Feb. 24, 1995, Ser. No. 394,387

Claims priority, application Japan, Feb. 24, 1994, 6-053179

Int. Cl.^{6} G11B *7/00*

U.S. Cl. 369—32 **13 Claims**



1. An optical information accessing system for a disc-type recording medium including a plurality of tracks forming one helix, each track having a plurality of sectors, comprising:

a counter for counting said sectors by tracing each of said tracks;

a comparator, connected to said counter, for comparing a value of said counter with a first value, to generate a coincidence signal when the value of said counter is the same as said first value;

abnormal completion signal generating means for generating an abnormal completion signal when data processing performed upon said disc-type recording medium is abnormally interrupted;

changing means, connected to said abnormal completion signal generating means and said comparator, for changing said first value with a second value different from said first value, when said abnormal completion signal is generated and said coincidence signal is generated;

gate means for passing said coincidence signal therethrough as a jump-back control signal; and

closing means, connected to said gate means, for closing said gate means when data processing is being performed upon said disc-type recording medium,

thereby retracing said tracks based upon said jump-back signal.

5,617,383

OPTICAL DISK DEVICE CAPABLE OF DISPLAYING THE WHOLE CAPACITY AND THE REPRODUCTION POSITION ON THE OPTICAL DISK

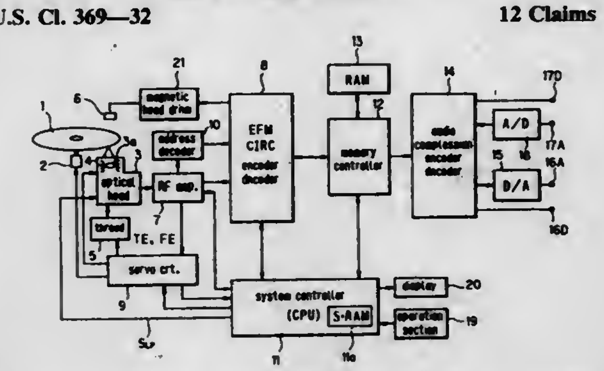
Kissei Matsumoto; Katsuki Fuchu, both of Kanagawa, and Shinji Katsuki, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 25, 1995, Ser. No. 450,574

Claims priority, application Japan, May 30, 1994, 6-137808

Int. Cl.^{6} G11B *17/22;3/70*

U.S. Cl. 369—32 **12 Claims**



1. A recording and reproducing apparatus for a recording medium on which management data for controlling the recording and the reproducing of data recorded in a data recording area has been recorded, said apparatus comprising:

head means for recording data on the recording medium or reading out recorded data from the recording medium;

arithmetic operating means for arithmetically computing the recording or reproducing position of the head means relative to data recorded on the data recording area of the recording medium by using the management data read out from the recording medium by said head means;

display means for displaying the recording or reproducing position of the head means and the amount of data recorded in the data recording area relative to the recording capacity of the whole of the data recording area; and

display control means for causing said display means to display the amount of data recorded in the data recording area relative to the recording capacity of the whole of the data recording area using the management data read out from said head means and display an indication of the recording or reproducing position of the head means using the data representative of said position obtained by the arithmetic computation from said arithmetic operating means.

5,617,384

METHOD AND APPARATUS FOR RECOVERING TOC AND USER INFORMATION FROM AN OPTICAL DISK AND USING THE TOC INFORMATION TO ACCESS USER TRACKS

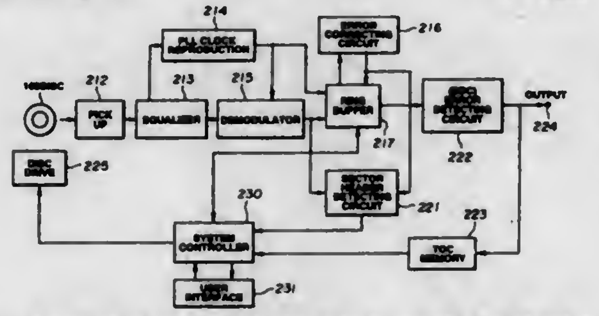
Jun Yonemitsu, Kanagawa; Ryuichi Iwamura; Shunji Yoshimura, both of Tokyo, and Makoto Kawamura, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Division of Ser. No. 405,852, Mar. 17, 1995. This application Jun. 1, 1995, Ser. No. 457,470

Claims priority, application Japan, Mar. 19, 1994, 6-074444

Int. Cl.[6] G11B *5/09;* **H04N** *5/76;* **H03M** *13/00*

U.S. Cl. 369—32 **58 Claims**



1. A method of reproducing data from an optical disk having a diameter less than 140 mm, a thickness of 1.2 mm±0.1 mm and a recording area divided into a lead-in area, a program area and a lead-out area, and wherein said data is recorded as embossed pits representing modulated, error-correction encoded user information in sectors in user tracks in said program area and representing modulated, error-correction encoded table of contents (TOC) information in sectors in at least one TOC track in said lead-in area with said TOC information including addresses of respective start sectors of said user tracks, the tracks having a track pitch in the range of 0.646 μm to 1.05 μm, said method comprising the steps of rotating said disk to obtain a constant linear velocity; projecting a pickup light beam through a lens for optically reading the rotating disk, said pickup light beam having a spatial frequency $l=\lambda/2NA$, where the spatial frequency l is less than the track pitch, λ is the wavelength of the pickup light beam and NA is the numerical aperture of the lens; demodulating the data read from said disk; error correcting the demodulated data; separating the error corrected data into TOC information and user information; and using said TOC information to access and read selected user tracks in response to access instructions from a user.

5,617,385

COMPACT DISK AND HIGH-SPEED SEARCH METHOD THEREOF AND RECORDING METHOD APPROPRIATE THEREFOR

Deok-hyun Lee, Seoul; Gyoung-chan Park, Suwon; Won-jae You, Incheon, and Jae-yong Kang, Suwon, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Jun. 6, 1995, Ser. No. 471,683

Claims priority, application Rep. of Korea, Jun. 21, 1994, 94-14031; Dec. 28, 1994, 94-382269

Int. Cl.[6] G11B *17/22*

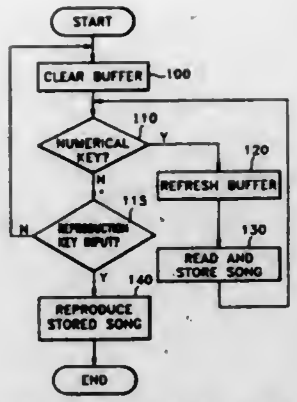
U.S. Cl. 369—32 **13 Claims**

1. A method for reproducing a program selected from a plurality of programs recorded on a compact disk, wherein an index table having index numbers and starting addresses corresponding to said plurality of programs is also recorded on said compact disk, the method comprising the steps of:

inputting an input number;

creating a temporary index number by combining said input number and previously input numbers;

reading said index table to obtain a starting address of a program which corresponds to said temporary index number;



reading said program corresponding to said temporary index number;

storing said program in a temporary memory; and

repeating the steps of inputting an input number, creating a temporary index number, reading said index table, reading said program, and storing said program until a reproduction command is input.

5,617,386

CD PLAYER FOR REPRODUCING SIGNALS FROM CD-OK AND VIDEO CD

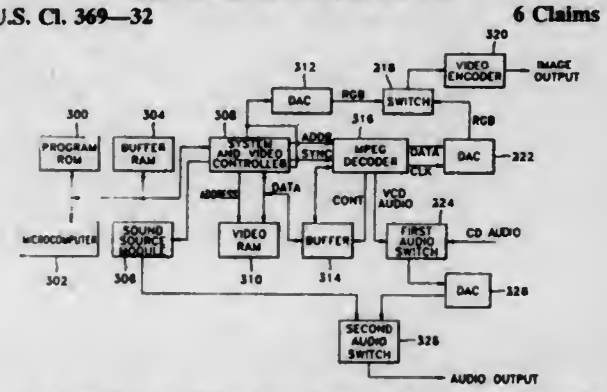
Hae-Min Choi, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Jul. 1, 1996, Ser. No. 674,451

Claims priority, application Rep. of Korea, Jul. 31, 1995, 95-23527

Int. Cl.[6] G11B *17/22;* **H04N** *5/76*

U.S. Cl. 369—32 **6 Claims**



1. A compact disc (CD) player for reproducing signals from a CD-OK disk and a video CD, comprising:

a first controller for generating a first control signal for signal reproduction of said CD-OK disk;

a second controller for outputting audio and video data for reproduction of said CD-OK disk according to said first control signal received from said first controller and for outputting a second control signal for signal reproduction of said video CD;

a compressed signal decoding portion, responsive to said second control signal, for restoring compressed video data and compressed audio data received during said video CD reproduction, into decompressed video data and audio data, respectively;

a first memory for storing control data of said CD-OK disk and data for said first controller during said CD-OK reproduction and for storing control data of said video CD and data for said first controller during said video CD reproduction;

a second memory, accessed by said second controller, for storing data for a still screen and superposed data of said CD-OK disk during said CD-OK reproduction and for storing said compressed video and audio data during said video CD reproduction;

a first digital-to-analog converter for converting the CD-OK video data output from said second controller into an analog RGB image signal;

a second digital-to-analog converter for converting image data output from said compressed signal decoding portion into an analog RGB image signal;

a first switch for selecting one of the RGB image signals output from one of said first and second digital-to-analog converters, according to a selection signal from said second controller;

a video encoder for converting the RGB image signal output from said first switch into a composite image signal and for outputting the converted signal; and

a second switch for selecting one of the video CD audio signal output from said compressed signal decoding portion and the CD-OK audio signal output from said second controller, and for outputting the result.

5,617,387

OPTICAL SYSTEM FOR OPTICAL INFORMATION RECORDING/REPRODUCING APPARATUS

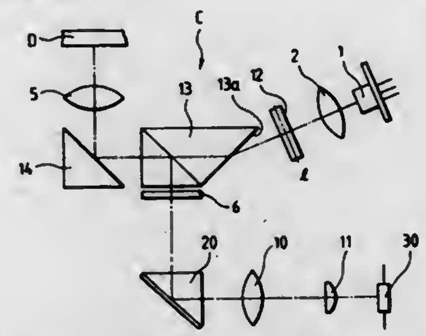
Takashi Morita; Suguru Takishima, and Isao Okuda, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 398,568, Aug. 25, 1989, abandoned. This application Oct. 28, 1991, Ser. No. 782,737

Claims priority, application Japan, Aug. 31, 1988, 63-217834

Int. Cl.[6] G11B *7/00;* **G02B** *5/30*

U.S. Cl. 369—44.23 **9 Claims**



1. An optical system for use in an optical information-recording/reproducing apparatus, comprising:

a light source for emitting a parallel light beam for travelling along an optical path from said light source to a photosensor;

an objective lens for focusing said light beam onto a spot on an optical disk in said optical path, said light beam being reflected by said optical disk;

first optical means in said optical path for receiving a reflected light beam from said optical disk and for providing at least a portion of said reflected light beam as an output, wherein said first optical means comprises a beam splitter disposed between said light source and said optical disk in said optical path, for passing light from said light source to said objective lens and for receiving said reflected light and separating a portion of said reflected light as said output;

a condenser lens in said optical path for converging the light output from said first optical means onto a sensing position on said photosensor;

a transparent optical member without optical power provided between said light source and said condenser lens in said optical path, wherein said transparent optical member is provided in said optical path, between said beam splitter and said condenser lens;

an adjusting mechanism for rotating said transparent optical member about an axis to shift said sensing position in a direction corresponding to a radial direction of said optical disk;

a half-wave plate provided in said optical path between said beam splitter and said transparent optical member; and

a further beam splitter with a wedge prism provided in said optical path between said transparent optical member and said condenser lens, said further beam splitter comprising a first reflecting surface coated with a polarizing separation coating for reflecting a first one of two orthogonally polarized components of said portion of said reflected light to a direction different from an incident direction thereto and transmitting a second component, and a second and a third reflecting surface formed on a back side of said wedge prism for reflecting said transmitted second component from said first reflecting surface and separating it into two beams so as to provide either positive or negative polarity for a tracking error;

wherein said photosensor comprises a focusing error detecting portion for detecting the first component of said separated portion of said reflected light reflected from said first reflecting surface, and tracking error detecting portions provided at opposite sides of said focusing error detecting portion for detecting said two beams reflected from said second and third reflecting surfaces, respectively.

5,617,388

DISC RECORDING/REPRODUCING APPARATUS WHICH USES STORED ECCENTRICITY DATA TO MAINTAIN THE READ/WRITE HEAD AT A CONSTANT RADIAL POSITION DURING A STAND-BY MODE

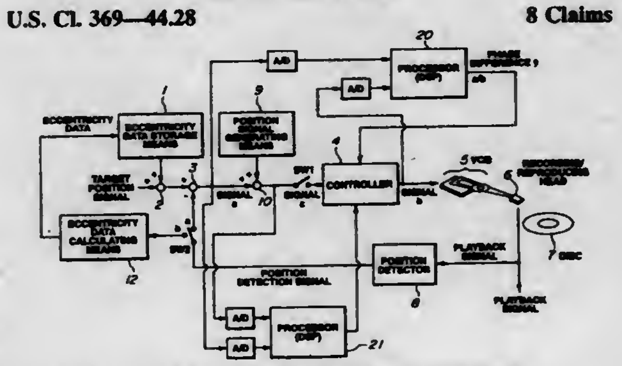
Hideaki Ishioka; Yoshikazu Onuki, both of Kanagawa, and Toru Takeda, Saitama, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 26, 1994, Ser. No. 249,395

Claims priority, application Japan, May 31, 1993, 5-149740

Int. Cl.[6] G11B *7/085*

U.S. Cl. 369—44.28 **8 Claims**



1. A disc recording/reproducing apparatus comprising:

a disc-shaped recording medium having tracks which are substantially concentric about a center point;

a tracking servo system, including driving means, for controlling the position of a recording/reproducing head, the recording/reproducing head being moved based upon a target position signal indicating a target position of the head on the disc-shaped recording medium, the recording/reproducing head being controlled in its position by the driving means employing an output of a controller fed with a deviation between the target position and an actual position of the recording/reproducing head;

eccentricity data storage means for storing eccentricity data indicating a difference between a center of rotation of the disc-shaped medium and the center point;

first addition means for adding the eccentricity data from the eccentricity data storage means to the target position signal; and

position controlling means for controlling the position of the recording/reproducing head using an output of the first addition means so that the position of recording/reproducing head relative to the center of rotation of the disc-shaped medium remains constant when the disc recording/reproducing apparatus is in a stand-by state.

5,617,389

METHOD OF REPRODUCING INFORMATION OF OPTICAL DISC, METHOD OF RECORDING AND REPRODUCING THE SAME, APPARATUS FOR REPRODUCING THE SAME, AND LIGHT DETECTING APPARATUS USED IN THE REPRODUCING APPARATUS

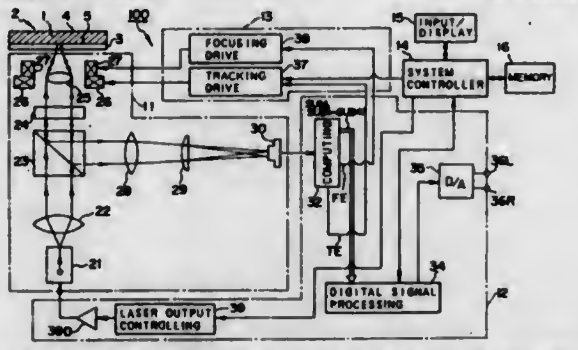
Makoto Satoh, and Hiroyuki Nakajima, both of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. No. 255,473, Jun. 8, 1994, abandoned. This application Jan. 29, 1996, Ser. No. 593,542

Claims priority, application Japan, Jun. 8, 1993, 5-137690

Int. Cl.[6] G11B 7/09

U.S. Cl. 369—44.42 8 Claims



1. A method of reproducing information of an optical disc, said optical disc having a recording surface on which a spiral track having a predetermined track pitch is formed, a plurality of information units being formed on said track each of which has a predetermined unit length in a circumferential direction and a radial direction of said optical disc respectively, the information being converted in a shape and a disposed position of an information pit, said information pit comprising an array of pit pieces which is formed in each of said plurality of information units, said method comprising the steps of:

irradiating a reading light to form a light spot on said information pit;

detecting only an outer light portion, which corresponds to an outer circumferential side domain, within a reflective light shaped in a spot from said information pit, which is projected on an imaginary plane including a light receiving surface of a light detecting apparatus to output a light detection signal indicating the detected outer light portion; and

reproducing the information on the basis of the light detection signal to determine the pit pieces of said array that carry information.

5,617,390

OPTICAL INFORMATION RECORDING MEDIUM HAVING SEPARATE INFORMATION AND REFERENCE INFORMATION PORTIONS AND METHOD USING THE SAME

Katsumi Iijima, and Shigeyuki Taniwa, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 776,855, Oct. 17, 1991, abandoned, which is a continuation of Ser. No. 456,547, Dec. 26, 1989, abandoned. This application Jan. 10, 1995, Ser. No. 370,826

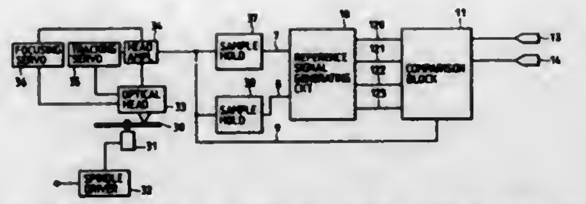
Claims priority, application Japan, Dec. 26, 1988, 63-325996; Dec. 15, 1989, 1-323944

Int. Cl.[6] G11B 7/00

U.S. Cl. 369—48 6 Claims

1. An information recording and reproducing method for recording multiple value digital information on an information recording medium and reproducing the multiple value digital information, the recording medium including at least first and second portions, said method comprising the steps of:

recording, by using an optical recording head, a reference mark on the first portion of the information recording medium;



thereafter, recording, by using the optical recording head, the multiple value digital information, the multiple value digital information being recorded on the second portion of the recording medium separate from the first portion of the recording medium on which the reference mark is recorded;

reading the reference mark;

generating a threshold signal on the basis of a peak value of a reference signal, which is obtained by reading the reference mark;

reading the multiple value digital information as an analog signal; and

reproducing the multiple value digital information as a multiple value digital signal by comparing the analog signal with the threshold signal.

5,617,391

OPTICAL RECORDING AND REPRODUCING SYSTEM

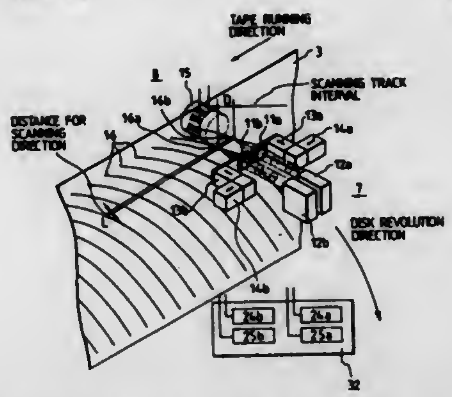
Seiji Ono, Yokosuka; Kenmei Masuda, Yokohama; Katsuo Konishi, Yokohama, and Hiroyuki Nagatomo, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 25, 1995, Ser. No. 378,193

Claims priority, application Japan, Feb. 3, 1994, 6-011564

Int. Cl.[6] G11B 7/00

U.S. Cl. 369—48 6 Claims



1. An optical recording and reproducing system having an optical recording and reproducing head unit for optical recording and reproducing by scanning one side of an optical recording medium by a laser beam irradiated from an optical pick-up through a pair of objective lenses, and a rotating arrangement for supporting at least said objective lenses in said optical recording and reproducing head unit, said optical recording medium having a recording surface having a plurality of discontinuous tracks, the optical recording and reproducing head unit recording or reproducing on at least one track on the optical recording medium with use of a head position control signal while the rotating arrangement revolves one turn, by phase control of said rotating arrangement wherein

said optical recording and reproducing head unit comprises:

a driving means for changing a relative position of said objective lenses on said rotating arrangement, and

a control means for i) recording a track control signal giving data of each of track numbers and a scanning start and a scanning end of the track on the optical recording medium, and for ii) recording on and reproducing from said plurality of tracks on said optical recording medium as a single continuous recording track with use of said track control signal and said head position control signal, by sequentially controlling the position of said objective lenses at the scanning start point of the next track using said driving means.

5,617,392

METHOD AND APPARATUS FOR CONTROLLING ROTATION OF AN OPTICAL DISK

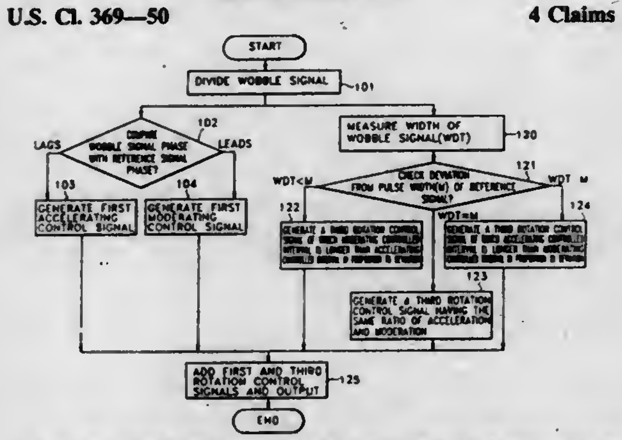
Jae-seong Shim, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

Division of Ser. No. 234,365, Apr. 28, 1994, Pat. No. 5,528,573. This application Apr. 4, 1996, Ser. No. 627,283

Claims priority, application Rep. of Korea, Jun. 28, 1993, 93-11859; Jan. 24, 1994, 94-1206

Int. Cl.[6] G11B 7/00

U.S. Cl. 369—50 4 Claims



3. In an optical disk system of the type wherein pre-grooves on an optical disk provide a wobble signal modulated by data and wherein the system reads out the wobble signal for controlling the rotation of the optical disk, a method for controlling the rotation of the optical disk, comprising the steps of:

generating a first rotation control signal by comparing the phases of the wobble signal reproduced from said optical disk and a reference signal;

generating a third rotation control signal every period of said reproduced wobble signal, said third rotation control signal having an accelerating controlled interval and a moderating controlled interval with the ratio of the accelerating controlled interval to the moderating controlled interval being in proportion to the deviation of the frequency of said reproduced wobble signal from a predetermined center frequency; and

rotationally controlling said optical disk by summing said first and third rotation control signals.

5,617,393

OPTICAL DISK HAVING AN ERASED-STATE INDICATOR AND OPTICAL DISK APPARATUS FOR REDUCING FREQUENCY OF DISK ERASING OPERATION

Satoshi Itami; Masaru Nakahara; Masahiro Nakada; Hiroshi Suzuki, and Kenichi Utsumi, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

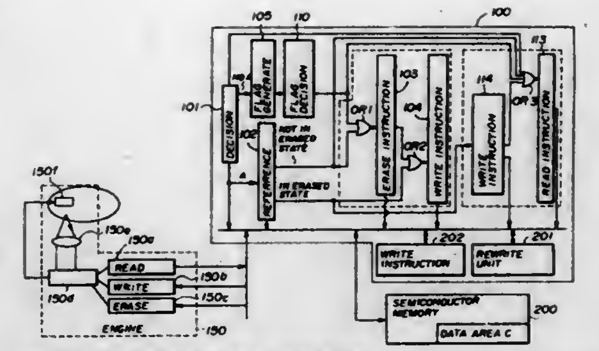
Continuation of Ser. No. 33,778, Mar. 17, 1993, abandoned. This application Dec. 28, 1994, Ser. No. 365,169

Claims priority, application Japan, Mar. 18, 1992, 4-062606

Int. Cl.[6] G11B 7/00

U.S. Cl. 369—58 15 Claims

1. An optical disk apparatus for an optical disk including: a user accessible area having a plurality of blocks; flag data recorded on the optical disk, said flag data indicating whether or not each of the blocks is in an erased state in which there is no recorded data; a flag area storing said flag data; and area data recorded on the optical disk, said area data indicating that the optical disk has the flag area,



said optical disk apparatus comprising:

decision means for determining whether or not the optical disk has the flag area by referring to the area data;

reference means, coupled to said decision means, for referring to the flag data in the flag area in response to a write command sent from an external device coupled to the optical disk apparatus;

erase instruction means, coupled to said decision means and said reference means, for generating an erase instruction with respect to a write subject block when said decision unit determines that the optical disk does not have the flag data, or when the reference means refers to the flag data indicating that the write subject block is not in the erased state;

first write instruction means, coupled to said reference means and said erase instruction means, for generating a first write instruction with respect to the write subject block when the erase instruction has been executed or when said reference means refers to the flag data indicating that the write subject block is in the erased state; and

engine means, coupled to said erase instruction means and said first write instruction means, for performing an erasing and writing operation on the optical disk in response to said erase instruction and said first write instruction.

5,617,394

OPTICAL DISK RECORDING METHOD AND DEVICE

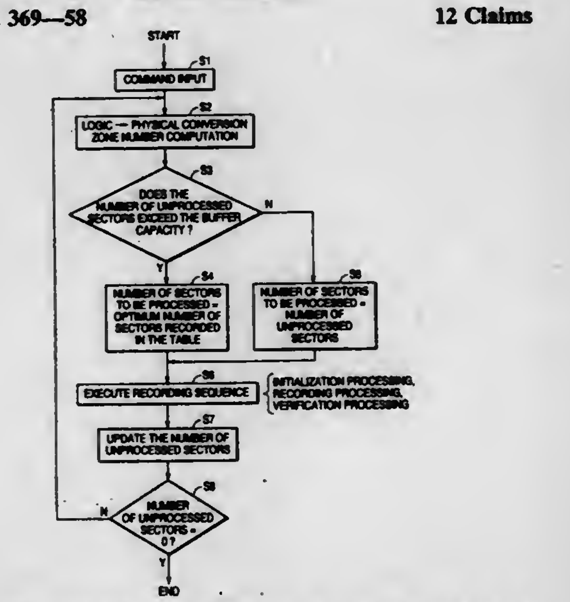
Satoru Sanada, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Mar. 30, 1995, Ser. No. 413,894

Claims priority, application Japan, Mar. 30, 1994, 6-060409; Feb. 28, 1995, 7-040007

Int. Cl.[6] G11B 7/00

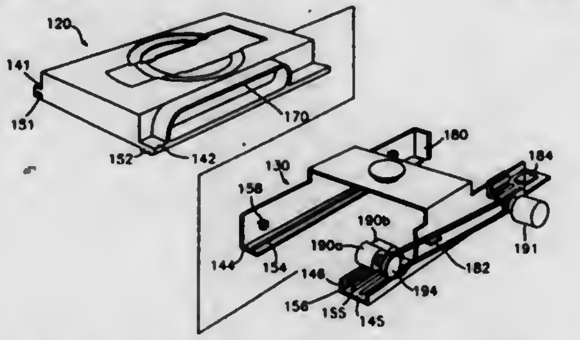
U.S. Cl. 369—58 12 Claims



1. A data recording method adapted for recording data on an optical disk having multiple tracks each including a plurality of

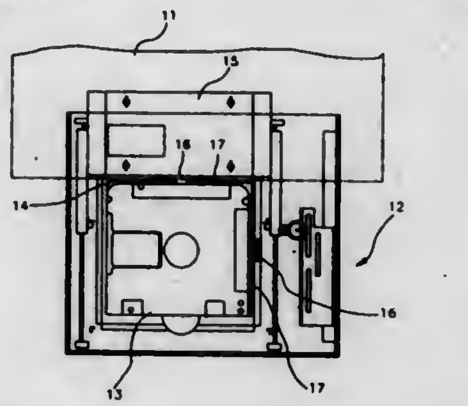
sectors on its recording surface, wherein the multiple tracks are grouped as a plurality of zones, said data recording method comprising:
calculating an optimum number of sectors to be continuously recorded for each of the plurality of zones on the optical disk;
determine the number of unprocessed sectors to be recorded on the optical disk;
dividing the number of unprocessed sectors into a plurality of unprocessed sector units in accordance with the calculated optimum number of sectors; and
recording a first unprocessed sector unit of said plurality of unprocessed sector units on said optical disk.

5,617,395
DISC LOADING APPARATUS FOR A FRONT LOADING DISC PLAYER
Young S. Choi, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea
Filed Nov. 9, 1994, Ser. No. 338,147
Claims priority, application Rep. of Korea, Nov. 11, 1993, 93-23883; Nov. 11, 1993, 93-23884
Int. Cl.^{6} G11B *33/02*
U.S. Cl. 369—77.1 **4 Claims**



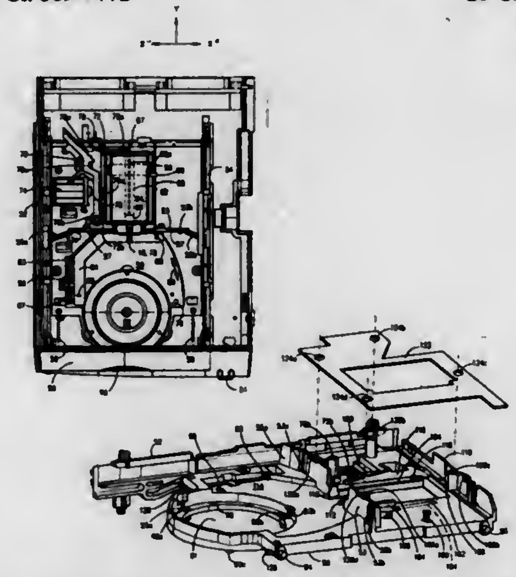
1. A disc loading apparatus for a front loading disc player, comprising:
a tray for mounting a disc, and including a pair of tray steps formed in parallel with each other by being bent outwardly from opposite lower edges of said tray, one or more of rib guiding grooves being formed on bottoms of said pair of tray steps in a lengthwise direction thereof;
a tray holder for allowing said tray to run therethrough, and including a pair of tray supporting steps formed in parallel with each other by being bent inwardly from opposite lower edges of said tray holder, positioning ribs being formed on upper faces of said pair of tray supporting steps in the lengthwise direction, said positioning ribs being meshed with said rib guiding grooves;
a guide band portion formed on an outer face of a side wall of said tray in parallel with one of said pair of tray steps kept at a distance from said one of said pair of tray steps, and extended to a certain distance in parallel with said one of said pair of tray steps, front and rear ends of said guide band portion being bent down to be in contact with said one of said pair of steps so that said guide band portion has an upper face and a lower face;
a carrying means having upper and lower carrying rollers installed within said guide band portion, said upper and lower carrying rollers clad with rubber and driven by a driving means in a close contact with the upper and lower faces of said guide band portion;
a first and a second limit switches for stopping forward and backward carrying of said tray, wherein said first limit switch installed at a predetermined first carrying limiting position on an inside of one of said pair of tray supporting steps and said second limit switch installed at a predetermined second carrying limiting position on an upper face of a rear end of said one of said pair of tray supporting steps, so that an inside of a rear end of said guide band portion would activate said first limit switch during the forward carrying of said tray and a rear end of said one of said pair of tray steps would activate said second limit switch during a backward carrying of said tray, thereby stopping the driving of said loading motor.

5,617,396
DISK TRAY HAVING A SYSTEM FOR RETAINING A DISK AT A POSITION THEREIN
Young S. Choi, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea
Filed Jun. 30, 1994, Ser. No. 269,380
Claims priority, application Rep. of Korea, Jun. 30, 1993, UM 93-11863
Int. Cl.^{6} G11B *33/02;5/02;5/10;23/10*
U.S. Cl. 369—77.2 **3 Claims**



1. A disk tray of a mini disk player comprising:
a rectangular disk receiving recess formed in the disk tray and larger than a disk cartridge to be accommodated therein, the disk cartridge containing a mini disk and the rectangular disk receiving recess having four side walls; and
two retainers, said retainers retaining the disk cartridge at a position in the rectangular disk receiving recess, each of the retainers including:
(1) a base plate,
(2) an abutment protrusion disposed at the middle of the base plate, and
(3) two springs each spring having first and second ends, the first ends of the two springs being connected to the base plate at opposite sides of the abutment protrusion and the second ends of the two springs being connected to one of said side walls, said two retainers being disposed respectively at adjoining side walls of the disk receiving recess, each abutment protrusion extending from a respective base plate through an opening in a respective side wall into the disk receiving recess, each abutment protrusion having a smooth upper surface inclined toward a bottom plane of the disk receiving recess, and the second ends of the two springs being fixed at an outer surface of the respective side wall, the outer surface of said wall facing away from the disk receiving recess,
whereby during insertion, the disk cartridge slides along the smooth upper surfaces of the abutment protrusions while pushing the abutment protrusions outward from the disk receiving recess, and then the disk cartridge is retained at a position in the disk receiving recess without movement through close contact with the abutment protrusions under the biasing force of the springs.

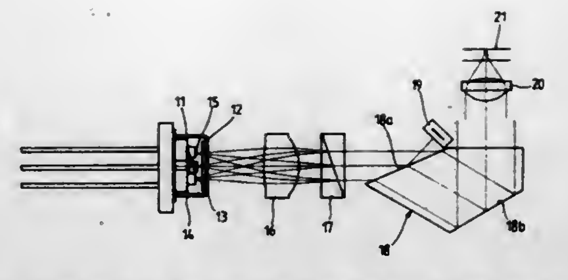
5,617,397
MOVABLE INTERNAL PLATFORM FOR A DISK DRIVE
David E. Jones, Layton; Michael R. Lyon, Roy; Richard F. Leavitt, Layton; Carl F. Nicklos, Ogden; Ralph L. Sonderegger, Farmington; Mark S. Thayne, West Point, and Yiping Ma, Layton, all of Utah, assignors to Iomega Corporation, Roy, Utah
Continuation-in-part of Ser. No. 324,808, Oct. 18, 1994, and Ser. No. 324,671, Oct. 18, 1994, abandoned. This application Mar. 3, 1995, Ser. No. 398,576
Int. Cl.^{6} G11B *17/30;21/02;33/02*
U.S. Cl. 369—772 **20 Claims**



1. Apparatus for use in a data storage device of the type that receives a removable disk cartridge, said apparatus comprising:
a pair of guide rails opposed to each other and spaced at a predetermined interval;
a platform movably mounted on said guide rails and having a cartridge receiving stop, the disk cartridge engaging the cartridge receiving stop upon insertion of the disk cartridge into the data storage device and thereby pushing said platform along said guide rails from a forward position to a rearward position within the data storage device;
an actuator mounted on said platform, said actuator having a head mounted thereon for recording and reading information to and from a recording medium within the disk cartridge; and
a spindle motor mounted on said platform for rotating the recording medium, wherein the elevation of said platform relative to a plane of said disk cartridge changes as the platform moves from said forward position to said rearward position, such that the spindle motor is brought into engagement with a hub of the disk cartridge.

5,617,398
IN-LINE OPTICAL PICKUP USING WOLLASTON PRISM AND COLLIMATING LENS DIRECTING POLARIZED LIGHT COMPONENTS TO DETECTORS
Chul-woo Lee, Seoul; Joong-sam Jeong, Suwon, and Eung-ho Kim, Seoul, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea
Continuation of Ser. No. 172,918, Dec. 27, 1993, abandoned. This application Feb. 29, 1996, Ser. No. 609,003
Claims priority, application Rep. of Korea, Apr. 30, 1993, 93-7481
Int. Cl.^{6} G11B *7/00*
U.S. Cl. 369—110 **6 Claims**

1. An optical pickup for writing and reading information from an optical recording medium, comprising:
a light source for generating incident light toward said optical recording medium;



an objective lens for converging said incident light on said optical recording medium;
a Wollaston prism disposed between said light source and objective lens for passing said incident light from the light source unimpeded along an optical axis of the light source and splitting the reflected light from said optical recording medium into P- and S-polarized components off the optical axis;
a plurality of photodetectors which are placed on the flanks of said light source for receiving the P- and S-polarized components of the reflected light of said optical recording medium split by said Wollaston prism, respectively;
a collimating lens placed between said light source and said Wollaston prism for placing said incident light in parallel with an optical axis and for condensing the P- and S-polarized components onto the plurality of photodetectors;
a shaping prism placed between said Wollaston prism and said objective lens for shaping a cross-section of incident light such that the cross-section is circular; and
a housing which confines said light source and photodetectors.

5,617,399
WRITE INTENSITY CALIBRATION OF A RECORDING BEAM BY READING A TEST PATTERN WRITTEN ON A BUFFER SECTOR OF A RECORD CARRIER
Johannes H. M. Spruit, and Johannus L. Bakx, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Feb. 10, 1995, Ser. No. 386,786
Claims priority, application European Pat. Off., Feb. 14, 1994, 94200384; Apr. 22, 1994, 94201113
Int. Cl.^{6} G11B *7/00*
U.S. Cl. 369—116 **17 Claims**

Zone Number	Number of Sector/Tracks	Start Track	Tracks with buffer sectors	Data Tracks	Number of Data Tracks	Tracks with buffer sectors	End Track
0	30	0	0 - 1	5 - 1377	1373	1378 - 1379	1379
1	32	1380	1380 - 1381	1382 - 2849	1468	2850 - 2851	2851
2	34	2852	2852 - 2853	2854 - 4413	1560	4414 - 4415	4415
3	36	4416	4416 - 4417	4418 - 6069	1652	6070 - 6071	6071
4	38	6072	6072 - 6073	6074 - 7817	1744	7818 - 7819	7819
5	40	7820	7820 - 7821	7822 - 9657	1836	9658 - 9659	9659
6	42	9660	9660 - 9661	9662 - 11589	1928	11590 - 11591	11591
7	44	11592	11592 - 11593	11594 - 13613	2020	13614 - 13615	13615
8	46	13616	13616 - 13617	13618 - 15729	2112	15730 - 15731	15731
9	48	15732	15732 - 15733	15734 - 17883	2150	[illegible]	[illegible]
Total					17853		

1. A method of recording signals on a record carrier of an inscribable type, the record carrier having substantially concentric tracks in each of a succession of concentric zones, each zone being divided into radial sectors, each radial sector having a header portion and a data portion, the header portions of the radial sectors in each zone being radially aligned; user information patterns of optically detectable marks being recordable in each radial sector by scanning the tracks therein with a radiation beam having a write intensity of a determined set value; said method comprising:
using at least one preselected test write intensity of the radiation beam to write a test information pattern in a buffer sector of at least one of said zones, a buffer sector of a zone being constituted by one or more of the tracks therein nearest an edge of the zone;
reading the written test information and deriving therefrom a corresponding test data pattern; and

determining from the test data pattern a set value of the write intensity of the radiation beam for recording user information in the radial sectors of said at least one of said radial zones.

5,617,400

MAGNETO-OPTICAL RECORDING AND REPRODUCING APPARATUS WITH LAYER APERTURE CONTROL

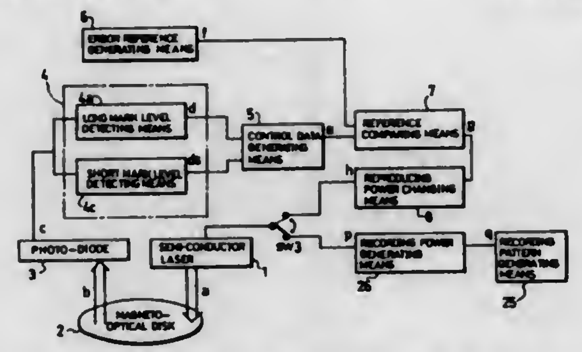
Hiroshi Fuji, Soraku-gun, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 25, 1995, Ser. No. 506,690

Claims priority, application Japan, Aug. 29, 1994, 6-204035

Int. Cl.⁶ G11B *7/00*

U.S. Cl. 369—116 **27 Claims**



1. A magneto-optical recording and reproducing apparatus for a magneto-optical recording medium made of a lamination of a recording layer for recording a datum within a mark and a reproducing layer for reading out a recorded datum from said recording layer comprising:

irradiating means for irradiating a light beam to said magneto-optical recording medium to develop an aperture in said reproducing layer, the recorded datum being read out from said mark through said aperture in a form of a readout signal;

level detecting means for detecting a signal level of said readout signal;

control data generating means for generating and outputting a control datum having a one-to-one correspondence to a size of said aperture based on said signal level of said readout signal; and

reproducing power changing means for controlling said irradiating means to change a reproducing power of the light beam based on said control datum in such a manner to change said aperture alone while leaving said mark intact.

5,617,401

CALIBRATION OF LASERS THAT PRODUCE MULTIPLE POWER OUTPUT LEVELS OF EMITTED RADIATION

Jerry E. Hurst, Jr., San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 8, 1996, Ser. No. 612,994

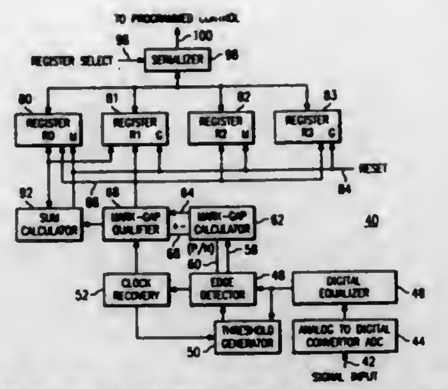
Int. Cl.⁶ G11B *7/00*

U.S. Cl. 369—116 **22 Claims**

1. A method for calibrating a laser for emitting any one of a first number of laser power levels, a first one of said laser power levels being a minimum laser power level for indicating a gap, a second number less than said first number of recording ones of said laser power levels for recording data on a record member, hereafter recording power levels, for recording mark signals on said record member;

comprising steps of:

generating a first calibration pulse pattern including said first one power level and predetermined ones of said recording power levels for recording said calibration pulse pattern as a plurality of said mark signals and gaps;



repeatedly recording timed pulses for generating said calibration pulse pattern on an optical disk at respective diverse second power level amplitudes;

reading said recorded calibration pattern;

deriving a clock time period indication from said read calibration pattern;

analyzing said read calibration pattern for finding an optimum second laser power level as a predetermined one of said recording power levels, said analyzing including;

finding and indicating average gap and mark durations for all of said calibration patterns recorded at said diverse amplitudes, respectively;

establishing desired gap and mark lengths respectively represented by first and second numbers of said clock time period; and

executing a least squares analysis for finding an optimum laser amplitude for said predetermined one of said recording power levels indicated by a product of said desired gap length and said average mark length being equal to a product of said desired mark length and said averaged gap length.

5,617,402

ACCESS AND TRACKING DEVICE FOR AN OPTICAL DISC

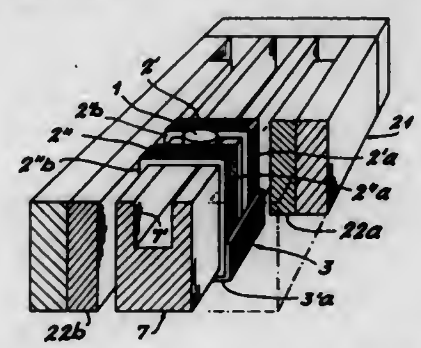
Daniel Bec, Villaneuve Tolosane; Jean-Pierre Le Merer, Portet Sur Garonne, and Michele LeBlanc, Fonsorbes, all of France, assignors to Art Tech Gigadisc "ATG", Toulouse, France

Continuation of Ser. No. 920,432, Aug. 11, 1992, abandoned. This application Oct. 14, 1994, Ser. No. 323,504

Claims priority, application France, Dec. 21, 1990, 90 16135

Int. Cl.⁶ G11B *7/09; 7/085; 21/02*

U.S. Cl. 369—219 **16 Claims**



1. A device for access to a track carried by an information medium having at least a recorded face, the information being readable and/or recordable optically by radiation focussed onto said recorded face by a lens having an optical axis, said track forming revolutions on the medium which form a spiral or concentric circular elements, said device comprising:

a fixed magnetic circuit comprising a central core having a longitudinal axis secant to the whole set of revolutions of said track, said magnetic circuit having two airgaps flanking said central core, each of said airgaps having an outer magnetic pole piece,

an optical head comprising said lens and on a side of said lens opposite to said information medium, a mirror for causing radiation incident on said mirror to deviate from the direction along said longitudinal axis to a direction along the optical axis of the lens, said mirror being rigidly fixed to said lens, an image of said optical axis reflected by said mirror being directed along said longitudinal axis,

coil means wound around said central core for creating an electrodynamic force on said optical head along said longitudinal axis, permitting said optical head to access the revolutions of said track, said coil means and said optical head forming a monolithic assembly, and said image of said optical axis lying inside a coil of said coil means,

means for displacing said optical head along said optical axis of the lens.

5,617,403

OPTICAL PICKUP

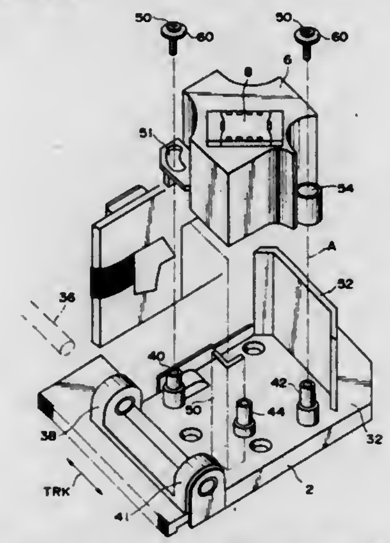
Genichi Iizuka, Chiba, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jun. 12, 1995, Ser. No. 489,393

Claims priority, application Japan, Jun. 21, 1994, 6-163173

Int. Cl.⁶ G11B *7/08; 21/16*

U.S. Cl. 369—244 **11 Claims**



1. An optical pickup for reproducing information recorded on an information recording medium with a laser beam, comprising:

a slide member having a plurality of cylindrical bosses and being displaced between an inner peripheral portion of the information recording medium and an outer peripheral portion thereof, a first one of said plurality of cylindrical bosses being hollow so as to form a tube;

a laser-beam receiving and emitting device comprising an emitting unit for irradiating the information recording medium with the laser beam and a receiving unit for receiving therein the laser beam reflected from the information recording medium; and

means for holding said laser-beam receiving and emitting device, said laser-beam receiving and emitting device holding means having a plurality of engagement portions formed therein respectively brought into engagement with said plurality of bosses, said first one of said plurality of bosses being arranged in a first one of said plurality of engagement portions relative to said laser-beam device so that the laser beam is emitted and received through the hollow boss, a second one of said plurality of engagement portions being formed as a slot receiving therein a second one of said plurality of bosses, so that said holding means is rotated with a third one of said plurality of bosses as a fulcrum.

5,617,404

MAGNETO-OPTIC DISK APPARATUS PROVIDED WITH A HOLDER HAVING A CLAW CATCHING AND BENDING AN ELASTIC MEMBER

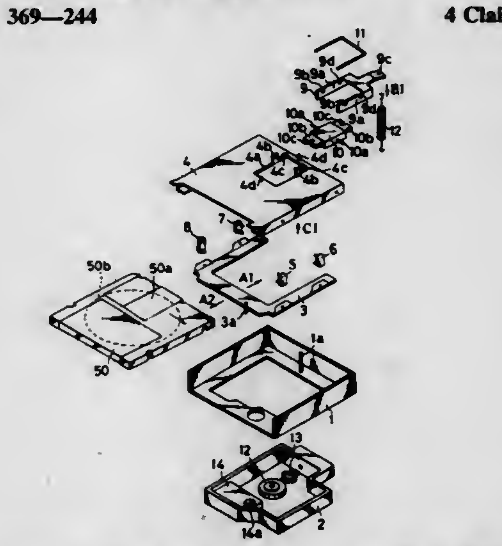
Yasushi Okada, Hadano, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 110,385, Aug. 23, 1993, abandoned. This application Aug. 8, 1995, Ser. No. 512,435

Claims priority, application Japan, Aug. 27, 1992, 4-228542

Int. Cl.⁶ G11B *21/16; 5/54*

U.S. Cl. 369—244 **4 Claims**



1. A magneto-optic disk apparatus provided with a cartridge receiving a magneto-optic disk, a loading mechanism for moving a holder with the cartridge being set therein to an unloading position or to a loading position, and a magnetic head for applying a magnetic field in close vicinity to said magneto-optic disk, wherein the apparatus comprises:

a support arm supporting said magnetic head and journaled as rotatable between a first position and a second position, said first position being in close vicinity to the magneto-optic disk and said second position being separate from the magneto-optic disk;

a first elastic member urging the support arm toward said second position; and

a rotating member for rotating said support arm to said first position against an urging force of said first elastic member in synchronism with movement of said holder to said loading position and rotating the support arm to said second position by the urging force of the first elastic member in synchronism with movement of said holder to said unloading position,

wherein said support arm is provided with a second elastic member to urge said magnetic head toward the magneto-optic disk at said first position and not to urge said magnetic head toward the magneto-optic disk at said second position, and said second elastic member is a U-shaped wire spring parallel to said magneto-optic disk, and wherein said holder is provided with a claw portion which catches and bends said second elastic member when said support arm is located at said first position.

5,617,405

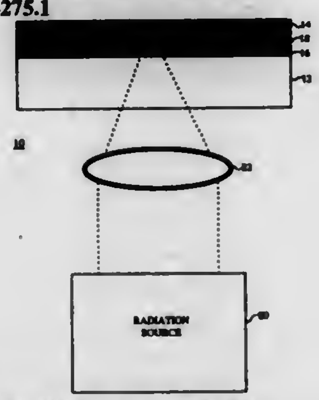
OPTICAL RECORDING MEDIUM HAVING AT LEAST TWO SEPARATE RECORDING LAYERS OF DIFFERENT WRITING TEMPERATURES

Randall H. Victora, Rochester, and Giuseppe Farruggia, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 5, 1996, Ser. No. 611,266

Int. Cl.^{6} G11B *3/74*

U.S. Cl. 369—275.1 **7 Claims**



1. An optical storage device, comprising:

a) at least two spaced apart recording layers;

b) a spacer layer separating by being positioned between alternating recording layers; and

c) each recording layer including a material responsive to a beam of radiation from a source to record information and at least one layer having a write temperature different than other recording layers and selected to improve recording performance parameters.

5,617,406

OPTICAL DISC WITH HEAT BLOCKING BANDS BETWEEN TRACKS

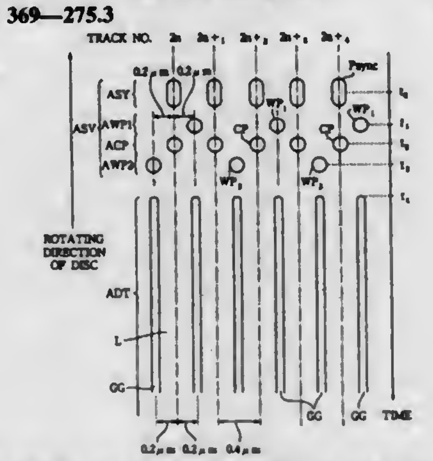
Nobuaki Onagi, and Fumihiko Yokogawa, both of Saitama-ken, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Feb. 21, 1995, Ser. No. 391,445

Claims priority, application Japan, Feb. 25, 1994, 6-028451

Int. Cl.^{6} G11B *7/24*

U.S. Cl. 369—275.3 **9 Claims**



1. An optical disc having a plurality of tracks arranged in a radical direction of the disc, each of the tracks comprising a plurality of servo areas for recording servo information, and a plurality of data areas for recording data information, the disc comprising in succession:

a substrate;

a first dielectric layer;

a magneto-optical recording layer;

a second dielectric layer; and

a coating layer;

wherein a heat blocking band is disposed between adjacent tracks at least in the data area for preventing heat from transmitting to the data area.

5,617,407

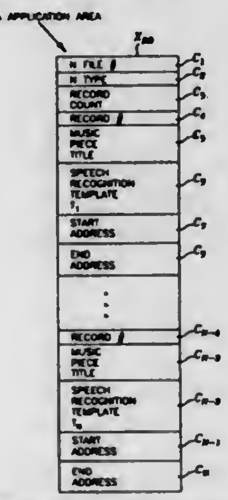
OPTICAL DISK HAVING SPEECH RECOGNITION TEMPLATES FOR INFORMATION ACCESS

Monica M. Bareis, 2240 Tarpley Rd, #213, Carrollton, Tex. 75006

Continuation of Ser. No. 492,971, Jun. 21, 1995, abandoned. This application Sep. 20, 1996, Ser. No. 717,185

Int. Cl.^{6} G11B *7/00*

U.S. Cl. 369—275.3 **12 Claims**



1. An information storage medium comprising:

an optical disk;

a storage area including a plurality of sections on said optical disk;

ones of said plurality of said sections storing an information table;

other ones of said plurality of said sections storing prestored data; and

said information table including speech recognition templates and pointers identifying data locations within said sections storing prestored data, such that said pointers are accessed by user spoken identifiers associated with the data and recognized by said speech recognition templates for retrieving data stored on said sections storing prestored data for output to a user based upon said user spoken identifiers.

5,617,408

OPTICAL RECORDING MEDIUM HAVING A DISC WITH DEFORMED PITS

Akira Nishizawa, Yokohama, and Kanji Kayanuma, Hadano, both of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Oct. 17, 1995, Ser. No. 544,134

Claims priority, application Japan, Oct. 21, 1994, 6-282558

Int. Cl.^{6} G11B *7/24*

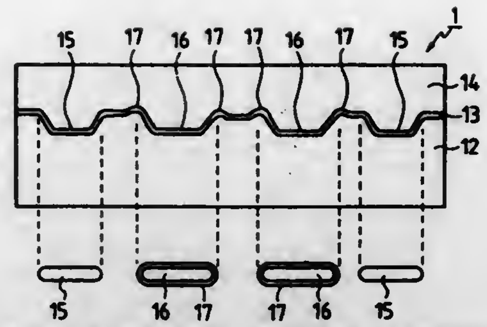
U.S. Cl. 369—275.4 **4 Claims**

1. An optical recording medium comprising:

a transparent substrate having a surface formed with a track of pits; and

a reflecting layer extending on the surface of the transparent substrate;

wherein the pits include first-type pits and second-type pits, wherein the first-type pits do not have an upwardly projecting



rims extending along edges thereof while the second-type pits have upwardly projecting rims extending along edges thereof.

5,617,409

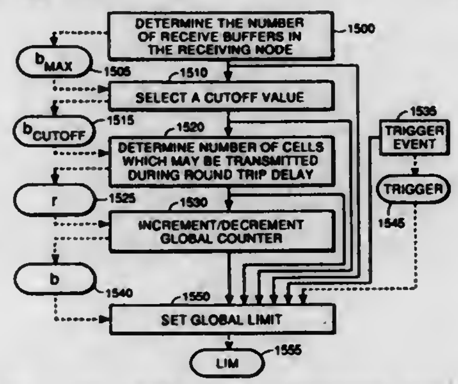
FLOW CONTROL WITH SMOOTH LIMIT SETTING FOR MULTIPLE VIRTUAL CIRCUITS

Cuneyt M. Ozveren, Somerville, Mass.; Hallam G. Murray, Jr., Menlo Park, Calif.; Gregory M. Waters, Groton, and Robert J. Simcoe, Westborough, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jan. 28, 1994, Ser. No. 189,398

Int. Cl.^{6} H04J *3/14*

U.S. Cl. 370—235 **32 Claims**



1. A flow control apparatus for a transmitting node having a plurality of virtual circuits with a receiving node, comprising:

first determining means to determine the number of buffers in said receiving node, said number referred to hereinafter as b_{max};

selecting means to select a cutoff value, said cutoff value hereinafter referred to as b_{cutoff}, said cutoff value b_{cutoff} selected to be less than b_{max};

second determining means to determine the number of data transmission units which may be transmitted by said transmitting node during one round trip propagation delay time between said transmitting node and said receiving node, said number of data transmission units hereinafter referred to as r;

a global counter incremented in response to each data transmission unit transmitted by said transmitting node to said receiving node, and decremented in response to buffer released messages received from said receiving node, the value of said global counter hereinafter referred to as b; and

means for limiting the number of data transmission units transmitted by said transmitting node to said receiving node on any one of said plurality of virtual circuits to a value of lim, responsive to said global counter having a value b greater than said b_{cutoff} value, said value of lim being interpolated between said value r and a value min, where said value min is equal to a number of receive buffers reserved in said receiving node for each one of said plurality of virtual circuits.

5,617,410

CDMA COMMUNICATION WITH A PROPAGATION DELAY BETWEEN A BASE AND A MOBILE STATION TAKEN INTO ACCOUNT

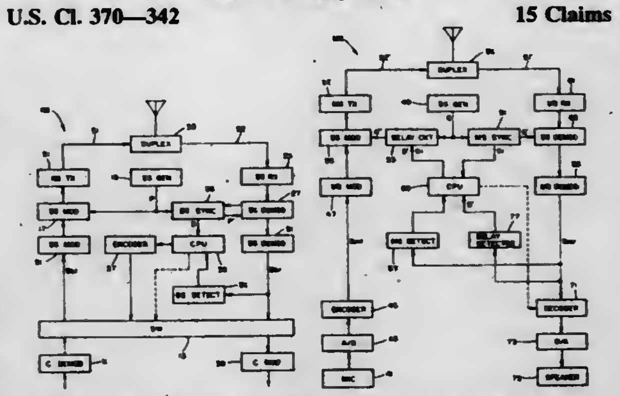
Mariko Matsumoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 15, 1995, Ser. No. 404,503

Claims priority, application Japan, Mar. 15, 1994, 6-069867

Int. Cl.^{6} H04J *13/04*

U.S. Cl. 370—342 **15 Claims**



1. A code division multiple access communication method comprising the steps of generating at a base station a base generated spectrum spread pattern, modulating a base transmission signal by said base generated spectrum spread pattern into a downward transmission signal for reception at a mobile station as a downward reception signal, synchronizing said base generated spectrum spread pattern with an upward reception signal received from said mobile station to produce a base synchronized spectrum spread pattern, demodulating said upward reception signal by said base spectrum spread pattern into a base reception signal, generating at said mobile station a mobile generated spectrum spread pattern, modulating a mobile transmission signal by using said mobile generated spectrum spread pattern as an adjusted spectrum spread pattern into an upward transmission signal for reception at said base station as said upward reception signal, synchronizing said mobile generated spectrum spread pattern with said downward reception signal to produce a mobile synchronized spectrum spread pattern, and demodulating said downward reception signal by said mobile synchronized spectrum spread pattern into a mobile reception signal, wherein said code division multiple access communication method comprises the steps of:

detecting at said base station a base station delay datum between said base generated and synchronized spectrum spread patterns;

inserting said base station delay datum into said downward transmission signal as an inserted delay datum; and

adjusting at said mobile station said mobile generated spectrum spread pattern into said adjusted spectrum spread pattern in response to said inserted delay datum.

5,617,411

METHOD FOR DIGITAL DATA TRANSMISSION IN THE ZERO SYMBOL OF COFDM MODULATION METHOD

Andreas Mueller, Nersingen, Germany, assignor to Daimler Benz AG, Stuttgart, Germany

PCT No. PCT/EP92/02703, § 371 Date Aug. 18, 1994, § 102(e) Date Aug. 18, 1994, PCT Pub. No. WO93/11616, PCT Pub. Date Jun. 10, 1993

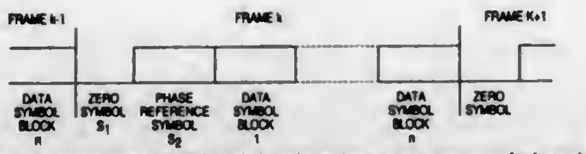
PCT Filed Nov. 24, 1992, Ser. No. 244,292

Claims priority, application Germany, Nov. 26, 1991, 41 38 770.8

Int. Cl.^{6} H04J *1/02;4/00*

U.S. Cl. 370—210 **9 Claims**

5. In a method for digital multi-channel transmission utilizing a COFDM (Coded Orthogonal Frequency Division Multiplex) method, and which operates in a frame oriented manner with the frame containing at least one zero symbol followed by a number of data symbol blocks, the improvement comprising the additional



step of transmitting additional data in at least one zero symbol; and wherein the additional data are transmitted on individual ones of sub-channels in the zero symbol in the phase-difference of adjacent sub-channels in the zero symbol.

5,617,412

FRAME/MULTIFRAME STRUCTURE FDMA SYSTEM AND CORRESPONDING SIGNAL

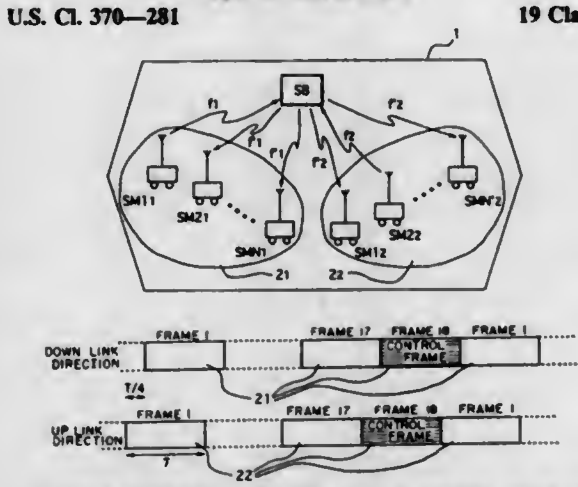
Marc Delprat, Le Chesnay; Vianney Andrieu; Frédéric Gourgue, both of Paris; Gladys Gaydu, Rosny Sous Bois, and Charles Nouchi, Suresnes, all of France, assignors to Alcatel N.V., Rijswijk, Netherlands

Filed Apr. 12, 1995, Ser. No. 420,604

Claims priority, application France, Apr. 15, 1994, 94 04556

Int. Cl.⁶ H04B *7/208*

U.S. Cl. 370—281 **19 Claims**



1. Digital half-duplex frequency division multiple access radio system in which a mobile station is either sending or receiving, wherein for each call between a mobile station and a base station, a first frequency is allocated for the up link direction, from the mobile station to the base station, and a second frequency is allocated for the down link direction, from the base station to the mobile station, the signals exchanged by said stations are organized in frames of predetermined fixed duration grouped into multiframes comprising a predetermined number of frames and each multiframe including at least one control frame, at least some of said control frames being listening frames during which the sending mobile station interrupts sending, switches to receive mode and, if appropriate, reverts to send mode.

5,617,413

SCALABLE WRAP-AROUND SHUFFLE EXCHANGE NETWORK WITH DEFLECTION ROUTING

Steve P. Monacos, Altadena, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

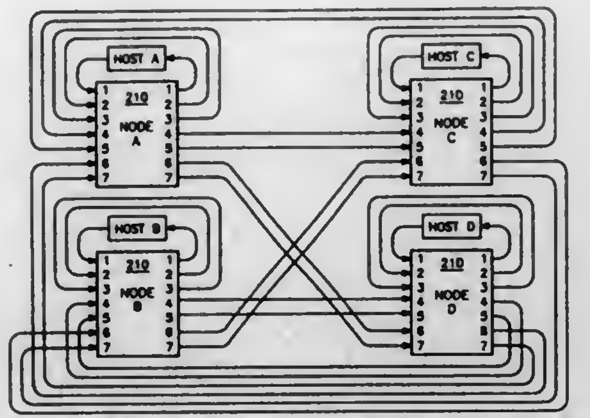
Continuation of Ser. No. 112,497, Aug. 18, 1993, abandoned. This application Jan. 27, 1995, Ser. No. 378,994

Int. Cl.⁶ H04L *12/58*

U.S. Cl. 370—400 **62 Claims**

1. A communication network for routing packets therethrough, each packet having a packet header designating a destination within said network, said network comprising:

plural crossbar nodes each having plural input and output ports;



at least first and second layers of connecting links connected to all of said crossbar nodes at first and second input ports, respectively, and first and second output ports, respectively, thereof;

each one of said plural crossbar nodes comprising local routing means responsive to said packet headers for deflecting at least one of a plurality of packets contending for a particular output port connected to one of said first and second layers to an output port connected to the other of said first and second layers compatible with the destination designated by the one packet's header.

5,617,414

POWER REDUCTION IN TIME-SPACE SWITCHES

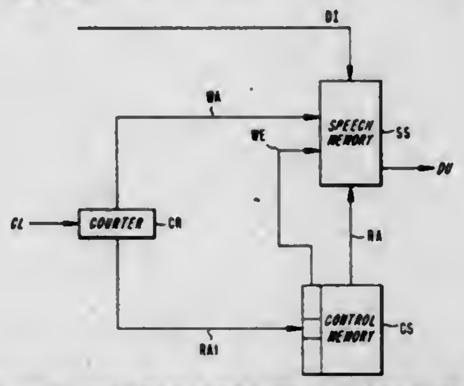
Jan Bergkvist, Älvsjö, and Peter Larsen, Rönninge, both of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Jan. 18, 1995, Ser. No. 375,403

Claims priority, application Sweden, Jan. 19, 1994, 9400133

Int. Cl.⁶ H04L *12/54*

U.S. Cl. 370—374 **2 Claims**



1. In a telecommunication system, especially a telephone system having at least one electronic-computer-controlled telephone exchange having time-space type switches having a plurality of speech memories connected in the form of matrices having rows and columns, wherein each column of speech memories is controlled by a respective control memory connected thereto, an apparatus for transferring, via inputs and outputs of the speech memories, speech and data information in binary form between subscribers connected to the exchange, comprising:

separate memories in the form of extra memories in the matrices, the separate memories having a plurality of memory positions having respective addresses, wherein control information signals are written into memory positions via inputs of the separate memories according to addresses from the control memories;

a counter for providing addresses;

a logic circuit for adding control information signals and speech and data information arriving at the speech memories;

wherein a control information signal, when read out from a separate memory to a speech memory according to an address from the counter and after addition in the logic circuit of information arriving at the speech memory, determines whether the information arriving at the speech memory is to be written into the speech memory at the address provided out by the counter according to a result of the addition, in which case the speech memory is activated, and whether the writing of information arriving at the speech memory is to be blocked, in which case the speech memory is not activated;

during a first read cycle after an information change in the control memory, a further control signal is applied to the logic circuit such that writing is carried out in each position in the speech memory during all of the read cycle irrespective of the control information signal, whereby after such an information change in the control memory, information is always available to be read out of the speech memory; and

after such writing of information into the speech memory during all of a read cycle, the further control signal is canceled, whereupon the control information signal takes over control of writing information into the speech memory, and depending on a polarity of the control information signal, the speech memory is either activated by writing information or not activated by blocking writing information.

5,617,415

INTERCONNECTION ELEMENT FOR AN ASYNCHRONOUS TIME-DIVISION MULTIPLEX TRANSMISSION SYSTEM

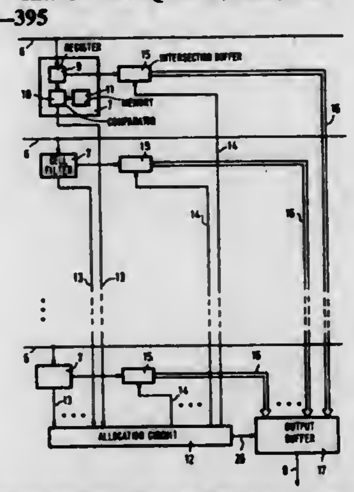
Wolfgang Kowalk, Oldenburg, and Hans-Georg Keller, Aachen, both of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 25, 1991, Ser. No. 674,492

Claims priority, application Germany, Apr. 2, 1990, 40 10 535.0

Int. Cl.⁶ H04Q *11/04;* **H04J** *3/24*

U.S. Cl. 370—395 **19 Claims**



1. An asynchronous time-division multiplex transmission system for cells containing a path identification, comprising an interconnection element which transmits cells, supplied by auxiliary lines (6) and destined for a trunk line (8), at a predetermined interconnection element transmission rate,

said element comprising a respective cell filter (7) connected to each of the auxiliary lines; and a respective intersection buffer (15) connected to each cell filter, said cell filter being arranged to pass a cell to the intersection buffer if the respective path identification is allocated to said trunk line,

characterized in that said element comprises an output buffer (17), coupled to outputs of said intersection buffers, for delivering cells to said trunk line; and means for transmitting said cells at least partly in parallel between the intersection buffers and the output buffer, at an output loading rate which is greater than said predetermined interconnection element transmission rate.

5,617,416

NETWORK WITH DATA RATE ADJUSTMENT FOR VIRTUAL CIRCUITS WITH ASYNCHRONOUS TIME DIVISION MULTIPLEX TRANSMISSION

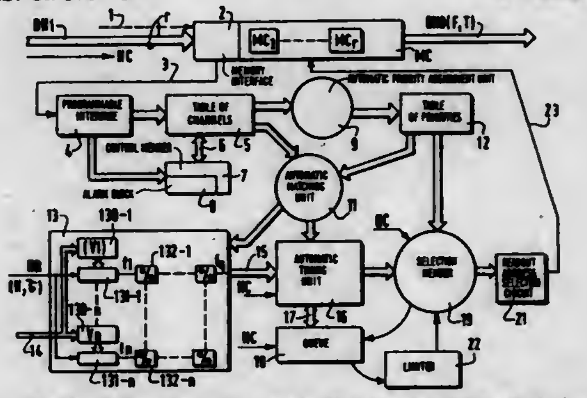
Souad Damien, Palaiseau, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 5, 1993, Ser. No. 102,451

Claims priority, application France, Aug. 6, 1992, 9209401

Int. Cl.⁶ H04L *12/56*

U.S. Cl. 370—391 **18 Claims**



1. An ATM network including a data rate readjustment device for channels with input cells in an asynchronous time division technology, which channels are present at the input of a memory for cells, said memory being formed by a plurality of r virtual circuit buffer memories, each cell of an activated channel being accommodated in each of said virtual circuit buffer memories whose identity is recognizable from a header of the said cell, while the output cells of each of said memories present on an output multiplex carrier DNO with a cell rate F are read from the said virtual circuit buffer memories by a readout address selection circuit, said network comprising:

first matching means for establishing a one-to-one relationship between each activated channel and a predetermined level of priority;

a rhythm synthesis table for providing pulse signals at all frequencies representative of the cell data rates possible for the channels;

second matching means which activate, at the output of the rhythm synthesis table, exclusively those pulse signals which have frequencies corresponding to the data rates of activated channels;

an automatic timing unit for the activated channels which judges the pulses received from said rhythm synthesis table at each cell time T_j and which assigns thereto the corresponding activated channels and their associated priorities; and

selection means for choosing the channel of highest priority on the basis of the highest priority derived in said automatic timing unit at each subsequent cell time T_{j+1} and for deriving therefrom a corresponding readout command to said readout address selection circuit.

5,617,417

ASYNCHRONOUS TRANSFER MODE COMMUNICATION IN INVERSE MULTIPLEXING OVER MULTIPLE COMMUNICATION LINKS

Shirish K. Sathe, Cupertino; Charles M. Corbalis, Saratoga, both of Calif.; Uri Schmidt, Azor, Israel, and Richard M. Moley, Saratoga, Calif., assignors to Stratacom, Inc., San Jose, Calif.

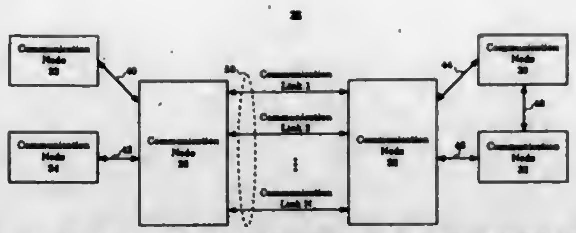
Filed Sep. 7, 1994, Ser. No. 301,854

Int. Cl.⁶ H04L *12/56*

U.S. Cl. 370—394 **6 Claims**

3. An asynchronous transfer mode communication system, comprising:

means for transferring a series of communication cells over each of a set of communication links while manipulating a framing



bit in each communication cell such that the framing bits provide a predetermined framing bit stream for each communication link;

means for receiving the communication cells over the communication links and aligning the received communication cells from each communication link according to the corresponding framing bit stream;

means for manipulating a control channel bit in each communication cell while transferring the communication cells over each communication link such that the control channel bits provide a control message for each communication link, the control message specifying an ordered list of logical identifiers, one logical identifier for each communication link, such that the ordered list indicates a multiplexed sequence of transfer of the communication cells over the communication links; and

means for deleting a failed communication link from the set of communication links by deleting the logical identifier for the failed communication link from the ordered list.

5,617,418

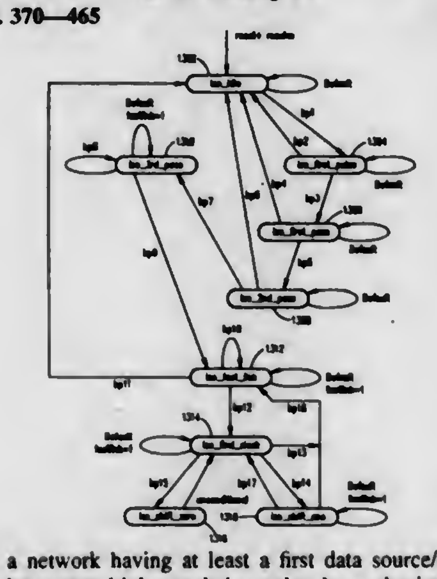
NETWORK LINK DETECTION AND GENERATION

Ramin Shirani, Morgan Hill, and Brian C. Edem, San Jose, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Continuation-in-part of Ser. No. 971,018, Nov. 2, 1992, abandoned. This application Nov. 1, 1993, Ser. No. 146,729

Int. Cl.⁶ H04Q *1/30*

U.S. Cl. 370—465 **13 Claims**



1. In a network having at least a first data source/sink and a second data source/sink coupled together by a physical medium, apparatus for determining at least one protocol capability of said second data source/sink, comprising:

first means, coupled to said first source/sink, for placing a first signal onto said physical medium, said first signal indicating a first protocol capability of said first source/sink;

second means, coupled to said second data source/sink, for receiving said first signal,

third means, coupled to said second data source/sink, for transmitting a second signal onto said physical medium when said second data source/sink has said first protocol capability, said second signal comprising a plurality of pulses spaced-apart by a first time interval, and a third signal, different from said second signal, when said second data source/sink has a second protocol capability, said third signal comprising a plurality of pulses spaced-apart by a second time interval, different from said first time interval;

fourth means, coupled to said first data source/sink, for detecting whether said signal transmitted by said second means is said second signal or said third signal, and

fifth means, coupled to said first data source/sink, for establishing communication with said second data source/sink using said first protocol if said fourth means detects said second signal and using said second protocol if said fourth means detects said third signal.

5,617,419

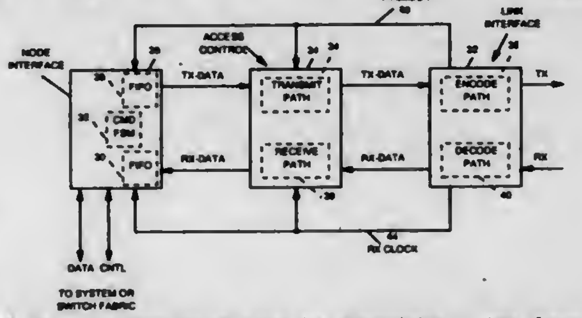
ADAPTING SWITCH PORT AND WORK STATION COMMUNICATION ADAPTERS TO DATA FRAME TYPES WITH DISPARATE FORMATS AND DATA RATES

Kenneth J. Christensen, Apex; Lee C. Haas, Raleigh, and Francis E. Noel, Durham, all of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 20, 1994, Ser. No. 309,522

Int. Cl.⁶ H04J *3/16*

U.S. Cl. 370—471 **16 Claims**



8. In a communication node for transmitting a data frame, adapter apparatus for adapting data rate of the data frame to data rate of a "clear-pipe" communication network attached to the node, said apparatus comprising:

a buffer buffering data words and non-data symbols of the data frame to be transmitted;

a detector detecting from the non-data symbols the type of data frame being buffered by said buffer;

a switch responsive to the type of data frame detected by said detector, said switch inserting a quantity of predetermined non-data symbols between data words to produce a stretched data frame adapted to the data rate of the communication network; and

state logic controlling the quantity of predetermined non-data symbols inserted between data words by said switch, the quantity depending upon the type of data frame detected by said detector and the data rate of the communication network.

5,617,420

HIERARCHICAL CONNECTION METHOD, APPARATUS, AND PROTOCOL

Lee D. Whetsel, Plano, Tex., assignor to Texas Instrument Incorporated, Dallas, Tex.

Continuation of Ser. No. 900,805, Jun. 17, 1992, abandoned. This application Jun. 13, 1994, Ser. No. 259,272

Int. Cl.⁶ H04J *3/24;* **G01R** *31/28*

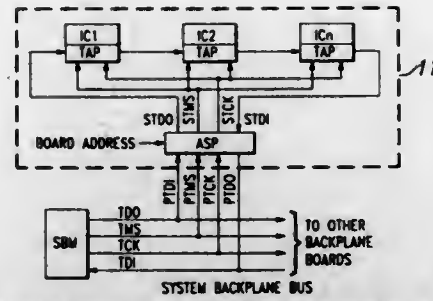
U.S. Cl. 370—402 **16 Claims**

1. A connection system comprising:

a master device operable for communicating data;

a plurality of slave devices to which data from said master device may be communicated;

at least three addressable connection circuits connected between said master device and said plurality of slave devices, said connection circuits operable when addressed by said master device to provide connections for communicating data from said master device to said slave devices, a first said connection circuit and a second said connection circuit and a third said connection circuit all connected to one another at a common node, said master device operable to connect itself to one of said slave devices via said first and second connection circuits by addressing said first and second connection circuits.



5,617,421

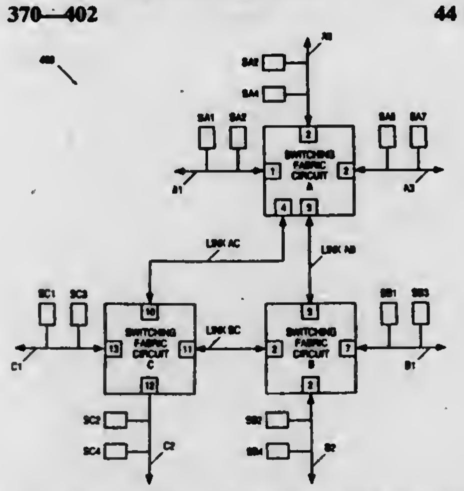
EXTENDED DOMAIN COMPUTER NETWORK USING STANDARD LINKS

Hon W. Chin, Palo Alto, and Frederick Scott, Sunnyvale, both of Calif., assignors to Cisco Systems, Inc., San Jose, Calif.

Filed Jun. 17, 1994, Ser. No. 261,393

Int. Cl.⁶ H04L *12/56*

U.S. Cl. 370—402 **44 Claims**



1. In a segmented computer network having a first domain and a second domain, a method comprising the steps of:

creating a first table entry for a first endstation in a first forwarding table of a first switching fabric circuit, the first table entry including domain information specifying that the first endstation is in the first domain and port information specifying that the first endstation is coupled to a first port;

receiving a packet having the first endstation as a source by the first port of the first switching fabric circuit;

determining a destination for the packet;

forwarding the packet to a second endstation of the first domain if the packet specifies the second endstation as the destination;

determining the domain information of the source if the destination for the packet specifies more than one endstation; and

forwarding the packet to endstations of the first domain as specified by the domain information of the source.

5,617,422

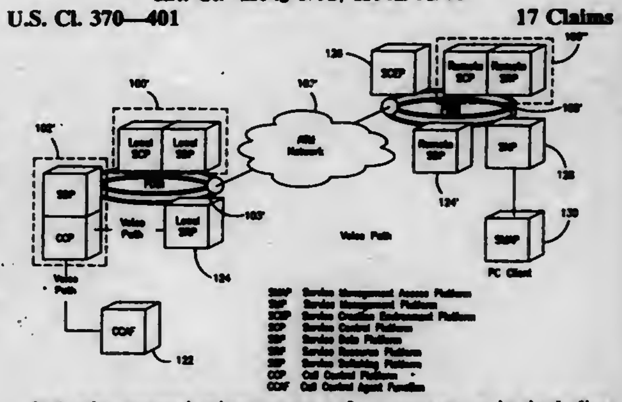
HIGH SPEED INTERFACE IN A TELECOMMUNICATIONS NETWORK

Paul D. Litzenberger, Wylie, Tex., and Louis G. Gottlieb, Colorado Springs, Colo., assignors to MCI Communications Corp., Washington, D.C.

Filed Aug. 10, 1995, Ser. No. 513,593

Int. Cl.⁶ H04J *3/12;* **H04L** *12/46*

U.S. Cl. 370—401 **17 Claims**



1. A telecommunications system of a common carrier including a plurality of intelligent platforms for processing call related information, said system comprising:

a first local area network for connecting at least two intelligent platforms forming a first group in said plurality of intelligent platforms to transfer call related information therebetween;

a second local area network for connecting at least two other intelligent platforms forming a second group in said plurality of intelligent platforms to transfer call related information therebetween;

a switch for routing a telephone call from a calling station to a called station, said routing being selectively based on call related information held in said first group; and

a wide area network, responsive to said first local area network, to said second local area network, and to said switch, for providing a high speed interface to transfer call related information among said first group, said second group and said switch, wherein said first group of intelligent platforms includes call related information with a high transport priority if a data conflict occurs on said wide area network, and said second group of intelligent platforms includes call related information with a low transport priority if said data conflict occurs on said wide area network.

5,617,423

VOICE OVER DATA MODEM WITH SELECTABLE VOICE COMPRESSION

Ping Li, New Brighton; Timothy D. Gunn, Mounds View, and Jeffrey P. Davis, Ham Lake, all of Minn., assignors to Multi-Tech Systems, Inc., Mounds View, Minn.

Continuation-in-part of Ser. No. 161,915, Dec. 3, 1993, Pat. No. 5,453,986, which is a continuation-in-part of Ser. No. 142,807, Oct. 25, 1993, Pat. No. 5,535,204, which is a continuation-in-part of Ser. No. 2,467, Jan. 8, 1993, Pat. No. 5,452,289. This application Jul. 7, 1994, Ser. No. 271,496

Int. Cl.⁶ H04J *3/12;* **H04L** *12/56*

U.S. Cl. 370—426 **17 Claims**

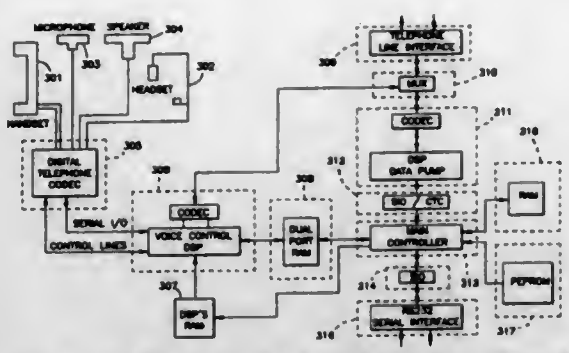
1. A method for negotiating communications parameters between a plurality of transceivers in a packet network, comprising the steps of:

uniquely encoding a packet to identify the packet as a communications parameter negotiation request;

encoding the packet with codes designating communications parameters; and

negotiating the communications parameters, comprising the steps of:

(a) transmitting the packet from a first transceiver to a second transceiver, the packet identifying a particular voice compression parameter;



(b) receiving the packet in a second transceiver, wherein the second transceiver recognizes the packet and transmits an acknowledgement packet if the voice compression parameter is acceptable;

(c) if the first transceiver receives the acknowledgement packet, then using the particular voice compression parameter for communications: and

(d) if the first transceiver does not receive the acknowledgement packet, then selecting another voice compression parameter and returning to step (a).

5,617,424

METHOD OF COMMUNICATION BETWEEN NETWORK COMPUTERS BY DIVIDING PACKET DATA INTO PARTS FOR TRANSFER TO RESPECTIVE REGIONS

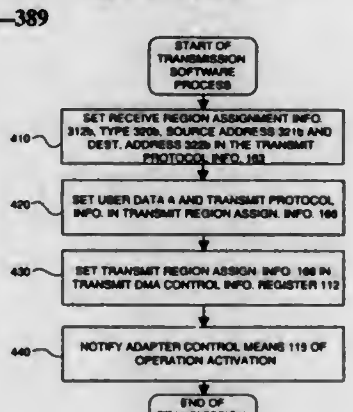
Hideki Murayama, Kunitachi; Satoshi Yoshizawa, Kawasaki; Hidenori Inouchi, Tokorozawa; Takeshi Aimoto; Takehisa Hayashi, both of Sagamihara, and Hiroshi Iwamoto, Hadano, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 297,220, Aug. 29, 1994, abandoned. This application May 3, 1996, Ser. No. 642,666

Claims priority, application Japan, Sep. 8, 1993, 5-223550

Int. Cl.[6] H04J *3/24*

U.S. Cl. 370—389 10 Claims



1. A network communication method for communicating information between network computers that each include at least a processor, a main memory and a network adapter connected to a network, comprising:

pre-assigning a receiving region in the main memory of a receiving network computer prior to the arrival of a data packet from a transmitting network computer, and initializing a port table and address conversion tables in the main memory of the receiving network computer;

transmitting a packet from said transmitting network computer, including adding a port ID for assigning a receiving region in the receiving network computer;

extracting from the port table in the main memory of the receiving network computer, information on the basis of the port ID; and

determining a physical address in the main memory of the receiving network computer on the basis of the information extracted from the port ID table, and transferring data of the transmitted data packet to the main memory of the receiving network computer identified by the physical address.

5,617,425

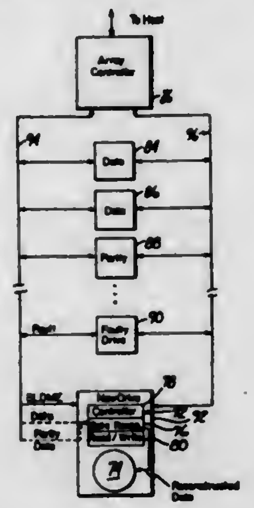
DISC ARRAY HAVING ARRAY SUPPORTING CONTROLLERS AND INTERFACE

David B. Anderson, Minnetonka, Minn., assignor to Seagate Technology, Inc., Scotts Valley, Calif.

Filed May 26, 1993, Ser. No. 67,677

Int. Cl.[6] G06F *11/00*

U.S. Cl. 371—10.2 36 Claims



1. A disc array, comprising:

a plurality of disc drives including a spare disc drive, each disc drive including:

a magnetic disc for storing information; and

a drive controller for writing information to the magnetic disc and for retrieving information from the magnetic disc, the drive controller including array support means for performing array support functions to support the disc array;

connection means, coupled to the drive controller in each of the plurality of disc drives, for connecting the drive controllers so that the drive controllers can communicate with one another to perform the array support functions in cooperation with one another;

array control means, coupled to the drive controller in each of the plurality of disc drives, for controlling the disc drives to perform a write operation to store information in a target location on the magnetic discs; and

wherein the array controller provides the spare disc drive with logging information indicative of new information to be written to the target location during a data write command, the data write command and a parity write command.

5,617,426

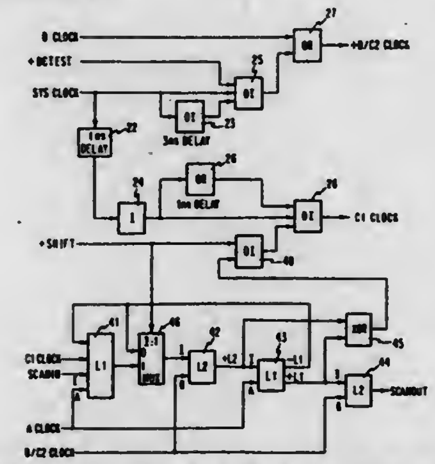
CLOCKING MECHANISM FOR DELAY, SHORT PATH AND STUCK-AT TESTING

Bernd K. F. Koenemann, Hopewell Junction; William H. McAnney, LaGrangeville, and Mark L. Shulman, Staatsburg, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 811,205, Dec. 20, 1991, abandoned. This application Feb. 21, 1995, Ser. No. 393,511

Int. Cl.[6] H04B *17/00*

U.S. Cl. 371—22.3 2 Claims



1. A digital logic circuit for testing a logic circuit block which has a set of input signal lines and a set of output signal lines, said circuit for testing comprising:

a first shift register latch scan string having a plurality of latch pairs with each one of said pairs including a master latch and a slave latch and with output signal lines of said slave latches being connected to the input signal lines of said logic circuit block and also with output signal lines of said slave latches being connected to a single subsequent master latch in these scan strings so as to form a shift register;

a second set of latch pairs with each one of said second set including a master latch and a slave latch with said output signals of said logic circuit block being connected to input signal lines of said master latches in said second set of latch pairs;

first clock means for shifting signal values along said scan string one latch at a time;

second clock means for controlling the loading of output signal values from said logic circuit block into said master latches in said second set of latch pairs;

third clock means transferring signal values from said master latches to the respective slave latches in said shift register latch scan string without transferring signal values between said latch pairs therein;

finite state machine means for suppressing a single pulse from said second clock means, said means for suppressing being driven by said first clock means and also by said third clock means, whereby it is assured that a pulse from said third clock means occurs earlier than a pulse from said second clock means.

5,617,427

METHOD FOR GENERATING TEST SEQUENCES FOR DETECTING FAULTS IN TARGET SCAN LOGICAL BLOCKS

Mitsuyasu Ohta, Osaka, and Akira Motohara, Hyogo, both of Japan, assignors to Matsushita Electeric Industrial Co., Ltd., Osaka, Japan

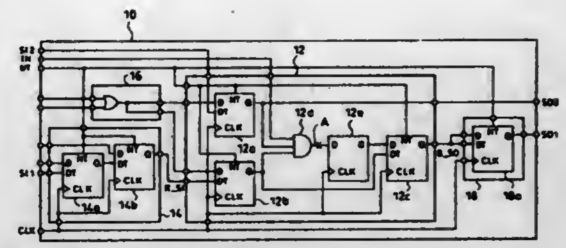
Filed Oct. 17, 1995, Ser. No. 544,162

Claims priority, application Japan, Oct. 18, 1994, 6-251921

Int. Cl.[6] G06F *11/00*

U.S. Cl. 371—22.3 7 Claims

1. A method of generating testing sequences for fault detection in a semiconductor integrated circuit having external pins, comprising:



(a) a plurality of logical blocks; and

(b) one or more scan chains with an input and an output;

said scan chain being formed of one or more scan flip-flops that are connected in series;

said input and output being connected to said external pins of said semiconductor integrated circuit, respectively;

wherein;

at least one of said plurality of logical blocks is a scan logical block;

said scan logical block having a plurality of scan flip-flops comprising at least one scan flip-flop for receiving a signal from a logical block of said plurality of logical blocks and at least one scan flip-flop for providing a signal to a logical block of said plurality of logical blocks; and

said plurality of scan flap-flops each belong to any one of said scan chains,

said method comprising the steps of:

(a) generating a block testing sequence that is a testing sequence for fault detection in a target scan logical block as a single circuit; and

(b) converting said generated block testing sequence into a testing sequence intended for the entire semiconductor integrated circuit.

2. A method of generating testing sequences for fault detection in a semiconductor integrated circuit having external pins, comprising:

(a) a plurality of logical blocks; and

(b) one or more scan chains with an input and an output;

said scan chain being formed of one or more scan flip-flops that are connected in series;

said input and output being connected to said external pins of said semiconductor integrated circuit, respectively;

wherein;

at least one of said plurality of logical blocks is a scan logical block;

said scan logical block having a plurality of scan flip-flops comprising at least one scan flip-flop for receiving a signal from a logical block of said plurality of logical blocks and at least one scan flip-flop for providing a signal to a logical block of said plurality of logical blocks; and

said plurality of scan flip-flops each belong to any one of said scan chains,

said method comprising the steps of:

(a) a first step of generating a block testing sequence that is a testing sequence for fault detection in a target scan logical block as a single circuit;

where (i) M is a number representing the maximum of the numbers of scan flip-flops contained in individual scan chains that run through said target scan logical block and (ii) S is a number representing the maximum of the numbers of in-block scan flip-flops that said individual scan chains contain within said target scan logical block;

(b) a second step including:

(b-1) subtracting a sum of the number of scan flip-flops that each said scan chain, has on the input side of said target scan logical block and S from M, and placing a pattern for shifting scan flip-flops equal in number to a result found, in front of a pattern in said block testing sequence for shifting input data into said scan target logical block via each said scan chain; and

(b-2) finding the number of flip-flops that each said scan chain has on the input side of said target scan logical

block, and placing a pattern for shifting scan flip-flops equal in number to a result found, behind a pattern in said block testing sequence for shifting input data into said scan target logical block via each said scan chain; and

(c) a third step including:

(c-1) finding the number of flip-flops that each said scan chain has on the output side of said target scan logical block, and placing a pattern for shifting scan flip-flops equal in number to a result found, in front of a pattern in said block testing sequence for shifting data for comparison with an expected value out of said target scan logical block via each said scan chain; and

(c-2) subtracting a sum of the number of scan flip-flops that each said scan chain has on the output side of said target scan logical block and S from M, and placing a pattern for shifting scan flip-flops equal in number to a result found, behind a pattern in said block testing sequence for shifting data for comparison with an expected value out of said scan target logical block via each said scan chain.

5,617,428

SCAN TEST CIRCUIT AND SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE WITH SCAN TEST CIRCUIT

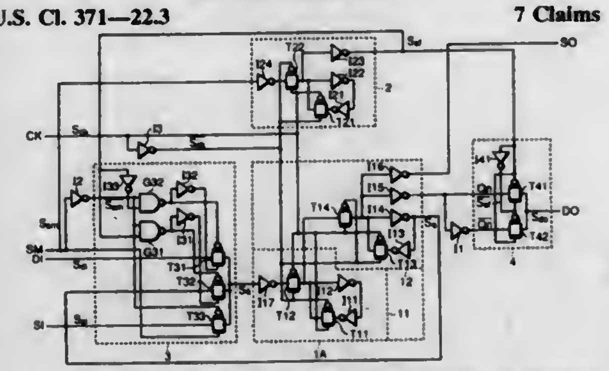
Yasuhiro Andoh, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed May 20, 1996, Ser. No. 650,655

Claims priority, application Japan, May 24, 1995, 7-124893

Int. Cl.[6] G01R *31/28*

U.S. Cl. 371—22.3 **7 Claims**



1. In a scan test circuit having a first input terminal for inputting first data of one bit, a second input terminal for inputting second data as serial data including predetermined scan test data, a third input terminal for inputting an operation switching signal for determining a scan operation and a normal operation, an input selector means for selecting one of said first data and said second data in response to the supply of said operation switching signal and outputting selected data, a register means for holding said selected data as hold data, a first output terminal for outputting first output data corresponding to said first data, and a second output terminal for outputting second output data corresponding to said second data, said scan test circuit being operable to carry out scanning operation such that, during normal operation, a plurality of under-test circuits are caused to be operated independently with one another and, during test operation, said plurality of under-test circuits are connected in series and said second data are supplied to a first-stage under-test circuit of said plurality of under-test circuits, and test results corresponding to said second data are outputted from a last-stage under-test circuit of said plurality of under-test circuits, the improvement comprising:

a latch means which latches said operation switching signal and generates an operation switching latch signal; and

a selector control means which is provided in said input selector means and which selects one of said first data and said second data in response to the supply of said operation switching signal and said operation switching latch signal and outputs the selected data.

5,617,429

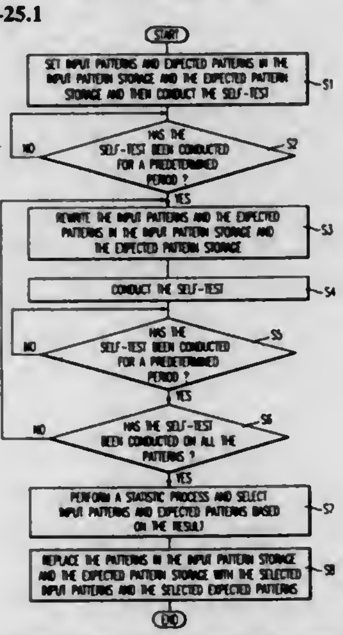
FAILURE DETECTION SYSTEM FOR DETECTING FAILURE OF FUNCTIONAL BLOCKS OF INTEGRATED CIRCUITS

Kouji Goto, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 16, 1994, Ser. No. 291,751

Int. Cl.[6] G06F *11/26*

U.S. Cl. 371—25.1 **21 Claims**



18. A failure detection system for detecting failure of at least one functional block provided within an integrated circuit, comprising:

monitoring means for monitoring an input signal inputted to said at least one functional block to be processed therein and giving a notification that specific one of predetermined signals is inputted when said input signal is in agreement with said specific one;

expected value storage means connected to said monitoring means, for storing data concerning a signal which is expected to be outputted from said at least one functional block if said predetermined signal is properly processed by said at least one functional block, and outputting data corresponding to said specific one which is notified by said monitoring means;

comparator means for comparing an output signal from said at least one functional block with said data outputted from said expected value storage means and outputting a comparison result; and

processing means having a timer for indicating time for use of said integrated circuit, for outputting data indicating said time for use of said integrated circuit at the moment when said comparison result indicates disagreement and at least one of said specific one which is notified by said monitoring means, said output signal from said at least one functional block and said data outputted from said expected value storage means, on the occasion that said comparison result indicates disagreement.

5,617,430

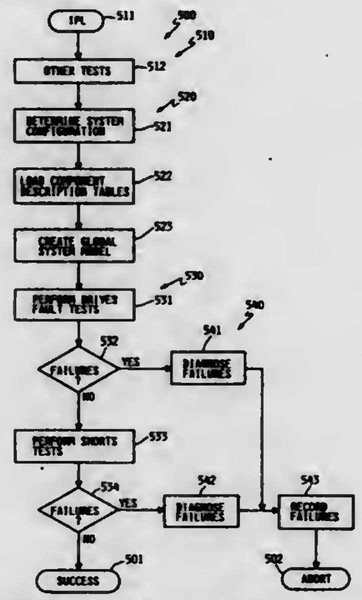
TESTING SYSTEM INTERCONNECTIONS USING DYNAMIC CONFIGURATION AND TEST GENERATION

Frank W. Angelotti; Wayne A. Britson; Steven M. Douskey; Kerry T. Kaliszewski, all of Rochester, and Michael A. Weed, Spring Valley, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 22, 1993, Ser. No. 171,492

Int. Cl.[6] G01R *31/28*

U.S. Cl. 371—27 **19 Claims**



1. A method for dynamically testing an interconnection structure among components in a variable configuration of an electronics system, said method comprising:

(a) initiating a system interconnect test at a certain time;

(b) substantially at said certain time, reading component data stored within said system, said component data including product type and interconnect structure description of each of said components within said system;

(c) constructing from said component data a global model specifying said interconnection structure existing within said system at said certain time;

(d) creating from said global model a set of test data and expected result data for checking said interconnection structure;

(e) applying said test data to said components to produce actual result data representing the condition of said interconnection structure;

(f) comparing said actual result data with said expected result data;

(g) diagnosing a failure in said interconnection structure if said actual result data differs from said expected result data.

5,617,431

METHOD AND APPARATUS TO REUSE EXISTING TEST PATTERNS TO TEST A SINGLE INTEGRATED CIRCUIT CONTAINING PREVIOUSLY EXISTING CORES

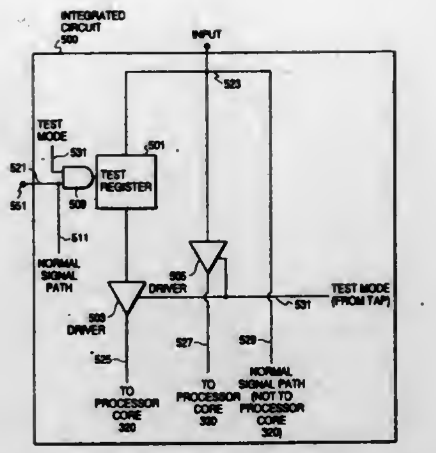
Raghuram S. Tupuri, and Harikumar B. Nair, both of Austin, Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Aug. 2, 1994, Ser. No. 284,163

Int. Cl.[6] G06F *11/00*

U.S. Cl. 371—27 **19 Claims**

1. A method of applying test vectors to a single integrated circuit containing at least one logic core for which a preexisting test



vector set exists, the test vector set having a plurality of test vectors normally applied in one cycle, the method comprising the steps of:

(a) converting each test vector of the test vector set into a first and second test vector;

(b) applying the first test vector to input pins of the single integrated circuit during a first time period;

(c) loading a test register connected to one of the input pins with a signal value from the first test vector, the test register being connected between the one input pin and a logic core under test;

(d) applying the second test vector to the input pins during a second time period;

(e) providing to the logic core under test the signal value stored in the test register concurrently with a signal value from the second test vector applied to the one input pin during the second time period;

(f) observing the results; and

repeating steps (b) through (f) for each test vector until the logic core is tested with each test vector in the test vector set.

5,617,432

COMMON ERROR PROTECTION CODE FOR DATA STORED AS A COMPOSITE OF DIFFERENT DATA FORMATS

John S. Eggenberger, Shingle Springs; Paul Hodges; Norman K. Ouchi, both of San Jose, and David A. Plomgren, San Carlos, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

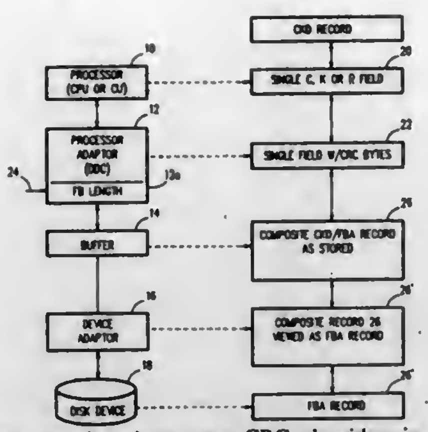
Continuation of Ser. No. 336,614, Nov. 9, 1994, abandoned. This application Jan. 5, 1996, Ser. No. 585,002

Int. Cl.[6] G06F *11/08*

U.S. Cl. 371—37.1 **16 Claims**

1. A method of error protection for data transmitted between a processor and a buffer segmented into successive segments of known length in one data format and transmitted between the buffer and a data storage device segmented into successive segments of known lengths in a different data format, the method comprising the steps of:

initially setting a cyclic redundancy code (CRC) generator to a preselected value;



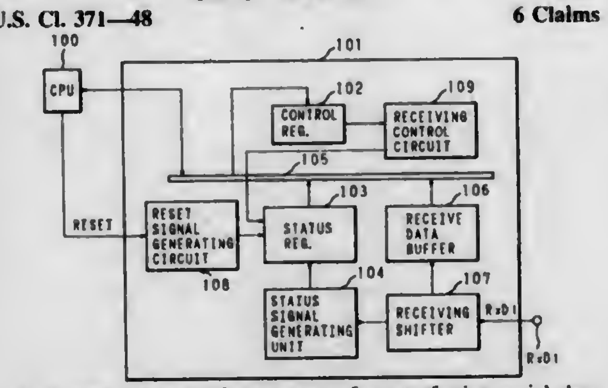
using one preselected common CRC algorithm in the CRC generator set to the preselected value, generating a set of CRC check bytes for each of the successive segments of known lengths as determined in said one format and also for each of the segments of known lengths as determined in said different format;

appending the generated sets of CRC check bytes at the end of each corresponding one of said segments in said one format and said segments in said different format for conditioning each such segment to indicate said preselected value in the absence of a detectable error whether the segment be of known lengths in said one format or known lengths in said different format;

resetting the generator to said preselected value after each set of CRC check bytes is appended to one of said segments in said one format or one of said segments in said other format; and

storing said data and appended check bytes in the buffer to create a composite data format viewed by the processor as comprising segments of known lengths in said one format and viewed by the data storage device as comprising segments of known lengths in said different format.

5,617,433
SERIAL DATA TRANSFER APPARATUS
Katsunori Suzuki, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 30, 1994, Ser. No. 268,582
Claims priority, application Japan, Jun. 30, 1993, 5-160946
Int. Cl.⁶ G06F *11/00*
U.S. Cl. 371—48 **6 Claims**



1. A serial data transfer apparatus for transferring serial data, comprising:

a receiving shifter for storing each bit of received serial data while sequentially shifting each bit to convert the serial data into parallel data;

a control register for storing values of a receiving permission bit, one of said values permitting data to be received and another of said values preventing data from being received;

a status signal generating unit for generating error information of the received data;

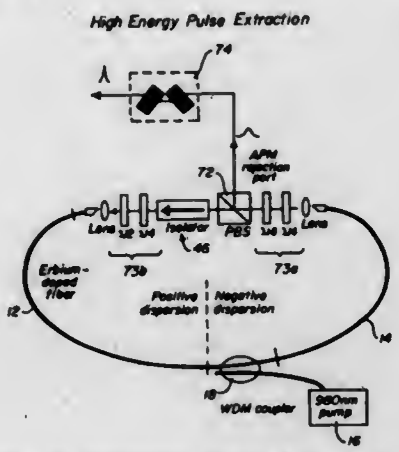
a status register for storing the error information generated by said status signal generating unit;

a receiving control register for controlling said status register to allow the error information to be stored; and

a reset signal generating circuit for initializing stored values of said status register;

wherein said reset signal generating circuit comprises means responsive to a RESET instruction from a central processing unit (CPU) for preventing a reset of said status register when the receiving permission bit is reset to a value preventing data from being received, whereby the error information stored in said status register is maintained.

5,617,434
STRETCHED-PULSE FIBER LASER
Kohichi R. Tamura, Mito, Japan; Erich P. Ippen, Belmont, Mass.; Hermann A. Haus, Lexington, Mass.; Lynn E. Nelson, Somerville, Mass., and Christopher R. Doerr, Atlantic Highlands, N.J., assignors to Massachusetts Inst. of Technology, Cambridge, Mass.
Continuation of Ser. No. 418,812, Apr. 7, 1995, Pat. No. 5,513,194, which is a continuation of Ser. No. 268,821, Jun. 30, 1994, abandoned. This application Apr. 22, 1996, Ser. No. 635,846
Int. Cl.⁶ H01S *3/30*
U.S. Cl. 372—6 **23 Claims**



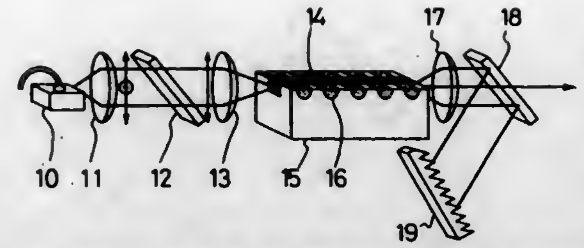
1. A method for suppressing soliton effects on a laser pulse circulating in a modelocked fiber laser cavity, comprising the steps of:

propagating the intracavity laser pulse through a first fiber segment characterized by positive group velocity dispersion; and

propagating the intracavity laser pulse through a second fiber segment characterized by negative group velocity dispersion, the propagation of the laser pulse through the first and second fiber segments producing laser pulse width variations between maximum and minimum width values of sufficient magnitude to suppress soliton effects as the laser pulse circulates within the laser cavity.

5,617,435
LASING SYSTEM WITH WAVELENGTH-CONVERSION WAVEGUIDE
Hideo Nagai, Osaka; Toru Takayama, Nara; Masahiro Kume, Shiga, and Akio Yoshikawa, Kyoto, all of Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan
Filed Mar. 16, 1995, Ser. No. 404,995
Claims priority, application Japan, Mar. 28, 1994, 6-057541; Feb. 6, 1995, 7-017718
Int. Cl.⁶ H01S *3/10*
U.S. Cl. 372—22 **11 Claims**

1. A lasing system of a wavelength-conversion waveguide type, comprising:



a self-sustained pulsation type semiconductor laser light source having an emitting portion for emitting a semiconductor laser light with TM (transverse magnetic)-mode oscillation from said emitting portion of said semiconductor light source by self-sustained pulsation;

a wavelength-conversion waveguide having an incident portion for converting the emitted semiconductor laser light into a second harmonic light and for propagating said emitted semiconductor laser light;

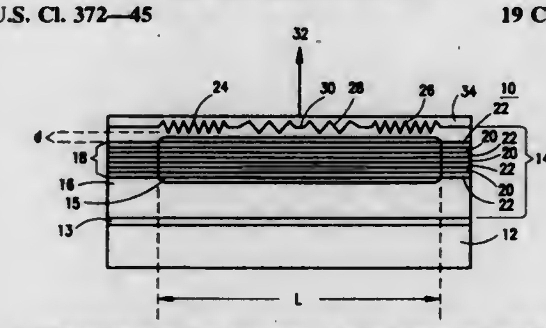
a focusing lens for focusing said semiconductor laser light emitted from said semiconductor laser light source on said incident portion of said wavelength-conversion waveguide;

an external resonator composed of a couple of reflecting mirrors for resonating said semiconductor laser light emitted from said semiconductor laser light source; and

an optical element having a Brewster face within said external resonator, said Brewster face being tilted so that the angle of incidence of a beam of emitted semiconductor laser light becomes a Brewster angle,

wherein the direction of polarization of said semiconductor laser light emitted from said semiconductor laser light source is in alignment with the direction of p-polarized light of said Brewster face, thereby producing an improved lasing system generating short-wavelength second harmonic light such that semiconductor laser oscillation threshold current and differential efficiency do not increase.

5,617,436
STRAIN-COMPENSATED MULTIPLE QUANTUM WELL LASER STRUCTURES
Yu-Hwa Lo, Ithaca, N.Y., assignor to Cornell Research Foundation, Inc., Ithaca, N.Y.
Filed Jun. 7, 1995, Ser. No. 486,046
Int. Cl.⁶ H01S *3/18;3/085*
U.S. Cl. 372—45 **19 Claims**



1. A grating coupled surface emitting laser structure comprising:

a) a substrate;

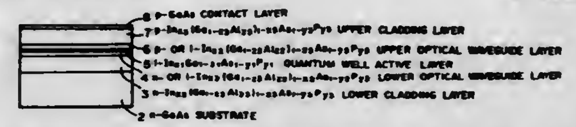
b) a laser body on said substrate;

c) a horizontal laser cavity in said laser body;

d) a strain-compensated multiple quantum well structure in said horizontal cavity; and

e) a second order diffraction grating spaced above said strain-compensated multiple quantum well structure, wherein the coupling efficiency between said horizontal laser cavity and said second order diffraction grating is selected to be greater than approximately 150 cm^{-1}.

5,617,437
SEMICONDUCTOR LASER
Toshiaki Fukunaga, Kanagawa-ken, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa-ken, Japan
Filed Nov. 21, 1995, Ser. No. 561,465
Claims priority, application Japan, Nov. 24, 1994, 6-289774; Nov. 24, 1994, 6-289775
Int. Cl.⁶ H01S *3/19*
U.S. Cl. 372—45 **4 Claims**



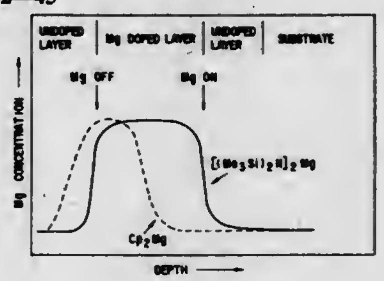
1. A semiconductor laser comprising an active layer, optical waveguide layers formed on opposite sides of the active layer, and cladding layers,

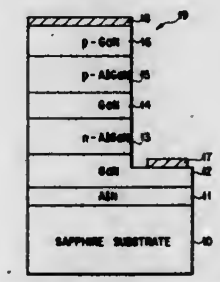
wherein the active layer is constituted of an InGaAsP type of compound semiconductor,

each of the optical waveguide layers is constituted of a compound semiconductor selected from the group consisting of an InGaAsP type of quarternary compound semiconductor, in which the content of As in the Group-V segments is at least 2%, and an InGaAlAsP type of five-element compound semiconductor, in which the content of As in the Group-V elements falls within the range of 2% to 10%, and

each of the cladding layers is constituted of a compound semiconductor selected from the group consisting of an InGaAsP type of quarternary compound semiconductor, in which the content of As in the Group-V elements falls within the range of 2% to 10%, and an InGaAlAsP type of five-element compound semiconductor, in which the content of As in the Group-V elements falls within the range of 2% to 10%.

5,617,438
SEMICONDUCTOR LASER AND METHOD FOR MANUFACTURING THE SAME
Ako Hatano, Tokyo, and Yasuo Ohba, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Dec. 11, 1995, Ser. No. 567,982
Claims priority, application Japan, Dec. 19, 1994, 6-314901
Int. Cl.⁶ H01S *3/19*
U.S. Cl. 372—45 **8 Claims**



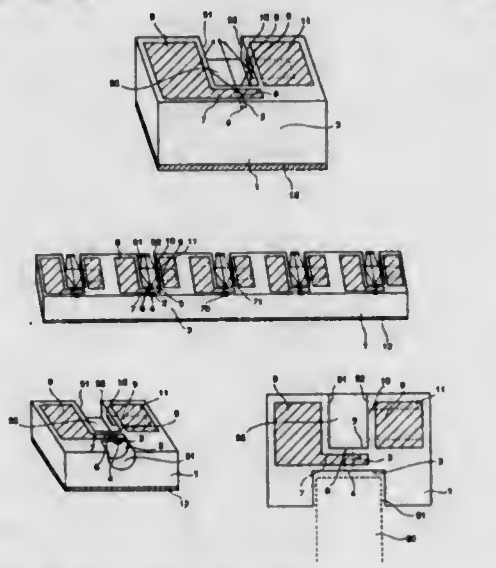


1. A semiconductor laser having an oscillation wavelength of not more than 450 nm, comprising:

a substrate;

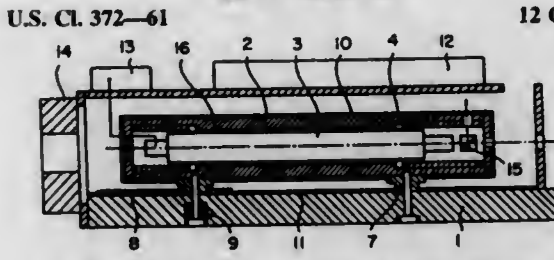
a lower cladding layer formed on or over the substrate and containing a III-V Group compound semiconductor as a main component;
an active layer formed on the lower cladding layer and containing the III-V Group semiconductor as a main component; and
an upper p-type cladding layer formed on the active layer and containing the III-V Group semiconductor as a main component, wherein Mg and Si are included in the upper p-type cladding layer.

5,617,439
SEMICONDUCTOR LASER DEVICE AND SEMICONDUCTOR LASER ARRAY DEVICE
Syoichi Kakimoto, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 29, 1995, Ser. No. 536,124
Claims priority, application Japan, Jun. 10, 1994, 6-242971
Int. Cl.⁶ H01S *3/19*
U.S. Cl. 372—50 **7 Claims**



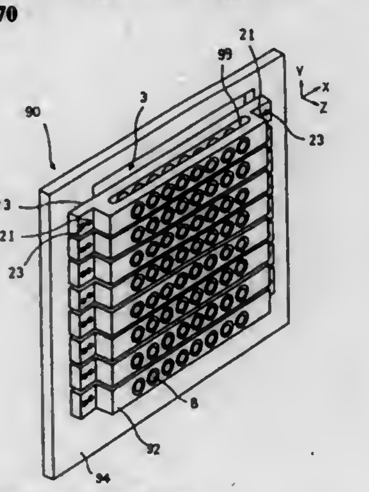
1. A semiconductor laser device comprising:
a semiconductor substrate having a surface;
a semiconductor laser having a pair of facets including emitting points, disposed on said semiconductor substrate, and producing, from one of the emitting points, a laser beam having an optical axis; and
a photodiode having a light responsive surface lying in a plane parallel to the optical axis of the laser beam, located to intersect the laser beam, and disposed on the semiconductor substrate wherein the pair of facets and the light responsive surface are perpendicular to the surface of the semiconductor substrate, and the light responsive surface of the photodiode is disposed so that light of the laser beam reflected by the light responsive surface does not return to the emitting points of the laser facets.

5,617,440
DEVICE FOR HOLDING A CYLINDRICAL LASER TUBE IN A STABLE RADIATION DIRECTION
Dietrich Meier, Niedererlinsbach, Switzerland, assignor to Leica AG, Heerbrugg, Switzerland
PCT No. PCT/EP94/02203, § 371 Date Mar. 8, 1995, § 102(e) Date Mar. 8, 1995, PCT Pub. No. WO95/02265, PCT Pub. Date Jan. 19, 1995
PCT Filed Jul. 5, 1994, Ser. No. 392,748
Claims priority, application Germany, Jul. 8, 1993, 43 22 723.6
Int. Cl.⁶ H01S *3/03*
U.S. Cl. 372—61 **12 Claims**



1. A device for holding a cylindrical laser tube in a stable radiation direction in an internal space of a housing, the internal-space having a larger diameter than the laser tube, the device comprising:
O-rings, for mounting the laser tube, fitted in end regions of the internal space;
a baseplate on to which the housing is mounted;
a thermally conducting paste in said internal space between said laser tube and said housing; and
controllable heating and cooling elements in contact with an outer wall of the housing.

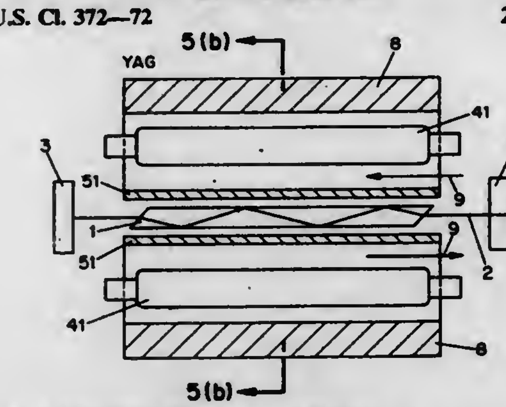
5,617,441
LIGHT SOURCE UNIT AND ITS MANUFACTURING METHOD, ADJUSTING METHOD AND ADJUSTING APPARATUS
Naotarou Nakata; Naofumi Aoki, and Kazutoshi Yamazaki, all of Kyoto, Japan, assignors to Rohm Co. Ltd., Kyoto, Japan
Filed Oct. 21, 1992, Ser. No. 964,155
Claims priority, application Japan, Oct. 21, 1991, 3-302279; Oct. 21, 1991, 3-302280; Nov. 5, 1991, 3-318493; Dec. 17, 1991, 3-353671; Feb. 20, 1992, 4-033026; Feb. 20, 1992, 4-033027; Mar. 31, 1992, 4-076530
Int. Cl.⁶ H01S *3/091;* **H01L** *33/00*
U.S. Cl. 372—70 **1 Claim**



1. A light source unit comprising:
a plurality of light emitting means;
a fixing member for fixing the light emitting means;
a substrate for fixing the fixing member;
a pair of positioning holes and a pair of fixing holes provided to the fixing member;

a pair of positioning holes and a pair of fixing holes provided to the substrate;
a first pair of pins, each of said first pair of pins inserted through one of the positioning holes provided to the fixing member and one of the positioning holes of the substrate for positioning of the fixing member and the substrate; and
a second pair of pins, each of said second pair of pins screwed through one of the fixing holes provided to the fixing member and one of the fixing holes of the substrate for fixing of the fixing member and the substrate.

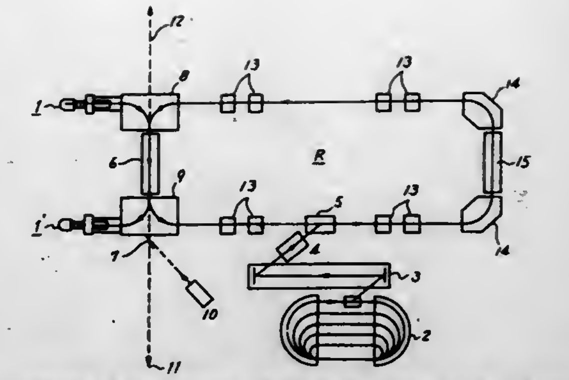
5,617,442
SOLID-STATE LASER DEVICE WITH DIFFUSED-LIGHT EXCITATION, AND INTEGRATING SPHERE
Ryohei Tanuma, Kawasaki, Japan, assignor to Fuji Electric Co., Ltd., Tokyo, Japan
Division of Ser. No. 421,118, Apr. 13, 1995, which is a continuation-in-part of Ser. No. 228,223, Apr. 15, 1994, Pat. No. 5,490,161. This application Nov. 9, 1995, Ser. No. 555,007
Claims priority, application Japan, Apr. 15, 1993, 5-87675; Apr. 14, 1994, 6-75214
Int. Cl.⁶ H01S *3/093*
U.S. Cl. 372—72 **22 Claims**



1. A solid-state laser device comprising:
a solid-state laser medium doped with Nd^{3+}, said medium comprising a pair of opposing surfaces, a first longitudinal end and a second longitudinal end;
a totally reflecting mirror disposed at said first longitudinal end of the laser medium;
a partially transparent mirror disposed at said second longitudinal end of the laser medium;
a light source for exciting the solid-state laser medium;
a reflector means disposed for introducing light produced by the light source into the solid-state laser medium; and
converter means disposed between the light source and the solid-state laser medium for converting wavelengths of light emitted by the laser medium, said converter means comprising a filter doped with Cr^{3+}.

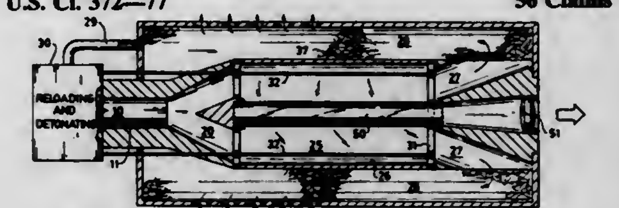
5,617,443
METHOD AND APPARATUS FOR GENERATING GAMMA-RAY LASER
Hidetsugu Ikegami, Takarazuka, Japan, assignor to Research Development Corporation of Japan, Japan
Filed Oct. 26, 1995, Ser. No. 548,684
Claims priority, application Japan, Nov. 29, 1994, 6-293607
Int. Cl.⁶ H01S *3/09*
U.S. Cl. 372—74 **6 Claims**

1. A method of generating a gamma-ray laser comprising the steps of:
causing an electron beam and a positron beam accelerated to identical energies to join into a confluence in the same direction; and
forming, on the axis of confluence, positronium molecules or beam-shaped para-positroniums of the same phase cooled to



transient Bose-Einstein condensation or the vicinity thereof, thereby simultaneously generating gamma-ray lasers of two wavelengths which accompany annihilation caused by self-stimulated radiation.

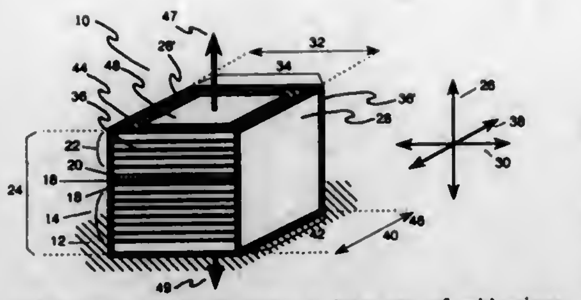
5,617,444
LASER GUN AND CARTRIDGE
William R. Houde-Walter, Rush, N.Y., assignor to LaserMax Inc., Rochester, N.Y.
Continuation of Ser. No. 303,327, Sep. 9, 1994, abandoned. This application Mar. 15, 1996, Ser. No. 616,957
Int. Cl.⁶ H01S *3/091*
U.S. Cl. 372—77 **56 Claims**



1. A laser gun comprising:
a. a laser medium mounted in a light-reflective laser chamber;
b. a source of light for pumping the laser medium, the light source comprising a chemically combustible flash material contained within a small arms cartridge;
c. a small arms cartridge chamber and detonating mechanism arranged to receive and mechanically detonate the cartridge so that burning and light-emitting gases expand from the light source;
d. a passageway extending from the cartridge chamber to the laser chamber so that gases expanding from the cartridge chamber emit light within the laser chamber; and
e. the mounting of the laser medium in the laser chamber is arranged so that the laser medium is pumped by light from the light-emitting gases from the source when the gases burn and emit light in the laser chamber.

5,617,445
QUANTUM CAVITY LIGHT EMITTING ELEMENT
Jack L. Jewell, Boulder, Colo., assignor to Picolight Incorporated, Boulder, Colo.
Filed Jun. 7, 1995, Ser. No. 483,271
Int. Cl.⁶ H01S *3/19;3/082*
U.S. Cl. 372—96 **45 Claims**

1. A light emitting element comprising:
at least one light emitting material, said light emitting material emitting light in a wavelength range centered about a center wavelength;
first and second reflecting mirrors at opposite sides of said light emitting material forming a first optical cavity in a first dimension which includes said light emitting material and reflecting mirrors and which enhances emission of light substantially parallel to said first dimension at a wavelength



within said wavelength range, at least one of said mirrors being at least partially transparent to light in said wavelength range to allow said light emitted from said light emitting material to be emitted therethrough; and

at least two reflective surfaces oriented substantially perpendicular to said first dimension, said at least two reflective surfaces forming a second optical cavity in a second dimension substantially perpendicular to said first dimension, said second optical cavity being of a predetermined size such that it suppresses emission of light substantially parallel to said second dimension from said light emitting material.

5,617,446

SURFACE-EMITTING SEMICONDUCTOR LIGHT EMITTING DEVICE

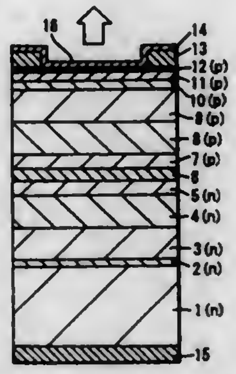
Akira Ishibashi; Norikazu Nakayama, and Satoru Kijima, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jul. 11, 1995, Ser. No. 499,894

Claims priority, application Japan, Jul. 11, 1994, 6-181779

Int. Cl.⁶ H01S *3/19*

U.S. Cl. 372—96 **11 Claims**



1. A surface-emitting semiconductor light emitting device, comprising:

a first cladding layer on a substrate;

an active layer on said first cladding layer;

a second cladding layer on said active layer;

a first electrode electrically connected to said first cladding layer;

a second electrode electrically connected to said second cladding layer, said second electrode being provided in a region other than a light emitting region, and

a thin film electrode of gold thin enough for light to pass therethrough provided in said light emitting region,

said first cladding layer, said active layer and said second cladding layer comprising II–VI compound semiconductors, and light being emitted in a direction normal to the plane of said active layer from one side of the active layer remoter from said substrate.

5,617,447

METHOD OF STABILIZING A POWER SUPPLY NETWORK AGAINST REACTIVE LOAD FLUCTUATIONS, AND A REACTIVE POWER COMPENSATION DEVICE

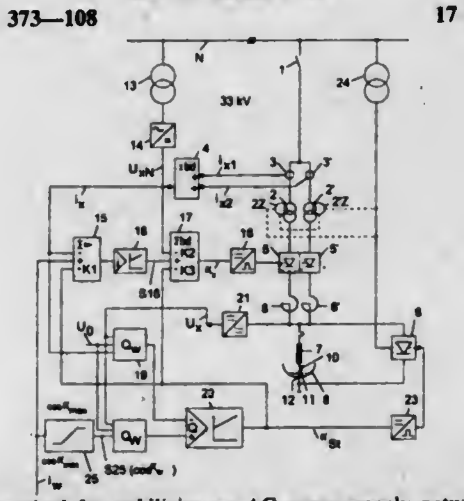
Shripad Tambe, Baden, Switzerland, assignor to ABB Management AG, Baden, Switzerland

Filed Oct. 6, 1995, Ser. No. 539,958

Claims priority, application Germany, Oct. 12, 1994, 44 36 353.2

Int. Cl.⁶ H05B *7/144*

U.S. Cl. 373—108 **17 Claims**



1. A method for stabilizing an AC power supply network (N) against reactive load fluctuations of at least one electric load having a variable reactive load, comprising the steps of:

a) controlling a current intensity of the load to a desired current value using a current controller in a first control loop, which includes the load as a controlled system, and at least one power converter; and

b) controlling reactive power of the load to a desired reactive power value using a reactive power controller in a third control loop which includes the load as a controlled system, said step of controlling a reactive power further including at least one of the following steps:

c) multiplying an output signal of the reactive power controller by a first factor and adding the output signal to at least one input variable of the current controller; and

d) multiplying the output signal of the reactor power controller by a third factor and adding the output signal to at least one output variable of the current controller.

5,617,448

TELECOMMUNICATIONS NETWORK ROUTING

William H. Bolinger, Jr., 10002 W. 86th Ter., Overland Park, Kans. 66212; Belinda S. Carpenter, 426 Lee Dr.; Danny R. Letterman, 23411 N.E. 100th St., both of Liberty, Mo. 64068; Ginny S. Krystel, 5001 W. 112th Ter., Leawood, Kans. 66211; William R. Blessing, 11104 Prince Edward Ct., Oakton, Va. 22124, and Tommie L. Holmes, 517 S.E. Timber Creek La., Lee's Summit, Mo. 64063

Filed Oct. 6, 1993, Ser. No. 132,398

Int. Cl.⁶ H04M *15/00*

U.S. Cl. 379—114 **21 Claims**

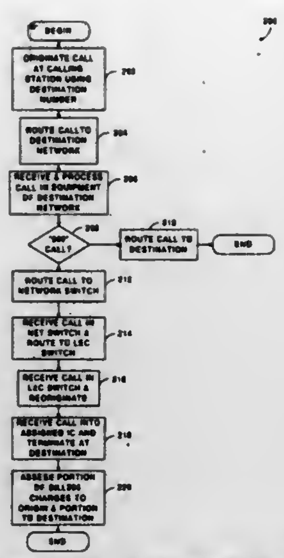
1. A method of handling a telecommunications call that is placed from a call origin for a connection to a call destination, the method comprising:

receiving the call into a telecommunications network;

routing the call to call handling equipment;

re-originating the call in the call handling equipment to the call destination;

routing the re-originated call from the call handling equipment to the call destination to complete a connection from the call origin to the call destination;



assessing first billing charges to the call origin for the portion of the connection from the call origin to the call handling equipment; and

assessing second billing charges to the call destination for the re-originated portion of the connection from the call handling equipment to the call destination.

5,617,449

IC MEMORY CARD TYPE RADIO MODEM

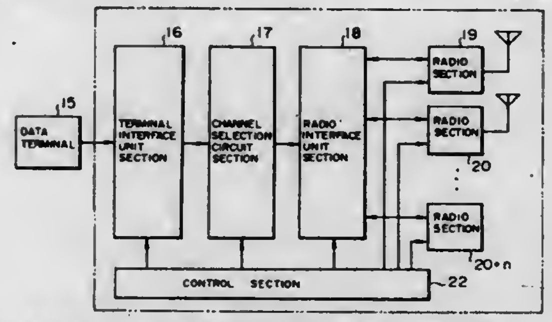
Masahiko Tanaka, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 22, 1995, Ser. No. 493,428

Claims priority, application Japan, Jun. 27, 1994, 6-144425

Int. Cl.⁶ H04B *1/38;* **H04M** *11/00*

U.S. Cl. 375—222 **2 Claims**



1. An IC memory card type radio modem comprising:

a connecting portion which can be connected to a PC card portion of a portable information processing device;

a radio section adaptable to at least one type of radio infrastructure;

a radio interface unit section adapted to said radio section:

a channel selection circuit section connected to said radio interface unit section;

a terminal interface unit section to be connected to said channel selection circuit section;

a control section for controlling said plurality of radio sections, wherein said radio interface unit section is controlled to always switch to a radio infrastructure which can perform communication; and

detection means for detecting a reception state of said radio section, and wherein when said detection means determines that communication cannot be continued, said radio interface unit section is controlled to switch a currently used radio infrastructure to a radio infrastructure which can perform communication.

5,617,450

DIGITAL SUBSCRIBER LOOP INTERFACE UNIT

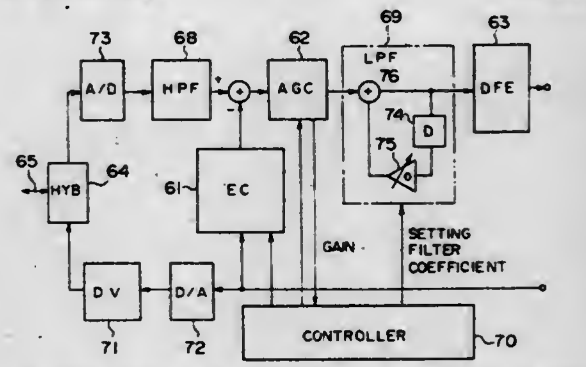
Mitsuo Kakuishi, Kawasaki; Yutaka Awata, Kanagawa, and Nobukazu Koizumi, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Aug. 10, 1994, Ser. No. 288,358

Claims priority, application Japan, Oct. 26, 1993, 5-267148

Int. Cl.⁶ H03H *7/30*

U.S. Cl. 375—230 **3 Claims**



1. A digital subscriber loop interface unit connected to a digital subscriber loop, comprising:

an echo canceler for carrying out an echo canceling operation;

a decision feedback equalizer for carrying out an equalizing operation; and

a low-pass filter to which a signal processed by said echo canceler is supplied and for supplying a signal processed by said low-pass filter to said decision feedback equalizer, said low-pass filter having:

means for changing a filter coefficient in accordance with a length of said digital subscriber loop; and

means for changing the filter coefficient based on whether said decision feedback equalizer is in or after a pull-in step.

5,617,451

DIRECT-CONVERSION RECEIVER FOR DIGITAL-MODULATION SIGNAL WITH SIGNAL STRENGTH DETECTION

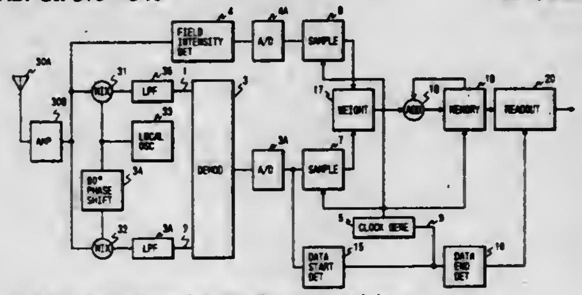
Masahiro Mimura; Makoto Hasegawa, both of Tokyo; Katsushi Yokozaki, Yokohama; Hiroyuki Harada, Kanazawa; Takaaki Kishigami, Kawasaki, and Yasunari Tanaka, Yokohama, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Sep. 12, 1994, Ser. No. 302,982

Claims priority, application Japan, Sep. 13, 1993, 5-226953; Sep. 13, 1993, 5-226954; Feb. 21, 1994, 6-022273

Int. Cl.⁶ H03D *1/00*

U.S. Cl. 375—340 **11 Claims**



1. A direct-conversion receiver comprising:

a direct-conversion demodulator;

first means for sampling an output signal of the demodulator;

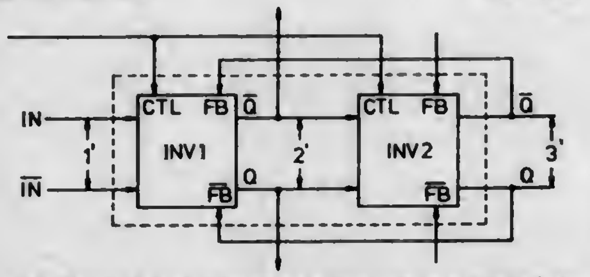
a memory;

an adder for adding an output signal of the memory and an output signal of the first means;

second means for storing an output signal of the adder into the memory, wherein results of the adding of "n" output signals of the first means which relate to a signal periodically trans-

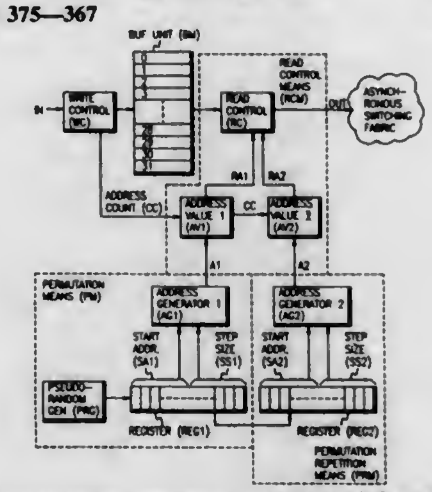
mitted from a transmitting station "n" times are present in the memory at a final stage, wherein "n" denotes a natural number equal to 2 or greater; and
third means for reading out signals representative of the results of the adding from the memory.

5,617,452
BIT SYNCHRONIZER
Tord L. Haulin, Uppsala; Pér M. Segerbäck, Vällingsby, both of Sweden, and Heinz Mäder, Weinfelden, Switzerland, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden
Continuation of Ser. No. 203,382, Mar. 1, 1994, abandoned. This application Jan. 16, 1996, Ser. No. 585,752
Claims priority, application Sweden, Mar. 1, 1993, 9300679
Int. Cl.⁶ H04L *7/00*
U.S. Cl. 375—354 **14 Claims**



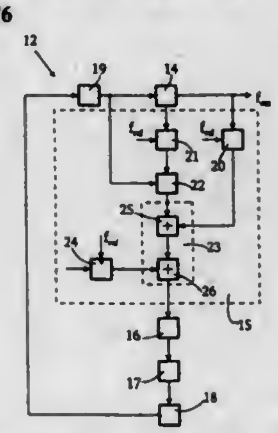
1. A differential delay element for a delay line in a phase aligner, wherein each delay element includes pairs of inverting devices comprising a first inverting device operative to provide, in response to a control voltage applied to the first inverting device, a controllable delaying of a positive edge or a negative edge of an individual pulse in the data bit stream, and a second inverting device operative in restoring said negative edge or positive edge of the pulse so as to maintain the pulse width of information in the data bit stream.

5,617,453
DESYNCHRONIZER AND USE OF SAME
Pascal Roobrouck, Antwerp, Belgium, assignor to Alcatel N.V., Amsterdam, Netherlands
Filed Jan. 6, 1994, Ser. No. 178,095
Claims priority, application European Pat. Off., Jan. 7, 1993, 93200023
Int. Cl.⁶ H04L *7/00*
U.S. Cl. 375—367 **11 Claims**



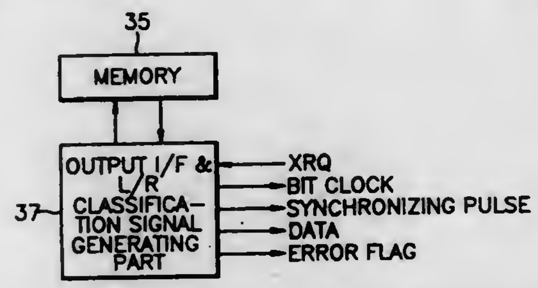
1. Desynchronizer responsive to an input information stream having information units which occur in a predetermined periodic order, the input information stream being provided at an input of the desynchronizer, for deriving an output information stream having information units which occur in a substantially randomized order, the output information stream being provided at an output of the desynchronizer, said desynchronizer including:
selection means for selecting from said input information stream a plurality of sequential subframes each including a predetermined number of said information units which occur in a predetermined periodic order,
permutation means for selecting in a substantially random way for each of said selected sequential subframes a corresponding permutation of a set of distinct sequence tags each of which is associated with a distinct one of the predetermined number of said information unit which occur in a predetermined periodic order, and
reordering means for determining said substantially randomized order by reordering the predetermined number of said information units which occur in a predetermined periodic order included in each one of said selected sequential subframes according to said corresponding permutation.

5,617,454
TRANSMISSION SYSTEM
Hans-Joachim Götz; Markus Brachmann; Georg Frank, all of Nürnberg, and Thomas Eckart, Emskirchen, all of Germany, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Jul. 14, 1995, Ser. No. 503,076
Claims priority, application Germany, Jul. 15, 1994, 44 25 087.8
Int. Cl.⁶ H03D *3/24*
U.S. Cl. 375—376 **19 Claims**



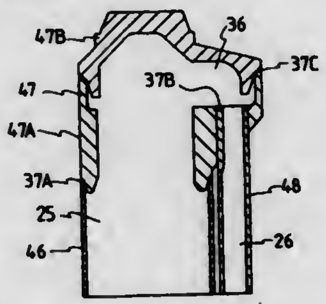
1. Transmission system comprising a phase-locked loop which includes
a phase comparator for comparing an oscillator signal with a reference signal and for generating a comparison signal, and
an oscillator which is provided for receiving a control signal derived from the comparison signal, characterized in that the oscillator arranged as a ring oscillator comprises at least one delay element included in a closed circuit, in that at least one delay element has at least two different adjustable delay times, and in that a controller is provided for setting the delay times of at least one delay element in dependence on the comparison signal, and characterized further in that the controller comprises a shift register which includes shift elements of which the number corresponds to the number of adjustable delay elements, in that a shift element is arranged for setting the delay time of an assigned delay element and in that a first group of shift elements is arranged for setting a first delay time and/or at least a second group of shift elements is arranged for setting a second delay time, all based upon the comparison signal.

5,617,455
INTERFACE METHOD AND DEVICE IN DIGITAL SIGNAL PROCESSING SYSTEM
Cheol-Woong Mok, Incheon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea
Filed Oct. 28, 1994, Ser. No. 330,783
Claims priority, application Rep. of Korea, Feb. 7, 1994, 2311/1994
Int. Cl.⁶ H04L *23/00*
U.S. Cl. 375—377 **5 Claims**



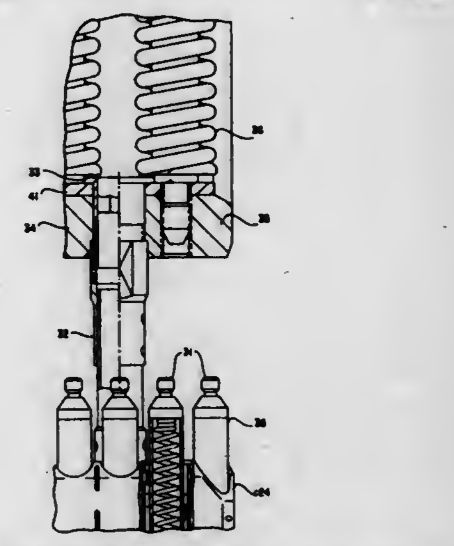
1. An interface method for a digital signal processing system comprising the steps of:
storing digital data regenerated from a recording means in a memory;
reading said digital data from said memory in response to a data transmission request signal of an object interface part;
transmitting said digital data to said object interface part in units of sound groups, one of said sound groups being transmitted during two cycles of said data transmission request signal; and
transmitting channel classification data of 1 byte to classify a channel associated with said data transmitted in the transmitting step, together with said digital data, to said object interface part.

5,617,456
FUEL ASSEMBLY AND NUCLEAR REACTOR
Hideki Kurosaki; Junjiro Nakajima, both of Hitachi; Hajime Umehara, Katsuta; Shozo Nakamura, Hitachiota; Satoshi Kanno; Koji Nishida, both of Hitachi; Yasunori Bessho, Mito; Masahisa Inagaki, Hitachi; Osamu Yokomizo, Toukaimura, and Yuichiro Yoshimoto, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Division of Ser. No. 214,760, Mar. 18, 1994, which is a continuation-in-part of Ser. No. 974,834, Nov. 16, 1992, which is a continuation of Ser. No. 526,030, May 21, 1990, abandoned, which is a continuation of Ser. No. 163,758, Jan. 14, 1988, abandoned. This application Jun. 5, 1995, Ser. No. 463,828
Int. Cl.⁶ G21C *21/00*
U.S. Cl. 376—260 **1 Claim**



1. A method of fabricating a water rod including an ascending tube path having therein a coolant ascending path for guiding upward a coolant supplied, and a descending tube path disposed outside said ascending tube path and having therein a coolant descending tube path for guiding downward said coolant guided by said coolant ascending tube path and discharging said coolant to a region above fuel supporting portions, characterized in that
either one of said ascending tube path and said descending tube path is inserted into a coupling member, the upper end of said one tube path is welded to said coupling member, the other of said tube paths is welded to the lower part of said coupling member, and a cover member forming a communication path, for communication of said coolant ascending tube path with said coolant descending tube path, between said cover member and said coupling member is attached to said coupling member.

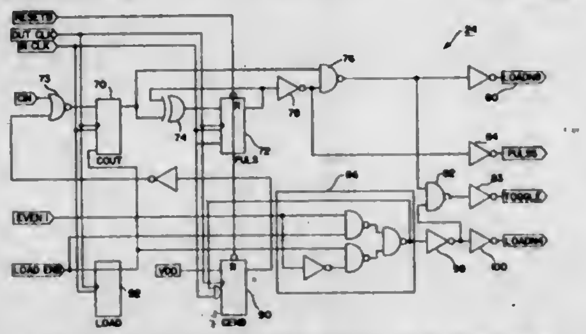
5,617,457
PRESSURIZED-WATER REACTOR WITH INDIVIDUALLY ADAPTED PRESSURE DISTRIBUTION IN THE COOLANT
Mingmin Ren, and Jürgen Stabel-Weinheimer, both of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany
Filed Sep. 18, 1995, Ser. No. 529,588
Claims priority, application Germany, Mar. 16, 1993, 43 08 364.1
Int. Cl.⁶ G21C *1/04*
U.S. Cl. 376—352 **8 Claims**



1. A pressurized-water reactor, comprising:
a pressure vessel having a bottom, an inlet, a lateral outlet, and an interior;
a core support disposed at said bottom of said pressure vessel;
a grid plate having apertures formed therein and having an upper surface, said grid plate defining a plenum above said grid plate in said interior of said pressure vessel, said plenum leading to said lateral outlet;
plenum attachments protruding into said plenum at said upper surface of said grid plate;
a multiplicity of mutually adjacent fuel assemblies disposed in said interior of said pressure vessel on said core support, each of said fuel assembled containing a bundle of fuel rods and a top carrying a top plate covering said bundle and having passage openings formed therein, and each of said fuel assemblies being disposed around control-rod guide tubes and being supported at said apertures in said grid plate by said top;
a device disposed in said pressure vessel for deflecting a coolant flow from said inlet, into said pressure vessel and through said core support, for distributing the coolant flow over said individual fuel assemblies and for guiding the coolant flow along said fuel rods, through said passage openings in said top plates of the fuel assemblies, through said apertures in said grid plate and into said plenum; and
throttle plates each being attached in said top of a respective one of a plurality of said fuel assemblies, said throttle plates

having throttle openings formed therein for an individual adaptation of pressure in the coolant flowing through said top of said respective fuel assembly, said throttle openings in said throttle plate having a smaller cross section than said passage openings in said top plate, said throttle openings having a cross-sectional area, and the greatest part of said cross-sectional area of said throttle openings being disposed above said passage openings in said top plate.

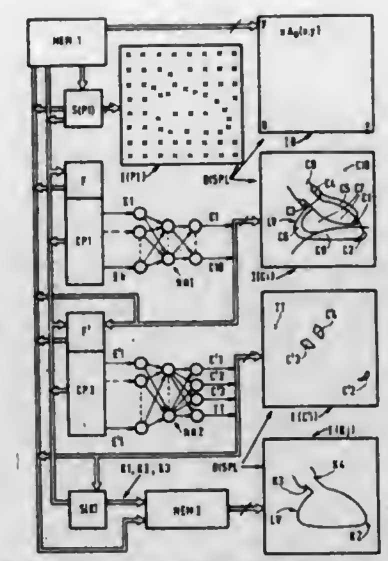
5,617,458
CLOCK DIVIDER
Anthony M. Jones, Yate, and David A. Barnes, Wotton-Under-Edge, both of United Kingdom, assignors to Discovision Associates, Irvine, Calif.
Continuation of Ser. No. 409,108, Mar. 23, 1995, Pat. No. 5,488,646. This application Dec. 5, 1995, Ser. No. 567,555
Claims priority, application United Kingdom, Mar. 24, 1994, 9405806
Int. Cl.⁶ H03H *11/26*
U.S. Cl. 377—49 **12 Claims**



1. A counter clocked by a L phase system clock of frequency f, counting an integer number N, comprising:
L means for counting (N-D), where D is a predetermined integer number that allows each L counter means to settle before N would be counted, each counting means being clocked by a predetermined phase of system clock; and
L means for controlling counter means, one counter controlling means associated with each counter means, for delaying the output of their associated counter by at least D;
wherein:
the L counter means and their associated counter control means are arranged in series such that the input to each counter means is the output of the previous counter means in series delayed by the counter control means associated with the previous counter means.

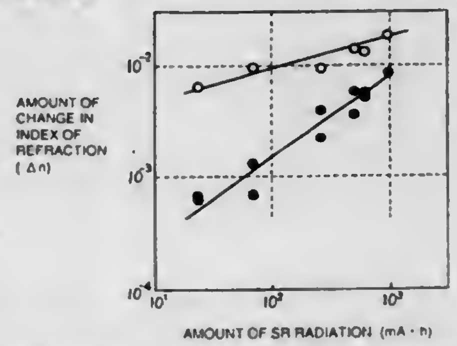
5,617,459
METHOD OF PROCESSING IMAGES IN ORDER AUTOMATICALLY TO DETECT KEY POINTS SITUATED ON THE CONTOUR OF AN OBJECT AND DEVICE FOR IMPLEMENTING THIS METHOD
Shérif Makram-Ebeid, Dampierre, and Jacques Breitenstein, Saint-Maur-des-Fosses, both of France, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Jul. 12, 1995, Ser. No. 500,653
Claims priority, application France, Jul. 12, 1994, 94 08652
Int. Cl.⁶ G01N *23/04*
U.S. Cl. 378—62 **22 Claims**

1. Method of processing images in order automatically to detect points situated on the contour of an object (LV) at predetermined structure, referred to as key pixels (K_2, K_3, K_4), in an image referred to as the initial image (I_0), this method comprising a first phase including steps of:
storage in the initial image (I_0) in the form of a two-dimensional matrix of pixels of the intensity values of each pixel (A_0) labelled by its coordinates (x,y);



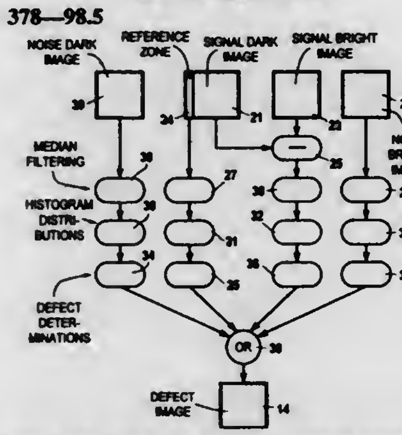
storage in the initial image (I_0) of data of regions of the object (LV) which are referred to as classes (C_1 to C_m) including classes which are referred to as corresponding classes (C_2, C_3, C_4) respectively containing the key pixels (K_2, K_3, K_4) to be detected;
selection of pixels of the initial image (I_0) which are referred to as pixels of interest (PI), on the contour of and inside and outside the object (LV);
generation of a first vector of characteristics (E_1 to E_4) for each of the pixels of interest (PI); and
classification of the pixels of interest (PI) into the said classes (C_1 to C_m) of the object (LV) on the basis of their respective vector of characteristics (E_1 to E_4).

5,617,460
METHOD OF INCREASING INDEX OF REFRACTION OF SILICA GLASS
Makoto Katayama, and Tomohiko Kanie, both of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan
Filed Oct. 13, 1995, Ser. No. 542,791
Claims priority, application Japan, Oct. 17, 1994, 6-250494; Sep. 26, 1995, 7-247495
Int. Cl.⁶ G21K *5/00*
U.S. Cl. 378—64 **15 Claims**



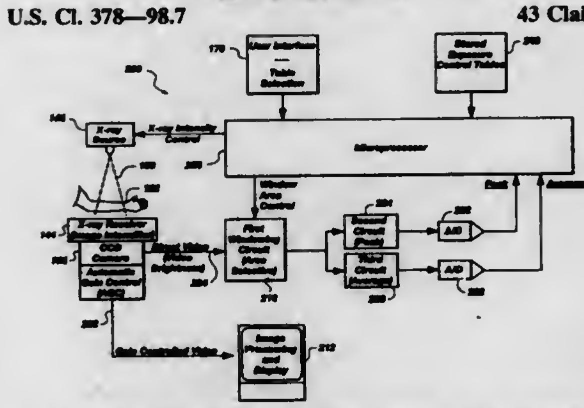
1. A method of increasing index of refraction of silica glass, comprising the steps of:
preparing a silica glass;
irradiating a prescribed region of said silica glass with X-ray having a wavelength within a range from 1.2 Å to 7.0 Å; and
exciting K shell electrons of silicon atoms in said irradiated region by said X-ray, whereby increasing the index of refraction in said irradiated region.

5,617,461
METHOD FOR THE OPERATION OF A DIGITAL IMAGING SYSTEM OF AN X-RAY DIAGNOSTIC APPARATUS
Horst Schreiner, Fuerth, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany
Filed Jul. 16, 1996, Ser. No. 682,028
Claims priority, application Germany, Jul. 25, 1995, 195 27 148.3
Int. Cl.⁶ H05G *1/64*
U.S. Cl. 378—98.5 **16 Claims**



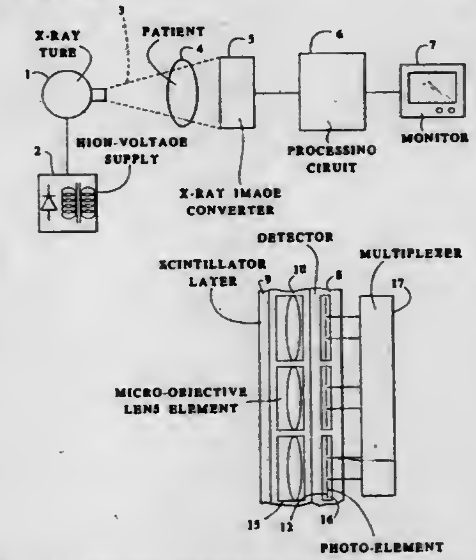
1. A method for operating a digital imaging system in an x-ray diagnostic apparatus having an x-ray unit for generating x-ray images, an x-ray image converter video chain for converting the x-ray images into video images, the chain including a digital image converter having image points arranged in matrix form in rows and columns, and a monitor for displaying the video images, said method comprising the steps, for recognizing defective image points, of:
generating at least one calibration image;
converting said calibration image into a filter image by filtering said calibration image;
subjecting said filter image to a defect determination procedure and thereby obtaining a defect image; and
correcting an original image using said defect image.

5,617,462
AUTOMATIC X-RAY EXPOSURE CONTROL SYSTEM AND METHOD OF USE
R. Bruce Spratt, Bountiful, Utah, assignor to OEC Medical Systems, Inc., Salt Lake City, Utah
Filed Aug. 7, 1995, Ser. No. 512,524
Int. Cl.⁶ H05G *1/64*
U.S. Cl. 378—98.7 **43 Claims**



1. A method for controlling X-ray exposure when imaging an area of anatomy, the method comprising:
(a) emitting X-rays from an X-ray source, through a piece of anatomy and to an X-ray receiver so as to form an image;
(b) determining absolute intensity for the image and selecting an area of the image containing anatomy of interest for further processing;
(c) determining the peak intensity and the average intensity within the selected area;
(d) combining the peak intensity and the average intensity to give a single value representative of density for the anatomy being imaged; and
(e) comparing the single value against a predetermined exposure control table and adjusting the emission of X-rays to achieve a desired exposure for the anatomy density as represented by the single value.

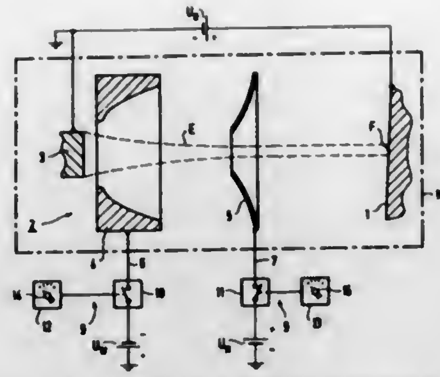
5,617,463
X-RAY DIAGNOSTIC INSTALLATION
Rainer Beierlein, Spardorf, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany
Filed Dec. 7, 1995, Ser. No. 568,568
Claims priority, application Germany, Feb. 20, 1995, 195 05 729.5
Int. Cl.⁶ H05G *1/64*
U.S. Cl. 378—98.3 **15 Claims**



1. An x-ray diagnostic installation comprising:
an x-ray source which emits an x-ray beam;
an x-ray image converter disposed in said x-ray beam for acquiring an x-ray image of a subject disposed between said x-ray source and said x-ray image converter, said x-ray image converter having a scintillator layer which converts incident x-rays into light and a detector which detects said light, said detector comprising a plurality of photoelements in a matrix-like formation and a matrix-like array of a plurality of optical micro-elements disposed between said scintillator layer and said detector; and
means supplied with said x-ray image from said x-ray image converter for playing back said x-ray image.

5,617,464
CATHODE SYSTEM FOR AN X-RAY TUBE
Norbert Mika, Buckenhof, and Hannjoerg Bittorf, Erlangen, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany
Filed Aug. 29, 1995, Ser. No. 520,412
Claims priority, application Germany, Aug. 29, 1994, 44 30 622.9
Int. Cl.⁶ H01J *35/30*
U.S. Cl. 378—137 **11 Claims**

1. An electron emission system comprising:
an electron emitter which emits an electron beam in a propagation direction;
an anode;



an auxiliary anode disposed between said electron emitter and said anode, said auxiliary anode having a through-opening for passage of said electron beam, and having a length along said propagation direction which is greater than or equal to a smallest clearance of said through-opening;

means for placing said electron emitter at an electron emitter potential relative to said anode; and

means for placing said auxiliary anode at a positive potential relative to said electron emitter potential and including switch means operable with a pulse-pause ratio for producing a selected electron current between said electron emitter and said anode to place said auxiliary anode at said positive potential.

5,617,465

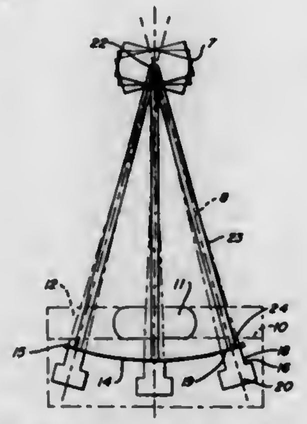
SCAN-TYPE X-RAY IMAGING WITH FIXED CONVERTER

Hans R. Bucher, Boulder, Colo., assignor to Xedar Corporation, Boulder, Colo.

Filed Dec. 8, 1995, Ser. No. 569,570

Int. Cl.[6] G21K *5/10*

U.S. Cl. 378—146 **20 Claims**



17. A method for X-ray imaging, said method comprising:

positioning an object at a scan area;

providing a directed X-ray beam at said predetermined area so that said X-rays pass through said object positioned thereat;

providing a converter screen receiving X-rays passed through said object at said scan area;

providing a movable sensor/coupling unit having a sensor and a coupler with an input face movably engaging said converter screen, said coupler providing output signals from said converter screen to said sensor, and said sensor providing an output signal responsive to receipt of output signals from said converter screen;

moving said sensor/coupling unit so that said input face of said coupler is moved relative to said converter screen to effect a scan of said scan area and maintaining said input face of said coupler in engagement with said converter screen throughout movement of said sensor/coupling unit; and

using said output signal from said sensor to provide an image of said object scanned at said scan area.

5,617,466

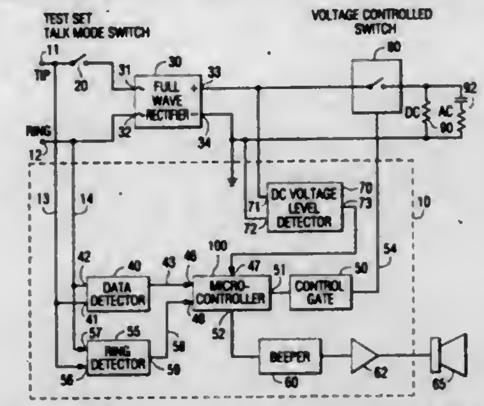
MECHANISM FOR CONTROLLABLY ENABLING TEST SET TO ASSERT OFF-HOOK CONDITION ON TELEPHONE LINE IN DEPENDENCE UPON DETECTION OF PRESCRIBED VOLTAGE LEVEL AND ABSENCE OF DATA TRAFFIC

Robert B. Walance, Newbury Park, Calif., assignor to Harris Corporation, Melbourne, Fla.

Filed Mar. 20, 1995, Ser. No. 407,878

Int. Cl.[6] H04M *1/24;3/08;3/22*

U.S. Cl. 379—28 **33 Claims**



1. A method of preventing a telephone instrument, that is connectable to a telephone line and has the capability of coupling an electrical element in circuit with said telephone line, from coupling said electrical element in circuit with said telephone line, said electrical element, if placed in circuit with said telephone line during the transmission of digital data signals thereover, causing said digital data signals to be degraded, said method comprising the steps of:

(a) initially placing said telephone instrument in a default mode in which said electrical element is not coupled is not coupled with said telephone line;

(b) monitoring said telephone line for the presence of digital data signals and for the presence of a prescribed minimum voltage thereon; and

(c) maintaining said telephone instrument in said default mode, unless step (b) detects both the absence of digital data signals and the presence of said prescribed minimum voltage on said telephone line, and thereupon enabling said telephone instrument to couple said electrical element in circuit with said telephone line.

5,617,467

COMMUNICATION SYSTEM FOR CONNECTION TO A BASE STATION OF A MULTI-CELLULAR WIRELESS TELEPHONE SYSTEM

Thomas Bacher; Frank Heineck, both of Munich, and Karl Klug, Miesbach, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 18, 1994, Ser. No. 214,570

Claims priority, application Germany, Mar. 26, 1993, 43 09 848.7

Int. Cl.[6] H04M *11/00*

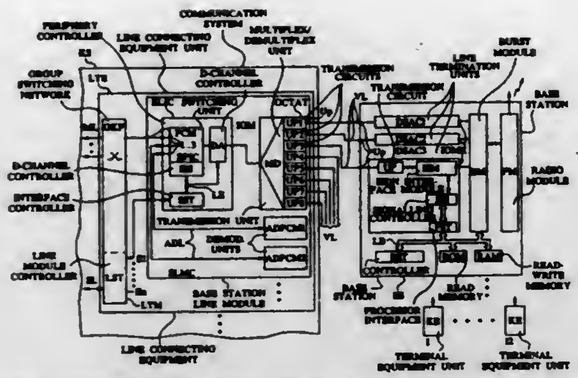
U.S. Cl. 379—58 **12 Claims**

1. A system comprising:

a plurality of wireless terminal equipment units;

at least one base station having a radio unit for wireless transmission to the terminal equipment units;

a communication system connecting trunk lines to the at least one base station;



said communication system having at least one switching unit for effecting a switching of the terminal equipment units wirelessly connected to the at least one base station;

said base station not containing any switching units for effecting the switching of the terminal equipment units;

said at least one switching unit in said communication system connecting via a transmission unit to said trunk lines, said at least one base station having transmission units connecting said trunk lines to said radio unit, said transmission unit of said communication system and said transmission units of said base station performing a burst-operation transmission method between the communication system and the at least one base station for transmitting digitized voice and signaling information according to burst-operation transmission, one transmission channel being provided between the base station and the communication system for each wirelessly connected terminal equipment unit to which the base station communicates via the radio unit.

5,617,468

PORTABLE TELEPHONE SET FOR PERFORMING REMOTE CONTROL OPERATION OF A BASE STATION TELEPHONE SET

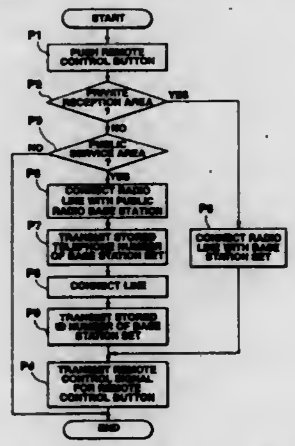
Osamu Nojima, Tachikawa, and Noboru Yumoto, Fussa, both of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Jul. 13, 1994, Ser. No. 274,311

Claims priority, application Japan, Jul. 15, 1993, 5-198988

Int. Cl.[6] H04Q *7/20*

U.S. Cl. 379—58 **7 Claims**



1. A portable telephone set capable of establishing a telecommunications channel with a public radio base station connected to a telecommunications network and with a base station telephone set, said portable telephone set comprising:

input means for remotely controlling functions of the base station telephone set;

storage means for storing a telephone number of the base station telephone set;

determination means for determining if the portable telephone set is within or out of a service area of the base station telephone set;

first control means for controlling, when the portable telephone set is determined as being in the service area of the base station telephone set, a remote control signal generated in response to a remote control operation to be directly transmitted to the base station telephone set; and

second control means for controlling, when a remote control operation is performed on the portable telephone set determined by said determining means as being out of said service area and a remote control operation is performed by said input means, a telephone number of the base station telephone set stored in the portable telephone set being dialed to establish a transmission path with the base station telephone set through a public radio base station connected to a telecommunications network, so as to transmit the remote control signal from the portable telephone set to the base station telephone set.

5,617,469

Patent Not Issued For This Number

5,617,470

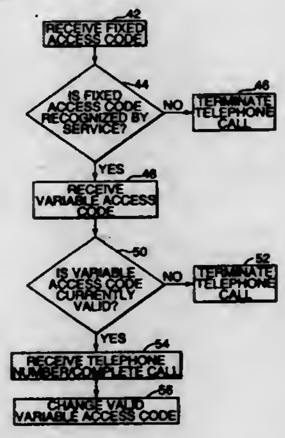
APPARATUS AND METHOD FOR PREVENTING UNAUTHORIZED ACCESS TO A SYSTEM

George B. DePasquale, 1820 Albany Ave., West Hartford, Conn. 06117

Filed Jun. 2, 1995, Ser. No. 459,038

Int. Cl.[6] H04M *15/00;17/00*

U.S. Cl. 379—114 **18 Claims**



1. A telephone system, comprising:

means for preventing access to a telephone service by unauthorized users, including an access code having a fixed component identifying an authorized user and having a plurality of variable components associated with the fixed component, at least one of the plurality of variable components comprising at least one currently valid variable component for the purpose of processing a telephone call by the telephone service; and

means for changing the at least one currently valid variable component to be used for making the next telephone call from among the plurality of variable components in a predetermined sequence to prevent stealing of the access code by unauthorized users.

5,617,471

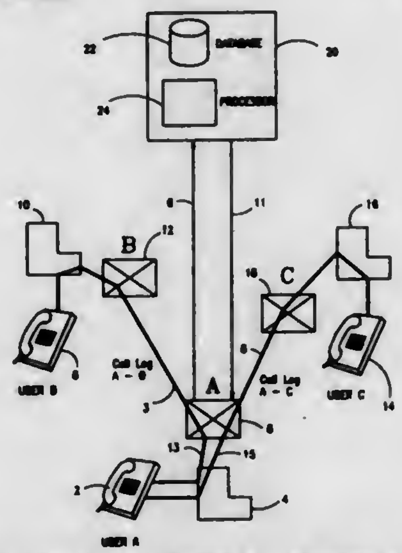
TELECOMMUNICATIONS SYSTEM FOR TRANSFERRING A TELEPHONE CALL

Wesley D. Rogers, 11428 Night Star Way, Reston, Va. 22094; Louis G. Gottlieb, 6639 Foxdale Cir., Colorado Springs, Colo. 80919; Saleem R. Molani, 7837 Hardwich Ct., Plano, Tex. 75025; Gregory W. Sedlock, 1505 Timber Edge Dr., McKinney, Tex. 75070, and Roger P. Engdahl, 1200 Shaker Dr., Herndon, Va. 22070

Filed May 25, 1995, Ser. No. 451,074

Int. Cl.^{6} H04M *3/42; 1/64; 15/00; 7/00*

U.S. Cl. 379—212 **14 Claims**



1. A telecommunications system in a telephone network of a long distance carrier for providing a call transfer function, comprising:

a first, second and third telephone stations, wherein each of respective telephone calls between said first and second telephone stations, and between said second and third telephone stations is either an incoming call or an outgoing call with respect to said second telephone station;

a first switching office connected via a customer premise equipment to said second telephone station, said second telephone station requesting said first switching office to establish communication between said first and third telephone stations; and

a network control system, including a database and processing means, connected to said first switching office, said first switching office sending a request message to said network control system for inquiring whether said communication is allowed, said network control system providing a response message to said first switching office which establishes said communication, if allowed, between said first and third telephone stations and which disconnects said second telephone station from said first and third telephone stations, wherein said database has a table for providing information on allowability of said communication between said first and third telephone stations based on a type of telephone call.

5,617,472

NOISE SUPPRESSION OF ACOUSTIC SIGNAL IN TELEPHONE SET

Toshio Yoshida, and Michitaka Sisido, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Dec. 27, 1994, Ser. No. 363,866

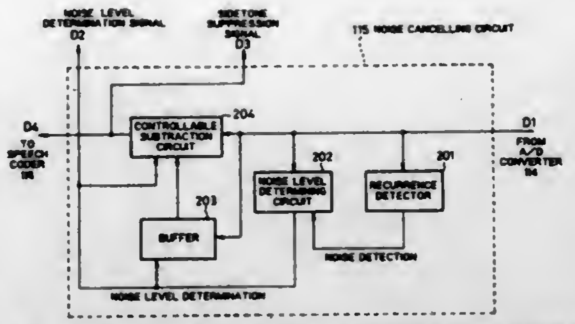
Claims priority, application Japan, Dec. 28, 1993, 5-353431

Int. Cl.^{6} H04M *1/00;* **H03B** *29/00*

U.S. Cl. 379—390 **25 Claims**

1. A telephone set comprising:

a telephone transmitter for converting a sound wave to a transmitting acoustic signal;



a telephone receiver for converting a received acoustic signal to a sound wave;

noise detecting means for detecting a noise component from the transmitting acoustic signal;

noise level determining means for determining a noise level by comparing a power level of the noise component with a first threshold; and

noise cancellation means for canceling the noise component from the transmitting acoustic signal when the noise level is not smaller than the first threshold, said noise cancellation means comprising:

storage means for storing the noise component when the noise level is not smaller than the first threshold; and

subtraction means for subtracting the noise component stored in the storage means from the transmitting acoustic signal when the noise level is not smaller than the first threshold.

5,617,473

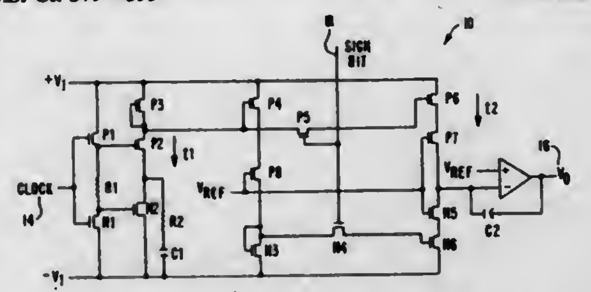
SIGN BIT INTEGRATOR AND METHOD

Stanley F. Wietecha, South Bound Brook, and John A. Olmstead, Cape May Court House, both of N.J., assignors to Harris Corporation, Melbourne, Fla.

Filed Jun. 23, 1995, Ser. No. 493,454

Int. Cl.^{6} H04M *1/74; 9/00;* **H03M** *1/06; 1/00*

U.S. Cl. 379—399 **17 Claims**



9. A method of generating a signal for reducing distortion in a voice signal in a telephone system CODEC comprising the steps of:

(a) generating a charge pulse when a voice signal is sampled in a telephone system CODEC;

(b) setting a magnitude of the charge pulse by providing the charge pulse to a current mirror having plural diversely sized transistors wherein a ratio of sizes of two of the plural transistors sets the magnitude of the charge pulse;

(c) setting a polarity of the charge pulse responsive to a sign bit signal in the voice signal; and

(d) providing the charge pulse with the set magnitude and polarity to the CODEC as an offset correction signal.

5,617,474

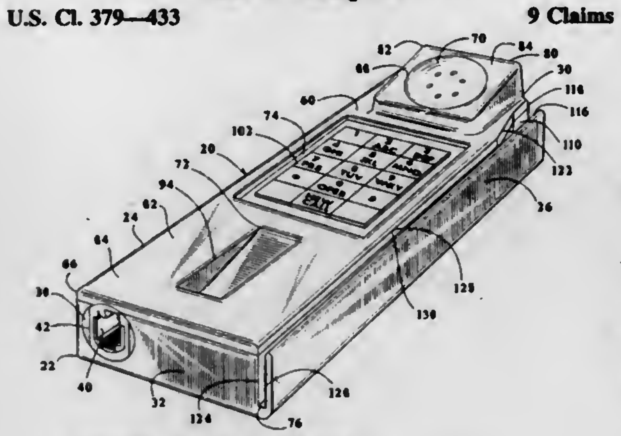
TELEPHONE HANDSET HAVING A LATCH-RECEIVING OPENING IN AN ENLARGED INLET OPENING OF A CARD-RECEIVING SLOT

Albert Ditzig, Hoffman Estates, and Jerome L. Oldani, Aurora, both of Ill., assignors to The Goeken Group Corporation, Oakbrook, Ill.

Filed May 8, 1990, Ser. No. 520,404

Int. Cl.^{6} H04Q *7/00*

U.S. Cl. 379—433 **9 Claims**



1. A telephone handset, comprising:

a front surface having an earpiece and a mouthpiece;

a back surface;

end walls extending between and connecting said front and back surface, said end walls comprising a top and bottom;

sidewalls extending between and connecting said top and bottom;

one of said surfaces defining a card-receiving slot;

said slot having an enlarged inlet opening defining a mouth; and

said mouth comprises a latch-receiving opening.

5,617,475

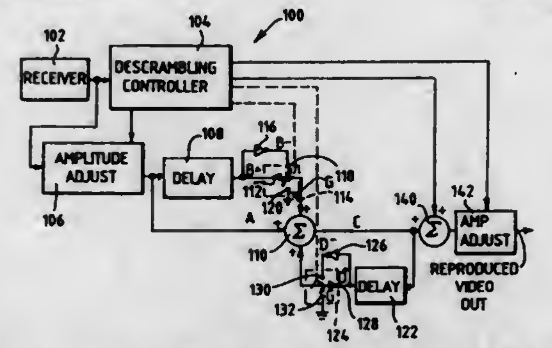
SCRAMBLING AND DESCRAMBLING OF VIDEO SIGNALS USING HORIZONTAL LINE COMBINATIONS

Daniel Marz, Richboro, Pa., assignor to General Instrument Corporation, G.I. Communications Division, Hatboro, Pa.

Filed Nov. 18, 1994, Ser. No. 342,301

Int. Cl.^{6} H04L *9/00*

U.S. Cl. 380—14 **38 Claims**



37. A method of transmitting a video signal having first and second original components to develop a reproduced video signal having first and second reproduced components, comprising the steps of:

delaying the first original component of the video signal in time to produce a delayed first original component;

combining the second original component of the video signal with the delayed first original component to produce a portion of a scrambled video signal having first and second scrambled components;

transmitting the scrambled video signal;

receiving the transmitted scrambled video signal;

delaying the first scrambled component of the received scrambled video signal in time;

combining the delayed first scrambled component of the received scrambled video signal, the second scrambled component of the received scrambled video signal and a feedback signal to develop the first reproduced component of the reproduced video signal; and

delaying the second reproduced component of the reproduced video signal to produce the feedback signal.

5,617,476

AUDIO SCRAMBLING SYSTEM FOR SCRAMBLING AND DESCRAMBLING AUDIO SIGNALS

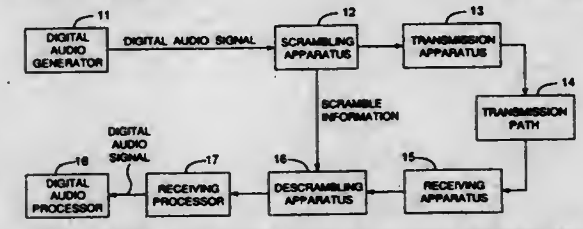
Susumu Ibaraki, Toyonaka; Noboru Katta, Itami; Seiji Nakamura, Toyonaka, and Hiroki Murakami, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

Filed Oct. 12, 1994, Ser. No. 321,766

Claims priority, application Japan, Jul. 12, 1993, 5-306386; Jul. 12, 1993, 5-306387; Dec. 10, 1993, 5-254183

Int. Cl.^{6} H04K *1/02;* **H04N** *7/117;* **H04L** *9/00*

U.S. Cl. 380—49 **16 Claims**



1. A scrambling system comprising a scrambling apparatus and a descrambling apparatus for scrambling and descrambling a digital audio signal having a plurality of sample data units, each unit having a predetermined bit length,

said scrambling apparatus comprising:

first detection means for detecting a first portion and a second portion in each sample data unit; and

encryption means for encrypting said sample data unit only at said second portion, and for producing a scrambled sample data unit; and

said descrambling apparatus comprising:

second detection means for detecting said first portion and said second portion in each scrambled sample data unit; and

decryption means for decrypting said scrambled sample data unit only at said second portion, and for producing a descrambled sample data unit;

wherein said first portion and said second portion is separated by a next-most-significant bit which is the highest order bit having a value which is not equal to that of a most-significant bit in said sample data unit, and said next-most-significant bit belonging to said first portion.

5,617,477

PERSONAL WEARABLE COMMUNICATION SYSTEM WITH ENHANCED LOW FREQUENCY RESPONSE

James H. Boyden, Los Altos Hills, Calif., assignor to Interval Research Corporation, Palo Alto, Calif.

Filed Mar. 8, 1995, Ser. No. 400,901

Int. Cl.^{6} H04R *5/02*

U.S. Cl. 381—25 **114 Claims**

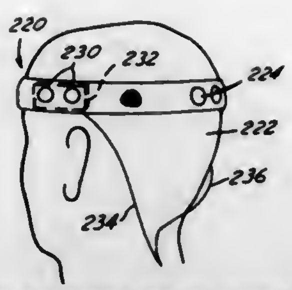
1. A personal wearable, portable communication and entertainment system comprising:

a hollow, closed structural member;

a first transducer means mounted on said structural member;

a second transducer means mounted on said structural member;

said first and second transducer means positioned in spaced relation to each other on said structural member;



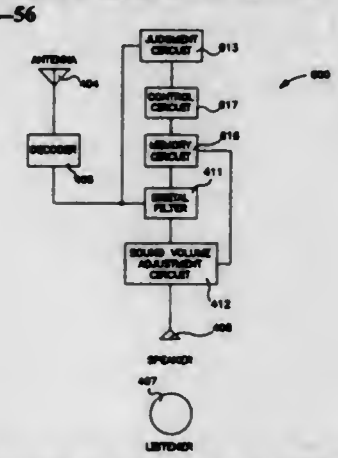
driver means for driving said first and second transducer means with driving signals, said first and second transducer means being driven 180 degrees out-of-phase at a first frequency range and being driven in-phase at a second frequency range;
said first frequency range being lower than said second frequency range;
means for supplying audio signals to said first and second transducer means; and
means for changing the relative phase of driving signals from said driving means when the out-of-phase response would have been approximately the same as the in-phase response;
whereby the response of said system in said first frequency range is enhanced.

13. A personal wearable, portable communication and entertainment system comprising:
a first hollow structural member;
a first transducer means mounted on said first structural member;
said first structural member having a first acoustic aperture in spaced relation to said first transducer means;
a second hollow structural member;
a second transducer means mounted on said second structural member;
said second structural member having a second acoustic aperture in spaced relation to said second transducer means;
driver means for driving said first and second transducer means; and
means for supplying audio signals to said first and second transducer means;
whereby when said system is worn with the first transducer means being positioned adjacent, but not blocking or covering one of the wearer's ears, the second transducer means being positioned adjacent but not blocking or covering the other of the wearer's ears; and the first and second apertures each being positioned at a distance further from the wearer's ears than the respective first and second transducers, the system provides a low frequency response which approximates that provided by conventional headphones and earphones that cover the wearer's ears and significantly block external sounds to the ears.

22. A personal wearable, portable communication and entertainment system comprising:
a hollow structural member;
first and second transducer means mounted in spaced relation on said structural member;
said structural member having at least one acoustic aperture positioned between said first and second transducer means;
driver means for driving said first and second transducer means;
means for supplying audio signals to said first and second transducer means; and
whereby when the system is worn with the first transducer means being positioned adjacent, but not blocking or covering one of the wearer's ears, the second transducer means being positioned adjacent, but not blocking or covering the other of the wearer's ears, and said aperture is positioned farther away from the wearer's ears than said first and second transducer means, the low frequency response of said system approximates that provided by conventional headphones and earphones that cover the wearer's ears and significantly block external sounds to the ears.

5,617,478
SOUND REPRODUCTION SYSTEM AND A SOUND REPRODUCTION METHOD

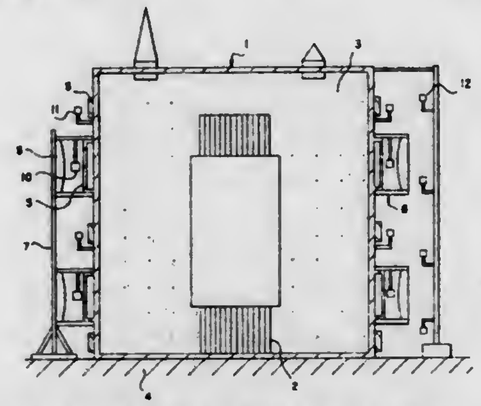
Ryou Tagami, Hirakata; Takeshi Norimatsu, Kadoma; Masaharu Matsumoto, Katano; Mikio Oda, Yawata; Mitsuhiko Serikawa, Nishinomiya; Akihisa Kawamura, Hirakata, and Hiroko Numazu, Kadoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Apr. 11, 1994, Ser. No. 225,602
Int. Cl.⁶ H04R *29/00;* **H03G** *3/00*
U.S. Cl. 381—56 **2 Claims**



1. A sound reproduction system for automatically conducting a tone control and a sound volume adjustment for an audio signal, the sound reproduction system comprising:
input means for inputting an audio signal;
judging means for receiving the input audio signal and for determining whether the input audio signal is a voice signal or a non-voice signal so as to output a judgment signal;
tone control means for adjusting amplitude-frequency characteristics of the input audio signal in accordance with a judgment result by the judgment means and for generating an output signal;
sound volume adjustment means for receiving the output signal and for adjusting sound volume of the output signal in accordance with a tone control conducted by the tone control means;
memory means for storing data of a first amplitude-frequency characteristics pattern for the voice signal, a second amplitude-frequency characteristics pattern for the non-voice signal, and a plurality of amplitude-frequency characteristics patterns gradually shifting from the first amplitude-frequency characteristics pattern to the second amplitude-frequency characteristics pattern, and data of sound volumes corresponding to the respective amplitude-frequency characteristics patterns, wherein
in the first amplitude-frequency characteristics pattern, the amplitudes at lower and higher frequency ranges are lower than the amplitude at a central frequency, and
in the second amplitude-frequency characteristics pattern, the amplitudes at lower and higher frequency ranges are higher than the amplitude at the central frequency;
control means for receiving the judgment signal and controlling the tone control means by generating a control signal for selecting the data of amplitude-frequency characteristics patterns stored in the memory means so as to gradually conduct a tone control at predetermined time intervals until receiving a next judgment signal, and for controlling the sound volume adjustment means by generating a control signal for selecting the data of sound volume stored in the memory means corresponding to the selected data of amplitude-frequency characteristics patterns so as to adjust the sound volume corresponding to respective gradual steps of the tone control; and
output means for receiving the output signal from the sound volume adjusting means and for reproducing the output signal.

5,617,479
GLOBAL QUIETING SYSTEM FOR STATIONARY INDUCTION APPARATUS

Stephen Hildebrand, Arlington, Va., and Ziqiang Hu, Columbia, Md., assignors to Noise Cancellation Technologies, Inc., Linthicum, Md.
Continuation of Ser. No. 118,839, Sep. 3, 1993, abandoned. This application Dec. 12, 1995, Ser. No. 571,281
Int. Cl.⁶ G10K *11/16*
U.S. Cl. 381—71 **13 Claims**

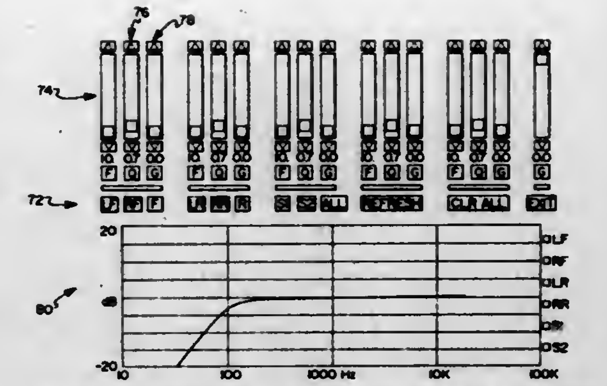


1. A quiet stationary induction apparatus comprising:
induction means,
a tank means surrounding said induction means so as to provide a space therebetween,
a fluid medium in said space, said induction apparatus adapted to produce vibration phenomena in said medium and on said tank means,
an active noise attenuation means including a control means associated with said tank means and adapted to produce counter vibration phenomena in an acoustically coupled fashion to thereby attenuate noise resulting from said vibration phenomena, said active noise attenuation means including an actuator means located adjacent said tank means including curved surface actuators having their curved surface facing standing wave forms of vibration phenomena on said tank means, and an accompanying sensor means associated therewith for sensing the residual signal resulting from the interaction of said vibration phenomena and counter vibration phenomena, said sensor means including first sensors located approximately midway between said tank means and said curved surfaces,
said actuator means including piezoceramic actuators mounted on said tank means over localized areas of high vibration, and
said sensor means further including second sensors located on said piezoceramic actuators to thereby provide residual signals to said control means to enable it to attenuate both standing wave forms and localized areas of high vibration phenomena.

5,617,480
DSP-BASED VEHICLE EQUALIZATION DESIGN SYSTEM

Bradley A. Ballard, Belleville; John W. Whikehart, Novi; Henry F. Blind, Grosse Pointe Woods, and Robert E. Pierfelice, Allen Park, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Continuation of Ser. No. 22,580, Feb. 25, 1993, abandoned. This application Jan. 6, 1995, Ser. No. 369,861
Int. Cl.⁶ H03G *5/00*
U.S. Cl. 381—98 **9 Claims**

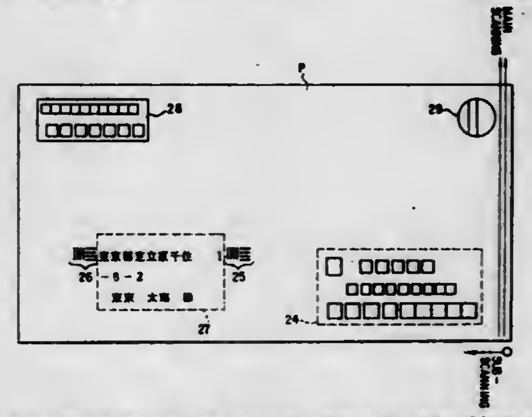
1. An equalization design system for determining the design parameters limiting the equalization adjustment capacity of a DSP-based audio reproduction system, said audio reproduction system having an equalizer with limited user adjustment, and installed in a particular model of a motor vehicle, the design system comprising:



a DSP audio reproduction system including at least one signal source, a DSP unit, an amplifier and a speaker set forming an audio path;
a source of pink noise transmitting to at least a portion of the audio path;
an audio analyzer detecting selected audio response characteristics responsive to said source of pink noise, including at least one microphone;
a computer for generating signal processing coefficients in response to an operator interactively adjusting signal processing parameters including each of the center frequency, the Q and the gain parameters of audio reproductions, said center frequency being adjustable in steps of not more than about 200 Hz in a range up to about 20,000 Hz, or steps of not more than about 10 Hz in a range up to about 1000 Hz, or steps of not more than about 1 Hz in a range up to about 100 Hz, and including a display monitor, said computer being programmed with a graphical user interface for coordinating adjustments in real time with visual icons displayed on said display monitor for each of said center frequency, Q and gain parameters to obtain a set of production filter coefficients to be propagated for each radio to be installed in a production unit of the particular model of motor vehicle and to obtain in real time the limits of adjustment capacity.

5,617,481
ADDRESS READING APPARATUS AND ADDRESS PRINTING APPARATUS USING MAIL ADDRESS POSITION MARK

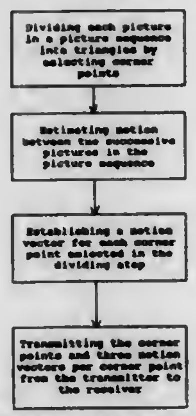
Yoshikatu Nakamura, Yokosuka, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Mar. 20, 1995, Ser. No. 407,091
Claims priority, application Japan, Mar. 22, 1994, 6-050180
Int. Cl.⁶ G06K *9/00*
U.S. Cl. 382—101 **11 Claims**



1. A mail address reading apparatus for reading an address of a mail which has a mark formed in a machine code form, the mark indicating a position of the address area of the mail, the mail address reading apparatus comprising:

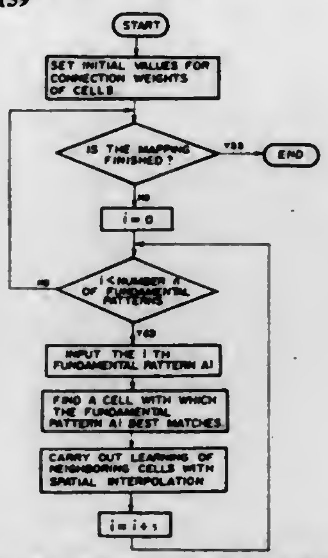
means for deriving image data from the mail having an address area;
means for detecting the mark from the image data derived by the deriving means; and
means for specifying the address area of the image data according to the position indicated by the mark and for reading the address for the image data of the specified area,
wherein the mark has first and second marks, said specifying means includes first determining means for determining that the first mark is the upper left corner of the address area and second determining means for determining that the second mark is the upper right corner of the address area, the first and second marks are respectively constructed by two adjacent codes, one of the machine codes is a first machine code having a plurality of discrete black stripes extending in a vertical direction of an address of the mail and the other machine code is a second machine code having a plurality of black horizontal stripes extending in a horizontal direction and disposed adjacently on the right side of the first machine code.

5,617,482
METHOD OF MOTION COMPENSATION AND ELASTIC DEFORMATION IN PICTURE SEQUENCES
Harald Brusewitz, Älvsjö , Sweden, assignor to Televerket, Farsta, Sweden
Continuation of Ser. No. 969,221, Feb. 12, 1993, abandoned.
This application Jan. 3, 1995, Ser. No. 367,773
Claims priority, application Sweden, Aug. 15, 1990, 9002647
Int. Cl.[6] G06K *9/32;9/00*
U.S. Cl. 382—107 **2 Claims**



1. Method of motion compensation and elastic deformation in a picture sequence transmitted between a transmitter and a receiver, the method comprising the following steps in the transmitter:
dividing each picture in a picture sequence into triangles by selecting corner points;
estimating motion between two successive pictures in the picture sequence;
establishing a motion vector for each corner point selected in the dividing step; and
transmitting the corner points and three motion vectors per corner point from the transmitter to the receiver; and
the method comprising the following steps in the receiver:
receiving the corner points and the three motion vectors per corner point at the receiver from the transmitter;
calculating the motion vectors of internal points of the triangles using the three transmitted motion vectors of respective triangles;
calculating pixel values of the corner points of the triangles using pixel values of a previous picture in the picture sequence and the motion vectors transmitted by the transmitter; and
calculating pixel values of the internal points of the triangles using the motion vectors calculated in the calculating step and the pixel values of the previous picture in the picture sequence.

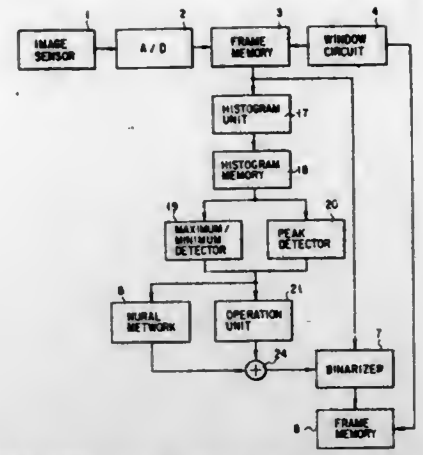
5,617,483
PATTERN LEARNING METHOD
Akira Osawa, Kanagawa-ken, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Continuation of Ser. No. 12,779, Feb. 3, 1993, abandoned.
This application Nov. 14, 1994, Ser. No. 339,883
Claims priority, application Japan, Feb. 4, 1992, 4-018864; Dec. 25, 1992, 4-347237
Int. Cl.[6] G06K 9/62
U.S. Cl. 382—159 **39 Claims**



1. A pattern learning method comprising the steps of:
presenting information signals representing a plurality of different find mental patterns of varying image density representative of physical objects to a large number of cells of a neural network;
assigning a spatial position for each of the cells;
causing a chosen cell, which best matches with a first fundamental pattern having been presented to the neural network, to learn said first fundamental pattern;
for neighboring cells having a distance within a predetermined range from the chosen cell, carrying out orientation-based spatial interpolating operations, using respective ones of said spatial positions, between the first fundamental pattern and a second fundamental pattern which has been learned by a second cell, the second fundamental pattern not being the first fundamental pattern and the second cell not being the chosen cell; and
causing said neighboring cells to learn the results of said spatial interpolating operations, thereby causing the cells to learn a large number of feature patterns.

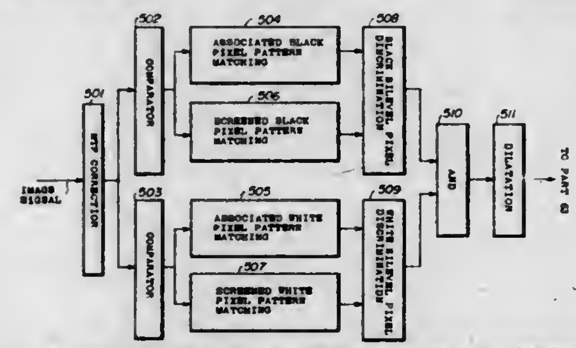
5,617,484
IMAGE BINARIZING APPARATUS
Toshiaki Wada, and Kangda Wang, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 125,602, Sep. 23, 1993, abandoned.
This application Jun. 6, 1995, Ser. No. 466,362
Claims priority, application Japan, Sep. 25, 1992, 4-256116; Apr. 21, 1993, 5-094554
Int. Cl.[6] G06K *9/00*
U.S. Cl. 382—172 **10 Claims**

1. An image binarizing apparatus comprising:
photoelectric converting means for photoelectrically converting an image into an electric image signal;
image signal separating means for separating an image signal acquired from said photoelectric converting means into a predetermined number of portions to yield partial images;
extracting means for extracting no more than three levels of brightness of a highest brightness, a lowest brightness and an average brightness as parameters from said partial images for



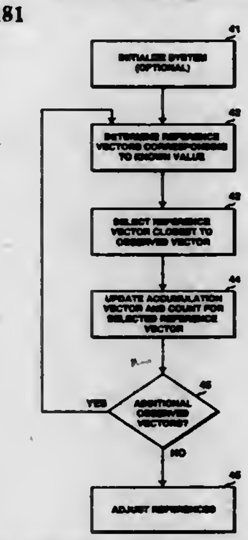
a partial image block of interest and for each of a plurality of partial image blocks adjacent to said partial image block of interest;
threshold value computing means for inputting said extracted parameters comprised of no more than said three levels of brightness which are extracted from said partial image block of interest and all of said adjacent partial image blocks to a neural network, and causing said neural network to compute a single threshold value based on only said extracted parameters corresponding to said no more than three levels of brighmess; and
binarizing means for selectively binarizing a plurality of pixels which form part of all of the pixels constituting an image, based on said threshold value acquired by said threshold value computing means.

5,617,485
IMAGE REGION SEGMENTATION SYSTEM
Satoshi Ohuchi, Hachioji, and Kaoru Imao, Yokohama, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Continuation of Ser. No. 137,507, Oct. 18, 1993, abandoned, which is a continuation of Ser. No. 828,474, Jan. 30, 1992, abandoned, which is a continuation-in-part of Ser. No. 743,204, Aug. 9, 1991, Pat. No. 5,134,666. This application Apr. 4, 1995, Ser. No. 485,553
Claims priority, application Japan, Feb. 4, 1991, 3-035752
Int. Cl.[6] G06K *9/00*
U.S. Cl. 382—176 **10 Claims**



1. An image region segmentation system for discriminating a text region within an image, said system comprising:
a) first detection means for detecting a candidate region for the text region within the image by outputting, for each pixel of the image included in the candidate region, a first signal indicating that said each pixel constitutes part of the candidate region for the text region;
b) second detection means for detecting a white region including at least a group of successive white pixels within the image, by carrying out, for each of the pixels of the image, a pattern matching of:
(i) a matrix of the pixels of the image including a reference pixel in the center of the matrix with
(ii) predetermined matrix patterns, said second detection means including:
1) means for detecting whether a white region including at least a group of successive white pixels exists within the image at a predetermined distance from the reference pixel along a scanning line, and
2) means for supplying a second signal for each pixel of the image when the white region is detected to exist within the image at the predetermined distance from each said pixel; and
c) discrimination means for detecting a text region within the image by determining that both the first signal and the second signal are simultaneously supplied by said first detection means and said second detection means with respect to each pixel of the image included in the detected text region.

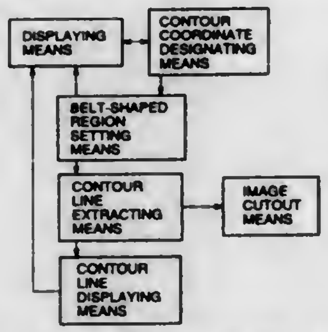
5,617,486
CONTINUOUS REFERENCE ADAPTATION IN A PATTERN RECOGNITION SYSTEM
Yeo-Lu Chow, Saratoga; Peter V. deSouza, San Jose; Adam B. Fineberg, and Hsiao-Wuen Hon, both of Saratoga, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.
Continuation of Ser. No. 129,679, Sep. 30, 1993, abandoned.
This application Nov. 27, 1995, Ser. No. 563,256
Int. Cl.[6] G06K *9/00*
U.S. Cl. 382—181 **41 Claims**



1. An apparatus for pattern recognition of data input comprising:
means for representing said data input as a set of observed vectors, wherein individual observed vectors of said set of observed vectors represent said data input at a different point in time;
means for comparing a first subset of said set of observed vectors to a set of models by comparing a set of reference vectors associated with said set of models to said set of observed vectors and identifying a resultant model which most closely matches said first subset, wherein said resultant model is one of said set of models;
means for creating a set of accumulation vectors wherein individual accumulation vectors of said set of accumulation vectors correspond to individual reference vectors of said set of reference vectors, and wherein a first accumulation vector of said set of accumulation vectors stores a first observed vector, and wherein said first observed vector was previously associated with a first reference vector of said set of reference vectors;
means for updating said set of reference vectors to create an updated set of reference vectors associated with said set of models to more accurately represent said data input, wherein said means for updating combines said first accumulation vector with said first reference vector; and

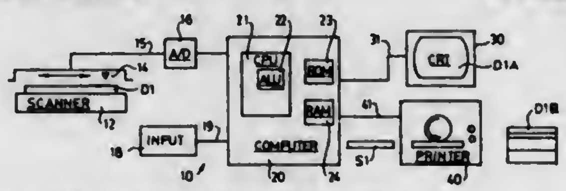
means for utilizing said updated set of reference vectors in comparing subsequent data input streams to said set of models.

5,617,487
IMAGE CUTOUT APPARATUS
Tsutomu Yoneyama, and Hiroshi Kinoshita, both of Tokyo, Japan, assignors to Konica Corporation, Tokyo, Japan
Filed Sep. 9, 1994, Ser. No. 303,618
Claims priority, application Japan, Sep. 22, 1993, 5-236911
Int. Cl.⁶ G06K *9/48;9/30;9/46;* **G01B** *9/00*
U.S. Cl. 382—199 **8 Claims**



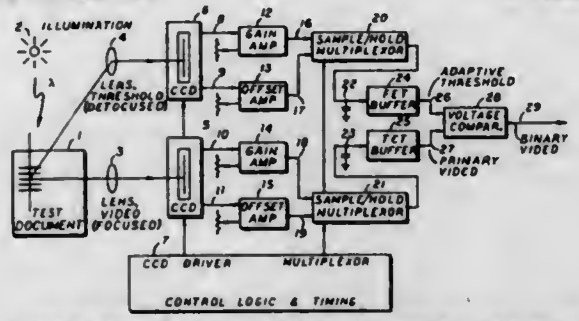
1. An apparatus for searching a contour line of an image to be cut out, comprising:
displaying means for displaying an image obtained through photoelectric conversion scanning of an original image;
belt-shaped region setting means for setting a belt-shaped region by designating at least two points located along the contour line of an image to be cut out;
processing means for processing image data in the belt-shaped region that has been set by said belt-shaped region setting means;
contour line searching means for searching the contour line of the image to be cut out, based on the image data processed by said processing means;
a tracer for extracting a contour point located on the contour line of an image in accordance with an image data in a width direction of the belt-shaped region; and
wherein the tracer is moved in a direction perpendicular to the width direction so as to continuously extract each contour point, thereby searching the contour line; and
wherein said belt-shaped region setting means is arranged such that a weight distribution for determining a contour point by said tracer is set in the width direction of the belt-shaped region.

5,617,488
RELAXATION WORD RECOGNIZER
Tao Hong, Buffalo, and Jonathan J. Hull, Amherst, both of N.Y., assignors to The Research Foundation of State University of New York, Buffalo, N.Y.
Filed Feb. 1, 1995, Ser. No. 381,767
Int. Cl.⁶ G06F *15/02;* **G06K** *9/62;9/72*
U.S. Cl. 382—229 **8 Claims**



1. A word recognition method comprising:
(a) dividing a document into a two dimensional matrix of pixel areas;
(b) scanning the pixel areas with a light source and detecting the intensity of light from each pixel area to generate a plurality of pixel data signals, each pixel data signal being proportional to the intensity of light detected from its corresponding pixel area;
(c) comparing the pixel data signals to data signals stored in a memory that represent alphanumeric characters and words in order to initially recognize word candidates from said pixel data signals;
(d) generating a ranking of candidates for each word based upon a likelihood of correctness of each candidate, each ranking having a top choice indicating the initial most likely correct candidate for the word;
(e) grouping ranked word candidates into neighborhoods, each neighborhood comprising two or more word candidates and each neighborhood being adjacent to at least one other neighborhood;
(f) reading from a read only memory word collocation data for each word candidate and one or more top choice adjacent word candidates;
(g) computing a collocation score for each word candidate and the top choice of at least two adjacent neighborhoods wherein the collocation score for each word candidate is computed by adding the probability of correctness of the word candidate to the products of (i) the collocation data of the candidate and its top choice neighbors and (ii) the probability of correctness for the top choice neighbor and dividing the result by the sums of the probabilities of correctness of all the words in the neighborhood and the sums of the products of (i) collocation data of each neighbor with the top choice of the adjacent neighbors and the (ii) the probability of correctness of the top choices of the adjacent neighbors;
(h) sorting word candidates by their collocation score;
(i) comparing changes between the word candidates of the initial neighborhoods and the word candidates in the sorted neighborhood;
(j) counting the number of changes for the neighborhoods; and
(k) repeating steps (e) through (i) until the number of changes is less than a predetermined threshold value.

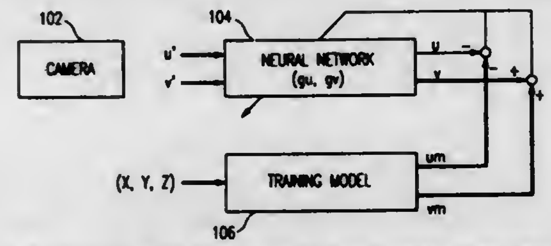
5,617,489
OPTICAL ADAPTIVE THRESHOLDER FOR CONVERTING ANALOG SIGNALS TO BINARY SIGNALS
Richard S. Adachi, 1641 Mariposa St., Richmond, Calif. 94804, assignor to Richard S. Adachi, Richmond, Calif.
Filed Aug. 4, 1993, Ser. No. 998,803
Int. Cl.⁶ H04N *1/40;* **H03M** *1/12;* **G06K** *9/40;* **H01L** *27/00*
U.S. Cl. 382—275 **2 Claims**



1. An apparatus for an optical adaptive thresholder for converting an analog primary video signal to a binary video signal, pixel by pixel in real time comprising:
first scanning means, having a finely focused lens and a first CCD scanner, scanning on an optical axis, line by line, a document, said first scanning means outputting odd and even video pixel signals, via said finely focused lens;
second scanning means, having a defocused lens and a second CCD scanner, scanning slightly off said optical axis in synchronization with said first scanning means, line by line, said document, said second scanning means outputting odd and even threshold pixel signals via said defocused lens;

illumination means illuminating said document scanned by said first and second scanning means;
first normalizing means for normalizing and matching said odd and even video pixel signals;
second normalizing means for normalizing and matching said odd and even threshold pixel signals;
first sample and hold means for alternately multiplexing said odd and even video pixel signals, output from said first normalizing means, to compose said primary video signal;
second sample and hold means for alternately multiplexing said odd and even threshold pixel signals, output from said second normalizing means, to compose an adaptive threshold signal; and
comparing means, for comparing said primary video signal with said adaptive threshold signal to generate said binary video signal.

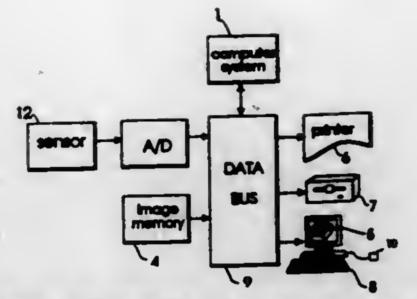
5,617,490
CAMERA SYSTEM WITH NEURAL NETWORK COMPENSATOR FOR MEASURING 3-D POSITION
Masao Kume, Hirakata, Japan, and Takeo Kanade, Pittsburgh, Pa., assignors to Sanyo Electric Co., Ltd., Osaka, Japan
Filed Jun. 27, 1994, Ser. No. 266,136
Int. Cl.⁶ G06T *1/40;5/00*
U.S. Cl. 382—275 **7 Claims**



1. A camera system for measuring actual image coordinates of an object, the camera system comprising:
a camera, having a signal processing portion, for imaging the object and outputting first image coordinates of the object;
a camera model generator for outputting instruction signals, wherein the instruction signals are produced based on a pinhole camera model using camera parameters which are derived based on an image center and a geometrical relationship between a world coordinate of x, y, and z axes, a camera coordinate of x, y, and z axes, and an image coordinates of x and y axes; and
a neural network, responsive to the instruction signals provided by the camera model generator, for receiving the first image coordinates, adjusting the first image coordinates according to a difference between the first image coordinates and the instruction signals, and outputting second image coordinates having increased accuracy compared to the first image coordinates,
wherein the camera model generator optimizes the instruction signals according to the second image coordinates from the neural network.

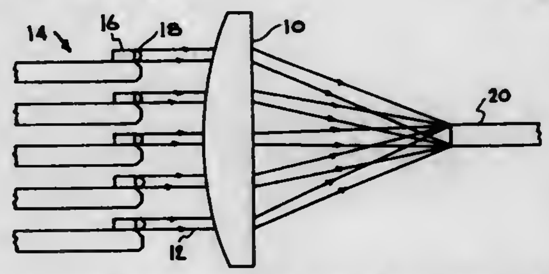
5,617,491
ESTIMATION OF SURFACE GEOMETRY FROM RELATIVE RANGE IMAGES
Gerhard Roth, Gloucester, Canada, assignor to National Research Council of Canada, Ottawa, Canada
Continuation of Ser. No. 149,842, Nov. 9, 1993, abandoned. This application May 16, 1995, Ser. No. 442,356
Int. Cl.⁶ G06K *9/36*
U.S. Cl. 382—285 **5 Claims**

1. A method of finding a geometric surface patch represented by an equation, the surface patch closely approximating a geometric surface within a digitized scene, the scene comprising a plurality of



surface patches represented by a plurality of data points, the method comprising the steps of:
a) digitizing the scene by sensing relative range information about a plurality of points observed in a scene using a rangefinding sensor;
b) inputting the sensed relative range information into a computer having a random access memory;
c) storing the digitized scene in the random access memory, the digitized scene comprising a plurality of data points;
d) using the computer to select a region from the digitized scene consisting of a set of points in three dimensions stored in the random access memory;
e) selecting one of a plurality of geometric surface types from a library of geometric surface types to represent a predominant geometric surface covered by the region;
f) determining a minimal number of data points required to define the selected surface type;
g) selecting the minimal number of data points by randomly choosing the data points from the selected region;
h) using the computer to compute from the surface type and the selected randomly chosen minimal number of data points, an equation of a surface patch on which the randomly selected points lie;
i) counting the number of data points in the selected region that are within a predetermined distance from the geometric surface patch defined by the equation; and,
j) repeating steps (g) to (i) a predetermined number of times, and selecting the surface patch with the maximum number of counted data points.

5,617,492
FIBER OPTIC COUPLING OF A MICROLENS CONDITIONED, STACKED SEMICONDUCTOR LASER DIODE ARRAY
Raymond J. Beach; William J. Benett, both of Livermore, and Steven T. Mills, Antioch, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.
Filed Feb. 6, 1996, Ser. No. 597,331
Int. Cl.⁶ G02B *6/32*
U.S. Cl. 385—33 **9 Claims**



1. A system-t for coupling light from a microchannel cooled, microlens conditioned semiconductor laser diode array into a fiber optic, comprising:
a microchannel cooled, microlens conditioned semiconductor laser diode array for producing laser light;
a fiber optic having an input aperture; and

a lens to focus said laser light into said input aperture, wherein the focal length of said lens is chosen such that the divergence of said laser light after it passes through said lens is ≦ the numerical aperture of said fiber optic wherein said lens focuses said laser light to a spot having a size that is ≦ said input aperture

wherein each diode laser of said laser diode array produces a beam, wherein the maximum angle of divergence of said beam is

$$\tan^{-1}\left(\frac{A}{\sqrt{2}}/F\right),$$

where A is the side length of a square aperture of said laser light, and F is the focal length of said lens.

5,617,493

WAVEGUIDE TYPE OPTICAL CONTROL DEVICE WITH PROPERTIES OF SUPPRESSED DC DRIFT, REDUCED DRIVING VOLTAGE AND HIGH SPEED OPERATION

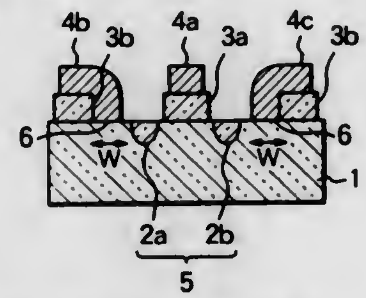
Hiroshi Nishimoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 15, 1995, Ser. No. 573,036

Claims priority, application Japan, Dec. 15, 1994, 6-311695

Int. Cl.⁶ G02B 6/26

U.S. Cl. 385—40 8 Claims



1. An optical control device which comprises:

a substrate having a main surface and being of a first dielectric and light-transparent material with an eletrooptic effect;

two waveguides formed in the main surface of said substrate and having parallel portions close to each other;

a first buffer layer section formed on the main surface between the parallel portions of said waveguides, said first buffer layer being of a second dielectric and light-transparent material having a refractive index smaller than that of said substrate and a dielectric constant of 15 or less;

a first electrode formed on said first buffer layer; at least one second electrode formed on the main surface of said substrate adjacent to and outside of the parallel portions of said waveguides, said second electrode being spatially separated from said first electrode and said first buffer layer section; and

a second buffer layer section of said second dielectric and light-transparent material interposed between said second electrode and the main surface of said substrate, said second buffer layer section being spatially separated from said first buffer layer section, said second electrode partially being in direct contact with the main surface of said substrate.

5,617,494

ALIGNMENT PIECE FOR A CONNECTOR FOR OPTICAL CONDUCTORS

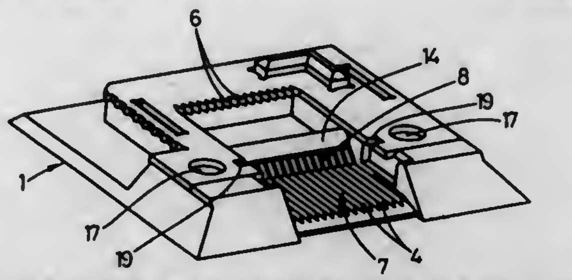
Danny Morlion, St. Amandsberg; Luc Jonckheere, Dilbeek, and Jan P. K. Van Koetsem, Zwijndrecht, all of Belgium, assignors to Framatome Connectors International, Paris, France

Filed Sep. 6, 1995, Ser. No. 524,230

Claims priority, application Netherlands, Sep. 8, 1994, 9401459

Int. Cl.⁶ G02B 6/36

U.S. Cl. 385—83 8 Claims



1. Alignment piece for a connector for optical conductors, comprising a support plate with a top surface, a guiding plate manufactured with very high accuracy, said guiding plate being supported on the top surface of said support plate, and one or more alignment channels for the conductors, said guiding plate having an end edge in which ends of the alignment channels are made as V-shaped slots and wherein the support plate is provided with an inclining guiding surface in which the alignment channels extend, said inclining guiding surface of the support plate ending at a distance from said end edge of the guiding plate, wherein a support member is provided between this end edge and the guiding surface, said support member projecting above the guiding surface and said support member being adapted to support the conductors during mounting the same in the alignment piece under such an angle of inclination that the conductors project above said end edge of the guiding plate.

5,617,495

OPTICAL SEMICONDUCTOR DEVICE AND CONNECTION STRUCTURE THEREFOR

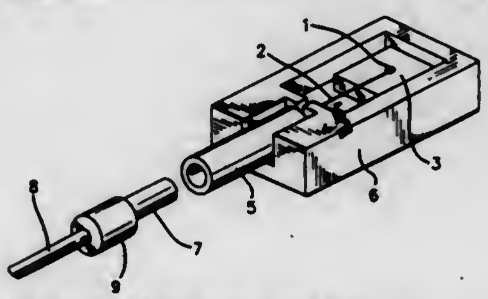
Masaaki Funabashi, and Kazuhiko Kurata, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed May 3, 1995, Ser. No. 434,908

Claims priority, application Japan, May 24, 1994, 6-109283

Int. Cl.⁶ G02B 6/36

U.S. Cl. 385—92 5 Claims



1. Optical semiconductor device, comprising:

an optical semiconductor element;

a short optical fiber directly optically coupled at a first end face to said optical semiconductor element, said optical semiconductor element and one end of said short optical fiber being mounted on a common silicon substrate, said common silicon substrate comprising a V-groove on one surface thereof, said one end of said short optical fiber being disposed in said V-groove;

a first ferrule receiving said optical fiber, said first ferrule receiving only a portion of said short optical fiber near a second end face opposite said first face, said second end face of said optical fiber, together with an adjacent end face of said first ferrule, being end-face-ground; and

a sleeve having an inner diameter larger than an outer diameter of said first ferrule, into a first end of which said first ferrule is inserted and being sufficiently long to receive in a second end thereof a second ferrule including an external optical fiber.

5,617,496

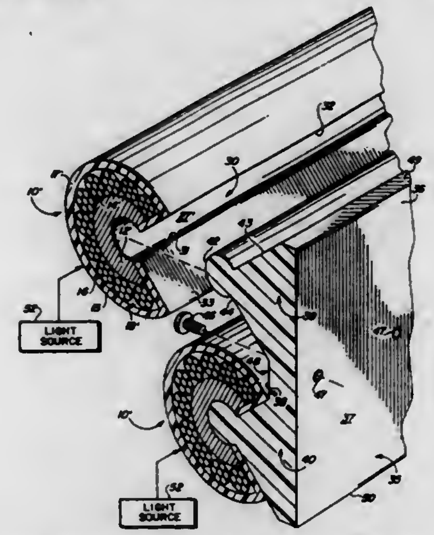
LATERAL ILLUMINATION FIBER OPTIC CABLE DEVICE AND METHOD OF MANUFACTURE

Brett M. Kingstone, Orlando, Fla., assignor to Super Vision International, Inc., Orlando, Fla.

Continuation of Ser. No. 65,942, May 21, 1993, Pat. No. 5,333,228. This application Jul. 20, 1994, Ser. No. 277,887

Int. Cl.⁶ G02B 6/44

U.S. Cl. 385—100 4 Claims



1. A lateral illumination fiber optic cable comprising:

a central core extending longitudinally of the cable;

a plurality of optical fibers distributed perimetrically about the core and extending axially along an outer surface of the core, said optical fibers having a plurality of bends in the fibers for enhancing lateral illumination at the expense of axial transmission of light; and

a transparent tubular sheath encompassing the core and the optical fibers and extending along a length of the cable.

5,617,497

LATERAL ILLUMINATION FIBER OPTIC CABLE DEVICE AND METHOD OF MANUFACTURE

Brett M. Kingstone, Orlando, Fla., assignor to Super Vision International, Inc., Orlando, Fla.

Continuation-in-part of Ser. No. 277,887, Jul. 20, 1994, which is a continuation of Ser. No. 65,942, May 21, 1993, Pat. No. 5,333,228. This application Dec. 22, 1994, Ser. No. 361,986

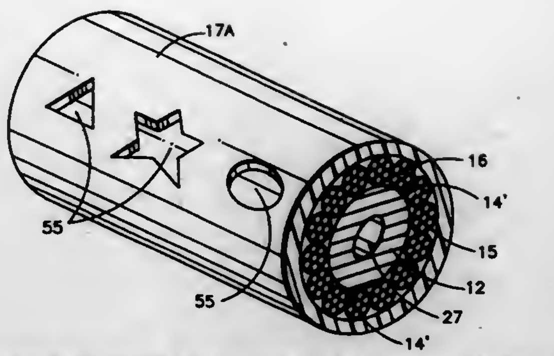
Int. Cl.⁶ G02B 6/44

U.S. Cl. 385—100 17 Claims

1. A lateral illumination fiber optic cable device, comprising:

a central core having an axially extending light reflective outer surface;

a plurality of optical fibers distributed circumferentially about the core and extending axially along the reflective surface; and



a transparent tubular sheath running longitudinally, coaxially of the core about the optical fibers.

5,617,498

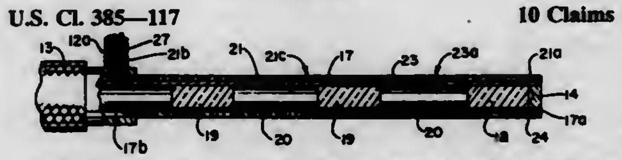
LIGHT-TRANSMITTING OUTER CASINGS FOR ENDOSCOPES AND METHODS OF MAKING

Charles D. Cawood, 11527 N. Lou Al Ct., Houston, Tex. 77024

Continuation-in-part of Ser. No. 349,247, Dec. 5, 1994, Pat. No. 5,463,712. This application Aug. 18, 1995, Ser. No. 516,613

Int. Cl.⁶ G02B 23/26

U.S. Cl. 385—117 10 Claims



1. A method of making an endoscope with a light-transmitting outer casing comprising the steps of:

forming an elongated tubular sheath of a light-transmitting material, said sheath having proximal and distal ends;

forming said proximal end of said sheath into a light-receiving post;

inserting an elongated lens train into said sheath so that a proximal end of said lens train projects through an opening at said proximal end of said sheath said lens train including an opposite distal end having at least one field lens; and

positioning said distal end of said sheath around a periphery of said at least one field lens and polishing said distal end of said sheath for allowing transmission of light therethrough.

5,617,499

TECHNIQUE FOR FABRICATION OF A POLED ELECTROOPTIC FIBER SEGMENT

Steven R. J. Brueck, and Xiang-Cun Long, both of Albuquerque, N.M., assignors to University of New Mexico, Albuquerque, N.M.

Filed Sep. 8, 1995, Ser. No. 525,960

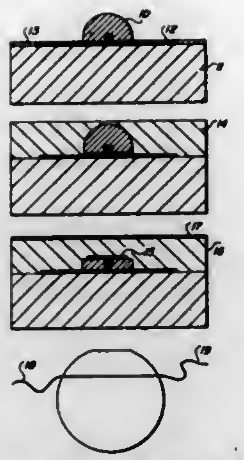
Int. Cl.⁶ G02B 6/16

U.S. Cl. 385—122 10 Claims

6. In optoelectronics, an electrooptically active fiber segment comprising:

a) a flat substrate with a metalized layer forming a first electrode;

b) a fiber, a portion of which has been polished flat on a first side close to the core and on a second side opposite said first side, said first side being attached to said substrate, and with unpolished portions of said fiber extending beyond said substrate;



c) an electrode deposited on said second side;

d) and temperature/electric field means to induce a second-order nonlinearity in said fiber.

5,617,500

SYSTEM FOR DETECTING AN OPTICAL INFORMATION AND SCANNING MICROSCOPE SYSTEM

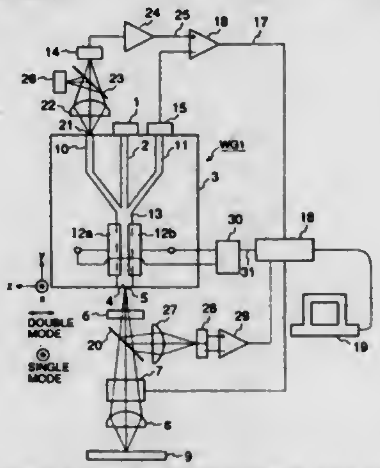
Takashi Shionoya, Kawasaki, and Junji Ikeda, Yokohama, both of Japan, assignors to Nikon Corporation, Japan

Filed May 17, 1995, Ser. No. 443,225

Claims priority, application Japan, May 20, 1994, 6-107091; Mar. 3, 1995, 7-070676; Mar. 3, 1995, 7-070677

Int. Cl.[6] G02B *6/10;21/00;* **G11B** *7/00*

U.S. Cl. 385—132 **25 Claims**



1. A system for detecting an optical information, comprising:

an optical branching device having:

a trunk channel waveguide with a changeable coupling length, wherein first light including the optical information is introduced into said trunk channel waveguide through an end face of said trunk channel waveguide, and

at least two branch channel waveguides connected to said trunk channel waveguide;

a first photodetector and a second photodetector for respectively detecting lights passing through said branch channel waveguides to detect the optical information;

a light source for emitting second light into one of said branch channel waveguides;

a third photodetector for detecting a light intensity distribution formed on the end face of the trunk channel waveguide based on the second light.

5,617,501

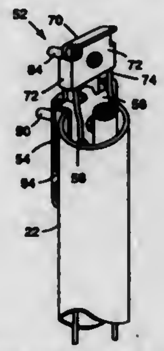
SHIELD BOND STRAIN CONNECTOR FOR FIBER OPTIC CLOSURE

James R. Miller, Austin, and Ellwyn J. Schroeder, Georgetown, both of Tex., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 31, 1995, Ser. No. 414,181

Int. Cl.[6] G02B *6/00;* **H01R** *4/66*

U.S. Cl. 385—134 **19 Claims**



1. A shield bond strain connector for use with a cable jacket connector and a cable having strength members, the shield bond strain connector comprising:

a clamping plate having a mounting bolt attached thereto; and

a shield bond extension element having first, second and third holes therein, said first hole positioned to receive a mounting bolt of the cable jacket connector, and said second hole positioned to receive a prong of the cable jacket connector, such that said extension element is affixed to the cable jacket connector when the mounting bolt thereof is engaged in said first hole and when the prong thereof is engaged in said second hole, said third hole further being positioned to receive said mounting bolt of said clamping plate such that the strength members of the cable may be securely fastened between said clamping plate and said extension element.

5,617,502

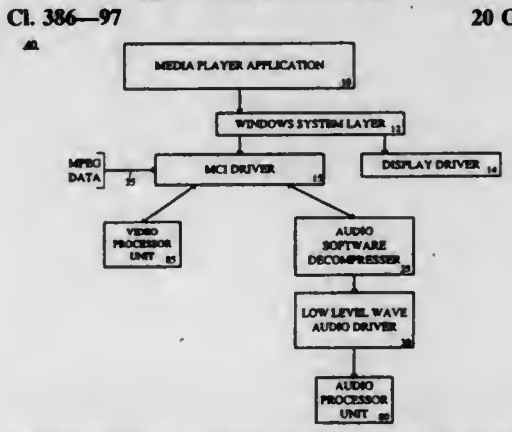
SYSTEM AND METHOD SYNCHRONIZING AUDIO AND VIDEO DIGITAL DATA SIGNALS DURING PLAYBACK

Jeffrey Ort, Kirkland, Wash., and Daniel Daum, San Jose, Calif., assignors to Cirrus Logic, Inc., Fremont, Calif.

Filed Mar. 22, 1996, Ser. No. 620,637

Int. Cl.[6] H04N *5/76;5/928*

U.S. Cl. 386—97 **20 Claims**



1. In a digital playback system including a video processor unit and a software driver, a method of synchronizing audio and video digital signals during playback thereof, said method comprising the steps of:

(a) determining whether said audio and video digital signals are in synchronization or out of synchronization by a small number of frames, x, said step of determining performed by said video processor unit;

(b) provided said audio and video digital signals are out of synchronization by x or less frames, performing a first step of synchronizing said video digital signal to said audio digital signal, said first step initiated and performed solely by said video processor unit; and

(c) provided said audio and video digital signals are out of synchronization by more than x frames, performing a second step of synchronizing said video digital signal to said audio digital signal, said second step comprising the steps of:

(i) said software driver instructing said video processor unit to perform a video frame synchronization procedure; and

(ii) said video processor interrupting said software driver during said video frame synchronization procedure on a video frame basis until said software driver determines a completion point of said video frame synchronization procedure.

5,617,503

MOTOR CONTROL ARRANGEMENT, AND SHAVER COMPRISING SUCH A MOTOR CONTROL ARRANGEMENT

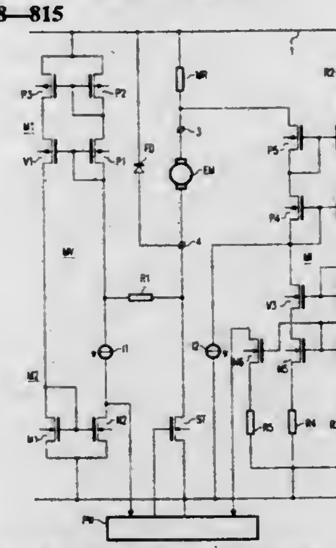
Robert J. Froeen, Eindhoven; Paulus J. C. Van Leest, Drachten, and Franciscus A. C. M. Schoofs, Eindhoven, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 3, 1993, Ser. No. 161,002

Claims priority, application European Pat. Off., Dec. 3, 1992, 92203742

Int. Cl.[6] G05F *1/10*

U.S. Cl. 388—815 **45 Claims**



1. A motor control arrangement comprising:

a first and a second supply voltage terminal,

an electric motor, and

a control circuit for controlling the speed of the electric motor, said control circuit comprises a first and a second connection terminal coupled to the electric motor, a measurement resistor coupled between the first supply voltage terminal and the first connection terminal, a switching transistor having a main current path coupled between the second connection terminal and the second supply voltage terminal and having a control electrode, a flyback diode coupled between the second connection terminal, a pulse width control stage coupled to the control electrode of the switching transistor, and a motor voltage measurement stage for controlling the pulse width control stage in response to a motor voltage carried by the electric motor, wherein the motor voltage measurement stage comprises a resistor and a first current mirror having a common terminal coupled to the first supply voltage terminal, having an input coupled to the second connection terminal by means of the resistor, and having an output coupled to the pulse width control stage.

5,617,504

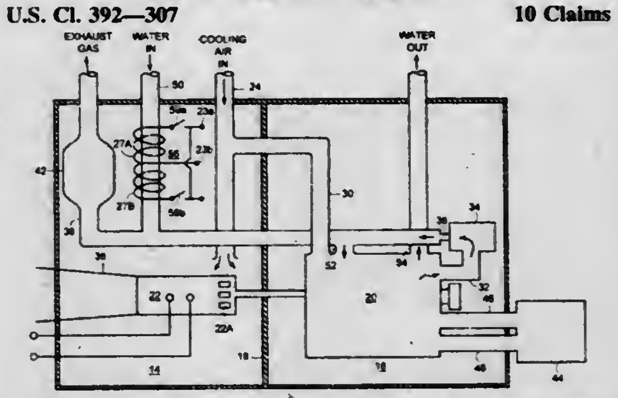
COGENERATION SYSTEM AND CONTROL THEREFOR WITH AUXILIARY HEATING ELEMENTS AND THERMAL BARRIER

Thomas Sciacca, 31 Rolling La., Wayland, Mass. 01778, and Neil Slavin, 201 Hayden Rd., Groton, Mass. 01450

Continuation of Ser. No. 892,571, Jun. 3, 1992, abandoned. This application Oct. 11, 1994, Ser. No. 321,456

Int. Cl.[6] B60L *1/02;* **F01K** *15/00*

U.S. Cl. 392—307 **10 Claims**



1. A cogeneration system suitable for residential applications, comprising:

A. an engine for providing both heat and motive power,

B. a generator coupled to said engine for providing electric power,

C. electric heating means for providing additional heat, comprising a first electrical heat source and a second electrical heat source, and

D. controller means for controlling the energization of said first and second electrical heat sources during a given period in accordance with measured operating characteristics of said system during a defined prior time interval which is representative of overall system energy demand for a next operating time period, for applying the measured operating characteristic to control energization of the electric heating means for the next operating time period by computing a duty cycle band value indicative of the measured operating characteristic and computing a first delay value and a second delay value based upon said duty cycle band, wherein each of said delay values is indicative of a time delay before said first and second electrical heat sources, respectively, will be energized.

5,617,505

SPEECH SIGNAL PROCESSING APPARATUS FOR CUTTING OUT A SPEECH SIGNAL FROM A NOISY SPEECH SIGNAL

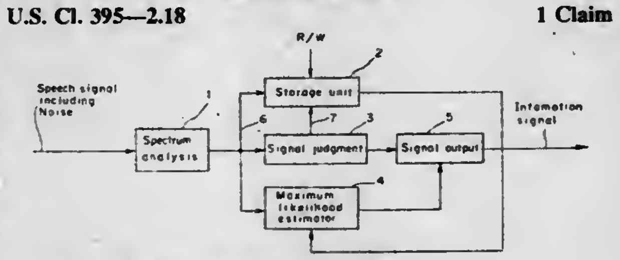
Joji Kane, Nara, and Akira Nohara, Nishinomiya, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 982,770, Nov. 27, 1992, abandoned, which is a division of Ser. No. 706,576, May 28, 1991, abandoned. This application May 31, 1995, Ser. No. 455,252

Claims priority, application Japan, May 28, 1990, 2-138053; May 28, 1990, 2-138061; May 28, 1990, 2-138062; May 28, 1990, 2-138063; May 28, 1990, 2-138067

Int. Cl.[6] G01L *1/06*

U.S. Cl. 395—2.18 **1 Claim**

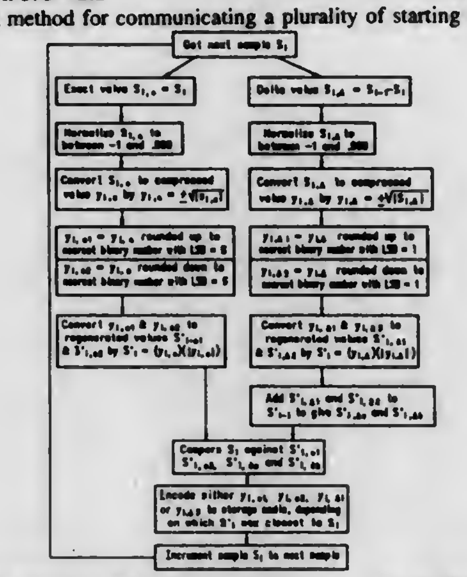


1. A signal processing apparatus comprising:

band division means for performing a band division process including a Fourier transformation for an inputted speech signal and outputting spectrum signals of plural channels;
cepstrum analysis means for performing a cepstrum analysis process for the spectrum signals of plural channels outputted from said band division means and outputting a quefrency value which represents a pitch detected through said cepstrum analysis;
formant analysis means for performing a formant analysis process for the cepstrum analysis result outputted from said cepstrum analysis means and outputting a quefrency value and a cepstrum level which represent a formant detected through said cepstrum analysis;
speech detection means for detecting a feature of a speech of the inputted speech signal based on a combination of the quefrency value which represents the detected pitch outputted from said cepstrum analysis means, and the quefrency value and the cepstrum level which represent the detected formant outputted from said formant analysis means;
speech judgment control means for storing predetermined features of speeches of plural speakers and sequentially outputting the stored features, said predetermined features denoting a predetermined pitch quefrency value and a predetermined formant quefrency value and cepstrum level for each of said plural speakers;
speech judgment means for detecting which speaker among said plural speakers the feature detected by said speech detection means corresponds to by comparing the feature detected by said speech detection means with the stored features outputted from said speech judgment control means and outputting a detection result;
switch control means for outputting a switch control signal according to the detection result outputted from said speech judgment means; and
switch means for outputting speech signals discriminating them by respective speakers according to the switch control signal outputted from said switch control means in response to the outputted speech signal.

5,617,506
METHOD FOR COMMUNICATING A VALUE OVER A TRANSMISSION MEDIUM AND FOR DECODING SAME
Phil L. Burk, San Rafael; Robert J. Mical, Redwood City; Steven E. Hayes, Half Moon Bay, and David C. Platt, Mountain View, all of Calif., assignors to The 3DO Company, Redwood City, Calif.
Filed Jun. 29, 1994, Ser. No. 267,978
Int. Cl.[6] G10L ***3/02;9/00***
U.S. Cl. 395—2.1 **18 Claims**

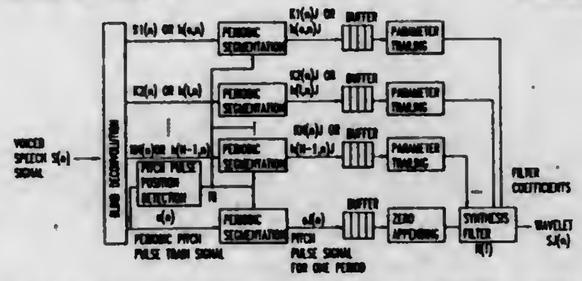
1. A method for communicating a plurality of starting values s_i



over a transmission medium, i=0, 1, 2, . . . , all of said starting values s_i being in a starting value space, comprising the steps of, for each of at least two i'th starting values s_i:

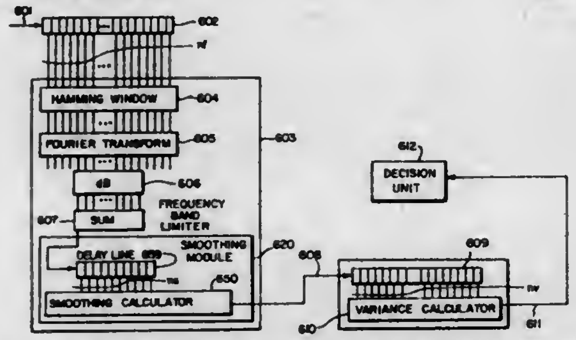
calculating a transmission value y_i given by $y_i=f_i(s_i)$, where the value $f_i(s_i)$ is selected depending on a selection decision from a predefined group of candidate values including $e_1(s_i)$ and $d_1(s_i-f^{-1}{}_{i-1}(f_{i-1}(s_{i-1})))$, where the function $e_1(\ )$ is a predefined mapping from said starting value space to a first transmission value space, and where the function $d_1(\ )$ is a predefined mapping from said starting value space to a second transmission value space said first and second transmission value spaces containing discrete values; and
transmitting over said transmission medium said transmission value y_i in conjunction with an indication of whether y_i: (a) is a function of s_i and not of $f^{-1}{}_{i-1}(f_{i-1}(s_{i-1}))$, or (b) is a function of $s_i-f^{-1}{}_{i-1}(f_{i-1}(s_{i-1}))$;
wherein the function $e_1(\ )$ is defined by $e_1(s)=\mathrm{sign}(s)*|s|^{1/n}$, rounded to the nearest discrete value in said first transmission value space, and the function $d_1(\ )$ is defined by $d_1(s)=\mathrm{sign}(s)*|s|^{1/n}$, rounded to the nearest discrete value in said second transmission value space, n being an integer greater than 1.

5,617,507
SPEECH SEGMENT CODING AND PITCH CONTROL METHODS FOR SPEECH SYNTHESIS SYSTEMS
Chong R. Lee, and Yong K. Park, both of Seoul, Rep. of Korea, assignors to Korea Telecommmnication Authority, Seonl, Rep. of Korea
Continuation of Ser. No. 972,283, Nov. 5, 1992, abandoned. This application Jul. 14, 1994, Ser. No. 275,940
Claims priority, application Rep. of Korea, Nov. 6, 1991, 91-19617
Int. Cl.[6] G01L ***1/06;*** **G06F** ***15/00***
U.S. Cl. 395—2.09 **8 Claims**



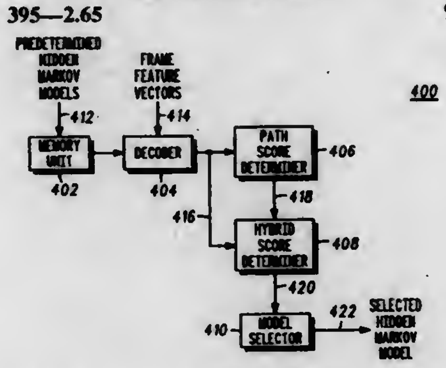
1. A speech coding method for use in speech synthesis, comprising:
obtaining a set of spectral envelope parameters that represents an estimated spectral envelope of a voiced speech signal by using a spectrum estimation technique;
deconvolving said voiced speech signal, with an impulse response that is a time-domain representation of said estimated spectral envelope of said voiced speech signal, into a pitch pulse train signal having a sequence of periodically located pitch pulses;
forming an excitation signal by appending zero-valued samples to each pitch pulse signal of one period such that one pitch pulse is contained in each period;
convolving said excitation signal with said impulse response into wavelets;
obtaining wavelet codes by coding the wavelets of all periods; and
storing in memory wavelet codes and information of corresponding pitch pulse locations of all wavelets, for use in speech synthesis.

5,617,508
SPEECH DETECTION DEVICE FOR THE DETECTION OF SPEECH END POINTS BASED ON VARIANCE OF FREQUENCY BAND LIMITED ENERGY
Benjamin K. Reaves, Yamatotakada, Japan, assignor to Panasonic Technologies Inc., Secausus, N.J., and Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Continuation-in-part of Ser. No. 956,614, Oct. 5, 1992. This application Aug. 12, 1993, Ser. No. 105,755
Int. Cl.[6] G10L ***9/00***
U.S. Cl. 395—2.42 **7 Claims**



1. A device for detecting speech in an input signal comprising:
first determining means for determining a plurality of values representative of a plurality of frequency band limited energy within the signal, wherein the signal is sampled at a predetermined sampling rate in a single frequency band over a first plurality of frames, wherein each frame comprises a plurality of samples;
second determining means for receiving the plurality of values from said first determining means, and determining a variance of the frequency band limited energy of the signal in the single frequency band over a second plurality of frames;
third determining means for determining beginning and ending points of speech within the signal using the variance of the frequency band limited energy; and
a signal recording device including:
means for receiving the signal;
means for storing the most recent m seconds of the received signal; and
means for selecting the portion of the stored signal that corresponds to the start and the end points determined by said third determining means.

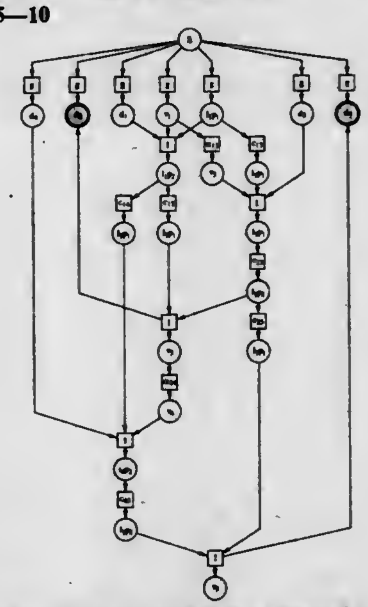
5,617,509
METHOD, APPARATUS, AND RADIO OPTIMIZING HIDDEN MARKOV MODEL SPEECH RECOGNITION
William M. Kushner, Arlington Heights; Edward Srenger, Schaumburg, and Matthew A. Hartman, Bloomington, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Mar. 29, 1995, Ser. No. 413,146
Int. Cl.[6] G10L ***9/00***
U.S. Cl. 395—2.65 **9 Claims**



1. A method for optimizing Hidden Markov Model recognition of an input speech signal corresponding to a plurality of frame feature vectors, the method comprising:

1A) storing, in a memory unit, a plurality of predetermined Hidden Markov Models;
1B) determining, in a decoder for a frame feature vector, a plurality of current maximum likelihood scores each corresponding to a distinct Hidden Markov Model in the plurality of predetermined Hidden Markov Models;
1C) computing, in a decoder for the frame feature vector, a plurality of current path scores each corresponding to the distinct Hidden Markov Model in the plurality of predetermined Hidden Markov Models, wherein each path score quantifies a variation in the maximum likelihood score as a function of time, and for the distinct Hidden Markov Model:
1C1) computing a difference between the current maximum likelihood score and an immediately previous maximum likelihood score;
1C2) adding a square of the difference to a previous path score to provide the current path score; and
1C3) repeating steps 1C1 and 1C2 for each Hidden Markov Model to provide the plurality of current path scores;
1D) computing, in a decoder for the frame feature vector, a plurality of current hybrid scores each corresponding to the distinct Hidden Markov Model in the plurality of predetermined Hidden Markov Models, wherein each hybrid score is a combination of the maximum likelihood score and the path score;
1E) repeating steps 1B through 1D until all frame feature vectors have been processed; and
1F) selecting the Hidden Markov Model with a lowest current hybrid score.

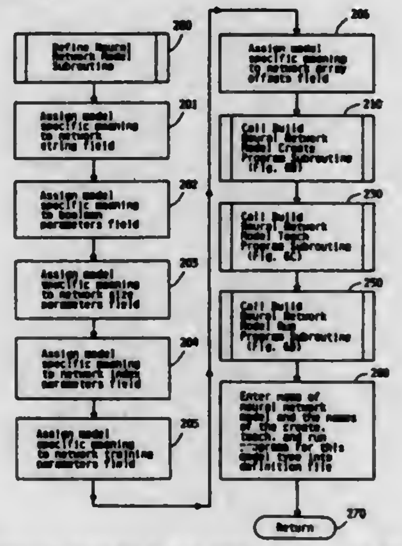
5,617,510
DEPENDENCY GRAPH SOLUTION FOR CONSTRAINT SYSTEMS
Walid T. Keyrouz; Glenn A. Kramer, and Jahir A. Pabon, all of Austin, Tex., assignors to Schlumberger Technology Corporation, Austin, Tex.
Continuation of Ser. No. 53,891, Apr. 27, 1993, abandoned, which is a continuation-in-part of Ser. No. 979,143, Nov. 20, 1992, Pat. No. 5,452,238, which is a continuation-in-part of Ser. No. 365,586, Jun. 13, 1989, Pat. No. 5,253,189. This application Apr. 12, 1995, Ser. No. 420,618
Int. Cl.[6] G06F ***15/20***
U.S. Cl. 395—10 **19 Claims**



1. In a digital computer programmed generally for computer-aided design, a method of generating a solution plan for a geometric constraint system comprising a collection of rigid body geometric entities satisfying a set of constraints, where the set of constraints over-constrain the system, comprising the steps of:

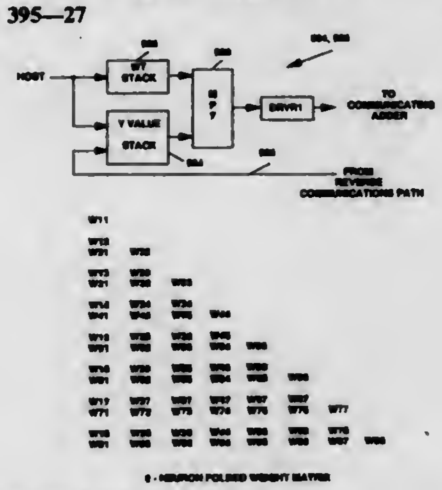
representing the rigid body geometric entities in terms of degrees of freedom;
incrementally satisfying constraints and systematically reducing the degrees of freedom of the system;
adding a constraint to the geometric constraint system reducing the degrees of freedom and resulting in an over-constrained system;
identifying the over-constraining set of constraints by
(i) constructing a dependency graph describing the constrained relationships between entities;
(ii) identifying the constraint which initiated system over-constraint,
(iii) identifying the constraints coupled to the initiating constraint by back tracing through the dependency graph, the set of identified constraints comprising the over-constraining set; and
generating a solution plan by altering one or more constraints from said over-constraining set.

5,617,511
NEURAL NETWORK SHELL FOR APPLICATION PROGRAMS
Joseph P. Bigus, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.
Division of Ser. No. 75,370, Jun. 11, 1993, Pat. No. 5,450,529, which is a division of Ser. No. 849,116, Mar. 10, 1992, Pat. No. 5,222,196, which is a division of Ser. No. 482,450, Feb. 20, 1990, Pat. No. 5,142,665. This application Jun. 2, 1995, Ser. No. 459,858
Int. Cl.⁶ G06F *15/18*
U.S. Cl. 375—26 **6 Claims**



1. A method of defining a first neural network model for use by a neural network having an input and an output for a result, comprising the steps of:
accessing a neural network data structure, wherein the neural network data structure defines a structure and organization of a plurality of data arrays, wherein the plurality of data arrays have data types and an order within the neural network data structure, and wherein the structure and organization of the neural network data structure is common and generic to all of a plurality of defined neural network models; and
building a default neural network data structure unique to said first neural network model, said building step further comprising the step of:
entering a plurality of data values unique to the first neural network model into the neural network data structure.

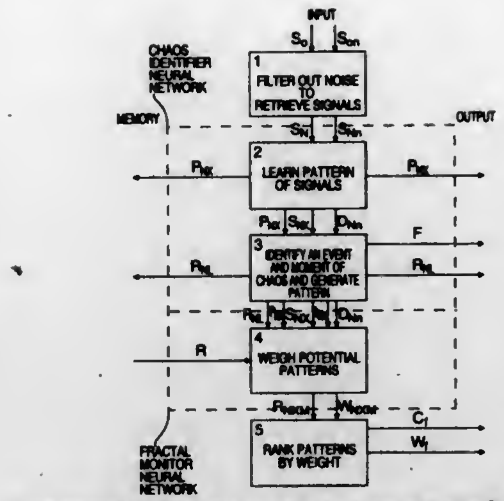
5,617,512
TRIANGULAR SCALABLE NEURAL ARRAY PROCESSOR
Gerald G. Pechanek, Endwell, and Stamatis Vassiliadis, Vestal, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 231,853, Apr. 22, 1994, Pat. No. 5,509,106, which is a continuation of Ser. No. 682,786, Apr. 8, 1991, abandoned, which is a continuation-in-part of Ser. No. 526,866, May 22, 1990, Pat. No. 5,065,339. This application Jun. 2, 1995, Ser. No. 459,191
Int. Cl.⁶ G06F *15/18*
U.S. Cl. 395—27 **1 Claim**



1. A computing structure comprising:
a plurality of processing units arranged in a folded array structure having orthogonal sets of neurons, the plurality of processing units including a number of communicating adder trees wherein each communicating adder tree has a communication path for communicating in a reverse direction relative to summation; and
connection means for connecting into a plurality of general processing cells symmetric pairs of the processing units such that each processing unit having a weight storage unit designated as W_{ij} is connected to a processing unit having a weight storage unit designated as W_{ji} where j is not equal to j, each of the general processing cells sharing communication paths of the symmetric pairs of the processing units that make up each of the general processing cells so that the number of communicating adder trees is reduced.

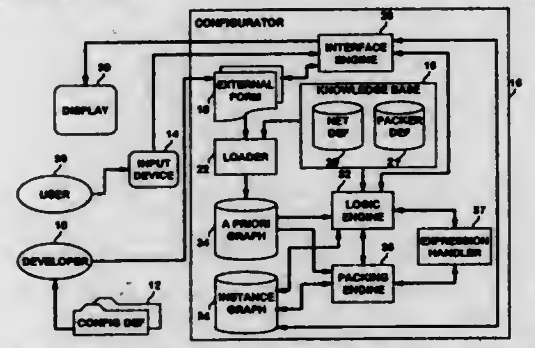
5,617,513
METHOD FOR ANALYZING ACTIVITY IN A SIGNAL
Bonnie S. Schnitta, 29 Gann Rd., East Hampton, N.Y. 11927
Division of Ser. No. 847,776, Mar. 6, 1992, Pat. No. 5,402,520. This application Jan. 4, 1995, Ser. No. 368,686
Int. Cl.⁶ G06F *17/00*
U.S. Cl. 395—50 **35 Claims**

1. A method for determining if activity in a signal is market activity comprising the steps of:
receiving an unfiltered signal at a noise filter unit;
passing the unfiltered signal through a non-adaptive noise filter to generate a filtered signal;
passing the filtered signal through an adaptive pattern recognition unit;
at the adaptive pattern recognition unit, predicting a first pattern that is a function of the filtered signal;
determining if there is a first deviation in the filtered signal by comparing the filtered signal with the predicted first pattern;
passing the unfiltered signal through the adaptive pattern recognition unit;
at the adaptive pattern recognition unit, predicting a second pattern that is a function of the unfiltered signal;



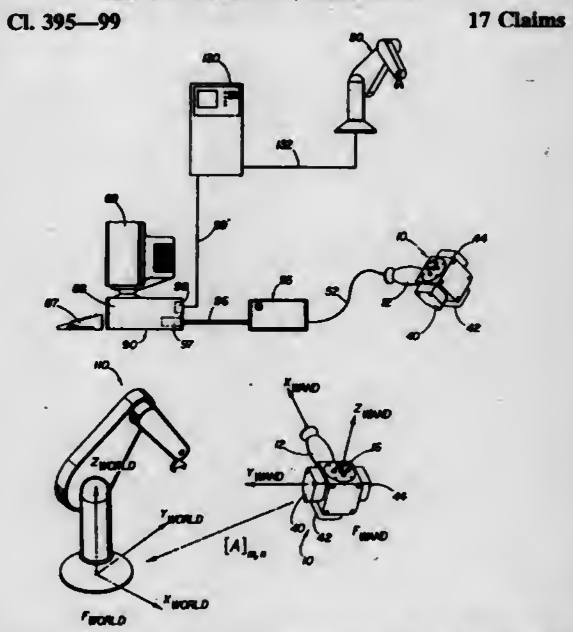
determining if there is a second deviation in the unfiltered signal by comparing the unfiltered signal with the predicted second pattern; and
if there exists a second deviation in the unfiltered signal and no first deviation in the filtered signal, outputting an indication of market activity.

5,617,514
GENERALIZED CONFIGURATOR USING MULTIPLE INTERACTING PACKERS AND DECLARATIVELY DEFINED CONSTRAINT EXPRESSIONS
Nigel I. Dolby, Ham Lake; Timothy E. Nagle, Bloomington, and Thomas R. Goessling, Burnsville, all of Minn., assignors to Unisys Corporation, Blue Bell, Pa.
Filed Jul. 13, 1994, Ser. No. 275,194
Int. Cl.⁶ G06F *17/00*
U.S. Cl. 395—51 **29 Claims**



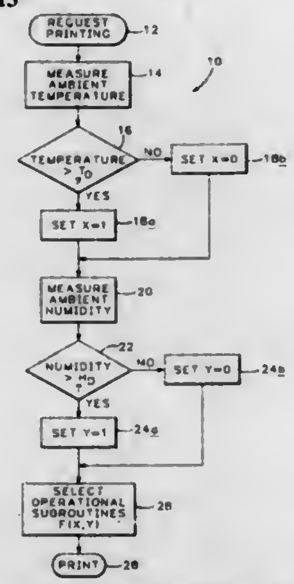
1. A non-rule-based, generalized configurator expert system for generating a a configuration of connected components by solving packing problems through the execution of packing operations, the configurator expert system being customized for a given domain of components by a configurator developer, and operated by a configurator user to generate a configuration solution based on user requests, predetermined component requirements, and connection constraints specified by component definitions, the configurator expert system having a first spreading activation bi-partite graph for storing the component definitions and constraint expressions declaratively specified by the configurator developer, a second spreading activation bi-partite graph for storing instances of components defined in the first spreading activation bi-partite graph interactively selected by the configurator user, and a processing module that can accept requests from the configurator user to configure selected components, match the requests to the component definitions stored in the first spreading activation bi-partite graph, create and connect the instances of the selected components in the second spreading activation bi-partite graph if creation and connection are valid based on the component definitions and prior configurator user requests, and report the configuration resulting from the requests to the configurator user, the non-ruled-based, generalized configurator expert system comprising:
packing definition means coupled to the processing module for storing and retrieving at least one piece of knowledge relating to the type of packing operations that may be attached to component definitions in the first spreading activation bi-partite graph; and
packing processing means coupled to the processing module, the first spreading activation bi-partite graph, and the second spreading activation bi-partite graph for concurrently performing multiple packing operations to define the connection of selected components to other selected components in the second spreading activation bi-partite graph according to criteria declaratively specified by the configurator developer in constraint expressions stored in the first spreading activation bi-partite graph.

5,617,515
METHOD AND APPARATUS FOR CONTROLLING AND PROGRAMMING A ROBOT OR OTHER MOVEABLE OBJECT
Brice K. MacLaren, Huntsville; Randall L. Johnson, Madison; Judson R. Griffin, III, and James R. Meehan, both of Huntsville, all of Ala., assignors to Dynetics, Inc., Huntsville, Ala.
Filed Jul. 11, 1994, Ser. No. 273,480
Int. Cl.⁶ G06K *7/10;* **G01B** *11/24*
U.S. Cl. 395—99 **17 Claims**



1. A system for controlling a movement of a three-dimensional workpiece in space, comprising:
(a) freely moveable means for detecting motion in a plurality of directions and for generating signals representative of said motion;
(b) means, coupled to said means for detecting motion, for acquiring said signals representative of said motion and for generating sampled signals therefrom;
(c) computing means coupled to said means for acquiring said signal for receiving and processing said sampled signals and for translating said sampled signals into command signals for moving the workpiece, and;
(d) means responsive to said command signals for effecting the movement of the workpiece in response to said command signals.

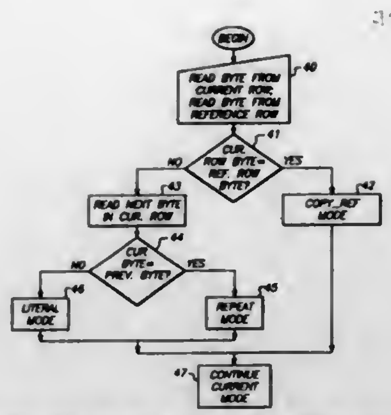
5,617,516
METHOD AND APPARATUS FOR OPTIMIZING PRINTER OPERATION
Earl L. Barton, Corvallis, Oreg., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Continuation of Ser. No. 200,793, Feb. 23, 1994, abandoned. This application Sep. 29, 1995, Ser. No. 537,168
Int. Cl.[6] G01D *15/18*
U.S. Cl. 395—113 **2 Claims**



1. A method of optimizing an addressable printer operation, the printer being directed by a personal computer or file server, the method comprising the steps of:
upon receiving a request to commence a printing event, measuring a first value of temperature ambient to the printer;
determining whether said first value of ambient temperature is greater than or less than a predetermined second value of temperature;
setting a first variable to a first state when said first value of ambient temperature is greater than said predetermined second value of temperature and setting said first variable to a second state when said first value of ambient temperature is less than said predetermined second value of temperature;
measuring a first value of humidity ambient to the printer;
determining whether said first value of humidity is greater than or less than a predetermined second value of humidity;
setting a second variable to a third state when said first value of ambient humidity is greater than said predetermined second value of humidity and setting said second variable to a fourth state when said first value of ambient humidity is less than said predetermined second value of humidity;
selecting a printer operational subroutine in accordance with said states set said first and second variable; and
commencing printing with the printer and employing said selected printer operational subroutine for the duration of said printing event.

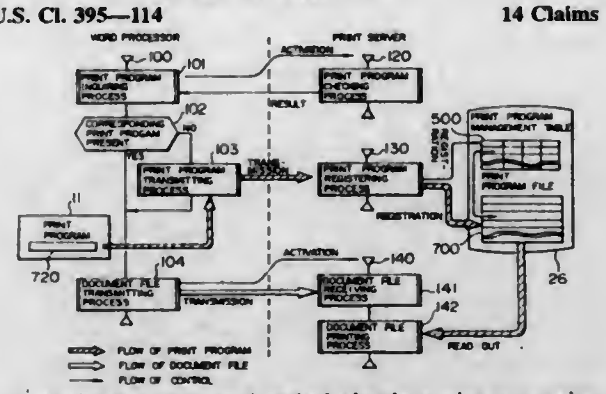
5,617,517
TWO-DIMENSIONAL METHOD AND SYSTEM FOR COMPRESSING BI-LEVEL IMAGES
Shan Chi, Santa Clara, Calif., assignor to Seiko Epson Corporation, Tokyo, Japan
Filed Sep. 20, 1994, Ser. No. 309,018
Int. Cl.[6] G06K *15/00*
U.S. Cl. 395—114 **13 Claims**

1. A computer-based method for compressing bit-mapped data arranged in rows of bytes including a current row and a reference row, wherein each of said bytes in said current row is compared with a corresponding byte in said reference row, said method comprising the steps of:



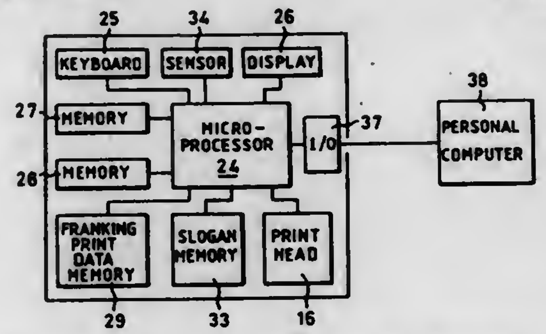
characterizing each of said bytes in said current row as being in a copy mode if said byte is equal to said corresponding byte in said reference row;
characterizing each of said bytes in said current row as being in a repeat mode if said byte does not equal said corresponding byte in said reference row and said byte equals the next byte in said current row;
characterizing each of said bytes in said current row as being in a literal mode if said byte does not equal said corresponding byte in said reference row and said byte does not equal the next byte in said current row;
assigning a variable-length mode code to each transition from one of said modes to another one of said modes; and
representing said current row by one or more of said variable-length mode codes to provide a compressed row of said data.

5,617,518
OUTPUT CONTROL METHOD AND SYSTEM OF SERVERS
Hideki Kuwamoto, Yokohama; Takao Iwatani, Fujisawa; Keiichi Nakane, Yokohama, and Masaki Fujiwara, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Continuation of Ser. No. 791,125, Nov. 13, 1991, abandoned. This application Jun. 6, 1995, Ser. No. 470,007
Claims priority, application Japan, Nov. 13, 1990, 2-306394; Apr. 2, 1991, 3-069688
Int. Cl.[6] G06K *15/00*
U.S. Cl. 395—114 **14 Claims**



1. A print program control method whereby a print server prints print data from a printing request initiated from at least one information processing apparatus on a basis of a print control program, said print server having a printer, a controller for controlling a print output of the printer, and a storing means controlled by the controller for storing therein a print control program to cause said printer to effect a printing operation, said print server and said information processing apparatus being interconnected via a LAN, said method comprising the steps of:
checking, by said at least one information processing apparatus upon initiating a printing request, to see whether or not a predetermined print control program suitable to print a pending print data in a layout desired by said information processing apparatus is currently stored in said storing means for storing a plurality of print control programs in said print server;
transferring said predetermined print control program from said information processing apparatus to said storing means in said print server via the LAN when such a print control program is not stored; and
printing said pending print data by said predetermined print control program stored in said storing means.

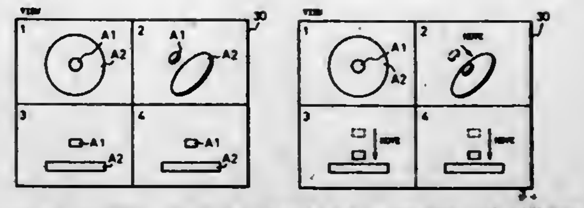
5,617,519
FRANKING MACHINE
Raymond J. Herbert, Leigh-on-Sea, United Kingdom, assignor to Neopost Limited, Essex, United Kingdom
Filed Dec. 20, 1993, Ser. No. 169,360
Claims priority, application United Kingdom, Dec. 23, 1992, 9226811
Int. Cl.[6] G07B *17/00*
U.S. Cl. 395—117 **5 Claims**



1. A franking machine including electronic accounting and control circuits; a digital printing device; slogan sensing means; feed means to feed a mail item past said digital printing device and to feed an input item past said slogan sensing means; franking impression memory means to store franking impression data defining a franking impression to be printed; slogan memory means to store slogan data defining a slogan to be printed; said electronic accounting and control circuits being operative to read out said franking impression data from said franking impression memory means and to read out said slogan data from said slogan memory means to control said digital printing device to print a franking impression and a slogan alongside said franking impression on a mail item fed by said feed means past said digital printing device; said slogan sensing means being operable to sense a new slogan carried by the input item fed by said feed means past said slogan sensing means and to output sense signals defining said sensed slogan; and said electronic accounting and control circuits being operative to store said sense signals in said slogan memory to be utilised as said data defining a slogan to be printed alongside said franking impression.

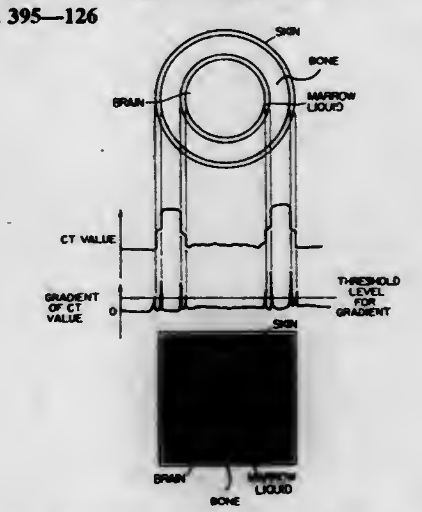
5,617,520
THREE-DIMENSIONAL PATTERN EDITING APPARATUS HAVING MOVING DISTANCE CALCULATOR AND/OR A DRAGGING PATTERN HOLDING UNIT
Yoichi Yamada, and Shigeo Funaki, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan
PCT No. PCT/JP93/00958, § 371 Date Mar. 4, 1994, § 102(e) Date Mar. 4, 1994, PCT Pub. No. WO94/01829, PCT Pub. Date Jan. 20, 1994
PCT Filed Jul. 9, 1993, Ser. No. 204,237
Claims priority, application Japan, Jul. 10, 1992, 4-183560
Int. Cl.[6] G06T *17/40*
U.S. Cl. 395—119 **8 Claims**

1. A three-dimensional pattern editing apparatus in a CAD system, said apparatus comprising:



pattern display means for displaying a plurality of different views, of related three-dimensional patterns having respective, different viewpoints and indicating a common object, on a plurality of respective, divided display areas;
input means for permitting a user to input a request for performing a dragging operation on an object in accordance with selecting a three-dimensional pattern of the object as displayed on a selected, divided display area, and moving the selected three-dimensional pattern;
display pattern moving means for moving the selected, three-dimensional pattern displayed on the selected, divided display area in accordance with the input request;
pattern movement converting means for converting an amount and direction of movement of the selected three-dimensional pattern, as displayed in selected, divided display area, to, and for outputting, a converted amount and direction of movement of each related three-dimensional pattern of the common object for each of the other, respective different viewpoints thereof respectively displayed in the other, respective divided areas, in real time; and
display linking means for moving the related three-dimensional patterns of the common object as displayed on the other, respective divided areas by the converted amount and direction of movement as output by the pattern movement converting means, the dragging operation performed by the user on the selected three-dimensional pattern displayed on the selected, divided area thereby being converted to and executed in real time as converted dragging operations for the related three-dimensional patterns in the respective, divided areas.

5,617,521
THREE-DIMENSIONAL IMAGE SHADING METHOD USING VOLUME RENDERING OF SHADING PIXEL AREA HAVING A SMALL PIXEL VALUE GRADIENT
Yoshihiro Goto, Tokyo, Japan, assignor to Hitachi Medical Corporation, Tokyo, Japan
Filed Sep. 15, 1994, Ser. No. 306,611
Claims priority, application Japan, Oct. 15, 1993, 5-258199
Int. Cl.[6] G06T *15/00*
U.S. Cl. 395—126 **4 Claims**



1. A three-dimensional image shading method using a volume rendering algorithm comprising the steps of:

setting certain upper and lower thresholds for extraction of pixel values and a threshold for a gradient of a pixel value by an operator;
setting an orthogonal three-dimensional coordinate system of x-axis, y-axis and z-axis so that an x-z plane is made parallel to surfaces of stacked slices of a slice-stacked three-dimensional image by the operator and inputting values of Θ and δ by the operator where Θ is the angle of said surfaces of slices to a perpendicular line drawn from an arbitrarily selected origin of said orthogonal three-dimensional coordinate system on a view plane and δ is the angle of said z-axis to a projection line of said perpendicular line projected on the x-z plane;
modulating an amount of light passing through said pixel by a function of sin Θ, when said pixel value is larger than said upper threshold to determine a first value corresponding to a pixel of said view plane;
subjecting said pixel value to a transparency process to determine a second value corresponding to a pixel of said view plane, when said pixel value is equal to or smaller than said lower threshold, or when said pixel value is larger than said lower threshold and equal to or smaller than said upper threshold and a gradient of said pixel value is larger than said threshold for the gradient;
modulating an amount of light passing through said pixel by a value of the gradient of said pixel value to determine a third value corresponding to a pixel of said view plane, when said pixel value is equal to or smaller than said lower threshold and the gradient of said pixel value is equal to or smaller than said threshold for the gradient; and
constructing an image on the basis of said first, second and third values.

5,617,522

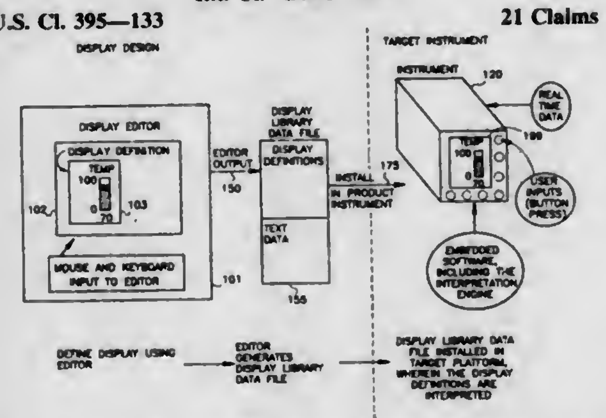
METHODS AND APPARATUS FOR PROVIDING AND/OR CUSTOMIZING DISPLAY SCREENS AND OPERATOR INTERFACES FOR PROCESS CONTROL AND MEASUREMENT INSTRUMENTS

Richard R. Peltier, Norristown, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 3, 1995, Ser. No. 415,324

Int. Cl.⁶ G06T *11/00*

U.S. Cl. 395—133 21 Claims



1. A method for providing display screens and operator interfaces for process control and measurement instruments, comprising the steps of:
(a) graphically defining and generating a Display Library, utilizing a graphical display editor, wherein said Display Library is suitable for use by process control and process measurement instruments not capable of executing said graphical display editor;
(b) providing said Display Library to an instrument; and
(c) interpreting the contents of said Display Library provided to said instrument, utilizing an interpretation engine resident in said instrument, wherein said interpretation engine runs during the operation of said instrument in order to render a given display.

5,617,523

WAVEFORM DISPLAY APPARATUS FOR EASILY REALIZING HIGH-DEFINITION WAVEFORM OBSERVATION

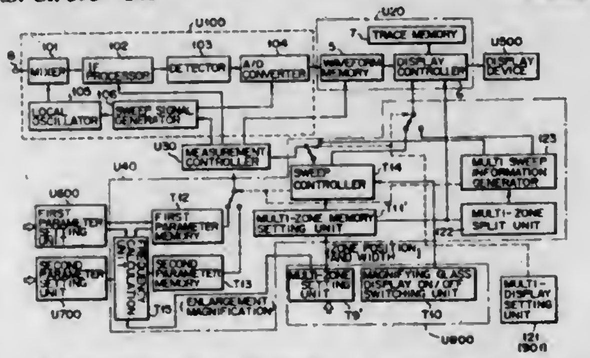
Yoshifumi Imazu, Isehara, Japan, and Takahiro Wada, Atsugi, both of Japan, assignors to Anritsu Corporation, Tokyo, Japan

Division of Ser. No. 776,259, Nov. 27, 1991, Pat. No. 5,434,954. This application Feb. 8, 1995, Ser. No. 385,556

Claims priority, application Japan, Nov. 30, 1990, 2-337347

Int. Cl.⁶ G06T *3/00*

U.S. Cl. 395—140 2 Claims



1. A waveform display apparatus of frequency sweep type, comprising:
a measurement unit for measuring a signal to be measured by sweeping a frequency under a predetermined measurement frequency condition so as to obtain waveform data corresponding to the frequency;
a display device for displaying the waveform data obtained by said measurement unit as developed on a frequency axis thereof;
first parameter setting means for setting a frequency as a base;
a frequency selection unit for obtaining a plurality of frequencies having a predetermined relationship according to the frequency as the base, and selecting and outputting a plurality of frequency ranges including these frequencies, respectively;
a measurement control unit for causing said measurement unit to sweep the plurality of frequency ranges at a resolution higher than a measurement frequency resolution used when a measurement is continuously performed from a lowest lower limit to a highest upper limit using the frequency included in one of the plurality of frequency ranges; and
a display data processing unit for receiving the predetermined measurement frequency condition, and causing said display device to display waveform data in the plurality of frequency ranges measured by said measurement unit.

5,617,524

RUN SLICE LINE DRAW ENGINE WITH SHADING CAPABILITIES

Giang H. Dao, Houston, and John J. Watters, Austin, both of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Filed Jan. 31, 1995, Ser. No. 381,106

Int. Cl.⁶ G06T *11/00*

U.S. Cl. 395—143 20 Claims

1. A method of applying color information to a first line between a first endpoint of a first color and a second endpoint of a second color, each color composed of one or more color components, comprising the steps of:
generating information for defining locations of points for the first line;

generating information for defining locations of points for one or more shading lines, wherein each of said one or more shading lines corresponds to one of said one or more color components of the first line and has endpoint coordinates defined responsive to the length of the first line and the values at the endpoints of the first line of said corresponding color component; and
mapping points of the first line to respective points of said one or more shading lines to determine component color values for the points of the first line.

5,617,525

IMAGE OUTPUTTING ADAPTABLE TO VARIOUS FONTS

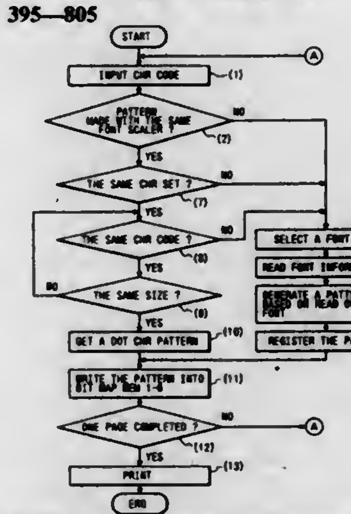
Akio Sugaya, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 30, 1993, Ser. No. 39,821

Claims priority, application Japan, Mar. 30, 1992, 4-074596; Oct. 30, 1992, 4-315881

Int. Cl.⁶ G06F *3/00*

U.S. Cl. 395—805 14 Claims



1. An output control apparatus comprising:
font data memory means for storing first font data from which a character pattern is generated by a first font scaler and second font data from which a character pattern is generated by a second font scaler;
character pattern memory means for storing the character pattern generated by the first or second font scaler with information showing by which one of the first and second font scalers the character pattern was generated;
determining means for determining whether said character pattern memory means stores a character pattern generated by the first font scaler from the first font data corresponding to a pattern to be output; and
output means for, in response to a determination by said determining means that said character pattern memory means stores a character pattern generated by the first font scaler from the first font data corresponding to the pattern to be output, outputting data based on the stored character pattern and, in response to a determination by said determining means that said character pattern memory means does not store the pattern, for generating a character pattern by means of the first font scaler from the first font data corresponding to the pattern to be output and outputting data based on the generated character pattern.

5,617,526

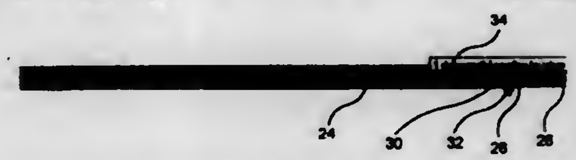
OPERATING SYSTEM PROVIDED NOTIFICATION AREA FOR DISPLAYING VISUAL NOTIFICATIONS FROM APPLICATION PROGRAMS

Daniel P. Oran, Cambridge, Mass.; Teresa A. Serrador, Kirkland, Wash.; Joseph D. Belfiore, and George H. Pitt, III, both of Redmond, Wash., assignors to Microsoft Corporation, Redmond, Wash.

Filed Dec. 13, 1994, Ser. No. 355,398

Int. Cl.⁶ G06F *3/00*

U.S. Cl. 395—326 41 Claims



1. In a computer system having an output device and running an operating system having a shell that provides a shell graphical user interface on the output device, a method comprising the steps of:
designating a portion of the shell graphical user interface as a notification area for displaying notifications, each said notification including a graphical object;
running a first application program on the computer system; and
displaying a notification from a second application in the notification area with the shell, without substantially interrupting the running of the first application program.

5,617,527

METHOD FOR ADDING A GRAPHICAL USER INTERFACE TO A COMMAND LINE APPLICATION

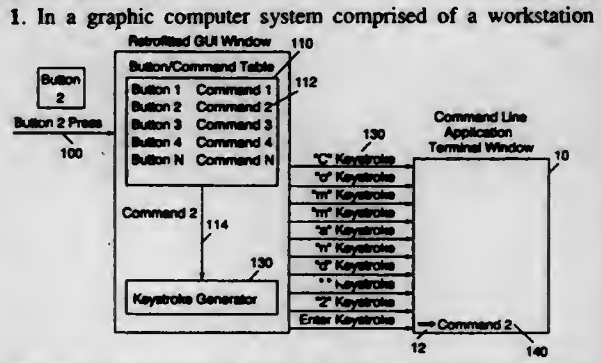
Mark S. Kressin, Niwot; Blaine H. Berger, and Bret P. Smith, both of Longmont, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 33,218, Mar. 18, 1993, abandoned. This application Jan. 17, 1996, Ser. No. 587,568

Int. Cl.⁶ G06F *3/14*

U.S. Cl. 395—326 10 Claims

1. In a graphic computer system comprised of a workstation



with a display, a keyboard having a plurality of keys, a mouse which controls a mouse pointer on said display, a method for providing in a window environment a graphical user interface for

executing a command-line application program, said program having a plurality of commands associated with it and using a command-line interface for receiving said commands, the method comprising the steps of:

(a) creating a table which associates with each of the plurality of commands of said command-line application to a specific graphical user interface button;

(b) initiating execution of the command-line application and a graphical user interface program for communication therebetween;

(c) providing in the display: a first window associated with said command-line application and displaying a command line; and a second window comprised of a display of each of said associated buttons;

(d) on the selection in the second window of a first button, using said table to identify said command associated with said first button;

(e) generating a message of associated characters from said identified command; and

(f) sending said message to said application for execution whereby the buttons and the commands entered on the command line are transparent to the application and wherein the buttons and command line serve as simultaneously available alternative input means in the display for the command-line application.

5,617,528

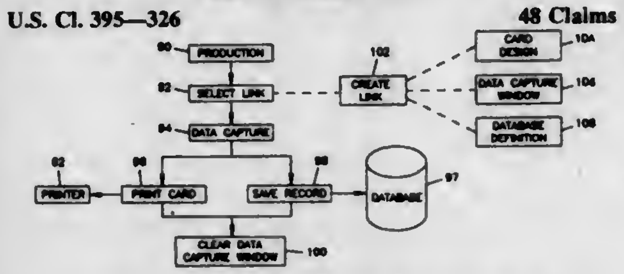
METHOD AND APPARATUS FOR INTERACTIVELY CREATING A CARD WHICH INCLUDES VIDEO AND CARDHOLDER INFORMATION

Jonathan H. Stechmann, Minneapolis; Joel T. Powell, Delano, and Loren Nyflot, Richfield, all of Minn., assignors to DataCard Corporation, Minneapolis, Minn.

Continuation-in-part of Ser. No. 192,042, Feb. 4, 1994, abandoned. This application Feb. 6, 1995, Ser. No. 384,401

Int. Cl.⁶ G06K *15/00*

U.S. Cl. 395—326 **48 Claims**



1. A method of creating a card, comprising the steps of:

(a) interactively creating a predetermined card design by displaying the predetermined card design and modifying specific positions on a planar surface of a card for each layout frame of a video picture, cardholder information fields, and static fields;

(b) capturing cardholder information corresponding to the cardholder information fields;

(c) previewing an image of a card having the predetermined card design including the video picture, cardholder information, and static fields within the predetermined card design substantially as can be printed; and

(d) printing the card.

5,617,529

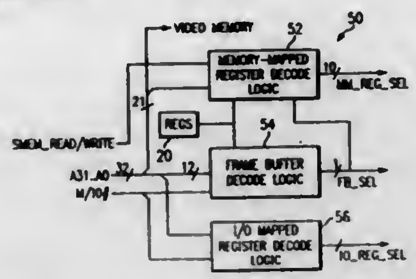
MEMORY-MAPPED VIDEO CONTROL REGISTERS

Giang H. Dao, Houston, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

Continuation of Ser. No. 361,886, Dec. 22, 1994, which is a continuation of Ser. No. 62,294, May 14, 1993, abandoned. This application Nov. 20, 1995, Ser. No. 560,892

Int. Cl.⁶ G06F *12/06*

U.S. Cl. 395—515 **9 Claims**



1. A method of configuring a video controller comprising the steps of:

defining a first range of system memory address space in high system memory for a frame buffer for storing digital video information;

defining a portion of said first range of system memory address space in high system memory for accessing one or more registers for storing video control information;

further defining a portion of low system memory address space for accessing said one or more registers for storing video control information;

providing an I/O address;

addressing said registers for storing video control information within an address range of I/O address space in response to said I/O address;

providing a memory address; and

in response to said memory address, selectively addressing said registers for storing video control information either within said portion of said first range of system memory address space in high system memory or within said defined portion of low system memory address space.

5,617,530

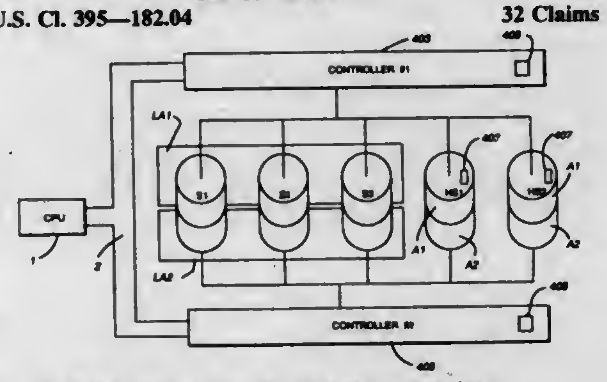
STORAGE DEVICE ARRAY ARCHITECTURE WITH COPYBACK CACHE

David C. Stallmo, and William A. Brant, both of Boulder, Colo., assignors to EMC Corporation, Hopkinton, Mass.

Continuation of Ser. No. 112,791, Aug. 26, 1993, Pat. No. 5,526,482, which is a continuation-in-part of Ser. No. 638,167, Jan. 4, 1991, Pat. No. 5,274,794. This application Dec. 27, 1995, Ser. No. 579,545

Int. Cl.⁶ G06F *11/10*

U.S. Cl. 395—182.04 **32 Claims**



1. A fault-tolerant storage device array, comprising:

(a) failure independent storage units for storing information, including data blocks and associated error-correction blocks;

(b) a copyback cache comprising at least one copyback storage unit for temporarily storing data blocks; and

(c) a storage unit controller, coupled to said failure independent storage units and to said copyback cache storage unit, and having a controller buffer providing a logical area corresponding to an area in said copyback cache, said storage unit controller for:

(i) receiving data blocks into the controller buffer as pending data blocks;

(ii) writing each pending data block into said logical area of said copyback cache; and

(iii) during an idle time of at least one of the failure independent storage units:

(1) reading at least one pending data block from the controller buffer;

(2) accessing at least one of the plurality of failure independent storage units and reading information corresponding to at least one read pending data block;

(3) generating an associated error-correction block from the read information and at least one read pending data block; and

(4) writing at least one such read pending data block and said associated error-correction block to at least one idle storage unit.

5,617,531

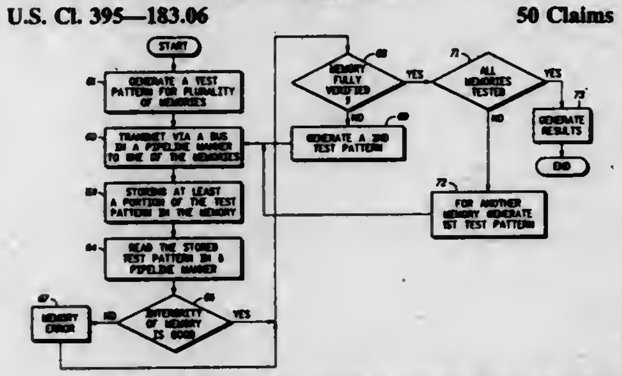
DATA PROCESSOR HAVING A BUILT-IN INTERNAL SELF TEST CONTROLLER FOR TESTING A PLURALITY OF MEMORIES INTERNAL TO THE DATA PROCESSOR

Alfred L. Crouch; Matthew D. Pressly, both of Austin; James G. Gay, Pflugerville; Clark G. Shepard, and Pamela S. Laakso, both of Austin, all of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 144,369, Nov. 2, 1993, abandoned. This application Jul. 10, 1995, Ser. No. 500,271

Int. Cl.⁶ G06F *11/08*

U.S. Cl. 395—183.06 **50 Claims**



1. A method for internally testing a plurality of embedded memories of a data processor, wherein the data processor is formed on a single integrated circuit and at least two of the plurality of embedded memories are different in both physical placement and number of memory, locations contained therein, the plurality of embedded memories residing within the single integrated circuit, the method comprising the steps of:

(a) generating, by an internal test controller of the data processor, a test pattern for testing the plurality of embedded memories, the test pattern having a plurality of bits;

(b) transmitting the plurality of bits of the test pattern in a parallel manner via at least one bus of the data processor to one embedded memory in the plurality of embedded memories, the at least one bus being internal to the single integrated circuit and having no direct connection to an environment external to the integrated circuit, the at least one bus being time multiplexed to be a functional bus that is used by the data processor to communicate information in a normal mode of operation and being a test bus that is used to transmit the plurality of bits of the test pattern in a test mode of operation;

(c) storing at least a portion of the test pattern within predetermined cells of the one embedded memory;

(d) reading, by the internal test controller, the at least a portion of the test pattern from the predetermined cells of the one embedded memory;

(e) verifying, by the internal test controller via the steps of reading and storing, that the one embedded memory is functioning properly, the verifying being performed by storing data in a verification storage element wherein the verification storage element has an input and an output wherein a feedback path is coupled between the input of the verification storage element and the output of the verification storage element so that the output of the verification storage element affects the input of the verification storage element; and

changing the test pattern to a new test pattern and repeating steps (b) through (f) until no new test patterns are available.

5,617,532

INFORMATION PROCESSING APPARATUS AND DATA BACK-UP/RESTORE SYSTEM FOR THE INFORMATION PROCESSING APPARATUS

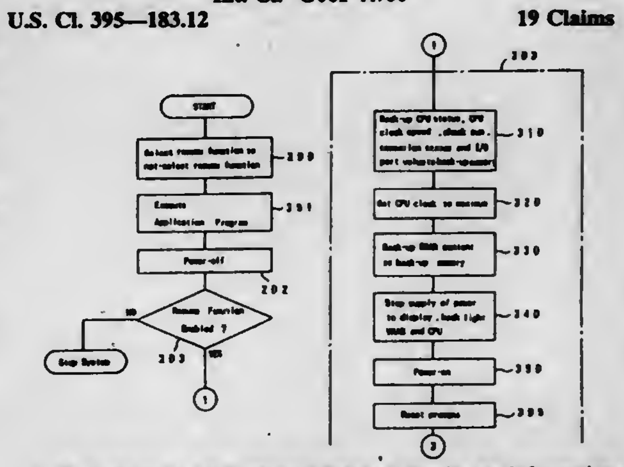
Yuichi Ushiyama, Shiojiri, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 242,142, May 13, 1994, abandoned, which is a continuation of Ser. No. 779,027, Oct. 18, 1991, abandoned. This application Jun. 6, 1995, Ser. No. 466,023

Claims priority, application Japan, Oct. 18, 1990, 2-279804; Nov. 30, 1990, 2-335730

Int. Cl.⁶ G06F *11/00*

U.S. Cl. 395—183.12 **19 Claims**



2. A method of backing-up/restoring data in an information processing apparatus having a first memory for storing first data, a second memory for storing second data, a back-up memory for backing up a status of said first data and a status of said second data, and control means for controlling said first memory, said second memory and said back-up memory through a bus line, said method comprising the steps of:

(a) making a power-off status configuration data in said second data in accordance with a predetermined logical operation at the time of power-off;

(b) backing up said power-off status configuration data and said first data at the time of power-off in said back-up memory;

(b-1) changing a refresh signal of said back-up memory to a frequency for keeping a data of said back-up memory;

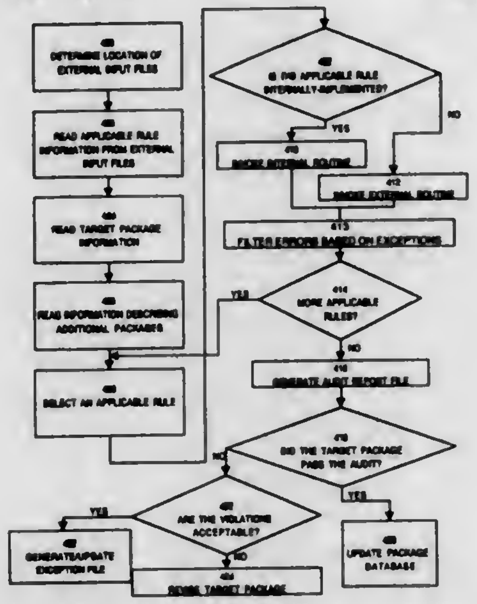
(c) making a power-on status configuration data in said second data in accordance with the predetermined logical operation at the time of power-on; and

(d) comparing said power-off status configuration data with said power-on status configuration data to directly determine, at the maximum clock signal frequency of said apparatus, whether the second data has changed,

(e) reporting to an operator of the apparatus an indication of the completion of the restoration which takes place of the data when the second data is not changed in view of the comparison resulting from step (d), and the apparatus becomes operable after the completion of step (c), and

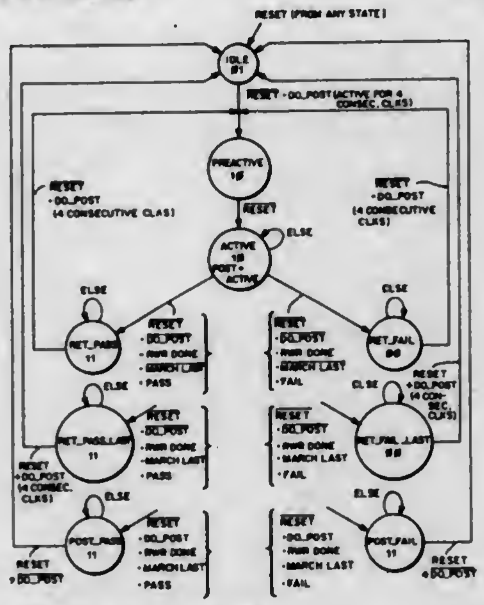
(f) changing a frequency of said clock signal to a frequency of an operational condition when the second data is not changed in view of the comparison resulting from step (d).

5,617,533
SYSTEM AND METHOD FOR DETERMINING WHETHER A SOFTWARE PACKAGE CONFORMS TO PACKAGING RULES AND REQUIREMENTS
Grace-Ann C. Wu, Sunnyvale; Mark B. McCall, San Carlos; Ella Raney, Los Altos, and Overcomer Wu, San Jose, all of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.
Filed Oct. 13, 1994, Ser. No. 322,604
Int. Cl.⁶ G06F *11/00; 11/30*
U.S. Cl. 395—183.14 **20 Claims**



1. A system for determining whether a target software package conforms to a plurality of packaging rules, the system comprising:
an applicable information retrieval unit for retrieving rule information from at least one external input file, wherein said at least one external input file resides external to the system, wherein said rule information indicates said plurality of packaging rules;
a target package information retrieval unit for retrieving information describing said target software package from at least one target package information file;
a package analyzer operatively coupled to said applicable information retrieval unit and said target package information retrieval unit, wherein the package analyzer determines whether said target software package conforms to said plurality of package rules based on said retrieved plurality of packaging rules and said retrieved information describing said target software package; and
an audit report generation unit operatively coupled to the package analyzer, the audit report generation unit generating data indicative of whether said target software package conforms to said plurality of packaging rules.

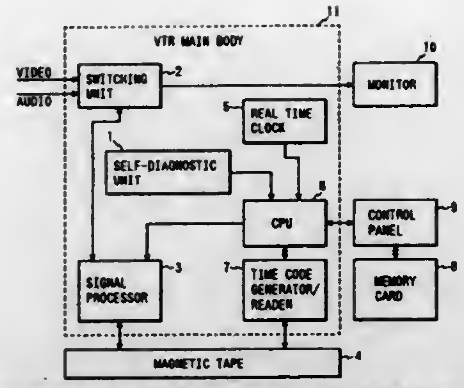
5,617,534
INTERFACE PROTOCOL FOR TESTING OF A CACHE MEMORY
Mark J. Balmer, Tigard, and Mark R. Waggoner, Hillsboro, both of Oreg., assignors to Intel Corporation, Santa Clara, Calif.
Continuation of Ser. No. 198,132, Feb. 16, 1994, abandoned. This application Jan. 11, 1996, Ser. No. 582,380
Int. Cl.⁶ G06F *11/00*
U.S. Cl. 395—183.18 **32 Claims**



1. A computer system comprising:
a microprocessor; and
an external cache memory coupled to said microprocessor, said cache memory including a memory array and an apparatus for initiating a routine to test said memory array in response to a signal asserted by said microprocessor, said apparatus generating a multi-bit status signal at an output coupled to an input of said microprocessor, said multi-bit status signal communicating a current status of said test routine, said current status including IDLE, ACTIVE, PASS and FAIL states of said test routine, said multi-bit status signal transitioning from said IDLE state to said ACTIVE state in response to said signal from said microprocessor, said ACTIVE state indicating a processing of said test routine, upon a completion of said test routine said ACTIVE state transitioning to said PASS/FAIL state, said PASS/FAIL state indicating an operational integrity of said cache memory, a failure to communicate said ACTIVE state indicates either an error in an interface between said cache memory and said microprocessor or a failure to initiate said test routine.

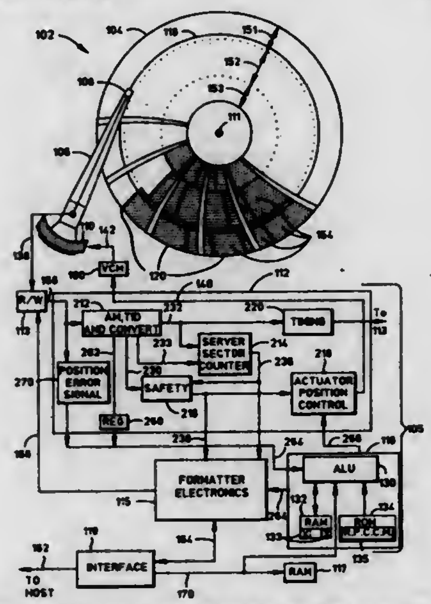
5,617,535
RECORDING AND PLAYBACKK APPARATUS
Toshiro Aizawa, Ebina; Shigemitsu Higuchi, Fujisawa, and Hiromasa Fujii, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Nov. 19, 1992, Ser. No. 978,729
Claims priority, application Japan, Mar. 3, 1992, 4-045571
Int. Cl.⁶ G06F *11/00*
U.S. Cl. 395—183.22 **38 Claims**

1. A recording and playback apparatus comprising:
means for recording information on a recording medium in a recording mode and for playing back recorded information from the recording medium in a playback mode;
self-diagnostic means for detecting a trouble occurring during at least one of the recording and playback modes;
means for generating self-diagnostic information relating to the trouble through the self-diagnostic means;



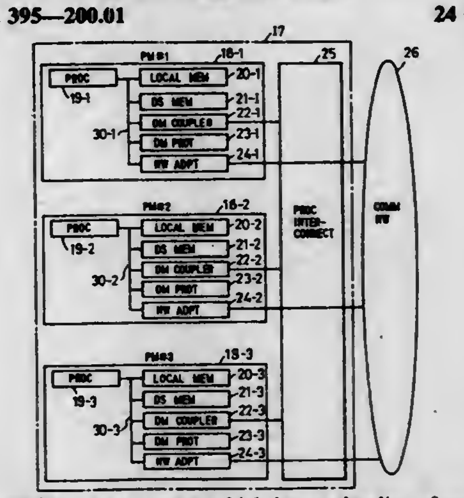
means for generating information indicative of a location of the occurrence of the trouble on the recording medium; and
a memory card associated with the recording and playback apparatus for storing the generated self-diagnostic information with the information indicative of the location of the trouble.

5,617,536
METHOD AND APPARATUS FOR SERVO CONTROL WITH ERROR DETECTION OF GRAY (PENNINGTON) CODE USED FOR SERVO TRACK ID
David A. Freitas, Morgan Hill; Louis J. Serrano, and Mantle Man-Hon Yu, both of San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Mar. 2, 1995, Ser. No. 396,810
Int. Cl.⁶ G06F *11/00*
U.S. Cl. 395—185.01 **32 Claims**



1. A method for controlling head position in a servo disk system, the system having a controller for calculating a head position estimation and also for positioning the head, wherein at least one disk medium having generally concentric data tracks thereon rotates relative to the head, the disk medium containing at least one servo information field written on at least one track, the servo information field containing head locating information, wherein the head locating information includes a sector address marker, a position error signal (PES) data field, and a Pennington coded (PCODE) data field identifying a particular track, the method comprising the steps of:
reading a servo information field of a track on a disk medium that the head relatively moves over thereby obtaining a PCODE data field for that track;
dividing the PCODE data field in the servo information field into a first part and a second part;
placing the first part of the PCODE data field in a first storage register REG.1;
placing the second part of the PCODE data field in a second storage register REG.2;
inverting the contents of REG.2;
comparing the contents of REG. 1 with the inverted contents of REG.2;
determining if the contents of REG. 1 are within a predetermined range of bits of the inverted contents of REG.2; and
sending a control output signal to the controller to position the head, the control output signal being based on the determining step.

5,617,537
MESSAGE PASSING SYSTEM FOR DISTRIBUTED SHARED MEMORY MULTIPROCESSOR SYSTEM AND MESSAGE PASSING METHOD USING THE SAME
Shigeki Yamada, Tokorozawa; Katsumi Maruyama, Kokubunji; Minoru Kubota, Tokyo, and Satoshi Tanaka, Fuchu, all of Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan
Filed Oct. 3, 1994, Ser. No. 317,647
Claims priority, application Japan, Oct. 5, 1993, 5-248973; Aug. 26, 1994, 6-202071
Int. Cl.⁶ G06F *13/00; 15/16*
U.S. Cl. 395—200.01 **24 Claims**



1. A multiprocessor system which has a plurality of processor modules which are interconnected via a channel for communication and each having unique identifying information and being capable of executing an application object, each one of said plurality of processor modules comprising:
a distributed shared memory which has addresses common to all of said processor modules and includes a plurality of communication areas for sending use which are dedicatedly assigned to respective ones of all possible combinations of one-to-one communication between said one of the plurality of processor modules at a sender's side and each of said plurality of processor modules at a receiver's side and a plurality of communication areas for receiving use which are dedicatedly assigned to respective ones of all possible combinations of point-to-point communication between said one of the plurality of processor modules at a receiver's side and each of said processor modules at a sender's side, each of said communications areas for sending use and for receiving use having message buffers each for writing therein a message to be transferred, each pair of sender's side and receiver's side processor modules defining point-to-point communication being assigned shared addresses of a dedicated communication area, by which said shared addresses are associated with said identifying information of said sender's side and receiver's side processor modules forming said each pair;
message buffer management means which responds to a request by said application object for writing a message into one of said communication areas corresponding to one of said pro-

cessor modules designated as a receiver's side processor module to acquire a vacant one of said message buffers in said communication area at said sender's side corresponding to said receiver's side processor module; and

distributed shared memory control means which, as said application object writes said message into said acquired vacant message buffer in said sender's side communication area corresponding to said receiver's side processor module, sends the address of said acquired message buffer and said message to said receiver's side processor module specified by said application object to write said message into a receiver's side message buffer of the same address shared with said acquired message buffer.

5,617,538

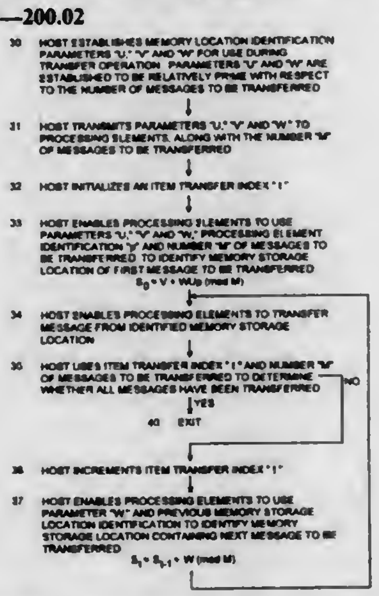
MESSAGE TRANSFER SYSTEM AND METHOD FOR PARALLEL COMPUTER WITH MESSAGE TRANSFERS BEING SCHEDULED BY SKEW AND ROLL FUNCTIONS TO AVOID BOTTLENECKS

Steven K. Heller, Derry, N.H., assignor to TM Patents, L.P., Wilmington, Del.

Continuation of Ser. No. 724,652, Jul. 2, 1991, abandoned. This application May 26, 1994, Ser. No. 249,653

Int. Cl.⁶ G06F *13/00*

U.S. Cl. 395—200.02 **21 Claims**



1. A computer system comprising a plurality of processing elements interconnected by a communications network, the communications network having a series of network addresses each associated with one of said processing elements,

A. the communications network transferring messages transmitted by the processing elements in accordance with an address portion associated with each message, each address portion identifying a network address, the communications network transferring each message to one of said processing elements whose network address is identified by the message's address portion;

B. said processing elements during a message transfer operation, generating a series of messages and transmitting them over the communications network, each of said processing elements:

i. transmitting a first message whose address portion contains a network address which is a mathematical function of a skew parameter value and the processing element's network address, and

ii. after transmitting the first message, transmitting successive messages having address portions containing successive network addresses following the first message's network address in the series,

such that successive messages are associated with respective address portions which enable the communications network to transfer the messages to processing elements which have successive network addresses.

5,617,539

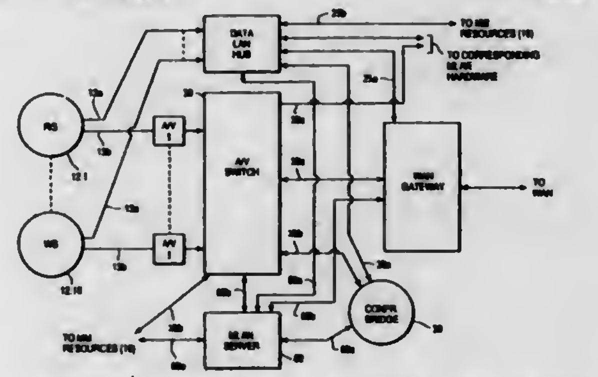
MULTIMEDIA COLLABORATION SYSTEM WITH SEPARATE DATA NETWORK AND A/V NETWORK CONTROLLED BY INFORMATION TRANSMITTING ON THE DATA NETWORK

Lester F. Ludwig, Foster City; J. Chris Lauwers, Menlo Park; Keith A. Lantz, Los Altos; Gerald J. Burnett, Atherton, all of Calif., and Emmett R. Burns, Incline Village, Nev., assignors to Vicor, Inc., Palo Alto, Calif.

Division of Ser. No. 131,523, Oct. 1, 1993. This application Jun. 7, 1996, Ser. No. 660,460

Int. Cl.⁶ H04L *12/28;12/46;* **H04N** *7/15*

U.S. Cl. 395—200.02 **17 Claims**



1. A teleconferencing system for conducting a teleconference among a plurality of participants comprising:

(a) a plurality of workstations each having

a monitor for displaying visual images, and

AV capture and reproduction capabilities for capturing and reproducing video images and spoken audio of the participants;

(b) a first network providing a data path along which data can be shared among a plurality of the workstations;

(c) a data conference manager for managing a data conference, during which the shared data is displayed on the workstation monitors of a plurality of the participants;

(d) a second network providing an AV path, logically separate from the data path, along which AV signals representing video images and spoken audio of the participants are carried between the workstations to define a videoconference;

(e) an AV conference manager; and

(f) a first software layer, at each workstation, configured to communicate with the AV conference manager over the first network to co-operate with, and thereby enable, the AV conference manager to control the reproduction of both the video image and spoken audio of one or more of the participants at the workstation of another of the participants by utilizing a network operating system and a protocol of the first network.

5,617,540

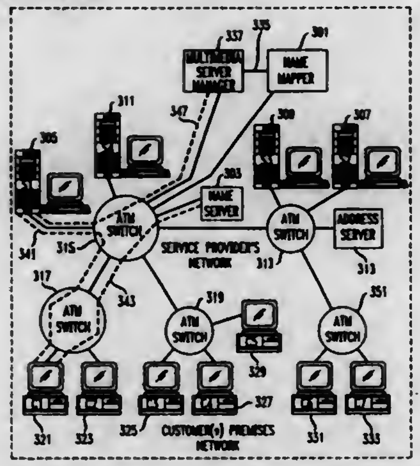
SYSTEM FOR BINDING HOST NAME OF SERVERS AND ADDRESS OF AVAILABLE SERVER IN CACHE WITHIN CLIENT AND FOR CLEARING CACHE PRIOR TO CLIENT ESTABLISHES CONNECTION

Seyhan Civanlar, Middletown Township, Monmouth County, and Vikram R. Saksena, Freehold, both of N.J., assignors to AT&T, Middletown, N.J.

Filed Jul. 31, 1995, Ser. No. 509,307

Int. Cl.⁶ G06F *13/00*

U.S. Cl. 395—200.11 **4 Claims**



1. A client capable of requesting a multimedia service from a multimedia server connected on a system having a plurality of multimedia servers that can provide the service, said client being characterized by:

means for storing a predetermined, fixed virtual host name corresponding to said plurality of multimedia servers and identified with said requested multimedia service;

means for transmitting a request for a layer-3 address corresponding to a multimedia server currently available for providing the requested service identified with the virtual host name from among the plurality of multimedia servers that can provide the service, said means for transmitting being actuated every time, and prior to, said client establishes a new layer-3 connection for obtaining the requested multimedia service, and

a cache for storing a binding between the stored virtual host name and a layer-3 address of the corresponding multimedia server currently available for providing the requested service, said cache being cleared prior to when said client establishes said new layer-3 connection, said binding of said new layer-3 connection received in response to said request being stored in said cache.

5,617,541

SYSTEM FOR PACKETIZING DATA ENCODED CORRESPONDING TO PRIORITY LEVELS WHERE RECONSTRUCTED DATA CORRESPONDS TO FRACTIONALIZED PRIORITY LEVEL AND RECEIVED FRACTIONALIZED PACKETS

Andres Albanese; Michael G. Luby; Johannes F. Bloemer, and Jeffrey A. Edmonds, all of Berkeley, Calif., assignors to International Computer Science Institute, Berkeley, Calif.

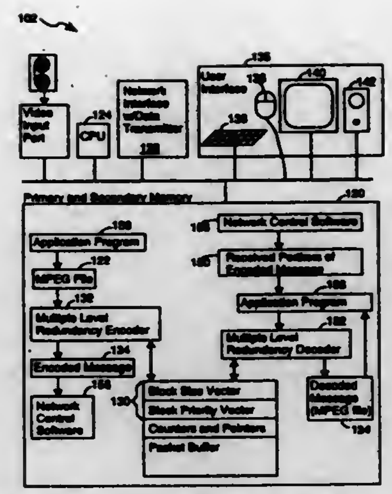
Filed Dec. 21, 1994, Ser. No. 361,802

Int. Cl.⁶ G06F *3/00*

U.S. Cl. 395—200.13 **19 Claims**

1. A data distribution system, comprising:

a multiplicity of data processing devices interconnected by data transmission media;



one of said data processing devices including:

memory for storing a message to be transmitted as a stream of data packets to at least one other of said data processing devices;

priority data, stored in said memory, representing a plurality of assigned priority levels p_i for specified portions of said stored message such that all portions of said stored message have respective assigned priority levels; each priority level p_i indicating that the message portions to which each respective priority level p_i is assigned are to be recoverable whenever at least a p_i fraction of the transmitted data packets are received by a data receiving device;

programmable data processing circuitry;

a data encoding program, executed by said programmable data processing circuitry, for generating an encoded representation of said stored message that includes, for each said portion of said stored message, a level of redundant data L_i corresponding to the priority level p_i assigned to said portion of said stored message, such that said encoded representation of said stored message includes a plurality of different non-zero levels of redundant data for said different portions of said stored message;

a data packetizing program that distributes and stores said encoded representation of said stored message in a plurality of data packets such that, for each defined priority level p_i, every possible subset of said data packets having more than said p_i fraction of said data packets includes sufficient information to reconstruct the portions of said stored message to which said priority level p_i is assigned; and

data transmission apparatus for transmitting said encoded representation of said stored message as a sequence of said data packets representing a single logical message to said at least one other of said data processing devices;

said at least one other of said data processing devices including:

data receiving apparatus for receiving at least a subset of said transmitted data packets;

memory for at least temporarily storing said received data packets;

programmable data processing apparatus; and

a data decoding program, executed by said programmable data processing apparatus, for generating a decoded representation of said received data packets, including decoding different portions of said received data packets in accordance with the different levels of redundant data included in said encoded representation of said stored message.

5,617,542

KEYBOARD TERMINAL WITH RAPID KEYED CHARACTER LOCAL DISPLAY THAT IS ALTERED IF CHARACTER TRANSMITTED TO HOST IS NOT TIMELY ACKNOWLEDGED

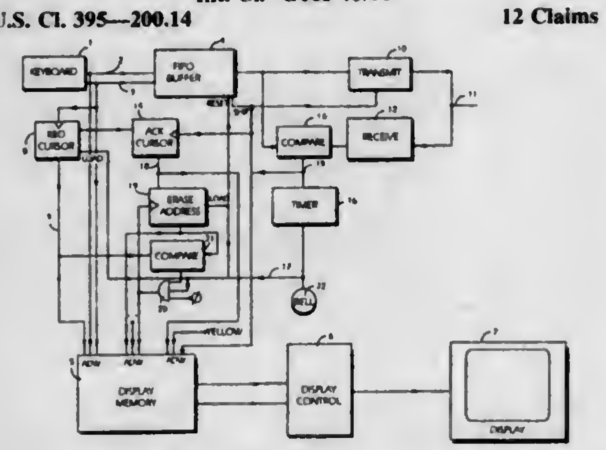
Richard G. C. Williams, San Diego, Calif., assignor to British Telecommunications public limited company, London, England

Filed Sep. 8, 1994, Ser. No. 303,038

Claims priority, application European Pat. Off., Sep. 10, 1993, 93307143

Int. Cl.⁶ G06F *13/00*

U.S. Cl. 395—200.14 **12 Claims**



1. A data communication terminal comprising:

a keyboard for input of characters.

transmitter means for transmitting coded signals representing those characters,

receiver means for receiving echoed characters as a form of acknowledgement,

visual display means operable to display characters,

control means operable in response to an input signal from the keyboard to display the corresponding character on the visual display means and operable in the absence, within a defined time period, of receipt of a corresponding echoed character to erase the displayed character,

a buffer for storing characters input from the keyboard and not yet transmitted, and

the control means being operable in the event of the said absence of an echoed character to erase any characters stored in the buffer and their corresponding representations on the visual display means.

5,617,543

NON-ARITHMETICAL CIRCULAR BUFFER CELL AVAILABILITY STATUS INDICATOR CIRCUIT

Christopher E. Phillips, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed May 26, 1995, Ser. No. 451,535

Int. Cl.⁶ G06F *12/00*

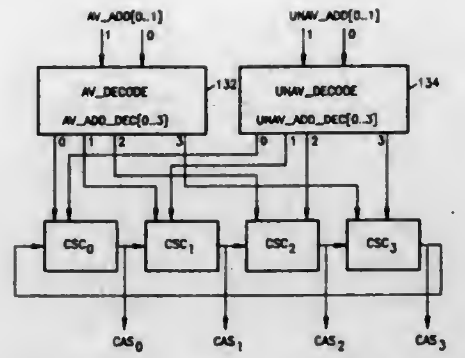
U.S. Cl. 395—250 **5 Claims**

1. An availability status indicator circuit for simultaneously indicating which of N circular buffer cells (CBC_x, for x=0 through N−1) are available for access, where the N circular buffer cells are sequentially accessible, with CBC_x being accessed after $CBC_{((x-1)+N)\ REM\ N}$, the circuit comprising:

N cell status circuits (CSC_x, for x=0 through N−1) that correspond to the separate circular buffer cells (CBC_x, for x=0 through N−1, respectively), each cell status circuit, CSC_x, including:

a. an output terminal at which a cell availability status signal CAS_x is provided to indicate the availability status of the corresponding circular buffer cell CBC_x;

b. a first input terminal connected to receive the cell availability status signal, $CAS_{((X-1)+N)\ REM\ N}$ from the output terminal of the previous cell status circuit, $CSC_{((X-1)+N)\ REM\ N}$;



130

c. a cell availability status signal generator that generates the cell availability status signal, CAS_x, in response to the cell availability status signal, $CAS_{((X-1)+N)\ REM\ N}$, to an available address indicator signal that includes an indicator of whether CBC_x is a first circular buffer call available to be accessed, and to an unavailable address indicator signal that includes an indicator of whether CBC_x is a last circular buffer cell available to be accessed, the cell availability status signal, CAS_x, having a first state if the corresponding circular buffer cell, CBC_x, is available for access and having a second state if the corresponding circular buffer cell, CBC_x is not available for access.

5,617,544

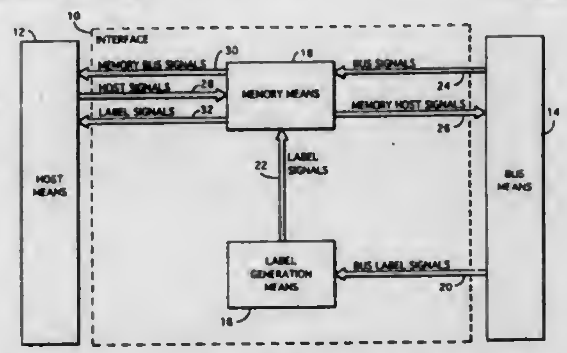
INTERFACE HAVING RECEIVE AND TRANSMIT MESSAGE LABEL MEMORIES FOR PROVIDING COMMUNICATION BETWEEN A HOST COMPUTER AND A BUS

Bhalchandra R. Tulpule, Farmington; Steven A. Avritch, Bristol; Geoffrey T. Blackwell, Vernon, and Andrew M. MacKay, Newington, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 23, 1994, Ser. No. 363,604

Int. Cl.⁶ G06F *13/00*

U.S. Cl. 395—281 **12 Claims**



1. An interface between a host means and a bus means comprising:

label generation means, responsive to bus label signals from the bus means, for providing label signals; and

memory means, responsive to bus signals from the bus means, for providing memory host signals to the bus means, said memory means being further responsive to said label signals from said label generation means for storing said label signals as label memory signals, said memory means being further responsive to host signals from the host means, either for providing memory bus signals to the host means when the host means reads memory bus information from the memory means, or for providing said label memory signals to the host means when the host means reads label memory information from the memory means.

5,617,545

ARBITRATION CIRCUIT CAPABLE OF CHANGING THE PRIORITY AND ARRIVAL TIME OF NONSELECTED REQUESTS

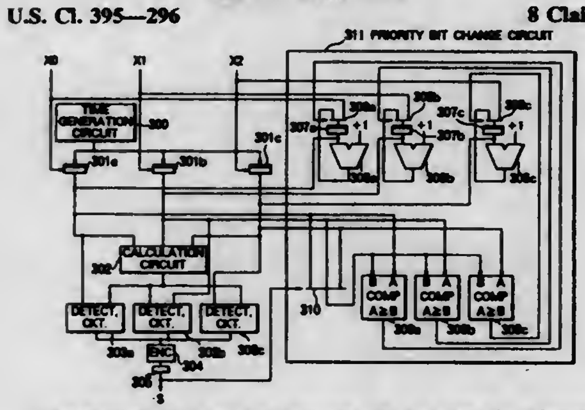
Yasuhiro Ogata, Akishima; Shigeo Takeuchi, Hanno; Taturu Toba; Shinichi Shutoh, both of Hadano, and Naoki Hamanaka, Tokyo, all of Japan, assignors to Hitachi, Ltd., and Hitachi VLSI Engineering Corporation, both of Tokyo, Japan

Filed Jun. 9, 1993, Ser. No. 73,075

Claims priority, application Japan, Jun. 10, 1992, 4-150390

Int. Cl.⁶ G06F *13/18*

U.S. Cl. 395—296 **8 Claims**



1. An arbitration circuit for selecting one of a plurality of request signals, comprising:

an information generation circuit responsive to the arrival of each of request signals at said arbitration circuit for generating arrival-order-related information for use in discrimination of an order of arrival times of the request signals;

a selection circuit for selecting one of said plurality of request signals based on a combination of priority which is predetermined for each request signal and said arrival order information generated for each request signal;

wherein said selection circuit comprises a circuit which selects one of said plurality of request signals on the basis of said combinations in such a manner that when a total number of request signals which has a highest priority among the request signals is one, then that one request signal of the highest priority is selected and when a total number of request signals which has a highest priority among the request signals is plural, one of plural highest priority request signals which arrived at said arbitration circuit earliest is selected; and

wherein said arbitration circuit further comprises an order change circuit responsive to selection of one of the request signals by said selection circuit for changing an arrival-order-related information generated for at least another one of the request signals which has not been selected by said selection circuit to one indicative of an earlier arrival order for use in later arbitration by said arbitration circuit, wherein said another request signal is one which is earlier in the arrival order than said selected request.

5,617,546

DATA BUS ARCHITECTURE COMPATIBLE WITH 32-BIT AND 64-BIT PROCESSORS

Kuo-Piao Shih, Taoyuan; Wen-Lu Liao, and Yann-Lang Chung, both of Taipei, all of Taiwan, assignors to Acer Incorporated, Taipei, Taiwan

Continuation of Ser. No. 178,396, Dec. 22, 1993, abandoned. This application Jan. 11, 1996, Ser. No. 584,705

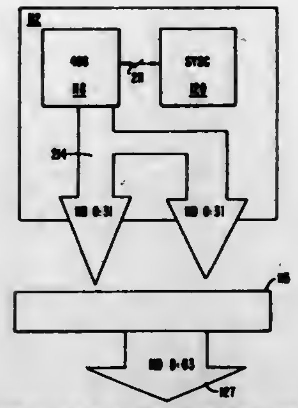
Int. Cl.⁶ G06F *13/00*

U.S. Cl. 395—307 **12 Claims**

1. A removable central processing unit (CPU) module for Use in a data processing system, comprising:

at least one CPU having a first data width;

a first data bus having said first data width coupled to said at least one CPU;



a connector coupled to said first data bus for connecting to a circuit board having a second data bus, said second data bus having a second data width larger than said first data width; and

a third data bus coupled to said first data bus and said connector, said third data bus being a duplicate of said first data bus and connected in parallel therewith, thereby facilitating compatibility between said CPU module and said second data bus by transmitting identical data on said first and third data buses substantially simultaneously.

5,617,547

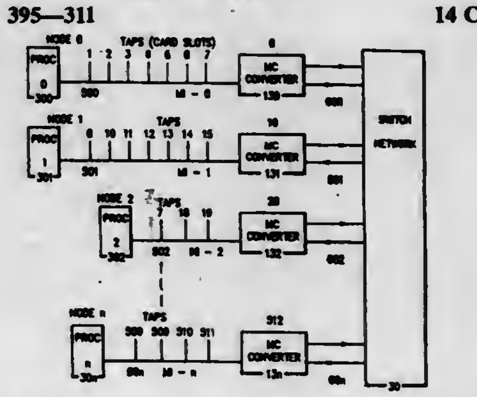
SWITCH NETWORK EXTENSION OF BUS ARCHITECTURE

James W. Feeney, Endicott; John D. Jabusch, Endwell; Robert F. Lusch, Vestal; Howard T. Olnowich, and George W. Wilhelm, Jr., both of Endwell, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 144,849, Oct. 28, 1993, abandoned, and a continuation-in-part of Ser. No. 946,204, Sep. 17, 1992, Pat. No. 5,495,474, and a continuation-in-part of Ser. No. 946,512, Sep. 17, 1992, abandoned, and a continuation-in-part of Ser. No. 947,644, Sep. 17, 1992, abandoned, and a continuation-in-part of Ser. No. 946,506, Sep. 17, 1992, abandoned, which is a continuation-in-part of Ser. No. 677,543, Mar. 29, 1991, abandoned. This application Apr. 30, 1996, Ser. No. 640,368

Int. Cl.⁶ G06F *13/00*

U.S. Cl. 395—311 **14 Claims**



1. An apparatus for interconnecting computer systems, the apparatus comprising:

a plurality of parallel computer system buses, including a first system node bus and a second system node bus;

a switch network interconnecting said first and second system system node buses for establishing a direct, node to node communication path; and

a plurality of network adapters, each said network adapter connected to said switch network and to at least one of said computer system buses, including:

means responsive to a bus sequence message including destination address and data on said first system node bus for determining if said destination address is for a device not on said first system node bus and, if not, for transmitting said bus sequence message to said switch network; and

means responsive to said destination address for converting said destination address into a switch connection control code for routing said bus sequence message through said switch network and for appending said switch connection control code to said bus sequence message; and

said switch network being responsive to said switch connection control code for establishing a direct port to port circuit connection to said second system node bus, stripping said switch connection control code from said message and transmitting said bus sequence message to said second system node bus.

5,617,548

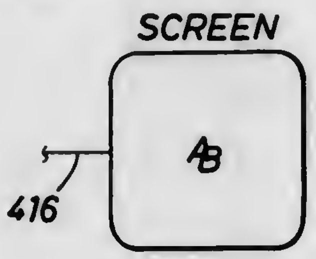
METHOD OF INTERACTING WITH COMPUTER GRAPHICS

Joseph B. West, and Charles A. Clinton, both of Woodinville, Wash., assignors to Landmark Graphics Corporation, Houston, Tex.

Continuation of Ser. No. 955,586, Dec. 1, 1992, abandoned. This application Feb. 23, 1995, Ser. No. 393,252

Int. Cl.⁶ G06F *3/100*

U.S. Cl. 395—326 **8 Claims**



1. A method of interacting with computer graphics comprising:

generating and storing in a data storage medium a list which includes data related to computer generated objects from one or more application programs and which objects are to be included in a computer graphics scene display and an application program identifier to identify the application program which is the source of each computer generated object included in the list;

generating a single screen display in a computer display means in response to the list;

manipulating an object in the scene display with a user command;

generating at least one interrogation command in response to said manipulation and interrogating said list to retrieve data relating to each object affected by the manipulation and an application program identifier related to each application program which is the source of an object affected by the manipulation;

transmitting to each application program which is the source of an object affected by the manipulation, data related to the objects of which the program is the source and information regarding the manipulation; and

detecting such transmission by the application program which is the source of an object affected by the manipulation and performing such additional steps as are required by the manipulation.

5,617,549

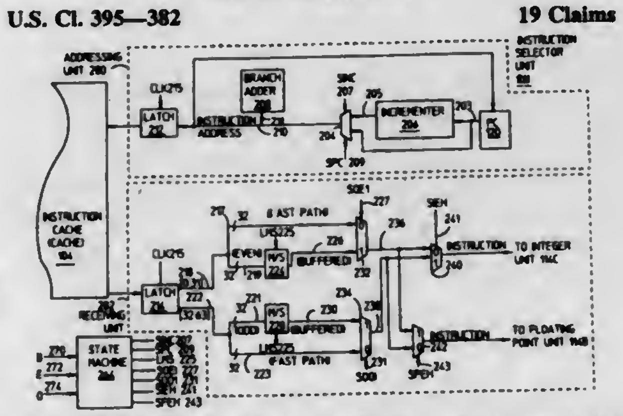
SYSTEM AND METHOD FOR SELECTING AND BUFFERING EVEN AND ODD INSTRUCTIONS FOR SIMULTANEOUS EXECUTION IN A COMPUTER

Eric R. DeLano, Fort Collins, Colo., assignor to Hewlett-Packard Co, Palo Alto, Calif.

Continuation of Ser. No. 957,344, Oct. 6, 1992, abandoned. This application Aug. 26, 1994, Ser. No. 296,989

Int. Cl.⁶ G06F *9/38*

U.S. Cl. 395—382 **19 Claims**



1. Apparatus for selecting and buffering multiple instructions fetched from a memory system for simultaneous execution by a processor, comprising:

addressing means for fetching even and odd instructions from the memory system;

a decoder unit configured to generate a bundle signal indicating whether a pair of even and odd instructions can be executed simultaneously;

first and second busses, electrically coupled to the memory system, operable to transport said even instructions received from the memory system;

third and fourth busses, electrically coupled to the memory system, operable to transport said odd instructions received from the memory system;

a first master/slave register, electrically coupled to said second bus, operable to store said even instructions;

a second master/slave register, electrically coupled to said third bus, operable to store said odd instructions;

first selector means, responsive to said bundle signal, having input terminals and output terminals, said input terminals electrically coupled to said first and fourth busses and said first and second master/slave registers, for selecting, at one of said output terminals, an even instruction from either said first bus or said first master/slave register, and for selecting, at another one of said output terminals, an odd instruction from either said fourth bus or said second register;

second selector means, having input terminals electrically coupled to said output terminals of said first selector means, said second selector means having output terminals coupled to the execution unit, for routing aligned even and odd instructions that can be bundled, misaligned even and odd instructions that can be bundled or individual even or odd instruction that cannot be bundled from said first selector means to specific operational units located in the execution unit; and

control logic means, coupled to said first and second selector means, for generating signals that control which input terminals are selected by said first and second selector means.

5,617,550

DATA PROCESSOR GENERATING JUMP TARGET ADDRESS OF A JUMP INSTRUCTION IN PARALLEL WITH DECODING OF THE INSTRUCTION

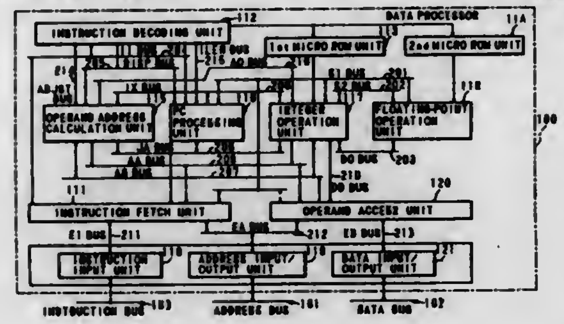
Masahito Matsuo, and Toyohiko Yoshida, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 10,085, Jan. 27, 1993, Pat. No. 5,485,587. This application Sep. 29, 1995, Ser. No. 535,871

Claims priority, application Japan, Feb. 7, 1992, 4-22695

Int. Cl.⁶ G06F *9/38; 9/32*

U.S. Cl. 395—383 **2 Claims**



1. A data processor for processing a first jump instruction which includes a first absolute address field and jump to an address identified by said first absolute address field, and a second jump instruction which includes a second absolute address field and jump to an address specified by said second absolute address field, comprising:

storage means for storing instructions;

instruction fetch means for fetching the instructions from said storage means;

instruction decoding means for decoding the instructions fetched by said instruction fetch means;

instruction executing means for executing the instructions on the basis of a decoded result inputted from said instruction decoding means;

first cut-out means for obtaining a first address in parallel with decoding of the first instruction in said instruction decoding means, by cutting out said first absolute address field of said first instruction, the first cut-out means starting the cut-out operation before the first instruction is identified as said first jump instruction;

second cut-out means for obtaining a second address in parallel with decoding of said first instruction in said instruction decoding means, by cutting out said second absolute address field of said first instruction, said second cut-out means starting cut-out operation before said first instruction is identified as said second jump instruction; and

transferring means for selectively transferring said first and second address to said instruction fetch means in accordance with a part of said decoded result of said first instruction, the transferring means transferring said first address when said first instruction is said first jump instruction, and transferring said second address when said first instruction is said second jump instruction; wherein

said instruction fetch means fetches an instruction of said first address when said first instruction is said first jump instruction, and fetches an instruction of said second address when said first instruction is said second jump instruction.

5,617,551

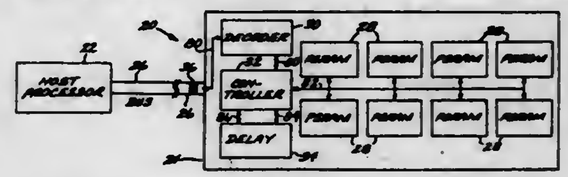
CONTROLLER FOR REFRESHING A PSRAM USING INDIVIDUAL AUTOMATIC REFRESH CYCLES

Rodney J. Corder, Huntington Beach, Calif., assignor to New Media Corporation, Irvine, Calif.

Filed Sep. 18, 1992, Ser. No. 947,182

Int. Cl.⁶ G11C *7/00*

U.S. Cl. 395—401 **12 Claims**



1. Apparatus for refreshing a pseudo-static random access memory accessible from a remote host processor, the apparatus comprising:

means for asynchronously detecting an end of a memory access cycle by the host processor;

a tapped delay line activated by the means for asynchronously detecting upon detection of the end of a memory access cycle of the pseudo-static random access memory by the host processor, the tapped delay line producing a series of delay line output signals at a series of preselected times after activation;

means for initiating an automatic refresh of the pseudo-static random access memory upon receipt of a first tapped delay line output signal; and

means for discontinuing the automatic refresh of the pseudo-static random access memory upon receipt of a second tapped delay line output signal that follows the first tapped delay line output signal by a sufficient time to permit performance of an automatic refresh.

5,617,552

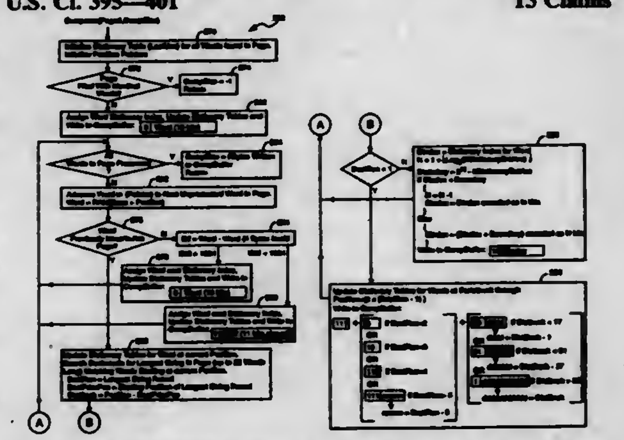
LOSSLESS DATA COMPRESSION SYSTEM AND METHOD

Jonathan F. Garber, Woodside; Jorg A. Brown, Concord, and Chad P. Walters, Palo Alto, all of Calif., assignors to Connectix Corporation, San Mateo, Calif.

Continuation of Ser. No. 175,749, Dec. 30, 1993, abandoned. This application Feb. 29, 1996, Ser. No. 613,433

Int. Cl.⁶ G06F *9/26; 9/34; 12/00; 12/02*

U.S. Cl. 395—401 **13 Claims**



5. A data compression method for compressing a set of M data words stored in a computer memory, each of said data words containing N bits; the steps of the method comprising:

(B) providing a first table for storing, during processing of said M data words, data representing last occurrence positions among those of said M data words already processed for all distinct word values among those of said M data words already processed;

(C) providing a second table for storing, during processing of said M data words, for each said data word an entry indicating the position among said M data words, if any, of a most recent

prior occurrence of another data word with the same word value as said each data word;

(D) providing a dictionary index for denoting, during processing of said M data words, how many distinct data word values are encountered during processing of said M data words;.

(E) processing said M data words in sequential order, including processing each said data word by performing the steps of:

(E1) determining, by referencing said first table, whether at least one data word with the same word value as said each data word is located earlier in said M data words than said each data word and determining the last occurrence position of any such data word;

(E2) when said determination in step E1 is that said each data word's value is unequal to that of all data words located earlier in said M data words than said each data word, storing in said first table in an entry corresponding to said each data word's value position data representing said each data word's position among said M data words, storing in said second table in an entry corresponding to said each data word's position said dictionary index and an indicator that said data word's value does not occur earlier among said M data words, incrementing said dictionary index, and outputting a code representing said each data word's value;

(E3) when said determination in step E1 is that said each data word's value is equal to at least one earlier word in said M data words, referencing said second table to identify data words earlier in said M data words than said each data word that match said each data worm's value, identifying a longest sequence of data words earlier in said M data words than said data word which match an equal number of data words starting with said each data word, outputting a corresponding code that indicates said longest sequence's length and position, and updating said first and second tables for said equal number of data words starting with said each data word.

5,617,553

COMPUTER SYSTEM WHICH SWITCHES BUS PROTOCOLS AND CONTROLS THE WRITING OF A DIRTY PAGE BIT OF AN ADDRESS TRANSLATION BUFFER

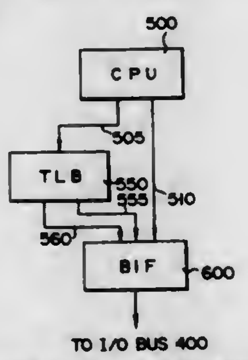
Kenji Minagawa, Urayasu; Takeshi Aikawa, Tokyo, and Mitsuo Saito, Yokosuka, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 799,981, Nov. 29, 1991, Pat. No. 5,446,849. This application Apr. 26, 1995, Ser. No. 429,103

Claims priority, application Japan, Nov. 30, 1990, 2-340347; Apr. 5, 1991, 3-73273

Int. Cl.[6] G06F *9/06*

U.S. Cl. 395—416 **5 Claims**



1. An electronic computer supporting a plurality of bus protocols to achieve processor-to-processor communication and processor-to-peripheral communication on the same system, which comprises:

control means for supplying a virtual address and data when a processor accesses a page;

address buffer translation means for translating said virtual address to a physical address to produce a bus protocol specifying signal; and

bus interface means for switching said bus protocols according to said bus protocol specifying signal to transfer said physical address and data on the bus by using the switched bus protocol.

5,617,554

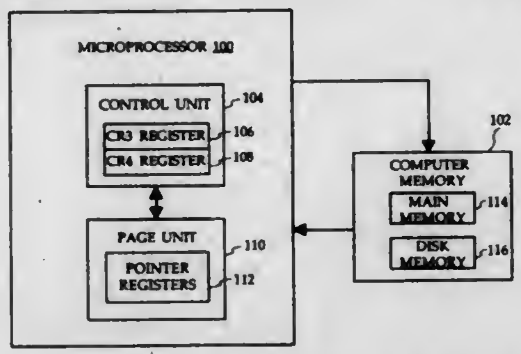
PHYSICAL ADDRESS SIZE SELECTION AND PAGE SIZE SELECTION IN AN ADDRESS TRANSLATOR

Donald B. Alpert, Santa Clara; Kenneth D. Shoemaker, Saratoga, both of Calif.; Kevin C. Kahn, Portland, and Konrad K. Lai, Aloha, both of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 832,944, Feb. 10, 1992, abandoned. This application Dec. 23, 1994, Ser. No. 372,805

Int. Cl.[6] G06F *12/10*

U.S. Cl. 395—418 **28 Claims**



1. A processor generating linear addresses, said processor comprising: a control unit having stored therein an indication in one of a plurality of states; and a paging unit coupled to said control unit to receive said indication, said paging unit translating said linear addresses into a physical address for accessing a physical address space, said paging unit simultaneously supporting paging using at least a first and a second page frame size while said indication is in a first of said plurality of states, said paging unit supporting paging using only one page frame size while said indication is in a second of said plurality of states.

5,617,555

BURST RANDOM ACCESS MEMORY EMPLOYING SEQUENCED BANKS OF LOCAL TRI-STATE DRIVERS

Vipul C. Patel; Kenneth A. Poteet, both of San Jose, and Chitranjan N. Reddy, Los Altos Hills, all of Calif., assignors to Alliance Semiconductor Corporation, San Jose, Calif.

Filed Nov. 30, 1995, Ser. No. 565,383

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—432 **20 Claims**

9. A burst random access memory (RAM) for reading or writing data in a burst sequence having a burst length, the burst RAM including a plurality of arrays, each having memory cells arranged in rows and columns, the arrays further being arranged in half-quadrants, each half quadrant having sets of local input/output (I/O) lines for accessing the memory cells therein, comprising:

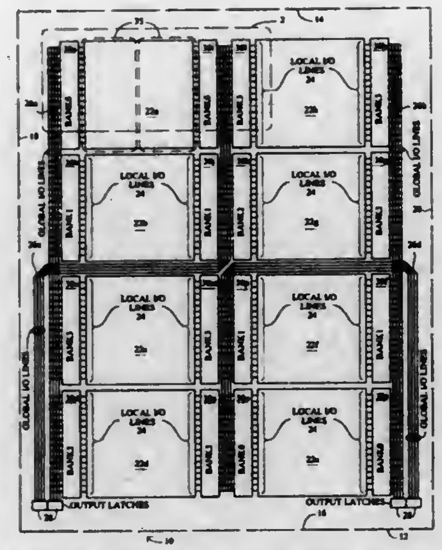
a plurality of data latches, the data latches being arranged in latch sets;

a set of global I/O lines coupled to each latch set;

an I/O group of half-quadrants associated with each set of global I/O lines, the number of half-quadrants in each I/O group being equal to at least the burst length;

a bank of tri-state drivers associated with each half-quadrant, the banks of tri-state drivers commonly coupling the sets of local I/O lines of half-quadrants within the same I/O group to the set of global I/O lines associated with the group;

a decoder for receiving an external address and activating at least one row within each different I/O group of half-



quadrants, and coupling selected columns associated with the active row to a set of local I/O lines; and

a sequencing circuit for receiving the least significant bits (LSBs) of the column address and generating a burst sequence of LSBs in response to an internal control signal, each LSB combination of the burst sequence enabling a bank of tri-state drivers associated with one half-quadrant within each I/O group.

5,617,556

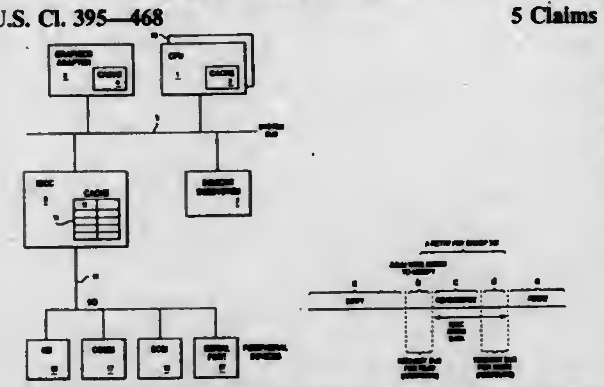
SYSTEM AND METHOD TO PREVENT THE OCCURRENCE OF A SNOOP PUSH DURING READ AND WRITE OPERATIONS

Yoanna Baumgartner; Dennis G. Gregoire, and Amy M. Youngs, all of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 123,817, Sep. 20, 1993. This application Aug. 16, 1995, Ser. No. 515,797

Int. Cl.[6] G06F *12/00;13/00*

U.S. Cl. 395—468 **5 Claims**



1. A method of controlling a cache to provide memory coherency, comprising the steps of:

mapping modification data to be written to said cache to a specific location in a system memory;

writing said modification data only to said cache prior to said cache obtaining ownership of original data residing in said system memory at said specific location;

mapping said modification data in said cache to an address corresponding to a memory sector address containing said copy of said original data

reading a copy of said original data at said specific location from said system memory; includes

arbitrating for ownership of a system bus such that said copy of said original data is read from said system memory; and

gaining ownership of said original data,

creating merged data by merging said modification data with said copy of said original data from said specific location in said system memory;

initiating an operation to write said merged data to said specific location in said system memory;

detecting a snoop hit, by a snooping processor, during either said step of creating or said step of initiating; and

preventing a snoop push operation from occurring upon detection of said snoop hit by issuing a retry signal to said snooping processor;

wherein said step of initiating is implemented independent of said snoop hit.

5,617,557

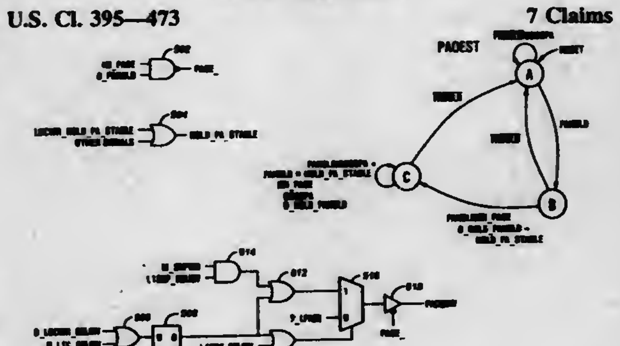
USING AN ADDRESS PIN AS A SNOOP INVALIDATE SIGNAL DURING SNOOP CYCLES

Jeffrey C. Stevens, Spring, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

Filed Nov. 14, 1994, Ser. No. 339,086

Int. Cl.[6] G06F *12/16*

U.S. Cl. 395—473 **7 Claims**



1. A circuit for invalidating an internal cache memory of a microprocessor connected to a bus in a computer system, wherein the microprocessor includes an invalidation pin and a plurality of processor address pins, and wherein the internal cache memory has a plurality of portions and is coupled to the invalidation pin and the plurality of processor address pins but uses a first number of the plurality of processor address pins during a snoop cycle, the first number being less than the full number in the plurality of processor address pins, the circuit comprising:

a plurality of circuit address pins each coupled to one of the processor address pins;

a snoop cycle generator coupled to the bus for generating a snoop cycle on the bus;

an address signal provider coupled to said snoop cycle generator and said plurality of circuit address pins for providing a plurality of address signals to said plurality of circuit address pins, wherein said address signal provider provides a snoop address on said plurality of address signals to a first number of said plurality of circuit address pins corresponding to the first number of the plurality of processor address pins if a snoop cycle is generated on the bus; and

an invalidation signal provider coupled to said snoop cycle generator, said address signal provider, and one of said plurality of circuit address pins for providing an invalidation signal to said one of said circuit address pins, wherein said one of said circuit address pins is other than one of said first number of said circuit address pins, and wherein said one of said circuit address pins is further coupled to said invalidation pin in addition to being coupled to a corresponding one of the processor address pins.

5,617,558

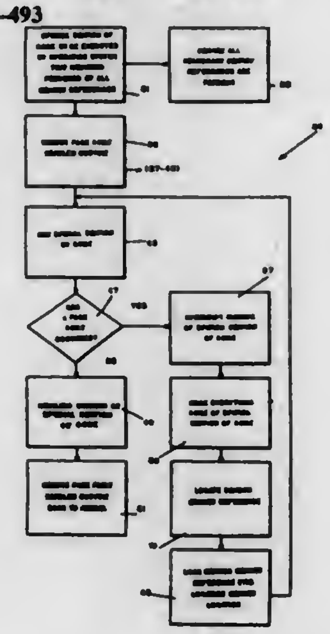
METHOD OF EXECUTING A SERIES OF COMPUTER CODE OPERATIONS THAT MUST BE COMPLETED WITHOUT INTERRUPTION BY A PAGE FAULT DURING EXECUTION

Michael H. Kelley, Raleigh, N.C., assignor to Data General Corporation, Westboro, Mass.

Continuation of Ser. No. 3,602, Jan. 13, 1993, which is a continuation of Ser. No. 424,184, Oct. 19, 1989, abandoned. This application Jun. 6, 1995, Ser. No. 466,334

Int. Cl.⁶ G06F *9/44*

U.S. Cl. 395—493 **16 Claims**



1. A computer-implemented method of operating a program which includes a special section of code comprising a plurality of steps in a data processing system, comprising:

starting operation of the special section of code, and when a memory reference is required for operation of the special section of code, requesting the required memory reference from an area of memory assigned for operation of the special section of code; if the memory reference is available in the assigned memory, providing access to the requested memory reference and continuing the operation of the special section of code, and if the memory reference is unavailable indicating a defined condition without retrieving the missing memory reference from secondary storage; wherein the operation of the special section of code is started without checking for the availability of the memory references; and, in response to the defined condition indicating non-availability of the memory reference, by:

(i) interrupting the operation of the special section of code;

(ii) undoing whatever steps the special section of code had done since the start of the operation of the special section of code up to the interrupt;

(iii) locating the required memory reference in storage, reading the memory reference from storage, and writing the memory reference to the assigned memory area; and

(iv) restarting the operation of the special section of code;

whereby a fault condition due to the non-availability of the memory reference is prevented.

5,617,559

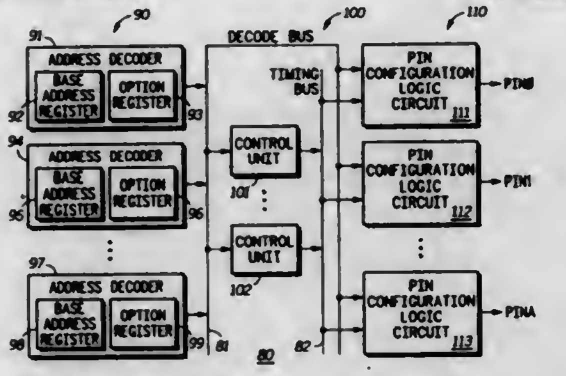
MODULAR CHIP SELECT CONTROL CIRCUIT AND METHOD FOR PERFORMING PIPELINED MEMORY ACCESSES

Chinh H. Le, and James B. Eifert, both of Austin, Tex., assignors to Motorola Inc., Schaumburg, Ill.

Filed Aug. 31, 1994, Ser. No. 298,868

Int. Cl.⁶ G06F *13/12*

U.S. Cl. 395—496 **28 Claims**



1. A modular chip select control circuit, comprising:

an address decode stage having a first plurality of address decoders, each address decoder associated with a programmable region and activating at least one corresponding control signal if an input address is within said programmable region;

a timing control stage coupled to said address decode stage, having a second plurality of control units, each control unit receiving said at least one corresponding control signal from each of said first plurality of address decoders and responsive thereto to provide a corresponding plurality of timing signals to control a memory access; and

a pin configuration stage coupled to said address decode stage and to said timing control stage, having a third plurality of pin configuration logic circuits, each pin configuration logic circuit programmable to provide a selected one of a plurality of chip select signals and responsive to selected ones of said corresponding plurality of timing signals of each of said second plurality of control units to provide said selected one of said plurality of chip select signals.

5,617,560

SYSTEM FOR HANDLING PLATFORM INDEPENDENT OPTICAL CARD BY SEPARATING DURING A READ AND RECOMBINING DURING A WRITE GENERIC DIRECTORY INFORMATION AND OS DEPENDENT DIRECTORY INFORMATION

Kaori Ichikawa, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Japan

Filed Aug. 24, 1994, Ser. No. 295,007

Claims priority, application Japan, Aug. 27, 1993, 5-212977

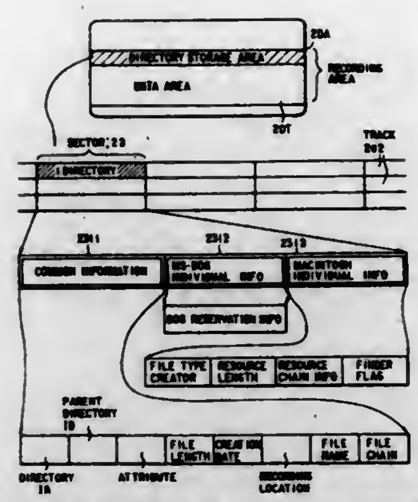
Int. Cl.⁶ G06F *13/00*

U.S. Cl. 395—500 **20 Claims**

1. In a system for accessing an optical card under the control of a general-purpose operating system, an optical card handling system comprising:

an optical card which data can be optically recorded on and reproduced from; read/write means for reading and writing data from and onto the optical card; and driver means which intervenes between said read/write means and said operating system and recombines directory data items; wherein

said optical card has files recorded on it in a directory format where directory data items for various types of general-purpose operating system are divided into information usable in common in a plurality of different operating systems and control information peculiar to specific operating systems, and then said information usable in common is set in a common directory area in a directory, and said control information is



set in individual information areas in the directory, thereby forming directory data items in a general-purpose format;

said read/write means has the function of reading said optical card and handing over the file directory information to said driver means, and in a write operation onto said optical card, updating the directory of said optical card with the data in the directory in said general-purpose format obtained from said driver means; and

said driver means contains a first processing function of, when accessing the optical card under the control of said operating system, recombining the directory data in said common directory area and in said individual information area into a data format suited for the directory format of said operating system, and a second processing function of, in a write operation onto the optical card, separating information usable in common in a plurality of different operating systems and control information peculiar to specific operating systems from the directory data given by said operating system to be interfaced with, forming the directory data in said general-purpose format where the information usable in common is set in said common directory area and said control information is set in said individual information areas, and handing over the data to said read/write means.

5,617,561

MESSAGE SEQUENCE NUMBER CONTROL IN A VIRTUAL TIME SYSTEM

David T. Blaauw, Austin, Tex.; Nimish S. Radia, Johnson City, and Joseph F. Skovira, Binghamton, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 22, 1994, Ser. No. 363,428

Int. Cl.⁶ G06F *9/455;* **H04J** *3/24*

U.S. Cl. 395—500 **31 Claims**

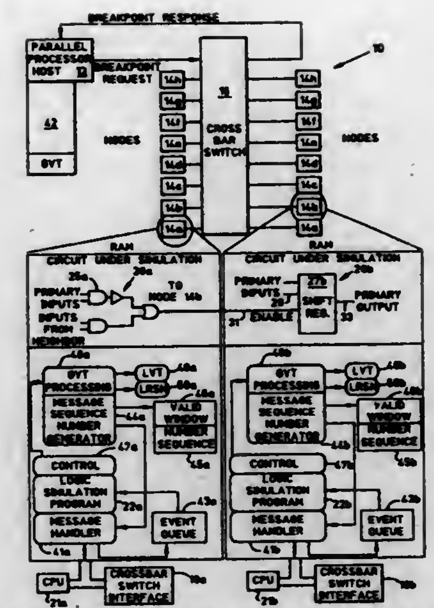
1. A message sequencing apparatus for use in a distributed, virtual time computing system that includes a plurality of parallel processors co-ordinated by global virtual time, the apparatus comprising:

a message facility for formatting a sequence of messages to be sent from a sending processor to a receiving processor;

said messages formatted by the message facility including fields for message sequence numbers, the message sequence number of any message denoting the message's position in the sequence of messages;

facility means coupled to the message facility for obtaining from the receiving processor a message including the message sequence number ("last received sequence number") of a last message received by the receiving processor; and

a message sequence number generator coupled to the facility means and responsive to the last received sequence number for providing the message sequence numbers from a finite sequence number range, such that the message sequence num-



ber of any message in the sequence of messages is unique with respect to the message sequence numbers of all other messages of the sequence of messages sent to the receiving processor since receipt of a message with the last received sequence number by the receiving processor.

5,617,562

RECEIVING CIRCUIT RESET UPON RECEPTION OF BURST DATA AND TRANSMISSION/RECEPTION SYSTEM UTILIZING THE SAME

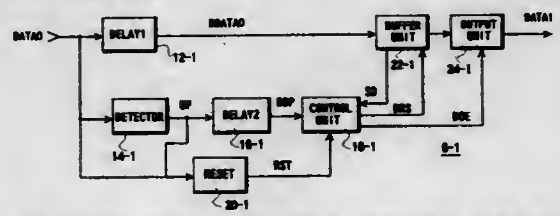
Masatoshi Komatsu, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Sep. 29, 1994, Ser. No. 315,108

Claims priority, application Japan, Oct. 1, 1993, 5-246748

Int. Cl.⁶ G06F *13/42*

U.S. Cl. 395—559 **15 Claims**



1. A receiving circuit for receiving a transmission signal including at least a data signal and a clock signal to output data, the data signal being transmitted randomly, comprising:

delay means for delaying, synchronously with the clock signal, the data signal by a predetermined time period;

buffer means, operating synchronously with the clock signal, for temporally storing the data of the delayed data signal and outputting the data;

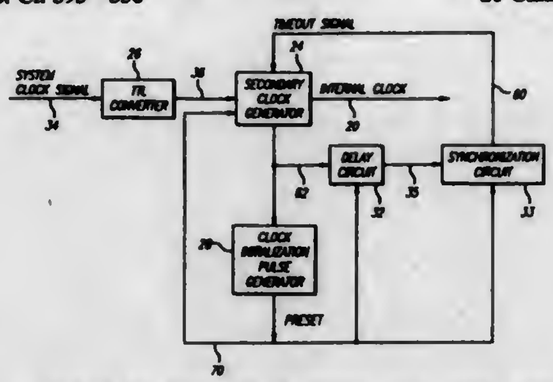
control means, operating synchronously with the clock signal, for controlling the storing and outputting operations of said buffer means; and

resetting means, operating synchronously with the clock signal, for supplying a reset signal at start of the data signal to reset said control means, the predetermined time period being determined based on a time period required to reset said control means,

the data signal includes a preamble portion having a predetermined bit pattern, said receiving circuit further comprises detecting means for detecting the preamble portion to generate a data presence signal, and

said reset means includes means responsive to the data presence signal, for generating the reset signal.

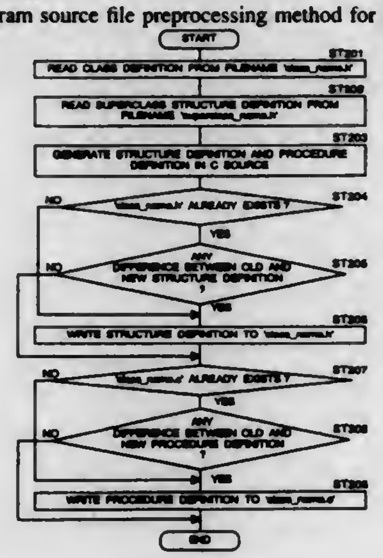
5,617,563
DUTY CYCLE INDEPENDENT TUNABLE CLOCK
Pradip Banerjee, San Jose; Patrick Chuang, Cupertino, and Atul V. Ghia, San Jose, all of Calif., assignors to Sony Corporation of Japan, and Sony Electronics, Inc., both of Park Ridge, N.J.
Filed Nov. 4, 1994, Ser. No. 334,687
Int. Cl.⁶ G06F *1/08*
U.S. Cl. 395—556 **20 Claims**



1. A method for generating an internal clock signal from a system clock, said method comprising the steps of:
preselecting a duty cycle period;
sensing an amplitude change in a signal generated by said system clock;
changing the amplitude of an output signal of a circuit coupled to said system clock from a first state to a second state after sensing said amplitude change in the signal generated by said system clock; and
changing the amplitude of the output signal from the second state to a different state after an amount of time defined by the duty cycle period has elapsed from the time of said amplitude change from the first state to the second state
wherein said circuit comprises a flip-flop.

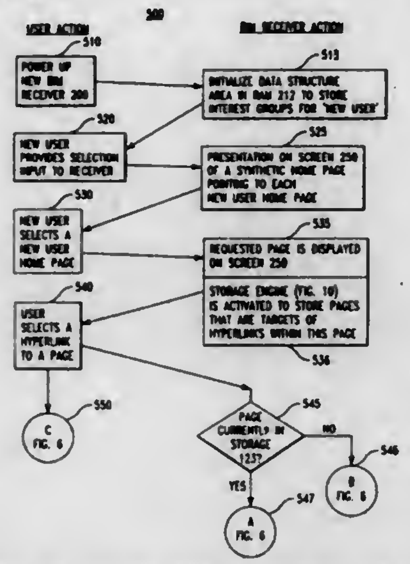
5,617,564
PROGRAM SOURCE FILE PREPROCESSING METHOD AND APPARATUS TO DETECT MODIFICATIONS AND GENERATE A CLASS OF FILES
Kazunori Tomotake, Katano, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan
Filed Apr. 18, 1994, Ser. No. 228,904
Claims priority, application Japan, Apr. 20, 1993, 5-092787
Int. Cl.⁶ G06F *17/30*
U.S. Cl. 395—611 **6 Claims**

1. A program source file preprocessing method for processing a



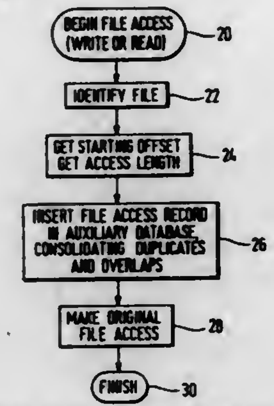
high precedence file to generate a low precedence file, comprising the steps of:
(a) reading said high precedence file to generate data for the low precedence file;
(b) storing said generated data temporarily in memory means;
(c) detecting whether or not the low precedence file is existing in said memory means;
(d) creating, when no low precedence file is existing, a new low precedence file, and writing the temporarily stored data in said new low precedence file;
(e) comparing, when said low precedence file is existing, said temporarily stored data on a character-by-character basis with old data already written in said low precedence file; and
(f) rewriting said temporarily stored data in said low precedence file when a meaningful difference is detected during the comparison.

5,617,565
BROADCAST INTERACTIVE MULTIMEDIA SYSTEM
Joseph E. Augenbraun, Princeton, N.J.; Larry A. Pearlstein, Newtown, Pa., and Michael A. Plotnick, Southampton, Pa., assignors to Hitachi America, Ltd., Tarrytown, N.Y.
Filed Nov. 29, 1994, Ser. No. 346,515
Int. Cl.⁶ G06F *17/30*
U.S. Cl. 395—604 **7 Claims**



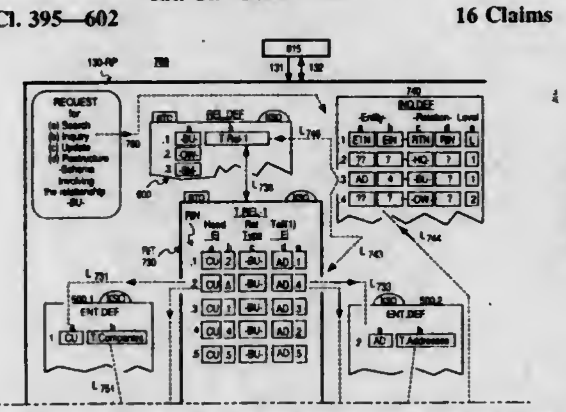
1. A method for communicating data elements from a common database to each of a plurality of users of the data elements, the method comprising the steps of
(a) defining interest categories for the database which express the collective interest of the users,
(b) assigning at least one of the interest categories to each data element,
(c) identifying data attributes for each of the data elements, the step of identifying including the step of defining an interest level for each of the interest categories wherein each interest level expresses an estimate of the collective interest of the users in each of the interest categories assigned to each data element,
(d) communicating each data element and its associated data attributes to the users,
(e) generating a user profile indicative of data elements of interest to each user,
(f) selecting and locally storing data elements of interest to each user in correspondence to the selections of each user with respect to the communicated data elements and with reference to the user profile, and
(g) modifying the user profile in correspondence to the data attributes of data elements selected by each user, and returning to step (f).

5,617,566
FILE PORTION LOGGING AND ARCHING BY MEANS OF AN AUXILARY DATABASE
Peter B. Malcolm, Lewdown, United Kingdom, assignor to Cheyenne Advanced Technology Ltd., United Kingdom
Continuation-in-part of Ser. No. 165,382, Dec. 10, 1993, abandoned. This application Dec. 15, 1994, Ser. No. 356,478
Int. Cl.⁶ G06F *17/30*
U.S. Cl. 395—620 **34 Claims**



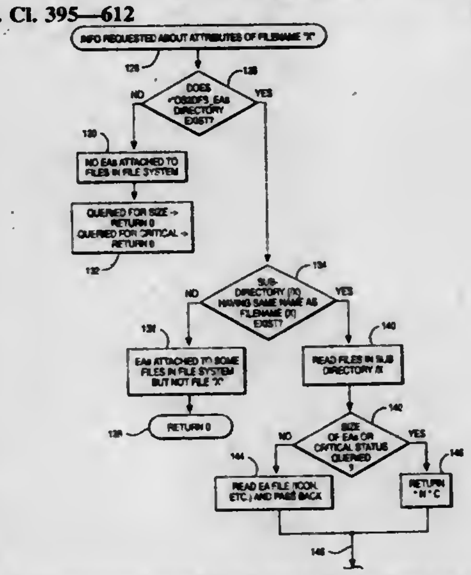
1. A method of accessing data stored in a computer system that includes a random access memory, a central processing unit, and mass storage means, the method comprising the steps of:
providing instructions stored in said random access memory to said central processing unit to cause said processing unit to seek to access data stored in said mass storage means by generating a write request or a read request; said central processing unit commanding the following operations:
identifying a file to which access is required;
identifying from said write request or read request file portion locations in said file to which access is necessary;
building an auxiliary database which identifies said file portion locations to which access is to be made and the date or date/time at which access is made; and
accessing said file portions.

5,617,567
DATA PROCESSING SYSTEM AND METHOD FOR RETRIEVING AND ENTITY SPECIFIED IN A SEARCH PATH RECORD FROM A RELATIONAL DATABASE
Karol Doktor, Wheelers Hill, Australia, assignor to Financial System Technology Pty. Ltd., South Melbourne, Australia
Division of Ser. No. 83,361, Jun. 28, 1993, abandoned, which is a continuation of Ser. No. 526,424, May 21, 1990, abandoned. This application May 11, 1995, Ser. No. 439,013
Int. Cl.⁶ G06F *17/30*
U.S. Cl. 395—602 **16 Claims**



9. In a computer system, a data processing system for retrieving a selected entity from a relational database, said data processing system comprising:
memory means containing a plurality of entities, wherein said entities are part of said relational database;
means, operatively coupled to said memory means, for storing a first search path record wherein said first search path record identifies a first relation, and said first search path record storing means includes an inquiry definition table means;
means, operatively coupled to said first search path record storing means, for retrieving from said relational database a first entity wherein said first entity is related to a second entity by said first relation;
means, operatively coupled to said memory means, for storing a second search path record wherein said second search path record identifies a second relation, and said second search path record storing means includes said inquiry definition table means; and
means, operatively coupled to said second search path record storing means and to said first entity retrieving means, for retrieving from said relational database said selected entity wherein said selected entity is related to said first entity by said second relation.

5,617,568
SYSTEM AND METHOD FOR SUPPORTING FILE ATTRIBUTES ON A DISTRIBUTED FILE SYSTEM WITHOUT NATIVE SUPPORT THEREFOR
Michael B. Ault, Austin; Ernst R. Plassmann, Pflugerville; Bruce A. Rich, Round Rock, and Michael D. Wilkes, Austin, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 14, 1994, Ser. No. 355,868
Int. Cl.⁶ G06F *17/30*
U.S. Cl. 395—612 **18 Claims**



1. A computerized method for storing data related to attributes of an operating system namespace and file having a corresponding operating system filename, said operating system file being stored in a directory in a distributed file system namespace, wherein said attributes are unsupported in said namespace, comprising the steps of:
creating a first directory under said directory containing all of said attributes for said directory;
creating a second directory under said first directory having the same name as said operating system filename;
storing a plurality of said attributes under said second directory as attribute files, each said attribute file having a corresponding attribute filename and an original filename corresponding to a respective attribute to render said attribute file invisible to clients accessing said operating system namespace, and

selected ones of said attribute filenames further each including a critical file designator preceding a respective said original attribute filename to indicate that said selected attribute filename corresponds to a critical said attribute file;

determining the total size "N" of said attribute files and the number "C" of said critical attribute files; and

storing under said second directory a size/critical file including said total size "N" of said attribute files and said number "C" of said critical attribute files.

5,617,569

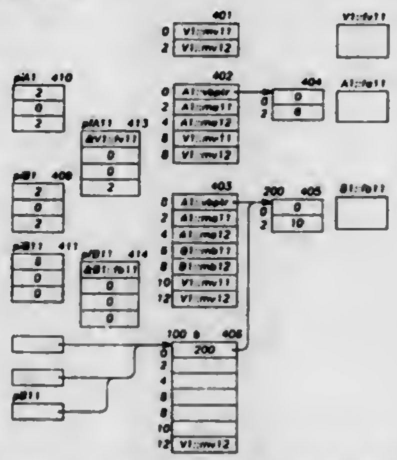
METHOD AND SYSTEM FOR IMPLEMENTING POINTERS TO MEMBERS IN A COMPILER FOR AN OBJECT-ORIENTED PROGRAMMING LANGUAGE

Jan Gray, Redmond; D. T. Jones, Preston, both of Wash., and Martin O'Riordan, Kildare, Ireland, assignors to Microsoft Corporation, Redmond, Wash.

Continuation of Ser. No. 866,785, Apr. 9, 1992, Pat. No. 5,432,936. This application Apr. 10, 1995, Ser. No. 419,980

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—614 **12 Claims**



1. A method in a computer system for invoking virtual function members of classes, the method comprising the computer-implemented steps of:

allocating a virtual function table for each of the classes, each virtual function table having entries that are ordered from a first entry to a last entry, each entry containing a reference to a virtual function member of the class for which the table is allocated;

generating a thunk corresponding to each ordered entry of the allocated virtual function tables, the thunk for receiving a reference to an object of a class and for invoking the virtual function member of the class referenced by the corresponding ordered entry of the allocated virtual function table for the class; and

for each invocation of a virtual function member of a class, invoking a thunk that corresponds to the ordered entry of the allocated virtual function table for the class at which the reference to the virtual function member is stored, wherein the thunk retrieves the reference to the virtual function member and transfers control to the virtual function member and wherein the thunks are shared by the classes.

5,617,570

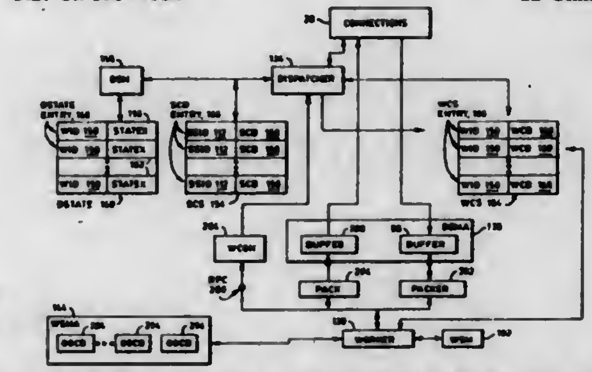
SERVER FOR EXECUTING CLIENT OPERATION CALLS, HAVING A DISPATCHER, WORKER TASKS, DISPATCHER SHARED MEMORY AREA AND WORKER CONTROL BLOCK WITH A TASK MEMORY FOR EACH WORKER TASK AND DISPATCHER/WORKER TASK SEMAPHORE COMMUNICATION

Edward A. Russell, Acton, and Raymond T. Tang, Chelmsford, both of Mass., assignors to Wang Laboratories, Inc., Billerica, Mass.

Filed Nov. 3, 1993, Ser. No. 143,161

Int. Cl.[6] G06F *15/163*

U.S. Cl. 395—684 **12 Claims**



1. In a data processing system including at least one client mechanism for generating operation requests to servers, each server including a server resource and each operation request specifying an operation to be performed with respect to the server resource, a server mechanism for executing the operation requests, comprising:

a dispatcher,

a plurality of worker tasks, and

a plurality of dispatcher shared memory areas,

each dispatcher shared memory area corresponding to a worker task, the dispatcher being responsive to an operation request from a client mechanism for

selecting a worker task to execute the operation request,

receiving the operation request directly into the dispatcher shared memory space of the worker task, and

indicating to the worker task that an operation request has been assigned to the worker task,

the worker task being responsive to the indication of an operation request for receiving the operation request from the dispatcher shared memory space of the worker task,

executing the operation request,

placing the results of the operation request into the dispatcher shared memory space of the worker task, and

indicating to the dispatcher that the operation request is completed, the dispatcher being responsive to the indication that the operation request is completed for providing the results of the operation request directly from the dispatcher shared memory space of the worker task to the client mechanism, wherein

each operation request provided from a client mechanism is provided as a sequence or one or more remote procedure call requests, each remote procedure call request including an associated buffer containing the parameters of the remote procedure call request, and

the server mechanism includes

a plurality of worker control blocks,

each worker control block corresponding to a worker task and including a semaphore which is set by the dispatcher to indicate that an operation request has been assigned to the worker task, and wherein

the dispatcher is responsive to a remote procedure call request for

receiving the buffer directly into the dispatcher shared memory space of the worker task selected to execute the remote procedure call request, and

setting the semaphore in the worker control block corresponding to the selected worker task, and

providing a request acceptance response to the client mechanism, the selected worker task is responsive to the semaphore in the corresponding worker control block for

reading the associated parameters from the buffer,

performing the assigned remote procedure call request, and

placing the results of the remote procedure call request into the dispatcher shared memory space of the worker task, and

generating a remote procedure call to the dispatcher to indicate that the assigned remote procedure all request has been completed.

5,617,571

METHOD FOR CONTROLLING POWER TO INDIVIDUAL AUDIO-VIDEO UNITS MAKING UP AN AUDIO-VIDEO SYSTEM

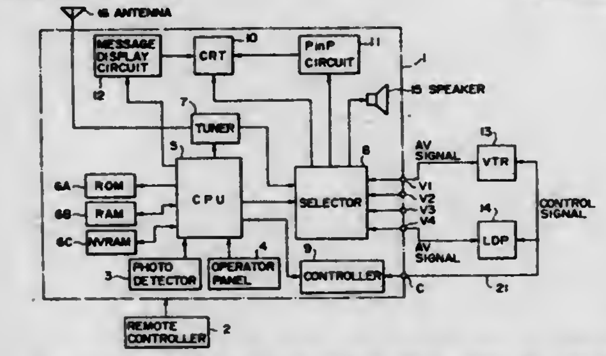
Shigeo Tanaka, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 247,010, May 23, 1994, abandoned, which is a division of Ser. No. 133,838, Oct. 12, 1993, Pat. No. 5,402,183. This application Aug. 29, 1995, Ser. No. 520,475

Claims priority, application Japan, Oct. 13, 1992, 4-300387; Feb. 12, 1993, 5-047396

Int. Cl.[6] G06F *1/32*

U.S. Cl. 395—750 **4 Claims**



1. A method for use in an audio-video control center for controlling a power applied to and selectively consumed by an audio-video apparatus unit that is one of a plurality of audio-video apparatus units connected to the control center in an audio-video system, comprising the steps of:

determining whether a command has come from one of said plurality of audio-video apparatus units;

determining whether a request has come from one of said plurality of audio-video apparatus units, if it was determined that no command has come;

if it was determined that a command has come, determining whether said command is a connection command;

if it was determined that said command is a connection command, determining whether said connection command is for connection to one of said plurality of audio-video apparatus units making up the audio-video system;

if said connection command is for connection to said one of said plurality of audio-video apparatus units, determining whether said connection is to the same unit that received a previous connection command;

if said connection is not the same as the previous connection, counting a predetermined period of time; and

when said predetermined period of time has passed, sending a power-off command to said audio-video apparatus unit that received the previous connection command, whereby said audio-video apparatus unit that received the previous connection command is turned off and no power applied thereto is consumed.

5,617,572

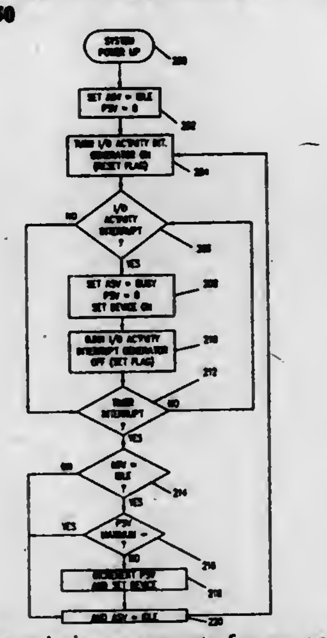
SYSTEM FOR REDUCING POWER CONSUMPTION IN COMPUTERS

John J. Pearce, Del Valle; Jim Walker, Cedar Park; Charles P. Zeller, and Craig S. Jones, both of Austin, all of Tex., assignors to Dell USA, L.P., Austin, Tex.

Continuation of Ser. No. 381,058, Jan. 31, 1995, abandoned. This application Jun. 19, 1996, Ser. No. 666,059

Int. Cl.[6] G06F *1/32;11/30*

U.S. Cl. 395—750 **35 Claims**



1. A system for reducing an amount of power used by a computer having one or more I/O devices, said system comprising:

means for determining a plurality of power supply modes for each I/O device of said system, said plurality of power supply modes being stored in memory;

means for monitoring the occurrence of activity by said I/O devices at given time periods;

means for selecting from said plurality of power supply modes a power supply mode for each of said I/O devices;

means for altering an amount of power supplied to each of said I/O devices, said altering means comprising means for successively placing said I/O devices in lower power supply modes for the device in response to the lack of activity of said I/O device during successive monitored periods; and

means for changing the given time periods during which the occurrence of activity by said I/O devices are monitored in response to the occurrence of activity by said I/O devices.

5,617,573

STATE SPLITTING FOR LEVEL REDUCTION

Alan Y. Huang, San Jose; Steven K. Knapp, Santa Clara, and Sanjeev Kwatra, Sunnyvale, all of Calif., assignors to Xilinx, Inc., San Jose, Calif.

Filed May 23, 1994, Ser. No. 247,445

Int. Cl.[6] G11C *13/00*

U.S. Cl. 395—376 **10 Claims**

1. A method of state splitting in a state machine including the steps of:

(a) determining a number N of logic levels for each state in said state machine, wherein said number N is equal to:

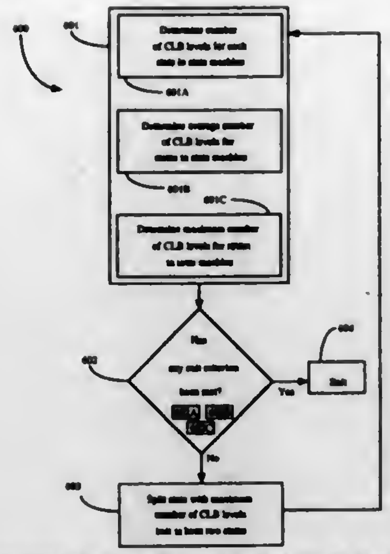
$$N_{i-1}+\log_k f_i$$

wherein

k is the number of input lines to a CLB,

i is a particular node in a particular hierarchial level in a Boolean logic network representing said state machine, and

f is the number of fanin transitions to said particular node;



(b) determining an average number N(AV) of CLB levels of the states in said state machine;
(c) determining the state having a maximum number N(MAX) of CLB levels in said state machine;
(d) splitting the state associated with said maximum number N(MAX) into two states if predetermined exit criteria are not met.

5,617,574

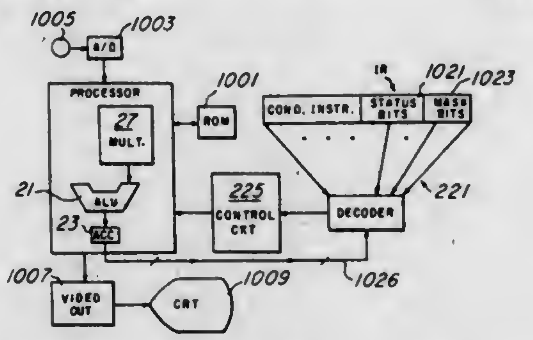
DEVICES, SYSTEMS AND METHODS FOR CONDITIONAL INSTRUCTIONS

Frederic Boutaud, Roquefort les Pins, France, and Peter N. Ehlig, Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 967,942, Oct. 28, 1992, abandoned, which is a continuation of Ser. No. 347,967, May 4, 1989, abandoned. This application Aug. 10, 1994, Ser. No. 288,539

Int. Cl.⁶ G06F 9/30

U.S. Cl. 395—376 **17 Claims**



1. A data processing device or system, comprising:
a status register for containing values;
an instruction pipeline operable to hold more than one instruction in an order to be executed, including a conditioning instruction and one or more conditioned instructions; wherein said conditioning instruction controls execution of said conditioned instructions as a function of values in said status register;
a decoder connected to said instruction pipeline and said status register for decoding said conditioning instruction; and
a control circuit responsive to said decoder to cause execution of said one or more conditioned instructions if a particular status condition of said conditioning instruction is present, or to cause said one or more conditioned instructions to be replaced by a null operation if said particular status condition of said conditioning instruction is not present.

5,617,575

INTERPROCESSOR PRIORITY CONTROL SYSTEM FOR MULTIVECTOR PROCESSOR

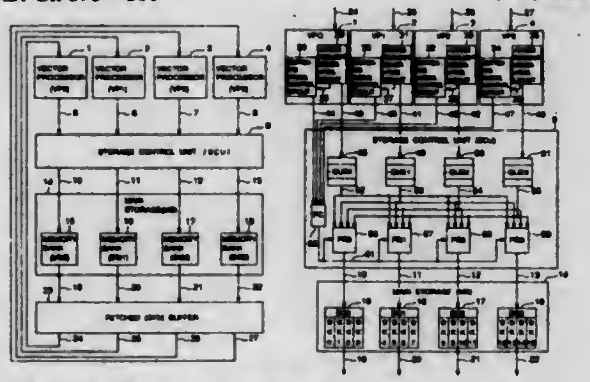
Tadayuki Sakakibara, Kunitachi; Teruo Tanaka, Hachioji, both of Japan; Katsuyoshi Kitai, Polo Alto, Calif.; Tadaaki Isobe; Shigeko Hashimoto, both of Hadano, Japan; Yasuhiro Inagami, and Yoshiko Tamaki, both of Kodaira, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 855,056, Mar. 19, 1992, Pat. No. 5,392,443. This application Dec. 21, 1993, Ser. No. 170,743

Claims priority, application Japan, Mar. 19, 1991, 3-054435; Dec. 25, 1992, 4-345900

Int. Cl.⁶ G06F *12/00; 15/16*

U.S. Cl. 395—800 **24 Claims**



1. A computer system, comprising:
a plurality of processors;
a storage divided into a plurality of memory modules which can be accessed in parallel with one another; and
a storage control circuit for transferring memory access requests outputted in parallel from said plurality of processors to said plurality of memory modules in parallel with one another;
said plurality of processors including a plurality of requests, each in one of said processors, wherein each requester responds to a memory access instruction being executed by a processor to which said requester belong requests accesses to a plurality of memory locations within said storage and issues sequentially a plurality of access requests for accessing said plurality of memory locations, said requester of each processor including a signal generating circuit for generating a priority switching signal for switching a priority of said requester,
wherein said storage control circuit includes:
a plurality of selector circuits, each provided in one-to-one correspondence with respective ones of said plurality of memory modules, each selector circuit selecting one of a plurality of access requests which are issued from said plurality of processors and which are to be transferred to one of the memory modules corresponding to the selector circuit,
a priority information hold unit for holding priority information which is defined in common with respect to said plurality of selector circuits concerning priorities of said plurality of requesters and which is to be supplied to said plurality of selector circuits, and
a switching circuit, connected to said plurality of requesters and said priority information hold unit, which responds to a priority switching signal outputted from said signal generating circuit included in one of said plurality of requesters and which switches said priority information held in said priority information hold unit so as to change priority of said one requester.

5,617,576

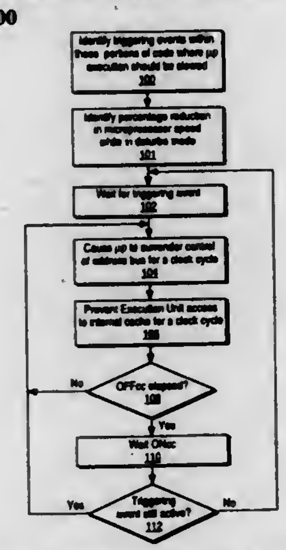
METHOD OF SLOWING DOWN CODE EXECUTION IN A MICROPROCESSOR INCLUDING AN INTERNAL CACHE MEMORY

Edward L. Solari, Monmouth; Thomas A. Heckenberg, Forest Grove, and Subbarao Vanka, Portland, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 175,655, Dec. 29, 1993, abandoned. This application Feb. 7, 1995, Ser. No. 385,195

Int. Cl.⁶ G06F *9/00; 13/00*

U.S. Cl. 395—800 **12 Claims**



1. A method of slowing the execution of a sequence of instructions contained in a designated section of address space in a computer system having a microprocessor, a main memory and an address bus coupling the microprocessor to the main memory, the main memory including the designated section of address space, the computer system also including at least one control line which is used to prevent access to the main memory and coupled to the microprocessor and the computer system also including an execution speed controller coupled to the address bus and the control line, comprising the steps of:
a) identifying a percentage reduction in microprocessor speed represented by a number of clock cycles defining a period during which the microprocessor is stalled; and
b) configuring the execution speed controller with the number of clock cycles defining the period during which the microprocessor is stalled.
c) examining the address bus to identify a predetermined address associated with the designated section of address space;
d) providing at least one control signal on the control line in response to identifying the predetermined address; and
e) using the control signal to slow the execution by the microprocessor of the sequence of instructions stored within the designated section of address space.

5,617,577

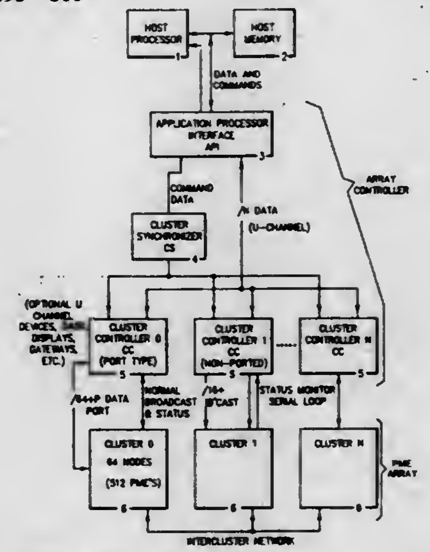
ADVANCED PARALLEL ARRAY PROCESSOR I/O CONNECTION

Thomas N. Barker, Vestal; Clive A. Collins, Poughkeepsie; Michael C. Dapp, Endwell; James W. Dieffenderfer, Owego; Donald G. Grice; Billy J. Knowles, both of Kingston; Donald M. Lesmeister, Vestal; Richard E. Nier, Apalachin, all of N.Y.; Eric E. Retter, Warren Center, Pa.; David B. Rolfe, West Hurley, and Vincent J. Smoral, Endwell, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 887,259, May 22, 1992, abandoned, and a continuation-in-part of Ser. No. 301,278, Sep. 6, 1994, which is a continuation of Ser. No. 611,594, Nov. 13, 1990, abandoned, and a continuation-in-part of Ser. No. 324,295, Oct. 17, 1994, Pat. No. 5,475,856, which is a continuation of Ser. No. 798,788, Nov. 27, 1991, abandoned. This application Mar. 8, 1995, Ser. No. 400,687

Int. Cl.⁶ G06F *13/00*

U.S. Cl. 395—800 **14 Claims**



1. A computer system, comprising:
a plurality of nodes interconnected as a multi-dimensional network with parallel communication paths between processor-memory elements (PME's) each having a processor and a local memory along communication paths providing a processing array, each node comprising a plurality of PME's having communication paths to other PME's;
an array director including:
an application program interface for receiving and translating commands and data directed to said processing array;
a cluster synchronizer;
a cluster controller; and
a zipper for breaking node connections and providing I/O communications to nodes;
wherein the cluster synchronizer and the cluster controller route data and commands to appropriate clusters and provide load balancing among clusters;
wherein the computer system is organized as a massively parallel machine with nodes interconnected as a multi-dimensional network cluster with parallel communication paths between PME's along communication paths both internal and external to a node, and further comprising means for breaking communication paths between PME's providing external I/O communication;
wherein said processing array has rings for communication which can be broken to provide an interface for communications external to a node.

5,617,578

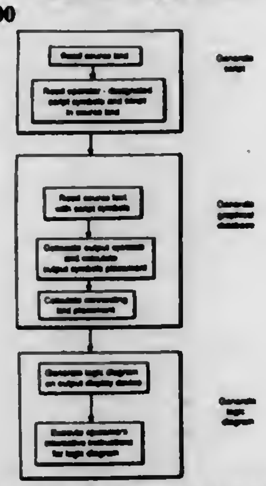
COMPUTER-BASED WORKSTATION FOR GENERATION OF LOGIC DIAGRAMS FROM NATURAL LANGUAGE TEXT STRUCTURED BY THE INSERTION OF SCRIPT SYMBOLS

Yury Kroll; Vadim M. Yasinovsky, both of Brookline, and Adam B. Green, Lexington, all of Mass., assignors to SPSS Corp., Chicago, Ill.

Continuation of Ser. No. 301,480, Sep. 8, 1994, abandoned, which is a continuation of Ser. No. 545,341, Jun. 26, 1990, abandoned. This application Jun. 3, 1996, Ser. No. 655,665

Int. Cl.⁶ G06F *15/62*

U.S. Cl. 395—800 **5 Claims**



1. A computer-based workstation for generating logic diagrams from a script corresponding to a text written in a natural language, said workstation comprising:

a computing apparatus having at least one central processing unit and at least one block of memory,

an input unit or units connected to said computing apparatus for providing input of said script to said computing apparatus,

programs running in said computing apparatus which

recognize script symbols in said script,

generate from said script a graphical database containing shape and placement information of output symbols and connecting lines of said logic diagrams,

determine within said graphical database from a set of predetermined rules a minimum total line length of each said connecting lines.

determine from said set of predetermined rules a minimum number of segments of said connecting lines, and

responsive to said placement information of said output symbols placement information of said connecting lines, said minimum total line length, and said minimum number of segments, minimize connecting line intersection and connecting line ambiguity within said graphical database, and

generate from said graphical database logic diagrams corresponding to said script, and

an output unit or units connected to said computing apparatus for providing visual display of logic diagrams.

5,617,579

PROCESS CARTRIDGE, METHOD FOR ASSEMBLING PROCESS CARTRIDGE AND IMAGE FORMING APPARATUS

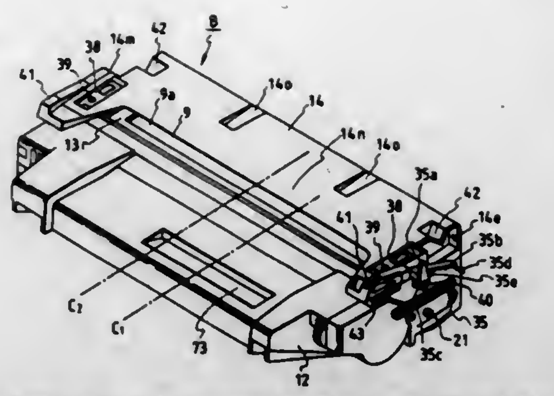
Masahiko Yashiro, Yokohama; Shinichi Sasaki, Fujisawa; Isao Ikemoto, Kawasaki; Koji Miura, Sagamihara; Toshiyuki Karakama, Tokyo, and Atsushi Numagami, Hadano, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 307,045, Sep. 16, 1994, Pat. No. 5,500,714, which is a continuation of Ser. No. 70,704, Jun. 2, 1993, abandoned. This application Aug. 29, 1995, Ser. No. 521,069

Claims priority, application Japan, Sep. 4, 1992, 4-260613; Sep. 24, 1992, 4-277761

Int. Cl.⁶ G03G *15/00*

U.S. Cl. 399—114 **33 Claims**



1. A toner frame for a process cartridge removably mountable onto a main body of an electrophotographic image forming apparatus including a resilient earth contact to be electrically contacted with an electrophotographic photosensitive drum in the process cartridge for earthing the electrophotographic photosensitive drum, and a fixed member for shifting a protection cover of the process cartridge for protecting the electrophotographic photosensitive drum, the process cartridge including a process cartridge frame; an electrophotographic photosensitive drum mounted in the process cartridge frame; a rotatable developing roller for supplying toner to the electrophotographic photosensitive drum for developing a latent image formed on the electrophotographic photosensitive drum; a charge roller abutted to the electrophotographic photosensitive drum for charging the electrophotographic photosensitive drum; a cleaning blade abutted to the electrophotographic photosensitive drum for removing residual toner from the electrophotographic photosensitive drum; a protection cover for protecting the electrophotographic photosensitive drum, the protection cover capable of assuming a protection position wherein a transfer area on the electrophotographic photosensitive drum is covered, the transfer area being an area where the toner image developed on the electrophotographic photosensitive drum is transferred to a recording medium, and an open position wherein the transfer area is not covered; an urging member for applying an urging force to the protection cover so as to urge the protection cover toward the protection position; a protection cover shift member disposed adjacent one end of the electrophotographic photosensitive drum in an axial direction thereof, wherein the protection cover shift member abuts the fixed member for shifting the protection cover from the protection position to the open position against the urging force in the process of mounting the process cartridge onto the main body of the electrophotographic image forming apparatus; a drum earthing member disposed adjacent to the end of the electrophotographic photosensitive drum that the protection cover shift member is disposed adjacent to, wherein the drum earthing member abuts the resilient earth contact when the process cartridge is mounted onto the main body of the electrophotographic image forming apparatus; wherein the process cartridge is mounted onto the main body of the electrophotographic image forming apparatus in a direction intersecting the axial direction of the electrophotographic photosensitive drum; said toner frame comprising:

a toner containing portion for containing toner to be used by the rotatable developing roller for developing the latent image formed on the electrophotographic photosensitive drum; and

a grip formed on an outer surface of said toner containing portion for gripping said toner frame upon mounting and dismounting of the process cartridge respectively onto and from the main body of the electrophotographic image forming apparatus,

wherein, when said toner frame is assembled to the process cartridge, a center of said grip is offset in the axial direction of the electrophotographic photosensitive drum from a longitudinal midpoint of the electrophotographic photosensitive drum toward the end of the electrophotographic photosensitive drum at which the protection cover shift member and the drum earthing member are disposed adjacent to.

DESIGNS

APRIL 1, 1997

378,627

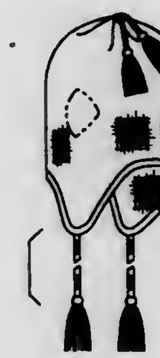
TASSELLED LOGO HAT

Patrick W. O'Brien, 530 W. Diversey, #104, Chicago, Ill. 60614

Filed Nov. 1, 1995, Ser. No. 45,880

Term of patent 14 years

U.S. Cl. D2—889



378,628

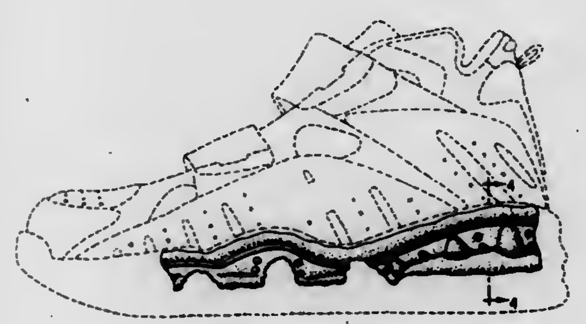
ELEMENT OF A SHOE SOLE

Ricardo Vestuti, Portland, Oreg., assignor to Nike, Inc., Beaverton, Oreg.

Filed Feb. 8, 1996, Ser. No. 50,062

Term of patent 14 years

U.S. Cl. D2—947



378,629

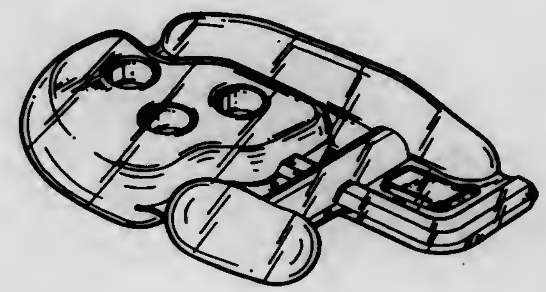
BLADDER FOR A SHOE SOLE

Joel L. Passke, Portland, and James C. Sell, Jr., Beaverton, both of Oreg., assignors to Nike, Inc., Beaverton, Oreg.

Filed Jun. 3, 1996, Ser. No. 55,318

Term of patent 14 years

U.S. Cl. D2—961



378,630

KEY HOLDER

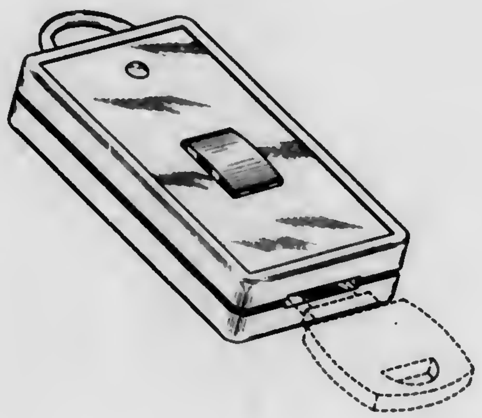
Stephen M. Carman, 5057 S. 4300 West, Hooper, Utah 84315

Filed Jul. 13, 1995, Ser. No. 41,402

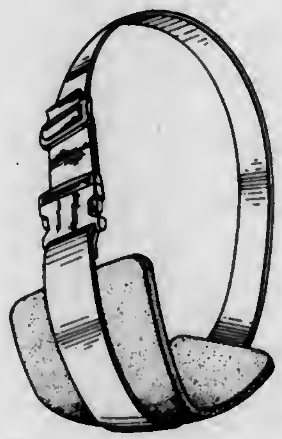
Term of patent 14 years

U.S. Cl. D3—207

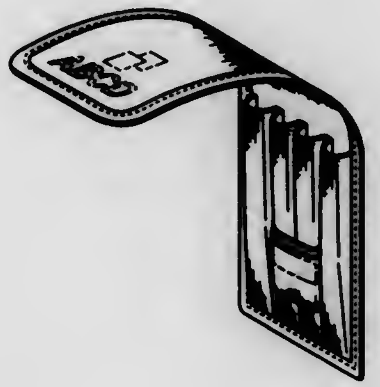
378,631
KEYCHAIN WITH HEATING MEANS FOR A KEY TO AID IN QUICK DEFROST OF AN AUTO LOCK
James Parker, 376 E. Washington, Bridgeport, Conn. 06608
Filed Dec. 22, 1995, Ser. No. 48,234
Term of patent 14 years
U.S. Cl. D3—208



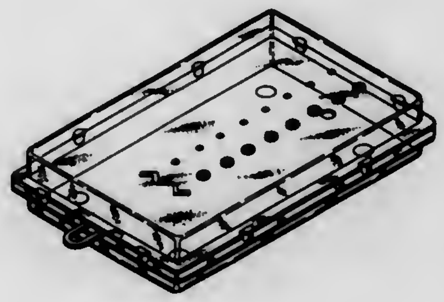
378,632
CHILD CARRIER STRAP
Kevin K. Popp, 14214 S. 24th Way, Phoenix, Ariz. 85048-9004
Filed Jun. 23, 1995, Ser. No. 40,683
Term of patent 14 years
U.S. Cl. D3—213



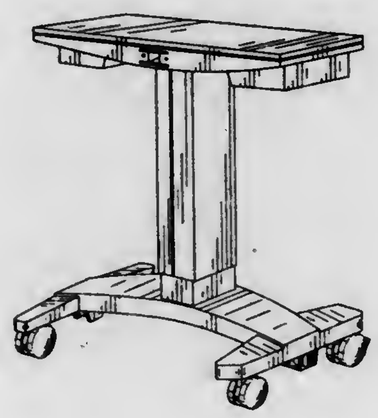
378,633
TOOL POUCH
Joseph R. Granito, 563 Victory Cir., Ballston Spa, N.Y. 12020
Filed Oct. 16, 1995, Ser. No. 45,269
Term of patent 14 years
U.S. Cl. D3—228



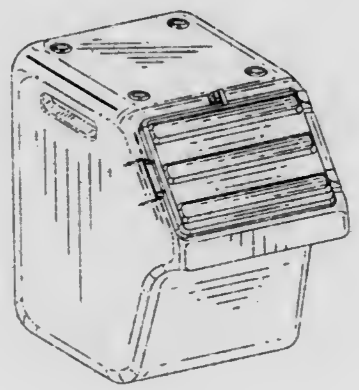
378,634
PROTECTIVE CASE FOR A REMOTE CONTROLLER
Roland E. LaPere, 16867 Wells St., Lake Elsinore, Calif. 92530
Filed Sep. 22, 1995, Ser. No. 44,318
Term of patent 14 years
U.S. Cl. D3—273



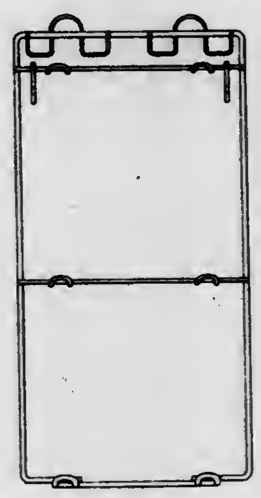
378,635
PORTABLE, ADJUSTABLE HEIGHT TABLE
Reto Studer, Avenches, Switzerland, and Theodor Wolf, Senden, Germany, assignors to Haag-Streit AG, Koniz, Switzerland
Filed Apr. 24, 1995, Ser. No. 37,909
Claims priority, application Switzerland, Oct. 25, 1994, 121-758
Term of patent 14 years
U.S. Cl. D6—429



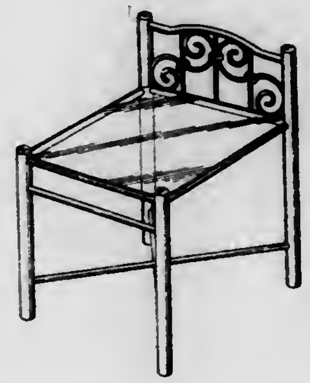
378,636
STORAGE BIN
Larry L. Chrisco, Fairland, Okla., assignor to Blitz U.S.A. Inc., Miami, Okla.
Filed May 30, 1995, Ser. No. 39,556
Term of patent 14 years
U.S. Cl. D6—443



378,637
MERCHANDISE DISPLAY RACK
Henry B. David, Glendale, Calif., assignor to Melco Wire Products Company, Glendale, Calif.
Filed Aug. 25, 1995, Ser. No. 43,376
Term of patent 14 years
U.S. Cl. D6—462



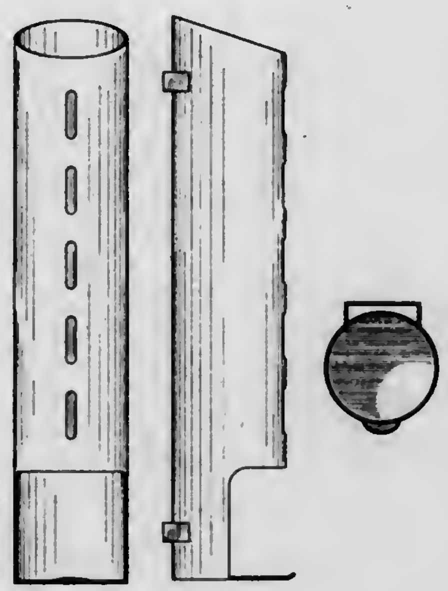
378,638
NIGHT TABLE
John Yeh, 660 S. Aberdeen, Anaheim Hills, Calif. 92807
Filed Feb. 2, 1996, Ser. No. 49,887
Term of patent 14 years
U.S. Cl. D6—487



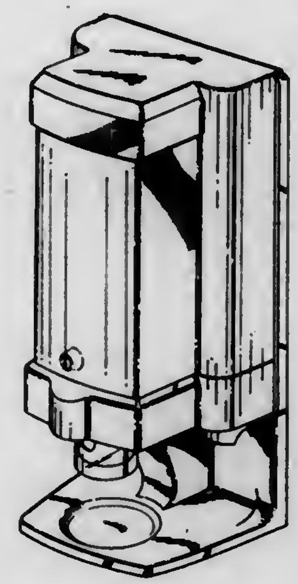
378,639
NIGHT TABLE
John Yeh, 660 S. Aberdeen, Anaheim Hills, Calif. 92807
Filed Feb. 2, 1996, Ser. No. 49,888
Term of patent 14 years
U.S. Cl. D6—487

378,640
HEADBOARD FOR BEDS
John Yeh, 660 S. Aberdeen, Anaheim Hills, Calif. 92807
Filed Apr. 18, 1996, Ser. No. 53,253
Term of patent 14 years
U.S. Cl. D6—505

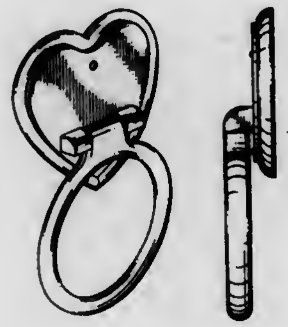
378,641
TOILET PAPER ROLL DISPENSER
Rudolf Beckenlehner, and Cliff Beckenlehner, both of 1 Marconi Ct., Unit 13, Bolton, Ontario, Canada
Filed Dec. 4, 1995, Ser. No. 47,445
Term of patent 14 years
U.S. Cl. D6—520



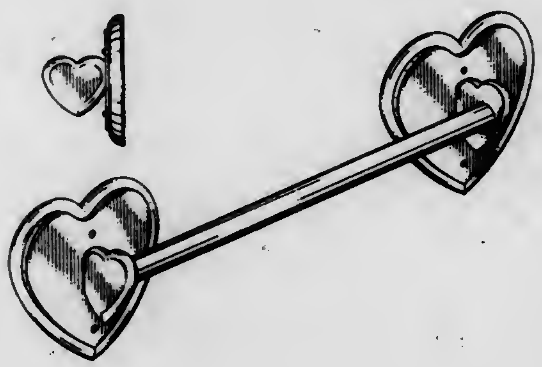
378,642
LIQUID DISPENSER
Michael DeGennaro, Larchmont, N.Y., assignor to Consumer Promotions Inc., Mount Vernon, N.Y.
Filed Nov. 15, 1995, Ser. No. 46,447
Term of patent 14 years
U.S. Cl. D6—542



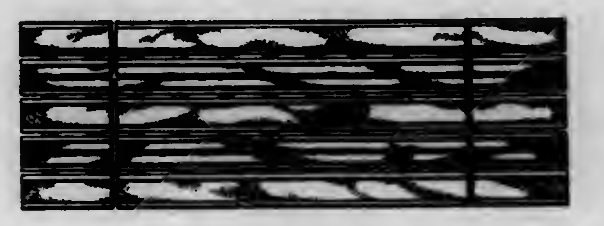
378,643
TOWEL HOLDER
Gary L. Jordan, Feathers Creek Rd., Belmont, N.Y. 14813
Continuation-in-part of Ser. No. 38,608, May 9, 1995, Pat. No. Des. 371,709. This application Apr. 9, 1996, Ser. No. 52,726
Term of patent 14 years
U.S. Cl. D6—546



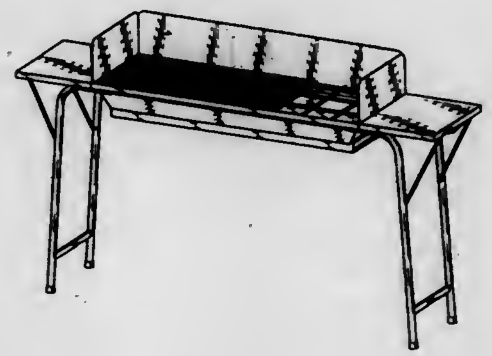
378,644
TOWEL RACK
Gary L. Jordan, Feathers Creek Rd., Belmont, N.Y. 14813
Division of Ser. No. 38,608, May 9, 1995, Pat. No. Des. 371,709. This application Apr. 9, 1996, Ser. No. 52,727
Term of patent 14 years
U.S. Cl. D6—549



378,645
FLOOR MAT OF TREAD STRIPS WITH A SPACER ARRAY
Roy H. Reardon, Wakefield, England, assignor to BTR plc, London, United Kingdom
Filed Feb. 3, 1994, Ser. No. 18,311
Claims priority, application United Kingdom, Aug. 6, 1993, 2032952
Term of patent 14 years
U.S. Cl. D6—582

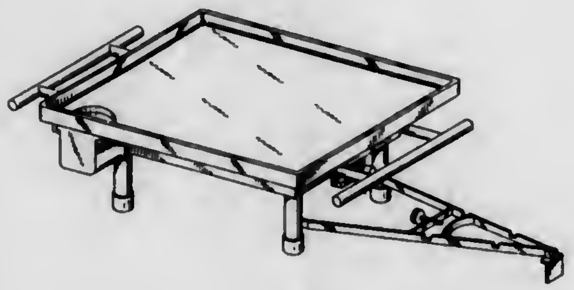


378,646
COOKER AND BARBECUE GRILL
William A. Dutro, Cove, and S. Ty Measom, Logan, both of Utah, assignors to Dutro Company, Emeryville, Calif.
Filed Mar. 18, 1996, Ser. No. 51,745
Term of patent 14 years
U.S. Cl. D7—339

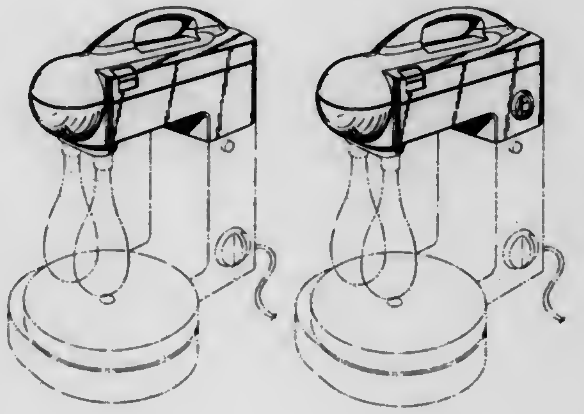


378,647
ELECTRIC DEEP FAT FRYER
Philippe Piret, Ifs, France, assignor to Moulinex S.A., Bagnolet, France
Filed Jun. 6, 1995, Ser. No. 40,256
Claims priority, application France, Dec. 6, 1994, 94 6720
Term of patent 14 years
U.S. Cl. D7—354

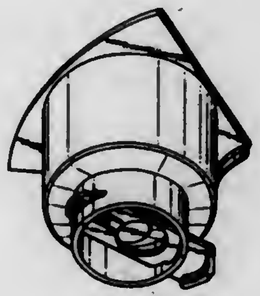
378,648
PORTABLE COOKING GRIDDLE
Brian Perry, 13502-H Whittier Blvd. #360, Whittier, Calif. 90605
Continuation-in-part of Ser. No. 40,580, Jun. 22, 1995, Pat. No. Des. 373,702. This application Nov. 13, 1995, Ser. No. 46,319
Term of patent 14 years
U.S. Cl. D7—363



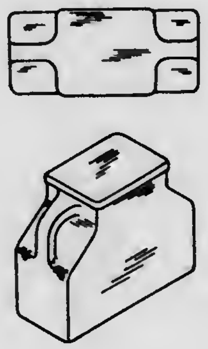
378,649
STAND MIXER HEAD
Terry L. Myers, Richmond, Va., and Phillip L. Brookshire, Cincinnati, Ohio, assignors to Hamilton Beach/Proctor-Silex, Inc., Glen Allen, Va.
Filed Oct. 3, 1994, Ser. No. 29,290
Term of patent 14 years
U.S. Cl. D7—379



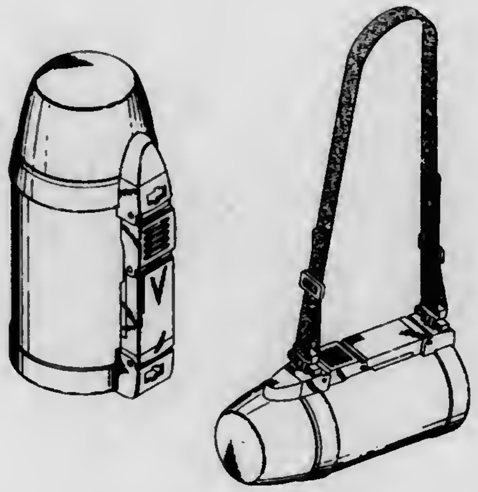
378,650
LIQUID DISPENSER
Don M. Wong, 2296 Bunker Hill Dr., San Mateo, Calif. 94402
Filed Aug. 7, 1995, Ser. No. 43,443
Term of patent 14 years
U.S. Cl. D7—397



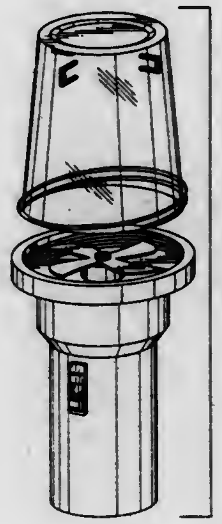
378,651
COOLER
Jeffrey D. Marion, 805 W. End Blvd., Winston-Salem, N.C. 27101
Filed Dec. 18, 1995, Ser. No. 48,023
Term of patent 14 years
U.S. Cl. D7—605



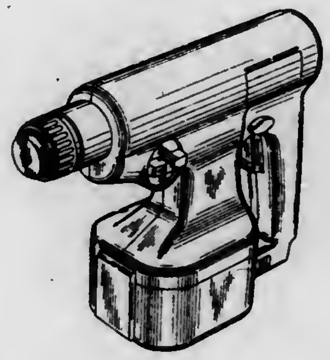
378,652
PORTABLE VACUUM BOTTLE
Michio Yamanaka, and Takashi Kondo, both of Tokyo, Japan, assignors to Nippon Sanso Corporation, Tokyo, Japan
Filed Mar. 28, 1996, Ser. No. 52,357
Claims priority, application Japan, Oct. 19, 1995, 7-31335
Term of patent 14 years
U.S. Cl. D7—608



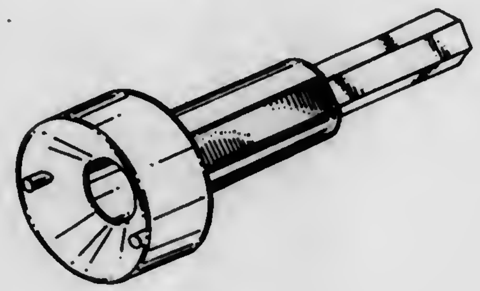
378,653
HERB GRINDER
Anthony M. Richardi, 5 Nickerson Ave., Taunton, Mass. 02780
Filed Nov. 16, 1995, Ser. No. 46,847
Term of patent 14 years
U.S. Cl. D7—679



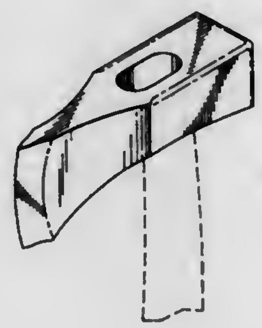
378,654
CORDLESS HAMMER
Takeshi Matsuoka; Noriaki Kobayashi, and Joswari Mohamed, all of Hitachinaka, Japan, assignors to Hitachi Koki Co., Ltd., Tokyo, Japan
Filed Nov. 3, 1995, Ser. No. 46,758
Claims priority, application Japan, Jun. 23, 1995, 7-18131
Term of patent 14 years
U.S. Cl. D8—69



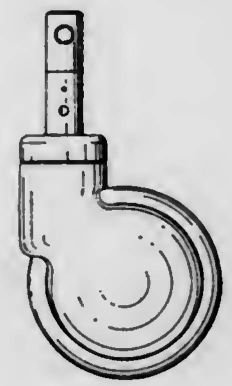
378,655
POWER DRIVEN GOLF SPIKE WRENCH
Jerry P. Anderson, 3374 Checkmate Dr., Anchorage, Ak. 99508
Continuation-in-part of Ser. No. 33,618, Jan. 17, 1995, abandoned. This application Apr. 22, 1996, Ser. No. 53,447
Term of patent 14 years
U.S. Cl. D8—70



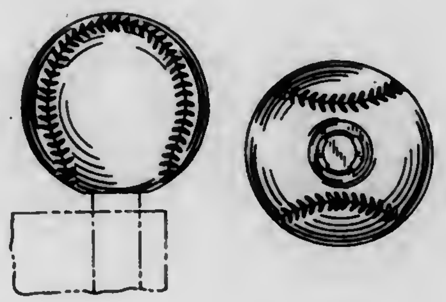
378,656
WOOD SPLITTING MAUL
Nelson D. Maine, 130 Western Ave., Henniker, N.H. 03242
Filed Oct. 16, 1995, Ser. No. 45,264
Term of patent 14 years
U.S. Cl. D8—78



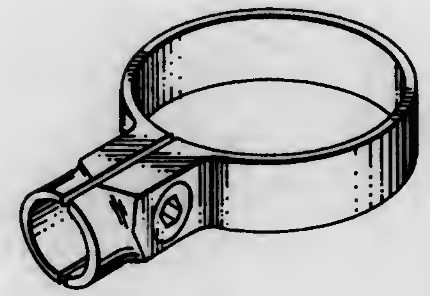
378,657
CASTOR
Stafford T. Screen, West Midlands, United Kingdom, assignor to Colson Castors Limited, West Midlands, United Kingdom
Filed Nov. 17, 1995, Ser. No. 46,859
Claims priority, application United Kingdom, May 17, 1995, 2047500
Term of patent 14 years
U.S. Cl. D8—375



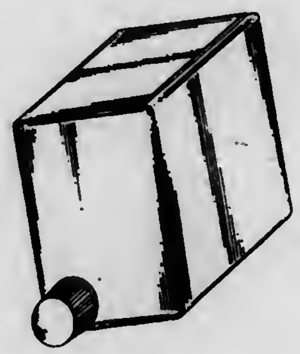
378,658
BASEBALL-SHAPED FINIAL FOR A CURTAIN ROD AND HOLDBACK
David K. Bried, Loves Park, and James Daniels, Freeport, both of Ill., assignors to Newell Operating Company, Freeport, Ill.
Filed Mar. 31, 1995, Ser. No. 36,956
Term of patent 14 years
U.S. Cl. D8—378



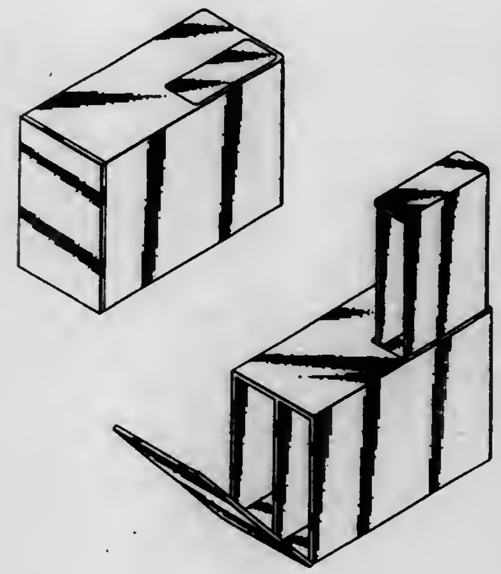
378,659
CONTROL CABLE CLAMP FOR MOTORCYCLES
Ole Blennov, 229 S. Glasgiow Ave., Inglewood, Calif. 90301
Filed Jun. 5, 1995, Ser. No. 39,742
Term of patent 14 years
U.S. Cl. D8—396



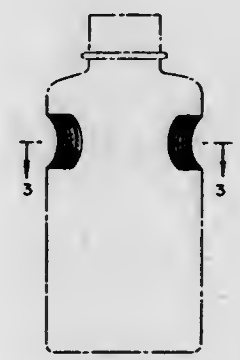
378,660
CONTAINER FOR LIQUID INK FOR A PRINTING MACHINE
Yoshio Ota, and Koji Ono, both of Shibata-gun, Japan, assignors to Tohoku Ricoh Co., Ltd., Japan
Filed Apr. 20, 1995, Ser. No. 37,922
Claims priority, application Japan, Jan. 30, 1995, 7-2008
Term of patent 14 years
U.S. Cl. D9—417



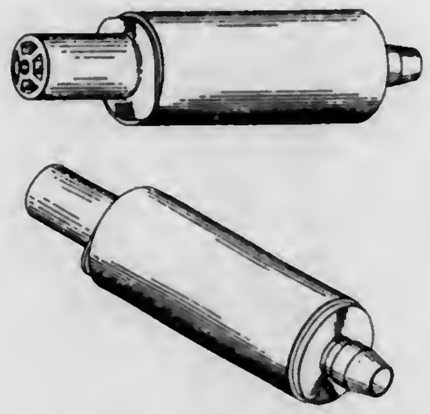
378,661
CONTAINER
Peggy J. Campbell-Scott, 231 W. Tamarisk Ave., Phoenix, Ariz. 85041
Division of Ser. No. 29,335, Oct. 3, 1994, Pat. No. Des. 368,656. This application Apr. 8, 1996, Ser. No. 52,766
Term of patent 14 years
U.S. Cl. D9—432



378,662
PAIR OF SURFACE DETAILS FOR A CYLINDRICAL BOTTLE
Marc Gobe, New York, N.Y., assignor to Bath & Body Works, Inc., Columbus, Ohio
Filed Mar. 28, 1995, Ser. No. 36,872
The portion of the term of this patent subsequent to Feb. 25, 2011, has been disclaimed.
Term of patent 14 years
U.S. Cl. D9—434



378,663
PUMP FOR A SOAP DISPENSER
Warren S. Daansen, P.O. Box 614, Nashua, N.H. 03061
Filed Apr. 23, 1996, Ser. No. 53,476
Term of patent 14 years
U.S. Cl. D9—448

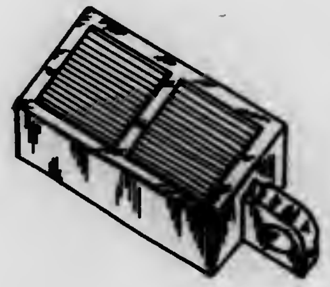


378,664
BOTTLE FOR LIQUIDS
Stuart H. Feen, Libertyville, Ill., assignor to Plastic Bottle Corporation, Libertyville, Ill.
Filed May 12, 1994, Ser. No. 22,810
Term of patent 14 years
U.S. Cl. D9—528

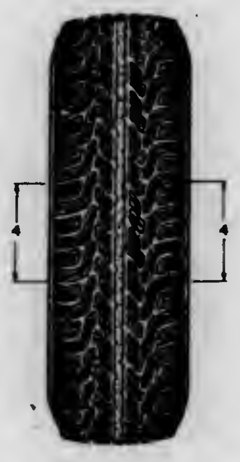
378,665
BOTTLE
Russell R. Fenton, and Elmer (Chuck) H. Goss, both of East Amherst, N.Y., assignors to FWJ, Inc., Tonawanda, N.Y.
Filed Sep. 18, 1995, Ser. No. 44,730
Term of patent 14 years
U.S. Cl. D9—558

378,666
WRIST WATCH
Kazuyasu Kojima, Fussa, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Dec. 26, 1995, Ser. No. 48,294
Term of patent 14 years
U.S. Cl. D10—38

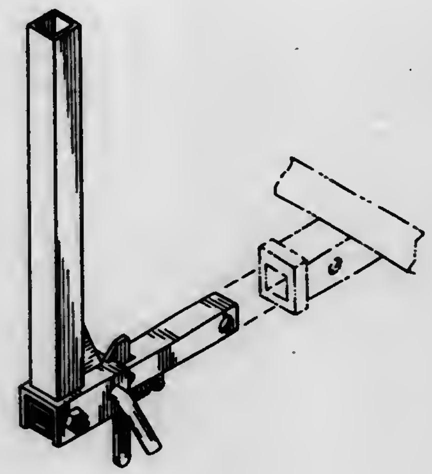
378,667
MOTORCYCLE FOOT PEG
Henry S. Ortega, 1738 Via Buena Vista, San Lorenzo, Calif. 94580
Filed Sep. 1, 1995, Ser. No. 43,331
Term of patent 14 years
U.S. Cl. D12—114



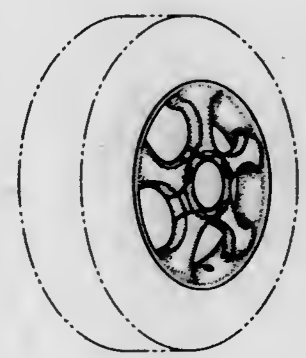
378,668
AUTOMOBILE TIRE
Koya Hamamoto, Hiratsuka; Izumi Kuramochi, and Hiroshi Tokizaki, both of Tokyo, all of Japan, assignors to The Yokohama Rubber Co. Ltd., Tokyo, Japan
Filed May 17, 1995, Ser. No. 39,190
Claims priority, application Japan, Dec. 22, 1994, 6-38938
Term of patent 14 years
U.S. Cl. D12—146



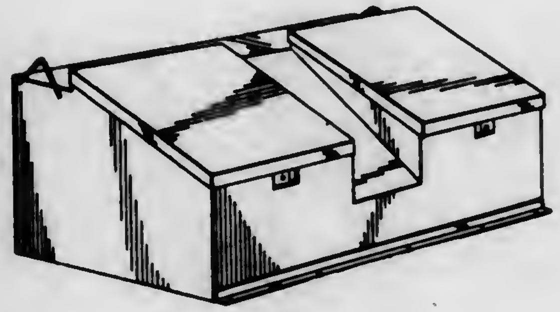
378,669
RECEIVER HITCH
John K. Gregory, 8465 Ramsey Rd., Gold Hill, Oreg. 97525
Filed Mar. 7, 1996, Ser. No. 51,371
Term of patent 14 years
U.S. Cl. D12—162



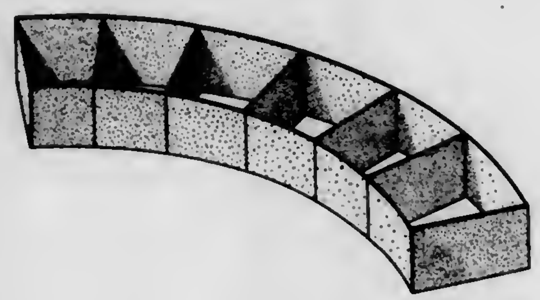
378,670
FRONT FACE OF A VEHICLE WHEEL
Alberto Echazabal, Hialeah Gardens, Fla., and Claudio Bernoni, Albano Terma, Italy, assignors to Motoring Accessories, Miami, Fla.
Filed Apr. 28, 1995, Ser. No. 38,113
The portion of the term of this patent subsequent to Aug. 1, 2009, has been disclaimed.
Term of patent 14 years
U.S. Cl. D12—209



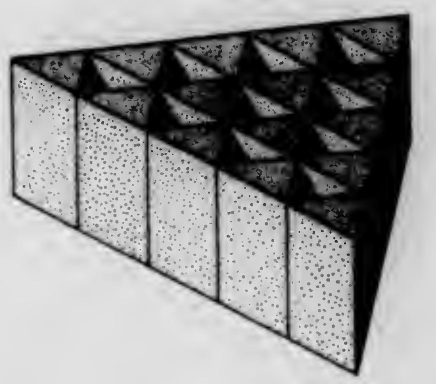
378,671
COMBINATION FUEL TANK AND TOOL BOX
Dean L. Herrs, 1117 8th Rd., Linn, Kans. 66953
Filed Apr. 10, 1996, Ser. No. 52,876
Term of patent 14 years
U.S. Cl. D12—218



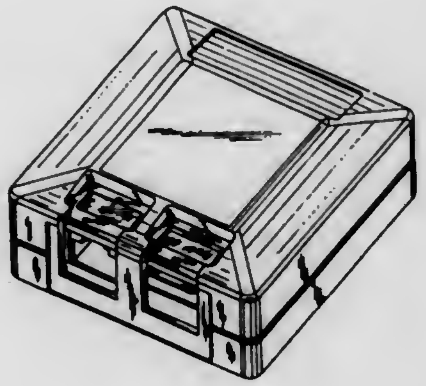
378,672
GRID STRUCTURE FOR SUPPORTING ANTENNAS AND REFLECTIVE SURFACES IN EXTRATERRESTRIAL SPACE
Tak Aochi, Morgan Hill, and Robert J. Pyle, Sunnyvale, both of Calif., assignors to Lockheed Missiles and Space Company, Inc., Sunnyvale, Calif.
Filed Nov. 22, 1991, Ser. No. 804,341
Term of patent 14 years
U.S. Cl. D12—345



378,673
GRID STRUCTURE FOR SUPPORTING ANTENNAS AND REFLECTIVE SURFACES IN EXTRATERRESTRIAL SPACE
Tak Aochi, Morgan Hill, and Robert J. Pyle, Sunnyvale, both of Calif., assignors to Lockheed Missiles and Space Company, Inc., Sunnyvale, Calif.
Filed Nov. 22, 1991, Ser. No. 804,342
Term of patent 14 years
U.S. Cl. D12—345

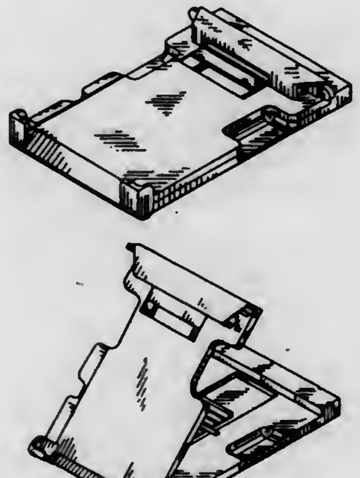


378,674
SURFACE MOUNT MULTIMEDIA OUTLET
Edward J. Volansky, Naugatuck; John A. Siemon, Woodbury, and Randy J. Below, Cheshire, all of Conn., assignors to The Siemon Company, Watertown, Conn.
Filed Nov. 4, 1994, Ser. No. 30,712
Term of patent 14 years
U.S. Cl. D13—147

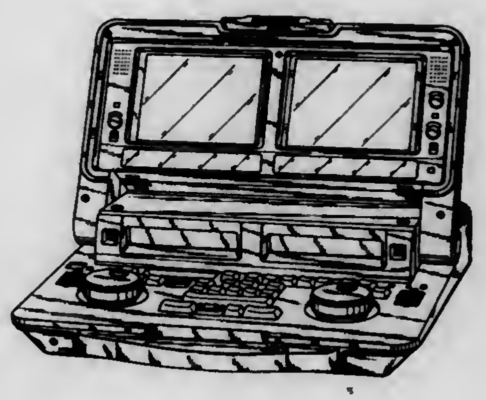


378,675
WAFER BOAT
Hiroyuki Iwai, Kanagawa-ken, Japan, assignor to Tokyo Electron Limited, Tokyo-to, Japan
Filed Nov. 30, 1995, Ser. No. 47,279
Claims priority, application Japan, May 30, 1995, 7-15169; May 30, 1995, 7-15170
Term of patent 14 years
U.S. Cl. D13—182

378,676
HOLDER FOR PORTABLE COMPUTING DEVICE
Walter A. Goodman, Binghamton, N.Y.; Frank V. Grebe, Racine, Wis.; Charles R. Hatton, Endicott, N.Y.; David J. Podmajersky, Johnson City, N.Y.; John H. Sherman, Glen Aubrey, N.Y., and Paul A. Wormsbecher, Endwell, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Sep. 9, 1994, Ser. No. 28,204
Term of patent 14 years
U.S. Cl. D14—114



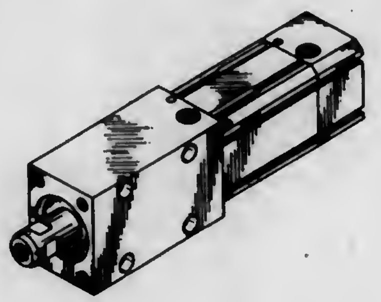
378,677
VIDEO EDITOR WITH LIQUID CRYSTAL MONITOR
Hiroyuki Matsumoto, Osaka; Sadayoshi Azuma, Kyoto, and Takashi Hiraoka, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Mar. 28, 1996, Ser. No. 52,361
Claims priority, application Japan, Oct. 26, 1995, 7-32440
Term of patent 14 years
U.S. Cl. D14—124



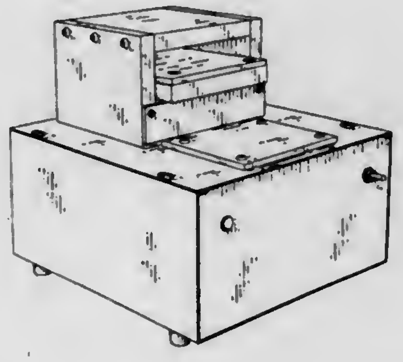
378,678
PORTABLE TWO-WAY RADIO
Frank M. Tyneski, Plantation; Craig F. Siddoway, Davie; Bruce A. Claxton, Coral Springs, and Gregory D. Jackson, Plantation, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed May 31, 1994, Ser. No. 23,686
Term of patent 14 years
U.S. Cl. D14—137

378,679
REMOTE CONTROL FOR TELEVISION SET
Edward Soriano, 715 E. Center, Duncanville, Tex. 75116
Filed Apr. 14, 1995, Ser. No. 37,513
Term of patent 14 years
U.S. Cl. D14—218

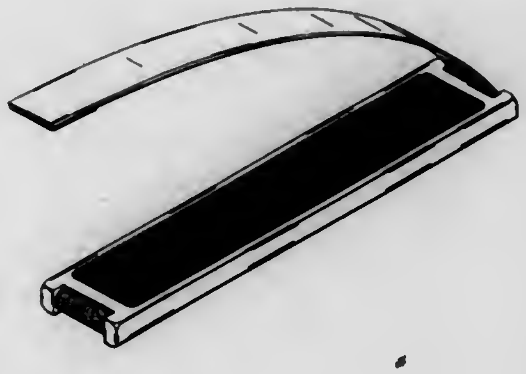
378,680
CYLINDER
Taishi Ikumi, Ibaraki-ken, Japan, assignor to SMC Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 18, 1996, Ser. No. 51,734
Claims priority, application Japan, Sep. 22, 1995, 7-28314
Term of patent 14 years
U.S. Cl. D15—7



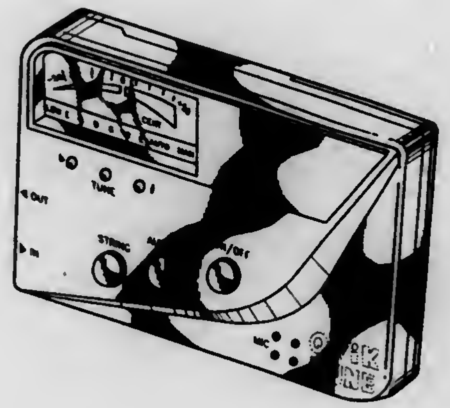
378,681
POWER PRESS FOR PAPER CUTTING
James H. Beljen, Mountain Home, Ark., assignor to School Systems, Inc., Mountain Home, Ark.
Filed Feb. 8, 1996, Ser. No. 50,114
Term of patent 14 years
U.S. Cl. D15—127



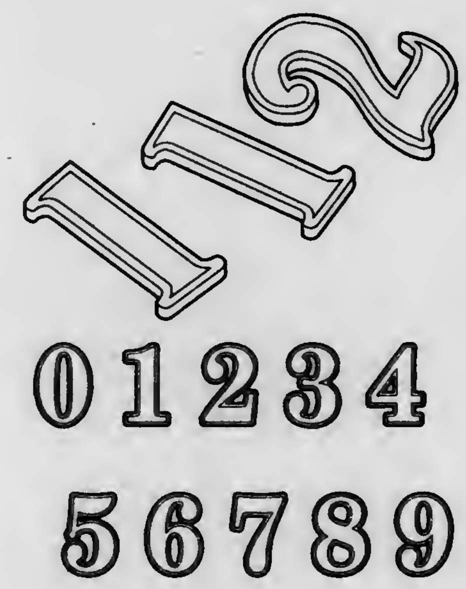
378,682
TRIPOD MOUNT FOR BINOCULARS
Malcolm S. Coley, 956 Robertson Bridge Rd., Statham, Ga. 30666, and Phillip E. G. Owen, Plot 1, Mount Hampden Harare, Zimbabwe
Filed Jan. 16, 1996, Ser. No. 48,954
Term of patent 14 years
U.S. Cl. D16—136



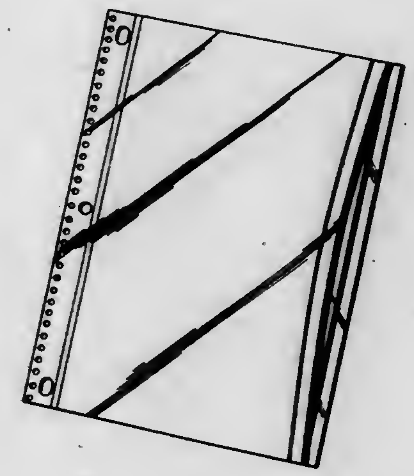
378,683
GUITAR TUNER WITH ANALOG-SIMULATIVE LIQUID CRYSTAL DISPLAY
Steve Ridinger, P.O. Box 2769, Laguna Hills, Calif. 92654-2769
Filed Nov. 16, 1995, Ser. No. 46,828
Term of patent 14 years
U.S. Cl. D17—99



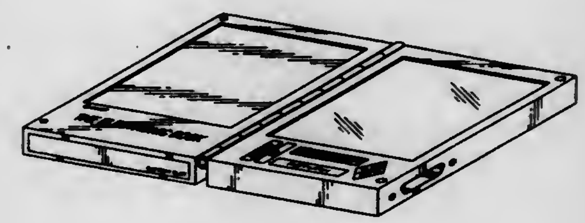
378,684
SET OF NUMBERS
Geraldine D. Duppins, 112 Enchanted Hills Rd., Apt. 102, Owings Mills, Md. 21117
Filed Oct. 27, 1995, Ser. No. 46,714
Term of patent 14 years
U.S. Cl. D18—26



378,685
SPIRAL NOTEBOOK POUCH
Diana J. French, and Charlotte M. Odau, both of 2009 Linden Lake Rd., Fort Collins, Colo. 80524
Filed Nov. 29, 1994, Ser. No. 31,498
Term of patent 14 years
U.S. Cl. D19—33

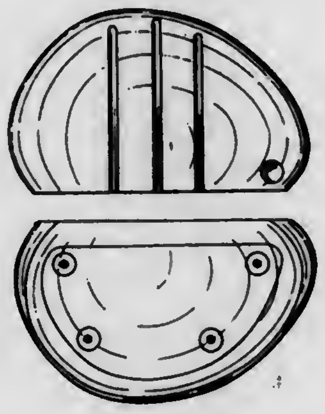


378,686
ELECTRONIC BOOK
Roger P. Proctor, and Robert R. Rankin, both of 13 Longyear Ave., Tillson, N.Y. 12486
Filed Dec. 1, 1995, Ser. No. 47,362
Term of patent 14 years
U.S. Cl. D19—60

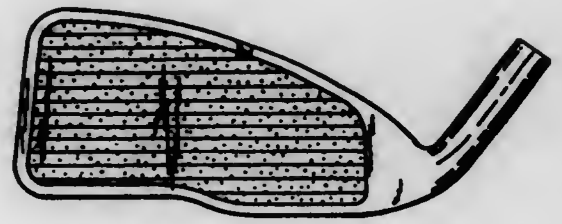


378,687
TOSS GAME
Eddie Clark, P.O. Box 105483, Jefferson City, Mo. 65110, and Curtis A. Hazelhorst, 726 Bighorn Dr., Jefferson City, Mo. 65109
Filed May 25, 1995, Ser. No. 39,263
Term of patent 14 years
U.S. Cl. D21—5

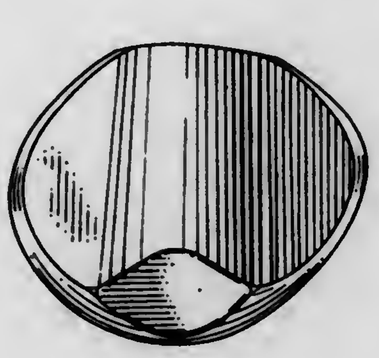
378,688
MALLET PUTTER HEAD
Don T. Cameron, Carlsbad, Calif., assignor to Acushnet Company, Fairhaven, Mass.
Filed Jun. 7, 1995, Ser. No. 40,005
Term of patent 14 years
U.S. Cl. D21—219



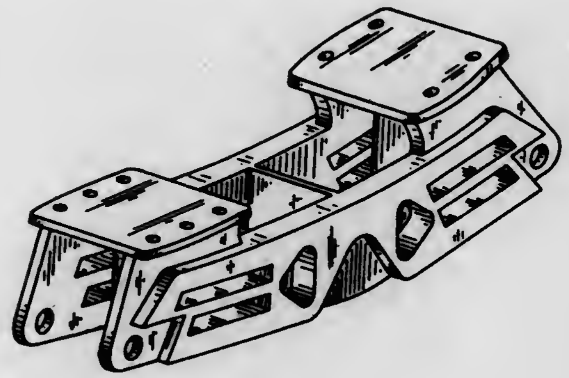
378,689
GOLF CLUB IRON HEAD
Jerry G. Beck, 5328 Fairway Ct., West Bloomfield, Mich. 48323
Filed Aug. 25, 1995, Ser. No. 43,126
Term of patent 14 years
U.S. Cl. D21—220



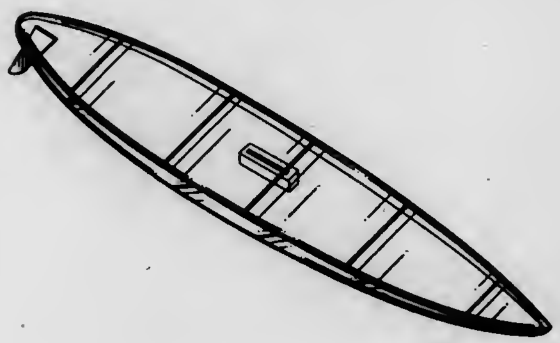
378,690
GOLF CLUB SOLE PLATE
Anthony R. Stella, Tarzana, Calif., assignor to Maverick Golf Corporation, Tarzana, Calif.
Filed Oct. 25, 1995, Ser. No. 45,647
Term of patent 14 years
U.S. Cl. D21—221



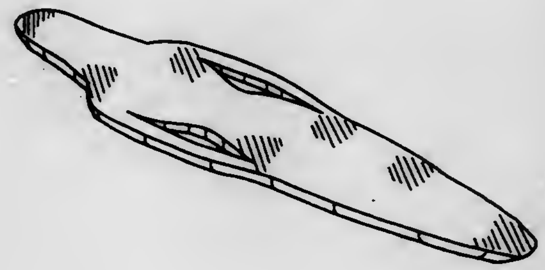
378,691
IN-LINE WHEELED SKATE CHASSIS
Michael K. Pratt, Ware, Mass., assignor to Seneca Sports, Inc., Milford, Mass.
Filed Nov. 9, 1995, Ser. No. 46,216
Term of patent 14 years
U.S. Cl. D21—226



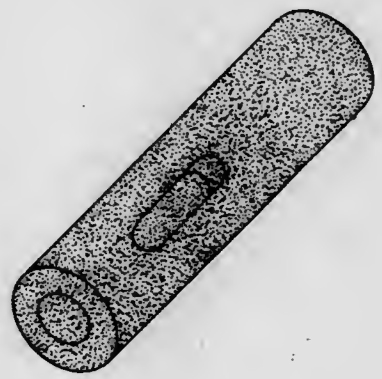
378,692
TRANSPARENT AQUATIC BOARD
Bruce C. Lincoln, 8334 S. Mill Ave., Tempe, Ariz. 85284
Filed Feb. 23, 1996, Ser. No. 50,713
Term of patent 14 years
U.S. Cl. D21—228



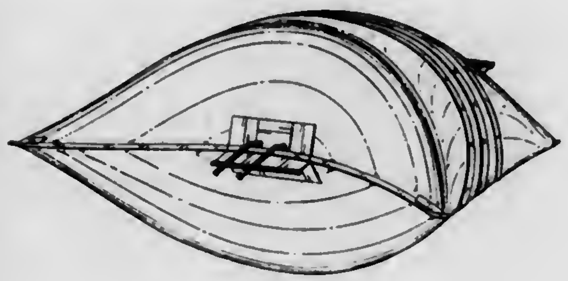
378,693
HUMAN BODY SHAPED BODY BOARD
Georgios Margaritis, 620 Iris Ave., #205, Sunnyvale, Calif. 94086
Filed Oct. 23, 1995, Ser. No. 45,544
Term of patent 14 years
U.S. Cl. D21—236



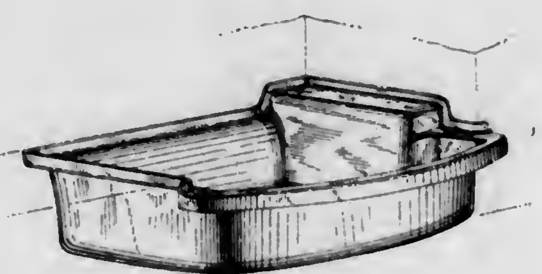
378,694
FISHING ROD FLOAT
Thomas P. Colling, 58319 Kimber, Washington, Mich. 48094, and Jo-Ed Spitzer, 2997 Walton Blvd., Auburn Hills, Mich. 48326
Filed May 1, 1995, Ser. No. 38,196
Term of patent 14 years
U.S. Cl. D22—139



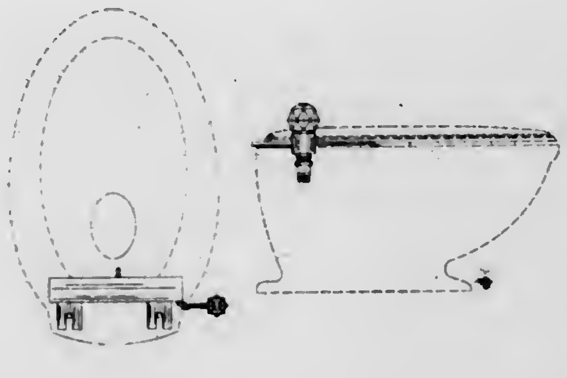
378,695
PIPELINE PLUG
Allen D. Mathison, Richfield, and Randy D. Smith, New Hope, both of Minn., assignors to Cherne Industries Incorporated, Minneapolis, Minn.
Filed May 19, 1994, Ser. No. 23,217
Term of patent 14 years
U.S. Cl. D23—260



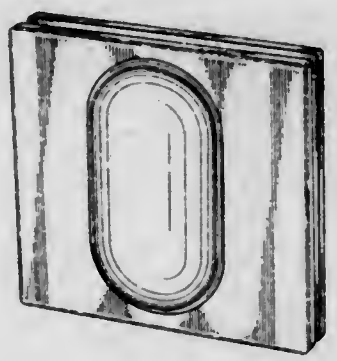
378,696
BASE FOR BATHING AREA
Thomas A. Bonnell, and Robert C. Giese, both of Sheboygan, Wis., assignors to Kohler Co., Kohler, Wis.
Filed Jan. 25, 1995, Ser. No. 33,973
Term of patent 14 years
U.S. Cl. D23—283



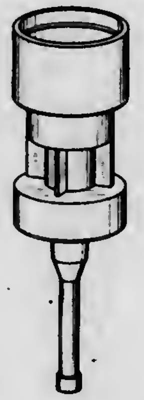
378,697
PERSONAL PORTABLE BIDET
H. W. New, 25188 Marion, Unit F-409, Punta Gorda, Fla. 33950
Filed Aug. 5, 1993, Ser. No. 11,471
Term of patent 14 years
U.S. Cl. D23—295



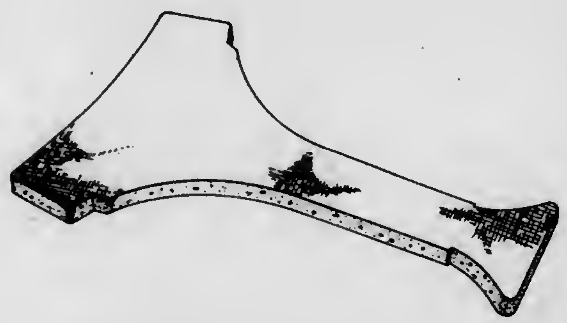
378,698
VENTILATING LOUVER
Minoru Ukai, Gifu, and Hideaki Nakata, Aichi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., and Matsushita Seiko Co., Ltd., both of Osaka, Japan
Filed Aug. 9, 1995, Ser. No. 42,739
Claims priority, application Japan, Feb. 9, 1995, 7-3379
Term of patent 14 years
U.S. Cl. D23—393



378,699
CANNULA
John J. Niedospial, Princeton Junction, N.J., and Robert J. DeLuccia, Mamaroneck, N.Y., assignors to Sanofi Winthrop, Inc., New York, N.Y.
Filed Jan. 18, 1996, Ser. No. 48,997
Term of patent 14 years
U.S. Cl. D24—112

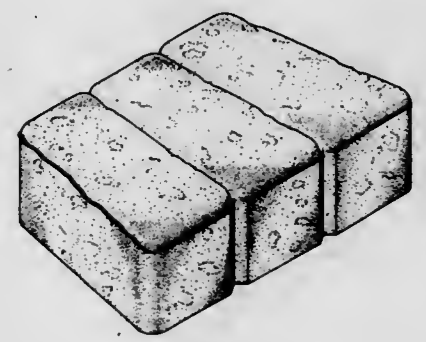


378,700
FOAM PAD
Robert E. Taylor, Fairport, and Paul J. Klock, Rochester, both of N.Y., assignors to Forte Technologies, Inc., Rochester, N.Y.
Filed Dec. 21, 1995, Ser. No. 48,185
Term of patent 14 years
U.S. Cl. D24—124

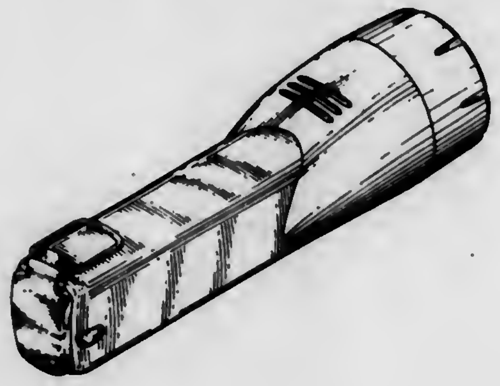


378,701
DOOR
Udo Münch, Sinn, and Jörg Wirbelauer, Weilburg-Waldhsn, both of Germany, assignors to Rittal-Werk Rudolf Loh GmbH & Co. KG, Germany
Filed Oct. 18, 1994, Ser. No. 29,901
Claims priority, application Germany, Apr. 18, 1994, M 94 03 158.4
Term of patent 14 years
U.S. Cl. D25—48

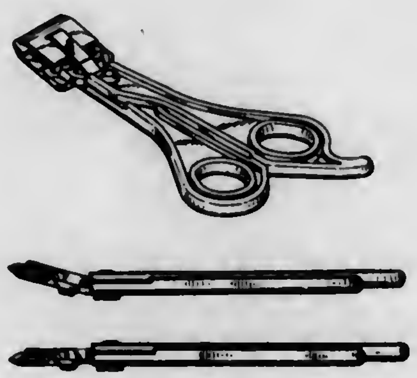
378,702
EDGING BLOCK
Peter J. Blomquist, Lake Elmo, and Todd P. Strand, Marine on St. Croix, both of Minn., assignors to Handy-Stone Corporation, Oakdale, Minn.
Filed Aug. 9, 1995, Ser. No. 42,376
Term of patent 14 years
U.S. Cl. D25—113



378,703
FLASHLIGHT
Kai-Bun Lo, Kowloon, Hong Kong, assignor to Gaylite Enterprises Company, Hong Kong, Hong Kong
Continuation-in-part of Ser. No. 19,303, Feb. 28, 1994, abandoned. This application Dec. 21, 1995, Ser. No. 48,791
Term of patent 14 years
U.S. Cl. D26—46

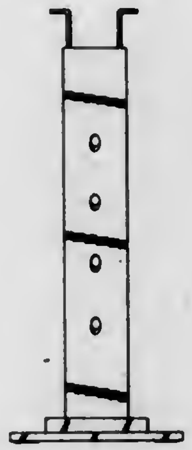


378,704
HAND POWERED HAIR CUTTING DEVICE
James E. McCambridge, Polo, Ill., assignor to Wahl Clipper Corporation, Sterling, Ill.
Filed Jun. 8, 1995, Ser. No. 40,035
Term of patent 14 years
U.S. Cl. D28—44



378,705
ELECTRIC HAIR TRIMMER
Shunji Izumi, Nagano, Japan, assignor to Izumi Products Company, Nagano, Japan
Filed Mar. 2, 1995, Ser. No. 35,579
Term of patent 14 years
U.S. Cl. D28—53

378,706
HOLDER FOR A PET WATER DISPENSER
Al Valentine, and Carol L. Valentine, both of 69344 Saxon Dr., Romeo, Mich. 48065
Continuation-in-part of Ser. No. 24,752, Jun. 17, 1994, Pat. No. Des. 364,943. This application Aug. 16, 1995, Ser. No. 42,749
Term of patent 14 years
U.S. Cl. D30—133



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TO WHOM

PATENTS WERE ISSUED ON THE 1st DAY OF APRIL, 1997

NOTE— Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Aastrom Biosciences, Inc.: *See—*
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AB Volvo: *See—*
Gobert, Ulrich, 5,615,554, Cl. 60-609.000.
ABB Management AG: *See—*
Althaus, Rolf; Keller, Jakob J.; and Schulte-Werning, Burkhard, 5,615,546, Cl. 60-39.020.
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ABB Preheater, Inc.: *See—*
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Abbott Laboratories: *See—*
Basha, Anwer; Brooks, Clint D. W.; Bhatia, Pramila; Craig, Richard A.; Ratajczyk, James D.; and Stewart, Andrew O., 5,616,596, Cl. 514-365.000.
Chu, Alexander H. T.; and Wloch, Gene P., 5,616,595, Cl. 514-344.000.
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Kempf, Dale J.; Norbeck, Daniel W.; Codacovi, Lynn M.; Sham, Hing L.; and Wittenberger, Steven J., 5,616,714, Cl. 546-269.700.
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Kaniwa, Kouji; Minabe, Kouji; Abe, Hiroya; Tada, Yukinobu; and Narita, Yoshio, 5,617,266, Cl. 360-70.000.
Abe, Shunichi: *See—*
Takahashi, Yoshiharu; Oseto, Jiro; Hirata, Teru; Abe, Shunichi; Ohmae, Seizo; and Kobayashi, Eiji, 5,616,516, Cl. 438-127.000.
Abe, Yoshimi; and Murai, Shinji, to M-Hydroponics Research Co., Ltd. Method for raising seedling. 5,615,519, Cl. 47-59.000.
Abel, Albert E.: *See—*
Mouk, Robert W.; and Abel, Albert E., 5,616,821, Cl. 570-177.000.
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Harris, Kevin M., 5,616,640, Cl. 473-378.000.
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Fujimoto, Tomoya; Okamura, Kenko; Morishita, Shigeru; Murakami, Masaru; Adachi, Akira; Hayashi, Mitsutoshi; Fujita, Akinari; Nagashima, Shingo; Kurashina, Minoru; and Yoshida, Kentaro, 5,615,976, Cl. 405-184.000.
Adachi, Hiroshi: *See—*
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Advanced Accessory Systems, LLC: *See—*
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Advanced Micro Devices, Inc.: *See—*
Agrawal, Om P., 5,617,042, Cl. 326-39.000.
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Aerochem Research Laboratories Inc.: *See—*
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Masicovetere, Roland; and Angelella, Stefano, 5,616,260, Cl. 219-69.120.
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Katayama, Masanori; and Agata, Hiroshi, 5,616,098, Cl. 475-346.000.
AGC Research and Development Corp.: *See—*
Kaner, Albert, 5,615,785, Cl. 212-180.000.
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Kelley, Henry A.; Vaes, Jos Alfons; and Van Hunsel, Johan H., 5,616,445, Cl. 430-204.000.
Agfa-Gevaert: *See—*
Janssens, Danny; Schoeters, Emile; Vuylsteke, Pieter; and Dhaenens, Frans, 5,616,930, Cl. 250-584.000.
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Ceriani, Mario, 5,615,848, Cl. 244-118.500.
Ahmad, Syed S.: *See—*
King, Jerrold L.; Ahmad, Syed S.; and Brooks, Jerry M., 5,616,953, Cl. 257-666.000.
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Ahn, Chie T.: *See—*

Nam, Jae Y.; Park, Sang G.; Lee, Young S.; and Ahn, Chie T., 5,617,150, Cl. 348-700.000.
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Sezi, Recai; Borndoerfer, Horst; Ahne, Hellmut; Birkle, Siegfried; Kuehn, Eberhard; Leuschner, Rainer; Rissel, Eva; and Sebald, Michael, 5,616,667, Cl. 526-271.000.
Aikawa, Takeshi: *See—*
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Aimoto, Takeshi: *See—*
Murayama, Hideki; Yoshizawa, Satoshi; Inouchi, Hidenori; Aimoto, Takeshi; Hayashi, Takehisa; and Iwamoto, Hiroshi, 5,617,424, Cl. 370-389.000.
Aisin Aw Co., Ltd.: *See—*
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Miyachi, Eiji, 5,615,651, Cl. 123-198.00F.
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Sato, Takeru; and Sano, Chiaki, 5,616,786, Cl. 562-401.000.
Sugimoto, Masakazu; Kojima, Hiroyuki; Tanaka, Akiko; Matsui, Hiroshi; Sato, Katsuaki; and Nakamatsu, Tsuyoshi, 5,616,480, Cl. 435-172.300.
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Schaap, Arthur P.; and Akhavan-Tafti, Hashem, 5,616,729, Cl. 549-223.000.
Akiba, Nobuko: *See—*
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Akimoto, Tomoko: *See—*
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Ako, Kenji: *See—*
Kawata, Shigeru; Noguchi, Kazuo; Ako, Kenji; and Nakamura, Shin, 5,616,768, Cl. 558-146.000.
Aktiebolaget Astra: *See—*
Bjursell, Karl G.; Carlsson, Peter N. I.; Enerbäck, Curt S. M.; Hansson, Stig L.; Lidberg, Ulf F. P.; Nilsson, Jeanette A.; and Törnell, Jan B. F., 5,616,483, Cl. 435-198.000.
Akzo Nobel Inc.: *See—*
Hsu, Oscar Hsien-Hsiang; Currier, Gerard M.; and Moes, Philip H., 5,616,419, Cl. 428-512.000.
Akzo Nobel N.V.: *See—*
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Bright, Danielle A., 5,616,770, Cl. 558-161.000.
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Wei, Ching Y.; Liu, Jianqiang; Salisbury, Roger S.; Kwasnick, Robert F.; Possin, George E.; and Albagli, Douglas, 5,616,524, Cl. 438-4.000.
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Björklund, Ola; Ritchie, Alexander; and Souter, George, 5,615,776, Cl. 209-403.000.
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Kamboj, Rajender; Nutt, Stephen L.; Shekter, Lee; and Wosnick, Michael A., 5,616,481, Cl. 435-172.300.
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McLaughlin, Steven R.; Wieloch, Christopher J.; and Mather, John C., 5,616,888, Cl. 174-260.000.
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Hill, Joe T.; Williams, John R.; Utter, Robert E.; and Fields, Gene M., 5,616,016, Cl. 418-55.400.
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Patel, Vipul C.; Poteet, Kenneth A.; and Reddy, Chitranjan N., 5,617,555, Cl. 395-432.000.
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Bouman, David G.; Moser, Larry D.; and Moser, Keith W., 5,615,472, Cl. 29-596.000.
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Samsonov, Victor; and Hiterer, Misha, 5,616,229, Cl. 205-107.000.
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Ohtomo, Naoki, 5,615,681, Cl. 128-661.030.
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Hwang, Duk S.; Nario, Evelyn; Lepe, Mark; Luz, Lyndon; Ito, Hirokazu; and Takechi, Kazuo, 5,616,693, Cl. 530-392.000.
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Hasegawa, Kazuo; and Ouchi, Junichi, 5,616,907, Cl. 235-462.000.
Mitsuzuka, Katsuya; and Kato, Hironori, 5,616,849, Cl. 73-862.322.
Mizuta, Ken; Kawata, Toshihiko; Shibazaki, Ken; and Miura, Yukio, 5,617,000, Cl. 318-663.000.
Mori, Masahiko; and Iwane, Yasuhiko, 5,615,960, Cl. 400-613.000.
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Danielson, Arvin D.; Schultz, Darald R.; Silva, Dennis; Boatwright, Darrell L.; Austin, Rickey G.; and Alt, Daniel E., 5,617,343, Cl. 364-707.000.
Alt, Helmut G.: *See—*
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Hartwig, Gert, 5,615,839, Cl. 241-260.100.
Althaus, Rolf; Keller, Jakob J.; and Schulte-Werning, Burkhard, to ABB Management AG. Method and appliance for cooling a gas turbine combustion chamber. 5,615,546, Cl. 60-39.020.
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Askin, Albert L.; Schultz, Paul B.; and Serafin, Daniel L., 5,616,231, Cl. 205-153.000.
Hittner, Herman J.; Byers, R. Lee; Lees, John N., Jr.; Rierson, David W.; and Dinter-Brown, Ludmila, 5,616,296, Cl. 266-145.000.
Sawtell, Ralph R.; Premkumar, Mosur K.; and Yun, David I., 5,616,421, Cl. 428-614.000.
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Matsumoto, Shigeharu; Sakurai, Nobuo; and Kojima, Ichiro, 5,615,568, Cl. 72-20.100.
Amada Mfg America Inc.: *See—*
Seto, Yoshiharu; and Hirose, Shunzo, 5,616,112, Cl. 483-29.000.
Amano Corporation: *See—*
Takahashi, Shinichiro; and Nagayama, Eiji, 5,615,437, Cl. 15-98.000.
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Ayral-Kaloustian, Semiramis; Schow, Steven R.; Du, Mila T.; and Gibbons, James J., Jr., 5,616,612, Cl. 514-478.000.
Crews, Alvin D., Jr.; Harrington, Philip M.; Karp, Gary M.; Manfredi, Mark C.; and Guaciaro, Michael A., 5,616,706, Cl. 544-221.000.
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Moses, Leonard C.; Kendall, John H. W.; and Hyde, Bradley G., 5,615,622, Cl. 109-2.000.
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Popli, Shankar D.; and Go, Zenaida O., 5,616,621, Cl. 514-772.400.
Waranis, Robert P.; and Leonard, Thomas W., 5,616,588, Cl. 514-291.000.
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O'Shaughnessy, Timothy G.; and Brown, David G., 5,617,062, Cl. 331-111.000.
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Hyllberg, Bruce E., 5,616,263, Cl. 219-469.000.
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Bartos, Thomas M.; and Rosen, Bruce I., 5,616,792, Cl. 562-486.000.
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Anastassiou, Dimitris: *See—*
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Andersson, Lars G. A. Dynamic cone penetration device. 5,616,833, Cl. 73-84.000.
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Peterson, Virgil D.; Andert, Gary W.; and Botts, Rollin D., 5,615,451, Cl. 16-34.000.
Ando, Hiroyuki: *See—*
Kato, Koji; Ando, Hiroyuki; Sugita, Yukihiko; Ichikawa, Hideaki; Inoue, Akira; and Miyazaki, Satoshi, 5,617,162, Cl. 396-318.000.
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Tsukamoto, Kazumasa; Ando, Masahiko; Fukatsu, Akira; Mae, Toshiyuki; Sakai, Motoyuki; Hamajima, Tetsuo; Kaigawa, Masato; Fukumura, Kagenori; Oba, Hidehiro; Hojo, Yasuo; Tabata, Atsushi; and Takahashi, Nobuaki, 5,616,094, Cl. 475-128.000.
Andoh, Yasuhiro, to NEC Corporation. Scan test circuit and semiconductor integrated circuit device with scan test circuit. 5,617,428, Cl. 371-22.300.
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Andrew, Mark S.; and Andrew, Mylina. Method and apparatus for lenticular liquefaction and aspiration. 5,616,120, Cl. 604-28.000.
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Andrews, David R.; and Sudhakar, Anantha, to Schering Corporation. Chiral hydrazine derivatives. 5,616,777, Cl. 560-29.000.
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Delprat, Marc; Andrieu, Vianney; Gourgue, Frédéric; Gaydu, Gladys; and Nouchi, Charles, 5,617,412, Cl. 370-281.000.
Andritz-Patentverwaltungs-Gesellschaft m.b.H.: *See—*
Goldschmied, Gerhard; and Priesch, Gerhard, 5,616,362, Cl. 427-328.000.
Androphy, Elliot J.; and Barsoum, James G., to Biogen, Inc.; and New England Medical Center Hospitals, Inc. Papillomavirus E2 trans-activation repressors. 5,616,559, Cl. 514-12.000.
Andtsjö , Henrik: *See—*
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Angelella, Stefano: *See—*
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Angelotti, Frank W.; Britson, Wayne A.; Douskey, Steven M.; Kaliszewski, Kerry T.; and Weed, Michael A., to International Business Machines Corporation. Testing system interconnections using dynamic configuration and test generation. 5,617,430, Cl. 371-27.000.
Angermeier, Anton; and Wier, Manfred, to Siemens Aktiengesellschaft. Diagnostic method for recognizing combustion misfiring in an internal-combustion engine. 5,616,858, Cl. 73-117.300.
Anilionis, Algis: *See—*
Farrell, Roberta L.; Gelep, Paul; Anilionis, Algis; Javaherian, Kashayar; Maione, Theodore E.; Rusche, James; Sadownick, Bruce A.; and Jackson, Jennifer A., 5,616,473, Cl. 435-69.100.
Anritsu Corporation: *See—*
Imazu, Yoshifumi; and Wada, Takahiro, 5,617,523, Cl. 395-140.000.
Anzawa, Seiichi; and Yoda, Syoichi, to Nagano Japan Radio Co., Ltd. Connecting method of printed substrate and apparatus. 5,617,300, Cl. 361-795.000.
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Aoki, Riichirou: *See—*
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Aoshima, Nobuyuki: *See—*
Iwase, Takashi; Matsumoto, Takashi; Aoshima, Nobuyuki; Matsuura, Norimasa; and Goto, Takashi, 5,616,079, Cl. 463-32.000.
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Aoyagi, Takao: *See—*
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Hayashida, Hajime; Aoyagi, Takashi; Inoue, Satoshi; Nozue, Ringi; Kawamura, Kiyoshi; and Sato, Shigeaki, 5,616,880, Cl. 84-719.000.
Aoyama, Satoshi, to Toyota Jidosha Kabushiki Kaisha. Reformer and fuel cell system using the same. 5,616,430, Cl. 429-17.000.
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Adrian, Andrew A.; Danielson, Michael S.; Meyers, David B.; and Spiegel, Leo, 5,617,058, Cl. 330-10.000.
Apperson, Gerald R.: *See—*
Rich, David R.; Apperson, Gerald R.; Labuda, Lawrence L.; and Mace, Leslie E., 5,616,923, Cl. 250-343.000.
Apple Computer, Inc.: *See—*
Chow, Yen-Lu; deSouza, Peter V.; Fineberg, Adam B.; and Hon, Hsiao-Wuen, 5,617,486, Cl. 382-181.000.
Rogers, Conrad; and De Iuliis, Daniele G., 5,616,051, Cl. 439-518.000.
Applebaum, Edward L.; and Beale, Brad, to Smith & Nephew, Inc. Implant package insert delivery system. 5,615,770, Cl. 206-363.000.
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Lenhart, Stephen J.; Hall, John C.; and Applewhite, Anthony Z., 5,617,006, Cl. 320-21.000.
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Kuck, Burton M.; and Thomas, Danial T., 5,617,039, Cl. 324-771.000.
Aprica Kassai Kabushikikaisha: *See—*
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Johnson, Dennis E. J.; and Frith, Clifford F., 5,616,250, Cl. 210-695.000.
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Schoenmeyr, Ivar, 5,615,597, Cl. 92-103.0SD.
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Arakawa, Takeharu; Araki, Morio; Nobe, Kenichi; and Yamanaka, Kiyoshi, 5,617,319, Cl. 364-449.100.
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Araujo, Roger J.; Borrelli, Nicholas F.; Hoaglin, Christine L.; and Smith, Charlene, to Corning Incorporated. Method of forming high purity fused silica having high resistance to optical damage. 5,616,159, Cl. 65-17.400.
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Aria, Fariba: *See—*
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Tamazawa, Kazuharu; Kojima, Tadao; Arima, Hideki; Murakami, Yukiyasu; Isomura, Yasuo; Okada, Minoru; Takenaka, Toichi; and Takanobu, Kiyoshi, 5,616,715, Cl. 546-278.400.
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Knight, John D., 5,615,639, Cl. 119-168.000.
Arldt, Roy L.; Downey, Susan H.; Golden, Harry J.; Mahmoud, Issa S.; Okoro, Clement A.; and Spalik, James, to International Business Machines Corporation. Flux composition and corresponding soldering method. 5,615,827, Cl. 228-223.000.
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Cook, James T., Sr.; Arnold, David D.; and Cartsonas, Christos, 5,616,521, Cl. 438-51.000.
Arnold, Frances H.; Sasaki, Darryl Y.; Shnek, Deborah; and Pack, Daniel, to California Institute of Technology. Lipid-based metal sensor. 5,616,790, Cl. 562-444.000.
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Bec, Daniel; Le Merer, Jean-Pierre; and LeBlanc, Michele, 5,617,402, Cl. 369-219.000.
Artigue, Claude: *See—*
Mallecot, Franck; Artigue, Claude; LeClerc, Denis; Legouezigou, Lionel; Poingt, Francis; and Pommereau, Frédéric, 5,616,522, Cl. 438-42.000.
Aruga, Tamotsu: *See—*
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Tanaka, Chiaki; Sasaki, Masaomi; Aruga, Tamotsu; Shimada, Tomoyuki; and Adachi, Hiroshi, 5,616,805, Cl. 564-405.000.
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Asada, Kazutoshi: *See—*
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Asahi Glass Company Ltd.: *See—*
Matsumura, Yasushi; Nakano, Takashi; Makino, Mayumi; and Morizawa, Yoshitomi, 5,616,732, Cl. 549-305.000.
Ohgawara, Masao; and Tsubota, Hiroyoshi, 5,617,230, Cl. 349-110.000.
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Endoh, Yasuhiko, 5,617,165, Cl. 396-418.000.
Kawasaki, Masahiro; Takahashi, Hiroyuki; and Tanimura, Yoshinari, 5,617,173, Cl. 396-78.000.
Morita, Takashi; Takishima, Suguru; and Okuda, Isao, 5,617,387, Cl. 369-44.230.
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Ascione, Jean-Marc: *See—*
Allard, Delphine; Ascione, Jean-Marc; and Hansenne, Isabelle, 5,616,331, Cl. 424-401.000.
Asea Brown Boveri AG: *See—*
Bauer, Friedhelm, 5,616,938, Cl. 257-139.000.
Dittrich, Andreas, 5,616,970, Cl. 307-126.000.
Ashiya, Kazuhiko: *See—*
Okada, Tomohiko; Shiozaki, Fumio; Takehara, Toshio; Kizu, Seiichi; and Ashiya, Kazuhiko, 5,616,386, Cl. 428-40.100.
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Garrett, Julie; and Ashlock, Thomas, 5,615,722, Cl. 160-38.000.
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Tomita, Saburo, 5,615,487, Cl. 33-245.000.
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Kau, Pui K., 5,616,433, Cl. 429-121.000.
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Watson, Jeff R.; Goetsch, Michael N.; Noval, Jim V.; and Aspandiar, Raiyo F., 5,617,294, Cl. 361-719.000.
Assembled Products Corporation: *See—*
Owen, Noel S., 5,615,620, Cl. 108-45.000.
AST Research Inc.: *See—*
Suski, Edward D., 5,616,050, Cl. 439-495.000.
Astec Industries, Inc.: *See—*
Campbell, Thomas R., 5,615,973, Cl. 404-75.000.
Astra Aktiebolag: *See—*
Evenden, John L.; Hammarberg, Eva M.; Hansson, Hans S.; Hellberg, Sven E.; Johansson, Lars G.; Lundkvist, Johan R. M.; Ross, Svante B.; Sohn, Daniel D.; and Thorberg, Seth O., 5,616,610, Cl. 514-456.000.
Astro Tool Corp.: *See—*
Bushnell, Raymond B.; Evilsizer, William H.; Henderson, Paul D.; and Hughes, Scotte L., 5,615,840, Cl. 242-301.000.
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Civanlar, Seyhan; and Saksena, Vikram R., 5,617,540, Cl. 395-200.110.
AT&T Global Information Solutions Company: *See—*
Nguyen, Hoang P.; and Walker, John D., 5,616,943, Cl. 257-355.000.
Prater, James S., 5,617,102, Cl. 342-374.000.
Atari Games Corporation: *See—*
Logg, G. Edward, 5,616,031, Cl. 434-38.000.
Atkins, Martin P., to BP Chemicals Limited. Olefin hydration process. 5,616,815, Cl. 568-700.000.
Atoche, Carlos: *See—*
Beyer, Claus; Gatza, John; Atoche, Carlos; and Totonji, Sam, 5,615,935, Cl. 303-195.000.
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Vasselin, Thierry; and Vuachet, Michel, 5,616,418, Cl. 428-474.700.
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Attrill, Robin P.: *See—*
Bell, David; Miller, David; and Attrill, Robin P., 5,616,750, Cl. 556-32.000.
Auffray, Jean-Paul; and Mesure, Michel, to Societe D'Applications Generales D'Electricite et de Mecanique Sagem. Circuit for adapting facsimile machine to be connected to a data transmission line and including a differential amp with two high impedance line inputs. 5,617,222, Cl. 358-442.000.
Augat Inc.: *See—*
Gauker, Bradford K., 5,616,045, Cl. 439-352.000.
Augenbraun, Joseph E.; Pearlstein, Larry A.; and Plotnick, Michael A., to Hitachi America, Ltd. Broadcast interactive multimedia system. 5,617,565, Cl. 395-604.000.
Augst, George W.; Liberda, Margo A.; and Riedel, John E., to Minnesota Mining and Manufacturing Company. Perforated roll of elastic wrap. 5,616,387, Cl. 428-43.000.
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Ault, Michael B.; Plassmann, Ernst R.; Rich, Bruce A.; and Wilkes, Michael D., to International Business Machines Corporation. System and method for supporting file attributes on a distributed file system without native support therefor. 5,617,568, Cl. 395-612.000.
Aura Systems, Inc.: *See—*
Um, Gregory; and Szilagyi, Andrei, 5,616,982, Cl. 310-328.000.
Ausmelt Limited: *See—*
Floyd, John M.; and Lightfoot, Brian W., 5,615,626, Cl. 110-346.000.
Austin, Laurie E.: *See—*
Hsu, Wen-Liang; Halasa, Adel F.; Matrana, Barry A.; Christian, Scott M.; Austin, Laurie E.; and Gross, Bill B., 5,616,653, Cl. 525-332.500.
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Danielson, Arvin D.; Schultz, Darald R.; Silva, Dennis; Boatwright, Darrell L.; Austin, Rickey G.; and Alt, Daniel E., 5,617,343, Cl. 364-707.000.
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Bogursky, Robert M.; Krupin, Michael; Bellantoni, Peter V.; and McGrath, Martin E., 5,616,053, Cl. 439-590.000.
Avar, Lajos; Staniek, Peter; Stoll, Klaus; Habicher, Wolf D.; and Hähner, Uwe, to Sandoz Ltd. Phosphonite-hals and phosphite-hals compounds as stabilizers. 5,616,636, Cl. 524-102.000.
Avery Dennison Corporation: *See—*
Deschenes, Charles L.; Kogiso, Hitoshi; Ito, Tomoyasu; and Kimbara, Hidekatsu, 5,615,816, Cl. 227-71.000.
Nguyen, Thanh V.; Allen, John; and Yu, Qun, 5,616,629, Cl. 522-40.000.
Avritch, Steven A.: *See—*
Tulpule, Bhalchandra R.; Avritch, Steven A.; Blackwell, Geoffrey T.; and MacKay, Andrew M., 5,617,544, Cl. 395-281.000.
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Heldt-Hansen, Hans P.; Fujita, Yuko; Awaji, Haruo; Shimoto, Hidesato; and Sharyou, Masaki, 5,616,215, Cl. 162-72.000.
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Ayad, Hafez M., to Rhone-Poulenc Inc. Method of combatting insect eggs and ovicidal compositions. 5,616,336, Cl. 424-405.000.
Ayral-Kaloustian, Semiramis; Schow, Steven R.; Du, Mila T.; and Gibbons, James J., Jr., to American Cyanamid Company. Urethanes and ureas that enhance the growth of bone marrow progenitor cells. 5,616,612, Cl. 514-478.000.
B&G Plastics, Inc.: *See—*
Kolton, Chester; and Spater, Stuart S., 5,615,810, Cl. 223-85.000.
Baba, Kohichi: *See—*
Watanabe, Takeshi; Tsuji, Kikunosuke; Hori, Setsuo; Kado, Seiji; Satake, Kenichi; Nakatsu, Hiromi; Baba, Kohichi; Ishii, Masayuki; and Uriu, Yoshiko, 5,615,877, Cl. 271-259.000.
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Babcock & Wilcox Company, The: *See—*
Moskal, Thomas E., 5,615,953, Cl. 374-7.000.
Babcock, Douglas J.: *See—*
Weisman, S. Miller, II; Letang, Dennis M.; and Babcock, Douglas J., 5,615,654, Cl. 123-350.000.
Baccou, Jean-Claude: *See—*
Ginoux, Jean-Paul; Dreyer, Alain; Roch, Philippe; Baccou, Jean-Claude; and Lacan, Dominique, 5,616,323, Cl. 424-195.100.
Bacher, Thomas; Heineck, Frank; and Klug, Karl, to Siemens Aktiengesellschaft. Communication system for connection to a base station of a multi-cellular wireless telephone system. 5,617,467, Cl. 379-58.000.
Bae, Jongsik, to Hyundai Motor Company. Apparatus for drying the air duct of a vehicle air conditioner. 5,615,491, Cl. 34-61.000.
Baglini, James L.: *See—*
Hamilton, Brian K.; and Baglini, James L., 5,616,883, Cl. 102-288.000.
Bailey, Bobby G. Dandy jack. 5,615,863, Cl. 254-94.000.
Bailey, Peter M. Batting practice aid and method of using same. 5,615,879, Cl. 473-424.000.
Bain, Benjamin H., Jr.: *See—*
Moalem, Farhad; Bain, Benjamin H., Jr.; and Caselli, Joseph J., 5,615,500, Cl. 38-77.830.
Bakale, Roger P.: *See—*
Gao, Yun; Hong, Yaping; Nie, Xiaoyi; Bakale, Roger P.; Feinberg, Richard R.; and Zepp, Charles M., 5,616,808, Cl. 564-428.000.
Baker, Eddie G.: *See—*
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Baker Hughes Incorporated: *See—*
Coronado, Martin P., 5,615,741, Cl. 166-387.000.
Bakx, Johannus L.: *See—*
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Bal Seal Engineering Company, Inc.: *See—*
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Bala, Frank, Jr.: *See—*
Thomas, Barbara; Mehreteab, Ammanuel; Erilli, Rita; Gomes, Gilbert; Bala, Frank, Jr.; Tarng, Jiashi; Lysy, Regis; and Broze, Guy, 5,616,548, Cl. 510-242.000.
Balaschak, James J.; Fujio, Masatsugu; Hayashi, Keiichiro; Okano, Masatoshi; and Thrall, David E., to Teledyne Industries Inc. Abnormality detection/suppression system for a valve apparatus. 5,616,829, Cl. 73-46.000.
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Baldwin, Neil A.: *See—*
Bowey, Kenneth G.; and Baldwin, Neil A., 5,616,535, Cl. 504-206.000.
Ball, Dean M. Method and apparatus for measuring viscosity. 5,616,855, Cl. 73-54.430.
Ballard, Bradley A.; Whikehart, John W.; Blind, Henry F.; and Pierfelice, Robert E., to Ford Motor Company. DSP-based vehicle equalization design system. 5,617,480, Cl. 381-98.000.
Ballard, Gerald L.; and Gaudiello, John G., to International Business Machines Corporation. Metallized substrate. 5,616,422, Cl. 428-621.000.
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Mayer, Lawrence D.; Bally, Marcel B.; Cullis, Pieter R.; Ginsberg, Richard S.; and Mitilenes, George N., 5,616,341, Cl. 424-450.000.
Balmer, Mark J.; and Waggoner, Mark R., to Intel Corporation. Interface protocol for testing of a cache memory. 5,617,534, Cl. 395-183.180.
Balon, Richard L. Hockey stick curving apparatus. 5,615,719, Cl. 144-269.000.
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Pellaux, Jean-Paul; Hale, John M.; and Bals, Ion, 5,616,826, Cl. 73-24.020.
Balsells, Peter J., to Bal Seal Engineering Company, Inc. Coil spring with ends adapted for coupling without welding. 5,615,870, Cl. 267-167.000.
Balzers Aktiengesellschaft: *See—*
Karner, Johann; Bergmann, Erich; and Daxinger, Helmut, 5,616,373, Cl. 427-577.000.

Balzers und Leybold Deutschland Holding AG: *See—*
Kunz, Hans; Sauer, Andreas; Schuhmacher, Manfred; Szczyrbowski, Joachim; and Marquardt, Dietmar, 5,616,226, Cl. 204-298.230.
Bamberger, Robert L.: *See—*
Jejelowo, Moses O.; and Bamberger, Robert L., 5,616,665, Cl. 526-129.000.
Bambury, Ronald E.; and Kunzler, Jay F., to Bausch & Lomb Incorporated. Organosilicon-containing materials useful for biomedical devices. 5,616,757, Cl. 556-419.000.
Ban, Keiji; Tomoe, Tetsuro; Fuchi, Masami; Tsuchiya, Hiroaki; Yoshimura, Osamu; and Tanaka, Shinichi, to Mita Industrial Co., Ltd. Image transferred sheet conveying guide for use in an image forming apparatus. 5,617,193, Cl. 399-316.000.
Bando, Katsuji: *See—*
Mitsubayashi, Masahiko; Ohnishi, Masazumi; Miyamoto, Noritaka; Kadota, Keisuke; Shimada, Tohru; and Bando, Katsuji, 5,615,570, Cl. 72-298.000.
Bando Kiko Co., Ltd.: *See—*
Bando, Shigeru, 5,616,064, Cl. 451-5.000.
Bando, Shigeru, to Bando Kiko Co., Ltd. Plate-like glass material, etc., working device. 5,616,064, Cl. 451-5.000.
Banerjee, Pradip; Chuang, Patrick; and Ghia, Atul V., to Sony Corporation of Japan; and Sony Electronics, Inc. Duty cycle independent tunable clock. 5,617,563, Cl. 395-556.000.
Bank, Howard M.; Naasz, Brian M.; and Nguyen, Binh T., to Dow Corning Corporation. Process for reacting organodisilanes with organic halides. 5,616,760, Cl. 556-468.000.
Bank, Howard M.; and Decker, Gary T., to Dow Corning Corporation. Aldehydes as accelerators for hydrosilation. 5,616,763, Cl. 556-479.000.
Bantien, Frank: *See—*
Benz, Gerhard; Marek, Jiri; Bantien, Frank; Muenzel, Horst; Laermer, Franz; Offenberg, Michael; and Schilp, Andrea, 5,616,523, Cl. 438-50.000.
Banyu Pharmaceutical Co., Ltd.: *See—*
Nomoto, Takashi; Hayashi, Masahiro; Shibata, Jun; Iwasawa, Yoshikazu; Mitsuya, Morihiro; Iida, Yoshiaki; Nonoshita, Katsumasa; and Nagata, Yasufumi, 5,616,803, Cl. 564-337.000.
Bar, Klaus; and Schmiedl, Reinhard, to Diehl GmbH & Co. Mirror arrangement with a deformable mirror element. 5,617,261, Cl. 359-845.000.
Barath, Peter, to Cedars-Sinai Medical Center. Balloon catheter with cutting edge. 5,616,149, Cl. 606-159.000.
Baravian, Jean; Jahn, Ulrich; Groten, Robert; and Beck, Jean-Jacques, to Freudenberg Spunweb S.A. Process for the production of two-layer textile reinforcement adapted for the production of bituminous sealing sheets for roofing and reinforcement thus obtained. 5,616,395, Cl. 428-102.000.
Barbaret, Pascal, to FCB. High-intensity magnetic separator. 5,615,775, Cl. 209-219.000.
Barber, Loren L., Jr.; Welygan, Dennis G.; and Pihl, Richard M., to Minnesota Mining and Manufacturing Company. Composite abrasive filaments, methods of making same, articles incorporating same, and methods of using said articles. 5,616,411, Cl. 428-373.000.
Barberan, S.A.: *See—*
Barberan Albiac, Jesús, 5,616,211, Cl. 156-552.000.
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Barcellos-Hoff, Mary H., to University of California, Regents of the. TGF-β antagonists as mitigators of radiation-induced tissue damage. 5,616,561, Cl. 514-13.000.
Bareis, Monica M. Optical disk having speech recognition templates for information access. 5,617,407, Cl. 369-275.300.
Barker, Andrew J., to Zeneca Limited. Quinazoline derivatives as anti-proliferative agents. 5,616,582, Cl. 514-234.500.
Barker, Thomas N.; Collins, Clive A.; Dapp, Michael C.; Dieffenderfer, James W.; Grice, Donald G.; Knowles, Billy J.; Lesmeister, Donald M.; Nier, Richard E.; Retter, Eric E.; Rolfe, David B.; and Smoral, Vincent J., to International Business Machines Corporation. Advanced parallel array processor I/O connection. 5,617,577, Cl. 395-800.000.
Barlow, Christopher W.: *See—*
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Barnes, David A.: *See—*
Jones, Anthony M.; and Barnes, David A., 5,617,458, Cl. 377-49.000.
Barnes, Wayne M. *Thermus aquaticus* DNA polymerase lacking the n-terminal 235 amino acids of taq DNA polymerase. 5,616,494, Cl. 435-252.300.
Barniskis, Walter A.: *See—*
Beckwith, Timothy A.; Brintz, William M.; and Barniskis, Walter A., 5,616,983, Cl. 313-51.000.
Baroid Technology, Inc.: *See—*
Comeau, Laurier E.; Gillis, Ian; and Vandenberg, Elis, 5,615,740, Cl. 166-380.000.
Barrett, Harold J.: *See—*
Stephenson, Stanley, III; Zander, Dennis R.; and Barrett, Harold J., 5,617,160, Cl. 396-60.000.
Barris, Marty A.; Weik, Thomas M.; Robertson, Kelly C.; Monson, Donald R.; Rothman, Jim C.; and Betts, Pete A., to Donaldson Company, Inc. Pulse jet filter cleaning system. 5,616,171, Cl. 95-280.000.
Barron, Kimball R., to Fisher Controls International, Inc. Flow control valve with non-plugging multi-stage valve trim. 5,615,708, Cl. 137-625.300.
Barrow, Stephen R.: *See—*
Williams, David R.; Ryles, Christine W.; and Barrow, Stephen R., 5,616,313, Cl. 424-49.000.
Barry, James E. Illuminated gas tank or shell. 5,615,940, Cl. 362-72.000.
Barsoum, James G.: *See—*
Androphy, Elliot J.; and Barsoum, James G., 5,616,559, Cl. 514-12.000.
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Hadary, Dany; Bartfeld, Daniel; Butler, Michael J.; Jenish, David; Krieger, Timothy; Malek, Lawrence T.; Soostmeyer, Gisela; and Walcyzk, Eva, 5,616,485, Cl. 435-220.000.
Bartl, Herbert: *See—*
Ostoja-Starzewski, Karl-Heinz A.; Witte, Josef; Bartl, Herbert; Reichert, Karl-Heinz; and Vasiliou, Georgios, 5,616,529, Cl. 502-154.000.
Barton, Earl L., to Hewlett-Packard Company. Method and apparatus for optimizing printer operation. 5,617,516, Cl. 395-113.000.
Barton, Richard J.: *See—*
Phillion, Jack A.; Klomhaus, Jamie L.; Meyers, Gary M.; and Barton, Richard J., 5,615,908, Cl. 280-728.300.
Bartos, Thomas M.; and Rosen, Bruce I., to Amoco Corporation. Catalytic purification of dicarboxylic aromatic acid. 5,616,792, Cl. 562-486.000.
Baruch, Ezra, to Hydro-Aire Division of Crane Company. Fiberoptic velocity transducer including dielectric coating for filtering and velocity determination. 5,617,022, Cl. 324-175.000.
Basch, Jeffrey D.; Gallucci, Robert R.; and Hamilton, Douglas G., to General Electric Company. Separation of plastic components for recycling thereof. 5,616,641, Cl. 524-417.000.
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Beckmann, Stefan; Etzbach, Karl-Heinz; Sens, Rüdiger; and Häberle, Karl, 5,616,678, Cl. 528-73.000.
Grimmer, Johannes; and Martin, Christoph, 5,616,737, Cl. 549-458.000.
Kahl, Thomas-Michael; and Wettling, Thomas, 5,616,771, Cl. 558-282.000.
Keilhauer, Gerhard; Romerdahl, Cynthia; Braña, Miguel F.; Qian, Xiao-Dong; Bousquet, Peter; Berlanga, Jose M.C.; Moset, Marina M.; and de Vega, Maria J.P., 5,616,589, Cl. 514-296.000.
Schlarb, Bernhard; Wendel, Kurt; Bellaire, Helmut; and Beck, Karin H., 5,616,644, Cl. 524-522.000.
Schuster, Ludwig; and Eggersdorfer, Manfred, 5,616,817, Cl. 568-861.000.
Schwarz, Hans V.; Otterbach, Andreas; Mattner, Otto; Merger, Franz; Schwarz, Wolfgang; Brandt, Eckhardt; Magnussen, Peter; and Minges, Roland, 5,616,784, Cl. 560-345.000.
Sens, Rüdiger; Schefczik, Ernst; Reichelt, Helmut; and Etzbach, Karl-Heinz, 5,616,710, Cl. 546-119.000.
Stahl, Stefan; Harder, Wolfgang; and Hoehn, Arthur, 5,616,773, Cl. 558-353.000.
Steiner, Gerd; Munschauer, Rainer; Unger, Liliane; Teschendorf, Hans-Jürgen; and Höger, Thomas, 5,616,705, Cl. 544-105.000.
Witt, Michael; Scherzer, Dietrich; Hahn, Klaus; and Naegele, Dieter, 5,616,624, Cl. 521-56.000.
Basha, Anwer; Brooks, Clint D. W.; Bhatia, Pramila; Craig, Richard A.; Ratajczyk, James D.; and Stewart, Andrew O., to Abbott Laboratories. Substituted arylalkynyl-and heteroarylalkynl-N-hydroxyurea inhibitors of leukotriene biosynthesis. 5,616,596, Cl. 514-365.000.
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Batesville Casket Company, Inc.: *See—*
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Battard, Jean-Claude; and Esnault, Daniel, to Societe Nationale D'Exploitation Industrielle des Tabacs et Allumettes. Method of modifying and aromatizing the primary or secondary smoke of smoking products. 5,615,694, Cl. 131-365.000.
Battelle Memorial Institute: *See—*
Elliott, Douglas C.; Sealock, L. John, Jr.; and Baker, Eddie G., 5,616,154, Cl. 48-197.00R.
Battist, Gerald E.; Bogue, B. Arlie; and Myers, Garry L., to Fuisz Technologies Ltd. Apparatus and process for strengthening low density compression dosage units and product therefrom. 5,616,344, Cl. 424-486.000.
Bauer, Barney J., to TRW Vehicle Safety Systems Inc. Apparatus for use in a vehicle occupant restraint system. 5,615,917, Cl. 280-806.000.
Bauer, Friedhelm, to Asea Brown Boveri AG. MOS-controlled power semiconductor component for high voltages. 5,616,938, Cl. 257-139.000.
Bauer, Hans-Peter, to Suspa Compart Aktiengesellschaft. Fluid-filled unit of a cylinder and a piston rod, in particular gas spring. 5,615,867, Cl. 267-64.110.
Bauer, James A.; Palmer, Nelson R.; Palmer, Kathryn M.; and Wehrli, Henry A., III, to Eaton Corporation. Low cost circuit controller. 5,617,281, Cl. 361-27.000.
Bauman, Mitchell A.; and Federici, James L., to Unisys Corporation. Day-clock carry and compare tree. 5,617,375, Cl. 368-10.000.
Baumgartner, Yoanna; Gregoire, Dennis G.; and Youngs, Amy M., to International Business Machines Corporation. System and method to prevent the occurrence of a snoop push during read and write operations. 5,617,556, Cl. 395-468.000.
Bausch & Lomb Incorporated: *See—*
Bambury, Ronald E.; and Kunzler, Jay F., 5,616,757, Cl. 556-419.000.
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Ostoja-Starzewski, Karl-Heinz A.; Witte, Josef; Bartl, Herbert; Reichert, Karl-Heinz; and Vasiliou, Georgios, 5,616,529, Cl. 502-154.000.
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Jentsch, Joerg-Dietrich; Martin, Georg; and Zirngiebl, Eberhard, 5,616,730, Cl. 549-233.000.
Löbberding, Antonius; Mikhail, Gamal K.; and Springer, Wolfgang, 5,616,731, Cl. 549-282.000.
Münzmay, Thomas; Fuhrmann, Peter; Lamla, Franz; Meckel, Walter; and Rasshofer, Werner, 5,616,623, Cl. 521-49.500.
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von Bonin, Wulf; Müller, Hanns-Peter; and Kapps, Manfred, 5,616,628, Cl. 521-157.000.
Bayer Corporation: *See—*
Hector, Richard F.; and Collins, Michael S., 5,616,321, Cl. 424-145.100.
Bayer, Thomas E.: *See—*
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Baylor College of Medicine: *See—*
Lam, Dominic M.; and Kelleher, Peter J., 5,616,122, Cl. 604-49.000.
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Beale, Brad: *See—*
Applebaum, Edward L.; and Beale, Brad, 5,615,770, Cl. 206-363.000.
Bear Archery, Inc.: *See—*
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Bear, Robert S., Jr.: *See—*
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Beard, Richard L.: *See—*
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Beardsley, Terry R. Immune-enhancing agent for therapeutic use in immunocompromised hosts. 5,616,554, Cl. 514-8.000.
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Yergenson, Robin P.; and Beaufort, Richard F., 5,615,876, Cl. 271-258.010.
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Reddy, M. Parameswara; and Farooqui, Firdous, 5,616,700, Cl. 536-25.300.
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Williams, Joel L.; Burkett, Susan L.; and McGuire, Shel, 5,616,369, Cl. 427-536.000.
Woodard, Daniel L.; Howard, Adriann J.; and Down, James A., 5,616,701, Cl. 536-25.400.
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Beeson, Robert R.: *See—*
Thoman, Jeffrey A.; Swanson, David W.; Hamlin, Mindy A.; Beeson, Robert R.; Hall, Corrina; Salter, James G.; and Rhoads, W. Wistar, 5,617,128, Cl. 347-87.000.
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Bodager, Gregory A.; and Beighle, Phillip L., 5,616,439, Cl. 430-15.000.
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Belarde, John F., to John-Wayne Construction Company, Inc. Method for forming concrete barriers. 5,616,291, Cl. 264-34.000.
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Benesi, Steve C. Method for weaving a filter fabric belt for pressure filter apparatus. 5,615,713, Cl. 139-97.000.
Benest, Roger S. Wheel head and rail assembly. 5,615,617, Cl. 104-94.000.
Benett, William J.: *See—*
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Bergan, Terry: *See—*
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Bertin, Claude L.; DiMaria, Donelli J.; Miyakawa, Makoto; and Sakaue, Yoshinori, to International Business Machines Corporation. Three-dimensional direct-write EEPROM arrays and fabrication methods. 5,617,351, Cl. 365-185.050.
Bessho, Yasunori: *See—*
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Beutin, Bruno A.; Creti, Joël; Donnadieu, Jean-Pierre; Garnier, Francis G. A.; Hugues, Michel G.; Lecordix, Jean-Loic H.; Maignan, Claude P. H.; Massot, Gilles C. G.; Pincemin, Jean-Marie N.; Thorel, Christophe J. F.; Touron, Carole C.; and Vennin, Gérard M. R. M., to Societe Nationale D'Etude et de Construction de Moteurs D'Aviation S.N.E.C.M.A. System for regulating oil and fuel temperatures of a turbojet engine. 5,615,547, Cl. 60-39.080.
Beutler, Bruce: *See—*
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Beyer, Claus; Gatza, John; Atoche, Carlos; and Totonji, Sam, to Robert Bosch GmbH. ABS control for a four wheel drive vehicle experiencing axle oscillations. 5,615,935, Cl. 303-195.000.
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Bhatti, Balwinder S.: *See—*
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Biendarra, Bruce S.; and Ricciardelli, Robert H., to Pryon Corporation. Moisture absorbing media filter. 5,616,158, Cl. 55-275.000.
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Bierce, Laurence M.: *See—*
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Bingham, David, to Maxim Integrated Products. Voltage overshoot limiter. 5,617,051, Cl. 327-317.000.
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BioCon, Incorporated: *See—*
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Birdwell, J. C. Mud pump. 5,616,009, Cl. 417-342.000.
Birkle, Siegfried: *See—*
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Bivens, Donald B.; Shiflett, Mark B.; and Yokozeki, Akimichi, to Du Pont de Nemours, E. I., and Company. Azeotrope-like refrigerants with chlorodifluoromethane, pentafluoroethane, and C_2-C_4 hydrocarbon. 5,616,276, Cl. 252-67.000.
Björklund, Ola; Ritchie, Alexander; and Souter, George, to Alfa Laval Separation AB. Mounting & tensioning arrangements for screens. 5,615,776, Cl. 209-403.000.
Bjursell, Karl G.; Carlsson, Peter N. I.; Enerbäck, Curt S. M.; Hansson, Stig L.; Lidberg, Ulf F. P.; Nilsson, Jeanette A.; and Törnell, Jan B. F., to Aktiebolaget Astra. Genomic DNA sequences encoding human BSSL/CEL. 5,616,483, Cl. 435-198.000.
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Moalem, Farhad; Bain, Benjamin H., Jr.; and Caselli, Joseph J., 5,615,500, Cl. 38-77.830.
Reekie, George; Prosper, Jacob; Atos, Sheldon; and Dyke, Colin, 5,615,970, Cl. 403-379.000.
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Blanchard, Raymond W., to Roamer Corporation. Vehicle with side accessible cargo bed and storage compartments. 5,615,922, Cl. 296-37.600.
Blank, Roy L., to Richardson-Vicks Inc. Use of salicylic acid for regulating skin wrinkles and/or skin atrophy. 5,616,572, Cl. 514-159.000.
Blatz, Warren J. Surface covering tile. 5,616,389, Cl. 428-45.000.
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Blomquist, William B.; Dawson, Gary D.; Richardson, Roland T.; and Tallarek, Glen, to Chrysler Corporation. Method of pinched line detection for an evaporative emission control system. 5,616,836, Cl. 73-118.100.
Blue, John D. No bounce no dunk recreation ball game. 5,615,890, Cl. 473-469.000.
Board of Governors of Wayne State University: *See—*
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Board of Regents, The University of Texas System: *See—*
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Board of Trustees operating Michigan State University: *See—*
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Ojo, Adeola F.; Fitch, Frank R.; and Bülow, Martin, 5,616,170, Cl. 95-101.000.
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Bodager, Gregory A.; and Beighle, Phillip L., to Du Pont de Nemours, E. I., and Company. Imaged element utilizing a transfer process and a non-photosensitive/photosensitive combination for forming the colored image. 5,616,439, Cl. 430-15.000.
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Boehringer Ingelheim Pharmaceuticals, Inc.: *See—*
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Boevé, Jan A. Groundcovering element, method for its manufacture and method for the manufacture of a mould to be applied with the manufacturing method. 5,615,971, Cl. 404-37.000.
Bogdan, David C.; Pearl, Donald L.; Pribula, David T.; Aulet, Nancy R.; Hussain, Muhammed I.; and Hutt, George W., to International Business Machines Corporation. Automated system, and corresponding method, for measuring transmitter extinction ratio of electro-optic modules. 5,617,237, Cl. 359-180.000.
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Bogen, Kenneth T.: *See—*
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Bogursky, Robert M.; Krupin, Michael; Bellantoni, Peter V.; and McGrath, Martin E., to Auto Splice Systems, Inc. Continuous molded electrical connector. 5,616,053, Cl. 439-590.000.
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Bolinger, William H., Jr.; Carpenter, Belinda S.; Letterman, Danny R.; Krystel, Ginny S.; Blessing, William R.; and Holmes, Tommie L. Telecommunications network routing. 5,617,448, Cl. 379-114.000.
Bolotin, Monique; and Menart, Sandrine, to Rhone-Poulenc Rorer S.A. *K. lactis* transaldolase gene promoter and use thereof. 5,616,474, Cl. 435-69.100.
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Boncek, Raymond K., to United States of America, Air Force. Transparent optical node structure. 5,617,233, Cl. 359-123.000.
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Booth, Jason P.; and Booth, Deborah A. Electronic goal detecting system. 5,615,880, Cl. 473-471.000.
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Borrett, Gary T.; Kitteringham, John; Porter, Roderick A.; Shipton, Mark R.; Vimal, Mythily; and Young, Rodney C., to SmithKline Beecham plc. Enantiomers of carbazole derivatives as 5-HT_1-like agonists. 5,616,603, Cl. 514-411.000.
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Vinouze, Bruno; Guilbert, Martine; and Bosc, Dominique, 5,617,231, Cl. 349-112.000.
Bosch, Thomas L. Construction and sport line reel. 5,615,844, Cl. 242-395.000.
Bothwell, Charles R. Golf club. 5,616,087, Cl. 473-316.000.
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Peterson, Virgil D.; Andert, Gary W.; and Botts, Rollin D., 5,615,451, Cl. 16-34.000.
Boucher, Steven P.: *See—*
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Bouman, David G.; Moser, Larry D.; and Moser, Keith W., to Alliance Winding Equipment, Inc. Method of adjusting a stator coil lacing machine. 5,615,472, Cl. 29-596.000.
Bourlett, Steven P., to United States of America, Navy. Submarine launched unmanned aerial vehicle. 5,615,847, Cl. 244-63.000.
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Keilhauer, Gerhard; Romerdahl, Cynthia; Braña, Miguel F.; Qian, Xiao-Dong; Bousquet, Peter; Berlanga, Jose M.C.; Moset, Marina M.; and de Vega, Maria J.P., 5,616,589, Cl. 514-296.000.
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Boussignac, Georges. Binaural stethoscope allowing surrounding noises to be heard. 5,616,890, Cl. 181-131.000.
Boutaud, Frederic; and Ehlig, Peter N., to Texas Instruments Incorporated. Devices, systems and methods for conditional instructions. 5,617,574, Cl. 395-376.000.
Bowen, John H.; and Lovett, Jeffery A., to General Electric Company. Phase resolved sampling system. 5,616,870, Cl. 73-863.010.
Bower, Kirk. Eye shield for visor or cap bill. 5,615,413, Cl. 2-10.000.
Bowey, Kenneth G.; and Baldwin, Neil A., to Service Chemicals plc. Herbicidal compositions including glyphosates and quaternary ammonium surfactants. 5,616,535, Cl. 504-206.000.
Boyce, C. Bradford; and Belter, Randolph K., to LaRoche Industries Inc. Process for preparing fluorinated aliphatic compounds. 5,616,819, Cl. 570-167.000.
Boyce, Rogely W.: *See—*
Geddes, Ann D.; and Boyce, Rogely W., 5,616,560, Cl. 514-12.000.
Boyd, Gary L., to Solar Turbines Incorporated. Ceramic cerami turbine nozzle. 5,616,001, Cl. 415-209.200.
Boyden, James H., to Interval Research Corporation. Personal wearable communication system with enhanced low frequency response. 5,617,477, Cl. 381-25.000.
Boylan, John R.: *See—*
Goettmann, James A.; Monroe, Stephen H.; Angelini, Peter J.; and Boylan, John R., 5,616,384, Cl. 428-36.100.
Boyle, Joseph P.; and Welmers, Adrianus, to Exxon Research and Engineering Company. Solvent extraction of hydrocarbon oils producing an increased yield of improved quality raffinate. 5,616,238, Cl. 208-314.000.
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Abert, Michael; Block, Siegfried; Bozenhardt, Johannes; Leigsnering, Franz; Pfatteicher, Werner; and Schewe, Franz-Clemens, 5,617,309, Cl. 364-133.000.
BP Chemicals Limited: *See—*
Atkins, Martin P., 5,616,815, Cl. 568-700.000.

Blackborow, John R.; and Morton, Lee J., 5,616,654, Cl. 525-333.700.
Cook, Stephen J., 5,616,543, Cl. 508-239.000.
Brachmann, Markus: *See—*
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Bradshaw, Anthony J.: *See—*
Thornton, Richard T.; Bradshaw, Anthony J.; and Snyder, Wayne W., 5,616,114, Cl. 600-3.000.
Brady, John R. Non-slip sewing ruler. 5,615,488, Cl. 33-484.000.
Bragg, Susan L.: *See—*
Shalon, Tadmor; Pund, Marvin L.; Bragg, Susan L.; Houseman, James D.; and Free, Steven W., 5,617,157, Cl. 351-222.000.
Braig, James R.; Goldberger, Daniel S.; and Sterling, Bernhard B., to Optiscan, Inc. Self-emission noninvasive infrared spectrophotometer with body temperature compensation. 5,615,672, Cl. 128-633.000.
Brana, Miguel F.: *See—*
Keilhauer, Gerhard; Romerdahl, Cynthia; Brana, Miguel F.; Qian, Xiao-Dong; Bousquet, Peter; Berlanga, Jose M.C.; Moset, Marina M.; and de Vega, Maria J.P., 5,616,589, Cl. 514-296.000.
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Schwarz, Hans V.; Otterbach, Andreas; Mattner, Otto; Merger, Franz; Schwarz, Wolfgang; Brandt, Eckhardt; Magnussen, Peter; and Minges, Roland, 5,616,784, Cl. 560-345.000.
Brandt, Greg N. Cylinder lock and key. 5,615,566, Cl. 70-419.000.
Brant, William A.: *See—*
Stallmo, David C.; and Brant, William A., 5,617,530, Cl. 395-182.040.
Brascon Architectural Products Inc.: *See—*
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Brawer, Michael K., to University of Washington. Method for estimating the biological potential of a selected carcinoma in a patient. 5,616,469, Cl. 435-7.230.
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Warren, Ronald W.; and Breed, Ben R., 5,617,099, Cl. 342-159.000.
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Breitenstein, Jacques: *See—*
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Bretschneider, Thomas: *See—*
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Brewer, Matthew C.; Serenius, Eric J.; and Reese, David M., to Ohio Electronic Engravers, Inc. Engraving method and apparatus for generating engraving drive signals for engraving engraved areas of accurately controlled size in the surface of a workpiece using coefficient values and associated set up parameter values. 5,617,217, Cl. 358-299.000.
Breyer, Karl-Hermann; Koch, Klaus-Peter; Heier, Helmut; and Pressel, Hans-Gerd, to Carl-Zeiss-Stiftung. Method of making coordinate measurements on workpieces. 5,615,489, Cl. 33-503.000.
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Lawson, David F.; Stayer, Mark L., Jr.; Saffles, David; and Harwood, H. James, 5,616,704, Cl. 540-450.000.
Nakajima, Yukio, 5,617,341, Cl. 364-578.000.
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Bright, Danielle A., to Akzo Nobel, NV. 1,4-cyclohexanedimethanol bis (diaryl phosphate). 5,616,770, Cl. 558-161.000.
Bright, Gene M., to Pfizer Inc. Pyridopyrazine derivatives for treating alcohol and nicotine abuse and addiction. 5,616,585, Cl. 514-249.000.
Brintz, William M.: *See—*
Beckwith, Timothy A.; Brintz, William M.; and Barniskis, Walter A., 5,616,983, Cl. 313-51.000.
Bristol-Myers Squibb Co.: *See—*
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Britax Wingard Limited: *See—*
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Percival, Robert M.; Davey, Steven T.; and Szebesta, Daryl, 5,617,244, Cl. 359-341.000.
Williams, Richard G. C., 5,617,542, Cl. 395-200.140.
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Broadbent, Carolyn C.; Kernan, Jeffrey T.; and Truche, Jean L., to Hewlett-Packard Company. Universal quadrupole and method of manufacture. 5,616,919, Cl. 250-292.000.
Brockway, Brian P.; Brockway, Robert V.; and Fundakowski, Richard A., to Data Sciences International, Inc. Respiration monitoring system based on sensed blood pressure variations. 5,615,686, Cl. 128-673.000.
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Brookshire, Ronald L., to Landfill Gas & Environmental Products, Inc. Flow metering device for landfill gas extraction well. 5,616,841, Cl. 73-152.290.
Broome, William S., to Grau Limited. Brake system for a vehicle train. 5,615,929, Cl. 303-7.000.
Brophy, Mark E.; Cox, William C.; Finnemore, Harlan E.; Mattison, Glenn D.; Snider, Rex R.; and Wonderling, Michael W., to ABB Preheater, Inc. Air preheater with semi-modular rotor construction. 5,615,732, Cl. 165-8.000.
Brother Kogyo Kabushiki Kaisha: *See—*
Yamada, Takahiro; Ogawa, Masao; and Shibata, Eiji, 5,615,629, Cl. 112-225.000.
Brotz, Gregory R. High-temperature roll mill. 5,616,267, Cl. 219-619.000.
Broussoux, Dominique; Collard, Jean; and Daumas, Marie-Thérèse, to Commissariat a l'Energie Atomique; and Thomson-Brandt Armements. Process for manufacturing metal parts by free forging and drop forging in a press. 5,615,465, Cl. 29-1.210.
Brown & Sharpe Manufacturing Company: *See—*
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Brown, Daniel P., to Insta-Foam Products, Inc. Gun for dispensing fluent sealants or the like. 5,615,804, Cl. 222-136.000.
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Brown, Donald C.; and Hickey, Suzanne V., to Heyco Stamped Products, Inc. Female connector for a plastic molded receptacle and an extension cord. 5,616,041, Cl. 439-222.000.
Brown, Emery N.; and Skates, Steven J., to General Hospital Corporation, The. Method and system for calibration of immunoassay systems through application of bayesian analysis. 5,616,504, Cl. 436-518.000.
Brown, Fon R., Jr.; and Nelson, Robert C. Method and apparatus for charging lead acid batteries. 5,617,005, Cl. 320-21.000.
Brown, Jeffrey B.: *See—*
Abboud, Samir E.; Apuzzo, Nickolas C.; Brown, Jeffrey B.; Cunningham, Earl A.; Hannon, David M.; Mallette, Raymond P.; Tyler, Paul S.; Voss, Steven H.; and Wallash, Albert J., 5,617,289, Cl. 361-151.000.
Brown, J. Martin: *See—*
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Wipasuramonton, Pongdet P.; and Brown, Louis R., 5,615,909, Cl. 280-730.200.
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Brown, Ward T.: *See—*
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Brown, William, to Stretto Di Messina S.P.A. Suspension bridge framework. 5,615,436, Cl. 14-18.000.
Brown, William V. Watering device. 5,615,516, Cl. 47-40.500.
Brownfield, Lawrence C.: *See—*
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Thomas, Barbara; Mehreteab, Ammanuel; Erilli, Rita; Gomes, Gilbert; Bala, Frank, Jr.; Tamg, Jiashi; Lysy, Regis; and Broze, Guy, 5,616,548, Cl. 510-242.000.
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Brueck, Steven R. J.; and Long, Xiang-Cun, to University of New Mexico. Technique for fabrication of a poled electrooptic fiber segment. 5,617,499, Cl. 385-122.000.
Brumby, Thomas: *See—*

Zentel, Hans J.; Töpert, Michael; Laurent, Henry; Brumby, Thomas; and Esperling, Peter, 5,616,573, Cl. 514-172.000.
Brunswick Corporation: *See—*
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Brunton Company, The: *See—*
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Bucher, Doris J.: *See—*
Judd, Amrit K.; and Bucher, Doris J., 5,616,327, Cl. 424-206.100.
Bucher-Guyer AG Maschinenfabrik: *See—*
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Bucher, Hans R., to Xedar Corporation. Scan-type X-ray imaging with fixed converter. 5,617,465, Cl. 378-146.000.
Buhler, Marcel; Ho Dac, Thang; and Zurcher, Ulrich, to Nestec S.A. Process for milling, dehydrating and deodorizing plant fiber residues. 5,616,356, Cl. 426-443.000.
Bull, Christopher H.: *See—*
Wombwell, Paul T.; Willis, Philip D.; and Bull, Christopher H., 5,616,633, Cl. 523-400.000.
Bull HN Information Systems Italia S.p.A.: *See—*
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Bülow, Martin: *See—*
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Bunke, Paul R.: *See—*
Taylor, Matthew J.; Bunke, Paul R.; and Pflaumer, Phillip F., 5,616,358, Cl. 426-590.000.
Burchell, Richard A. Receptacle locator. 5,615,490, Cl. 33-528.000.
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Burjes, Louis; and Schroeck, Calvin W., to Lubrizol Corporation, The. Tertiary alkyl alkylphenols and organic compositions containing same. 5,616,816, Cl. 568-727.000.
Burk, Phil L.; Mical, Robert J.; Hayes, Steven E.; and Platt, David C., to 3DO Company, The. Method for communicating a value over a transmission medium and for decoding same. 5,617,506, Cl. 395-2.100.
Burkett, Susan L.: *See—*
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Burlington Chemical Co., Inc.: *See—*
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Burns, Carmen D., to Staktek Corporation. Method of manufacturing an integrated package having a pair of die on a common lead frame. 5,615,475, Cl. 29-827.000.
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Buser, John W.: *See—*
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Bushnell, Raymond B.; Evilsizer, William H.; Henderson, Paul D.; and Hughes, Scotte L., to Astro Tool Corp. Fishing reel with drag system. 5,615,840, Cl. 242-301.000.
Butler, Michael J.: *See—*
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Butler, Robert. Skirt for caster wheels. 5,615,450, Cl. 16-18.0CG.
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Buxton, William A. S.: *See—*
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Cadila Laboratories Limited: *See—*
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Caffey, Craig A.: *See—*
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Caffey, Hyram J.; and Caffey, Craig A. Rotary cutting head. 5,615,543, Cl. 56-295.000.
Cahoon, Richard S. Method for foam bioprocess. 5,616,493, Cl. 435-246.000.
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Cain, William C.: *See—*
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California Institute of Technology: *See—*
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Calmar-Albert GmbH: *See—*
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Calvin, Olin W.: *See—*
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Camilletti, Robert C.; Chandra, Grish; and Michael, Keith W., to Dow Corning Corporation. Enhanced adhesion of H-resin derived silica to gold. 5,616,202, Cl, 156-89.000.
Campbell, Charles N., II: *See—*
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Campbell, Gregory A.; and White, Richard M., to University of California, Regents of the. Microelectromechanical-based power meter. 5,617,020, Cl. 324-142.000.
Campbell, Thomas R., to Astec Industries, Inc. Paving machine with gravity feed hopper and auger mechanism. 5,615,973, Cl. 404-75.000.
Canada, Her Majesty the Queen in right of, as represented by the Minister of Natural Resources Canadian Forest Service: *See—*
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Cangene Corporation: *See—*
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Ichikawa, Hiroyuki; Ikeda, Yoshinori; Katoh, Koichi; Kurita, Mitsuru; Suzuki, Yasumichi; and Kitamura, Toshiyuki, 5,617,224, Cl. 358-530.000.
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Ito, Kan; Taguchi, Tomishige; Endo, Shozo; Inagaki, Atsushi; and Kawahara, Hiroyuki, 5,617,138, Cl. 348-222.000.
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Nishimura, Naoki; Omata, Hiroshi; and Honguu, Kazuoki, 5,616,428, Cl. 428-694.0ML.
Numata, Yasuhiro; Takayanagi, Yoshiaki; Katayama, Akira; Kuwabara, Nobuyuki; Ebisawa, Isao; and Ohtani, Tsuyoshi, 5,617,122, Cl. 347-14.000.
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Takaoka, Makoto; Sugiura, Susumu; Matsumoto, Kentaro; Uda, Toyokazu; and Uda, Masami, 5,617,123, Cl. 347-15.000.
Toge, Yoshiyuki; and Tanaka, Shinya, 5,615,683, Cl. 128-666.000.
Ueda, Noriyoshi; Sato, Masaaki; and Hirai, Katsuaki, 5,617,196, Cl. 399-379.000.
Ueno, Yasuhide, 5,617,220, Cl. 358-434.000.
Yashiro, Masahiko; Sasaki, Shinichi; Ikemoto, Isao; Miura, Koji; Karakama, Toshiyuki; and Numagami, Atsushi, 5,617,579, Cl. 399-114.000.
Yoshihara, Yoshihiko, 5,617,179, Cl. 355-40.000.

Cantor, Glenn H.; and Palmer, Guy H. Ribozyme-mediated inhibition of bovine leukemia virus. 5,616,466, Cl. 435-6.000.

Cape, William R.: *See*—
Guntert, Ronald M.; and Cape, William R., 5,615,972, Cl. 404-72.000.

Capraro, Anthony, Jr. Front access automatic teller machine security enclosure. 5,615,623, Cl. 109-2.000.

Carborundum Company, The: *See*—
Tenhover, Michael A.; and Ruppel, Irving B., 5,616,426, Cl. 428-688.000.

Cardenas, Juan M. Syringe for epidural catheter. 5,616,133, Cl. 604-187.000.

Carey, Jay F., II; and Zamanzadeh, Mehrooz, to Louis Berkman Company, The. Corrosion-resistant coated metal strip. 5,616,424, Cl. 428-647.000.

Carey, William F.: *See*—
Tuckerman, Mark A.; Knuth, Russell P.; and Carey, William F., 5,616,172, Cl. 96-16.000.

Carey, William S.; Solov, Andrew; Perez, Libardo A.; and Freese, Donald T., to BetzDearborn Inc. Inhibition of scale and corrosion in aqueous systems. 5,616,278, Cl. 252-180.000.

Carl Schenck AG: *See*—
Proske, Hans; Treib, Volker; and Wuttke, Horst, 5,615,992, Cl. 414-786.000.

Carl-Zeiss-Stiftung: *See*—
Breyer, Karl-Hermann; Koch, Klaus-Peter; Heier, Helmut; and Pressel, Hans-Gerd, 5,615,489, Cl. 33-503.000.

Carlson, Bradley D.: *See*—
Stansberry, Warren W.; Carlson, Bradley D.; and Heidel, Jeffrey C., 5,617,323, Cl. 364-474.030.

Carlsson, Peter N. I.: *See*—
Bjursell, Karl G.; Carlsson, Peter N. I.; Enerbäck, Curt S. M.; Hansson, Stig L.; Lidberg, Ulf F. P.; Nilsson, Jeanette A.; and Törnell, Jan B. F., 5,616,483, Cl. 435-198.000.

Carney, James C.: *See*—
Spearin, Elliott Y.; and Carney, James C., 5,616,367, Cl. 427-532.000.

Carpenter, Belinda S.: *See*—
Bolinger, William H., Jr.; Carpenter, Belinda S.; Letterman, Danny R.; Krystel, Ginny S.; Blessing, William R.; and Holmes, Tommie L., 5,617,448, Cl. 379-114.000.

Carper, Kenneth E., to Clopay Building Products Company, Inc. Extension spring system for an overhead door. 5,615,723, Cl. 160-191.000.

Carr, Jeffrey W.; and Gunder, Jeffrey P., to International Business Machines Corporation. Thin film slider with protruding R/W element formed by chemical-mechanical polishing. 5,617,273, Cl. 360-105.000.

Carr, Kenneth L., to Microwave Medical Systems. Microwave blood thawing with feedback control. 5,616,268, Cl. 219-687.000.

Carrier Vibrating Equipment, Inc.: *See*—
Schieber, Douglas A., 5,615,763, Cl. 198-751.000.

Carter, Paul: *See*—
Petersen, John A. M.; Whatcott, Gary L.; and Carter, Paul, 5,617,320, Cl. 364-453.000.

Cartilier, Louis; Mateescu, Mircea A.; Dumoulin, Yves; and Lenaerts, Vincent, to Labopharm, Inc. Cross-linked amylose as a binder/disintegrant in tablets. 5,616,343, Cl. 424-464.000.

Cartsonas, Christos: *See*—
Cook, James T., Sr.; Arnold, David D.; and Cartsonas, Christos, 5,616,521, Cl. 438-51.000.

Casati, Paolo: *See*—
Poinelli, Renato; Mazzola, Mauro; and Casati, Paolo, 5,617,295, Cl. 361-723.000.

Case Corporation: *See*—
Covington, Michael J.; Brandt, David M.; and Robinson, James W., 5,616,077, Cl. 460-119.000.
Lourigan, Patrick M., 5,615,553, Cl. 60-422.000.
Matousek, Robert A.; and Minnihan, James W., 5,615,989, Cl. 414-502.000.

Caselli, Joseph J.: *See*—
Moalem, Farhad; Bain, Benjamin H., Jr.; and Caselli, Joseph J., 5,615,500, Cl. 38-77.830.

Casey, John F.; Schroeder, Ronald W.; Dove, Lewis R.; and Yearsley, Philip J., to Hewlett-Packard Company. Collinear terminated transmission line structure. 5,617,298, Cl. 361-766.000.

Cash, David A., to RMO, Inc. Orthbondontic appliance and method of making the same. 5,616,026, Cl. 433-8.000.

Casio Computer Co., Ltd.: *See*—
Morohoshi, Hiroshi; Masuda, Yuichi; and Kuroki, Yasuo, 5,616,860, Cl. 73-170.140.
Nojima, Osamu; and Yumoto, Noboru, 5,617,468, Cl. 379-58.000.
Suga, Fusao, 5,615,685, Cl. 128-670.000.

Casper, Stephen L.; Hush, Glen E.; and Voshell, Thomas W., to Micron Technology, Inc. Flat panel display in which low-voltage row and column address signals control a much higher pixel activation voltage. 5,616,991, Cl. 315-167.000.

Cassidy, Gerald A.; Netshisaulu, Khathutshelo S.; and Lubashevsky, Aharon, to First National Bank of Southern Africa Limited. System for the secure transportation of articles. 5,615,625, Cl. 109-45.000.

Cassidy, Mark F., Jr.: *See*—
Kellner, Robert J.; and Cassidy, Mark F., Jr., 5,615,474, Cl. 29-703.000.

Castel, Yvon, to Institut Francais du Petrole. Pumping method and device with sequential jets. 5,616,006, Cl. 417-54.000.

Castel, Yvon, to Institut Francais du Petrole. Device and method for detecting interfaces separating several phases by ultrasonic waves. 5,616,856, Cl. 73-61.450.

Castelijns, Anna M. C. F.; and Maas, Peter J. D., to DSM N.V. Process for the preparation of dibenzylamine. 5,616,804, Cl. 564-398.000.

Castle, Kenneth R.: *See*—
Manhart, Paul K.; Stuhlinger, Tilman W.; Castle, Kenneth R.; and Ruda, Mitchell C., 5,617,252, Cl. 359-653.000.

Caterpillar Inc.: *See*—
Faletti, James J.; Feucht, Dennis D.; and Sinn, Scott G., 5,615,653, Cl. 123-322.000.
Feucht, Dennis D., 5,615,646, Cl. 123-90.120.
Lark, Wayne W.; Morgan, Denny; and Turba, James R., 5,617,034, Cl. 324-635.000.

Catlow, Inc.: *See*—
Guertin, Robert W., 5,615,706, Cl. 137-614.040.

Cauwet, Danièle: *See*—
Mahieu, Claude; Semeria, Didier; Cauwet, Danièle; and Vanlerberghe, Guy, 5,616,746, Cl. 554-66.000.

Cawood, Charles D. Light-transmitting outer casings for endoscopes and methods of making. 5,617,498, Cl. 385-117.000.

Cecebe Technologies Inc.: *See*—
Cameron, Gordon M.; Cooper, Charles G.; and Bellamy, Gregory J., 5,615,738, Cl. 165-103.000.

Cedal S.r.l.: *See*—
Ceraso, Bruno, 5,615,470, Cl. 29-469.500.

Cedars-Sinai Medical Center: *See*—
Barath, Peter, 5,616,149, Cl. 606-159.000.

Celoudoux, Jean P.; and Verhille, Michel, to L'Entreprise Industrielle. Wire handling grippers; process and apparatus for manufacturing of electrical cable bundles using these grippers. 5,615,478, Cl. 29-845.000.

Centre National de la Recherche Scientifique: *See*—
Behr, Jean-Paul; and Loeffler, Jean-Philippe, 5,616,745, Cl. 554-56.000.

Century International Adhesives & Coating Corporation: *See*—
Zhang, Tianhong, 5,616,400, Cl. 428-195.000.

Cephalon, Inc.: *See*—
Hudkins, Robert L.; Diebold, James L.; and Knight, Ernest, Jr., 5,616,724, Cl. 548-417.000.

Cerami, Anthony; Beutler, Bruce; and Wolpe, Stephen D., to Rockefeller University, The. Macrophage-derived inflammatory mediator (MIP-1alpha and MIP-1beta). 5,616,688, Cl. 530-351.000.

Ceraso, Bruno, to Cedal S.r.l. Process for producing plastic laminates with metal laminae. 5,615,470, Cl. 29-469.500.

Cerdec Corporation: *See*—
Ryan, Joseph W., 5,616,417, Cl. 428-428.000.

Ceriani, Mario, to Agusta Eli S.r.l. Rescue and ambulance helicopter. 5,615,848, Cl. 244-118.500.

Cetnarowski, Charles E. Deck mop wringer with adjustable support stands. 5,615,446, Cl. 15-261.000.

Cha, Byoung K.; and Ha, Chang W., to Hyundai Electronics Industries Co., Ltd. Sensing circuit to enhance sensing margin. 5,617,354, Cl. 365-185.210.

Chaffee, Linda C.: *See*—
Rothrum, Robert J.; Chaffee, Linda C.; and McGurran, Kelly T., 5,616,385, Cl. 428-40.100.

Chalfin, Julia M.: *See*—
Chalfin, William; and Chalfin, Julia M., 5,615,886, Cl. 273-272.000.

Chalfin, William; and Chalfin, Julia M. Word forming board game with colored transparent tiles. 5,615,886, Cl. 273-272.000.

Challande, Christian; Desarmaux, Pierre; and Thomas, Pascal, to Salomon S.A. Sport boot, particularly alpine ski boot. 5,615,498, Cl. 36-117.300.

Chamber, Thomas J.: *See*—
Eagles, Daniel C.; Feingold, Vladimir; and Chamber, Thomas J., 5,616,148, Cl. 606-107.000.

Chambers, Harvey E. Pulsater fluid system flusher. 5,615,695, Cl. 134-102.100.

Chambers, Ronald E.: *See*—
Gulunay, Necati; and Chambers, Ronald E., 5,617,372, Cl. 367-38.000.

Champion International Corporation: *See*—
Wright, Robert V.; and Chuprevich, Ann Marie, 5,616,353, Cl. 426-324.000.

Chandra, Grish: *See*—
Camilletti, Robert C.; Chandra, Grish; and Michael, Keith W., 5,616,202, Cl. 156-89.000.

Chandraratna, Roshantha A.: *See*—
Teng, Min; Beard, Richard L.; Colon, Diana; Duong, Tien T.; and Chandraratna, Roshantha A., 5,616,712, Cl. 546-158.000.

Chandraratna, Roshantha A. S., to Allergan. Acetylenes disubstituted with a heteroaromatic group and a 2-substituted chromanyl, thiochromanyl or 1,2,3,4—tetrahydroquinolinyl group having retinoid-like activity. 5,616,597, Cl. 514-365.000.

Chaney, David A.; and Wallen, Mark, to Conley Corporation. Double containment fitting. 5,615,700, Cl. 137-15.000.

Chang, Jung-Jen: *See*—
Lin, Chung-Kuang; and Chang, Jung-Jen, 5,615,697, Cl. 135-20.100.

Chang, Shi-Tse: *See*—
Hickling, Robert: Lee, Peng; Wei, Wei; and Chang, Shi-Tse, 5,616,845, Cl. 73-584.000.

Chang, Wei-Chi: *See*—
Tzeng, Jaw-Horng; Chiu, Ming-Jer; Hwang, Yii-Wei; and Chang, Wei-Chi, 5,617,270, Cl. 360-85.000.

Chansavoir, Alain: *See*—
Ducarouge, Christian; Grisel, Richard; Giraud, Nicholas; Sottocasa, Helene; Chansavoir, Alain; and Haddadi, Ahmed, 5,617,155, Cl. 351-204.000.

Chao, Benjamin: *See*—
Ovshinsky, Stanford R.; Fetcenko, Michael A.; Reichman, Benjamin; Young, Kwo; Chao, Benjamin; and Im, Jun, 5,616,432, Cl. 429-59.000.

Chapa, Gabriel R.: *See*—
Unruh, Jerry D.; Segmuller, Brigitte E.; Chapa, Gabriel R.; and Pryor, Kent E., 5,616,785, Cl. 562-25.000.

Chapin, Jay R.: *See*—
Ward, Michael G.; Yarbrough, Roy L.; and Chapin, Jay R., 5,617,048, Cl. 327-143.000.

Chaplik, Naom, to Pacific Communication Sciences, Inc. Matched filters for processing related signal components. 5,617,063, Cl. 332-103.000.

Chappell, Chris, to Dunlop Maxfli Sports Corporation. Golf club set. 5,616,086, Cl. 473-290.000.

Charbonnel, Jean-Louis; Marey, Daniel J.; Marois, Fabrice; and Miraucourt, Gérard G., to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "SNECMA". Turbine engine equipped with means for controlling the play between the rotor and stator. 5,616,003, Cl. 415-209.300.

Chartered Semiconductor Manufacturing Pte Ltd.: *See*—
Ping, Teong S., 5,616,519, Cl. 438-626.000.

Chauvet, Christine: *See*—
Boivin, Jean; Zard, Samir; and Chauvet, Christine, 5,616,743, Cl. 552-604.000.

Cheburkov, Yuri: *See*—
Behr, Frederick E.; and Cheburkov, Yuri, 5,616,794, Cl. 562-851.000.

Cheikh, Roland C., to Delab. Delivery of solid drug compositions. 5,616,123, Cl. 604-60.000.

Cheiky, Michael C., to Dreisbach Electromotive Inc. Electrolyte distributing system and method. 5,615,717, Cl. 141-100.000.

Chemical Lime Company: *See*—
Huege, Fred R.; and Salter, Timothy L., 5,616,283, Cl. 252-192.000.

Cheminal, Bernard; Lacroix, Eric; and Lantz, André, to Elf Atochem S.A. Process for the manufacture of 1,1,1,2-tetrafluoro-2-chloroethane and of pentafluoroethane. 5,616,820, Cl. 570-169.000.

Chemoxal S.A.: *See*—
Nicolle, Remy; Le Rouzic, Daniel; Crisinel, Pascal; DeClerck, Gerard; and Ledon, Henry, 5,616,335, Cl. 424-405.000.

Chen, Chin-nan. Apparatus for counting coins. 5,616,074, Cl. 453-30.000.

Chen, Fang; Griffen, Christopher T.; and Ni, Eel-Jeu, to Ford Motor Company. Apparatus and method for measuring contact force distribution of a tire. 5,616,839, Cl. 73-146.000.

Chen, Fu H.; and Wang, Jenny C. H. Bicycle gear selector mechanism. 5,615,580, Cl. 74-475.000.

Chen, Hsiung-chih. Retractable handle assembly for a suitcase. 5,615,757, Cl. 190-115.000.

Chen, Mao-Min; and Krounbi, Mohamad T., to International Business Machines Corporation. Magnetoresistive read head with back filled gap insulation layers. 5,617,277, Cl. 360-113.000.

Chen, Shyh-Fong: *See*—
Chou, Shan-Yen; Huang, Tsai-Mien; Chen, Shyh-Fong; and Ku, Hao, 5,616,713, Cl. 546-250.000.

Chen, Tse-Hsing. Ultrathin transmission mechanism for all types of automobile power window. 5,615,577, Cl. 74-89.210.

Cheng, Akimi C.: *See*—
Cheng, Chi; and Cheng, Akimi C., 5,615,600, Cl. 92-178.000.

Cheng, Chi; and Cheng, Akimi C. Roller bearing piston. 5,615,600, Cl. 92-178.000.

Cheng, Chieh-Min; Giudice, Anthony C.; Liang, Rong-Chang; Schwarzel, William C.; and Wan, Leonard C., to Polaroid Corporation. Lithographic printing plates with dispersed rubber additives. 5,616,449, Cl. 430-302.000.

Cheng, Shih-Cheng; Tong, Hua-Ching; and Cain, William C., to Read-Rite Corporation. Magnetic head structure with reduction of magnetic domain instability. 5,617,278, Cl. 360-126.000.

Cheng, Soofin; and Shih, Ren-Jai, to National Science Council. Preparation of layered zirconium phosphite sulfophenylphosphonates and their use as a catalyst. 5,616,749, Cl. 556-13.000.

Cheng, Wilfred W. T.: *See*—
Morano, Nick; Cheng, Wilfred W. T.; Allohverdi, Mohammad; and Di Marco, Anthony G., 5,615,949, Cl. 366-159.100.

Chenglin, Yueh-Kung. Personal cooking appliance. 5,615,604, Cl. 99-332.000.

Chesebrough-Pond's USA Co., Division of Conopco, Inc.: *See*—
Williams, David R.; Ryles, Christine W.; and Barrow, Stephen R., 5,616,313, Cl. 424-49.000.

Chester, David B.: *See*—
Young, William R.; and Chester, David B., 5,617,344, Cl. 364-724.100.

Chetverin, Alexander B.; and Chetverina, Helena V. Method for amplification of nucleic acids in solid media. 5,616,478, Cl. 435-91.200.

Chetverina, Helena V.: *See*—
Chetverin, Alexander B.; and Chetverina, Helena V., 5,616,478, Cl. 435-91.200.

Chevalier, Jean-Louis: *See*—
Saurat, Jean; Bigand, Dominique; and Chevalier, Jean-Louis, 5,615,965, Cl. 403-24.000.

Chevron Chemical Company: *See*—
Harrison, James J.; and Ruhe, William R., Jr., 5,616,668, Cl. 526-271.000.

Chevron Research and Technology Company, A Division of Chevron U.S.A. Inc.: *See*—
Krishna, Ashok S.; Skocpol, Robert C.; and Frederickson, Lewis A., 5,616,237, Cl. 208-120.000.

Chevron U.S.A. Inc.: *See*—
Mazgarov, Akhmet M.; Fakhriev, Akhmatfail M.; Khafizov, Rais N.; Kashevarov, Leonid A.; and Alimov, Mikhail P., 5,616,306, Cl. 423-228.000.

Chew, Chee C., to Hewlett-Packard Company. Spittoon system for ink-jet printers. 5,617,125, Cl. 347-36.000.

Cheyenne Advanced Technology Ltd.: *See*—
Malcolm, Peter B., 5,617,566, Cl. 395-620.000.

Chi, Shan, to Seiko Epson Corporation. Two-dimensional method and system for compressing bi-level images. 5,617,517, Cl. 395-114.000.

Chi, Yi Chen. Anti-tangle mechanism for a bicycle. 5,615,585, Cl. 74-551.100.

Chiba, Takayoshi: *See*—
Kobunaya, Hideki; Ishikawa, Yutaka; Yamasaki, Yoshimori; and Chiba, Takayoshi, 5,617,382, Cl. 369-32.000.

Children's Medical Center Corporation, The: *See*—
Hauschka, Peter V.; and Gallop, Paul M., 5,616,576, Cl. 514-81.000.

Chin, Hon W.; and Scott, Frederick, to Cisco Systems, Inc. Extended domain computer network using standard links. 5,617,421, Cl. 370-402.000.

Chiron Diagnostics Corporation: *See*—
Maley, Thomas C.; D'Orazio, Paul A.; Edelman, Peter G.; and Zalenski, John A., 5,616,222, Cl. 204-294.000.

Chisolm, Tuneen E. C.; and Minor, Barbara H., to Du Pont de Nemours, E. I., and Company. Azeotrope(like) mixtures of two hexafluoropropane stereoisomers. 5,616,275, Cl. 252-67.000.

Chiu, Ming-Jer: *See*—
Tzeng, Jaw-Horng; Chiu, Ming-Jer; Hwang, Yii-Wei; and Chang, Wei-Chi, 5,617,270, Cl. 360-85.000.

Chizuk, Joseph A., Jr.; Bergen, Richard F.; and Gundlach, Robert W., to Xerox Corporation. Ionographic printing with a focused ion stream controllable in two dimensions. 5,617,129, Cl. 347-123.000.

Cho, Hyung J., to Samsung Heavy Industries Co., Inc. Control valve for heavy construction equipment having regeneration function. 5,615,705, Cl. 137-596.200.

Choda, Mitsunobu: *See*—
Kanai, Hiroshi; Nishimura, Hideo; Okamoto, Atsuo; and Choda, Mitsunobu, 5,615,926, Cl. 297-411.270.

Choe, In J. Work stand. 5,615,782, Cl. 211-70.600.

Choi, Hae-Min, to Samsung Electronics Co., Ltd. CD player for reproducing signals from CD-OK and video CD. 5,617,386, Cl. 369-32.000.

Choi, Sang-kook; Kwon, Chung-hwan; and Kim, Hong-keun, to Samsung Electronics Co., Ltd. Vertical diffusion furnace having improved gas flow. 5,616,025, Cl. 432-241.000.

Choi, Yongwon; Kappler, John; and Marrack, Philippa, to National Jewish Center for Immunology and Respiratory Medicine. Process for producing monoclonal antibodies against human T cell receptor elements using recombinant DNA vectors, and cells transfected thereby. 5,616,472, Cl. 435-69.100.

Choi, Young S., to Daewoo Electronics Co., Ltd. Disc loading apparatus for a front loading disc player. 5,617,395, Cl. 369-77.100.

Choi, Young S., to Daewoo Electronics Co., Ltd. Disk tray having a system for retaining a disk at a position therein. 5,617,396, Cl. 369-77.200.

Cholez, Ralph E.: *See*—
Clark, James M.; and Cholez, Ralph E., 5,615,898, Cl. 277-235.00B.

Chou, Shan-Yen; Huang, Tsai-Mien; Chen, Shyh-Fong; and Ku, Hao, to Development Center for Biotechnology. Process of preparing 2-hydroxymethyl-3,5-dimethyl-4-methoxypyridine. 5,616,713, Cl. 546-250.000.

Chow, Mark K.: *See*—
Berger, John G.; Chow, Mark K.; and Clevenger, James T., Jr., 5,615,544, Cl. 56-341.000.

Chow, Yen-Lu; deSouza, Peter V.; Fineberg, Adam B.; and Hon, Hsiao-Wuen, to Apple Computer, Inc. Continuous reference adaptation in a pattern recognition system. 5,617,486, Cl. 382-181.000.

Christensen, Kenneth J.; Haas, Lee C.; and Noel, Francis E., to International Business Machines Corporation. Adapting switch port and work station communication adapters to data frame types with disparate formats and data rates. 5,617,419, Cl. 370-471.000.

Christian, Scott M.: *See*—
Hsu, Wen-Liang; Halasa, Adel F.; Matrana, Barry A.; Christian, Scott M.; Austin, Laurie E.; and Gross, Bill B., 5,616,653, Cl. 525-332.500.

Christidis, Yani: *See*—

Vallejos, Jean-Claude; Perrard, Alain; Christidis, Yani; and Gallezot, Pierre, 5,616,733, Cl. 549-507.000.
Chrysler Corporation: *See—*
Blomquist, William B.; Dawson, Gary D.; Richardson, Roland T.; and Tallarek, Glen, 5,616,836, Cl. 73-118.100.
Forrest, Mariana G., 5,616,261, Cl. 219-121.630.
Hemingway, Gregory; Legray, James V.; and Hite, John S., 5,616,848, Cl. 73-838.000.
Chu, Alexander H. T.; and Wloch, Gene P., to Abbott Laboratories. Process for recovering water insoluble compounds from a fermentation broth. 5,616,595, Cl. 514-344.000.
Chu, George. Reinforced pneumatic tool holder. 5,615,746, Cl. 173-171.000.
Chu, George H.: *See—*
Shenoy, Vivek N.; Revak, Timothy T.; Chu, George H.; McMullin, Hugb R.; Rosenblatt, Joel S.; and Martin, George R., 5,616,689, Cl. 530-356.000.
Chuang, Patrick: *See—*
Banerjee, Pradip; Chuang, Patrick; and Ghia, Atul V., 5,617,563, Cl. 395-556.000.
Chubbuck, Joseph. Modular mechanical system. 5,615,468, Cl. 29-38.00C.
Chung, Dae S., to Samsung Heavy Industries Co., Ltd. Variable priority device for heavy construction equipment. 5,615,991, Cl. 414-685.000.
Chung, Soo-Il: *See—*
Steinert, Peter M.; Kim, In-Gyu; Chung, Soo-Il; and Park, Sang-chul, 5,616,500, Cl. 435-320.100.
Chung, Yann-Lang: *See—*
Shih, Kuo-Piao; Liao, Wen-Lu; and Chung, Yann-Lang, 5,617,546, Cl. 395-307.000.
Chung, Yeon-Choon: *See—*
Kim, Dong-Young; and Chung, Yeon-Choon, 5,617,095, Cl. 342-1.000.
Chuprevich, Ann Marie: *See—*
Wright, Robert V.; and Chuprevich, Ann Marie, 5,616,353, Cl. 426-324.000.
Ciba-Geigy Corporation: *See—*
Aeschlimann, Peter, 5,616,695, Cl. 534-643.000.
Evans, Samuel; Gande, Matthew E.; Nesvadba, Peter; von Ahn, Volker H.; and Winter, Roland A. E., 5,616,774, Cl. 560-4.000.
Finter, Jürgen; Hilti, Bruno; Mayer, Carl W.; and Minder, Ernst, 5,616,287, Cl. 252-518.000.
Hüsler, Rinaldo; Orban, Ivan; and Holer, Martin, 5,616,787, Cl. 562-423.000.
Maetzke, Thomas, 5,616,590, Cl. 514-301.000.
Pitteloud, Rita; and Gilg, Bernard, 5,616,780, Cl. 560-118.000.
Steinmann, Alfred, 5,616,637, Cl. 524-102.000.
Taylor, Peter W.; Love, William G.; and van der Zanden, Brigine C. H., 5,616,602, Cl. 514-410.000.
Wombwell, Paul T.; Willis, Philip D.; and Bull, Christopher H., 5,616,633, Cl. 523-400.000.
Zambounis, John S.; Hao, Zhimin; and Iqbal, Abul, 5,616,725, Cl. 548-453.000.
Cincinnati Milacron Inc.: *See—*
Wissmann, Siegfried R.; and Reaves, Herschel, 5,616,350, Cl. 425-133.100.
Cipolla, Anthony J., to Ion Laser Technology. Laser system for use in dental procedures. 5,616,141, Cl. 606-15.000.
Cirrus Logic, Inc.: *See—*
Ort, Jeffrey; and Daum, Daniel, 5,617,502, Cl. 386-97.000.
Cisco Systems, Inc.: *See—*
Chin, Hon W.; and Scott, Frederick, 5,617,421, Cl. 370-402.000.
City of New York, Inc., The Public Health Research Institute of the: *See—*
Kramer, Fred R.; Dubnau, David; Drlica, Karl A.; and Pinter, Abraham, 5,616,459, Cl. 435-5.000.
Civanlar, Seyhan; and Saksena, Vikram R., to AT&T. System for binding host name of servers and address of available server in cache within client and for clearing cache prior to client establishes connection. 5,617,540, Cl. 395-200.110.
Claas CHG Beschrankt Haftende Offene Handelsgesellschaft: *See—*
Duckinghaus, Heinrich, 5,615,594, Cl. 91-433.000.
Claber S.p.A.: *See—*
Roman, Gianfranco, 5,615,837, Cl. 239-530.000.
Clariant Finance (BVI) Limited: *See—*
Farrell, Roberta L.; Gelep, Paul; Anilionis, Algis; Javaherian, Kashayar; Maione, Theodore E.; Rusche, James; Sadownick, Bruce A.; and Jackson, Jennifer A., 5,616,473, Cl. 435-69.100.
Clark, James M.; and Cholez, Ralph E. Bead seal motorcycle gasket. 5,615,898, Cl. 277-235.00B.
Clark, Kirtland P.; and Kleiner, Eduard K., to Dynax Corporation. Synergistic surfactant compositions and fire fighting concentrates thereof. 5,616,273, Cl. 252-2.000.
Clark, Lawrence A. Molecular level cleaning of contaminates from parts utilizing an envronmentally safe solvent. 5,616,549, Cl. 510-412.000.
Clark, Stewart A., to Northrop Grumman Corporation. Dynamically reconfigurable data processing system. 5,617,318, Cl. 364-516.000.
Clark, Terence: *See—*
Cruse, Richard; Szalai, Veronika; Clark, Terence; Rohman, Stephen; and Mininni, Robert, 5,616,754, Cl. 556-409.000.
Claudius Peters Aktiengesellschaft: *See—*
Weist, Hans-Joachim, 5,615,987, Cl. 414-218.000.
Cleary, Brenda A.; and Boucher, Steven P., to Henkel Corporation. Aqueous compositions useful as printing vehicles. 5,616,364, Cl. 427-389.900.
Clendenin, C. Gerald: *See—*
Simpson, John W.; Clendenin, C. Gerald; Fulton, James P.; Wincheski, Russell A.; Todhunter, Ronald G.; Namkung, Min; and Nath, Shridhar C., 5,617,024, Cl. 324-209.000.
Clevenger, James T., Jr.: *See—*
Berger, John G.; Chow, Mark K.; and Clevenger, James T., Jr., 5,615,544, Cl. 56-341.000.
Clinton, Charles A.: *See—*
West, Joseph B.; and Clinton, Charles A., 5,617,548, Cl. 395-326.000.
Cloninger, Leonard W. Wire support bracket. 5,615,850, Cl. 248-68.100.
Clopay Building Products Company, Inc.: *See—*
Carper, Kenneth E., 5,615,723, Cl. 160-191.000.
Cluts, Jonathan C., to Microsoft Corporation. System and methods for selecting music on the basis of subjective content. 5,616,876, Cl. 84-609.000.
Coakes, Fred: *See—*
Delaquis, Michel; and Coakes, Fred, 5,615,607, Cl. 99-409.000.
Coates, David: *See—*
Hittich, Reinhard; Rieger, Bernhard; Reiffenrath, Volker; Coates, David; and Plach, Herbert, 5,616,284, Cl. 252-299.630.
Coca-Cola Company, The: *See—*
Schroeder, Alfred A.; Romanyszyn, Michael T., Jr.; Getsy, Stephen B.; Montgomery, Gregg S.; Wolfe, Joseph J.; and Wittig, Norman P., 5,615,801, Cl. 222-51.000.
Cocchi, Gino, to Ali S.p.A. - Carpigiani Group. Stirrer for machines for making ice cream or the like. 5,615,952, Cl. 366-313.000.
Codacovi, Lynn M.: *See—*
Kempf, Dale J.; Norbeck, Daniel W.; Codacovi, Lynn M.; Sham, Hing L.; and Wittenberger, Steven J., 5,616,714, Cl. 546-269.700.
Codman & Shurtleff, Inc.: *See—*
Yapp, Ronald A.; and Worrick, Charles B., III, 5,616,144, Cl. 606-61.000.
Cogdill, Bobby J.; and Trantham, Richardson J., to Dayco Products, Inc. Hose construction and method of making the same. 5,616,205, Cl. 156-229.000.
Cohen, Eric L. Liquid spray compressor. 5,616,007, Cl. 417-65.000.
COLCON Anstalt: *See—*
Schlatter, Walter, 5,615,569, Cl. 72-67.000.
Coldren, C. Michael. Lamp and reflector bracket for fluorescent fixtures. 5,615,943, Cl. 362-220.000.
Cole, Jeffrey J.: *See—*
Long, Charles F.; Cole, Jeffrey J.; and McCauley, Phillip F., 5,616,093, Cl. 475-120.000.
Colgate-Palmolive Co.: *See—*
Thomas, Barbara; Mehreteab, Ammanuel; Erilli, Rita; Gomes, Gilbert; Bala, Frank, Jr.; Tarng, Jiashi; Lysy, Regis; and Broze, Guy, 5,616,548, Cl. 510-242.000.
Collagen Corporation: *See—*
Shenoy, Vivek N.; Revak, Timothy T.; Chu, George H.; McMullin, Hugh R.; Rosenblatt, Joel S.; and Martin, George R., 5,616,689, Cl. 530-356.000.
Collard, Jean: *See—*
Broussoux, Dominique; Collard, Jean; and Daumas, Marie-Thérèse, 5,615,465, Cl. 29-1.210.
Collin, Marianne: *See—*
Andersson, Mats; and Collin, Marianne, 5,616,526, Cl. 501-89.000.
Collins, Clive A.: *See—*
Barker, Thomas N.; Collins, Clive A.; Dapp, Michael C.; Dieffenderfer, James W.; Grice, Donald G.; Knowles, Billy J.; Lesmeister, Donald M.; Nier, Richard E.; Retter, Eric E.; Rolfe, David B.; and Smoral, Vincent J., 5,617,577, Cl. 395-800.000.
Collins, Michael S.: *See—*
Hector, Richard F.; and Collins, Michael S., 5,616,321, Cl. 424-145.100.
Collins, Paul W.: *See—*
Khanna, Ish K.; Weier, Richard M.; Collins, Paul W.; Yu, Yi; Xu, Xiangdong; Partis, Richard A.; and Koszyk, Francis J., 5,616,601, Cl. 514-399.000.
Colloidal Dynamics PTY LTD: *See—*
O'Brien, Richard W., 5,616,872, Cl. 73-865.500.
Colon, Cesar: *See—*
Fu, Xiaoyong; Thiruvengadam, Tiruvettipuram K.; Tann, Chou-Hong; and Colon, Cesar, 5,616,742, Cl. 552-595.000.
Colon, Diana: *See—*
Teng, Min; Beard, Richard L.; Colon, Diana; Duong, Tien T.; and Chandraratna, Roshantha A., 5,616,712, Cl. 546-158.000.
Comeau, Laurier E.; Gillis, Ian; and Vandenberg, Elis, to Baroid Technology, Inc. Internal pressure sleeve for use with easily drillable exit ports. 5,615,740, Cl. 166-380.000.
Commissariat a l'Energie Atomique: *See—*
Broussoux, Dominique; Collard, Jean; and Daumas, Marie-Thérèse, 5,615,465, Cl. 29-1.210.
Commodore Laboratories, Inc.: *See—*
Mouk, Robert W.; and Abel, Albert E., 5,616,821, Cl. 570-177.000.
Commonwealth Scientific and Industrial Research Organisation: *See—*
Glass, Monty; and Dabbs, Timothy P., 5,617,207, Cl. 356-345.000.
Morton, Trevor C.; Hodgkin, Jonathan H.; and Eibl, Robert, 5,616,666, Cl. 526-262.000.
Commonwealth Scientific Corporation: *See—*
Baldwin, David A.; and Michel, Stephen L., 5,616,179, Cl. 117-108.000.
Compaq Computer Corporation: *See—*
Dao, Giang H.; and Watters, John J., 5,617,524, Cl. 395-143.000.
Dao, Giang H., 5,617,529, Cl. 395-515.000.
Stevens, Jeffrey C., 5,617,557, Cl. 395-473.000.

Computer Sciences Corporation: *See—*
Frizelle, Gerald D. M.; Jackson, Robert G.; and Woodcock, Eric J., 5,617,321, Cl. 364-468.100.
Concast Standard AG: *See—*
Roehrig, Adalbert; and Kawa, Franciszek, 5,615,731, Cl. 164-418.000.
Confalonieri, Pierangelo; and Nicollini, Germano, to SGS-Thomson Microelectronics S.r.l. Electronic switch having reduced body effect. 5,617,055, Cl. 327-404.000.
Conley Corporation: *See—*
Chaney, David A.; and Wallen, Mark, 5,615,700, Cl. 137-15.000.
Conley, James G.; and Lemelson, Jerome H., to Syndia Corporation. Method of applying a wear-resistant diamond coating to a substrate. 5,616,372, Cl. 427-554.000.
Conlon, Brendan M.: *See—*
Kidston, Kevin S.; and Conlon, Brendan M., 5,615,933, Cl. 303-152.000.
Connectix Corporation: *See—*
Garber, Jonathan F.; Brown, Jorg A.; and Walters, Chad P., 5,617,552, Cl. 395-401.000.
Conner Peripherals, Inc.: *See—*
Gordenker, Robert J. M.; Tucker, Lawrence J.; and Murphy, Michael E., 5,617,269, Cl. 360-77.120.
Consorzio per la Ricerca sulla Microelettronica nel Mezzogiorno: *See—*
Palara, Sergio; and Sueri, Stefano, 5,617,046, Cl. 327-110.000.
Ronsisvalle, Cesare, 5,616,512, Cl. 438-406.000.
Contarino, Alfred F. Card retention and security device. 5,615,454, Cl. 24-3.130.
Conti, Richard: *See—*
Merck, John J., Jr.; Wyman, Jon; and Conti, Richard, 5,616,857, Cl. 73-82.000.
Contico International, Inc.: *See—*
Nelson, Philip L., 5,615,835, Cl. 239-333.000.
Continental Emsco Company: *See—*
Moses, Charles J.; and Simic, Rajko M., 5,615,977, Cl. 405-195.100.
Cook, James T., Sr.; Arnold, David D.; and Cartsonas, Christos, to Sensym, Incorporated. Side port package for micromachined fluid sensor. 5,616,521, Cl. 438-51.000.
Cook, Keith R., to ITT Automotive Electrical Systems, Inc. Method and apparatus for wiping a windshield. 5,616,182, Cl. 134-6.000.
Cook, Stephen J., to BP Chemicals (Additives) Limited. Lubricating oil compositions. 5,616,543, Cl. 508-239.000.
Cooley, Robert B.; and Burr, Robert L., to Lottery Enterprises Inc. Bill pay system and method. 5,616,902, Cl. 235-380.000.
Coope, Janet L.: *See—*
Harichian, Bijan; and Coope, Janet L., 5,616,282, Cl. 252-186.420.
Cooper, Charles G.: *See—*
Cameron, Gordon M.; Cooper, Charles G.; and Bellamy, Gregory J., 5,615,738, Cl. 165-103.000.
Cooper, Richard P., to Thermal Dynamics U.S.A. Ltd. Co. Resistance heating element with large area, thin film and method. 5,616,266, Cl. 219-543.000.
Corain, Luciano: *See—*
Bortoli, Giulio; Corain, Luciano; and Sora, Gianluigi, 5,615,714, Cl. 139-449.000.
Corbalis, Charles M.: *See—*
Sathe, Shirish K.; Corbalis, Charles M.; Schmidt, Uri; and Moley, Richard M., 5,617,417, Cl. 370-394.000.
Corbet, Todd A.: *See—*
Sepehri, Nariman; Corbet, Todd A.; and Lawrence, Peter D., 5,616,998, Cl. 318-568.220.
Corder, Rodney J., to New Media Corporation. Controller for refreshing a PSRAM using individual automatic refresh cycles. 5,617,551, Cl. 395-401.000.
Cordioli, Sergio. Remotely controlled device for rotating the steering-wheel of a motor vehicle and then taking it back to the starting position. 5,615,581, Cl. 74-494.000.
Corente, Joseph N. Fitted sheet for use as a disposable stretcher/gurney linen. 5,615,425, Cl. 5-81.10T.
Cornell, Donald P.: *See—*
Weise, Andrew P.; and Cornell, Donald P., 5,617,308, Cl. 363-98.000.
Cornell, Eric A.; and Renn, Michael J. Optical cooling of solids. 5,615,558, Cl. 62-56.000.
Cornell Research Foundation, Inc.: *See—*
Lo, Yu-Hwa, 5,617,436, Cl. 372-45.000.
Corning Incorporated: *See—*
Alexander, M. Grayson; Stempin, John L.; and Wexell, Dale R., 5,616,160, Cl. 65-27.000.
Araujo, Roger J.; Borrelli, Nicholas F.; Hoaglin, Christine L.; and Smith, Charlene, 5,616,159, Cl. 65-17.400.
Vance, Miles E., 5,617,200, Cl. 356-73.100.
Coronado, Martin P., to Baker Hughes Incorporated. Packer inflation system. 5,615,741, Cl. 166-387.000.
Correia, Joao D. G.: *See—*
Herrmann, Wolfgang A.; Correia, Joao D. G.; Fischer, Richard; Adam, Waldemar; Lin, Jianhua; Saha-Möller, Chantu R.; and Shimizu, Masao, 5,616,734, Cl. 549-406.000.
Corso, Anthony J.: *See—*
Siegfried, David G.; Rimko, Robert W.; and Corso, Anthony J., 5,615,944, Cl. 362-226.000.
Cortiade, Simeon: *See—*
Armengaud, Jean-Francois; Martignon, Alain; Cortiade, Simeon; and Marti, Jacques, 5,616,842, Cl. 73-152.180.
Cosco, Inc.: *See—*
Kain, James M., 5,615,925, Cl. 297-188.010.
Cosmo Solution Limited: *See—*
Yung, Siu M., 5,615,649, Cl. 123-146.50B.
Costa, Edward A., Sr. Masthead and spreader bird roosting guard. 5,615,524, Cl. 52-101.000.
Coughlin, Jeffrey P., to Harley-Davidson Motor Company. Motorcycle engine. 5,615,642, Cl. 123-54.400.
Coulter Corporation: *See—*
Rodriguez, Carlos M.; and Ledis, Stephen L., 5,616,501, Cl. 436-63.000.
Courant, Patrick, to Bull, S.A. Device for cambering conductive fingers on an integrated circuit. 5,615,571, Cl. 72-322.000.
Covington, Michael J.; Brandt, David M.; and Robinson, James W., to Case Corporation. Control system for a cotton harvester. 5,616,077, Cl. 460-119.000.
Cowan, Michael I.; Weiss, Jordan P.; and Ziff, Lisa A., to Radiant Products, Ltd. Disposable applicator. 5,615,440, Cl. 15-104.940.
Cox, Scott, to Acco-Rexel Group Services Plc. Binding machines. 5,615,986, Cl. 412-40.000.
Cox, William C.: *See—*
Brophy, Mark E.; Cox, William C.; Finnemore, Harlan E.; Mattison, Glenn D.; Snider, Rex R.; and Wonderling, Michael W., 5,615,732, Cl. 165-8.000.
Cozzi, Daniele, to Bull HN Information Systems Italia S.p.A. Power supply with power factor correction and protection against failures of the power factor correction. 5,617,013, Cl. 323-222.000.
Cracchiolo, James M.; and Cracchiolo, Justina M. Viewing structure for infants. 5,615,434, Cl. 5-658.000.
Cracchiolo, Justina M.: *See—*
Cracchiolo, James M.; and Cracchiolo, Justina M., 5,615,434, Cl. 5-658.000.
Craig, Franklin J.: *See—*
Weder, Donald E.; Weder, Erin H.; Dunn, R. E. Jack; and Craig, Franklin J., 5,616,377, Cl. 428-35.700.
Weder, Donald E.; Weder, E. H.; Dunn, R. E. Jack; and Craig, Franklin J., 5,616,378, Cl. 428-35.700.
Weder, Donald E.; Weder, E. H.; Dunn, R. E. Jack; and Craig, Franklin J., 5,616,379, Cl. 428-35.700.
Weder, Donald E.; Weder, E. H.; Dunn, R. E. Jack; and Craig, Franklin J., 5,616,380, Cl. 428-35.700.
Weder, Donald E.; Weder, E. H.; Dunn, R. E. Jack; and Craig, Franklin J., 5,616,381, Cl. 428-35.700.
Weder, Donald E.; Weder, E. H.; Dunn, R. E. Jack; and Craig, Franklin J., 5,616,382, Cl. 428-35.700.
Craig, Richard A.: *See—*
Basha, Anwer; Brooks, Clint D. W.; Bhatia, Pramila; Craig, Richard A.; Ratajczyk, James D.; and Stewart, Andrew O., 5,616,596, Cl. 514-365.000.
Crandall, William, to Talking Signs, Inc. Accessible automatic teller machines for sight-impaired persons and print-disabled persons. 5,616,901, Cl. 235-379.000.
Crane, Gordon; and Crane, Paul. Fishing lure retrieving apparatus. 5,615,511, Cl. 43-17.200.
Crane, Paul: *See—*
Crane, Gordon; and Crane, Paul, 5,615,511, Cl. 43-17.200.
Crause, Peter; Habermann, Paul; Tripier, Dominique; Ulmer, Wolfgang; and Schmid, Gerhard, to Hoechst Aktiengesellschaft. Synthetic isohirudins with improved stability. 5,616,476, Cl. 435-69.100.
Crawford, Donald L.; Stevens, Todd O.; and Crawford, Ronald L., to Idaho Research Foundation, Inc. Biological system for degrading nitroaromatics in water and soils. 5,616,162, Cl. 71-9.000.
Crawford, Ronald L.: *See—*
Crawford, Donald L.; Stevens, Todd O.; and Crawford, Ronald L., 5,616,162, Cl. 71-9.000.
Creighton, Donald J.; and Hamilton, Diana S., to University of Maryland Baltimore Campus. Glutathione N-hydroxycarbamoyl thioesters and method of inhibiting neoplastic growth. 5,616,563, Cl. 514-18.000.
Cresswell, Michael W.; Allen, Richard A.; Kopanski, Joseph J.; and Linholm, Loren W., to United States of America, Commerce. Method and reference standards for measuring overlay in multilayer structures, and for calibrating imaging equipment as used in semiconductor manufacturing. 5,617,340, Cl. 364-571.010.
Creti, Joël: *See—*
Beutin, Bruno A.; Creti, Joël; Donnadieu, Jean-Pierre; Garnier, Francis G. A.; Hugues, Michel G.; Lecordix, Jean-Loic H.; Maignan, Claude P. H.; Massot, Gilles C. G.; Pincemin, Jean-Marie N.; Thorel, Christophe J. F.; Touron, Carole C.; and Vennin, Gérard M. R. M., 5,615,547, Cl. 60-39.080.
Crews, Alvin D., Jr.; Harrington, Philip M.; Karp, Gary M.; Manfredi, Mark C.; and Guaciaro, Michael A., to American Cyanamid Company. 1-(3-heterocyclylphenyl)-s-triazine-2,4,6-oxo or thiotrione herbicidal agents. 5,616,706, Cl. 544-221.000.
Cripe, James A. Water craft with removable duck blind cabin house assembly. 5,615,633, Cl. 114-351.000.
Crisinel, Pascal: *See—*
Nicolle, Remy; Le Rouzic, Daniel; Crisinel, Pascal; DeClerck, Gerard; and Ledon, Henry, 5,616,335, Cl. 424-405.000.
Crooks, Peter A.; Caldwell, William S.; Dull, Gary M.; Bhatti, Balwinder S.; Deo, Niranjan M.; and Ravard, Alain. Compounds which are useful for prevention and treatment of central nervous system disorders. 5,616,707, Cl. 544-242.000.

Cros, Michel: *See—*
Hoyon, Christophe; and Cros, Michel, 5,615,786, Cl. 213-75.00R.
Crosfield Limited: *See—*
Edwards, Richard B.; and Graham, Peter, 5,616,310, Cl. 423-700.000.
Cross, Gary, to Cycle Country Accessories Corp. ATV lift handle rub block. 5,615,745, Cl. 172-811.000.
Crouch, Alfred L.; Pressly, Matthew D.; Gay, James G.; Shepard, Clark G.; and Laakso, Pamela S., to Motorola, Inc. Data Processor having a built-in internal self test controller for testing a plurality of memories internal to the data processor. 5,617,531, Cl. 395-183.060.
Crouser, Darwin S.; McAllise, Gregg A.; Morgan, Jeffery A.; and Sindlinger, Fred S., to Hoover Company, The. Convertible upright carpet extractor. 5,615,448, Cl. 15-321.000.
Crumbacher, Harry W.: *See—*
Molezzi, Michael J.; Crumbacher, Harry W.; McConville, Bernard; and Shannon, Connie H., 5,615,831, Cl. 239-8.000.
Cruse, Richard; Szalai, Veronika; Clark, Terence; Rohman, Stephen; and Mininni, Robert, to Enichem S.p.A. Compounds useful as chemical precursors in chemical vapor deposition of silicon-based ceramic materials. 5,616,754, Cl. 556-409.000.
Cullen, Thomas G.: *See—*
Henrie, Robert N., II; Peake, Clinton J.; Cullen, Thomas G.; Yeager, Walter H.; Buser, John W.; Fiordeliso, James J.; and Dixson, John A., 5,616,718, Cl. 546-330.000.
Cullis, Pieter R.: *See—*
Janoff, Andrew S.; Boni, Lawrence; Madden, Thomas D.; Cullis, Pieter R.; Lenk, Robert P.; Kearns, John J.; Durning, Anthony G.; Klimchak, Robert; and Portnoff, Joel, 5,616,334, Cl. 424-404.000.
Mayer, Lawrence D.; Bally, Marcel B.; Cullis, Pieter R.; Ginsberg, Richard S.; and Mitilenes, George N., 5,616,341, Cl. 424-450.000.
Cully, Jan: *See—*
Heidlas, Jürgen; Cully, Jan; and Vollbrecht, Heinz-Rüdiger, 5,616,359, Cl. 426-614.000.
Heidlas, Jürgen; Vollbrecht, Heinz-Rüdiger; and Cully, Jan, 5,616,352, Cl. 426-312.000.
Cultor Ltd.: *See—*
Virtanen, Jouko; and Mäkela, Matti, 5,616,361, Cl. 426-658.000.
Cumiskey, Walter R.: *See—*
Watkins, Jeffrey K.; Cumiskey, Walter R.; and Loizeaux, Phillip D., 5,615,421, Cl. 4-506.000.
Cunningham, Earl A.: *See—*
Abboud, Samir E.; Apuzzo, Nickolas C.; Brown, Jeffrey B.; Cunningham, Earl A.; Hannon, David M.; Mallette, Raymond P.; Tyler, Paul S.; Voss, Steven H.; and Wallash, Albert J., 5,617,289, Cl. 361-151.000.
Cunningham, Jeffrey G.; and Irish, Allen G., to Teleflex Incorporated. C-shaped pin-connector with flex holes. 5,615,583, Cl. 74-502.400.
Current, Wayne A., to International Visual Corp. Height adjustable sign holder. 5,615,503, Cl. 40-601.000.
Currier, Gerard M.: *See—*
Hsu, Oscar Hsien-Hsiang; Currier, Gerard M.; and Moes, Philip H., 5,616,419, Cl. 428-512.000.
Curry, Mark H.; Zimmerman, Donald M.; and Haley, John C., to Tyson Holding Company. Apparatus and method for processing hog stomachs. 5,616,073, Cl. 452-123.000.
Cybex International, Inc.: *See—*
Simonson, Roy, 5,616,107, Cl. 482-97.000.
Cycle Country Accessories Corp.: *See—*
Cross, Gary, 5,615,745, Cl. 172-811.000.
Cypress Semiconductor, Inc.: *See—*
Rees, David B.; and Steadman, Martin J., 5,617,057, Cl. 327-543.000.
Czerwinski, Frank G.: *See—*
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D2B Systems Company Limited: *See—*
Stirling, Andrew J., 5,617,330, Cl. 364-514.00A.
Dabbs, Timothy P.: *See—*
Glass, Monty; and Dabbs, Timothy P., 5,617,207, Cl. 356-345.000.
Dabrowski Amaral, Christine E.: *See—*
Schaffer, Priscilla A.; and Dabrowski Amaral, Christine E., 5,616,461, Cl. 435-6.000.
Daewoo Electronics Co., Ltd.: *See—*
Choi, Young S., 5,617,395, Cl. 369-77.100.
Choi, Young S., 5,617,396, Cl. 369-77.200.
Lee, Min-Sub, 5,617,144, Cl. 348-416.000.
Dai-Ichi Electric Co., Ltd.: *See—*
Horino, Morikatsu; and Satoh, Hiroshi, 5,615,802, Cl. 222-66.000.
Dai, Pei-Shing E.: *See—*
Sherwood, David E., Jr.; Dai, Pei-Shing E.; and Campbell, Charles N., II, 5,616,530, Cl. 502-210.000.
Dai, YuZhong, to Brown & Sharpe Manufacturing Company. Device for measuring an angle between pivotally-connected members. 5,616,917, Cl. 250-237.00G.
Daidotokushuko Kabushikikaisha: *See—*
Tawara, Hiroshi; Hiramatsu, Mineyuki; and Maeda, Jun, 5,616,295, Cl. 266-92.000.
Daifotis, Anastasia G.; and Yates, Ashley J., to Merck & Co., Inc. Bisphosphonates prevent bone loss associated with immunosuppressive therapy. 5,616,571, Cl. 514-102.000.
Daihachi Chemical Industry Co., Ltd.: *See—*
Kawata, Shigeru; Noguchi, Kazuo; Ako, Kenji; and Nakamura, Shin, 5,616,768, Cl. 558-146.000.
Daimler-Benz Aerospace Airbus GmbH: *See—*
Kirma, Safa, 5,616,887, Cl. 174-84.00R.
Daimler Benz AG: *See—*
Mueller, Andreas, 5,617,411, Cl. 370-210.000.
Rall, Bernhard; and Dorner, Jürgen, 5,617,282, Cl. 361-56.000.
Dainippon Ink and Chemicals, Inc.: *See—*
Imamura, Shoji; and Ebato, Hiroshi, 5,616,657, Cl. 525-437.000.
Kuwamura, Shin'ichi; Deguchi, Yoshinobu; Goto, Tokio; and Yoshino, Fumio, 5,616,645, Cl. 524-546.000.
Daisey Kikai Kabushiki Kaisha: *See—*
Suzuki, Tomosaburo; and Takizawa, Tsuneo, 5,615,518, Cl. 47-58.000.
Daiwa Seiko, Inc.: *See—*
Aizawa, Yuichi; and Imai, Yasuto, 5,616,088, Cl. 473-341.000.
Furubayashi, Tadashi, 5,615,842, Cl. 242-268.000.
Saito, Masaji, 5,615,841, Cl. 242-231.000.
Takeuchi, Shinji; Shinohara, Eiji; and Kawashiro, Masayuki, 5,615,843, Cl. 242-319.000.
Dallas A.C. Horn & Co., Inc.: *See—*
Dyess, William B., 5,615,762, Cl. 198-464.100.
Dallas, L. Murray. Apparatus and method for completing and recompleting wells for production. 5,615,739, Cl. 166-306.000.
Damien, Souad, to U.S. Philips Corporation. Network with data rate adjustment for virtual circuits with asynchronous time division multiplex transmission. 5,617,416, Cl. 370-391.000.
Dammon, James R., to Fairfield Manufacturing Co., Inc. Press fit carrier/spindle for use in planetary transmission. 5,616,097, Cl. 475-331.000.
Dana-Farber Cancer Institute: *See—*
Schaffer, Priscilla A.; and Dabrowski Amaral, Christine E., 5,616,461, Cl. 435-6.000.
Danielson, Arvin D.; Schultz, Darald R.; Silva, Dennis; Boatwright, Darrell L.; Austin, Rickey G.; and Alt, Daniel E., to Norand Corporation. Portable work station and data collection terminal including switchable multi purpose touch screen display. 5,617,343, Cl. 364-707.000.
Danielson, Michael S.: *See—*
Adrian, Andrew A.; Danielson, Michael S.; Meyers, David B.; and Spiegel, Leo, 5,617,058, Cl. 330-10.000.
Danstrom, Eric J., to SGS-Thomson Microelectronics, Inc. Multifunction voltage regulator. 5,617,014, Cl. 323-267.000.
Dao, Giang H.; and Wanters, John J., to Compaq Computer Corporation. Run slice line draw engine with shading capabilities. 5,617,524, Cl. 395-143.000.
Dao, Giang H., to Compaq Computer Corporation. Memory-mapped video control registers. 5,617,529, Cl. 395-515.000.
Dapp, Michael C.: *See—*
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Gray, Robert D.; Spatola, Arno F.; and Darlak, Krzysztof, 5,616,605, Cl. 514-415.000.
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Young, William C.; and Darr, Richard C., 5,615,790, Cl. 215-375.000.
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Berger, Andrew J.; Brennan, James F., III; Dasari, Ramanchandra R.; Feld, Michael S.; Itzkan, Irving; Tanaka, Kaz; and Wang, Yang, 5,615,673, Cl. 128-633.000.
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Kelley, Michael H., 5,617,558, Cl. 395-493.000.
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Stechmann, Jonathan H.; Powell, Joel T.; and Nyflot, Loren, 5,617,528, Cl. 395-326.000.
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Percival, Robert M.; Davey, Steven T.; and Szebesta, Daryl, 5,617,244, Cl. 359-341.000.
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Karner, Johann; Bergmann, Erich; and Daxinger, Helmut, 5,616,373, Cl. 427-577.000.
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Cogdill, Bobby J.; and Trantham, Richardson J., 5,616,205, Cl. 156-229.000.
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Roberts, David S.; Dearwester, Donald A.; and Swearingin, Leroy A., 5,616,328, Cl. 424-257.100.
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Nelson, William S., 5,615,637, Cl. 119-14.030.
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Bank, Howard M.; and Decker, Gary T., 5,616,763, Cl. 556-479.000.
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Wolf, Franz J.; Reichert, Uwe; Decker, Walter; Demling, Frank; Ogrissek, Andrew; Felchtiger, Dieter; Lindmayer, Martin; and Heinle, Dieter, 5,616,965, Cl. 307-10.100.
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Nicolle, Remy; Le Rouzic, Daniel; Crisinel, Pascal; DeClerck, Gerard; and Ledon, Henry, 5,616,335, Cl. 424-405.000.
De Cock, Etienne M.; De Schamphelaere, Lucien A.; Van Dessel, Bart J.; and Van Hoogten, Daniël L., to Xeikon N.V. Developing unit for thoroughly supplying mixed toner in an electrostatographic printer. 5,617,189, Cl. 399-254.000.
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Peterson, Rudolph A., Jr., 5,616,964, Cl. 307-9.100.
Deguchi, Yoshinobu: *See—*
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Kottenhahn, Matthias; and Drauz, Karlheinz, 5,616,727, Cl. 548-533.000.
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Rogers, Conrad; and De Iuliis, Daniele G., 5,616,051, Cl. 439-518.000.
DeJule, Michael C.; and Riza, Nabeel A., to General Electric Company. Three terminal liquid crystal lens cell. 5,617,109, Cl. 345-87.000.
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Cheikh, Roland C., 5,616,123, Cl. 604-60.000.
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Johnson, Jack D.; and Liem, Fie A., 5,616,864, Cl. 73-504.040.
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Simmermon, John C.; Dell, Curtis G.; Peterson, Douglas; Blakemore, Colin B.; Remaley, John B.; Golod, Anatoly; and Bear, Robert S., Jr., 5,616,827, Cl. 73-29.010.
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Pearce, John J.; Walker, Jim; Zeller, Charles P.; and Jones, Craig S., 5,617,572, Cl. 395-750.000.
Delprat, Marc; Andrieu, Vianney; Gourgue, Frédéric; Gaydu, Gladys; and Nouchi, Charles, to Alcatel N.V. Frame/multiframe structure FDMA system and corresponding signal. 5,617,412, Cl. 370-281.000.
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Vatelot, Yves; and Demeester, Jacques, 5,615,791, Cl. 215-382.000.
De Meyer, Willy: *See—*
Amesz, Willem; Van Raemdonck, Joris K. M.; De Meyer, Willy; and Verpoest, Ignace H. J. M., 5,616,391, Cl. 428-71.000.
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Pace-Asciak, Cecil R.; and Demin, Peter M., 5,616,607, Cl. 514-430.000.
Demling, Frank: *See—*
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Demura, Akihiro, to Ibiden Co., Inc. Printed wiring board and process for producing thereof. 5,616,256, Cl. 216-18.000.
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Crooks, Peter A.; Caldwell, William S.; Dull, Gary M.; Bhatti, Balwinder S.; Deo, Niranjan M.; and Ravard, Alain, 5,616,707, Cl. 544-242.000.
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Tavlarides, Lawrence L.; and Deorkar, Nandu, 5,616,533, Cl. 502-407.000.
DePasquale, George B. Apparatus and method for preventing unauthorized access to a system. 5,617,470, Cl. 379-114.000.
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Boling, Norman L., 5,616,224, Cl. 204-298.080.
Depreux, Patrick: *See—*
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Derudder, Carlos; and Debaes, Johnny, to N.V. Michel Van De Wiele. Technique for separating and tensioning warp threads in a face-to-face weaving machine. 5,615,712, Cl. 139-21.000.
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Desai, Manoj C., to Pfizer Inc. Coupling reagent and method. 5,616,687, Cl. 530-334.000.
Desarmaux, Pierre: *See—*
Challande, Christian; Desarmaux,. Pierre; and Thomas, Pascal, 5,615,498, Cl. 36-117.300.
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Detroit Diesel Corporation: *See—*
Weisman, S. Miller, II; Letang, Dennis M.; and Babcock, Douglas J., 5,615,654, Cl. 123-350.000.
Deutsche Forschungsanstalt fuer Luft- und Raumfahrt e.V.: *See—*
Litterst, Thomas, 5,616,913, Cl. 250-203.400.
de Vega, Maria J.P.: *See—*
Keilhauer, Gerhard; Romerdahl, Cynthia; Braña, Miguel F.; Qian, Xiao-Dong; Bousquet, Peter; Berlanga, Jose M.C.; Moset, Marina M.; and de Vega, Maria J.P., 5,616,589, Cl. 514-296.000.
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Chou, Shan-Yen; Huang, Tsai-Mien; Chen, Shyh-Fong; and Ku, Hao, 5,616,713, Cl. 546-250.000.
Dever, James L.; and Gill, James C., to Ferro Corporation. Method for making brominated syndiotactic styrenic polymers. 5,616,656, Cl. 525-355.000.
Deviney, Jerry P. Cup placement indicator. 5,615,635, Cl. 116-173.000.
Deviney, Marvin L.; and Kampa, Joel J., to Southwest Research Institute. Low flammability thermoset polymers. 5,616,659, Cl. 525-480.000.
Devore, David D.: *See—*
Timmers, Francis J.; Devore, David D.; and Stevens, James C., 5,616,664, Cl. 526-127.000.
DeVries, Hans; and Ramamurthi, Suresh. Facsimile modem for passing image information to a facsimile machine and computer. 5,617,221, Cl. 358-442.000.
DeWar, Anthony G.: *See—*
McCarthy, James P.; Greene, George H.; and DeWar, Anthony G., 5,616,758, Cl. 556-423.000.
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Guyton, Dean L., 5,615,420, Cl. 4-233.000.
Dhaenens, Frans: *See—*
Janssens, Danny; Schoeters, Emile; Vuylsteke, Pieter; and Dhaenens, Frans, 5,616,930, Cl. 250-584.000.
Diagnostic/Retrieval Systems, Inc.: *See—*
Williams, Jack R., 5,617,371, Cl. 367-13.000.
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Lee, Napoleon W.; Ku, Wei-Yi; Nguyen, Hy V.; and Diba, Sholeh, 5,617,041, Cl. 326-39.000.
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vom Schemm, Michael, 5,615,894, Cl. 277-134.000.
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Spinelli, Silvano; and DiDomenico, Roberto, 5,616,709, Cl. 546-101.000.

Diebold, James L.: *See—*

Hudkins, Robert L.; Diebold, James L.; and Knight, Ernest, Jr., 5,616,724, Cl. 548-417.000.

Dieffenderfer, James W.: *See—*

Barker, Thomas N.; Collins, Clive A.; Dapp, Michael C.; Dieffenderfer, James W.; Grice, Donald G.; Knowles, Billy J.; Lesmeister, Donald M.; Nier, Richard E.; Retter, Eric E.; Rolfe, David B.; and Smoral, Vincent J., 5,617,577, Cl. 395-800.000.

Diehl GmbH & Co.: *See—*

Bar, Klaus; and Schmiedl, Reinhard, 5,617,261, Cl. 359-845.000.

Dierssen, Gunther H.: *See—*

Hopstock, David M.; Roden, John S.; Dierssen, Gunther H.; and Sapieszko, Ronald S., 5,616,414, Cl. 428-402.000.

Dieter, Jerry A.; and Firestone, Jeffery J., to Grow Group, Inc. Method of cleaning tubes or conduits. 5,616,183, Cl. 134-8.000.

Digital Equipment Corporation: *See—*

Krakauer, David B.; Mistry, Kaizad; Butler, Steven; and Partovi, Hamid, 5,617,283, Cl. 361-56.000.

Ozveren, Cuneyt M.; Murray, Hallam G., Jr.; Waters, Gregory M.; and Simcoe, Robert J., 5,617,409, Cl. 370-235.000.

Di Marco, Anthony G.: *See—*

Morano, Nick; Cheng, Wilfred W. T.; Allohverdi, Mohammad; and Di Marco, Anthony G., 5,615,949, Cl. 366-159.100.

DiMaria, Donelli J.: *See—*

Bertin, Claude L.; DiMaria, Donelli J.; Miyakawa, Makoto; and Sakaue, Yoshinori, 5,617,351, Cl. 365-185.050.

Dinkler, Charles; and Tew, John M., Jr., to Ohio Medical Instrument Company, Inc. Self locking surgical retractor. 5,616,117, Cl. 600-232.000.

Dinter-Brown, Ludmila: *See—*

Hittner, Herman J.; Byers, R. Lee; Lees, John N., Jr.; Rierson, David W.; and Dinter-Brown, Ludmila, 5,616,296, Cl. 266-145.000.

Dionex Corporation: *See—*

McCormick, Randy M., 5,616,227, Cl. 204-457.000.

Discovision Associates: *See—*

Jones, Anthony M.; and Barnes, David A., 5,617,458, Cl. 377-49.000.

DiStefano, Thomas H.: *See—*

Fjelstad, Joseph; DiStefano, Thomas H.; and Smith, John W., 5,615,824, Cl. 228-180.100.

Dittmann, Michael; Stadler, Heinz; and Mitschik, Herbert, to Siemens Aktiengesellschaft. Polarized electromagnetic relay. 5,617,066, Cl. 335-78.000.

Dittrich, Andreas, to Asea Brown Boveri AG. Method and circuit arrangement for driving semiconductor switches in a series circuit. 5,616,970, Cl. 307-126.000.

Ditzig, Albert; and Oldani, Jerome L., to Goeken Group Corporation, The. Telephone handset having a latch-receiving opening in an enlarged inlet opening of a card-receiving slot. 5,617,474, Cl. 379-433.000.

Dixon, Damian: *See—*

Tunnicliffe, George; Lee, John P.; and Dixon, Damian, 5,615,969, Cl. 403-348.000.

Dixon, Raymond D.; Smith, Frank M.; and O'Leary, Richard F., to United States of America, Energy. Method for welding beryllium. 5,615,826, Cl. 228-208.000.

Dixson, John A.: *See—*

Henrie, Robert N., II; Peake, Clinton J.; Cullen, Thomas G.; Yeager, Walter H.; Buser, John W.; Fiordeliso, James J.; and Dixson, John A., 5,616,718, Cl. 546-330.000.

Dobler, Karl-Otto; and Krieg, Wolfgang, to Robert Bosch GmbH. Headlight of a self-propelled vehicle, especially for a motor vehicle. 5,615,939, Cl. 362-66.000.

Dobson, James W., Jr.; Robertson, Terry D.; and Mondshine, Kenneth B., to Texas United Chemical Company, LLC. Low solids, high density fluids for well drilling. 5,616,541, Cl. 507-145.000.

Doerr, Christopher R.: *See—*

Tamura, Kohichi R.; Ippen, Erich P.; Haus, Hermann A.; Nelson, Lynn E.; and Doerr, Christopher R., 5,617,434, Cl. 372-6.000.

Doi, Masateru: *See—*

Handa, Koji; Kubo, Keishi; Doi, Masateru; and Yoshizumi, Keiichi, 5,616,916, Cl. 250-234.000.

Doktor, Karol, to Financial System Technology Pty. Ltd. Data processing system and method for retrieving and entity specified in a search path record from a relational database. 5,617,567, Cl. 395-602.000.

Dolby, Nigel I.; Nagle, Timothy E.; and Goessling, Thomas R., to Unisys Corporation. Generalized configurator using multiple interacting packers and declaratively defined constraint expressions. 5,617,514, Cl. 395-51.000.

Dollinger, Horst: *See—*

Rudolf, Klaus; Eberlein, Wolfgang; Engel, Wolfhard; Mihm, Gerhard; Doods, Henri; Wieland, Heike A.; Willim, Klaus-Dieter; Krause, Jürgen; Dollinger, Horst; Esser, Franz; Schnorrenberg, Gerd; Entzeroth, Michael; and Wienen, Wolfgang, 5,616,620, Cl. 514-620.000.

Donaldson Company, Inc.: *See—*

Barris, Marty A.; Weik, Thomas M.; Robertson, Kelly C.; Monson, Donald R.; Rothman, Jim C.; and Betts, Pete A., 5,616,171, Cl. 95-280.000.

Donnadieu, Jean-Pierre: *See—*

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Donnelly Corporation: *See—*

Hook, Richard R., 5,615,857, Cl. 248-549.000.

Donovan, William P.; Tan, Yuping; Jany, Christine S.; and González, José M., Jr., to Monsanto Company. *Bacillus thuringiensis* cryET5 gene and related plasmids, bacteria and insecticides. 5,616,319, Cl. 424-93.200.

Doods, Henri: *See—*

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D'Orazio, Paul A.: *See—*

Maley, Thomas C.; D'Orazio, Paul A.; Edelman, Peter G.; and Zalenski, John A., 5,616,222, Cl. 204-294.000.

Dorner, Jürgen: *See—*

Rall, Bernhard; and Dorner, Jürgen, 5,617,282, Cl. 361-56.000.

Dou, Xiaoming; Yamaguchi, Yoshinori; Uenoyama, Harumi; and Wang, Yung X., to Kyoto Dai-Ichi Kagaku Co., Ltd. Spectral measuring method and spectral measuring apparatus. 5,617,205, Cl. 356-301.000.

Doucet, Jean: *See—*

Ferland, Pierre; Tremblay, Leopold; and Doucet, Jean, 5,616,831, Cl. 73-61.630.

Douglas, Stephen P.: *See—*

Krepinsky, Jiri J.; Douglas, Stephen P.; and Whitfield, Dennis M., 5,616,698, Cl. 536-18.600.

Douskey, Steven M.: *See—*

Angelotti, Frank W.; Britson, Wayne A.; Douskey, Steven M.; Kaliszewski, Kerry T.; and Weed, Michael A., 5,617,430, Cl. 371-27.000.

Dove, Lewis R.: *See—*

Casey, John F.; Schroeder, Ronald W.; Dove, Lewis R.; and Yearsley, Philip J., 5,617,298, Cl. 361-766.000.

Dow Chemical Company, The: *See—*

Harris, William I.; and Sammler, Robert L., 5,616,622, Cl. 521-33.000.

Kenworthy, Linda L., 5,615,525, Cl. 52-169.500.

Newman, Thomas H., 5,616,748, Cl. 556-11.000.

Roerden, Dorothy L.; and Frank, R. Keith, 5,616,800, Cl. 564-292.000.

Strickland, Alan D., 5,616,497, Cl. 435-262.000.

Timmers, Francis J.; Devore, David D.; and Stevens, James C., 5,616,664, Cl. 526-127.000.

Dow Corning Corporation: *See—*

Bank, Howard M.; Naasz, Brian M.; and Nguyen, Binh T., 5,616,760, Cl. 556-468.000.

Bank, Howard M.; and Decker, Gary T., 5,616,763, Cl. 556-479.000.

Camilletti, Robert C.; Chandra, Grish; and Michael, Keith W., 5,616,202, Cl. 156-89.000.

Dow Corning Toray Silicone Co., Ltd.: *See—*

Nakashima, Hisataka, 5,616,756, Cl. 556-413.000.

Down, James A.: *See—*

Woodard, Daniel L.; Howard, Adriann J.; and Down, James A., 5,616,701, Cl. 536-25.400.

Downey, Susan H.: *See—*

Arldt, Roy L.; Downey, Susan H.; Golden, Harry J.; Mahmoud, Issa S.; Okoro, Clement A.; and Spalik, James, 5,615,827, Cl. 228-223.000.

Drach, William C.: *See—*

Koscica, Thomas E.; Tadross, Michael; and Drach, William C., 5,617,103, Cl. 343-700.0MS.

Draghetti, Fiorenzo; and Sartoni, Massimo, to G.D Societá per Azioni. Unit for transferring cigarette portions from a dual rod cigarette manufacturing machine to a filter asssembly machine. 5,615,761, Cl. 198-441.000.

Draper, Kenneth G.: *See—*

Sullivan, Sean; Draper, Kenneth G.; McSwiggen, James; and Stinchcomb, Dan T., 5,616,488, Cl. 435-366.000.

Sullivan, Sean M.; and Draper, Kenneth G., 5,616,490, Cl. 435-366.000.

Draths, Karen M.: *See—*

Frost, John W.; and Draths, Karen M., 5,616,496, Cl. 435-252.300.

Drauz, Karlheinz: *See—*

Kottenhahn, Matthias; and Drauz, Karlheinz, 5,616,727, Cl. 548-533.000.

Drechsler, Josef; Goebel, Eickhart; Kühn, Gottfried; Rothamel, Karl; and Wowes, Jörg, to Hofmann Werkstatt-Technik GmbH. Method and assembly for clamping and releasing a rotary member on a motor-driven shaft of an unbalance measuring arrangement. 5,615,574, Cl. 73-487.000.

Dreisbach Electromotive Inc.: *See—*

Cheiky, Michael C., 5,615,717, Cl. 141-100.000.

Dreizin, Edward L.; and Felder, William, to Aerochem Research Laboratories Inc. Process and apparatus for micro-arc welding. 5,616,258, Cl. 219-56.220.

Dreyer, Alain: *See—*

Ginoux, Jean-Paul; Dreyer, Alain; Roch, Philippe; Baccou, Jean-Claude; and Lacan, Dominique, 5,616,323, Cl. 424-195.100.

Dries, Willy M. A. C.: *See—*

François, Marc K. J.; and Dries, Willy M. A. C., 5,616,587, Cl. 514-258.000.

Drip Irrigation Systems, Ltd.: *See—*

Eckstein, Gershon; and Eckstein, Eran, 5,615,838, Cl. 239-533.100.

Drlica, Karl A.: *See—*

Kramer, Fred R.; Dubnau, David; Drlica, Karl A.; and Pinter, Abraham, 5,616,459, Cl. 435-5.000.

Drube, Paul: *See—*

Preston, Duane; Drube, Tom; and Drube, Paul, 5,616,838, Cl. 73-195.000.

Drube, Tom: *See—*

Preston, Duane; Drube, Tom; and Drube, Paul, 5,616,838, Cl. 73-195.000.

Drum Workshop, Inc.: *See—*

Lombardi, Donald G., 5,616,875, Cl. 84-415.000.

Drummond Scientific Company: *See—*

Kenney, James W., 5,616,871, Cl. 73-864.140.

D'Sidocky, Richard M.; and Maly, Neil A., to Goodyear Tire & Rubber Company, The. Rubber vulcanization composition containing tetrabenzylthiuram disulfide, a bismaleimide, a sulfenamide compound and sulfur, a sulfur donor or mixtures thereof. 5,616,279, Cl. 252-182.170.

D'Sidocky, Richard M.; Zanzig, David J.; and Futamura, Shingo, to Goodyear Tire & Rubber Company, The. Sulfur vulcanizable rubber containing sodium thiosulfate pentahydrate. 5,616,655, Cl. 525-342.000.

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Castelijns, Anna M. C. F.; and Maas, Peter J. D., 5,616,804, Cl. 564-398.000.

Du, Mila T.: *See—*

Ayral-Kaloustian, Semiramis; Schow, Steven R.; Du, Mila T.; and Gibbons, James J., Jr., 5,616,612, Cl. 514-478.000.

Du Pont de Nemours, E. I., and Company: *See—*

Bivens, Donald B.; Shiflett, Mark B.; and Yokozeki, Akimichi, 5,616,276, Cl. 252-67.000.

Bodager, Gregory A.; and Beighle, Phillip L., 5,616,439, Cl. 430-15.000.

Chisolm, Tuneen E. C.; and Minor, Barbara H., 5,616,275, Cl. 252-67.000.

Duffy, Joseph J.; Kirayoglu, Birol; Lin, Pui-Yan; Marin, Robert A.; and Santucci, Robert J., 5,616,204, Cl. 156-156.000.

Glicksman, Howard D.; Kodas, Toivo T.; and Majumdar, Diptarka, 5,616,165, Cl. 75-369.000.

Harris, Kevin M., 5,616,640, Cl. 473-378.000.

Lin, Perry H., 5,616,412, Cl. 428-373.000.

Mah, Dennie T.; Trainham, James A., III; Newman, John S.; Eames, Douglas J.; and Law, Clarence G., Jr., 5,616,220, Cl. 204-252.000.

Okamoto, Kuninori; Kuno, Hideaki; Yaguchi, Isamu; Koishikawa, Jun; and Yamamoto, Yasuo, 5,616,173, Cl. 106-117.000.

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Kramer, Fred R.; Dubnau, David; Drlica, Karl A.; and Pinter, Abraham, 5,616,459, Cl. 435-5.000.

Dubois, Philippe: *See—*

Narayan, Ramani; Dubois, Philippe; and Krishnan, Mohan, 5,616,671, Cl. 527-300.000.

Ducarouge, Christian; Grisel, Richard; Giraud, Nicholas; Sottocasa, Helene; Chansavoir, Alain; and Haddadi, Ahmed, to Essilor International. Method for determining measurement parameters for a spectacle wearer. 5,617,155, Cl. 351-204.000.

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Dudney, Ralph A. Use of *Xenorhabdous nematophilus* Im/1 and 19061/1 for fire ant control. 5,616,318, Cl. 424-93.100.

Duffield, David J.; Landis, Michael D.; and Edde, Gabriel A., to Thomson Consumer Electronics, Inc. System for controlling updates of extended data services (EDS) data. 5,617,146, Cl. 348-460.000.

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Dugast-Zrihen, Maryse; and Meyer, Dominique, to Guerbet S.A. Polyiodinated compounds, process for their preparation, contrast medium containing them. 5,616,798, Cl. 564-153.000.

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Dull, Gary M.: *See—*

Crooks, Peter A.; Caldwell, William S.; Dull, Gary M.; Bhatti, Balwinder S.; Deo, Niranjan M.; and Ravard, Alain, 5,616,707, Cl. 544-242.000.

Dumont, Donald R.: *See—*

Sundstrom, Robert A.; and Dumont, Donald R., 5,616,046, Cl. 439-367.000.

Dumoulin, Yves: *See—*

Cartilier, Louis; Mateescu, Mircea A.; Dumoulin, Yves; and Lenaerts, Vincent, 5,616,343, Cl. 424-464.000.

Duncan, Gregory S.; Calvin, Olin W.; Schlagel, Mark E.; Keene, Darren S.; and Edwards, Russell J., to Johnson & Johnson Vision Products, Inc. Solution removal nozzle. 5,616,184, Cl. 134-22.100.

Duncan, Maxine E.: *See—*

Jensen, Donald A.; and Duncan, Maxine E., 5,615,469, Cl. 29-426.500.

Duncan, Robert G., to Xilinx, Inc. Method for entering state flow diagrams using schematic editor programs. 5,617,327, Cl. 364-489.000.

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Chappell, Chris, 5,616,086, Cl. 473-290.000.

Dunn, R. E. Jack: *See—*

Weder, Donald E.; Weder, Erin H.; Dunn, R. E. Jack; and Craig, Franklin J., 5,616,377, Cl. 428-35.700.

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Weder, Donald E.; Weder, E. H.; Dunn, R. E. Jack; and Craig, Franklin J., 5,616,382, Cl. 428-35.700.

Dunne, Jeremy G., to Laser Technology, Inc. Device, and associated method, for determining distances between moving objects. 5,617,199, Cl. 356-5.010.

Duong, Tien T.: *See—*

Teng, Min; Beard, Richard L.; Colon, Diana; Duong, Tien T.; and Chandraratna, Roshantha A., 5,616,712, Cl. 546-158.000.

Dupont Merck Pharmaceutical Company, The: *See—*

Otto, Michael J., 5,616,578, Cl. 514-218.000.

Durif, Ghislain; and Morfey, Allistair, to Schneider Electric SA. Electronic trip device comprising a storage device. 5,617,078, Cl. 340-652.000.

Durning, Anthony G.: *See—*

Janoff, Andrew S.; Boni, Lawrence; Madden, Thomas D.; Cullis, Pieter R.; Lenk, Robert P.; Kearns, John J.; Durning, Anthony G.; Klimchak, Robert; and Portnoff, Joel, 5,616,334, Cl. 424-404.000.

Dydyk, Michael; Golio, John M.; Higgins, Robert J., Jr.; and Arvanitis, Aristotelis, to Motorola. Method of making a ferrite/semiconductor resonator/filter. 5,615,473, Cl. 29-602.100.

Dydyk, Michael, to Motorola, Inc. Filter using enhanced quality factor resonator and method. 5,617,065, Cl. 333-186.000.

Dyess, William B., to Dallas A.C. Horn & Co., Inc. Conveyor apparatus for collating bagged products. 5,615,762, Cl. 198-464.100.

Dyke, Colin: *See—*

Reekie, George; Prosper, Jacob; Atos, Sheldon; and Dyke, Colin, 5,615,970, Cl. 403-379.000.

Dynax Corporation: *See—*

Clark, Kirtland P.; and Kleiner, Eduard K., 5,616,273, Cl. 252-2.000.

Dynetics, Inc.: *See—*

MacLaren, Brice K.; Johnson, Randall L.; Griffin, Judson R., III; and Meehan, James R., 5,617,515, Cl. 395-99.000.

Dziark, John J.; Pink, Michael R.; and Martucci, John P., to General Electric Company. One part room temperature vulcanizing composition having both a high rate of extrusion and low sag. 5,616,647, Cl. 524-788.000.

E. Heller & Company: *See—*

Heller, Adam; Pishko, Michael V.; and Heller, Ephraim, 5,616,532, Cl. 502-242.000.

E.R. Squibb & Sons, Inc.: *See—*

Poss, Michael A., 5,616,591, Cl. 514-312.000.

Eagles, Daniel C.; Feingold, Vladimir; and Chamber, Thomas J., to Staar Surgical Company, Inc. Transverse hinged deformable intraocular lens injecting apparatus. 5,616,148, Cl. 606-107.000.

Eames, Douglas J.: *See—*

Mah, Dennie T.; Trainham, James A., III; Newman, John S.; Eames, Douglas J.; and Law, Clarence G., Jr., 5,616,220, Cl. 204-252.000.

Earle, Kent L., to Etcon Corporation. Device for measuring a wide range of voltages and for determining continuity. 5,617,018, Cl. 324-72.500.

Easter, James R.; and Impink, Albert J., Jr., to Westinghouse Electric Corporation. Information system for operating complex plant. 5,617,311, Cl. 364-185.000.

Eastman Chemical Company: *See—*

Sublett, Bobby J., 5,616,404, Cl. 428-221.000.

Eastman Kodak Company: *See—*

Burns, Peter D.; and Redden, John E., 5,617,223, Cl. 358-527.000.

Gogle, Ronald A.; and Lane, William S., 5,616,452, Cl. 430-398.000.

Jagielinski, Tomasz M., 5,616,911, Cl. 235-493.000.

North, Stephen P., 5,617,185, Cl. 355-75.000.

Siekierski, Roger A.; and Greene, Charles W., 5,617,164, Cl. 396-401.000.

Stephenson, Stanley, III; Zander, Dennis R.; and Barrett, Harold J., 5,617,160, Cl. 396-60.000.

Stephenson, Stanley W., III; and Seamans, Tom M., 5,617,168, Cl. 396-413.000.

Victora, Randall H.; and Farruggia, Giuseppe, 5,617,405, Cl. 369-275.100.

Wilson, John C.; and Tyagi, Dinesh, 5,616,444, Cl. 430-110.000.

Wilson, John C.; Alexandrovich, Peter S.; and Bonser, Steven M., 5,616,797, Cl. 564-92.000.

Eastmond, Bruce C.; and Alameh, Rachid M., to Motorola, Inc. Method, apparatus, and communication device for charging a charge storage device which is momentarily connected to a fixed load. 5,617,008, Cl. 320-22.000.

Eaton Corporation: *See—*

Arora, Ram S.; O'Neil, Walter K.; and Buuck, Bryce A., 5,617,067, Cl. 335-78.000.

Bauer, James A.; Palmer, Nelson R.; Palmer, Kathryn M.; and Wehrli, Henry A., III, 5,617,281, Cl. 361-27.000.

Nielsen, Douglas J., 5,615,647, Cl. 123-90.160.

Ebara Corporation: *See—*

Kobayashi, Makoto; Yamamoto, Masakazu; Miyake, Yoshio; Isemoto, Koji; Uwai, Keita; and Miyazaki, Yoshiaki, 5,616,013, Cl. 417-423.140.

Okumura, Katsuya; Aoki, Riichirou; Yajima, Hiromi; Kodera, Masako; Mishima, Shirou; Shigeta, Atsushi; Hirose, Masayoshi; Kimura, Norio; and Ishikawa, Seiji, 5,616,063, Cl. 451-1.000.

Ebato, Hiroshi: *See—*
Imamura, Shoji; and Ebato, Hiroshi. 5,616,657, Cl. 525-437.000.

Eberlein, Wolfgang: *See—*
Rudolf, Klaus; Eberlein, Wolfgang; Engel, Wolfhard; Mihm, Gerhard; Doods, Henri; Wieland, Heike A.; Willim, Klaus-Dieter; Krause, Jürgen; Dollinger, Horst; Esser, Franz; Schnorrenberg, Gerd; Entzeroth, Michael; and Wienen, Wolfgang, 5,616,620, Cl. 514-620.000.

Ebisawa, Isao: *See—*
Numata, Yasuhiro; Takayanagi, Yoshiaki; Katayama, Akira; Kuwabara, Nobuyuki; Ebisawa, Isao; and Ohtani, Tsuyoshi. 5,617,122, Cl. 347-14.000.

Ebner, Peter H.; and Lochner, Heribert. Annealing base for hood-type annealing furnaces. 5,616,297, Cl. 266-263.000.

Eckart, Thomas: *See—*
Götz, Hans-Joachim; Brachmann, Markus; Frank, Georg; and Eckart, Thomas, 5,617,454, Cl. 375-376.000.

Eckberg, Richard P.; Evans, Edwin R.; and Toub, Melvin R., to General Electric Company. Fluorosilicone coatings. 5,616,403, Cl. 428-215.000.

Eckert, C. Edward. Method for fluxing molten metal. 5,616,167, Cl. 75-678.000.

Eckner, Karl F.; Ryser, Elliot T.; and Smittle, Richard B., to Silliker Laboratories Group, Inc. Culture and transfer device for enhanced recovery and isolation of microorganisms. 5,616,499, Cl. 435-309.100.

Eckstein, Eran: *See—*
Eckstein, Gershon; and Eckstein, Eran, 5,615,838, Cl. 239-533.100.

Eckstein, Gershon; and Eckstein, Eran, to Drip Irrigation Systems, Ltd. In-line retention drip emitter. 5,615,838, Cl. 239-533.100.

Edafiogho, Ivan O.: *See—*
Scott, Kenneth R.; Nicholson, Jesse M.; and Edafiogho, Ivan O., 5,616,615, Cl. 514-511.000.

Edde, Gabriel A.: *See—*
Duffield, David J.; Landis, Michael D.; and Edde, Gabriel A., 5,617,146, Cl. 348-460.000.

Edelman, Peter G.: *See—*
Maley, Thomas C.; D'Orazio, Paul A.; Edelman, Peter G.; and Zalenski, John A., 5,616,222, Cl. 204-294.000.

Edem, Brian C.: *See—*
Shirani, Ramin; and Edem, Brian C., 5,617,418, Cl. 370-465.000.

Edgar, Albert D., to International Business Machines Corporation. System and method for sacrificial color matching using bias. 5,617,116, Cl. 345-150.000.

Edmonds, Jeffrey A.: *See—*
Albanese, Andres; Luby, Michael G.; Bloemer, Johannes F.; and Edmonds, Jeffrey A., 5,617,541, Cl. 395-200.130.

Edwards, Michael L.; Matthews, Donald P.; and McCarthy, James R., to Merrell Pharmaceuticals Inc. 2-'-ethenylidene cytidine, uridine and guanosine derivatives. 5,616,702, Cl. 536-27.130.

Edwards, Richard B.; and Graham, Peter, to Crosfield Limited. Aluminosilicates. 5,616,310, Cl. 423-700.000.

Edwards, Russell J.: *See—*
Duncan, Gregory S.; Calvin, Olin W.; Schlagel, Mark E.; Keene, Darren S.; and Edwards, Russell J., 5,616,184, Cl. 134-22.100.

Edwards, Stanley H., Jr.; and Marshall, Richard, to Square D Company. Enclosure for a solid state overload relay mechanism or other device. 5,615,792, Cl. 220-3.800.

Efange, S. Mbua N.; and Mash, Deborah C., to University of Minnesota, Regents of the; and University of Miami. Bioactive tricyclic ibogaine analogs. 5,616,575, Cl. 514-215.000.

Effey, Gunter: *See—*
Raehse, Wilfried; Effey, Gunter; and Beck, Wilhelm, 5,615,492, Cl. 34-73.000.

EFKA-Werke Fritz Kiehn GmbH: *See—*
Ruppert, Heinrich W.; Schütze, Gunter; and Gätschmann, Klaus G., 5,615,692, Cl. 131-70.000.

Egawa, Tatsuya; Kawaguchi, Yasuhiro; Mogami, Kenji; and Shimizu, Nobuaki, to Idemitsu Kosan Co., Ltd. Method of producing a polyvinyl ether compound. 5,616,812, Cl. 568-598.000.

Eggenberger, John S.; Hodges, Paul; Ouchi, Norman K.; and Plomgren, David A., to International Business Machines Corporation. Common error protection code for data stored as a composite of different data formats. 5,617,432, Cl. 371-37.100.

Eggersdorfer, Manfred: *See—*
Schuster, Ludwig; and Eggersdorfer, Manfred, 5,616,817, Cl. 568-861.000.

Eggleston, Brian E., to SSB Technologies, Inc. Power amplifier, and associated method, for a microwave repeater station. 5,617,059, Cl. 330-66.000.

Egglhuber, Karl, to Wacker Siltronic Gesellschft für Halbleitermaterialien Aktiengesellschaft. Wire saw and method for cutting wafers from a workpiece. 5,616,065, Cl. 451-10.000.

Ehara, Yasunori: *See—*
Ogawa, Ken; and Ehara, Yasunori, 5,615,550, Cl. 60-276.000.

Ehlig, Peter N.: *See—*
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Ehredt, Jesse: *See—*
Shaw, Mark D.; Heyman, J. Tad; Bierce, Laurence M.; and Ehredt, Jesse, 5,615,608, Cl. 108-55.300.

Eibl, Robert: *See—*
Morton, Trevor C.; Hodgkin, Jonathan H.; and Eibl, Robert, 5,616,666, Cl. 526-262.000.

Eidler, Franz; Zimmermann, Werner; and Rüping, Thomas, to Robert Bosch GmbH. Method and device for monitoring sensor functions. 5,617,337, Cl. 364-551.010.

Eifert, James B.: *See—*
Le, Chinh H.; and Eifert, James B., 5,617,559, Cl. 395-496.000.

Eilers, Hergen: *See—*
Jacobsen, Stuart M.; Jaffe, Steven M.; Eilers, Hergen; and Jones, Michieal L., 5,616,986, Cl. 313-461.000.

Eisfeld, Timothy M.: *See—*
Palsson, Bernhard O.; and Eisfeld, Timothy M., 5,616,487, Cl. 435-235.100.

Eisinger, Ronald S.; Hunnisett, Christopher S.; Hussein, Fathi D.; Lee, Kiu H.; and Cann, Kevin J., to Union Carbide Chemicals & Plastics Technology Corporation. Process for controlling particle growth during production of sticky polymers. 5,616,661, Cl. 526-88.000.

Ekberg, Bjarne, to Outokumpu Mintec Oy. Apparatus for treating a filter cake. 5,615,494, Cl. 34-585.000.

Ekramoddoullah, Abul K. M.; and Taylor, Douglas, to Canada, Her Majesty the Queen in right of, as represented by the Minister of Natural Resources Canadian Forest Service. Monoclonal antibodies to white pine blister rust fungus *Cronartium ribicola* , 5,616,470, Cl. 435-7.310.

Elan Corporation PLC: *See—*
Geoghegan, Edward J.; Mulligan, Seamus; and Panoz, Donald E., 5,616,345, Cl. 424-497.000.

Elazouni, Ashraf M. Discrete-event simulation-based method for staffing highway maintenance crews. 5,617,342, Cl. 364-578.000.

Electrodynamics, Inc.: *See—*
Morich, Robert S., 5,617,080, Cl. 340-815.570.

Electronics and Telecommunication Research Institute: *See—*
Nam, Jae Y.; Park, Sang G.; Lee, Young S.; and Ahn, Chie T., 5,617,150, Cl. 348-700.000.

Electronics and Telecommunications Research Institute: *See—*
Lee, Hyun J.; Lee, Sang M.; and Kim, Yong H., 5,617,149, Cl. 348-699.000.

Elf Aquitaine Production: *See—*
Armengaud, Jean-Francois; Martignon, Alain; Cortiade, Simeon; and Marti, Jacques, 5,616,842, Cl. 73-152.180.
Seureau, Jacques; and Hoyack, Mark, 5,616,244, Cl. 210-295.000.

Elf Atochem S.A.: *See—*
Cheminal, Bernard; Lacroix, Eric; and Lantz, André, 5,616,820, Cl. 570-169.000.

Elliott, Douglas C.; Sealock, L. John, Jr.; and Baker, Eddie G., to Battelle Memorial Institute. Method for the catalytic conversion of organic materials into a product gas. 5,616,154, Cl. 48-197.00R.

Ells, Thomas S.; and Luber, Joseph R., to McNeill-PPC, Inc. Process for making a hard-candy based oral pharmaceutical lozenge containing an antacid. 5,616,340, Cl. 424-440.000.

EMC Corporation: *See—*
Stallmo, David C.; and Brant, William A., 5,617,530, Cl. 395-182.040.

Emerson Electric Co.: *See—*
May, Kevin M.; Snider, S. Duke; and Messner, Daniel R., 5,616,975, Cl. 310-89.000.

Enclosure Technologies, Inc.: *See—*
Jurrius, Eran J. P.; and Karam, Robert L., Jr., 5,616,199, Cl. 156-64.000.

Endo, Koichi: *See—*
Kobayashi, Yoichi; Tomii, Tsuyoshi; Endo, Koichi; Nishikaze, Hayato; and Hirano, Seiichi, 5,615,873, Cl. 271-121.000.

Endo, Shozo: *See—*
Ito, Kan; Taguchi, Tomishige; Endo, Shozo; Inagaki, Atsushi; and Kawahara, Hiroyuki, 5,617,138, Cl. 348-222.000.

Endo, Toyokazu: *See—*
Ueki, Katsuji; and Endo, Toyokazu, 5,616,396, Cl. 428-139.000.

Endoh, Shuichi: *See—*
Murakami, Eisaku; Yuasa, Kazuhiro; Endoh, Shuichi; Matsumae, Iwao; Tanaka, Yoshiaki; Hosokawa, Hiroshi; Uno, Mugijiroh; Saitoh, Hiroshi; Takenaka, Eiji; Sugiyama, Toshihiro; Yamanaka, Tetsuo; and Komatsubara, Satoru, 5,617,191, Cl. 399-286.000.

Endoh, Yasuhiko, to Asahi Kogaku Kogyo Kabushiki Kaisha. Film driving mechanism of a camera. 5,617,165, Cl. 396-418.000.

Endress & Hauser Flowtec AG: *See—*
Hagenmeyer, Heinrich; and Wenger, Alfred, 5,616,868, Cl. 73-861.357.

Enerbäck, Curt S. M.: *See—*
Bjursell, Karl G.; Carlsson, Peter N. I.; Enerbäck, Curt S. M.; Hansson, Stig L.; Lidberg, Ulf F. P.; Nilsson, Jeanette A.; and Törnell, Jan B. F., 5,616,483, Cl. 435-198.000.

Energy Saving Products and Sales Corporation: *See—*
Lamothe, Richard P., 5,617,134, Cl. 347-264.000.

Engdahl, Roger P.: *See—*
Rogers, Wesley D.; Gottlieb, Louis G.; Molani, Saleem R.; Sedlock, Gregory W.; and Engdahl, Roger P., 5,617,471, Cl. 379-212.000.

Engel, Steven A.: *See—*
Sudall, Stephen J.; and Engel, Steven A., 5,616,207, Cl. 156-246.000.

Engel, Wolfhard: *See—*
Rudolf, Klaus; Eberlein, Wolfgang; Engel, Wolfhard; Mihm, Gerhard; Doods, Henri; Wieland, Heike A.; Willim, Klaus-Dieter; Krause, Jürgen; Dollinger, Horst; Esser, Franz; Schnorrenberg, Gerd; Entzeroth, Michael; and Wienen, Wolfgang, 5,616,620, Cl. 514-620.000.

Enichem S.p.A.: *See—*

Cruse, Richard; Szalai, Veronika; Clark, Terence; Rohman, Stephen; and Mininni, Robert, 5,616,754, Cl. 556-409.000.

Enlow, William P.; and Mahood, James A., to General Electric Company. Process for making biphenylene and bisphenylene phosphites. 5,616,767, Cl. 558-92.000.

Enomoto, Hiromichi: *See—*
Kimura, Koichi; Ogura, Toshihiko; Aotsu, Hiroaki; Ikegami, Mitsuru; Kuwabara, Tadashi; Enomoto, Hiromichi; and Kyoda, Tadashi, 5,617,360, Cl. 365-189.010.

Entenmann, Matthias: *See—*
Pollmann, Herbert; Hodulik, Wolfgang; Peters, Klaus-Jürgen; Gmelin, Karl; Entenmann, Matthias; and Ropertz, Peter, 5,615,861, Cl. 251-306.000.

Entzeroth, Michael: *See—*
Rudolf, Klaus; Eberlein, Wolfgang; Engel, Wolfhard; Mihm, Gerhard; Doods, Henri; Wieland, Heike A.; Willim, Klaus-Dieter; Krause, Jürgen; Dollinger, Horst; Esser, Franz; Schnorrenberg, Gerd; Entzeroth, Michael; and Wienen, Wolfgang, 5,616,620, Cl. 514-620.000.

Erdelen, Christoph: *See—*
Fischer, Reiner; Krüger, Bernd-Wieland; Bretschneider, Thomas; Erdelen, Christoph; Wachendorff-Neumann, Ulrike; Lürssen, Klaus; Santel, Hans-Joachim; and Schmidt, Robert R., 5,616,536, Cl. 504-225.000.

Erhard, Rory J.: *See—*
Jackson, Terry R.; Erhard, Rory J.; Kinzle, Robert A.; and Cady, Robert B., 5,615,506, Cl. 42-50.000.

Erilli, Rita: *See—*
Thomas, Barbara; Mehreteab, Ammanuel; Erilli, Rita; Gomes, Gilbert; Bala, Frank, Jr.; Tarng, Jiashi; Lysy, Regis; and Broze, Guy, 5,616,548, Cl. 510-242.000.

Eronen, Harri; and Harjula, Arjo, to Finnyards Oy. Stern arrangement for a ship. 5,615,630, Cl. 114-251.000.

Erregierre Industria Chimica S.p.A.: *See—*
Bonaldi, Antonio; Molinari, Egidio; and Roda, Aldo, 5,616,741, Cl. 552-554.000.

Esnault, Daniel: *See—*
Battard, Jean-Claude; and Esnault, Daniel, 5,615,694, Cl. 131-365.000.

Esperling, Peter: *See—*
Zentel, Hans J.; Töpert, Michael; Laurent, Henry; Brumby, Thomas; and Esperling, Peter, 5,616,573, Cl. 514-172.000.

Esser, Franz: *See—*
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Essilor International: *See—*
Ducarouge, Christian; Grisel, Richard; Giraud, Nicholas; Sottocasa, Helene; Chansavoir, Alain; and Haddadi, Ahmed, 5,617,155, Cl. 351-204.000.

Etcon Corporation: *See—*
Earle, Kent L., 5,617,018, Cl. 324-72.500.

Ethyl Corporation: *See—*
Mike, Carl A.; Valcho, Joseph J.; and Yu, Daniel Yuan-Fu, 5,616,153, Cl. 44-331.000.

Etoh, Jun: *See—*
Horiguchi, Masashi; Etoh, Jun; Aoki, Masakazu; and Itoh, Kiyoo, 5,617,365, Cl. 365-200.000.

Etter, Marcel, to Liaisons Electroniques-Mecaniques LEM S.A. Inductive measuring device for measuring alternating current components superposed to a high direct current. 5,617,019, Cl. 324-117.00R.

Etzbach, Karl-Heinz: *See—*
Beckmann, Stefan; Etzbach, Karl-Heinz; Sens, Rüdiger; and Häberle, Karl, 5,616,678, Cl. 528-73.000.
Sens, Rüdiger; Schefczik, Ernst; Reichelt, Helmut; and Etzbach, Karl-Heinz, 5,616,710, Cl. 546-119.000.

Eugstar, Arthur, to Eugster/Frismag AG. Coffee making machine having a built-in coffee grinder. 5,615,601, Cl. 99-280.000.

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Eugstar, Arthur, 5,615,601, Cl. 99-280.000.

Eull, Patricia A.; Berger, Todd R.; and Graf, Joel S., to Minnesota Mining and Manufacturing Company. Method and packaging for surgical masks. 5,615,767, Cl. 206-278.000.

European Gas Turbines Limited: *See—*
Mina, Theodors I., 5,615,555, Cl. 60-742.000.

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Smith, Paul, 5,615,964, Cl. 401-210.000.

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Bushnell, Raymond B.; Evilsizer, William H.; Henderson, Paul D.; and Hughes, Scotte L., 5,615,840, Cl. 242-301.000.

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Redden, Galen; and Luzader, Rex E., 5,616,434, Cl. 429-136.000.

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Jejelowo, Moses O.; and Bamberger, Robert L., 5,616,665, Cl. 526-129.000.

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Dammon, James R., 5,616,097, Cl. 475-331.000.

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Rice, Dennis F.; Mowen, Ricky L.; and Faith, Marshall W., 5,616,070, Cl. 451-62.000.

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McMahon, Mike; Jeffers, Larry A.; and White, Fred, 5,616,851, Cl. 73-29.010.

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Victora, Randall H.; and Farruggia, Giuseppe, 5,617,405, Cl. 369-275.100.

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Barbaret, Pascal, 5,615,775, Cl. 209-219.000.

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Bauman, Mitchell A.; and Federici, James L., 5,617,375, Cl. 368-10.000.

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Krude, Werner; Harz, Peter; and Feichter, Bruno, 5,616,081, Cl. 464-145.000.

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Wolf, Franz J.; Reichert, Uwe; Decker, Walter; Demling, Frank; Ogrissek, Andrew; Feichtiger, Dieter; Lindmayer, Martin; and Heinle, Dieter, 5,616,965, Cl. 307-10.100.

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Gao, Yun; Hong, Yaping; Nie, Xiaoyi; Bakale, Roger P.; Feinberg, Richard R.; and Zepp, Charles M., 5,616,808, Cl. 564-428.000.

Feingold, Vladimir: *See—*
Eagles, Daniel C.; Feingold, Vladimir; and Chamber, Thomas J., 5,616,148, Cl. 606-107.000.

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Muhr, Jürgen; and Feld, Marcel, 5,616,723, Cl. 548-371.400.

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Berger, Andrew J.; Brennan, James F., III; Dasari, Ramanchandra R.; Feld, Michael S.; Itzkan, Irving; Tanaka, Kaz; and Wang, Yang, 5,615,673, Cl. 128-633.000.

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Vollenweider, Jürg, 5,615,537, Cl. 53-466.000.

Ferland, Pierre; Tremblay, Leopold; and Doucet, Jean, to Alcan International Limited. Process and apparatus for controlling gravity settling system. 5,616,831, Cl. 73-61.630.

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Ferralli, Michael W., to Technology Licensing Company. Virtual imaging multiple transducer system. 5,616,892, Cl. 181-155.000.

Ferrell, W. Stuart. Glass door release system. 5,615,918, Cl. 292-92.000.

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Dever, James L.; and Gill, James C., 5,616,656, Cl. 525-355.000.

Fetcenko, Michael A.: *See—*
Ovshinsky, Stanford R.; Fetcenko, Michael A.; Reichman, Benjamin; Young, Kwo; Chao, Benjamin; and Im, Jun, 5,616,432, Cl. 429-59.000.

Feucht, Dennis D., to Caterpillar Inc. Method and apparatus for holding a cylinder valve closed during combustion. 5,615,646, Cl. 123-90.120.

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Faletti, James J.; Feucht, Dennis D.; and Sinn, Scott G., 5,615,653, Cl. 123-322.000.

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Oleszczuk, Andrew R.; and Gessner, Scott L., 5,616,408, Cl. 442-346.000.

Fichtel & Sachs AG: *See—*
Grundel, Manfred; and Reimer, Hans, 5,615,756, Cl. 188-322.150.

Field, Peter H., to Medeco Security Locks, Inc. Keys for cylinder locks. 5,615,565, Cl. 70-409.000.

Field, Todd G. Computer mouse ball and pad cleaning kit. 5,615,438, Cl. 15-104.200.

Fields, Gene M.: *See—*
Hill, Joe T.; Williams, John R.; Utter, Robert E.; and Fields, Gene M., 5,616,016, Cl. 418-55.400.

Fies, Matthias; Grützmacher, Roland; and Westfechtel, Alfred, to Henkel Kommanditgesellschaft auf Aktien. Polyalkylene glycol. 5,616,679, Cl. 528-76.000.

Figard, Steve D., to Abbott Laboratories. Buffer composition for reagents for immunoassay. 5,616,460, Cl. 435-5.000.

Filippovich, Cherstokov V.; Rafailovich, Sterlin S.; German, S. Lev, deceased (by Elena N. German, legal representative); Jeng-Tain, Lin; Saito, Satoru; and Tatsu, Haruyoshi, to Nippon Mektron Limited. Vinyl ether compound, process for producing the same and copolymer containing the same. 5,616,813, Cl. 568-663.000.

Financial System Technology Pty. Ltd.: *See—*
Doktor, Karol, 5,617,567, Cl. 395-602.000.

Finch, Valerie V.; Glaug, Frank S.; Olson, Christopher P.; Ratliff, Kathleen I.; and Sheldon, Donald A., to Kimberly-Clark Corporation. Process for making a child's mitt wipe. 5,616,201, Cl. 156-73.100.

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Chow, Yen-Lu; deSouza, Peter V.; Fineberg, Adam B.; and Hon, Hsiao-Wuen, 5,617,486, Cl. 382-181.000.

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Sheehy, James B.; Gish, Kenneth W.; Sprenger, John J.; and Finkbeiner, William H., Jr., 5,617,257, Cl. 359-818.000.

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Brophy, Mark E.; Cox, William C.; Finnemore, Harlan E.; Mattison, Glenn D.; Snider, Rex R.; and Wonderling, Michael W., 5,615,732, Cl. 165-8.000.

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Eronen, Harri; and Harjula, Arjo, 5,615,630, Cl. 114-251.000.

Finter, Jürgen; Hilti, Bruno; Mayer, Carl W.; and Minder, Ernst, to Ciba-Geigy Corporation. Antistatic and electrically conducting composition. 5,616,287, Cl. 252-518.000.

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Firestone, Jeffery J.: *See—*
Dieter, Jerry A.; and Firestone, Jeffery J., 5,616,183, Cl. 134-8.000.

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Cassidy, Gerald A.; Netshisaulu, Khathutshelo S.; and Lubashevsky, Aharon, 5,615,625, Cl. 109-45.000.

Firth, John R.; Perez, Anthony R.; and Meyer, Ronald A., to Safety Syringes, Inc. Disposable self-shielding hypodermic syringe. 5,616,134, Cl. 604-192.000.

Fischer, Armin; Haimerl, Stefan; and Glehr, Manfred, to Siemens Aktiengesellschaft. Anti-theft system for a motor vehicle. 5,616,966, Cl. 307-10.500.

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Fischer, Reiner; Krüger, Bernd-Wieland; Bretschneider, Thomas; Erdelen, Christoph; Wachendorff-Neumann, Ulrike; Lürssen, Klaus; Santel, Hans-Joachim; and Schmidt, Robert R., to Bayer Aktiengesellschaft. Substituted 1H-3-aryl-pyrrolidine-2,4-dione derivatives. 5,616,536, Cl. 504-225.000.

Fischer, Richard: *See—*
Herrmann, Wolfgang A.; Correia, Joao D. G.; Fischer, Richard; Adam, Waldemar; Lin, Jianhua; Saha-Möller, Chantu R.; and Shimizu, Masao, 5,616,734, Cl. 549-406.000.

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Barron, Kimball R., 5,615,708, Cl. 137-625.300.

Fisher, Edward J. D.: *See—*
Allison, Robert J.; Farnsworth, Stephen D.; Fisher, Edward J. D.; and Scholefield, David R., 5,617,329, Cl. 364-492.000.

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Fisons plc: *See—*
Rhodes, Ian, 5,615,670, Cl. 128-203.150.

Fitch, Frank R.: *See—*
Ojo, Adeola F.; Fitch, Frank R.; and Bülow, Martin, 5,616,170, Cl. 95-101.000.

Fite, Ronald B.: *See—*
Rose, Barbara A.; Fite, Ronald B.; and Ray, Alan W., 5,615,985, Cl. 411-442.000.

Fitzsimon, John: *See—*
Jin, Iljoon; Fitzsimon, John; Bull, Michael J.; Marois, Pierre H.; Gupta, Alok K.; and Lloyd, David J., 5,616,189, Cl. 148-549.000.

Fjelstad, Joseph; DiStefano, Thomas H.; and Smith, John W., to Tessera, Inc. Soldering with resilient contacts. 5,615,824, Cl. 228-180.100.

Flatman, Carl S.: *See—*
Weichman, Frank L.; van der Schoot, Jelle; Kenway, Daniel J.; Hughes, Alan J.; and Flatman, Carl S., 5,615,777, Cl. 209-511.000.

Fleischer, Walter: *See—*
Brehm, Werner; and Fleischer, Walter, 5,615,860, Cl. 251-129.070.

Fleming, Terry L., to Perfect Ten Antenna Co. Inc. Heated microwave antenna. 5,617,107, Cl. 343-704.000.

Flexlens: *See—*
Hoffman, William C., 5,617,154, Cl. 351-162.000.

Floch, Bernard: *See—*
Darbon, Philippe; Floch, Bernard; and Matau, Max, 5,617,210, Cl. 356-399.000.

Flores, Victor: *See—*
Finkelstein, Harvey; Flores, Victor; Singer, Murray; and Verdel, Anatoly, 5,615,789, Cl. 215-348.000.

Florida Pneumatic Manufacturing Co.: *See—*
Mead, Donald R.; and Beebe, Deborah V., 5,616,157, Cl. 55-274.000.

Florida Power & Light Co.: *See—*
Shambo, George; Hodson, Robert B.; and Blackburn, Robert C., 5,615,947, Cl. 362-376.000.

Floyd, John M.; and Lightfoot, Brian W., to Ausmelt Limited. Processing of municipal and other wastes. 5,615,626, Cl. 110-346.000.

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Henrie, Robert N., II; Peake, Clinton J.; Cullen, Thomas G.; Yeager, Walter H.; Buser, John W.; Fiordeliso, James J.; and Dixson, John A., 5,616,718, Cl. 546-330.000.

Foerster, Erwin W., Jr. Deep-socket driver apparatus. 5,615,587, Cl. 81-64.000.

Fogler, Donald L., Jr.; and Keller, James F., to Sikorsky Aircraft Corporation. Maintaining attitude error constant in Euler singularity protection. 5,617,316, Cl. 364-424.014.

Folk, Kenneth F.: *See—*
Myer, John M.; Shuey, John R.; and Folk, Kenneth F., 5,616,048, Cl. 439-398.000.

Folske, Donald W.: *See—*
Gorman, Michael R.; Becker, Dennis L.; Folske, Donald W.; Melbye, William L.; Nestegard, Susan K.; and Ott, Ronald L., 5,616,394, Cl. 428-99.000.

Foncerrada, Luis: *See—*
Payne, Jewel M.; Kennedy, M. Keith; Randall, John B.; Meier, Henry; Uick, Heidi J.; Foncerrada, Luis; Schnepf, Harry E.; and Schwab, George E., 5,616,495, Cl. 435-252.300.

Foo, Pang-Dow; and Pai, Chien-Shing, to Lucent Technologies Inc. Process for fabricating integrating circuits. 5,616,518, Cl. 438-680.000.

Ford, Douglas W.; Todd, Robert W.; Trammell, Quinn E.; and Higley, Dennis A., to Optimize Technologies, Inc. Priming and injection valve for analytical instruments. 5,616,300, Cl. 422-103.000.

Ford Motor Company: *See—*
Ballard, Bradley A.; Whikehart, John W.; Blind, Henry F.; and Pierfelice, Robert E., 5,617,480, Cl. 381-98.000.
Chen, Fang; Griffen, Christopher T.; and Ni, Eel-Jeu, 5,616,839, Cl. 73-146.000.
Goenka, Lakhi N., 5,616,067, Cl. 451-39.000.
Habel, Michael J.; and Peterson, Larry A., 5,616,259, Cl. 219-69.200.
Hammer, Kathleen M.; and Kaminski, David P., 5,617,011, Cl. 322-28.000.
Leonard, Michael D.; and Murphy, James C., 5,616,837, Cl. 73-119.00A.

Formosa Saint Jose Corp.: *See—*
Ming-Shun, Yang, 5,615,725, Cl. 160-370.220.

Fornace, Albert J., Jr.; and Kastan, Michael B., to United States of America, Health and Human Services; and Johns Hopkins University. Methods for determining the presence of functional p53 in mammalian cells. 5,616,463, Cl. 435-6.000.

Forrest, Mariana G., to Chrysler Corporation. Laser welding system. 5,616,261, Cl. 219-121.630.

Forschungszentrum Juelich GmbH: *See—*
Binneberg, Armin; Neubert, Johannes; Spoerl, Gabriele; and Wolf, Walter, 5,615,557, Cl. 62-51.100.

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Fremerey, Johan K.; and Räbiger, Jürgen, 5,616,976, Cl. 310-90.500.

Forse, Roger J.: *See—*
Hey-Shipton, Gregory L.; Rohlfing, Stephan M.; Matthaei, George L.; and Forse, Roger J., 5,616,539, Cl. 505-210.000.

Foster, Antoinette; and Foster, Don. Pro-inflammatory composition comprising at least two members of the group consisting of DL. phenylalanine, ruta graveolans and corydalis bulbosda. 5,616,324, Cl. 424-195.100.

Foster, Don: *See—*
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Foster, James A.; Mueller, Werner H.; and Ryan, Debra A., to Hoechst Celanese Corp. Process for preparing alkyl anilines. 5,616,807, Cl. 564-423.000.

Fountain, Edward. Automatically engaging and disengaging pawl and pulley lifting mechanism. 5,615,865, Cl. 254-391.000.

Fowler, Daniel L.; Pattok, Greg R.; and Tanis, Bruce E., to Robertshaw Controls Company. Control system for a microwave oven and method of making the same. 5,616,269, Cl. 219-720.000.

Fox, Charles L., Jr.; Modak, Shanta M.; and Sampath, Lester A., to Trustees of Columbia University in The City of New York. Infection-resistant compositions, medical devices and surfaces and methods for preparing and using same. 5,616,338, Cl. 424-423.000.

Fox, Michael T.; and Norton, David C., to Quality Air Heating and Cooling of Midland Inc. Methods and apparatus for determining a minimum acceptable volume of fluid flow through a conduit. 5,616,867, Cl. 73-861.620.

FPS Food Processing Systems: *See—*
Weichman, Frank L.; van der Schoot, Jelle; Kenway, Daniel J.; Hughes, Alan J.; and Flatman, Carl S., 5,615,777, Cl. 209-511.000.

Fraas, Lewis M.; Williams, Douglas J.; and Samaras, John E., to JX Crystals Inc. Thermophotovoltaic electric generator using low bandgap photovoltaic cells with a hydrocarbon burner and enhanced catalytic infrared emitter. 5,616,186, Cl. 136-253.000.

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Morlion, Danny; Jonckheere, Luc; and Van Koetsem, Jan P. K., 5,617,494, Cl. 385-83.000.

France Telecom: *See—*
Vinouze, Bruno; Guilbert, Martine; and Bosc, Dominique, 5,617,231, Cl. 349-112.000.

France Telecom Etablissement Autonome De Droit Public: *See—*
De Bougrenet De La Tocnaye, Jean-Louis; Hamam, Habib; and Moignard, Renaud, 5,617,227, Cl. 349-57.000.

Francis, Joseph D.; and Steimke, Daniel L., to Morton International, Inc. Hybrid inflator with integral diffuser. 5,615,913, Cl. 280-740.000.

François, Marc K. J.; and Dries, Willy M. A. C., to Janssen Pharmaceutica N.V. Aqueous risperidone formulations. 5,616,587, Cl. 514-258.000.

Frank, Brian L.: *See—*
Sajic, Branko; Ryklin, Irma; and Frank, Brian L., 5,616,781, Cl. 510-221.000.

Frank, Georg: *See—*
Götz, Hans-Joachim; Brachmann, Markus; Frank, Georg; and Eckart, Thomas, 5,617,454, Cl. 375-376.000.

Frank, R. Keith: *See—*
Roerden, Dorothy L.; and Frank, R. Keith, 5,616,800, Cl. 564-292.000.

Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H.: *See—*
Theurer, Josef; and Peitl, Friedrich, 5,615,615, Cl. 104-2.000.

Frederickson, Lewis A.: *See—*
Krishna, Ashok S.; Skocpol, Robert C.; and Frederickson, Lewis A., 5,616,237, Cl. 208-120.000.

Free, Steven W.: *See—*
Shalon, Tadmor; Pund, Marvin L.; Bragg, Susan L.; Houseman, James D.; and Free, Steven W., 5,617,157, Cl. 351-222.000.

Freese, Donald T.: *See—*
Carey, William S.; Solov, Andrew; Perez, Libardo A.; and Freese, Donald T., 5,616,278, Cl. 252-180.000.

Frei, Alexandra S. Apparatus for avoiding sedimentation. 5,615,948, Cl. 366-118.000.

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Freitas, David A.; Serrano, Louis J.; and Yu, Mantle Man-Hon, to International Business Machines Corporation. Method and apparatus for servo control with error detection of gray (pennington) code used for servo track ID. 5,617,536, Cl. 395-185.010.

Fremerey, Johan K.; and Räbiger, Jürgen, to Forschungszentrum Julich GmbH. Auxiliary bearing system for a rotor floating-mounted on a stator. 5,616,976, Cl. 310-90.500.

French, Kendrick L., to Thompson Intellectual Properties, Ltd. Fire control mechanism for a firearm. 5,615,507, Cl. 42-69.020.

Fresenius AG: *See—*
Mathieu, Bernd, 5,616,305, Cl. 422-261.000.

Fressola, Alfred A. Method and system for producing stereographic images of celestial objects. 5,617,332, Cl. 364-514.00R.

Freudenberg Spunweb S.A.: *See—*
Baravian, Jean; Jahn, Ulrich; Groten, Robert; and Beck, Jean-Jacques, 5,616,395, Cl. 428-102.000.

Friberg, Nathan J.: *See—*
Thorud, Richard A.; and Friberg, Nathan J., 5,615,542, Cl. 56-255.000.

Frings, Albert: *See—*
Kropfgans, Frank; Frings, Albert; Horn, Michael; Koetzsch, Hans-Joachim; Monkiewicz, Jaroslaw; Seiler, Claus-Dietrich; Srebny, Hans-Guenther; and Standke, Burkhard, 5,616,762, Cl. 556-479.000.

Frith, Clifford F.: *See—*
Johnson, Dennis E. J.; and Frith, Clifford F., 5,616,250, Cl. 210-695.000.

Fritz, James S.; Hagen, Donald F.; and Markell, Craig G., to Minnesota Mining and Manufacturing Company. Self-wettable solid phase extraction medium. 5,616,407, Cl. 442-118.000.

Fritzberg, Alan R.; Kasina, Sudhakar; Rao, Tripuraneni N.; VanderHeyden, Jean-Luc; and Srinivasan, Ananthachari, to NeoRx Corporation. Metal-radionuclide-labeled proteins and glycoproteins for diagnosis and therapy. 5,616,692, Cl. 530-391.500.

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Fromherz, Markus P. J.: *See—*
Webster, Marc W.; Rulli, Paul A.; McCue, Daniel L., III; Saraswat, Vijay A.; and Fromherz, Markus P. J., 5,617,214, Cl. 358-296.000.

Fronen, Robert J.; Van Leest, Paulus J. C.; and Schoofs, Franciscus A. C. M., to U.S. Philips Corporation. Motor control arrangement, and shaver comprising such a motor control arrangement. 5,617,503, Cl. 388-815.000.

Frost, John W.; and Draths, Karen M., to Purdue Research Foundation. Bacterial cell tranformants for production of cis, cis-muconic acid and catechol. 5,616,496, Cl. 435-252.300.

Frost, William A., Jr.: *See—*
Wakai, Bruce M.; Lemmer, John E.; and Frost, William A., Jr., 5,617,331, Cl. 364-514.00A.

Fructamine S.p.A.: *See—*
Mauro, Marina; Viscardi, Carlo F.; and Gagna, Massimo, 5,616,795, Cl. 562-855.000.

Fu Tai Umbrella Works, Ltd.: *See—*
Lin, Chung-Kuang; and Chang, Jung-Jen, 5,615,697, Cl. 135-20.100.

Fu, Xiaoyong; Thiruvengadam, Tiruvettipuram K.; Tann, Chou-Hong; and Colon, Cesar, to Schering Corporation. Process for preparing Δ9,11 and 21-chloro corticosteroids. 5,616,742, Cl. 552-595.000.

Fuchi, Masami: *See—*
Ban, Keiji; Tomoe, Tetsuro; Fuchi, Masami; Tsuchiya, Hiroaki; Yoshimura, Osamu; and Tanaka, Shinichi, 5,617,193, Cl. 399-316.000.

Fuchu, Katsuki: *See—*
Matsumoto, Kissei; Fuchu, Katsuki; and Katsuki, Shinji, 5,617,383, Cl. 369-32.000.

Fuhrhop, Ralph W.: *See—*
Kaufman, Robert J.; Richard, Thomas J.; and Fuhrhop, Ralph W., 5,616,330, Cl. 424-400.000.

Fuhrmann, Peter: *See—*
Münzmay, Thomas; Fuhrmann, Peter; Lamla, Franz; Meckel, Walter; and Rasshofer, Werner, 5,616,623, Cl. 521-49.500.

Fuisz Technologies Ltd.: *See—*
Battist, Gerald E.; Bogue, B. Arlie; and Myers, Garry L., 5,616,344, Cl. 424-486.000.

Fuji Electric Co., Ltd.: *See—*
Tanuma, Ryohei, 5,617,442, Cl. 372-72.000.
Yamada, Toshifusa; Soyano, Shin; Arai, Etsuo; Watanabe, Manabu; and Igarashi, Seiki, 5,616,955, Cl. 257-690.000.

Fuji, Hiroshi, to Sharp Kabushiki Kaisha. Magneto-optical recording and reproducing apparatus with layer aperture control. 5,617,400, Cl. 369-116.000.

Fuji Kiko Co., Ltd.: *See—*
Kataumi, Yoshimasa; and Takikawa, Yoshihiro, 5,615,576, Cl. 74-18.100.

Fuji Oil Co., Ltd.: *See—*
Hattori, Mitsuo; Furuta, Hitoshi; Takahashi, Taro; and Maeda, Hirokazu, 5,615,613, Cl. 101-450.100.

Fuji Oozx Inc.: *See—*
Nakagawa, Seiichi, 5,616,192, Cl. 148-690.000.

Fuji Photo Film Co., Ltd.: *See—*

Fukunaga, Toshiaki, 5,617,437, Cl. 372-45.000.
Hiiro, Hiroyuki, 5,617,246, Cl. 359-494.000.
Osawa, Akira, 5,617,483, Cl. 382-159.000.
Oya, Toyohisa; and Goto, Takahiro, 5,616,456, Cl. 430-581.000.
Saito, Kimitoshi; and Yamamoto, Takashi, 5,617,183, Cl. 355-71.000.
Sakamoto, Yoshiaki, 5,617,002, Cl. 320-2.000.
Wada, Koji, 5,615,961, Cl. 400-619.000.
Watanabe, Takeshi; and Tanaka, Tsutomu, 5,617,170, Cl. 396-378.000.
Yanagimoto, Takekazu, 5,617,186, Cl. 355-75.000.
Yoshikawa, Sumio, 5,617,180, Cl. 355-40.000.

Fuji Photo Optical Co., Ltd.: *See*—
Yamada, Hiroshi, 5,617,255, Cl. 359-784.000.

Fuji Xerox Co., Ltd.: *See*—
Hara, Kohzo, 5,616,929, Cl. 250-573.000.
Kawabata, Takashi; Hyakutake, Nobuo; Furusawa, Fumio; Tokunaga, Masaaki; and Tsuruoka, Ryoichi, 5,617,197, Cl. 399-398.000.
Matsuda, Tsukasa; Hosoi, Kiyoshi; and Hashimoto, Ken, 5,616,409, Cl. 428-323.000.
Nishikata, Yasunari; and Pu, Lyong Sun, 5,616,802, Cl. 564-307.000.
Torimaru, Satoru; Sameshima, Junichirou; Hokari, Norio; Hayashi, Yukio; Kobayashi, Mikio; Iseki, Shuji; and Tsuruoka, Ryouichi, 5,617,195, Cl. 399-27.000.

Fujii, Hiromasa: *See*—
Aizawa, Toshiro; Higuchi, Shigemitsu; and Fujii, Hiromasa, 5,617,535, Cl. 395-183.220.

Fujii, Hiroshi; and Kiso, Shigemitsu, to Omron Corporation. Expandable AC power supply device. 5,616,968, Cl. 307-66.000.

Fujii, Kazuo; Nakazawa, Yukifumi; and Noguchi, Takehiko, to International Business Machines Corporation. Compact modem system suitable for a notebook or other small computer. 5,617,291, Cl. 361-686.000.

Fujii, Takashi; and Tomoi, Masaaki, to Fujisawa Pharmaceutical Co., Ltd. Method of treating rheumatoid arthritis and osteoarthrosis using tetrahydro WS9326A. 5,616,556, Cl. 514-11.000.

Fujii, Yasuhiro: *See*—
Yumitori, Fuminori; and Fujii, Yasuhiro, 5,617,363, Cl. 365-190.000.

Fujikawa, Nobuyoshi: *See*—
Toda, Hirofumi; Shimo, Shinjiro; Fujikawa, Nobuyoshi; Isoyama, Shinji; and Maruta, Kouichi, 5,616,528, Cl. 501-136.000.

Fujiki, Hironao; Shudo, Shigeki; and Kondou, Takashi, to Shin-Etsu Chemical Co., Ltd. Silicone compositions. 5,616,632, Cl. 523-211.000.

Fujimiya, Hitoshi: *See*—
Nasu, Hisanori; Yamamoto, Kenji; and Fujimiya, Hitoshi, 5,616,228, Cl. 204-603.000.

Fujimoto, Koichi: *See*—
Yanagisawa, Hiroaki; Fujimoto, Koichi; Amemiya, Yoshiya; Shimoji, Yasuo; Kanazaki, Takuro; Koike, Hiroyuki; and Sada, Toshio, 5,616,599, Cl. 514-381.000.

Fujimoto, Tomoya; Okamura, Kenko; Morishita, Shigeru; Murakami, Masaru; Adachi, Akira; Hayashi, Mitsutoshi; Fujita, Akinari; Nagashima, Shingo; Kurashina, Minoru; and Yoshida, Kentaro, to Kawasaki Steel Corp.; and Tokyo Gas Co. Ltd. Double walled pipe, jacking method and pipe end structure of leading pipe. 5,615,976, Cl. 405-184.000.

Fujio, Masatsugu: *See*—
Balaschak, James J.; Fujio, Masatsugu; Hayashi, Keiichiro; Okano, Masatoshi; and Thrall, David E., 5,616,829, Cl. 73-46.000.

Fujirebio Inc.: *See*—
Ikawa, Hiroshi; Matsumoto, Hajime; Matsumoto, Masakatsu; Sekine, Yasuo; Nishimura, Masato; and Hosoda, Akihiko, 5,616,711, Cl. 546-141.000.

Fujisawa Pharmaceutical Co., Ltd.: *See*—
Fujii, Takashi; and Tomoi, Masaaki, 5,616,556, Cl. 514-11.000.

Fujita, Akinari: *See*—
Fujimoto, Tomoya; Okamura, Kenko; Morishita, Shigeru; Murakami, Masaru; Adachi, Akira; Hayashi, Mitsutoshi; Fujita, Akinari; Nagashima, Shingo; Kurashina, Minoru; and Yoshida, Kentaro, 5,615,976, Cl. 405-184.000.

Fujita, Masami: *See*—
Takaba, Tetsufumi; Fujita, Masami; Yamazaki, Masaru; Kibayashi, Hiroshi; Sugano, Kazuyoshi; and Ishii, Shizuo, 5,617,169, Cl. 396-284.000.

Fujita, Masao; and Iida, Osamu, to Kawasaki Steel Corporation. Tapping method for blast furnace. 5,616,166, Cl. 75-387.000.

Fujita, Takashi: *See*—
Taniguchi, Tadatsugu; and Fujita, Takashi, 5,616,699, Cl. 536-23.100.

Fujita, Terunori: *See*—
Imuta, Junichi; Fukuoka, Daisuke; Yoshida, Masayasu; Saito, Junji; Fujita, Terunori; Tashiro, Takashi; Kawaai, Koji; Ueda, Takashi; and Kiso, Yoshihisa, 5,616,663, Cl. 526-127.000.

Fujita, Yuko: *See*—
Heldt-Hansen, Hans P.; Fujita, Yuko; Awaji, Haruo; Shimoto, Hidesato; and Sharyou, Masaki, 5,616,215, Cl. 162-72.000.

Fujitsu Limited: *See*—
Aritake, Hirokazu; Kato, Masayuki; Ishimoto, Manabu; Sato, Noriko; and Nakashima, Masato, 5,617,225, Cl. 359-9.000.
Hashima, Masayoshi; Hasegawa, Fumi; Okabayashi, Keijü; Watanabe, Ichiro; Kanda, Shinji; Sawasaki, Naoyuki; and Murase, Yuichi, 5,617,335, Cl. 364-516.000.
Hatakeyama, Atsushi, 5,617,364, Cl. 365-200.000.
Holmstrom, David, 5,617,380, Cl. 369-14.000.
Ishida, Yoshiyuki, 5,617,368, Cl. 365-221.000.
Itami, Satoshi; Nakahara, Masaru; Nakada, Masahiro; Suzuki, Hiroshi; and Utsumi, Kenichi, 5,617,393, Cl. 369-58.000.
Kakuishi, Mitsuo; Awata, Yutaka; and Koizumi, Nobukazu, 5,617,450, Cl. 375-230.000.
Kamijo, Shunsuke, 5,617,345, Cl. 364-754.000.
Lauritzen, Mogens, 5,617,347, Cl. 365-49.000.
Masuda, Natsuo; Yamamoto, Hiroshi; Horizoe, Haruhiko; Hiramatsu, Shinji; Hizuka, Hidehiko; Matsumoto, Manabu; and Motoseko, Toshihiko, 5,616,034, Cl. 439-78.000.
Mitsuhashi, Masato, 5,617,310, Cl. 364-140.000.
Namiki, Fumihiro, 5,617,313, Cl. 395-263.000.
Ochiai, Masayuki; Hashimoto, Kaoru; Kawahara, Toshimi; and Ōsumi, Mayumi, 5,616,164, Cl. 75-342.000.
Takahashi, Toru; Watanuki, Tsuneo; Takei, Fumio; Sawatari, Norio; and Nakamura, Yasushige, 5,616,440, Cl. 430-63.000.
Tonomoto, Yoshihiro; Fuke, Kenji; Sugimoto, Katsumi; Suzuki, Eiji; Tonai, Keiko; Tonai, Shozo; Yoshii, Hitoshi; Kawai, Tsutomu; Sato, Kunihiko; and Shimatsu, Katsuya, 5,617,192, Cl. 399-263.000.
Yamada, Yoichi; and Funaki, Shigeo, 5,617,520, Cl. 395-119.000.
Yumitori, Fuminori; and Fujii, Yasuhiro, 5,617,363, Cl. 365-190.000.
Zhong, Zhang, 5,617,314, Cl. 395-803.000.

Fujiu, Isao; and Yabutsuka, Mitsuo, to Kabushiki Kaisha Yamada Seisakusho. Shock absorbing apparatus for steering column. 5,615,916, Cl. 280-777.000.

Fujiwara, Masaki: *See*—
Kuwamoto, Hideki; Iwatani, Takao; Nakane, Keiichi; and Fujiwara, Masaki, 5,617,518, Cl. 395-114.000.

Fukami, Toshiyuki: *See*—
Kawaguchi, Hirofumi; Mizuta, Yasufumi; Matsumoto, Syunichi; Akiba, Nobuko; Fukami, Toshiyuki; Yamazato, Ichiro; Uegaito, Hisakazu; and Tanaka, Yuji, 5,616,441, Cl. 430-78.000.

Fukami, Yoshio: *See*—
Nara, Kei; Matsuura, Toshio; Yokota, Muneyasu; Kakizaki, Yukio; Fukami, Yoshio; Miyazaki, Seiji; and Narabe, Tsuyoshi, 5,617,211, Cl. 356-401.000.

Fukatsu, Akira: *See*—
Tsukamoto, Kazumasa; Ando, Masahiko; Fukatsu, Akira; Mae, Toshiyuki; Sakai, Motoyuki; Hamajima, Tetsuo; Kaigawa, Masato; Fukumura, Kagenori; Oba, Hidehiro; Hojo, Yasuo; Tabata, Atsushi; and Takahashi, Nobuaki, 5,616,094, Cl. 475-128.000.

Fuke, Kenji: *See*—
Tonomoto, Yoshihiro; Fuke, Kenji; Sugimoto, Katsumi; Suzuki, Eiji; Tonai, Keiko; Tonai, Shozo; Yoshii, Hitoshi; Kawai, Tsutomu; Sato, Kunihiko; and Shimatsu, Katsuya, 5,617,192, Cl. 399-263.000.

Fukuchi, Akio, to NEC Corporation. Feed-forward amplifier. 5,617,061, Cl. 330-151.000.

Fukuda, Satoru; Tanno, Masayuki; and Ryuo, Toshihiko, to Shin-Etsu Chemical Co., Ltd. Oxide garnet single crystal. 5,616,176, Cl. 117-54.000.

Fukuhara, Koji: *See*—
Itoh, Hiroshi; Yamamoto, Yoshinobu; Fukuhara, Koji; Shiroshima, Masahiro; and Kobayashi, Hiroya, 5,616,681, Cl. 528-279.000.

Fukuhara, Satoru: *See*—
Shinada, Hiroyuki; Kimura, Shingo; Kuroda, Katsuhiro; Fukuhara, Satoru; and Ohshima, Takashi, 5,616,926, Cl. 250-423.00F.

Fukumi, Hiroshi; Sugiyama, Mitsuo; Tabata, Keiichi; and Kojima, Koichi, to Sankyo Company, Limited. Anti-ulcer pyridyloxy derivatives, their preparation and uses. 5,616,579, Cl. 514-222.500.

Fukumura, Kagenori: *See*—
Tsukamoto, Kazumasa; Ando, Masahiko; Fukatsu, Akira; Mae, Toshiyuki; Sakai, Motoyuki; Hamajima, Tetsuo; Kaigawa, Masato; Fukumura, Kagenori; Oba, Hidehiro; Hojo, Yasuo; Tabata, Atsushi; and Takahashi, Nobuaki, 5,616,094, Cl. 475-128.000.

Fukunaga, Toshiaki, to Fuji Photo Film Co., Ltd. Semiconductor laser. 5,617,437, Cl. 372-45.000.

Fukuoka, Daisuke: *See*—
Imuta, Junichi; Fukuoka, Daisuke; Yoshida, Masayasu; Saito, Junji; Fujita, Terunori; Tashiro, Takashi; Kawaai, Koji; Ueda, Takashi; and Kiso, Yoshihisa, 5,616,663, Cl. 526-127.000.

Fullerton, Jack K.: *See*—
Taillie, Joseph P.; Beck, Richard A.; Raus, Robert W., Sr.; Proctor, Douglas E.; and Fullerton, Jack K., 5,616,989, Cl. 315-32.000.

Fulton, James P.: *See*—
Simpson, John W.; Clendenin, C. Gerald; Fulton, James P.; Wincheski, Russell A.; Todhunter, Ronald G.; Namkung, Min; and Nath, Shridhar C., 5,617,024, Cl. 324-209.000.

Fumey, Franck, to Plasto SA. Sealing panel, in particular for automobiles, including a loudspeaker housing. 5,616,891, Cl. 181-141.000.

Funabashi, Masaaki; and Kurata, Kazuhiko, to NEC Corporation. Optical semiconductor device and connection structure therefor. 5,617,495, Cl. 385-92.000.

Funaki, Shigeo: *See*—
Yamada, Yoichi; and Funaki, Shigeo, 5,617,520, Cl. 395-119.000.

Fundakowski, Richard A.: *See*—
Brockway, Brian P.; Brockway, Robert V.; and Fundakowski, Richard A., 5,615,686, Cl. 128-673.000.

Funder, Christian R., to Niro Holding A/S/. Spray drying device. 5,615,493, Cl. 34-583.000.

Furrow, Edward D.; and Snyder, Paul, to Genicom Corporation. Oscillatory ribbon cartridge for a printer. 5,615,958, Cl. 400-208.000.

Furubayashi, Tadashi, to Daiwa Seiko, Inc. Fishing reel brake device. 5,615,842, Cl. 242-268.000.

Furukawa, Andrew T.: *See*—
Tompkins, Nicholas J.; Murphy, Tim T.; and Furukawa, Andrew T., 5,616,354, Cl. 426-324.000.
Tompkins, Nicholas J.; Murphy, Tim T.; and Furukawa, Andrew T., 5,616,360, Cl. 426-615.000.

Furukawa, Hideo; and Ohashi, Tatsuyuki, to Honda Giken Kogyo Kabushiki Kaisha. Hydraulic pressure control system for hydraulically operated vehicle transmission. 5,615,578, Cl. 74-336.00R.

Furukido, Takeshi: *See*—
Maeda, Takashi; Furukido, Takeshi; Hoshino, Kousaku; Udo, Satoru; and Izumi, Masayoshi, 5,615,479, Cl. 29-888.300.

Furusawa, Fumio: *See*—
Kawabata, Takashi; Hyakutake, Nobuo; Furusawa, Fumio; Tokunaga, Masaaki; and Tsuruoka, Ryoichi, 5,617,197, Cl. 399-398.000.

Furusawa, Manabu: *See*—
Arikawa, Hiroo; Kanehara, Akihiko; Furusawa, Manabu; and Ishimura, Koh, 5,617,069, Cl. 337-227.000.

Furuta, Hitoshi: *See*—
Hattori, Mitsuo; Furuta, Hitoshi; Takahashi, Taro; and Maeda, Hirokazu, 5,615,613, Cl. 101-450.100.

Futamura, Motonori: *See*—
Hattori, Hitoshi; Futamura, Motonori; Saito, Kazuo; and Ozu, Masao, 5,616,019, Cl. 418-66.000.

Futamura, Shingo: *See*—
D'Sidocky, Richard M.; Zanzig, David J.; and Futamura, Shingo, 5,616,655, Cl. 525-342.000.

Futatsuki, Takashi: *See*—
Aoki, Hidemitsu; Yamanaka, Koji; Imaoka, Takashi; Futatsuki, Takashi; and Yamashita, Yukinari, 5,616,221, Cl. 204-252.000.

G.D Societá per Azioni: *See*—
Draghetti, Fiorenzo; and Sartoni, Massimo, 5,615,761, Cl. 198-441.000.

Gabb, Philip J.; and Evans, J. Philip, to Kennecott Utah Copper Corporation. Hydrometallurgical processing of impurity streams generated during the pyrometallurgy of copper. 5,616,168, Cl. 75-718.000.

Gabriele, Valentino, to J. C. Pardo & Sons. Food process agitators. 5,615,951, Cl. 366-311.000.

Gabrius, Algimantas J., to Juno Lighting, Inc. Plate closure for use in internally illuminated sign. 5,615,502, Cl. 40-570.000.

Gadelius, Gustaf, to Meduse Scandinavia AB. Means to safely determine the mutual positions of a femur and an ilium in hip surgery. 5,616,147, Cl. 606-102.000.

Gagna, Massimo: *See*—
Mauro, Marina; Viscardi, Carlo F.; and Gagna, Massimo, 5,616,795, Cl. 562-855.000.

Gagnon, David R.; Krinke, Harlan L.; and Brizuela, Corazon C., to Minnestoa Mining & Manufacturing Company. Hydrophilic membranes for electrochemical devices and method for preparing same. 5,616,246, Cl. 210-490.000.

Galbraith, Lyle D.; and Italiane, John R., to Olin Corporation. Inflatable metal bladders for automobile passenger protection. 5,615,914, Cl. 280-743.100.

Gale, Robert J.: *See*—
Acar, Yalcin B.; and Gale, Robert J., 5,616,235, Cl. 205-766.000.

Gallezot, Pierre: *See*—
Vallejos, Jean-Claude; Perrard, Alain; Christidis, Yani; and Gallezot, Pierre, 5,616,733, Cl. 549-307.000.

Gallop, Paul M.: *See*—
Hauschka, Peter V.; and Gallop, Paul M., 5,616,576, Cl. 514-81.000.

Gallopo, Andrew R.; Ibrahim, Nader I.; and Mazzanobile, Salvatore, to SmithKline Beecham Corporation. Quaternary ammonium antibacterial dentifrices with selected calcium abrasives. 5,616,314, Cl. 424-49.000.

Gallucci, Robert R.: *See*—
Basch, Jeffrey D.; Gallucci, Robert R.; and Hamilton, Douglas G., 5,616,641, Cl. 524-417.000.

Gande, Matthew E.: *See*—
Evans, Samuel; Gande, Matthew E.; Nesvadba, Peter; von Ahn, Volker H.; and Winter, Roland A. E., 5,616,774, Cl. 560-4.000.

Gao, Feng, to Valence Technology, Inc. Conductive metal oxide coated current collector for improved adhesion to composite electrode. 5,616,437, Cl. 429-245.000.

Gao, Yun; Hong, Yaping; Nie, Xiaoyi; Bakale, Roger P.; Feinberg, Richard R.; and Zepp, Charles M., to Sepracor, Inc. Optically pure 1-amino-2-indanols. 5,616,808, Cl. 564-428.000.

Gaportsin, Iosif. Toy. 5,615,900, Cl. 280-1.220.

Garber, Jonathan F.; Brown, Jorg A.; and Walters, Chad P., to Connectix Corporation. Lossless data compression system and method. 5,617,552, Cl. 395-401.000.

Garbowicz, Glenn D.; Troy, Patrick E.; and Wetterich, Janis L., to Philips Electronics North America Corporation. Ballast scheme for a fluorescent lamp with preheated filaments. 5,616,990, Cl. 315-103.000.

Garcia-Rubio, Luis H., to University of South Florida. Method and apparatus for the detection and classification of microorganisms in water. 5,616,457, Cl. 435-4.000.

Garnier, Francis G. A.: *See*—
Beutin, Bruno A.; Creti, Joël; Donnadieu, Jean-Pierre; Garnier, Francis G. A.; Hugues, Michel G.; Lecordix, Jean-Loic H.; Maignan, Claude P. H.; Massot, Gilles C. G.; Pincemin, Jean-Marie N.; Thorel, Christophe J. F.; Touron, Carole C.; and Vennin, Gérard M. R. M., 5,615,547, Cl. 60-39.080.

Garrett, Julie; and Ashlock, Thomas. Valance shaped enhancement apparatus. 5,615,722, Cl. 160-38.000.

Gärtner, Lutz, to ZF Friedrichshafen AG. Device for the transmission of moment from a drive unit to a transmission using a hydrodynamic converter. 5,616,002, Cl. 416-180.000.

Gas Research Institute: *See*—
Sage, Gerald F., 5,616,850, Cl. 73-23.310.
Shen, Yousheng; Joshi, Ashok V.; Krist, Kevin; Liu, Meilin; and Virkar, Anil V., 5,616,223, Cl. 204-295.000.
Smolensky, Leo A.; Wysk, S. Ronald; and Lin, Zhen W., 5,616,303, Cl. 422-147.000.

Gasser, Markus, to SIG Schweizerische Industrie-Gesellschaft. Article conveying, grouping and storing apparatus. 5,615,994, Cl. 414-794.200.

Gätschmann, Klaus G.: *See*—
Ruppert, Heinrich W.; Schütze, Gunter; and Gätschmann, Klaus G., 5,615,692, Cl. 131-70.000.

Gatza, John: *See*—
Beyer, Claus; Gatza, John; Atoche, Carlos; and Totonji, Sam, 5,615,935, Cl. 303-195.000.

Gauch, Wolfgang: *See*—
Böttge, Horst; Gauch, Wolfgang; Hoppe, Joachim; and Haghiri, Yahya, 5,615,476, Cl. 29-832.000.

Gaudette, Robert M. Metal precipitation composition for treating spent dry film stripping solution. 5,615,862, Cl. 252-175.000.

Gaudiello, John G.: *See*—
Ballard, Gerald L.; and Gaudiello, John G., 5,616,422, Cl. 428-621.000.

Gauker, Bradford K., to Augat Inc. Squib connector for automotive air bag assembly. 5,616,045, Cl. 439-352.000.

Gaulard, Robert: *See*—
Martin, Gérard; and Gaulard, Robert, 5,616,216, Cl. 201-25.000.

Gavnoudias, Stratis, to United States of America, Army. Low-cost near-surface burst (NSB) capability for proximity fuzes. 5,617,097, Cl. 342-68.000.

Gay, James G.: *See*—
Crouch, Alfred L.; Pressly, Matthew D.; Gay, James G.; Shepard, Clark G.; and Laakso, Pamela S., 5,617,531, Cl. 395-183.060.

Gaydu, Gladys: *See*—
Delprat, Marc; Andrieu, Vianney; Gourgue, Frédéric; Gaydu, Gladys; and Nouchi, Charles, 5,617,412, Cl. 370-281.000.

GB Electrical, Inc.: *See*—
Sorensen, Soren C.; and Sorensen, Jens O., 5,615,455, Cl. 24-16.0PB.

GD Searle & Co: *See*—
Khanna, Ish K.; Weier, Richard M.; Collins, Paul W.; Yu, Yi; Xu, Xiangdong; Partis, Richard A.; and Koszyk, Francis J., 5,616,601, Cl. 514-399.000.

GE Yokogawa Medical Systems, Limited: *See*—
Ri, Taiho; Amemiya, Shinichi; and Jibiki, Takao, 5,615,679, Cl. 128-660.050.

Geary, Phillip S.: *See*—
O'Kane, John B.; and Geary, Phillip S., 5,615,920, Cl. 294-65.500.

GEC Alsthom T & D SA: *See*—
Maineult, Jean, 5,616,898, Cl. 218-76.000.

GEC Alsthom Transport SA: *See*—
Hoyon, Christophe; and Cros, Michel, 5,615,786, Cl. 213-75.00R.

GEC Marconi Dynamics Inc.: *See*—
Shmoldas, John D.; Hutchings, Michael B.; and Barlow, Christopher W., 5,615,846, Cl. 244-3.280.

Geddes, Ann D.; and Boyce, Rogely W., to Procter & Gamble Company, The. Methods for the treatment of osteoporosis using bisphosphonates and parathyroid hormone. 5,616,560, Cl. 514-12.000.

Geen, Graham R.: *See*—
Johnson, Graham; Smith, Neil; Geen, Graham R.; Mann, Inderjit S.; and Novack, Vance, 5,616,721, Cl. 548-253.000.

Geerts, Rolf L.: *See*—
Patsidis, Konstantinos; Peifer, Bernd; Alt, Helmut G.; Geerts, Rolf L.; Fahey, Darryl R.; Welch, M. Bruce; Palackal, Syriac J.; and Deck, Harold R., 5,616,752, Cl. 556-95.000.

Geisberger, Gilbert, to Wacker-Chemie GmbH. Process for preparaing alkyl- or aryldichlorosilanes. 5,616,761, Cl. 556-469.000.

Geishecker, Stephen P.: *See*—
Nacewicz, Stanley J.; and Geishecker, Stephen P., 5,617,001, Cl. 318-788.000.

Gelep, Paul: *See*—
Farrell, Roberta L.; Gelep, Paul; Anilionis, Algis; Javaherian, Kashayar; Maione, Theodore E.; Rusche, James; Sadownick, Bruce A.; and Jackson, Jennifer A., 5,616,473, Cl. 435-69.100.

GEMA Volstatic AG: *See*—
Mauchle, Felix, 5,615,980, Cl. 406-19.000.

Gemcor Engineering Corp.: *See*—
Kellner, Robert J.; and Cassidy, Mark F., Jr., 5,615,474, Cl. 29-703.000.

Gemma, Edward A., Jr.; and Stellon, Andrew P., to United States Surgical Corporation. Suture package retention sleeve and procedure kit. 5,615,766, Cl. 206-63.300.

Genentech, Inc.: *See*—
Anderson, Stephen; Bennett, William F.; Botstein, David; Higgins, Deborah L.; Paoni, Nicholas F.; and Zoller, Mark J., 5,616,486, Cl. 435-226.000.

General Electric Company: *See*—
Abdel-Malek, Aiman A.; Hershey, John E.; and Hassan, Amer A., 5,616,824, Cl. 73-1.010.
Anderson, Patricia P.; and Thompson, Dennis P., 5,616,673, Cl. 528-23.000.

Basch, Jeffrey D.; Gallucci, Robert R.; and Hamilton, Douglas G., 5,616,641, Cl. 524-417.000.
Bowen, John H.; and Lovett, Jeffery A., 5,616,870, Cl. 73-863.010.
DeJule, Michael C.; and Riza, Nabeel A., 5,617,109, Cl. 345-87.000.
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Michel, Rodney L.; Sybert, Paul D.; Davis, Gary C.; and Swatos, William J., 5,616,674, Cl. 528-29.000.
Molezzi, Michael J.; Crumbacher, Harry W.; McConville, Bernard; and Shannon, Connie H., 5,615,831, Cl. 239-8.000.
O'Brien, Michael J.; and Griswold, Roy M., 5,616,672, Cl. 528-15.000.
Schneider, Erika, 5,617,029, Cl. 324-320.000.
Wei, Ching Y.; Liu, Jianqiang; Salisbury, Roger S.; Kwasnick, Robert F.; Possin, George E.; and Albagli, Douglas, 5,616,524, Cl. 438-4.000.

General Hospital Corporation, The: *See*—
Brown, Emery N.; and Skates, Steven J., 5,616,504, Cl. 436-518.000.

General Instrument Corporation, G.I. Communications Division: *See*—
Marz, Daniel, 5,617,475, Cl. 380-14.000.

General Instrument Corporation of Delaware: *See*—
Hamilton, Jeffrey S., 5,617,142, Cl. 348-405.000.

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Achey, David E.; and Thoman, Gary E., 5,616,825, Cl. 73-23.310.
Ashtiani-Zarandi, Mansour; and Hlavaty, David G., 5,616,293, Cl. 264-401.000.
Kidston, Kevin S.; and Conlon, Brendan M., 5,615,933, Cl. 303-152.000.
Long, Charles F.; Cole, Jeffrey J.; and McCauley, Phillip F., 5,616,093, Cl. 475-120.000.
Siegfried, David G.; Rimko, Robert W.; and Corso, Anthony J., 5,615,944, Cl. 362-226.000.

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Kendall, Steven S., 5,616,646, Cl. 524-588.000.

Genet, Alain: *See*—
Junino, Alex; Lagrange, Alain; and Genet, Alain, 5,616,809, Cl. 564-440.000.

Genicom Corporation: *See*—
Furrow, Edward D.; and Snyder, Paul, 5,615,958, Cl. 400-208.000.

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Kasianovitz, Elizabeth J. M.; Bellm, Lisa A.; and Maxwell, Kameron W., 5,616,337, Cl. 424-414.000.

Geoghegan, Edward J.; Mulligan, Seamus; and Panoz, Donald E., to Elan Corporation PLC. Controlled absorption diltiazen formulation for once-daily administration. 5,616,345, Cl. 424-497.000.

German, Elena N., legal representative: *See*—
Filippovich, Cherstokov V.; Rafailovich, Sterlin S.; German, S. Lev, deceased; Jeng-Tain, Lin; Saito, Satoru; and Tatsu, Haruyoshi, 5,616,813, Cl. 568-663.000.

German, S. Lev, deceased (by Elena N. German, legal representative): *See*—
Filippovich, Cherstokov V.; Rafailovich, Sterlin S.; German, S. Lev, deceased; Jeng-Tain, Lin; Saito, Satoru; and Tatsu, Haruyoshi, 5,616,813, Cl. 568-663.000.

Gessner, Scott L.: *See*—
Oleszczuk, Andrew R.; and Gessner, Scott L., 5,616,408, Cl. 442-346.000.

Getsy, Stephen B.: *See*—
Schroeder, Alfred A.; Romanyszyn, Michael T., Jr.; Getsy, Stephen B.; Montgomery, Gregg S.; Wolfe, Joseph J.; and Wittig, Norman P., 5,615,801, Cl. 222-51.000.

Ghadry, Farid N.: *See*—
Batarseh, Kareem I., 5,616,251, Cl. 210-725.000.

Ghia, Atul V.: *See*—
Banerjee, Pradip; Chuang, Patrick; and Ghia, Atul V., 5,617,563, Cl. 395-556.000.

Gibbons, James J., Jr.: *See*—
Ayral-Kaloustian, Semiramis; Schow, Steven R.; Du, Mila T.; and Gibbons, James J., Jr., 5,616,612, Cl. 514-478.000.

Gibbs, Douglas P.: *See*—
Van Dusen, Donn S.; and Gibbs, Douglas P., 5,615,904, Cl. 280-506.000.

Giesecke & Devrient GmbH: *See*—
Böttge, Horst; Gauch, Wolfgang; Hoppe, Joachim; and Haghiri, Yahya, 5,615,476, Cl. 29-832.000.

Gilg, Bernard: *See*—
Pitteloud, Rita; and Gilg, Bernard, 5,616,780, Cl. 560-118.000.

Gill, James C.: *See*—
Dever, James L.; and Gill, James C., 5,616,656, Cl. 525-355.000.

Gillette Canada Inc.: *See*—
Masterman, Thomas C.; and Spencer, Jean L., 5,616,315, Cl. 424-54.000.

Gillis, Ian: *See*—
Comeau, Laurier E.; Gillis, Ian; and Vandenberg, Elis, 5,615,740, Cl. 166-380.000.

Ginoux, Jean-Paul; Dreyer, Alain; Roch, Philippe; Baccou, Jean-Claude; and Lacan, Dominique, to Bio-Obtention SC. Cucumis melo protein extract with antioxidant activity and process for preparing it, cosmetic or pharmaceutical composition or food composition containing such an extract. 5,616,323, Cl. 424-195.100.

Ginsberg, Richard S.: *See*—
Mayer, Lawrence D.; Bally, Marcel B.; Cullis, Pieter R.; Ginsberg, Richard S.; and Mitilenes, George N., 5,616,341, Cl. 424-450.000.

Giraud, Nicholas: *See*—
Ducarouge, Christian; Grisel, Richard; Giraud, Nicholas; Sottocasa, Helene; Chansavoir, Alain; and Haddadi, Ahmed, 5,617,155, Cl. 351-204.000.

Gish, Kenneth W.: *See*—
Sheehy, James B.; Gish, Kenneth W.; Sprenger, John J.; and Finkbeiner, William H., Jr., 5,617,257, Cl. 359-818.000.

Giudice, Anthony C.: *See*—
Cheng, Chieh-Min; Giudice, Anthony C.; Liang, Rong-Chang; Schwarzel, William C.; and Wan, Leonard C., 5,616,449, Cl. 430-302.000.

Giurtino, Joel F.; Turkel, David; and Gordon, David P., to Symbiosis Corporation. Tissue core biopsy cannula. 5,615,690, Cl. 128-754.000.

Givas Habitat s.r.l.: *See*—
Vassilli, Berto, 5,615,431, Cl. 5-610.000.

GKN Automotive AG: *See*—
Krude, Werner; Harz, Peter; and Feichter, Bruno, 5,616,081, Cl. 464-145.000.

GKN Birfield SpA: *See*—
Krude, Werner; Harz, Peter; and Feichter, Bruno, 5,616,081, Cl. 464-145.000.

Glass, Monty; and Dabbs, Timothy P., to Commonwealth Scientific and Industrial Research Organisation. Appartatus and method for measuring a change in an energy path length. 5,617,207, Cl. 356-345.000.

Glaug, Frank S.: *See*—
Finch, Valerie V.; Glaug, Frank S.; Olson, Christopher P.; Ratliff, Kathleen I.; and Sheldon, Donald A., 5,616,201, Cl. 156-73.100.

Glehr, Manfred: *See*—
Fischer, Armin; Halmerl, Stefan; and Glehr, Manfred, 5,616,966, Cl. 307-10.500.

Glicksman, Howard D.; Kodas, Toivo T.; and Majumdar, Diptarka, to Du Pont de Nemours, E. I., and Company; and University of New Mexico. Method for making gold powders by aerosol decomposition. 5,616,165, Cl. 75-369.000.

Gloyd, David A.; Uribe, Emigdio A.; Koch, Robert J.; and Belsinger, Harry E., Jr., to Ohmeda Inc. Heated humidifier for incubator. 5,616,115, Cl. 600-22.000.

Gmelin, Karl: *See*—
Pollmann, Herbert; Hodulik, Wolfgang; Peters, Klaus-Jürgen; Gmelin, Karl; Entenmann, Matthias; and Ropertz, Peter, 5,615,861, Cl. 251-306.000.

Go, Zenaida O.: *See*—
Popli, Shankar D.; and Go, Zenaida O., 5,616,621, Cl. 514-772.400.

Gobert, Ulrich, to AB Volvo. Supercharged internal combustion engine. 5,615,554, Cl. 60-609.000.

Gockel, Ludger: *See*—
Knoop, Franz-Josef; and Gockel, Ludger, 5,617,299, Cl. 361-788.000.

Goder, Dimitry; and Santo, Hendrik, to Linear Technology Corporation. Multiple output regulator with time sequencing. 5,617,015, Cl. 323-282.000.

Godfrey, Jollie D., Jr.: *See*—
Kronenthal, David R.; and Godfrey, Jollie D., Jr., 5,616,775, Cl. 560-9.000.

Goebel, Eickhart: *See*—
Drechsler, Josef; Goebel, Eickhart; Kühn, Gottfried; Rothamel, Karl; and Wowes, Jörg, 5,615,574, Cl. 73-487.000.

Goeken Group Corporation, The: *See*—
Ditzig, Albert; and Oldani, Jerome L., 5,617,474, Cl. 379-433.000.

Goenka, Lakhi N., to Ford Motor Company. CO_2 nozzle and method for cleaning pressure-sensitive surfaces. 5,616,067, Cl. 451-39.000.

Goessling, Thomas R.: *See*—
Dolby, Nigel I.; Nagle, Timothy E.; and Goessling, Thomas R., 5,617,514, Cl. 395-51.000.

Goetsch, Michael N.: *See*—
Watson, Jeff R.; Goetsch, Michael N.; Noval, Jim V.; and Aspandiar, Raiyo F., 5,617,294, Cl. 361-719.000.

Goetting, F. Erich; Peterson, Wade K.; and Schultz, David P., to Xilinx, Inc. High speed post-programming net verification method. 5,617,021, Cl. 324-158.100.

Goettmann, James A.; Monroe, Stephen H.; Angelini, Peter J.; and Boylan, John R., to International Paper Company. Recyclable polymeric label paper. 5,616,384, Cl. 428-36.100.

Goggins, Timothy P., to National Graphics, Inc. Method of producing multidimensional lithographic separations free of moire interference. 5,617,178, Cl. 355-22.000.

Gogle, Ronald A.; and Lane, William S., to Eastman Kodak Company. Photographic processor and method for replenishing. 5,616,452, Cl. 430-398.000.

Gogolin, E. Lawrence: *See*—
Velasquez, David A.; Holmes, Douglas B.; and Gogolin, E. Lawrence, 5,616,152, Cl. 29-623.500.

Goldberger, Daniel S.: *See*—
Braig, James R.; Goldberger, Daniel S.; and Sterling, Bernhard B., 5,615,672, Cl. 128-633.000.

Golden, Harry J.: *See*—
Arldt, Roy L.; Downey, Susan H.; Golden, Harry J.; Mahmoud, Issa S.; Okoro, Clement A.; and Spalik, James, 5,615,827, Cl. 228-223.000.

Goldmann, Jürgen; and Kaul, Bansi L., to Sandoz Ltd. Modified form of bis-1,4-[2'-(2",5"-dimethoxycarbonylphenylazo)-3'-oxobutyramido]benzene and process for its synthesis. 5,616,778, Cl. 560-35.000.

Goldschmied, Gerhard; and Priesch, Gerhard, to Andritz-Patentverwaltungs-Gesellschaft m.b.H. Process and apparatus for the coating of metal. 5,616,362, Cl. 427-328.000.

Goldstar Co., Ltd.: *See*—
Kim, Si J., 5,617,094, Cl. 341-200.000.
Lee, Sang Y., 5,617,336, Cl. 364-550.000.
Ma, Young C., 5,616,018, Cl. 418-63.000.

Golio, John M.: *See*—
Dydyk, Michael; Golio, John M.; Higgins, Robert J., Jr.; and Arvanitis, Aristotelis, 5,615,473, Cl. 29-602.100.

Golla, Carla; Padoan, Silvia; and Olivo, Marco, to SGS-Thomson Microelectronics S.r.l. Regulation circuit and method for the erasing phase of non-volatile memory cells. 5,617,356, Cl. 365-185.250.

Golod, Anatoly: *See*—
Simmermon, John C.; Dell, Curtis G.; Peterson, Douglas; Blakemore, Colin B.; Remaley, John B.; Golod, Anatoly; and Bear, Robert S., Jr., 5,616,827, Cl. 73-29.010.

Gomes, Gilbert: *See*—
Thomas, Barbara; Mehreteab, Ammanuel; Erilli, Rita; Gomes, Gilbert; Bala, Frank, Jr.; Tarng, Jiashi; Lysy, Regis; and Broze, Guy, 5,616,548, Cl. 510-242.000.

Gonda, Raymond M. Collapsible boat with enhanced rigidity. 5,615,634, Cl. 114-354.000.

González, José M., Jr.: *See*—
Donovan, William P.; Tan, Yuping; Jany, Christine S.; and González, José M., Jr., 5,616,319, Cl. 424-93.200.

Goodwin, Jerry J. Drive tool with sensor for fastener deflection during tightening and clamping force validator. 5,615,575, Cl. 73-862.541.

Goodyear Tire & Rubber Company, The: *See*—
D'Sidocky, Richard M.; Zanzig, David J.; and Futamura, Shingo, 5,616,655, Cl. 525-342.000.
D'Sidocky, Richard M.; and Maly, Neil A., 5,616,279, Cl. 252-182.170.
Helfer, Farrel B.; Kim, Dong K.; Morgan, John G.; Shemenski, Robert M.; Sinopoli, Italo M.; Jeanpierre, Guy; and Nguyen, Gia V., 5,616,197, Cl. 152-527.000.
Hsu, Wen-Liang; Halasa, Adel F.; Matrana, Barry A.; Christian, Scott M.; Austin, Laurie E.; and Gross, Bill B., 5,616,653, Cl. 525-332.500.
Lucas, Danielle, 5,616,639, Cl. 524-262.000.
Marquet, Michel E. J.; and Le, Phuoc T., 5,616,195, Cl. 152-209.00R.
Niño, Mariano S.; and Ngoc, Hung D., 5,616,651, Cl. 525-305.000.
Patel, Kantilal D., 5,616,635, Cl. 524-37.000.

Gordenker, Robert J. M.; Tucker, Lawrence J.; and Murphy, Michael E., to Conner Peripherals, Inc. System for recording track-centering servo signals on multi-track magnetic medium. 5,617,269, Cl. 360-77.120.

Gordon, David P.: *See*—
Giurtino, Joel F.; Turkel, David; and Gordon, David P., 5,615,690, Cl. 128-754.000.

Gorecki, James L., to Lattice Semiconductor Corporation. Active resistor for stability compensation. 5,617,064, Cl. 333-22.00R.

Gorman, Michael R.; Becker, Dennis L.; Folske, Donald W.; Melbye, William L.; Nestegard, Susan K.; and Ott, Ronald L., to Minnesota Mining and Manufacturing Company. Sheet of loop material, and garments having such loop material incorporated therein. 5,616,394, Cl. 428-99.000.

Goto, Kouji, to Mitsubishi Denki Kabushiki Kaisha. Failure detection system for detecting failure of functional blocks of integrated circuits. 5,617,429, Cl. 371-25.100.

Goto, Takahiro: *See*—
Oya, Toyohisa; and Goto, Takahiro, 5,616,456, Cl. 430-581.000.

Goto, Takao, to Gotoh Gut Yugen Kaisha. Connector for coupling a harness and a stringed instrument. 5,615,462, Cl. 24-608.000.

Goto, Takashi: *See*—
Iwase, Takashi; Matsumoto, Takashi; Aoshima, Nobuyuki; Matsuura, Norimasa; and Goto, Takashi, 5,616,079, Cl. 463-32.000.

Goto, Tokio: *See*—
Kuwamura, Shin'ichi; Deguchi, Yoshinobu; Goto, Tokio; and Yoshino, Fumio, 5,616,645, Cl. 524-546.000.

Goto, Yoshihiro, to Hitachi Medical Corporation. Three-dimensional image shading method using volume rendering of shading pixel area having a small pixel value gradient. 5,617,521, Cl. 395-126.000.

Gotoh Gut Yugen Kaisha: *See*—
Goto, Takao, 5,615,462, Cl. 24-608.000.

Gotoh, Yasuhiro: *See*—
Miyagawa, Naoyasu; and Gotoh, Yasuhiro, 5,616,390, Cl. 428-64.100.

Gotou, Makoto: *See*—
Sakakibara, Yoshio; and Gotou, Makoto, 5,617,268, Cl. 360-77.140.

Gottlieb, Louis G.: *See*—
Litzenberger, Paul D.; and Gottlieb, Louis G., 5,617,422, Cl. 370-401.000.
Rogers, Wesley D.; Gottlieb, Louis G.; Molani, Saleem R.; Sedlock, Gregory W.; and Engdahl, Roger P., 5,617,471, Cl. 379-212.000.

Gottschald, Lutz, to Wernicke & Co. GmbH. Apparatus for processing the edge of ophthalmic lenses. 5,615,588, Cl. 82-11.000.

Götz, Hans-Joachim; Brachmann, Markus; Frank, Georg; and Eckart, Thomas, to U.S. Philips Corporation. Transmission system. 5,617,454, Cl. 375-376.000.

Gould Electronics Inc.: *See*—
Quinlan, Michael, 5,616,054, Cl. 439-621.000.

Gourgue, Frédéric: *See*—
Delprat, Marc; Andrieu, Vianney; Gourgue, Frédéric; Gaydu, Gladys; and Nouchi, Charles, 5,617,412, Cl. 370-281.000.

Graef, Jordt-Steffen. Injector nozzle. 5,615,836, Cl. 239-428.500.

Graf, Joel S.: *See*—
Eull, Patricia A.; Berger, Todd R.; and Graf, Joel S., 5,615,767, Cl. 206-278.000.

Graham, Lewis V. Equine halter. 5,615,539, Cl. 54-24.000.

Graham, Peter: *See*—
Edwards, Richard B.; and Graham, Peter, 5,616,310, Cl. 423-700.000.

Grange, Edward W.: *See*—
Lee, William W.; Brown, J. Martin; Grange, Edward W.; and Martinez, Abelardo P., 5,616,584, Cl. 514-243.000.

Gras, Rainer; and Wolf, Elmar, to Huels Aktiengesellschaft. Process for the production of matt epoxy resin and hybrid powder coatings. 5,616,658, Cl. 525-438.000.

Grasshoff, J. Michael; Taylor, Lloyd D.; and Warner, John C., to Polaroid Corporation. Method of imaging using a polymeric photoresist having pendant vinylbenzyl thymine groups. 5,616,451, Cl. 430-325.000.

Grau Limited: *See*—
Broome, William S., 5,615,929, Cl. 303-7.000.

Grau, Wolfgang: *See*—
Viegener, Walter; Walter, Heinz; and Grau, Wolfgang, 5,615,481, Cl. 29-890.149.

Gravel, Pierre. Compact bath-chair support. 5,615,422, Cl. 4-579.000.

Gray, Jan; Jones, D. T.; and O'Riordan, Martin, to Microsoft Corporation. Method and system for implementing pointers to members in a compiler for an object-oriented programming language. 5,617,569, Cl. 395-614.000.

Gray, Robert D.; Spatola, Arno F.; and Darlak, Krzysztof, to Research Corporation Tech., Inc. Peptide derivatives of collagenase inhibitor. 5,616,605, Cl. 514-415.000.

Gray, William D.: *See*—
Wen, Cheng P.; Wong, Wah S.; and Gray, William D., 5,616,517, Cl. 437-125.000.

Great Lakes Chemical Corporation: *See*—
Robin, Mark L.; Mazac, Charles J.; and Rubacha, John S., 5,615,742, Cl. 169-45.000.

Green, Adam B.: *See*—
Kroll, Yury; Yasinovsky, Vadim M.; and Green, Adam B., 5,617,578, Cl. 395-800.000.

Green Cross Corporation, The: *See*—
Takahashi, Tuyoshi; Ikegaya, Kazuo; Mochizuki, Shinobu; and Nishimaki, Hideo, 5,616,691, Cl. 530-364.000.

Greene, Charles W.: *See*—
Siekierski, Roger A.; and Greene, Charles W., 5,617,164, Cl. 396-401.000.

Greene, George H.: *See*—
McCarthy, James P.; Greene, George H.; and DeWar, Anthony G., 5,616,758, Cl. 556-423.000.

Greenmaster Industrial Corp.: *See*—
Wang, Leao; and Wu, Peter, 5,616,105, Cl. 482-72.000.

Greenwald, Roger J.: *See*—
Sauer, Jude S.; Oravecz, Michael G.; and Greenwald, Roger J., 5,616,131, Cl. 604-174.000.

Greenwood, Gil J.: *See*—
Brown, Ronald E.; Reed, Larry E.; Greenwood, Gil J.; Harper, Timothy P.; and Scharre, Mark D., 5,616,236, Cl. 208-48.00R.

Gregoire, Dennis G.: *See*—
Baumgartner, Yoanna; Gregoire, Dennis G.; and Youngs, Amy M., 5,617,556, Cl. 395-468.000.

Greive, Martin; and Ruf, Bernd, to Heidelberger Druckmaschinen AG. Device for receiving sheet piles thereon in a sheet-fed printing press. 5,615,875, Cl. 271-147.000.

Grice, Donald G.: *See*—
Barker, Thomas N.; Collins, Clive A.; Dapp, Michael C.; Dieffenderfer, James W.; Grice, Donald G.; Knowles, Billy J.; Lesmeister, Donald M.; Nier, Richard E.; Retter, Eric E.; Rolfe, David B.; and Smoral, Vincent J., 5,617,577, Cl. 395-800.000.

Grieshop, Maurice, to J. & M. Manufacturing Co., Inc. Auger unit for a granular material transport wagon. 5,615,990, Cl. 414-526.000.

Griffen, Christopher T.: *See*—
Chen, Fang; Griffen, Christopher T.; and Ni, Eel-Jeu, 5,616,839, Cl. 73-146.000.

Griffin, James W.: *See*—
Kress, John E.; and Griffin, James W., 5,615,559, Cl. 62-68.000.

Griffin, Judson R., III: *See*—
MacLaren, Brice K.; Johnson, Randall L.; Griffin, Judson R., III; and Meehan, James R., 5,617,515, Cl. 395-99.000.

Griffiths, Richard F.; Lawrence, John; and Williams, Aled, to United Kingdom of Great Britain and Northern Ireland, a British Corporation Sole, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Calibration systems. 5,616,822, Cl. 73-1.060.

Grimmer, Johannes; and Martin, Christoph, to BASF Aktiengesellschaft. Stereoselective preparation of (−) 3a,6,6,9a-tetramethylperhydronaphtho[2,1-b]furan. 5,616,737, Cl. 549-458.000.

Grisel, Richard: *See*—

Ducarouge, Christian; Grisel, Richard; Giraud, Nicholas; Sottocasa, Helene; Chansavoir, Alain; and Haddadi, Ahmed, 5,617,155, Cl. 351-204.000.

Griswold, Roy M.: *See*—
O'Brien, Michael J.; and Griswold, Roy M., 5,616,672, Cl. 528-15.000.

Gross, Bill B.: *See*—
Hsu, Wen-Liang; Halasa, Adel F.; Matrana, Barry A.; Christian, Scott M.; Austin, Laurie E.; and Gross, Bill B., 5,616,653, Cl. 525-332.500.

Groten, Robert: *See*—
Baravian, Jean; Jahn, Ulrich; Groten, Robert; and Beck, Jean-Jacques, 5,616,395, Cl. 428-102.000.

Grothoff, Hans, to Calmar-Albert GmbH. Plunger lock-up dispenser. 5,615,806, Cl. 222-153.130.

Grow Group, Inc.: *See*—
Dieter, Jerry A.; and Firestone, Jeffery J., 5,616,183, Cl. 134-8.000..

Grozinger, Karl G., to Boehringer Ingelheim Pharmaceuticals, Inc. Process for the preparation of pure enantiomers of 1-(2-pyridyl)-2-cyclohexylethylamine. 5,616,717, Cl. 546-329.000.

Grundei, Manfred; and Reimer, Hans, to Fichtel & Sachs AG. Shock absorber for a motor vehicle, which shock absorber has a piston valve. 5,615,756, Cl. 188-322.150.

Grützmacher, Roland: *See*—
Fies, Matthias; Grützmacher, Roland; and Westfechtel, Alfred, 5,616,679, Cl. 528-76.000.

Gsell, Thomas C.: *See*—
Pall, David B.; Gsell, Thomas C.; Matkovich, Vlado I.; and Bormann, Thomas, 5,616,254, Cl. 210-806.000.

Guaciaro, Michael A.: *See*—
Crews, Alvin D., Jr.; Harrington, Philip M.; Karp, Gary M.; Manfredi, Mark C.; and Guaciaro, Michael A., 5,616,706, Cl. 544-221.000.

Guardiola-Lemaitre, Béatrice: *See*—
Yous, Said; Lesieur, Daniel; Depreux, Patrick; Guardiola-Lemaitre, Béatrice; Adam, Gérard; Renard, Pierre; and Caignard, Daniel H., 5,616,614, Cl. 514-530.000.

Guba, Reinhold; Olek, Joachim; and Schoppe, Herbert, to MAN Roland Druckmaschinen AG. Apparatus for the cleaning of cylinders of a printing machine. 5,615,612, Cl. 101-425.000.

Guerbet S.A.: *See*—
Dugast-Zrihen, Maryse; and Meyer, Dominique, 5,616,798, Cl. 564-153.000.

Guertin, Robert W., to Catlow, Inc. Coaxial breakaway coupling with vapor assist check valve. 5,615,706, Cl. 137-614.040.

Guest, John D. Seal arrangements. 5,615,895, Cl. 277-208.000.

Guigueno, Hervé, to Schneider Electric SA. Electronic variable speed drive. 5,617,307, Cl. 363-37.000.

Guilbert, Martine: *See*—
Vinouze, Bruno; Guilbert, Martine; and Bosc, Dominique, 5,617,231, Cl. 349-112.000.

Gully, Danielle: *See*—
Boigegrain, Robert; Gully, Danielle; Jeanjean, Francis; and Molimard, Jean-Charles, 5,616,592, Cl. 514-314.000.

Gulunay, Necati; and Chambers, Ronald E., to Western Atlas International, Inc. Unaliased spatial trace interpolation in the f-k domain. 5,617,372, Cl. 367-38.000.

Gunder, Jeffrey P.: *See*—
Carr, Jeffrey W.; and Gunder, Jeffrey P., 5,617,273, Cl. 360-105.000.

Gundlach, Robert W.: *See*—
Chizuk, Joseph A., Jr.; Bergen, Richard F.; and Gundlach, Robert W., 5,617,129, Cl. 347-123.000.

Gunn, Timothy D.: *See*—
Li, Ping; Gunn, Timothy D.; and Davis, Jeffrey P., 5,617,423, Cl. 370-426.000.

Guntert & Zimmerman Construction Div., Inc.: *See*—
Guntert, Ronald M.; and Cape, William R., 5,615,972, Cl. 404-72.000.

Guntert, Ronald M.; and Cape, William R., to Guntert & Zimmerman Construction Div., Inc. Paving machine with extended telescoping members. 5,615,972, Cl. 404-72.000.

Gunze Limited: *See*—
Yamaoka, Ryuso; Ishii, Yoshinori; Kondo, Kunio; Wakita, Kazuto; and Tsurutani, Iwao, 5,616,420, Cl. 428-515.000.

Gupta, Alok K.: *See*—
Jin, Iljoon; Fitzsimon, John; Bull, Michael J.; Marois, Pierre H.; Gupta, Alok K.; and Lloyd, David J., 5,616,189, Cl. 148-549.000.

Gustafson, Carl E. Portable scoreboard. 5,615,636, Cl. 116-223.000.

Guthier, John F., to Xenotech, Inc. High wattage lamp ferrule and socket system. 5,616,984, Cl. 313-318.040.

Guyton, Dean L., to Dgic, llc. Flushable portable toilet. 5,615,420, Cl. 4-233.000.

Ha, Chang W.: *See*—
Cha, Byoung K.; and Ha, Chang W., 5,617,354, Cl. 365-185.210.

Haag, Earl C., III. Sterilizable valve assembly. 5,615,859, Cl. 251-61.100.

Haak, Christopher A.: *See*—
Bennett, Greggory S.; and Haak, Christopher A., 5,616,670, Cl. 526-307.700.

Haas, Lee C.: *See*—
Christensen, Kenneth J.; Haas, Lee C.; and Noel, Francis E., 5,617,419, Cl. 370-471.000.

Haast, William E.; and Harrell, Nancy G. Lyophilized health food products and methods of making same. 5,616,355, Cl. 426-384.000.

Habbersett, John I., to Caldwell Manufacturing Company. Lift-off guard guide for tilt shoe. 5,615,452, Cl. 16-194.000.

Habel, Michael J.; and Peterson, Larry A., to Ford Motor Company. Apparatus for preparing a surface of a cylinder bore by electrical discharge machining. 5,616,259, Cl. 219-69.200.

Habel, Wolfgang: *See*—
Richter, Robin; Martin, Hans-Peter; Roewer, Gerhard; Mueller, Eberhard; Kraemer, Hans; Sartori, Peter; Oelschlaeger, Andreas; Habel, Wolfgang; and Harnack, Bernhard, 5,616,308, Cl. 423-345.000.

Häberle, Karl: *See*—
Beckmann, Stefan; Etzbach, Karl-Heinz; Sens, Rüdiger; and Häberle, Karl, 5,616,678, Cl. 528-73.000.

Habermann, Paul: *See*—
Crause, Peter; Habermann, Paul; Tripier, Dominique; Ulmer, Wolfgang; and Schmid, Gerhard, 5,616,476, Cl. 435-69.100.

Habets, Winand J. A.: *See*—
Van Venrooij, Walter J.; Sillekens, Peter T. G.; and Habets, Winand J. A., 5,616,685, Cl. 530-324.000.

Habicher, Wolf D.: *See*—
Avar, Lajos; Staniek, Peter; Stoll, Klaus; Habicher, Wolf D.; and Hähner, Uwe, 5,616,636, Cl. 524-102.000.

Habus, Ivan: *See*—
Agrawal, Sudhir; Zhao, Qiuyan; and Habus, Ivan, 5,616,565, Cl. 514-44.000.

Hacker, Erik; and Pohlack, Hubert, to Jenoptik GmbH. Radiation projection arrangement with integrated radiation indicator. 5,617,250, Cl. 359-582.000.

Hadary, Dany; Bartfeld, Daniel; Butler, Michael J.; Jenish, David; Krieger, Timothy; Malek, Lawrence T.; Soostmeyer, Gisela; and Walcyzk, Eva, to Cangene Corporation. Streptomyces proteases and improved streptomyces strains for expression of peptides and polypeptides. 5,616,485, Cl. 435-220.000.

Haddad Apparel Group, Ltd., The: *See*—
Haddad, Jack C., 5,615,416, Cl. 2-202.000.

Haddad, Jack C., to Haddad Apparel Group, Ltd., The. Adjustment strap for jacket hood. 5,615,416, Cl. 2-202.000.

Haddad, Sameer S.; and Fang, Hao, to Advanced Micro Devices, Inc. Flash EEPROM memory with improved discharge speed using substrate bias and method therefor. 5,617,357, Cl. 365-185.270.

Haddadi, Ahmed: *See*—
Ducarouge, Christian; Grisel, Richard; Giraud, Nicholas; Sottocasa, Helene; Chansavoir, Alain; and Haddadi, Ahmed, 5,617,155, Cl. 351-204.000.

Häfele, Peter; and Poganitsch, Ernst, to U.S. Philips Corporation. Dental-jet device and mouthpiece for a dental-jet device. 5,616,028, Cl. 433-80.000.

Haga, Keiichiro: *See*—
Kawakita, Takeshi; Sano, Mitsuharu; Yutoku, Yuko; Ikeda, Yoshifumi; and Haga, Keiichiro, 5,616,581, Cl. 514-234.500.

Hagel, Pia; Noren, Kjell; and Hoegnelid, Kurt, to Pacesetter AB. Medical device for detecting hemodynamic conditions of a heart. 5,615,684, Cl. 128-670.000.

Hagen, Donald F.: *See*—
Fritz, James S.; Hagen, Donald F.; and Markell, Craig G., 5,616,407, Cl. 442-118.000.

Hagen, Floyd W., to Rosemount Aerospace Inc. Three pressure pseudo -Δ-P sensor for use with three pressure air data probe. 5,616,861, Cl. 73-180.000.

Hagenmeyer, Heinrich; and Wenger, Alfred, to Endress & Hauser Flowtec AG. Coriolis-type mass flow sensor with a single measuring tube. 5,616,868, Cl. 73-861.357.

Haghiri, Yahya: *See*—
Böttge, Horst; Gauch, Wolfgang; Hoppe, Joachim; and Haghiri, Yahya, 5,615,476, Cl. 29-832.000.

Hagiwara, Makoto, to Viscodrive Japan Ltd. Differential gear unit. 5,616,096, Cl. 475-249.000.

Hagiwara, Seiji: *See*—
Tsunekawa, Koichi; and Hagiwara, Seiji, 5,617,105, Cl. 343-702.000.

Hague, Clifford W.; and Koenig, Paul A., to IVAC Medical Systems, Inc. Infusion system with air-in-line clear function. 5,616,124, Cl. 604-65.000.

Hahn, Klaus: *See*—
Witt, Michael; Scherzer, Dietrich; Hahn, Klaus; and Naegele, Dieter, 5,616,624, Cl. 521-56.000.

Hähner, Uwe: *See*—
Avar, Lajos; Staniek, Peter; Stoll, Klaus; Habicher, Wolf D.; and Hähner, Uwe, 5,616,636, Cl. 524-102.000.

Haight, Anthony R.: *See*—
Stuk, Timothy L.; Haight, Anthony R.; Kerdesky, Francis A. J.; Leanna, M. Robert; Morton, Howard E.; Robbins, Timothy A.; Scarpetti, David; and Tien, Jien-Heh J., 5,616,776, Cl. 560-27.000.

Haimerl, Stefan: *See*—
Fischer, Armin; Haimerl, Stefan; and Glehr, Manfred, 5,616,966, Cl. 307-10.500.

Hait, John N., to Rocky Mountain Research Center. Frequency-multiplexed logic, amplification and energy beam control. 5,617,249, Cl. 359-577.000.

Halasa, Adel F.: *See*—
Hsu, Wen-Liang; Halasa, Adel F.; Matrana, Barry A.; Christian, Scott M.; Austin, Laurie E.; and Gross, Bill B., 5,616,653, Cl. 525-332.500.

Hale, John M.: *See*—
Pellaux, Jean-Paul; Hale, John M.; and Bals, Ion, 5,616,826, Cl. 73-24.020.

Haley, John C.: *See*—
Curry, Mark H.; Zimmerman, Donald M.; and Haley, John C., 5,616,073, Cl. 452-123.000.

Halfter, Georg. Method for processing animal excrement and liquid manure. 5,616,163, Cl. 71-15.000.

Hall, Corrina: *See*—
Thoman, Jeffrey A.; Swanson, David W.; Hamlin, Mindy A.; Beeson, Robert R.; Hall, Corrina; Salter, James G.; and Rhoads, W. Wistar, 5,617,128, Cl. 347-87.000.

Hall, John C.: *See*—
Lenhart, Stephen J.; Hall, John C.; and Applewhite, Anthony Z., 5,617,006, Cl. 320-21.000.

Hall, Michael L.: *See*—
Kirkham, Thomas R.; Laconte, Kirsten N.; Hall, Michael L.; Snyder, Jonathan E.; Wallace, Edward S.; Phillips, William H., Jr.; and Petersen, Robert L., Jr., 5,615,678, Cl. 128-660.010.

Hall, Robert T., II; and Onstad, Bradley K., to Minntech Corporation. Room Temperature sterilant. 5,616,616, Cl. 514-557.000.

Hallden-Abberton, Michael; McLeod, Donald, Jr.; Ritscher, James S.; and Turner, Scot M., to Rohm and Haas Company. Cured composite and process therefor. 5,616,638, Cl. 524-178.000.

Hallden-Abberton, Michael: *See*—
Turner, Scot M.; Ritscher, James S.; Hallden-Abberton, Michael; and McLeod, Donald, Jr., 5,616,753, Cl. 556-401.000.

Hamada, Yuichi: *See*—
Kubota, Yoshihiro; Kawakami, Satoshi; Hamada, Yuichi; Shirasaki, Toru; Nagata, Yoshihiko; and Kashida, Meguru, 5,616,927, Cl. 250-492.200.

Hamajima, Tetsuo: *See*—
Tsukamoto, Kazumasa; Ando, Masahiko; Fukatsu, Akira; Mae, Toshiyuki; Sakai, Motoyuki; Hamajima, Tetsuo; Kaigawa, Masato; Fukumura, Kagenori; Oba, Hidehiro; Hojo, Yasuo; Tabata, Atsushi; and Takahashi, Nobuaki, 5,616,094, Cl. 475-128.000.

Hamam, Habib: *See*—
De Bougrenet De La Tocnaye, Jean-Louis; Hamam, Habib; and Moignard, Renaud, 5,617,227, Cl. 349-57.000.

Hamamatsu Photonics K.K.: *See*—
Kobayashi, Yuji; Yoshida, Narihiro; Mukohzaka, Naohisa; Toyoda, Haruyoshi; and Hara, Tsutomu, 5,617,203, Cl. 356-237.000.
Ohmura, Takayuki; Okada, Tomoyuki; Kyushima, Hiroyuki; and Oohashi, Yousuke, 5,616,987, Cl. 313-533.000.
Takemori, Tamiki, 5,617,232, Cl. 359-108.000.

Hamanaka, Akiyoshi: *See*—
Shimokoriyama, Makoto; Matsui, Izumi; Hamanaka, Akiyoshi; and Yamamoto, Yukinori, 5,617,143, Cl. 348-407.000.

Hamanaka, Naoki: *See*—
Ogata, Yasuhiro; Takeuchi, Shigeo; Toba, Taturu; Sbutoh, Shinichi; and Hamanaka, Naoki, 5,617,545, Cl. 395-296.000.

Hamilton, Brian K.; and Baglini, James L., to OEA, Inc. Hybrid inflator and related propellants. 5,616,883, Cl. 102-288.000.

Hamilton, Diana S.: *See*—
Creighton, Donald J.; and Hamilton, Diana S., 5,616,563, Cl. 514-18.000.

Hamilton, Douglas G.: *See*—
Basch, Jeffrey D.; Gallucci, Robert R.; and Hamilton, Douglas G., 5,616,641, Cl. 524-417.000.

Hamilton, James D.: *See*—
O'Donnell, Matthew; and Hamilton, James D., 5,615,675, Cl. 128-653.100.

Hamilton, Jeffrey S., to General Instrument Corporation of Delaware. Method and apparatus for changing the compression level of a compressed digital signal. 5,617,142, Cl. 348-405.000.

Hamilton, Roger D.: *See*—
Melville, James A.; and Hamilton, Roger D., 5,617,296, Cl. 361-736.000.

Hamilton, Wayne M.; and Slosberg, David K., to Interface, Inc. I-bond method for making fusion-bonded carpet. 5,616,200, Cl. 156-72.000.

Hamilton, Wayne M.; and Slosberg, David K., to Interface, Inc. Fusion-bonded carpet system. 5,616,210, Cl. 156-435.000.

Hamilton, William J., Jr.: *See*—
Rhiger, David R.; Sen, Sanghamitra; and Hamilton, William J., Jr., 5,616,925, Cl. 250-370.130.

Hamlin, Mindy A.: *See*—
Thoman, Jeffrey A.; Swanson, David W.; Hamlin, Mindy A.; Beeson, Robert R.; Hall, Corrina; Salter, James G.; and Rhoads, W. Wistar, 5,617,128, Cl. 347-87.000.

Hamma, John: *See*—
Nobile, John; and Hamma, John, 5,615,995, Cl. 414-798.200.

Hammarberg, Eva M.: *See*—
Evenden, John L.; Hammarberg, Eva M.; Hansson, Hans S.; Hellberg, Sven E.; Johansson, Lars G.; Lundkvist, Johan R. M.; Ross, Svante B.; Sohn, Daniel D.; and Thorberg, Seth O., 5,616,610, Cl. 514-456.000.

Hammer, Kathleen M.; and Kaminski, David P., to Ford Motor Company. Method and system for limiting generator field voltage in the event of regulator failure in an automotive vehicle. 5,617,011, Cl. 322-28.000.

Hammond, Gerald S.: *See*—
Reichert, Paul; Hammond, Gerald S.; Le, Hung V.; Nagabhushan, Tattanahalli L.; and Trotta, Paul P., 5,616,555, Cl. 514-8.000.

Hampshire Chemical Corp.: *See*—
O'Neill, Gerald J.; and Levesque, Albert H., 5,616,772, Cl. 558-304.000.

Han, Gwang M.; and Moon, Dae Y., to Hyundai Electronics Industries Co., Ltd. Output buffer with reference voltage circuit for increasing speed. 5,617,043, Cl. 326-83.000.

Hanasaki, Koichi: *See*—
Ohta, Kazushige; Hanasaki, Koichi; and Konishi, Satoru, 5,617,251, Cl. 359-599.000.

Handa, Koji; Kubo, Keishi; Doi, Masateru; and Yoshizumi, Keiichi, to Matsushita Electric Industrial Co., Ltd. Configuration measuring method and apparatus for optically detecting a displacement of a probe due to an atomic force. 5,616,916, Cl. 250-234.000.

Hannon, David M.: *See*—
Abboud, Samir E.; Apuzzo, Nickolas C.; Brown, Jeffrey B.; Cunningham, Earl A.; Hannon, David M.; Mallette, Raymond P.; Tyler, Paul S.; Voss, Steven H.; and Wallash, Albert J., 5,617,289, Cl. 361-151.000.

Hans Oetiker AG Maschinen- und Apparate-fabrik: *See*—
Oetiker, Hans, 5,615,456, Cl. 24-20.00R.

Hansen, David D., to Morton International, Inc. Inflator socket pin collar for integrated circuit initaitor with integral metal oxide varistor for electrostatic discharge protections. 5,616,881, Cl. 102-202.400.

Hansenne, Isabelle: *See*—
Allard, Delphine; Ascione, Jean-Marc; and Hansenne, Isabelle, 5,616,331, Cl. 424-401.000.

Hansson, Hans S.: *See*—
Evenden, John L.; Hammarberg, Eva M.; Hansson, Hans S.; Hellberg, Sven E.; Johansson, Lars G.; Lundkvist, Johan R. M.; Ross, Svante B.; Sohn, Daniel D.; and Thorberg, Seth O., 5,616,610, Cl. 514-456.000.

Hansson, Stig L.: *See*—
Bjursell, Karl G.; Carlsson, Peter N. I.; Enerbäck, Curt S. M.; Hansson, Stig L.; Lidberg, Ulf F. P.; Nilsson, Jeanette A.; and Törnell, Jan B. F., 5,616,483, Cl. 435-198.000.

Hanzawa, Keizi: *See*—
Suzuki, Masayoshi; Sasayama, Takao; Hanzawa, Keizi; Ichikawa, Norio; Horie, Junichi; Sugisawa, Yukiko; and Ogasawara, Yuuji, 5,616,844, Cl. 73-514.320.

Hao, Zhimin: *See*—
Zambounis, John S.; Hao, Zhimin; and Iqbal, Abul, 5,616,725, Cl. 548-453.000.

Hara, Kohzo, to Fuji Xerox Co., Ltd. Ink tank with an ink level detector having a viewing window. 5,616,929, Cl. 250-573.000.

Hara, Tsukushi; Ohkuma, Takeshi; Yamamoto, Takahiko; Ito, Daisuke; Tsurunaga, Kazuyuki; and Tada, Takamitsu, to Tokyo Electric Power Company, Incorporated, The; and Kabushiki Kaisha Toshiba. Superconducting fault current limiter. 5,617,280, Cl. 361-19.000.

Hara, Tsutomu: *See*—
Kobayashi, Yuji; Yoshida, Narihiro; Mukohzaka, Naohisa; Toyoda, Haruyoshi; and Hara, Tsutomu, 5,617,203, Cl. 356-237.000.

Harada, Hiroyuki: *See*—
Mimura, Masahiro; Hasegawa, Makoto; Yokozaki, Katsushi; Harada, Hiroyuki; Kishigami, Takaaki; and Tanaka, Yasunari, 5,617,451, Cl. 375-340.000.

Harada, Kazuaki: *See*—
Tsuchiya, Masakazu; and Harada, Kazuaki, 5,616,557, Cl. 514-11.000.

Harada, Koichi; Takahashi, Kuniyuki; and Takahashi, Iwao, to Kabushiki Kaisha Shinkawa. Wire bonding method and apparatus. 5,616,257, Cl. 219-56.210.

Harada, Shingo: *See*—
Nakao, Norihiko; Tukahara, Yutaka; Ikeda, Naoki; Takehara, Shin; Seni, Hirofumi; Harada, Shingo; and Santo, Chiaki, 5,617,315, Cl. 364-424.045.

Haraga, Hideaki: *See*—
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Harder, Wolfgang: *See*—
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Hardesty, Doug; and LaFollette, William A., Jr., to Rubbermaid Commercial Products Inc. Portable cleaning container having foot activated drain. 5,615,447, Cl. 15-264.000.

Hardy, Frederick E.; Willey, Alan D.; and Scialla, Stefano, to Procter & Gamble Company, The. Acylated citrate esters as peracid precursors. 5,616,281, Cl. 252-186.380.

Hardy, Patrick: *See*—
Hergault, Stéphane; and Hardy, Patrick, 5,617,240, Cl. 359-194.000.

Harichian, Bijan; and Coope, Janet L., to Lever Brothers Company, Division of Conopco, Inc. Amido peroxycarboxylic acid enhanced bleaching through combination with a fatty amide substituted sugar. 5,616,282, Cl. 252-186.420.

Harjula, Arjo: *See*—
Eronen, Harri; and Harjula, Arjo, 5,615,630, Cl. 114-251.000.

Härle, Vinzenz: *See*—
Walz, Heinz; and Härle, Vinzenz, 5,616,072, Cl. 451-356.000.

Harley-Davidson Motor Company: *See*—
Coughlin, Jeffrey P., 5,615,642, Cl. 123-54.400.

Harnack, Bernhard: *See*—
Richter, Robin; Martin, Hans-Peter; Roewer, Gerhard; Mueller, Eberhard; Kraemer, Hans; Sartori, Peter; Oelschlaeger, Andreas; Habel, Wolfgang; and Harnack, Bernhard, 5,616,308, Cl. 423-345.000.

Harper, Timothy P.: *See*—
Brown, Ronald E.; Reed, Larry E.; Greenwood, Gil J.; Harper, Timothy P.; and Scharre, Mark D., 5,616,236, Cl. 208-48.00R.

Harper-Wyman Company: *See*—
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Harrell, Nancy G.: *See*—
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Harrington, Philip M.: *See*—

Crews, Alvin D., Jr.; Harrington, Philip M.; Karp, Gary M.; Manfredi, Mark C.; and Guaciaro, Michael A., 5,616,706, Cl. 544-221.000.
Harris Corporation: *See—*
Ma, Fan Y.; and Kornblum, John J., 5,617,090, Cl. 341-141.000.
Walance, Robert B., 5,617,466, Cl. 379-28.000.
Wietecha, Stanley F.; and Olmstead, John A., 5,617,473, Cl. 379-399.000.
Young, William R.; and Chester, David B., 5,617,344, Cl. 364-724.100.
Harris, Kevin M., to Acushnet Company; and Du Pont de Nemours, E. I., and Company. Golf ball cover composition containing oxa acids. 5,616,640, Cl. 473-378.000.
Harris, William I.; and Sammler, Robert L., to Dow Chemical Company, The. Crosslinked seeded copolymer beads and process of manufacture. 5,616,622, Cl. 521-33.000.
Harrison, Frank. Apparatus for replacing a battery in a battery powered device. 5,617,079, Cl. 340-693.000.
Harrison, James J.; and Ruhe, William R., Jr., to Chevron Chemical Company. Polymeric dispersants having polyalkylene and succinic groups. 5,616,668, Cl. 526-271.000.
Hartman, Frederick A.; Hubesch, Bruno A. J.; Pluyter, Johan G. L.; and Venegas, Manuel G., to Procter & Gamble Company, The. Fabric conditioning compositions. 5,616,553, Cl. 510-522.000.
Hartman, Matthew A.: *See—*
Kushner, William M.; Srenger, Edward; and Hartman, Matthew A., 5,617,509, Cl. 395-2.650.
Hartmann, Eduard, to Bucher-Guyer AG Maschinenfabrik. Process and apparatus for separating solid and liquid portions of crushed fruits. 5,616,357, Cl. 426-478.000.
Hartwell, James A.: *See—*
Solberg, Mark A.; and Hartwell, James A., 5,616,884, Cl. 102-351.000.
Hartwig, Gert, to Alteen Distributors, Ltd. Mixer. 5,615,839, Cl. 241-260.100.
Hartwig, Karl T.: *See—*
Takahashi, Akihiko; Yasuda, Hitoshi; Hartwig, Karl T.; McDonald, Lacy C.; and Zou, Hong, 5,616,191, Cl. 148-690.000.
Harwood, H. James: *See—*
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Harz, Peter: *See—*
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Hasegawa, Fumi: *See—*
Hashima, Masayoshi; Hasegawa, Fumi; Okabayashi, Keijū; Watanabe, Ichiro; Kanda, Shinji; Sawasaki, Naoyuki; and Murase, Yuichi, 5,617,335, Cl. 364-516.000.
Hasegawa, Junzo: *See—*
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Hasegawa, Kazuo; and Ouchi, Junichi, to Alps Electric Co., Ltd. Optical reading apparatus. 5,616,907, Cl. 235-462.000.
Hasegawa, Makoto: *See—*
Mimura, Masahiro; Hasegawa, Makoto; Yokozaki, Katsushi; Harada, Hiroyuki; Kishigami, Takaaki; and Tanaka, Yasunari, 5,617,451, Cl. 375-340.000.
Hasegawa, Shigeo: *See—*
Ishihara, Makiichi; Sunada, Takakazu; Hasegawa, Shigeo; Ukawa, Naohiko; Takashina, Toru; Kita, Yukio; Iwashita, Kouichiro; Yamashita, Kousuke; Ozaki, Junji; and Kaneshige, Kaname, 5,616,290, Cl. 261-115.000.
Hashima, Masayoshi; Hasegawa, Fumi; Okabayashi, Keijū; Watanabe, Ichiro; Kanda, Shinji; Sawasaki, Naoyuki; and Murase, Yuichi, to Fujitsu Limited. System for and method of recognizating and tracking target mark. 5,617,335, Cl. 364-516.000.
Hashimoto, Akira. Combustion air quality improving device for internal combustion engine or general combustion equipment. 5,615,658, Cl. 123-539.000.
Hashimoto, Kaoru: *See—*
Ochiai, Masayuki; Hashimoto, Kaoru; Kawahara, Toshimi; and Ōsumi, Mayumi, 5,616,164, Cl. 75-342.000.
Hashimoto, Ken: *See—*
Matsuda, Tsukasa; Hosoi, Kiyoshi; and Hashimoto, Ken, 5,616,409, Cl. 428-323.000.
Hashimoto, Mitsuru: *See—*
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Hashimoto, Shigeko: *See—*
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Hashimoto, Susumu: *See—*
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Hassan, Amer A.: *See—*
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Hatakeyama, Atsushi, to Fujitsu Limited. Semiconductor memory device. 5,617,364, Cl. 365-200.000.
Hatakeyama, Yoshiharu; Teshima, Kenzo; and Ishikawa, Tatsuo, to Yoshida Kogyo Co., Ltd. Tube container. 5,615,803, Cl. 222-94.000.
Hatano, Ako; and Ohba, Yasuo, to Kabushiki Kaisha Toshiba. Semiconductor laser and method for manufacturing the same. 5,617,438, Cl. 372-45.000.
Hattori, Hitoshi; Futamura, Motonori; Saito, Kazuo; and Ozu, Masao, to Kabushiki Kaisha Toshiba. Rolling piston type expansion machine. 5,616,019, Cl. 418-66.000.
Hattori, Mitsuo; Furuta, Hitoshi; Takahashi, Taro; and Maeda, Hirokazu, to Fuji Oil Co., Ltd. Method of using a hemicellulose printing assistant for lithographic printing plates. 5,615,613, Cl. 101-450.100.
Haugland, Richard P.; Singer, Victoria L.; Jones, Laurie J.; and Steinberg, Thomas H., to Molecular Probes, Inc. Non-specific protein staining using merocyanine dyes. 5,616,502, Cl. 436-86.000.
Haulin, Tord L.; Segerbäck, Pér M.; and Mäder, Heinz, to Telefonaktiebolaget LM Ericsson. Bit synchronizer. 5,617,452, Cl. 375-354.000.
Haus, Hermann A.: *See—*
Tamura, Kohichi R.; Ippen, Erich P.; Haus, Hermann A.; Nelson, Lynn E.; and Doerr, Christopher R., 5,617,434, Cl. 372-6.000.
Hauschka, Peter V.; and Gallop, Paul M., to Children's Medical Center Corporation, The. Controlling bone resorption with pyrroloquinoline quinone (PQQ) and related compounds. 5,616,576, Cl. 514-81.000.
Hauser, Ray M.; and Johnson, Alan W., to Hydro-Gear Limited Partnership. Transaxle having hydrostatic transmission with expansion chamber. 5,616,092, Cl. 425-83.000.
Hauser, Stephen A.: *See—*
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Hayasaki, Koichi: *See—*
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Hayashi, Hiroko: *See—*
Kanaya, Miharu; Owatari, Akio; Takatsuna, Junko; Yatake, Masahiro; Hayashi, Hiroko; Ono, Takashi; Sawatari, Yoshihiro; and Yagyu, Tatsuya, 5,616,174, Cl. 106-22.00K.
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Kleinhen, Stephen R., 5,615,871, Cl. 270-45.000.
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Greive, Martin; and Ruf, Bernd, 5,615,875, Cl. 271-147.000.
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Hlavaty, David G.: *See—*
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Arndt, Otto, 5,616,779, Cl. 560-48.000.
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Herrmann, Wolfgang A.; Correia, Joao D. G.; Fischer, Richard; Adam, Waldemar; Lin, Jianhua; Saha-Möller, Chantu R.; and Shimizu, Masao, 5,616,734, Cl. 549-406.000.
Pfeil, Armin; Hoenel, Michael; and Neumann, Uwe, 5,616,634, Cl. 523-404.000.
Planker, Siegfried; and Papenfuhs, Theodor, 5,616,799. Cl. 564-202.000.
Rohrmann, Jürgen; and Küber, Frank, 5,616,747, Cl. 556-11.000.

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Foster, James A.; Mueller, Werner H.; and Ryan, Debra A., 5,616,807, Cl. 564-423.000.
Linstid, H. Clay, III, 5,616,680, Cl. 528-183.000.
Thigpen, Hubert H., 5,616,736, Cl. 549-430.000.
Unruh, Jerry D.; Segmuller, Brigitte E.; Chapa, Gabriel R.; and Pryor, Kent E., 5,616,785, Cl. 562-25.000.

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Hoekstra, Paul W., to Thiokol Corporation. Propellant grain machining device and method. 5,615,983, Cl. 409-132.000.

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Hogan, Christopher M. Storage rack for an automotive anti-theft device. 5,615,815, Cl. 224-571.000.

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Kruse, Hans-Friedrich; Beaujean, Hans-Josef; Holderbaum, Thomas; and Jacobs, Jochen, 5,616,550, Cl. 510-444.000.

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Hollister, William H., to Smiths Industries Medical Systems, Inc. Safety needle cartridge system. 5,615,771, Cl. 206-368.000.

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Hon, Hsiao-Wuen: *See—*
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Honami, Reijiro: *See—*
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Honda Giken Kogyo K.K.: *See—*
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Furukawa, Hideo; and Ohashi, Tatsuyuki, 5,615,578, Cl. 74-336.00R.
Koyanagi, Takurou; Andou, Hiroyuki; and Nagai, Takaaki, 5,617,098, Cl. 342-70.000.
Ogawa, Ken; and Ehara, Yasunori, 5,615,550, Cl. 60-276.000.
Shimasaki, Yuichi; Komatsuda, Takashi; and Kato, Hiroaki, 5,615,552, Cl. 60-277.000.

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Ignagni, Mario B., 5,617,317, Cl. 364-449.900.
Peltier, Richard R., 5,617,522, Cl. 395-133.000.
Porter, Richard B., 5,615,829, Cl. 236-68.00B.

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Hook, Richard R., to Donnelly Corporation. Mirror support bracket. 5,615,857, Cl. 248-549.000.

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Horie, Junichi: *See—*
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Horiguchi, Akihiro; Monma, Jun; Kimura, Kazuo; Oh-Ishi, Katsuyoshi; Ueno, Fumio; Kasori, Mitsuo; and Sumino, Hiroyasu, to Kabushiki Kaisha Toshiba. Circuit substrate including insulating layer of aluminum nitride and electrically conductive layer of conductive component, aluminum nitride and other components, and semiconductor device containing same. 5,616,956, Cl. 257-703.000.

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Hosotani, Nobuhiko, to Hitachi, Ltd. Shadow-mask color cathode ray tube. 5,616,985, Cl. 313-403.000.
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Houde-Walter, William R., to LaserMax Inc. Laser gun and cartridge. 5,617,444, Cl. 372-77.000.
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Houshmand, Mory; Kruger, Kimberly A.; Alves, Gerald W.; Ostaszewski, Ricardo; and Belhateche, Noureddine, to Williams Field Services Company. LNG production in cryogenic natural gas processing plants. 5,615,561, Cl. 62-611.000.
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Nguyen, Hoang P.; and Walker, John D., 5,616,943, Cl. 257-355.000.
Prater, James S., 5,617,102, Cl. 342-374.000.
Hyundai Electronics Industries Co., Ltd.: *See*—
Cha, Byoung K.; and Ha, Chang W., 5,617,354, Cl. 365-185.210.
Han, Gwang M.; and Moon, Dae Y., 5,617,043, Cl. 326-83.000.
Hwang, Joon, 5,616,438, Cl. 430-5.000.
Kim, Hyo J., 5,616,988, Cl. 315-1.000.
Song, Bok N., 5,616,942, Cl. 257-316.000.
Hyundai Motor Company: *See*—
Bae, Jongsik, 5,615,491, Cl. 34-61.000.
Lee, Sangkyu, 5,615,728, Cl. 164-340.000.
Hyundai Pharm. Ind. Co., Ltd.: *See*—
Samukov, Vladimir V.; Sabirov, Aydar N.; and Pozdnyakov, Pavel I., 5,616,788, Cl. 562-430.000.
Iams Company, The: *See*—
Reinhart, Gregory A., 5,616,569, Cl. 514-54.000.
Iannacone, Carmen: *See*—
Briggs, Robert; Iannacone, Carmen; Rothey, James; and Evans, David, 5,617,119, Cl. 345-611.000.
Ibaraki, Susumu; Katta, Noboru; Nakamura, Seiji; and Murakami, Hiroki, to Matsushita Electric Industrial Co., Ltd. Audio scrambling system for scrambling and descrambling audio signals. 5,617,476, Cl. 380-49.000.
Ibiden Co., Inc.: *See*—
Demura, Akihiro, 5,616,256, Cl. 216-18.000.
Ibrahim, Nader I.: *See*—
Gallopo, Andrew R.; Ibrahim, Nader I.; and Mazzanobile, Salvatore, 5,616,314, Cl. 424-49.000.
IC Sensors, Inc.: *See*—
Koen, Edward F., 5,616,863, Cl. 73-493.000.
Ichige, Kenji: *See*—
Iura, Noriyuki; Kudo, Yoshimichi; Ichige, Kenji; Yamamoto, Naoki; and Imaide, Takuya, 5,617,312, Cl. 364-188.000.
Ichikawa, Hideaki: *See*—
Kato, Koji; Ando, Hiroyuki; Sugita, Yukihiko; Ichikawa, Hideaki; Inoue, Akira; and Miyazaki, Satoshi, 5,617,162, Cl. 396-318.000.
Ichikawa, Hiroyuki; Ikeda, Yoshinori; Katoh, Koichi; Kurita, Mitsuru; Suzuki, Yasumichi; and Kitamura, Toshiyuki, to Canon Kabushiki Kaisha. Imae processing apparatus having mosaic processing feature that decreases image resolution without changing image size or the number of pixels. 5,617,224, Cl. 358-530.000.
Ichikawa, Kaori, to Olympus Optical Co., Ltd. System for handling platform independent optical card by separating during a read and recombining during a write generic directory information and OS dependent directory information. 5,617,560, Cl. 395-500.000.
Ichikawa, Norio: *See*—
Suzuki, Masayoshi; Sasayama, Takao; Hanzawa, Keizi; Ichikawa, Norio; Horie, Junichi; Sugisawa, Yukiko; and Ogasawara, Yuuji, 5,616,844, Cl. 73-514.320.
Idaho Research Foundation, Inc.: *See*—
Crawford, Donald L.; Stevens, Todd O.; and Crawford, Ronald L., 5,616,162, Cl. 71-9.000.
Idemitsu Kosan Co., Ltd.: *See*—
Egawa, Tatsuya; Kawaguchi, Yasuhiro; Mogami, Kenji; and Shimizu, Nobuaki, 5,616,812, Cl. 568-598.000.
Igarashi, Seiki: *See*—
Yamada, Toshifusa; Soyano, Shin; Arai, Etsuo; Watanabe, Manabu; and Igarashi, Seiki, 5,616,955, Cl. 257-690.000.
Igarashi, Takashi; and Sato, Shuichi, to Hoya Corporation; and Hoya Information System Corporation. Apparatus for measuring the shape of a frame of spectacles. 5,615,486, Cl. 33-200.000.
Ignagni, Mario B., to Honeywell Inc. True north heading estimator utilizing GPS output information and inertial sensor system output information. 5,617,317, Cl. 364-449.900.
Ihara Chemical Industry Co. Ltd.: *See*—
Ikeda, Atsuhiko; Ozaki, Masami; Honami, Reijiro; Yumita, Takashi; Yano, Hiroyuki; Nakano, Yuki; Kurihara, Yutaka; and Hirano, Tadayoshi, 5,616,594, Cl. 514-340.000.
Yokota, Sumio; Matsuzawa, Masafumi; Ohba, Nobuyuki; Nagata, Toshihiro; Tachikawa, Shigehiko; Miyazawa, Takeshige; and Yanagisawa, Katsutada, 5,616,537, Cl. 504-242.000.
Iida, Osamu: *See*—
Fujita, Masao; and Iida, Osamu, 5,616,166, Cl. 75-387.000.
Iida, Yoshiaki: *See*—
Nomoto, Takashi; Hayashi, Masahiro; Shibata, Jun; Iwasawa, Yoshikazu; Mitsuya, Morihiro; Iida, Yoshiaki; Nonoshita, Katsumasa; and Nagata, Yasufumi, 5,616,803, Cl. 564-337.000.
Iijima, Katsumi; and Taniwa, Shigeyuki, to Canon Kabushiki Kaisha. Optical information recording medium having separate information and reference information portions and method using the same. 5,617,390, Cl. 369-48.000.
Iijima, Yasuteru: *See*—
Kaneko, Masakatsu; Murofushi, Yoshinobu; Kimura, Misako; Yamazaki, Mitsuo; and Iijima, Yasuteru, 5,616,600, Cl. 514-397.000.
Iino, Takashi: *See*—
Oishi, Konosuke; Okumoto, Toyoharu; Tsukada, Masamichi; and Iino, Takashi, 5,616,918, Cl. 250-288.000.
Iizuka, Genichi, to Sony Corporation. Optical pickup. 5,617,403, Cl. 369-244.000.
Iizuka, Hirokazu; Ohmura, Masashi; Kondo, Masataka; Kobayashi, Hideki; Mizuno, Hiroyuki; Yamazaki, Takaya; and Shibata, Kazuo, to Kabushiki Kaisha Toshiba. Rotary compressor having a cylinder portion formed of a valve sheet. 5,616,017, Cl. 418-63.000.
Ikawa, Hiroshi; Matsumoto, Hajime; Matsumoto, Masakatsu; Sekine, Yasuo; Nishimura, Masato; and Hosoda, Akihiko, to Fujirebio Inc. Methods of producing aminobutene derivatives. 5,616,711, Cl. 546-141.000.
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Ikeda, Junji: *See*—
Shionoya, Takashi; and Ikeda, Junji, 5,617,500, Cl. 385-132.000.
Ikeda, Naoki: *See*—
Nakao, Norihiko; Tukahara, Yutaka; Ikeda, Naoki; Takehara, Shin; Seni, Hirofumi; Harada, Shingo; and Santo, Chiaki, 5,617,315, Cl. 364-424.045.
Ikeda, Yoshifumi: *See*—
Kawakita, Takeshi; Sano, Mitsuharu; Yutoku, Yuko; Ikeda, Yoshifumi; and Haga, Keiichiro, 5,616,581, Cl. 514-234.500.
Ikeda, Yoshinori: *See*—
Ichikawa, Hiroyuki; Ikeda, Yoshinori; Katoh, Koichi; Kurita, Mitsuru; Suzuki, Yasumichi; and Kitamura, Toshiyuki, 5,617,224, Cl. 358-530.000.
Ikegami, Hidetsugu, to Research Development Corporation of Japan. Method and apparatus for generating gamma-ray laser. 5,617,443, Cl. 372-74.000.
Ikegami, Mitsuru: *See*—
Kimura, Koichi; Ogura, Toshihiko; Aotsu, Hiroaki; Ikegami, Mitsuru; Kuwabara, Tadashi; Enomoto, Hiromichi; and Kyoda, Tadashi, 5,617,360, Cl. 365-189.010.
Ikegaya, Kazuo: *See*—
Takahashi, Tuyoshi; Ikegaya, Kazuo; Mochizuki, Shinobu; and Nishimaki, Hideo, 5,616,691, Cl. 530-364.000.
Ikeguchi, Yoshito: *See*—
Matsuda, Yoshio; Kato, Hidenobu; and Ikeguchi, Yoshito, 5,615,563, Cl. 66-193.000.
Ikekawa, Nobuo: *See*—
Ikekawa, Tetsuro; and Ikekawa, Nobuo, 5,616,609, Cl. 514-450.000.
Ikekawa, Tetsuro; and Ikekawa, Nobuo. Carcinostatic compound and production thereof. 5,616,609, Cl. 514-450.000.
Ikemoto, Isao: *See*—
Yashiro, Masahiko; Sasaki, Shinichi; Ikemoto, Isao; Miura, Koji; Karakama, Toshiyuki; and Numagami, Atsushi, 5,617,579, Cl. 399-114.000.
Illinois Superconductor Corporation: *See*—
Lithgow, Robert D.; and Peters, James M., 5,616,540, Cl. 505-210.000.
Illinois Tool Works Inc.: *See*—
Heidorn, Richard H.; and Masghati, Mohammad, 5,615,852, Cl. 248-74.500.
Kobetsky, Robert G., 5,616,082, Cl. 470-49.000.
Im, Jun: *See*—

Ovshinsky, Stanford R.; Fetcenko, Michael A.; Reichman, Benjamin; Young, Kwo; Chao, Benjamin; and Im, Jun, 5,616,432, Cl. 429-59.000.
Imafuji, Kazuharu; and Terui, Nobuhiko, to Nikon Corporation. Camera having function of correcting shake. 5,617,177, Cl. 396-53.000.
Imai, Kenji: *See—*
Yamada, Masatoshi; Kondo, Yasuhiro; Imai, Kenji; Kojima, Masahiro; and Nagashima, Nobuyuki, 5,616,000, Cl. 415-191.000.
Imai, Yasuto: *See—*
Aizawa, Yuichi; and Imai, Yasuto, 5,616,088, Cl. 473-341.000.
Imaide, Takuya: *See—*
Iura, Noriyuki; Kudo, Yoshimichi; Ichige, Kenji; Yamamoto, Naoki; and Imaide, Takuya, 5,617,312, Cl. 364-188.000.
Nishimura, Ryuji; and Imaide, Takuya, 5,617,141, Cl. 348-366.000.
Imamura, Shoji; and Ebato, Hiroshi, to Dainippon Ink and Chemicals, Inc. Process for the preparation of high molecular lactic copolymer polyester. 5,616,657, Cl. 525-437.000.
Imanaka, Takeshi: *See—*
Kataoka, Mitsuteru; Imanaka, Takeshi; Tanaka, Atsushi; and Yamamoto, Sozo, 5,617,117, Cl. 345-157.000.
Imanishi, Daisuke: *See—*
Toda, Atsushi; and Imanishi, Daisuke, 5,616,178, Cl. 117-104.000.
Imao, Kaoru: *See—*
Ohuchi, Satoshi; and Imao, Kaoru, 5,617,485, Cl. 382-176.000.
Imaoka, Takashi: *See—*
Aoki, Hidemitsu; Yamanaka, Koji; Imaoka, Takashi; Futatsuki, Takashi; and Yamashita, Yukinari, 5,616,221, Cl. 204-252.000.
Imation Corp.: *See—*
Hopstock, David M.; Roden, John S.; Dierssen, Gunther H.; and Sapieszko, Ronald S., 5,616,414, Cl. 428-402.000.
Murphy, Martin D., 5,616,455, Cl. 430-569.000.
Imazu, Yoshifumi; and Wada, Takahiro, to Anritsu Corporation. Waveform display apparatus for easily realizing high-definition waveform observation. 5,617,523, Cl. 395-140.000.
Immunex Corporation: *See—*
Price, Virginia L., 5,616,477, Cl. 435-69.500.
IMP, Inc.: *See—*
Klein, Hans W., 5,617,093, Cl. 341-172.000.
Imperial College of Science, Technology and Medicine: *See—*
Reed, Michael J.; and Potter, Barry V. L., 5,616,574, Cl. 514-178.000.
Impink, Albert J., Jr.: *See—*
Easter, James R.; and Impink, Albert J., Jr., 5,617,311, Cl. 364-185.000.
Imura, Yoshio: *See—*
Amanuma, Tatsuo; Ohishi, Sueyuki; Imura, Yoshio; and Nakamura, Toshiyuki, 5,617,166, Cl. 396-55.000.
Imuta, Junichi; Fukuoka, Daisuke; Yoshida, Masayasu; Saito, Junji; Fujita, Terunori; Tashiro, Takashi; Kawaai, Koji; Ueda, Takashi; and Kiso, Yoshihisa, to Mitsui Petrochemical Industries, Ltd. Transition metal compound, olefin polymerization catalyst component comprising the transition metal compound, olefin polymerization catalyst comprising the olefin polymerization catalyst component, and process for olefin polymerization. 5,616,663, Cl. 526-127.000.
In Focus Systems, Inc.: *See—*
Prince, Dennis W., 5,617,113, Cl. 345-103.000.
Inagaki, Atsushi: *See—*
Ito, Kan; Taguchi, Tomishige; Endo, Shozo; Inagaki, Atsushi; and Kawahara, Hiroyuki, 5,617,138, Cl. 348-222.000.
Inagaki, Hiroshi, to NGK Spark Plug Co., Ltd. Misfire detecting device for internal combustion engine. 5,617,032, Cl. 324-399.000.
Inagaki, Masahisa: *See—*
Kurosaki, Hideki; Nakajima, Junjiro; Umehara, Hajime; Nakamura, Shozo; Kanno, Satoshi; Nishida, Koji; Bessho, Yasunori; Inagaki, Masahisa; Yokomizo, Osamu; and Yoshimoto, Yuichiro, 5,617,456, Cl. 376-260.000.
Inagami, Yasuhiro: *See—*
Sakakibara, Tadayuki; Tanaka, Teruo; Kitai, Katsuyoshi; Isobe, Tadaaki; Hashimoto, Shigeko; Inagami, Yasuhiro; and Tamaki, Yoshiko, 5,617,575, Cl. 395-800.000.
Industri AB Thule: *See—*
Lindén, Claes-Göran, 5,615,818, Cl. 224-326.000.
Industrial Technology Research Institute: *See—*
Tzeng, Jaw-Horng; Chiu, Ming-Jer; Hwang, Yii-Wei; and Chang, Wei-Chi, 5,617,270, Cl. 360-85.000.
Ing. Polin & C. S.p.A.: *See—*
Polin, Antonio, 5,615,603, Cl. 99-331.000.
Ingalls, Charles L.: *See—*
Holland, Stephen D.; and Ingalls, Charles L., 5,617,367, Cl. 365-219.000.
Ingersoll-Rand Company: *See—*
Sell, Leslie J., 5,615,704, Cl. 137-596.100.
Ingle, Fred L.: *See—*
Phillips, Herman R.; and Ingle, Fred L., 5,615,869, Cl. 267-103.000.
Inizan, Michel: *See—*
Robillard, Dominique; and Inizan, Michel, 5,615,833, Cl. 239-132.300.
Inland Steel Company: *See—*
Spearin, Elliott Y.; and Carney, James C., 5,616,367, Cl. 427-532.000.
Innovatec Products International, Inc.: *See—*
Issa, Antoine, 5,615,596, Cl. 92-98.00R.
Innovative BioSystems, Inc.: *See—*
Stormo, Keith E., 5,616,304, Cl. 422-227.000.
Inomata, Koichiro: *See—*
Okuno, Shiho; Hashimoto, Susumu; Yusu, Keiichiro; and Inomata, Koichiro, 5,616,370, Cl. 427-547.000.
Inomata, Mitsugu, to Canon Kabushiki Kaisha. Developing apparatus provided with a portable developing unit for supporting a plurality of developing devices. 5,617,188, Cl. 399-13.000.
Inouchi, Hidenori: *See—*
Murayama, Hideki; Yoshizawa, Satoshi; Inouchi, Hidenori; Aimoto, Takeshi; Hayashi, Takehisa; and Iwamoto, Hiroshi, 5,617,424, Cl. 370-389.000.
Inoue, Akira: *See—*
Kato, Koji; Ando, Hiroyuki; Sugita, Yukihiko; Ichikawa, Hideaki; Inoue, Akira; and Miyazaki, Satoshi, 5,617,162, Cl. 396-318.000.
Inoue, Atsuo, to Sanden Corporation. Automotive air conditioner system. 5,615,560, Cl. 62-212.000.
Inoue, Fuyuhiko: *See—*
Wakamoto, Shinji; Kawai, Hidemi; and Inoue, Fuyuhiko, 5,617,182, Cl. 355-53.000.
Inoue, Genichiro, to Matsushita Electric Industrial Co., Ltd. Multiplication device using semiconductor memory. 5,617,346, Cl. 364-757.000.
Inoue, Jiro, to Mitsui Kinzoku Kogyo Kabushiki Kaisha. Door locking device with an antitheft mechanism. 5,615,564, Cl. 70-279.000.
Inoue, Satoshi: *See—*
Hayashida, Hajime; Aoyagi, Takashi; Inoue, Satoshi; Nozue, Ringi; Kawamura, Kiyoshi; and Sato, Shigeaki, 5,616,880, Cl. 84-719.000.
Inoue, Takashi: *See—*
Onimaru, Sadahisa; Inoue, Takashi; Yasuda, Masanori; and Okada, Hiroshi, 5,616,021, Cl. 431-115.000.
Inoue, Tatsuo, to Sony Corporation. Projection TV set apparatus. 5,617,259, Cl. 359-820.000.
Inproheat Industires Ltd.: *See—*
Panz, Eric; and Panz, Steven E., 5,615,668, Cl. 126-360.00A.
Insta-Foam Products, Inc.: *See—*
Brown, Daniel P., 5,615,804, Cl. 222-136.000.
Institut Francais du Petrole: *See—*
Castel, Yvon, 5,616,006, Cl. 417-54.000.
Castel, Yvon, 5,616,856, Cl. 73-61.450.
Dawans, François; and Le Page, Jean-François, 5,615,702, Cl. 137-255.000.
Marchal, Remy; Lemal, Jeannine; and Sulzer, Caroline, 5,616,479, Cl. 435-100.000.
Martin, Gérard; and Gaulard, Robert, 5,616,216, Cl. 201-25.000.
Institut fuer Luft-und Kaeltetechnik Gemeinnuetzige Gesellschaft mbH: *See—*
Binneberg, Armin; Neubert, Johannes; Spoerl, Gabriele; and Wolf, Walter, 5,615,557, Cl. 62-51,100.
Instron Corporation: *See—*
Merck, John J., Jr.; Wyman, Jon; and Conti, Richard, 5,616,857, Cl. 73-82.000.
Integran, Inc.: *See—*
Kaneko, Akira, 5,617,004, Cl. 320-15.000.
Intel Corporation: *See—*
Alpert, Donald B.; Shoemaker, Kenneth D.; Kahn, Kevin C.; and Lai, Konrad K., 5,617,554, Cl. 395-418.000.
Balmer, Mark J.; and Waggoner, Mark R., 5,617,534, Cl. 395-183.180.
Solari, Edward L.; Heckenberg, Thomas A.; and Vanka, Subbarao, 5,617,576, Cl. 395-800.000.
Watson, Jeff R.; Goetsch, Michael N.; Noval, Jim V.; and Aspandiar, Raiyo F., 5,617,294, Cl. 361-719.000.
Interface, Inc.: *See—*
Hamilton, Wayne M.; and Slosberg, David K., 5,616,200, Cl. 156-72.000.
Hamilton, Wayne M.; and Slosberg, David K., 5,616,210, Cl. 156-435.000.
Intermec Corporation: *See—*
Arackellian, Kevork G., 5,616,909, Cl. 235-472.000.
International Business Machines Corpoation: *See—*
Smith, Gordon J., 5,617,339, Cl. 364-569.000.
International Business Machines Corporation: *See—*
Abboud, Samir E.; Apuzzo, Nickolas C.; Brown, Jeffrey B.; Cunningham, Earl A.; Hannon, David M.; Mallette, Raymond P.; Tyler, Paul S.; Voss, Steven H.; and Wallash, Albert J., 5,617,289, Cl. 361-151.000.
Angelotti, Frank W.; Britson, Wayne A.; Douskey, Steven M.; Kaliszewski, Kerry T.; and Weed, Michael A., 5,617,430, Cl. 371-27.000.
Arldt, Roy L.; Downey, Susan H.; Golden, Harry J.; Mahmoud, Issa S.; Okoro, Clement A.; and Spalik, James, 5,615,827, Cl. 228-223.000.
Ault, Michael B.; Plassmann, Ernst R.; Rich, Bruce A.; and Wilkes, Michael D., 5,617,568, Cl. 395-612.000.
Ballard, Gerald L.; and Gaudiello, John G., 5,616,422, Cl. 428-621.000.
Barker, Thomas N.; Collins, Clive A.; Dapp, Michael C.; Dieffenderfer, James W.; Grice, Donald G.; Knowles, Billy J.; Lesmeister, Donald M.; Nier, Richard E.; Retter, Eric E.; Rolfe, David B.; and Smoral, Vincent J., 5,617,577, Cl. 395-800.000.
Baumgartner, Yoanna; Gregoire, Dennis G.; and Youngs, Amy M., 5,617,556, Cl. 395-468.000.
Bertin, Claude L.; DiMaria, Donelli J.; Miyakawa, Makoto; and Sakaue, Yoshinori, 5,617,351, Cl. 365-185.050.
Bigus, Joseph P., 5,617,511, Cl. 375-26.000.
Blaauw, David T.; Radia, Nimish S.; and Skovira, Joseph F., 5,617,561, Cl. 395-500.000.

Bogdan, David C.; Pearl, Donald L.; Pribula, David T.; Aulet, Nancy R.; Hussain, Muhammed I.; and Hutt, George W., 5,617,237, Cl. 359-180.000.
Bogdan, David C.; Pearl, Donald L.; and Pribula, David T., 5,617,238, Cl. 359-180.000.
Carr, Jeffrey W.; and Gunder, Jeffrey P., 5,617,273, Cl. 360-105.000.
Chen, Mao-Min; and Krounbi, Mohamad T., 5,617,277, Cl. 360-113.000.
Christensen, Kenneth J.; Haas, Lee C.; and Noel, Francis E., 5,617,419, Cl. 370-471.000.
Edgar, Albert D., 5,617,116, Cl. 345-150.000.
Eggenberger, John S.; Hodges, Paul; Ouchi, Norman K.; and Plomgren, David A., 5,617,432, Cl. 371-37.100.
Feeney, James W.; Jabusch, John D.; Lusch, Robert F.; Olnowich, Howard T.; and Wilhelm, George W., Jr., 5,617,547, Cl. 395-311.000.
Freitas, David A.; Serrano, Louis J.; and Yu, Mantle Man-Hon, 5,617,536, Cl. 395-185.010.
Fujii, Kazuo; Nakazawa, Yukifumi; and Noguchi, Takehiko, 5,617,291, Cl. 361-686.000.
Henkels, Walter H.; Hwang, Wei; and Joshi, Rajiv V., 5,617,047, Cl. 327-142.000.
Hurst, Jerry E., Jr., 5,617,401, Cl. 369-116.000.
Keidl, Steven D.; Rotter, Jeffrey S.; and Steele, Steven W., 5,617,007, Cl. 320-22.000.
Koenemann, Bernd K. F.; McAnney, William H.; and Shulman, Mark L., 5,617,426, Cl. 371-22.300.
Kressin, Mark S.; Berger, Blaine H.; and Smith, Bret P., 5,617,527, Cl. 395-326.000.
Laine, Eric H.; and Wilson, James W., 5,616,958, Cl. 257-717.000.
Melville, James A.; and Hamilton, Roger D., 5,617,296, Cl. 361-736.000.
Pechanek, Gerald G.; and Vassiliadis, Stamatis, 5,617,512, Cl. 395-27.000.
Ruiz, Oscar J., 5,617,274, Cl. 360-104.000.
Shepard, Joseph F., 5,616,513, Cl. 438-402.000.
Thompson, Stephen P., 5,617,118, Cl. 345-200.000.
International Computer Science Institute: *See—*
Albanese, Andres; Luby, Michael G.; Bloemer, Johannes F.; and Edmonds, Jeffrey A., 5,617,541, Cl. 395-200.130.
International Electronic Research Corporation: *See—*
Steiner, Ronald E., 5,617,292, Cl. 361-704.000.
International Paper Company: *See—*
Goettmann, James A.; Monroe, Stephen H.; Angelini, Peter J.; and Boylan, John R., 5,616,384, Cl. 428-36.100.
International Road Dynamics: *See—*
Klashinsky, Rod; and Bergan, Terry, 5,617,086, Cl. 340-907.000.
International Visual Corp.: *See—*
Current, Wayne A., 5,615,503, Cl. 40-601.000.
Interval Research Corporation: *See—*
Boyden, James H., 5,617,477, Cl. 381-25.000.
Inventio AG: *See—*
Liebetrau, Christoph; and Richter, Utz, 5,615,864, Cl. 254-329.000.
Spiess, Peter, 5,616,895, Cl. 187-280.000.
Iomega Corporation: *See—*
Jones, David E.; Lyon, Michael R.; Leavitt, Richard F.; Nicklos, Carl F.; Sonderegger, Ralph L.; Thayne, Mark S.; and Ma, Yiping, 5,617,397, Cl. 369-772.000.
Ion Laser Technology: *See—*
Cipolla, Anthony J., 5,616,141, Cl. 606-15.000.
Ionics, Incorporated: *See—*
Hodgdon, Russell B., 5,616,249, Cl. 210-651.000.
Ippen, Erich P.: *See—*
Tamura, Kohichi R.; Ippen, Erich P.; Haus, Hermann A.; Nelson, Lynn E.; and Doerr, Christopher R., 5,617,434, Cl. 372-6.000.
Iqbal, Abul: *See—*
Zambounis, John S.; Hao, Zhimin; and Iqbal, Abul, 5,616,725, Cl. 548-453.000.
Irarrazabal, Pablo: *See—*
Meyer, Craig H.; and Irarrazabal, Pablo, 5,617,028, Cl. 324-320.000.
Irie, Tatsuji: *See—*
Tsutsumi, Kazumichi; Okamura, Shigekazu; and Irie, Tatsuji, 5,617,085, Cl. 340-903.000.
Irish, Allen G., to Teleflex Incorporated. Slide n' snap with living hinge lock. 5,615,584, Cl. 74-502.600.
Irish, Allen G.: *See—*
Cunningham, Jeffrey G.; and Irish, Allen G., 5,615,583, Cl. 74-502.400.
Ise, Yoshiaki; Miyazawa, Hiroyuki; Kimura, Hiroyuki; Okoshi, Shinichi; Nakamura, Tatsumasa; and Kato, Toshiyuki, to Shin-Etsu Quartz Co., Ltd. Base body of reflecting mirror and method for preparing the same. 5,617,262, Cl. 359-846.000.
Iseki, Shuji: *See—*
Torimaru, Satoru; Sameshima, Junichirou; Hokari, Norio; Hayashi, Yukio; Kobayashi, Mikio; Iseki, Shuji; and Tsuruoka, Ryouichi, 5,617,195, Cl. 399-27.000.
Isemoto, Koji: *See—*
Kobayashi, Makoto; Yamamoto, Masakazu; Miyake, Yoshio; Isemoto, Koji; Uwai, Keita; and Miyazaki, Yoshiaki, 5,616,013, Cl. 417-423.140.
Isenga, Steven R.: *See—*
Miller, James H.; and Isenga, Steven R., 5,615,631, Cl. 114-253.000.
Ishibashi, Akira; Nakayama, Norikazu; and Kijima, Satoru, to Sony Corporation. Surface-emitting semiconductor light emitting device. 5,617,446, Cl. 372-96.000.
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Arai, Yuji; Matumoto, Takanobu; Shin, Yuaki; and Ishiguro, Takashi, 5,616,450, Cl. 430-321.000.
Ishihara, Makiichi; Sunada, Takakazu; Hasegawa, Shigeo; Ukawa, Naohiko; Takashina, Toru; Kita, Yukio; Iwashita, Kouichiro; Yamashita, Kousuke; Ozaki, Junji; and Kaneshige, Kaname, to Mitsubishi Jukogyo Kabushiki Kaisha; and Ohji Rubber & Chemicals Co., Ltd. Gas-liquid contacting apparatus. 5,616,290, Cl. 261-115.000.
Ishii, Keisuke: *See—*
Miyashita, Susumu; Nagashima, Akira; Kondo, Tadashige; and Ishii, Keisuke, 5,615,538, Cl. 53-589.000.
Ishii, Masao: *See—*
Kusano, Manabu; Ishii, Masao; and Sukenobe, Nobuo, 5,616,652, Cl. 525-315.000.
Ishii, Masayuki: *See—*
Watanabe, Takeshi; Tsuji, Kikunosuke; Hori, Setsuo; Kado, Seiji; Satake, Kenichi; Nakatsu, Hiromi; Baba, Kohichi; Ishii, Masayuki; and Uriu, Yoshiko, 5,615,877, Cl. 271-259.000.
Ishii, Shizuo: *See—*
Takaba, Tetsufumi; Fujita, Masami; Yamazaki, Masaru; Kibayashi, Hiroshi; Sugano, Kazuyoshi; and Ishii, Shizuo, 5,617,169, Cl. 396-284.000.
Ishii, Yoshinori: *See—*
Yamaoka, Ryuso; Ishii, Yoshinori; Kondo, Kunio; Wakita, Kazuto; and Tsurutani, Iwao, 5,616,420, Cl. 428-515.000.
Ishii, Yutaka: *See—*
Yamamoto, Yoshitaka; Tagawa, Akira; Ishii, Yutaka; Koden, Mitsuhiro; and Shinomiya, Tokihiko, 5,617,229, Cl. 349-42.000.
Ishikawa, Kimiyasu, to NEC Corporation. Semiconductor memory device with controllable charging characteristics of column lines. 5,617,370, Cl. 365-233.500.
Ishikawa, Masazumi; and Tanibata, Toru, to Noritsu Koki Co., Ltd. Photographic processing method. 5,617,171, Cl. 396-512.000.
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Sonobe, Naohiro; Ishikawa, Minoru; and Iwasaki, Takao, 5,616,436, Cl. 429-218.000.
Ishikawa, Seiji: *See—*
Okumura, Katsuya; Aoki, Riichirou; Yajima, Hiromi; Kodera, Masako; Mishima, Shirou; Shigeta, Atsushi; Hirose, Masayoshi; Kimura, Norio; and Ishikawa, Seiji, 5,616,063, Cl. 451-1.000.
Ishikawa, Tatsuo: *See—*
Hatakeyama, Yoshiharu; Teshima, Kenzo; and Ishikawa, Tatsuo, 5,615,803, Cl. 222-94.000.
Ishikawa, Tomoji; Sugihara, Kazuyuki; and Kosuge, Katsuhiro, to Ricoh Company, Ltd. Image forming apparatus having rotary developing device. 5,617,198, Cl. 399-27.000.
Ishikawa, Toshimitsu; Kitamura, Atsushi; and Hirayama, Kenji, to Kabushiki Kaisha Toshiba. Semiconductor integrated circuit devices having particular terminal geometry. 5,616,962, Cl. 257-777.000.
Ishikawa, Yutaka: *See—*
Kobunaya, Hideki; Ishikawa, Yutaka; Yamasaki, Yoshimori; and Chiba, Takayoshi, 5,617,382, Cl. 369-32.000.
Ishimoto, Manabu: *See—*
Aritake, Hirokazu; Kato, Masayuki; Ishimoto, Manabu; Sato, Noriko; and Nakashima, Masato, 5,617,225, Cl. 359-9.000.
Ishimura, Koh: *See—*
Arikawa, Hiroo; Kanehara, Akihiko; Furusawa, Manabu; and Ishimura, Koh, 5,617,069, Cl. 337-227.000.
Ishioka, Hideaki; Onuki, Yoshikazu; and Takeda, Toru, to Sony Corporation. Disc recording/reproducing apparatus which uses stored eccentricity data to maintain the read/write head at a constant radial position during a stand-by mode. 5,617,388, Cl. 369-44.280.
Iso, Ryouichi; and Nakamura, Kazunari, to Olympus Optical Co., Ltd. Image freezing unit for obtaining still image at a precise timing from image data obtained by the imaging means. 5,617,136, Cl. 348-71.000.
Isobe, Akira, to NEC Corporation. Method for polishing a wafer by supplying surfactant to the rear surface of the wafer. 5,616,212, Cl. 438-693.000.
Isobe, Tadaaki: *See—*
Sakakibara, Tadayuki; Tanaka, Teruo; Kitai, Katsuyoshi; Isobe, Tadaaki; Hashimoto, Shigeko; Inagami, Yasuhiro; and Tamaki, Yoshiko, 5,617,575, Cl. 395-800.000.
Isomura, Yasuo: *See—*
Tamazawa, Kazuharu; Kojima, Tadao; Arima, Hideki; Murakami, Yukiyasu; Isomura, Yasuo; Okada, Minoru; Takenaka, Toichi; and Takanobu, Kiyoshi, 5,616,715, Cl. 546-278.400.
Isoyama, Shinji: *See—*
Toda, Hirofumi; Shimo, Shinjiro; Fujikawa, Nobuyoshi; Isoyama, Shinji; and Maruta, Kouichi, 5,616,528, Cl. 501-136.000.
Issa, Antoine, to Innovatec Products International, Inc. Inflated ball container repressurizer. 5,615,596, Cl. 92-98.00R.
Isuzu Motors Limited: *See—*
Kita, Hideki; and Tseng, Wenjea J., 5,616,527, Cl. 501-97.000.
Italiane, John R.: *See—*
Galbraith, Lyle D.; and Italiane, John R., 5,615,914, Cl. 280-743.100.

Itami, Satoshi; Nakahara, Masaru; Nakada, Masahiro; Suzuki, Hiroshi; and Utsumi, Kenichi, to Fujitsu Limited. Optical disk having an erased-state indicator and optical disk apparatus for reducing frequency of disk erasing operation. 5,617,393, Cl. 369-58.000.
ITC Incorporated: *See—*
Miller, James H.; and Isenga, Steven R., 5,615,631, Cl. 114-253.000.
Ito, Daisuke: *See—*
Hara, Tsukushi; Ohkuma, Takeshi; Yamamoto, Takahiko; Ito, Daisuke; Tsunanaga, Kazuyuki; and Tada, Takamitsu, 5,617,280, Cl. 361-19.000.
Ito, Hirokazu: *See—*
Hwang, Duk S.; Nario, Evelyn; Lepe, Mark; Luz, Lyndon; Ito, Hirokazu; and Takechi, Kazuo, 5,616,693, Cl. 530-392.000.
Ito, Kan; Taguchi, Tomishige; Endo, Shozo; Inagaki, Atsushi; and Kawahara, Hiroyuki, to Canon Kabushiki Kaisha. Photography booth with multiple video input and confirming image display. 5,617,138, Cl. 348-222.000.
Ito, Osamu; Sakurai, Hideo; Nogawa, Chiharu; and Kawahara, Shinya, to Ricoh Company, Ltd. Sublimation type thermosensitive image transfer recording medium. 5,616,534, Cl. 503-227.000.
Ito, Takaharu: *See—*
Kato, Hiroyuki; and Ito, Takaharu, 5,616,940, Cl. 257-206.000.
Ito, Tomoyasu: *See—*
Deschenes, Charles L.; Kogiso, Hitoshi; Ito, Tomoyasu; and Kimbara, Hidekatsu, 5,615,816, Cl. 227-71.000.
Ito, Yoichi: *See—*
Kato, Yoshiei; Nabeshima, Seiji; Ito, Yoichi; and Sorimachi, Kenichi, 5,616,188, Cl. 148-508.000.
Ito, Yoshiharu: *See—*
Sugano, Shigeru; Takebayashi, Takashi; Nagai, Shigekazu; Ito, Yoshiharu; Saito, Mitsuhiro; Matsushima, Hiroshi; and Saitoh, Akio, 5,617,338, Cl. 364-558.000.
Itoda, Kouichi; and Sutoh, Yoshio, to Ricoh Company, Ltd. Image erasing apparatus having an assembly for moving heat applicators. 5,616,262, Cl. 219-216.000.
Itoh, Akira; Terai, Hideo; and Shiraga, Kazuhiro, to Matsushita Electric Industrial Co., Ltd. Word processing unit with document display function. 5,617,115, Cl. 345-141.000.
Itoh, Hiroshi; Yamamoto, Yoshinobu; Fukuhara, Koji; Shiroshima, Masahiro; and Kobayashi, Hiroya, to Nippon Shokubai Co., Ltd. Process for producing aliphatic polyester. 5,616,681, Cl. 528-279.000.
Itoh, Junichi: *See—*
Matsuzawa, Yoshinori; Itoh, Junichi; and Tanbara, Yasuo, 5,617,176, Cl. 396-55.000.
Itoh, Kiyoo: *See—*
Horiguchi, Masashi; Etoh, Jun; Aoki, Masakazu; and Itoh, Kiyoo, 5,617,365, Cl. 365-200.000.
Itoh, Yoshiyasu: *See—*
Kanai, Hitoshi; Takahashi, Masashi; and Itoh, Yoshiyasu, 5,616,978, Cl. 310-211.000.
Itou, Sigeyuki: *See—*
Matsumura, Masafumi; and Itou, Sigeyuki, 5,616,999, Cl. 318-632.000.
ITT Automotive Electrical Systems, Inc.: *See—*
Cook, Keith R., 5,616,182, Cl. 134-6.000.
Jackson, James A.; and McCann, Roy A., 5,616,997, Cl. 318-467.000.
Itzkan, Irving: *See—*
Berger, Andrew J.; Brennan, James F., III; Dasari, Ramanchandra R.; Feld, Michael S.; Itzkan, Irving; Tanaka, Kaz; and Wang, Yang, 5,615,673, Cl. 128-633.000.
Iura, Noriyuki; Kudo, Yoshimichi; Ichige, Kenji; Yamamoto, Naoki; and Imaide, Takuya, to Hitachi, Ltd. Computer system that enters control information by means of video camera. 5,617,312, Cl. 364-188.000.
IVAC Medical Systems, Inc.: *See—*
Hague, Clifford W.; and Koenig, Paul A., 5,616,124, Cl. 604-65.000.
Ivey, Brandon C. Deadbolt extender. 5,615,919, Cl. 292-332.000.
Iwabuchi, Kouichi: *See—*
Nagase, Yu; Aoyagi, Takao; Akimoto, Tomoko; Tanaka, Kazunori; Iwabuchi, Kouichi; and Konagai, Yoshihiro, 5,616,317, Cl. 424-78.300.
Iwamoto, Hiroshi: *See—*
Murayama, Hideki; Yoshizawa, Satoshi; Inouchi, Hidenori; Aimoto, Takeshi; Hayashi, Takehisa; and Iwamoto, Hiroshi, 5,617,424, Cl. 370-389.000.
Iwamura, Ryuichi: *See—*
Yonemitsu, Jun; Iwamura, Ryuichi; Yoshimura, Shunji; and Kawamura, Makoto, 5,617,384, Cl. 369-32.000.
Iwane, Yasuhiko: *See—*
Mori, Masahiko; and Iwane, Yasuhiko, 5,615,960, Cl. 400-613.000.
Iwano, Hiroshi; and Ohba, Hiraku, to Nissan Motor Co., Ltd. Engine air-fuel ratio controller. 5,615,660, Cl. 123-680.000.
Iwasaki, Takao: *See—*
Sonobe, Naohiro; Ishikawa, Minoru; and Iwasaki, Takao, 5,616,436, Cl. 429-218.000.
Iwasawa, Yoshikazu: *See—*
Nomoto, Takashi; Hayashi, Masahiro; Shibata, Jun; Iwasawa, Yoshikazu; Mitsuya, Morihiro; Iida, Yoshiaki; Nonoshita, Katsumasa; and Nagata, Yasufumi, 5,616,803, Cl. 564-337.000.
Iwase, Kazuhiko: *See—*
Kawagoe, Seiji; Iwase, Kazuhiko; and Shibata, Haruo, 5,617,267, Cl. 360-77.020.
Iwase, Takashi; Matsumoto, Takashi; Aoshima, Nobuyuki; Matsuura, Norimasa; and Goto, Takashi, to Namco Ltd. Three-dimensional games machine. 5,616,079, Cl. 463-32.000.
Iwashita, Kouichiro: *See—*
Ishihara, Makiichi; Sunada, Takakazu; Hasegawa, Shigeo; Ukawa, Naohiko; Takashina, Toru; Kita, Yukio; Iwashita, Kouichiro; Yamashita, Kousuke; Ozaki, Junji; and Kaneshige, Kaname, 5,616,290, Cl. 261-115.000.
Iwata, Atukazu: *See—*
Sakito, Yoji; Shirahata, Mamoru; Kiyoshima, Yujiro; Minamisaka, Kazuya; and Iwata, Atukazu, 5,616,769, Cl. 558-146.000.
Iwata, Tomoyuki: *See—*
Mihara, Toshihide; Yoshida, Ryoji; Kuranaga, Yutaro; and Iwata, Tomoyuki, 5,615,982, Cl. 409-55.000.
Iwatani, Takao: *See—*
Kuwamoto, Hideki; Iwatani, Takao; Nakane, Keiichi; and Fujiwara, Masaki, 5,617,518, Cl. 395-114.000.
Izumi, Masayoshi: *See—*
Maeda, Takashi; Furukido, Takeshi; Hoshino, Kousaku; Udo, Satoru; and Izumi, Masayoshi, 5,615,479, Cl. 29-888.300.
Izumi, Shinichi: *See—*
Kobayashi, Kinzo; Izumi, Shinichi; Suzuki, Shinji; and Nakayama, Shinichi, 5,615,754, Cl. 188-73.350.
Izumi, Yukio: *See—*
Nagaoka, Hidetada; Onoda, Atsuo; Izumi, Yukio; Nishikawa, Keiichi; Oomura, Yuuji; Suzuki, Mitinaga; and Hoshi, Kiyotaka, 5,616,994, Cl. 318-254.000.
Izzo, John J., Sr. Turn signal and horn assembly for a bicycle. 5,617,303, Cl. 362-72.000.
J. & M. Manufacturing Co., Inc.: *See—*
Grieshop, Maurice, 5,615,990, Cl. 414-526.000.
J. C. Pardo & Sons: *See—*
Gabriele, Valentino, 5,615,951, Cl. 366-311.000.
J. Lough Limited: *See—*
Schmed, Arthur-Joachim, 5,615,602, Cl. 99-323.100.
Jabusch, John D.: *See—*
Feeney, James W.; Jabusch, John D.; Lusch, Robert F.; Olnowich, Howard T.; and Wilhelm, George W., Jr., 5,617,547, Cl. 395-311.000.
Jackson, Claudia D. Ear protector. 5,615,417, Cl. 2-209.000.
Jackson, James A.; and McCann, Roy A., to ITT Automotive Electrical Systems, Inc. Auto up window with obstacle detection system. 5,616,997, Cl. 318-467.000.
Jackson, Jennifer A.: *See—*
Farrell, Roberta L.; Gelep, Paul; Anilionis, Algis; Javaherian, Kashayar; Maione, Theodore E.; Rusche, James; Sadownick, Bruce A.; and Jackson, Jennifer A., 5,616,473, Cl. 435-69.100.
Jackson, Robert G.: *See—*
Frizelle, Gerald D. M.; Jackson, Robert G.; and Woodcock, Eric J., 5,617,321, Cl. 364-468.100.
Jackson, Robert L.: *See—*
Svetkoff, Donald J.; Rohrer, Donald K.; Noblett, David A.; and Jackson, Robert L., 5,617,209, Cl. 356-376.000.
Jackson, Terry R.; Erhard, Rory J.; Kinzle, Robert A.; and Cady, Robert B., to Heckerman, William L. Cartridge magazine for firearms. 5,615,506, Cl. 42-50.000.
Jacobs, Allison J.; and Jacobs, Scott. Custom dental tray. 5,616,027, Cl. 433-37.000.
Jacobs, Jochen: *See—*
Kruse, Hans-Friedrich; Beaujean, Hans-Josef; Holderbaum, Thomas; and Jacobs, Jochen, 5,616,550, Cl. 510-444.000.
Jacobs, Scott: *See—*
Jacobs, Allison J.; and Jacobs, Scott, 5,616,027, Cl. 433-37.000.
Jacobs, Stephen D.; and Prokhorov, Igor V., to University of Rochester, The. Magnetorheological finishing of edges of optical elements. 5,616,066, Cl. 451-36.000.
Jacobsen, Stuart M.; Jaffe, Steven M.; Eilers, Hergen; and Jones, Michieal L., to University of Georgia Research Foundation, Inc. Resonant microcavity display. 5,616,986, Cl. 313-461.000.
Jaffe, Steven M.: *See—*
Jacobsen, Stuart M.; Jaffe, Steven M.; Eilers, Hergen; and Jones, Michieal L., 5,616,986, Cl. 313-461.000.
Jagielinski, Tomasz M., to Eastman Kodak Company. Read-only magnetic security pattern. 5,616,911, Cl. 235-493.000.
Jahn, Ulrich: *See—*
Baravian, Jean; Jahn, Ulrich; Groten, Robert; and Beck, Jean-Jacques, 5,616,395, Cl. 428-102.000.
Jakuboski, Terri L.: *See—*
South, Michael S.; and Jakuboski, Terri L., 5,616,789, Cl. 562-439.000.
Jalkanen, Sirpa: *See—*
Salmi, Marko; and Jalkanen, Sirpa, 5,616,468, Cl. 435-7.230.
Janas, Victor F.: *See—*
Safari, Ahmad; Janas, Victor F.; and McNulty, Thomas F., 5,615,466, Cl. 29-25.350.
Janesko Oy: *See—*
Kåhre, Jan, 5,617,201, Cl. 356-135.000.
Janoff, Andrew S.; Boni, Lawrence; Madden, Thomas D.; Cullis, Pieter R.; Lenk, Robert P.; Kearns, John J.; Durning, Anthony G.; Klimchak, Robert; and Portnoff, Joel, to Liposome Company, Inc., The. Low toxicity drug-lipid systems. 5,616,334, Cl. 424-404.000.
Janssen, Daniel A. Literature display system. 5,615,781, Cl. 211-50.000.
Janssen Pharmaceutica N.V.: *See—*

François, Marc K. J.; and Dries, Willy M. A. C., 5,616,587, Cl. 514-258.000.
Van Daele, Georges H. P.; and Van den Keybus, Frans M. A., 5,616,583, Cl. 514-235.500.
Van Daele, Georges H. P.; and Van den Keybus, Frans M. A., 5,616,738, Cl. 549-467.000.
Janssens, Danny; Schoeters, Emile; Vuylsteke, Pieter; and Dhaenens, Frans, to Agfa-Gevaert. Radiation image displaying method and apparatus. 5,616,930, Cl. 250-584.000.
Jansson, Ulf: *See—*
Höglund, Ronny; and Jansson, Ulf, 5,615,997, Cl. 415-169.100.
Jany, Christine S.: *See—*
Donovan, William P.; Tan, Yuping; Jany, Christine S.; and González, José M., Jr., 5,616,319, Cl. 424-93.200.
Japan Tobacco Inc.: *See—*
Saitoh, Masayoshi, 5,615,693, Cl. 131-84.100.
Jarvis, Barry M. F.; and Morse, Carolyn E. Device for connecting a first elongate member to transverse second elongate member. 5,615,966, Cl. 403-49.000.
Javaherian, Kashayar: *See—*
Farrell, Roberta L.; Gelep, Paul; Anilionis, Algis; Javaherian, Kashayar; Maione, Theodore E.; Rusche, James; Sadownick, Bruce A.; and Jackson, Jennifer A., 5,616,473, Cl. 435-69.100.
Jeanjean, Francis: *See—*
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Jeffers, Larry A.: *See—*
McMahon, Mike; Jeffers, Larry A.; and White, Fred, 5,616,851, Cl. 73-29.010.
Jejelowo, Moses O.; and Bamberger, Robert L., to Exxon Chemical Patents, Inc. Supported polymerization catalyst systems, their production and use. 5,616,665, Cl. 526-129.000.
Jelks, Casandra N. Apparatus for simultaneously pumping milk from the right and left breast of a nursing mother. 5,616,125, Cl. 604-74.000.
Jeng, Shin-Puu, to Texas Instruments Incorporated. Planarized multi-level interconnect scheme with embedded low-dielectric constant insulators. 5,616,959, Cl. 257-758.000.
Jeng-Tain, Lin: *See—*
Filippovich, Cherstokov V.; Rafailovich, Sterlin S.; German, S. Lev, deceased; Jeng-Tain, Lin; Saito, Satoru; and Tatsu, Haruyoshi, 5,616,813, Cl. 568-663.000.
Jenish, David: *See—*
Hadary, Dany; Bartfeld, Daniel; Butler, Michael J.; Jenish, David; Krieger, Timothy; Malek, Lawrence T.; Soostmeyer, Gisela; and Walcyzk, Eva, 5,616,485, Cl. 435-220.000.
Jenkins, Andrew; Henry, Peter S.; and Yee, Gaylin M., to Analog Devices, Inc. Circuit for providing programmable hysteresis levels. 5,617,050, Cl. 327-205.000.
Jenkins, Jeffrey A., to Siemens Energy & Automation, Inc. Circuit breaker having data recording. 5,617,286, Cl. 361-93.000.
Jenn-Gwo, Hwu; and Ming-Jer, Jeng, to National Science Council. Method for making a fluorinated silicon dioxide layer on silicon substrate by anodic oxidation at room temperature. 5,616,233, Cl. 205-157.000.
Jenoptik GmbH: *See—*
Hacker, Erik; and Pohlack, Hubert, 5,617,250, Cl. 359-582.000.
Jensen, Donald A.; and Duncan, Maxine E., to Boeing Company, The. Composite stringer disassembly machine. 5,615,469, Cl. 29-426.500.
Jensen, Gert L.: *See—*
Olsen, Ib I.; and Jensen, Gert L., 5,616,366, Cl. 427-508.000.
Jensen, James A.: *See—*
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Jentsch, Joerg-Dietrich; Martin, Georg; and Zirngiebl, Eberhard, to Bayer Aktiengesellschaft. Process for preparing succinic anhydride. 5,616,730, Cl. 549-233.000.
Jeol Ltd.: *See—*
Murakami, Yukitaka, 5,616,866, Cl. 73-804.000.
Jeong, Byeong-Sun, to LG Electronics Inc. Method for adjusting lens offset of a video camera. 5,617,140, Cl. 348-347.000.
Jeong, Jong-sam: *See—*
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Jewell, Jack L., to Picolight Incorporated. Quantum cavity light emitting element. 5,617,445, Cl. 372-96.000.
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Ri, Taiho; Amemiya, Shinichi; and Jibiki, Takao, 5,615,679, Cl. 128-660.050.
Jiffy Foam, Inc.: *See—*
Rader, Samuel L., 5,616,626, Cl. 521-94.000.
Jin, Iljoon; Fitzsimon, John; Bull, Michael J.; Marois, Pierre H.; Gupta, Alok K.; and Lloyd, David J., to Alcan International Limited. Aluminum alloys and process for making aluminum alloy sheet. 5,616,189, Cl. 148-549.000.
Jin, Sungho; Kochanski, Gregory P.; and Zhu, Wei, to Lucent Technologies Inc. Field emission devices employing activated diamond particle emitters and methods for making same. 5,616,368, Cl. 427-535.000.
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Jinwoong, Inc.: *See—*
Lee, Youn J., 5,615,699, Cl. 135-118.000.
Johansson, Lars G.: *See—*
Evenden, John L.; Hammarberg, Eva M.; Hansson, Hans S.; Hellberg, Sven E.; Johansson, Lars G.; Lundkvist, Johan R. M.; Ross, Svante B.; Sohn, Daniel D.; and Thorberg, Seth O., 5,616,610, Cl. 514-456.000.
John-Wayne Construction Company, Inc.: *See—*
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Johns Hopkins University: *See—*
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Johnson, Alan W.: *See—*
Hauser, Ray M.; and Johnson, Alan W., 5,616,092, Cl. 425-83.000.
Johnson & Johnson Medical, Inc.: *See—*
Lattimore, James, 5,616,823, Cl. 73-1.030.
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Duncan, Gregory S.; Calvin, Olin W.; Schlagel, Mark E.; Keene, Darren S.; and Edwards, Russell J., 5,616,184, Cl. 134-22.100.
Johnson, Dennis E. J.; and Frith, Clifford F., to Aqua-Ion Systems. Method for mixing coagulating agents into a contaminated water flow, and for removing contaminants therefrom. 5,616,250, Cl. 210-695.000.
Johnson, F. Scott, to Texas Instruments Incorporated. High speed bipolar transistor using a patterned etch stop and diffusion source. 5,616,508, Cl. 438-350.000.
Johnson, Graham; Smith, Neil; Geen, Graham R.; Mann, Inderjit S.; and Novack, Vance, to SmithKline Beecham plc. Process for preparing benzopyran compounds. 5,616,721, Cl. 548-253.000.
Johnson, Harry F.; and Hundley, Sydney C., to Hunjohn, Inc. Hydraulic tube bender. 5,615,572, Cl. 72-389.100.
Johnson, Jack D.; and Liem, Fie A., to Delco Electronics Corp. Method and apparatus for compensation of micromachined sensors. 5,616,864, Cl. 73-504.040.
Johnson, Jan C.; and Johnson, Joel S. Border blocks for tree and shrub decoration. 5,615,529, Cl. 52-604.000.
Johnson, Joel S.: *See—*
Johnson, Jan C.; and Johnson, Joel S., 5,615,529, Cl. 52-604.000.
Johnson, Randall L.: *See—*
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Johnson, Richard R.: *See—*
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Jonckheere, Luc: *See—*
Morlion, Danny; Jonckheere, Luc; and Van Koetsem, Jan P. K., 5,617,494, Cl. 385-83.000.
Jones, Anthony M.; and Barnes, David A., to Discovision Associates. Clock divider. 5,617,458, Cl. 377-49.000.
Jones, Craig S.: *See—*
Pearce, John J.; Walker, Jim; Zeller, Charles P.; and Jones, Craig S., 5,617,572, Cl. 395-750.000.
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Haugland, Richard P.; Singer, Victoria L.; Jones, Laurie J.; and Steinberg, Thomas H., 5,616,502, Cl. 436-86.000.
Jones, Michieal L.: *See—*
Jacobsen, Stuart M.; Jaffe, Steven M.; Eilers, Hergen; and Jones, Michieal L., 5,616,986, Cl. 313-461.000.
Jordan, Frank W., to T.O.W. Inc. Process for the manufacture of organophilic clay. 5,616,286, Cl. 252-315.200.
Joshi, Ashok V.: *See—*
Shen, Yousheng; Joshi, Ashok V.; Krist, Kevin; Liu, Meilin; and Virkar, Anil V., 5,616,223, Cl. 204-295.000.
Joshi, Rajiv V.: *See—*
Henkels, Walter H.; Hwang, Wei; and Joshi, Rajiv V., 5,617,047, Cl. 327-142.000.
Joutel, Anne M. G.; Bousser, Marie-Germaine M.; and Tournier-Lasserve, Elisabeth A., to L'Assistance Publique—Hospitaux de Paris. Method for the diagnosis of CADASIL. 5,616,462, Cl. 435-6.000.
Judd, Amrit K.; and Bucher, Doris J., to SRI International; and New York Medical College. M-protein peptides of influenza virus as antiviral agents. 5,616,327, Cl. 424-206.100.
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Mizushima, Tetsuya; Juri, Tatsuro; Matsumi, Chiyoko; and Kawakami, Kazuo, 5,617,263, Cl. 360-48.000.
Jurrius, Eran J. P.; and Karam, Robert L., Jr., to Enclosure Technologies, Inc. Apparatus for electronically seam fusing similar and dissimilar polymeric materials. 5,616,199, Cl. 156-64.000.
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Fraas, Lewis M.; Williams, Douglas J.; and Samaras, John E., 5,616,186, Cl. 136-253.000.
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Amesz, Willem; Van Raemdonck, Joris K. M.; De Meyer, Willy; and Verpoest, Ignace H. J. M., 5,616,391, Cl. 428-71.000.
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Yamamoto, Itaru; Muto, Norio; and Miyake, Toshio, 5,616,611, Cl. 514-474.000.
Kabushiki Kaisha Sankyo Seiki Seisakusho: *See*—
Kitazawa, Hideo, 5,617,241, Cl. 359-200.000.
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Harada, Koichi; Takahashi, Kuniyuki; and Takahashi, Iwao, 5,616,257, Cl. 219-56.210.
Sasano, Toshiaki, 5,615,821, Cl. 228-102.000.
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Sugiyama, Makoto, 5,616,905, Cl. 235-456.000.
Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho: *See*—
Amano, Hiroatsu, 5,615,911, Cl. 280-734.000.
Kabushiki Kaisha Topcon: *See*—
Sano, Eiichi; and Minegishi, Hiroshi, 5,617,156, Cl. 351-214.000.
Kabushiki Kaisha Toshiba: *See*—
Hara, Tsukushi; Ohkuma, Takeshi; Yamamoto, Takahiko; Ito, Daisuke; Tsurunaga, Kazuyuki; and Tada, Takamitsu, 5,617,280, Cl. 361-19.000.
Hatano, Ako; and Ohba, Yasuo, 5,617,438, Cl. 372-45.000.
Hattori, Hitoshi; Futamura, Motonori; Saito, Kazuo; and Ozu, Masao, 5,616,019, Cl. 418-66.000.
Horiguchi, Akihiro; Monma, Jun; Kimura, Kazuo; Oh-Ishi, Katsuyoshi; Ueno, Fumio; Kasori, Mitsuo; and Sumino, Hiroyasu, 5,616,956, Cl. 257-703.000.
Iizuka, Hirokazu; Ohmura, Masashi; Kondo, Masataka; Kobayashi, Hideki; Mizuno, Hiroyuki; Yamazaki, Takaya; and Shibata, Kazuo, 5,616,017, Cl. 418-63.000.
Ishikawa, Toshimitsu; Kitamura, Atsushi; and Hirayama, Kenji, 5,616,962, Cl. 257-777.000.
Kanai, Hitoshi; Takahashi, Masashi; and Itoh, Yoshiyasu, 5,616,978, Cl. 310-211.000.
Kaneko, Satomi, 5,617,120, Cl. 395-615.000.
Kawagoe, Seiji; Iwase, Kazuhiko; and Shibata, Haruo, 5,617,267, Cl. 360-77.020.
Kohyama, Yusuke, 5,616,961, Cl. 257-774.000.
Minagawa, Kenji; Aikawa, Takeshi; and Saito, Mitsuo, 5,617,553, Cl. 395-416.000.
Nakamura, Yoshikatu, 5,617,481, Cl. 382-101.000.
Nambu, Kyojiro; Tomura, Masatoshi; and Kuwahara, Takayuki, 5,615,430, Cl. 5-600.000.
Okuno, Shiho; Hashimoto, Susumu; Yusu, Keiichiro; and Inomata, Koichiro, 5,616,370, Cl. 427-547.000.
Sano, Akihiro, 5,615,680, Cl. 128-661.090.
Sato, Youji; Nakajima, Yuji; Taki, Kinji; and Konno, Toshikazu, 5,617,301, Cl. 361-796.000.
Takamoto, Masahiro, 5,617,044, Cl. 327-77.000.
Takubo, Chiaki; Tazawa, Hiroshi; Hosomi, Eiichi; and Shibasaki, Koji, 5,615,822, Cl. 228-102.000.
Watanabe, Yoshihiro; and Nakamura, Hiroki, 5,617,228, Cl. 349-19.000.
Watanabe, Zensaku, 5,616,949, Cl. 257-434.000.
Yamamoto, Takeshi, 5,617,326, Cl. 364-488.000.
Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See*—
Odachi, Yasuharu; and Minoshima, Norimoto, 5,617,003, Cl. 320-2.000.
Yokono, Tomohiko; Sonobe, Masanori; Kawaguchi, Masahiro; Okuno, Takuya; and Suitou, Ken, 5,616,008, Cl. 417-222.200.
Kabushiki Kaisha Toyota Chuo Kenkyusho: *See*—
Yamada, Masatoshi; Kondo, Yasuhiro; Imai, Kenji; Kojima, Masahiro; and Nagashima, Nobuyuki, 5,616,000, Cl. 415-191.000.
Kabushiki Kaisha Yamada Seisakusho: *See*—
Fujiu, Isao; and Yabutsuka, Mitsuo, 5,615,916, Cl. 280-777.000.
Kabushiki Kaisya Toshiba: *See*—
Okumura, Katsuya; Aoki, Riichirou; Yajima, Hiromi; Kodera, Masako; Mishima, Shirou; Shigeta, Atsushi; Hirose, Masayoshi; Kimura, Norio; and Ishikawa, Seiji, 5,616,063, Cl. 451-1.000.
Kadanka, Petr, to Motorola, Inc. Power switching circuit. 5,616,971, Cl. 307-130.000.
Kado, Seiji: *See*—
Watanabe, Takeshi; Tsuji, Kikunosuke; Hori, Setsuo; Kado, Seiji; Satake, Kenichi; Nakatsu, Hiromi; Baba, Kohichi; Ishii, Masayuki; and Uriu, Yoshiko, 5,615,877, Cl. 271-259.000.
Kadoiwa, Kaoru: *See*—
Yamamoto, Yoshitsugu; and Kadoiwa, Kaoru, 5,616,181, Cl. 118-723.0ER.
Kadono, Hidehiko: *See*—
Ota, Atsushi; Uda, Seizi; Nakamura, Shingo; and Kadono, Hidehiko, 5,615,726, Cl. 164-32.000.
Kadota, Keisuke: *See*—
Mitsubayashi, Masahiko; Ohnishi, Masazumi; Miyamoto, Noritaka; Kadota, Keisuke; Shimada, Tohru; and Bando, Katsuji, 5,615,570, Cl. 72-298.000.
Kahl, Thomas-Michael; and Wettling, Thomas, to BASF Aktiengesellschaft. Preparation of aryl chloroformates. 5,616,771, Cl. 558-282.000.
Kahn, Kevin C.: *See*—
Alpert, Donald B.; Shoemaker, Kenneth D.; Kahn, Kevin C.; and Lai, Konrad K., 5,617,554, Cl. 395-418.000.
Kåhre, Jan, to Janesko Oy. Method for refractometer measuring using mathematical modelling. 5,617,201, Cl. 356-135.000.
Kai, Tadao: *See*—
Sakagami, Yasushi; and Kai, Tadao, 5,617,159, Cl. 396-55.000.
Kaigawa, Masato: *See*—
Tsukamoto, Kazumasa; Ando, Masahiko; Fukatsu, Akira; Mae, Toshiyuki; Sakai, Motoyuki; Hamajima, Tetsuo; Kaigawa, Masato; Fukumura, Kagenori; Oba, Hidehiro; Hojo, Yasuo; Tabata, Atsushi; and Takahashi, Nobuaki, 5,616,094, Cl. 475-128.000.
Kain, James M., to Cosco, Inc. Article holder for child seat. 5,615,925, Cl. 297-188.010.
Kaiser, Dieter; and Wintrich, Franz, to RWE Entsorgung Aktiengesellschaft. Process to sort waste mixtures. 5,615,778, Cl. 209-578.000.
Kaiser, John, Jr.: *See*—
Lockshaw, James J.; Kelly, Stephen; Walker, Randall; and Kaiser, John, Jr., 5,616,376, Cl. 428-33.000.
Kaji, Hidenobu, to Nikon Corporation. Lens cover drive mechanism for a camera. 5,617,167, Cl. 396-448.000.
Kajihara, Mamoru, to NEC Corporation. Plastic package type semiconductor device. 5,616,957, Cl. 257-712.000.
Kajima Corporation: *See*—
Tsubota, Haruji; and Sasaki, Naoya, 5,616,852, Cl. 73-37.000.
Kakimoto, Syoichi, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor laser device and semiconductor laser array device. 5,617,439, Cl. 372-50.000.
Kakimoto, Yasuhiro; and Yamamoto, Noriyuki, to Matsushita Electric Industrial Co., Ltd. Automatic bread producing machine. 5,615,605, Cl. 99-348.000.
Kakizaki, Yukio: *See*—
Nara, Kei; Matsuura, Toshio; Yokota, Muneyasu; Kakizaki, Yukio; Fukami, Yoshio; Miyazaki, Seiji; and Narabe, Tsuyoshi, 5,617,211, Cl. 356-401.000.
Kakuishi, Mitsuo; Awata, Yutaka; and Koizumi, Nobukazu, to Fujitsu Limited. Digital subscriber loop interface unit. 5,617,430, Cl. 375-230.000.
Kakuta, Wataru: *See*—
Matsunaga, Masafumi; Kakuta, Wataru; and Saito, Hikaru, 5,615,830, Cl. 239-8.000.
Kaliszewski, Kerry T.: *See*—
Angelotti, Frank W.; Britson, Wayne A.; Douskey, Steven M.; Kaliszewski, Kerry T.; and Weed, Michael A., 5,617,430, Cl. 371-27.000.
Kalota, Dennis J.; Ramsey, Skippy H.; and Spickard, Larry A., to Monsanto Company. Water soluble metal working fluids. 5,616,544, Cl. 508-508.000.
Kamada, Chiyoshi: *See*—
Nishiuma, Masahiko; Nakazato, Norio; Takahashi, Hiroyuki; Kamada, Chiyoshi; and Suwa, Motoo, 5,616,520, Cl. 438-125.000.
Kamboj, Rajender; Nutt, Stephen L.; Shekter, Lee; and Wosnick, Michael A., to Allelix Biopharmaceuticals Inc. Kainate-binding human CNS receptors of the EAA1 family. 5,616,481, Cl. 435-172.300.
Kamijo, Shunsuke, to Fujitsu Limited. Logical operation circuit and device having the same. 5,617,345, Cl. 364-754.000.
Kaminski, David P.: *See*—
Hammer, Kathleen M.; and Kaminski, David P., 5,617,011, Cl. 322-28.000.
Kampa, Joel J.: *See*—
Deviney, Marvin L.; and Kampa, Joel J., 5,616,659, Cl. 525-480.000.
Kanade, Takeo: *See*—
Kume, Masao; and Kanade, Takeo, 5,617,490, Cl. 382-275.000.
Kanai, Hiroshi; Nishimura, Hideo; Okamoto, Atsuo; and Choda, Mitsunobu, to Uchida Yoko Co., Ltd. Chair with removable armrest. 5,615,926, Cl. 297-411.270.
Kanai, Hitoshi; Takahashi, Masashi; and Itoh, Yoshiyasu, to Kabushiki Kaisha Toshiba. Electroconductive article, having portions with variable resistance and a rotor produced therefrom. 5,616,978, Cl. 310-211.000.
Kanaya, Miharu; Owatari, Akio; Takatsuna, Junko; Yatake, Masahiro; Hayashi, Hiroko; Ono, Takashi; Sawatari, Yoshihiro; and Yagyu, Tatsuya, to Seiko Epson Corporation. Ink composition and ink jet recording method using the same. 5,616,174, Cl. 106-22.00K.
Kanazaki, Takuro: *See*—
Yanagisawa, Hiroaki; Fujimoto, Koichi; Amemiya, Yoshiya; Shimoji, Yasuo; Kanazaki, Takuro; Koike, Hiroyuki; and Sada, Toshio, 5,616,599, Cl. 514-381.000.
Kanbara, Teruhisa; Tsubaki, Yuichiro; and Takeyama, Kenichi, to Matsushita Electric Industrial Co., Ltd. Ion-conductive polymer electrolyte and electrolytic capacitor using the same. 5,616,274, Cl. 252-62.200.
Kanda, Shinji: *See*—
Hashima, Masayoshi; Hasegawa, Fumi; Okabayashi, Keijū; Watanabe, Ichiro; Kanda, Shinji; Sawasaki, Naoyuki; and Murase, Yuichi, 5,617,335, Cl. 364-516.000.
Kane, Joji; and Nohara, Akira, to Matsushita Electric Industrial Co., Ltd. Speech signal processing apparatus for cutting out a speech signal from a noisy speech signal. 5,617,505, Cl. 395-2.180.
Kanehara, Akihiko: *See*—

Arikawa, Hiroo; Kanehara, Akihiko; Furusawa, Manabu; and Ishimura, Koh, 5,617,069, Cl. 337-227.000.
Kaneka Corporation: *See*—
Mitsuda, Masaru; Hayashi, Shigeo; Hasegawa, Junzo; Ueyama, Noboru; Ohashi, Takehisa; and Shibasaki, Masakatsu, 5,616,726, Cl. 548-475.000.
Kaneko, Akira, to Integran, Inc. Battery charging apparatus for series battery. 5,617,004, Cl. 320-15.000.
Kaneko, Manabu; Tanaka, Shinri; and Nagato, Michiko, to Konica Corporation. Silver halide color photographic light-sensitive material. 5,616,454, Cl. 430-554.000.
Kaneko, Masakatsu; Murofushi, Yoshinobu; Kimura, Misako; Yamazaki, Mitsuo; and Iijima, Yasuteru, to Sankyo Company, Limited. Griseolic acid compounds and their use as a phosphodiesterase inhibitor. 5,616,600, Cl. 514-397.000.
Kaneko, Satomi, to Kabushiki Kaisha Toshiba. Two-relation icon ranking and selecting method. 5,617,120, Cl. 395-615.000.
Kanemaru, Tetsuro; Kikuchi, Toshihiro; Senoo, Akihiro; and Nakata, Kouichi, to Canon Kabushiki Kaisha. Electrophotographic photosensitive member and electrophotographic apparatus using same. 5,616,442, Cl. 430-83.000.
Kaner, Albert, to AGC Research and Development Corp. In-vehicle device for moving and storing objects. 5,615,785, Cl. 212-180.000.
Kaneshige, Kaname: *See*—
Ishihara, Makiichi; Sunada, Takakazu; Hasegawa, Shigeo; Ukawa, Naohiko; Takashina, Toru; Kita, Yukio; Iwashita, Kouichiro; Yamashita, Kousuke; Ozaki, Junji; and Kaneshige, Kaname, 5,616,290, Cl. 261-115.000.
Kang, Geon-mo, to Samsung Aerospace Industries, LTD. Zoom lens. 5,617,253, Cl. 359-692.000.
Kang, Jae-yong: *See*—
Lee, Deok-hyun; and Kang, Jae-yong, 5,616,878, Cl. 84-645.000.
Lee, Deok-hyun; Park, Gyoung-chan; You, Won-jae; and Kang, Jae-yong, 5,617,385, Cl. 369-32.000.
Kang, Shin-woong: *See*—
Jin, Sung-ho; and Kang, Shin-woong, 5,616,669, Cl. 526-285.000.
Kanie, Tomohiko: *See*—
Katayama, Makoto; and Kanie, Tomohiko, 5,617,460, Cl. 378-64.000.
Kaniwa, Kouji; Minabe, Kouji; Abe, Hiroya; Tada, Yukinobu; and Narita, Yoshio, to Hitachi, Ltd. Motor stabilizing control apparatus for use with motors, including for use with a drum motor in a magnetic tape system. 5,617,266, Cl. 360-70.000.
Kanno, Isao, to Sanshin Kogyo Kabushiki Kaisha. Engine control. 5,615,645, Cl. 123-73.00C.
Kanno, Satoshi: *See*—
Kurosaki, Hideki; Nakajima, Junjiro; Umehara, Hajime; Nakamura, Shozo; Kanno, Satoshi; Nishida, Koji; Bessho, Yasunori; Inagaki, Masahisa; Yokomizo, Osamu; and Yoshimoto, Yuichiro, 5,617,456, Cl. 376-260.000.
Kansai Paint Company, Ltd.: *See*—
Tatsuno, Tadayoshi; Wakimoto, Mitsuo; and Kashiwada, Seiji, 5,616,388, Cl. 428-421.000.
Kanzaki Kokyukoki MFG. Co., Ltd.: *See*—
Mihara, Toshihide; Yoshida, Ryoji; Kuranaga, Yutaro; and Iwata, Tomoyuki, 5,615,982, Cl. 409-55.000.
Kao Corporation: *See*—
Kiuchi, Kazuhiko; Nakai, Shigeo; Sawa, Masuo; Kato, Masayuki; Sakai, Mitsuru; and Nomura, Shinya, 5,616,631, Cl. 523-139.000.
Tanaka, Nobuhiro, 5,615,536, Cl. 53-447.000.
Tanaka, Nobuhiro, 5,615,993, Cl. 414-786.000.
Kappler, John: *See*—
Choi, Yongwon; Kappler, John; and Marrack, Philippa, 5,616,472, Cl. 435-69.100.
Kapps, Manfred: *See*—
von Bonin, Wulf; Müller, Hanns-Peter; and Kapps, Manfred, 5,616,628, Cl. 521-157.000.
Karakama, Toshiyuki: *See*—
Yashiro, Masahiko; Sasaki, Shinichi; Ikemoto, Isao; Miura, Koji; Karakama, Toshiyuki; and Numagami, Atsushi, 5,617,579, Cl. 399-114.000.
Karam, Robert L., Jr.: *See*—
Jurrius, Eran J. P.; and Karam, Robert L., Jr., 5,616,199, Cl. 156-64.000.
Karl Thomae GmbH: *See*—
Rudolf, Klaus; Eberlein, Wolfgang; Engel, Wolfhard; Mihm, Gerhard; Doods, Henri; Wieland, Heike A.; Willim, Klaus-Dieter; Krause, Jürgen; Dollinger, Horst; Esser, Franz; Schnorrenberg, Gerd; Entzeroth, Michael; and Wienen, Wolfgang, 5,616,620, Cl. 514-620.000.
Karlshamns AB: *See*—
McCarthy, James P.; Greene, George H.; and DeWar, Anthony G., 5,616,758, Cl. 556-423.000.
Karlsson, Uno, to SAB WABCO AB. End piece seal for a rail vehicle slack adjuster. 5,615,755, Cl. 188-322.120.
Karner, Johann; Bergmann, Erich; and Daxinger, Helmut, to Balzers Aktiengesellschaft. Plasma CVD method for producing a diamond coating. 5,616,373, Cl. 427-577.000.
Karp, Gary M.: *See*—
Crews, Alvin D., Jr.; Harrington, Philip M.; Karp, Gary M.; Manfredi, Mark C.; and Guaciaro, Michael A., 5,616,706, Cl. 544-221.000.
Kartler, Michael J. Corner finishing system method. 5,615,530, Cl. 52-745.090.
Kasai Kogyo Co., Ltd.: *See*—
Ueki, Katsuji; and Endo, Toyokazu, 5,616,396, Cl. 428-139.000.
Kashevarov, Leonid A.: *See*—
Mazgarov, Akhmet M.; Fakhriev, Akhmatfail M.; Khafizov, Rais N.; Kashevarov, Leonid A.; and Alimov, Mikhail P., 5,616,306, Cl. 423-228.000.
Kashida, Meguru: *See*—
Kubota, Yoshihiro; Kawakami, Satoshi; Hamada, Yuichi; Shirasaki, Toru; Nagata, Yoshihiko; and Kashida, Meguru, 5,616,927, Cl. 250-492.200.
Kashioka, Tohru; Tanno, Shogo; and Mamishin, Etsuro, to Mitsubishi Cable Industries, Ltd. Method and apparatus for electrically testing multi-core cable. 5,617,033, Cl. 324-540.000.
Kashiwada, Seiji: *See*—
Tatsuno, Tadayoshi; Wakimoto, Mitsuo; and Kashiwada, Seiji, 5,616,388, Cl. 428-421.000.
Kasianovitz, Elizabeth J. M.; Bellm, Lisa A.; and Maxwell, Kameron W., to Genta Incorporated. Unit dose skin care package. 5,616,337, Cl. 424-414.000.
Kasina, Sudhakar: *See*—
Fritzberg, Alan R.; Kasina, Sudhakar; Rao, Tripuraneni N.; VanderHeyden, Jean-Luc; and Srinivasan, Ananthachari, 5,616,692, Cl. 530-391.500.
Kasori, Mitsuo: *See*—
Horiguchi, Akihiro; Monma, Jun; Kimura, Kazuo; Oh-Ishi, Katsuyoshi; Ueno, Fumio; Kasori, Mitsuo; and Sumino, Hiroyasu, 5,616,956, Cl. 257-703.000.
Kassai, Kenzou, to Aprica Kassai Kabushikikaisha. Seat for child-care implement. 5,615,927, Cl. 297-452.270.
Kastan, Michael B.: *See*—
Fornace, Albert J., Jr.; and Kastan, Michael B., 5,616,463, Cl. 435-6.000.
Kataoka, Mitsuteru; Imanaka, Takeshi; Tanaka, Atsushi; and Yamamoto, Sozo, to Matsushita Electric Industrial Co., Ltd. Input device. 5,617,117, Cl. 345-157.000.
Kataumi, Yoshimasa; and Takikawa, Yoshihiro, to Fuji Kiko Co., Ltd. Sealing structure for automatic transmission shift control device. 5,615,576, Cl. 74-18.100.
Katayama, Akira: *See*—
Numata, Yasuhiro; Takayanagi, Yoshiaki; Katayama, Akira; Kuwabara, Nobuyuki; Ebisawa, Isao; and Ohtani, Tsuyoshi, 5,617,122, Cl. 347-14.000.
Katayama, Makoto; and Kanie, Tomohiko, to Sumitomo Electric Industries, Ltd. Method of increasing index of refraction of silica glass. 5,617,460, Cl. 378-64.000.
Katayama, Masanori; and Agata, Hiroshi, to Hitachi, Ltd. Reduction mechanism for mill and mill having the same. 5,616,098, Cl. 475-346.000.
Kato, Hidenobu: *See*—
Matsuda, Yoshio; Kato, Hidenobu; and Ikeguchi, Yoshito, 5,615,563, Cl. 66-193.000.
Kato, Hideto, to Shin-Etsu Chemical Co., Ltd. Photosensitive resin composition and a process for forming a patterned polyimide film using the same. 5,616,448, Cl. 430-283.100.
Kato, Hiroaki: *See*—
Shimasaki, Yuichi; Komatsuda, Takashi; and Kato, Hiroaki, 5,615,552, Cl. 60-277.000.
Kato, Hironori: *See*—
Mitsuzuka, Katsuya; and Kato, Hironori, 5,616,849, Cl. 73-862.322.
Kato, Hiroyasu: *See*—
Kishi, Hajime; Odagiri, Nobuyuki; Tazaki, Tokuo; Nagata, Hideo; Terashita, Takeshi; Nishimura, Akira; and Kato, Hiroyasu, 5,616,405, Cl. 442-60.000.
Kato, Hiroyuki; and Ito, Takaharu, to NEC Corporation. Semiconductor semicustom-made integrated circuit device having component transistors variable in gain for fo.ming basic cell. 5,616,940, Cl. 257-206.000.
Kato, Koji; Ando, Hiroyuki; Sugita, Yukihiko; Ichikawa, Hideaki; Inoue, Akira; and Miyazaki, Satoshi, to Olympus Optical Co., Ltd. Data imprinting device for a camera having changeable image size. 5,617,162, Cl. 396-318.000.
Kato, Masayuki: *See*—
Aritake, Hirokazu; Kato, Masayuki; Ishimoto, Manabu; Sato, Noriko; and Nakashima, Masato, 5,617,225, Cl. 359-9.000.
Kiuchi, Kazuhiko; Nakai, Shigeo; Sawa, Masuo; Kato, Masayuki; Sakai, Mitsuru; and Nomura, Shinya, 5,616,631, Cl. 523-139.000.
Kato, Toshiyuki: *See*—
Ise, Yoshiaki; Miyazawa, Hiroyuki; Kimura, Hiroyuki; Okoshi, Shinichi; Nakamura, Tatsumasa; and Kato, Toshiyuki, 5,617,262, Cl. 359-846.000.
Kato, Yoshiei; Nabeshima, Seiji; Ito, Yoichi; and Sorimachi, Kenichi, to Kawasaki Steel Corporation. Method of producing molten aluminum-killed steel for thin steel sheet. 5,616,188, Cl. 148-508.000.
Kato, Yoshihisa, to Toyota Jidosha Kabushiki Kaisha. Vehicle pedal device having mechanism for displacing pedal pad away from steering device upon application of external force to the vehicle. 5,615,749, Cl. 180-274.000.
Katoh, Koichi: *See*—
Ichikawa, Hiroyuki; Ikeda, Yoshinori; Katoh, Koichi; Kurita, Mitsuru; Suzuki, Yasumichi; and Kitamura, Toshiyuki, 5,617,224, Cl. 358-530.000.
Katsuki, Shinji: *See*—
Matsumoto, Kissei; Fuchu, Katsuki; and Katsuki, Shinji, 5,617,383, Cl. 369-32.000.
Katsumata, Haruo: *See*—

Mita, Masaaki; Sugimoto, Kenji; and Katsumata, Haruo, 5,616,247, Cl. 210-640.000.
Katsuo, Kenichi, to Toyo Boseki Kabushiki Kaisha. Thermosetting polyurethane-urea elastic yarn and process thereof. 5,616,676, Cl. 528-61.000.
Katta, Noboru: *See—*
Ibaraki, Susumu; Katta, Noboru; Nakamura, Seiji; and Murakami, Hiroki, 5,617,476, Cl. 380-49.000.
Kau, Pui K., to Asian International Trades Company. Electrical connector for storage batteries. 5,616,433, Cl. 429-121.000.
Kaufman, Robert J.; Richard, Thomas J.; and Fuhrhop, Ralph W., to HemaGen/PFC. Stable oil-in-water emulsions incorporating a taxine (taxol) and method of making same. 5,616,330, Cl. 424-400.000.
Kaul, Bansi L.: *See—*
Goldmann, Jürgen; and Kaul, Bansi L., 5,616,778, Cl. 560-35.000.
Kauppinen, Marjo: *See—*
Nieminen, Juha; Tamminen, Aki; Huotari, Petri; Reinvall, Reima; Kauppinen, Marjo; and Heikkilä , Kimmo, 5,616,894, Cl. 187-247.000.
Kawa, Franciszek: *See—*
Roehrig, Adalbert; and Kawa, Franciszek, 5,615,731, Cl. 164-418.000.
Kawaai, Koji: *See—*
Imuta, Junichi; Fukuoka, Daisuke; Yoshida, Masayasu; Saito, Junji; Fujita, Terunori; Tashiro, Takashi; Kawaai, Koji; Ueda, Takashi; and Kiso, Yoshihisa, 5,616,663, Cl. 526-127.000.
Kawabata, Takashi; Hyakutake, Nobuo; Furusawa, Fumio; Tokunaga, Masaaki; and Tsuruoka, Ryoichi, to Fuji Xerox Co., Ltd. Image forming apparatus having a device for stripping a transfer member carried on a transfer drum. 5,617,197, Cl. 399-398.000.
Kawada, Akira: *See—*
Wakimasu, Mitsuhiro; Kikuchi, Takashi; Kawada, Akira; and Shirafuji, Hideo, 5,616,684, Cl. 530-317.000.
Kawagoe, Seiji; Iwase, Kazuhiko; and Shibata, Haruo, to Kabushiki Kaisha Toshiba. Servo data writing apparatus for supporting the free end of a rotating shaft in a magnetic disk device and method of writing servo data. 5,617,267, Cl. 360-77.020.
Kawaguchi, Hirofumi; Mizuta, Yasufumi; Matsumoto, Syunichi; Akiba, Nobuko; Fukami, Toshiyuki; Yamazato, Ichiro; Uegaito, Hisakazu; and Tanaka, Yuji, to Mita Industrial Co., Ltd. Tryptoanthorine derivative contained in electrophotosensitive material. 5,616,441, Cl. 430-78.000.
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Yokono, Tomohiko; Sonobe, Masanori; Kawaguchi, Masahiro; Okuno, Takuya; and Suitou, Ken, 5,616,008, Cl. 417-222.200.
Kawaguchi, Yasuhiro: *See—*
Egawa, Tatsuya; Kawaguchi, Yasuhiro; Mogami, Kenji; and Shimizu, Nobuaki, 5,616,812, Cl. 568-598.000.
Kawahara, Hiroyuki: *See—*
Ito, Kan; Taguchi, Tomishige; Endo, Shozo; Inagaki, Atsushi; and Kawahara, Hiroyuki, 5,617,138, Cl. 348-222.000.
Kawahara, Shinya: *See—*
Ito, Osamu; Sakurai, Hideo; Nogawa, Chiharu; and Kawahara, Shinya, 5,616,534, Cl. 503-227.000.
Kawahara, Toshimi: *See—*
Ochiai, Masayuki; Hashimoto, Kaoru; Kawahara, Toshimi; and Ōsumi, Mayumi, 5,616,164, Cl. 75-342.000.
Kawai, Hideki; Tamaoka, Masami; and Saito, Yukie, to Toray Industries, Inc. Platinum(II) complex and malignant tumor treatment agent. 5,616,613, Cl. 514-492.000.
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Wakamoto, Shinji; Kawai, Hidemi; and Inoue, Fuyuhiko, 5,617,182, Cl. 355-53.000.
Kawai, Norio; and Take, Shigeo, to Oppama Industry Co., Ltd. Time totaling meter and unit of the same for internal combustion engine. 5,617,373, Cl. 368-5.000.
Kawai, Tsutomu: *See—*
Tonomoto, Yoshihiro; Fuke, Kenji; Sugimoto, Katsumi; Suzuki, Eiji; Tonai, Keiko; Tonai, Shozo; Yoshii, Hitoshi; Kawai, Tsutomu; Sato, Kunihiko; and Shimatsu, Katsuya, 5,617,192, Cl. 399-263.000.
Kawajiri, Kazuhiko: *See—*
Honda, Tetsuya; and Kawajiri, Kazuhiko, 5,615,556, Cl. 62-6.000.
Kawakami, Kazuo: *See—*
Mizushima, Tetsuya; Juri, Tatsuro; Matsumi, Chiyoko; and Kawakami, Kazuo, 5,617,263, Cl. 360-48.000.
Kawakami, Satoshi: *See—*
Kubota, Yoshihiro; Kawakami, Satoshi; Hamada, Yuichi; Shirasaki, Toru; Nagata, Yoshihiko; and Kashida, Meguru, 5,616,927, Cl. 250-492.200.
Kawakita, Takeshi; Sano, Mitsuharu; Yutoku, Yuko; Ikeda, Yoshifumi; and Haga, Keiichiro, to Yoshitomi Pharmaceutical Industries, Ltd. Pharmaceutical use of pyridine compounds. 5,616,581, Cl. 514-234.500.
Kawakita, Toshio: *See—*
Kotani, Kozo; Kawakita, Toshio; Sakaya, Taiichi; and Kuroda, Ryuma, 5,616,649, Cl. 525-56.000.
Kawamura, Akihisa: *See—*
Tagami, Ryou; Norimatsu, Takeshi; Matsumoto, Masaharu; Oda, Mikio; Serikawa, Mitsuhiko; Kawamura, Akihisa; and Numazu, Hiroko, 5,617,478, Cl. 381-56.000.
Kawamura, Kiyoshi: *See—*
Hayashida, Hajime; Aoyagi, Takashi; Inoue, Satoshi; Nozue, Ringi; Kawamura, Kiyoshi; and Sato, Shigeaki, 5,616,880, Cl. 84-719.000.
Kawamura, Makoto: *See—*
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Kawarazaki, Masaru: *See—*
Uchiyama, Yasufumi; Kawarazaki, Masaru; and Shirai, Jun-ichi, 5,617,130, Cl. 347-131.000.
Kawasaki, Masahiro; Takahashi, Hiroyuki; and Tanimura, Yoshinari, to Asahi Kogaku Kogyo Kabushiki Kaisha. Camera system having power zoom lens. 5,617,173, Cl. 396-78.000.
Kawasaki Steel Corp.: *See—*
Fujimoto, Tomoya; Okamura, Kenko; Morishita, Shigeru; Murakami, Masaru; Adachi, Akira; Hayashi, Mitsutoshi; Fujita, Akinari; Nagashima, Shingo; Kurashina, Minoru; and Yoshida, Kentaro, 5,615,976, Cl. 405-184.000.
Fujita, Masao; and Iida, Osamu, 5,616,166, Cl. 75-387.000.
Kato, Yoshiei; Nabeshima, Seiji; Ito, Yoichi; and Sorimachi, Kenichi, 5,616,188, Cl. 148-508.000.
Kawashima, Takashi; Tamagawa, Akira; and Osanai, Akira, to Olympus Optical Co., Ltd. Optical reading apparatus. 5,616,910, Cl. 235-479.000.
Kawashiro, Masayuki: *See—*
Takeuchi, Shinji; Shinohara, Eiji; and Kawashiro, Masayuki, 5,615,843, Cl. 242-319.000.
Kawata, Shigeru; Noguchi, Kazuo; Ako, Kenji; and Nakamura, Shin, to Daihachi Chemical Industry Co., Ltd. Process for purifying phosphoric esters. 5,616,768, Cl. 558-146.000.
Kawata, Toshihiko: *See—*
Mizuta, Ken; Kawata, Toshihiko; Shibazaki, Ken; and Miura, Yukio, 5,617,000, Cl. 318-663.000.
Kay, William W.: *See—*
Newman, Stephen G.; and Kay, William W., 5,616,329, Cl. 424-261.100.
Kayanuma, Kanji: *See—*
Nishizawa, Akira; and Kayanuma, Kanji, 5,617,408, Cl. 369-275.400.
Kearns, John J.: *See—*
Janoff, Andrew S.; Boni, Lawrence; Madden, Thomas D.; Cullis, Pieter R.; Lenk, Robert P.; Kearns, John J.; Durning, Anthony G.; Klimchak, Robert; and Portnoff, Joel, 5,616,334, Cl. 424-404.000.
Keene, Darren S.: *See—*
Duncan, Gregory S.; Calvin, Olin W.; Schlagel, Mark E.; Keene, Darren S.; and Edwards, Russell J., 5,616,184, Cl. 134-22.100.
Keersmaekers, Marc. Device for the cleansing of the flue gases from waste incineration installations. 5,616,156, Cl. 55-269.000.
Keidl, Steven D.; Rotter, Jeffrey S.; and Steele, Steven W., to International Business Machines Corporation. Battery charging method and apparatus using current control. 5,617,007, Cl. 320-22.000.
Keilhauer, Gerhard; Romerdahl, Cynthia; Braña, Miguel F.; Qian, Xiao-Dong; Bousquet, Peter; Berlanga, Jose M.C.; Moset, Marina M.; and de Vega, Maria J.P., to BASF Aktiengesellschaft. New bis-naphthalimides for the treatment of cancer. 5,616,589, Cl. 514-296.000.
Keitzer, Betty J.: *See—*
Keitzer, John E.; and Keitzer, Betty J., 5,616,032, Cl. 434-117.000.
Keitzer, John E.; and Keitzer, Betty J. Multipurpose check writing guide. 5,616,032, Cl. 434-117.000.
Kelleher, Peter J.: *See—*
Lam, Dominic M.; and Kelleher, Peter J., 5,616,122, Cl. 604-49.000.
Keller, Hans-Georg: *See—*
Kowalk, Wolfgang; and Keller, Hans-Georg, 5,617,415, Cl. 370-395.000.
Keller, Jakob J.: *See—*
Althaus, Rolf; Keller, Jakob J.; and Schulte-Werning, Burkhard, 5,615,546, Cl. 60-39.020.
Keller, James F.: *See—*
Fogler, Donald L., Jr.; and Keller, James F., 5,617,316, Cl. 364-424.014.
Kelley, Henry A.; Vaes, Jos Alfons; and Van Hunsel, Johan H., to Agfa Division, Bayer Corporation. Method for obtaining a lithographic plate. 5,616,445, Cl. 430-204.000.
Kelley, Michael H., to Data General Corporation. Method of executing a series of computer code operations that must be completed without interruption by a page fault during execution. 5,617,558, Cl. 395-493.000.
Kellner, Robert J.; and Cassidy, Mark F., Jr., to Gemcor Engineering Corp. Automatic fastening machine with statistical process control. 5,615,474, Cl. 29-703.000.
Kelly, Stephen: *See—*
Lockshaw, James J.; Kelly, Stephen; Walker, Randall; and Kaiser, John, Jr., 5,616,376, Cl. 428-33.000.
Kelsay, Curtis D.; and Ness, Alan J., to Marshalltown Trowel Company. Taping knife handle. 5,615,445, Cl. 15-245.100.
Kelsey-Heyes Company: *See—*
Abuelsamid, Samir, 5,615,934, Cl. 303-191.000.
KEM Kuppers Elektromechanik GmbH: *See—*
Pucher, Hans-Jürgen, 5,616,862, Cl. 73-261.000.
Kemp, Alan D. Exterior door lock cover. 5,615,567, Cl. 70-455.000.
Kempf, Dale J.; Norbeck, Daniel W.; Codacovi, Lynn M.; Sham, Hing L.; and Wittenberger, Steven J., to Abbott Laboratories. Retroviral protease inhibiting compounds. 5,616,714, Cl. 546-269.700.
Kempf, Dale J.; Norbeck, Daniel W.; Sham, Hing L.; Zhao, Chen; and Reno, Daniel S., to Abbott Laboratories. Retroviral protease inhibiting compounds. 5,616,720, Cl. 548-204.000.
Kemutec Group, Ltd.: *See—*
Tunnicliffe, George; Lee, John P.; and Dixon, Damian, 5,615,969, Cl. 403-348.000.
Kendall, John H. W.: *See—*

Moses, Leonard C.; Kendall, John H. W.; and Hyde, Bradley G., 5,615,622, Cl. 109-2.000.
Kendall, Steven S., to Genesee Polymers Corporation. Restructuring silicone rubber to produce fluid or grease. 5,616,646, Cl. 524-588.000.
Kennecott Utah Copper Corporation: *See—*
Gabb, Philip J.; and Evans, J. Philip, 5,616,168, Cl. 75-718.000.
Kennedy, Ann R.; Koch, Cameron J.; Lord, Edith M.; and Wan, Xingsheng, to University of Pennsylvania, Trustees of the; and University of Rochester. Monoclonal antibodies differentially reactive with native and reductively modified Bowman-Birk protease inhibitor. 5,616,492, Cl. 435-341.000.
Kennedy, M. Keith: *See—*
Payne, Jewel M.; Kennedy, M. Keith; Randall, John B.; Meier, Henry; Uick, Heidi J.; Foncerrada, Luis; Schnepf, Harry E.; and Schwab, George E., 5,616,495, Cl. 435-252.300.
Kenney, James W., to Drummond Scientific Company. Pipet gun assembly. 5,616,871, Cl. 73-864.140.
Kenway, Daniel J.: *See—*
Weichman, Frank L.; van der Schoot, Jelle; Kenway, Daniel J.; Hughes, Alan J.; and Flatman, Carl S., 5,615,777, Cl. 209-511.000.
Kenworthy, Linda L., to Dow Chemical Company, The. Thermoplastic foam insulation and drainage board in below-grade applications. 5,615,525, Cl. 52-169.500.
Kenyon, Ronald W.; and Mistry, Prahalad M., to Zeneca Limited. Azo compound. 5,616,694, Cl. 534-598.000.
Kerdesky, Francis A. J.: *See—*
Stuk, Timothy L.; Haight, Anthony R.; Kerdesky, Francis A. J.; Leanna, M. Robert; Morton, Howard E.; Robbins, Timothy A.; Scarpetti, David; and Tien, Jien-Heh J., 5,616,776, Cl. 560-27.000.
Kernan, Jeffrey T.: *See—*
Broadbent, Carolyn C.; Kernan, Jeffrey T.; and Truche, Jean L., 5,616,919, Cl. 250-292.000.
Kerwin, Patrick A. Speed learning system computer based training. 5,616,033, Cl. 434-118.000.
Kewin, Daniel D. Tubular core assembilies for rolls of paper or other sheet material. 5,615,845, Cl. 242-613.500.
Keyrouz, Walid T.; Kramer, Glenn A.; and Pabon, Jahir A., to Schlumberger Technology Corporation. Dependency graph solution for constraint systems. 5,617,510, Cl. 395-10.000.
Khafizov, Rais N.: *See—*
Mazgarov, Akhmet M.; Fakhriev, Akhmatfail M.; Khafizov, Rais N.; Kashevarov, Leonid A.; and Alimov, Mikhail P., 5,616,306, Cl. 423-228.000.
Khanna, Ish K.; Weier, Richard M.; Collins, Paul W.; Yu, Yi; Xu, Xiangdong; Partis, Richard A.; and Koszyk, Francis J., to GD Searle & Co. 1,2-aryl and heteroaryl substituted imidazolyl compounds for the treatment of inflammation. 5,616,601, Cl. 514-399.000.
Khazanov, Yuri; and Norwood, Wilbor D., to Yeomans Chicago Corporation. Pump motor housing with improved cooling means. 5,616,973, Cl. 310-54.000.
Khudenko, Boris M. Treatment of wastewater and sludges. 5,616,241, Cl. 210-151.000.
Khyber Technologies Corporation: *See—*
Kumar, Rajendra, 5,616,906, Cl. 235-462.000.
K·I Chemical Industry Co., Ltd.: *See—*
Nagase, Yu; Aoyagi, Takao; Akimoto, Tomoko; Tanaka, Kazunori; Iwabuchi, Kouichi; and Konagai, Yoshihiro, 5,616,317, Cl. 424-78.300.
Kibayashi, Hiroshi: *See—*
Takaba, Tetsufumi; Fujita, Masami; Yamazaki, Masaru; Kibayashi, Hiroshi; Sugano, Kazuyoshi; and Ishii, Shizuo, 5,617,169, Cl. 396-284.000.
Kidston, Kevin S.; and Conlon, Brendan M., to General Motors Corporation. Electric vehicle with regenerative and anti-lock braking. 5,615,933, Cl. 303-152.000.
Kijima, Satoru: *See—*
Ishibashi, Akira; Nakayama, Norikazu; and Kijima, Satoru, 5,617,446, Cl. 372-96.000.
Kijima, Takahiko: *See—*
Nishizawa, Junichi; Kijima, Takahiko; Ezell, Edward F.; and Makihara, Akira, 5,615,954, Cl. 374-17.000.
Kikuchi, Naomi. Wind power generator with automatic regulation of blade pitch in response to wind speed by means of spring mounted blades. 5,616,963, Cl. 290-55.000.
Kikuchi, Takashi: *See—*
Wakimasu, Mitsuhiro; Kikuchi, Takashi; Kawada, Akira; and Shirafuji, Hideo, 5,616,684, Cl. 530-317.000.
Kikuchi, Tetsuo: *See—*
Yanagihara, Masamitsu; Shirasu, Hiroshi; and Kikuchi, Tetsuo, 5,617,181, Cl. 355-46.000.
Kikuchi, Toshihiro: *See—*
Kanemaru, Tetsuro; Kikuchi, Toshihiro; Senoo, Akihiro; and Nakata, Kouichi, 5,616,442, Cl. 430-83.000.
Kikuoka, Yasuhira: *See—*
Kusunoki, Akira; Otsuki, Jitsuji; Kikuoka, Yasuhira; Okada, Tatsunori; Matsumura, Mitsuie; Shinoki, Toshio; Mukai, Masahiro; and Yagi, Tetsuya, 5,616,431, Cl. 429-36.000.
Kim, Bong-Wha: *See—*
Lim, Nack-Hyun; Kim, Young-Cheol; and Kim, Bong-Wha, 5,616,194, Cl. 152-209.00R.
Kim, Dong K.: *See—*
Helfer, Farrel B.; Kim, Dong K.; Morgan, John G.; Shemenski, Robert M.; Sinopoli, Italo M.; Jeanpierre, Guy; and Nguyen, Gia V., 5,616,197, Cl. 152-527.000.
Kim, Dong-Young; and Chung, Yeon-Choon, to Korea Research Institute of Standards & Science. Hybrid type wide band electromagnetic wave absorber. 5,617,095, Cl. 342-1.000.
Kim, Eung-ho: *See—*
Lee, Chul-woo; Jeong, Jong-sam; and Kim, Eung-ho, 5,617,398, Cl. 369-110.000.
Kim, Hong-keun: *See—*
Choi, Sang-kook; Kwon, Chung-hwan; and Kim, Hong-keun, 5,616,025, Cl. 432-241.000.
Kim, Hyo J., to Hyundai Electronics Industries Co., Ltd. High energy-saving circuit for a display apparatus. 5,616,988, Cl. 315-1.000.
Kim, In-Gyu: *See—*
Steinert, Peter M.; Kim, In-Gyu; Chung, Soo-Il; and Park, Sang-chul, 5,616,500, Cl. 435-320.100.
Kim, Si J., to Goldstar Co., Ltd. Inverse quantizer. 5,617,094, Cl. 341-200.000.
Kim, Yong H.: *See—*
Lee, Hyun J.; Lee, Sang M.; and Kim, Yong H., 5,617,149, Cl. 348-699.000.
Kim, Young-Cheol: *See—*
Lim, Nack-Hyun; Kim, Young-Cheol; and Kim, Bong-Wha, 5,616,194, Cl. 152-209.00R.
Kimbara, Hidekatsu: *See—*
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Kimberly-Clark Corporation: *See—*
Finch, Valerie V.; Glaug, Frank S.; Olson, Christopher P.; Ratliff, Kathleen I.; and Sheldon, Donald A., 5,616,201, Cl. 156-73.100.
Kronzer, Francis J., 5,616,155, Cl. 51-295.000.
Nohr, Ronald S.; MacDonald, John G.; McGinniss, Vincent D.; and Whitmore, Robert S., Jr., 5,616,443, Cl. 430-106.000.
Sudall, Stephen J.; and Engel, Steven A., 5,616,207, Cl. 156-246.000.
Kimoto, Mamoru: *See—*
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Kimura, Hiroyuki: *See—*
Ise, Yoshiaki; Miyazawa, Hiroyuki; Kimura, Hiroyuki; Okoshi, Shinichi; Nakamura, Tatsumasa; and Kato, Toshiyuki, 5,617,262, Cl. 359-846.000.
Kimura, Katsuji, to NEC Corporation. Transconductance-variable analog multiplier using triple-tail cells. 5,617,052, Cl. 327-356.000.
Kimura, Kazuo: *See—*
Horiguchi, Akihiro; Monma, Jun; Kimura, Kazuo; Oh-Ishi, Katsuyoshi; Ueno, Fumio; Kasori, Mitsuo; and Sumino, Hiroyasu, 5,616,956, Cl. 257-703.000.
Kimura, Koichi; Ogura, Toshihiko; Aotsu, Hiroaki; Ikegami, Mitsuru; Kuwabara, Tadashi; Enomoto, Hiromichi; and Kyoda, Tadashi, to Hitachi, Ltd. Memory device. 5,617,360, Cl. 365-189.010.
Kimura, Misako: *See—*
Kaneko, Masakatsu; Murofushi, Yoshinobu; Kimura, Misako; Yamazaki, Mitsuo; and Iijima, Yasuteru, 5,616,600, Cl. 514-397.000.
Kimura, Norio: *See—*
Okumura, Katsuya; Aoki, Riichirou; Yajima, Hiromi; Kodera, Masako; Mishima, Shirou; Shigeta, Atsushi; Hirose, Masayoshi; Kimura, Norio; and Ishikawa, Seiji, 5,616,063, Cl. 451-1.000.
Kimura, Shingo: *See—*
Shinada, Hiroyuki; Kimura, Shingo; Kuroda, Katsuhiro; Fukuhara, Satoru; and Ohshima, Takashi, 5,616,926, Cl. 250-423.00F.
King, Christine L. Block play table. 5,615,619, Cl. 108-25.000.
King, Jerrold L.; Ahmad, Syed S.; and Brooks, Jerry M., to Micron Technology, Inc. Lead frame surface finish enhancement. 5,616,953, Cl. 257-666.000.
Kingstone, Brett M., to Super Vision International, Inc. Lateral illumination fiber optic cable device and method of manufacture. 5,617,496, Cl. 385-100.000.
Kingstone, Brett M., to Super Vision International, Inc. Lateral illumination fiber optic cable device and method of manufacture. 5,617,497, Cl. 385-100.000.
Kinnison, Robert W. Vegetation barrier for fencing. 5,615,866, Cl. 256-1.000.
Kinoshita, Hiroshi: *See—*
Yoneyama, Tsutomu; and Kinoshita, Hiroshi, 5,617,487, Cl. 382-199.000.
Kinoshita, Taizo: *See—*
Noda, Fumio; Shibata, Koichi; and Kinoshita, Taizo, 5,617,135, Cl. 348-12.000.
Kinouchi, Shigenori; and Sawada, Akira, to NEC Corporation. Huffman code decoding circuit. 5,617,089, Cl. 341-65.000.
Kinsella, James L.; and Sollott, Steven J., to United States of America, Health and Human Services. Method of treating atherosclerosis or restenosis using microtubule stabilizing agent. 5,616,608, Cl. 514-449.000.
Kinzle, Robert A.: *See—*
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Kioritz Corporation: *See—*
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Miyashita, Susumu; Nagashima, Akira; Kondo, Tadashige; and Ishii, Keisuke, 5,615,538, Cl. 53-589.000.

Kirayoglu, Birol: *See—*
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Kirin Beer Kabushiki Kaisha: *See—*
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Kirkham, Thomas R.; Laconte, Kirsten N.; Hall, Michael L.; Snyder, Jonathan E.; Wallace, Edward S.; Phillips, William H., Jr.; and Petersen, Robert L., Jr., to General Electric Company. Integral auto-selecting yoke/transducer connector for ultrasound transducer probe. 5,615,678, Cl. 128-660.010.
Kirma, Safa, to Daimler-Benz Aerospace Airbus GmbH. Electrical and mechanical cable connector permitting relative rotation between connector components. 5,616,887, Cl. 174-84.00R.
Kirsch, Howard C.: *See—*
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Kishi, Hajime; Odagiri, Nobuyuki; Tazaki, Tokuo; Nagata, Hideo; Terashita, Takeshi; Nishimura, Akira; and Kato, Hiroyasu, to Toray Industries, Inc. Cloth prepreg, process for producing the same and reinforcing fabric. 5,616,405, Cl. 442-60.000.
Kishigami, Takaaki: *See—*
Mimura, Masahiro; Hasegawa, Makoto; Yokozaki, Katsushi; Harada, Hiroyuki; Kishigami, Takaaki; and Tanaka, Yasunari, 5,617,451, Cl. 375-340.000.
Kiso, Shigemitsu: *See—*
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Kiso, Yoshihisa: *See—*
Imuta, Junichi; Fukuoka, Daisuke; Yoshida, Masayasu; Saito, Junji; Fujita, Terunori; Tashiro, Takashi; Kawaai, Koji; Ueda, Takashi; and Kiso, Yoshihisa, 5,616,663, Cl. 526-127.000.
Kita, Hideki; and Tseng, Wenjea J., to Isuzu Motors Limited. Composite ceramic. 5,616,527, Cl. 501-97.000.
Kita, Shigeru: *See—*
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Kita, Yukio: *See—*
Ishihara, Makiichi; Sunada, Takakazu; Hasegawa, Shigeo; Ukawa, Naohiko; Takashina, Toru; Kita, Yukio; Iwashita, Kouichiro; Yamashita, Kousuke; Ozaki, Junji; and Kaneshige, Kaname, 5,616,290, Cl. 261-115.000.
Kitagawa, Masahiko; and Tomomura, Yoshitaka, to Sharp Kabushiki Kaisha. Compound semiconductor luminescent device. 5,616,937, Cl. 257-94.000.
Kitai, Katsuyoshi: *See—*
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Kitamoto, Dai: *See—*
Nakai, Takeshi; Kitamoto, Dai; and Sayo, Noboru, 5,616,751, Cl. 556-54.000.
Kitamura, Atsushi: *See—*
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Kleinhen, Stephen R., to Heidelberg Finishing Systems, Inc. Sheet material handling apparatus and method. 5,615,871, Cl. 270-45.000.
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Huang, Alan Y.; Knapp, Steven K.; and Kwatra, Sanjeev, 5,617,573, Cl. 395-376.000.
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Ko, Chin-Sung. Umbrella folding and unfolding device. 5,615,698, Cl. 135-28.000.
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Kobayashi, Hideki: *See—*
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Kobayashi, Hiroya: *See—*
Itoh, Hiroshi; Yamamoto, Yoshinobu; Fukuhara, Koji; Shiroshima, Masahiro; and Kobayashi, Hiroya, 5,616,681, Cl. 528-279.000.
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Kobayashi, Nobuaki, to Sakura Color Products Corp. Liquid applicator and method of making same. 5,615,963, Cl. 401-206.000.
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Koch, Dietrich; Leicht, Werner; and Wand, Norbert, to MTU Motoren- Und Turbinen-Union Friedrichshafen GmbH. Internal-combustion engine cylinder head. 5,615,641, Cl. 123-41.82R.

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Koch, Robert J.: *See—*
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Kochanski, Gregory P.: *See—*
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Kodama, Noriaki, to NEC Corporation. Nonvolatile semiconductor memory device capable of converging threshold voltage with low power supply voltage. 5,617,358, Cl. 365-185.290.
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Koenemann, Bernd K. F.; McAnney, William H.; and Shulman, Mark L., to International Business Machines Corporation. Clocking mechanism for delay, short path and stuck-at testing. 5,617,426, Cl. 371-22.300.
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Prohaska, Stefan, 5,615,610, Cl. 101-253.000.
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Koenig, Paul A.: *See—*
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Koetsier, Wicher T.: *See—*
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Koetzsch, Hans-Joachim: *See—*
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Kohno, Satoru, to Shimadzu Corporation. MR imaging method and apparatus utilizing gradient and spin echo technique. 5,615,676, Cl. 128-653.200.
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Koishikawa, Jun: *See—*
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Kojima, Ichiro: *See—*
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Kojima, Masahiro: *See—*
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Kokuga, Toshiharu: *See—*
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Kolbe, Kevin C.: *See—*
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Kolton, Chester; and Spater, Stuart S., to B&G Plastics, Inc. Hanger for suspenders with trouser waistband snaps. 5,615,810, Cl. 223-85.000.
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Komatsu, Masatoshi, to NEC Corporation. Receiving circuit reset upon reception of burst data and transmission/reception system utilizing the same. 5,617,562, Cl. 395-559.000.
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Murakami, Eisaku; Yuasa, Kazuhiro; Endoh, Shuichi; Matsumae, Iwao; Tanaka, Yoshiaki; Hosokawa, Hiroshi; Uno, Mugijiroh; Saitoh, Hiroshi; Takenaka, Eiji; Sugiyama, Toshihiro; Yamanaka, Tetsuo; and Komatsubara, Satoru, 5,617,191, Cl. 399-286.000.
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Konagai, Yoshihiro: *See—*
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Kondo, Yasuhiro: *See—*
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Koskinen, Jukka; Andtsjö , Henrik; Takakarhu, Jouni; and Sarantila, Kari, to Borealis Polymers Oy. Method for polymerizing olefins in a fluid-bed reactor. 5,616,662, Cl. 526-88.000.
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 Morishita, Hiroki; Taniguchi, Susumu; and Kotera, Shinichi, 5,617,194, Cl. 399-349.000.
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Krafka, Edward G. Garden hand tool. 5,615,744, Cl. 172-22.000.
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 Nagai, Hideo; Takayama, Toru; Kume, Masahiro; and Yoshikawa, Akio, 5,617,435, Cl. 372-22.000.
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 Lim, Nack-Hyun; Kim, Young-Cheol; and Kim, Bong-Wha, 5,616,194, Cl. 152-209.00R.
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 Ikeda, Atsuhiko; Ozaki, Masami; Honami, Reijiro; Yumita, Takashi; Yano, Hiroyuki; Nakano, Yuki; Kurihara, Yutaka; and Hirano, Tadayoshi, 5,616,594, Cl. 514-340.000.
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 Tsai, Chiu-Mei; Kuo, Mei-Ling; and Huang, Kuo-Chih, 5,617,328, Cl. 364-490.000.
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 Kusano, Manabu; Ishii, Masao; and Sukenobe, Nobuo, 5,616,652, Cl. 525-315.000.
Kurashina, Minoru: *See*—
 Fujimoto, Tomoya; Okamura, Kenko; Morishita, Shigeru; Murakami, Masaru; Adachi, Akira; Hayashi, Mitsutoshi; Fujita, Akinari; Nagashima, Shingo; Kurashina, Minoru; and Yoshida, Kentaro, 5,615,976, Cl. 405-184.000.
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 Sonobe, Naohiro; Ishikawa, Minoru; and Iwasaki, Takao, 5,616,436, Cl. 429-218.000.
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 Ichikawa, Hiroyuki; Ikeda, Yoshinori; Katoh, Koichi; Kurita, Mitsuru; Suzuki, Yasumichi; and Kitamura, Toshiyuki, 5,617,224, Cl. 358-530.000.
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 Shinada, Hiroyuki; Kimura, Shingo; Kuroda, Katsuhiro; Fukuhara, Satoru; and Ohshima, Takashi, 5,616,926, Cl. 250-423.00F.
Kuroda, Ryuma: *See*—
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Kuroda, Yasushi: *See*—
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 Morohoshi, Hiroshi; Masuda, Yuichi; and Kuroki, Yasuo, 5,616,860, Cl. 73-170.140.
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Kushner, William M.; Srenger, Edward; and Hartman, Matthew A., to Motorola, Inc. Method, apparatus, and radio optimizing Hidden Markov Model speech recognition. 5,617,509, Cl. 395-2.650.
Kusunoki, Akira; Otsuki, Jitsuji; Kikuoka, Yasuhira; Okada, Tatsunori; Matsumura, Mitsuie; Shinoki, Toshio; Mukai, Masahiro; and Yagi, Tetsuya, to Mitsubishi Denki Kabushiki Kaisha. Fuel cell and its bipolar plate. 5,616,431, Cl. 429-36.000.
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 Kimura, Koichi; Ogura, Toshihiko; Aotsu, Hiroaki; Ikegami, Mitsuru; Kuwabara, Tadashi; Enomoto, Hiromichi; and Kyoda, Tadashi, 5,617,360, Cl. 365-189.010.
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 Nambu, Kyojiro; Tomura, Masatoshi; and Kuwahara, Takayuki, 5,615,430, Cl. 5-600.000.
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 Höglund, Ronny; and Jansson, Ulf, 5,615,997, Cl. 415-169.100.
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 Wei, Ching Y.; Liu, Jianqiang; Salisbury, Roger S.; Kwasnick, Robert F.; Possin, George E.; and Albagli, Douglas, 5,616,524, Cl. 438-4.000.
Kwasnik, Joseph W. Method and apparatus for current regulation and temperature compensation. 5,616,846, Cl. 73-708.000.
Kwatra, Sanjeev: *See*—
 Huang, Alan Y.; Knapp, Steven K.; and Kwatra, Sanjeev, 5,617,573, Cl. 395-376.000.
Kwon, Chung-hwan: *See*—
 Choi, Sang-kook; Kwon, Chung-hwan; and Kim, Hong-keun, 5,616,025, Cl. 432-241.000.
Kyocera Corporation: *See*—
 Murano, Shunji; Miyauchi, Kouji; Taguchi, Akira; and Shirao, Kazuhiko, 5,617,131, Cl. 347-233.000.
 Oshumi, Yuzaburo, 5,616,853, Cl. 73-37.500.
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Kyoto Dai-Ichi Kagaku Co., Ltd.: *See*—
 Dou, Xiaoming; Yamaguchi, Yoshinori; Uenoyama, Harumi; and Wang, Yung X., 5,617,205, Cl. 356-301.000.
Kyushima, Hiroyuki: *See*—
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L & P Property Management Company: *See*—
 Wells, Thomas J.; and Starr, Robert C., IV, 5,615,435, Cl. 5-716.000.
La Technologie Avancee Medicale: *See*—
 Bourrelly, Julien, 5,615,439, Cl. 15-104.200.
Laakso, Pamela S.: *See*—
 Crouch, Alfred L.; Pressly, Matthew D.; Gay, James G.; Shepard, Clark G.; and Laakso, Pamela S., 5,617,531, Cl. 395-183.060.
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 Cartilier, Louis; Mateescu, Mircea A.; Dumoulin, Yves; and Lenaerts, Vincent, 5,616,343, Cl. 424-464.000.
Laborde, Alice L.: *See*—
 Argoudelis, Alexander D., deceased; Shilliday, Franklin B.; Laborde, Alice L.; Truesdell, Scott E.; and Sebek, Oldrich K., 5,616,320, Cl. 424-71.300.

Labuda, Lawrence L.: *See—*
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Lacan, Dominique: *See—*
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Kirkham, Thomas R.; Laconte, Kirsten N.; Hall, Michael L.; Snyder, Jonathan E.; Wallace, Edward S.; Phillips, William H., Jr.; and Petersen, Robert L., Jr., 5,615,678, Cl. 128-660.010.
LaCoste, James P., Jr.; and Ramseur, Joseph M. Golf swing training device. 5,616,085, Cl. 473-267.000.
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Laermer, Franz: *See—*
Benz, Gerhard; Marek, Jiri; Bantien, Frank; Muenzel, Horst; Laermer, Franz; Offenberg, Michael; and Schilp, Andrea, 5,616,523, Cl. 438-50.000.
LaFollette, William A., Jr.: *See—*
Hardesty, Doug; and LaFollette, William A., Jr., 5,615,447, Cl. 15-264.000.
Lafond, Luc. Insulated assembly incorporating a thermoplastic barrier member. 5,616,415, Cl. 428-411.100.
Lagrange, Alain: *See—*
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Lahmann, Gerald J. Gymnastic balance beam with articulated beam portions. 5,616,102, Cl. 482-34.000.
Lai, Konrad K.: *See—*
Alpert, Donald B.; Shoemaker, Kenneth D.; Kahn, Kevin C.; and Lai, Konrad K., 5,617,554, Cl. 395-418.000.
Lai, Shyh-Jen. Toothbrush. 5,615,443, Cl. 15-167.200.
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Laine, Eric H.; and Wilson, James W., to International Business Machines Corporation. Electronic package. 5,616,958, Cl. 257-717.000.
L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude: *See—*
Robillard, Dominique; and Inizan, Michel, 5,615,833, Cl. 239-132.300.
Lam, Dominic M.; and Kelleher, Peter J., to Baylor College of Medicine. Methods and compositions for preventing secondary cataracts. 5,616,122, Cl. 604-49.000.
Lamla, Franz: *See—*
Münzmay, Thomas; Fuhrmann, Peter; Lamla, Franz; Meckel, Walter; and Rasshofer, Werner, 5,616,623, Cl. 521-49.500.
Lamothe, Richard P., to Energy Saving Products and Sales Corporation. Machine for manipulating and working on web material. 5,617,134, Cl. 347-264.000.
Lancer, Inc.: *See—*
Phillips, Herman R.; and Ingle, Fred L., 5,615,869, Cl. 267-103.000.
Land, Christopher A.; Pezzullo, Joseph A.; Malot, James J.; Papa, Louis C.; and Oberle, Daniel, to Terra Vac, Inc. Process for soil decontamination by oxidation and vacuum extraction. 5,615,974, Cl. 405-128.000.
Land Instruments International Limited: *See—*
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Landfill Gas & Environmental Products, Inc.: *See—*
Brookshire, Ronald L., 5,616,841, Cl. 73-152.290.
Landis, Michael D.: *See—*
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Landis, Timothy J., to OP-D-OP, Inc. Self-conforming visor apparatus. 5,615,414, Cl. 2-12.000.
Landmark Graphics Corporation: *See—*
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Lane, William S.: *See—*
Gogle, Ronald A.; and Lane, William S., 5,616,452, Cl. 430-398.000.
Lange, Louis G., III; and Spilburg, Curtis A. Use of non-absorbable synthetic sulfated polysaccharides to decrease cholesterol absorbtion. 5,616,570, Cl. 514-54.000.
Langis, John P. Light socket adapter. 5,615,942, Cl. 362-220.000.
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Lantz, Keith A.: *See—*
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Larguia, Constancio. Container safety cap. 5,615,788, Cl. 215-274.000.
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Vipond, Jeffrey J.; Larkin, John M.; Renken, Terry L.; and Stridde, Howard M., 5,616,811, Cl. 564-505.000.
LaRoche Industries Inc.: *See—*
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Larsen, Peter: *See—*
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Larsson, Anders: *See—*
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Laser Technology, Inc.: *See—*
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LaserMax Inc.: *See—*
Houde-Walter, William R., 5,617,444, Cl. 372-77.000.
LaserSurge, Inc.: *See—*
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L'Assistance Publique—Hospitaux de Paris: *See—*
Joutel, Anne M. G.; Bousser, Marie-Germaine M.; and Tournier-Lasserve, Elisabeth A., 5,616,462, Cl. 435-6.000.
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Gorecki, James L., 5,617,064, Cl. 333-22.00R.
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Laurent, Henry: *See—*
Zentel, Hans J.; Töpert, Michael; Laurent, Henry; Brumby, Thomas; and Esperling, Peter, 5,616,573, Cl. 514-172.000.
Lauritzen, Mogens, to Fujitsu Limited. Cache memory system and method thereof for storing a staged memory item and a cache tag within a single cache array structure. 5,617,347, Cl. 365-49.000.
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Lawler, Oliver W. Apparatus for treating pipe. 5,615,696, Cl. 134-104.200.
Lawrence, John: *See—*
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Lawrence Paper Company, The: *See—*
Hill, Alan M.; Meeks, William R.; and Van Ness, Charles L., 5,615,609, Cl. 101-183.000.
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Mahieu, Claude; Semeria, Didier; Cauwet, Danièle; and Vanlerberghe, Guy, 5,616,746, Cl. 554-66.000.

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Albanese, Andres; Luby, Michael G.; Bloemer, Johannes F.; and Edmonds, Jeffrey A., 5,617,541, Cl. 395-200.130.

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Foo, Pang-Dow; and Pai, Chien-Shing, 5,616,518, Cl. 438-680.000.

Jin, Sungho; Kochanski, Gregory P.; and Zhu, Wei, 5,616,368, Cl. 427-535.000.

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Lenhard-Lubeseder, Ulrich; Loehning, Joerg; and Luerken, Franz, 5,616,302, Cl. 422-117.000.

Luiz, Kim M. Pet emergency disaster shelter and method. 5,615,640, Cl. 119-482.000.

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Becker, Kurt J.; Jensen, James A.; and Lukacs, Alexander, III, 5,616,650, Cl. 525-102.000.

Luna, Armando H. Beach trolling device. 5,615,513, Cl. 43-43.130.

Lundkvist, Johan R. M.: *See—*

Evenden, John L.; Hammarberg, Eva M.; Hansson, Hans S.; Hellberg, Sven E.; Johansson, Lars G.; Lundkvist, Johan R. M.; Ross, Svante B.; Sohn, Daniel D.; and Thorberg, Seth O., 5,616,610, Cl. 514-456.000.

Lürssen, Klaus: *See—*

Fischer, Reiner; Krüger, Bernd-Wieland; Bretschneider, Thomas; Erdelen, Christoph; Wachendorff-Neumann, Ulrike; Lürssen, Klaus; Santel, Hans-Joachim; and Schmidt, Robert R., 5,616,536, Cl. 504-225.000.

Lusch, Robert F.: *See—*

Feeney, James W.; Jabusch, John D.; Lusch, Robert F.; Olnowich, Howard T.; and Wilhelm, George W., Jr., 5,617,547, Cl. 395-311.000.

Lutsch, Harald M., to Whitaker Corporation, The. Insulation displacement contact terminal. 5,616,047, Cl. 439-397.000.

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Luzader, Rex E.: *See—*

Redden, Galen; and Luzader, Rex E., 5,616,434, Cl. 429-136.000.

Lynch, Marvin L.; McClish, Michael A.; Selfe, Margaret A.; Steinl, Gregory; and Remboski, Donald J., Jr., to Motorola Inc. Misfire detection dependent on intake air charge fluctuations. 5,616,834, Cl. 73-116.000.

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Sundstrom, Robert A.; and Dumont, Donald R., 5,616,046, Cl. 439-367.000.

Lyon, Michael R.: *See—*

Jones, David E.; Lyon, Michael R.; Leavitt, Richard F.; Nicklos, Carl F.; Sonderegger, Ralph L.; Thayne, Mark S.; and Ma, Yiping, 5,617,397, Cl. 369-772.000.

Lyons, Robert T., to PDT, Inc.; and Pharmacia & Upjohn AB. Emulsioin suitable for administering a poorly water-soluble photosensitizing compound and use thereof. 5,616,342, Cl. 424-450.000.

Lysy, Regis: *See—*

Thomas, Barbara; Mehreteab, Ammanuel; Erilli, Rita; Gomes, Gilbert; Bala, Frank, Jr.; Tarng, Jiashi; Lysy, Regis; and Broze, Guy, 5,616,548, Cl. 510-242.000.

M-Hydroponics Research Co., Ltd.: *See—*

Abe, Yoshimi; and Murai, Shinji, 5,615,519, Cl. 47-59.000.

Ma, Fan Y.; and Kornblum, John J., to Harris Corporation. Multi-channel sigma-delta A/D converters with improved throughput. 5,617,090, Cl. 341-141.000.

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Ma, Young C., to Goldstar Co., Ltd. Oil supplying apparatus for a horizontal type rotary compressor. 5,616,018, Cl. 418-63.000.

Maas, Peter J. D.: *See—*

Castelijns, Anna M. C. F.; and Maas, Peter J. D., 5,616,804, Cl. 564-398.000.

MacDonald, John G.: *See—*

Nohr, Ronald S.; MacDonald, John G.; McGinniss, Vincent D.; and Whitmore, Robert S., Jr., 5,616,443, Cl. 430-106.000.

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Rich, David R.; Apperson, Gerald R.; Labuda, Lawrence L.; and Mace, Leslie E., 5,616,923, Cl. 250-343.000.

Machida, Kiyosada: *See—*

Ohta, Hidefumi; and Machida, Kiyosada, 5,617,172, Cl. 396-539.000.

MacKay, Andrew M.: *See—*

Tulpule, Bhalchandra R.; Avritch, Steven A.; Blackwell, Geoffrey T.; and MacKay, Andrew M., 5,617,544, Cl. 395-281.000.

MacLaren, Brice K.; Johnson, Randall L.; Griffin, Judson R., III; and Meehan, James R., to Dynetics, Inc. Method and apparatus for controlling and programming a robot or other moveable object. 5,617,515, Cl. 395-99.000.

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Hellon, Keith, 5,615,967, Cl. 403-133.000.

MacLeod, Donald J.; Robinson, Peter G.; and Nguyen, Long V., to Seagate Technology, Inc. Adhesiveless seal assembly incorporating magnetic seal for use with disc drive. 5,617,272, Cl. 360-99.080.

Madden, Thomas D.: *See—*

Janoff, Andrew S.; Boni, Lawrence; Madden, Thomas D.; Cullis, Pieter R.; Lenk, Robert P.; Kearns, John J.; Durning, Anthony G.; Klimchak, Robert; and Portnoff, Joel, 5,616,334, Cl. 424-404.000.

Mäder, Heinz: *See—*

Haulin, Tord L.; Segerbäck, Pér M.; and Mäder, Heinz, 5,617,452, Cl. 375-354.000.

Madison, Donald T. Cover for vehicle window. 5,615,923, Cl. 296-95.100.

Madnick, Jay L.; and Hauser, Stephen A., to 3COM Corporation. Method and apparatus for live insertion and removal of electronic sub-assemblies. 5,617,081, Cl. 340-825.030.

Mae, Toshiyuki: *See—*

Tsukamoto, Kazumasa; Ando, Masahiko; Fukatsu, Akira; Mae, Toshiyuki; Sakai, Motoyuki; Hamajima, Tetsuo; Kaigawa, Masato; Fukumura, Kagenori; Oba, Hidehiro; Hojo, Yasuo; Tabata, Atsushi; and Takahashi, Nobuaki, 5,616,094, Cl. 475-128.000.

Maeda, Hideho: *See—*

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Maeda, Hirokazu: *See—*

Hattori, Mitsuo; Furuta, Hitoshi; Takahashi, Taro; and Maeda, Hirokazu, 5,615,613, Cl. 101-450.100.

Maeda, Jun: *See—*

Tawara, Hiroshi; Hiramatsu, Mineyuki; and Maeda, Jun, 5,616,295, Cl. 266-92.000.

Maeda, Takashi; Furukido, Takeshi; Hoshino, Kousaku; Udo, Satoru; and Izumi, Masayoshi, to Oiles Corporation. Method of manufacturing a spherical annular seal. 5,615,479, Cl. 29-888.300.

Maeda, Yutaka, to Mitsubishi Corporation. Substance and/or heat exchanging tower. 5,616,289, Cl. 261-112.200.

Maetzke, Thomas, to Ciba-Geigy Corporation. Plant microbicides. 5,616,590, Cl. 514-301.000.

Magnussen, Peter: *See—*

Schwarz, Hans V.; Otterbach, Andreas; Mattner, Otto; Merger, Franz; Schwarz, Wolfgang; Brandt, Eckhardt; Magnussen, Peter; and Minges, Roland, 5,616,784, Cl. 560-345.000.

Magoteaux, David G., to TRW Inc. Air bag folding method. 5,615,915, Cl. 280-743.100.

Maguire, Jeffrey E., to Motorola. Low power data translation circuit and method of operation. 5,617,348, Cl. 365-49.000.

Mah, Dennie T.; Trainham, James A., III; Newman, John S.; Eames, Douglas J.; and Law, Clarence G., Jr., to Du Pont de Nemours, E. I., and Company. Electrochemical cell having a resilient flow field. 5,616,220, Cl. 204-252.000.

Mah, Mark: *See—*

Lee, Sherman; and Mah, Mark, 5,616,967, Cl. 307-42.000.

Mahieu, Claude; Semeria, Didier; Cauwet, Danièle; and Vanlerberghe, Guy, to L'Oreal. Use in cosmetics of lipophilic derivatives of amino deoxyalditols, cosmetic compositions containing them, and novel alkyl carbamates. 5,616,746, Cl. 554-66.000.
Mahmoud, Issa S.: *See*—
Arldt, Roy L.; Downey, Susan H.; Golden, Harry J.; Mahmoud, Issa S.; Okoro, Clement A.; and Spalik, James, 5,615,827, Cl. 228-223.000.
Mahood, James A.: *See*—
Enlow, William P.; and Mahood, James A., 5,616,767, Cl. 558-92.000.
Maignan, Claude P. H.: *See*—
Beutin, Bruno A.; Creti, Joël; Donnadieu, Jean-Pierre; Garnier, Francis G. A.; Hugues, Michel G.; Lecordix, Jean-Loic H.; Maignan, Claude P. H.; Massot, Gilles C. G.; Pincemin, Jean-Marie N.; Thorel, Christophe J. F.; Touron, Carole C.; and Vennin, Gérard M. R. M., 5,615,547, Cl. 60-39.080.
Main, William E.; Lovelace, David K.; and Pena-Finol, Jesus S., to Motorola, Inc. Base current compensation circuit. 5,617,056, Cl. 327-538.000.
Maine, Kristine P.; Heuvel, Dean P. V.; and McKay, Brent M., to Motorola, Inc. Satellite-based geolocation calibration system and method. 5,617,101, Cl. 342-358.000.
Maineult, Jean, to GEC Alsthom T & D SA. Medium-voltage or high-voltage circuit-breaker. 5,616,898, Cl. 218-76.000.
Maione, Theodore E.: *See*—
Farrell, Roberta L.; Gelep, Paul; Anilionis, Algis; Javaherian, Kashayar; Maione, Theodore E.; Rusche, James; Sadownick, Bruce A.; and Jackson, Jennifer A., 5,616,473, Cl. 435-69.100.
Majumdar, Diptarka: *See*—
Glicksman, Howard D.; Kodas, Toivo T.; and Majumdar, Diptarka, 5,616,165, Cl. 75-369.000.
Mak, Tak W.; and Thompson, Craig B., to Ontario Cancer Institute; and Thompson, Craig B. Knockout mice. 5,616,491, Cl. 435-354.000.
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Makihara, Akira: *See*—
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Makino, Mayumi: *See*—
Matsumura, Yasushi; Nakano, Takashi; Makino, Mayumi; and Morizawa, Yoshitomi, 5,616,732, Cl. 549-305.000.
Makram-Ebeid, Shérif; and Breitenstein, Jacques, to U.S. Philips Corporation. Method of processing images in order automatically to detect key points situated on the contour of an object and device for implementing this method. 5,617,459, Cl. 378-62.000.
Malcolm, Peter B., to Cheyenne Advanced Technology Ltd. File portion logging and arching by means of an auxilary database. 5,617,566, Cl. 395-620.000.
Malek, Lawrence T.: *See*—
Hadary, Dany; Bartfeld, Daniel; Butler, Michael J.; Jenish, David; Krieger, Timothy; Malek, Lawrence T.; Soostmeyer, Gisela; and Walcyzk, Eva, 5,616,485, Cl. 435-220.000.
Malekmehr, Farshad; and Farah, David A. Low residual bladder catheter. 5,616,126, Cl. 604-96.000.
Maley, Thomas C.; D'Orazio, Paul A.; Edelman, Peter G.; and Zalenski, John A., to Chiron Diagnostics Corporation. Electrochemical sensors paste. 5,616,222, Cl. 204-294.000.
Mallebrein, Georg: *See*—
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Mallecot, Franck; Artigue, Claude; LeClerc, Denis; Legouezigou, Lionel; Poingt, Francis; and Pommereau, Frédéric, to Alcatel N.V. Method of making a mark on a wafer such as a semiconductor wafer incorporating a buried structure. 5,616,522, Cl. 438-42.000.
Mallette, Raymond P.: *See*—
Abboud, Samir E.; Apuzzo, Nickolas C.; Brown, Jeffrey B.; Cunningham, Earl A.; Hannon, David M.; Mallette, Raymond P.; Tyler, Paul S.; Voss, Steven H.; and Wallash, Albert J., 5,617,289, Cl. 361-151.000.
Mallinckrodt Medical, Inc.: *See*—
Rosik, Leonard O., 5,616,312, Cl. 424-9.364.
Malot, James J.: *See*—
Land, Christopher A.; Pezzullo, Joseph A.; Malot, James J.; Papa, Louis C.; and Oberle, Daniel, 5,615,974, Cl. 405-128.000.
Maly, Neil A.: *See*—
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Mamishin, Etsuro: *See*—
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MAN Roland Druckmaschinen AG: *See*—
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Mandola, Mary D. Two stage bottle filter for the removal of sediment. 5,616,242, Cl. 210-238.000.
Manfredi, Mark C.: *See*—
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Manhart, Paul K.; Stuhlinger, Tilman W.; Castle, Kenneth R.; and Ruda, Mitchell C., to Lightpath Technologies Inc. Gradient refractive index lens elements. 5,617,252, Cl. 359-653.000.
Manitowoc Company, Inc., The: *See*—
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Mann, Inderjit S.: *See*—
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Manning, Monte: *See*—
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Mannis, Mark J.: *See*—
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Marchal, Remy; Lemal, Jeannine; and Sulzer, Caroline, to Institut Francais du Petrole. Method of production of sophorosides by fermentation with fed batch supply of fatty acid esters or oils. 5,616,479, Cl. 435-100.000.
Marek, Jiri: *See*—
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Marey, Daniel J.: *See*—
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Margetak, Glen P.; Heidorn, Michael E.; and Wright, Eric W., to TRW Inc. Apparatus for restraining a driver of a vehicle. 5,615,910, Cl. 280-731.000.
Marin, Robert A.: *See*—
Duffy, Joseph J.; Kirayoglu, Birol; Lin, Pui-Yan; Marin, Robert A.; and Santucci, Robert J., 5,616,204, Cl. 156-156.000.
Markell, Craig G.: *See*—
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Marker Deutschland GmbH: *See*—
Stepanek, Premek; and Wagner, Ludwig, 5,615,905, Cl. 280-602.000.
Marley, Eugene; and Hofmann, Gerhard. Ergonomic shopping bag handle. 5,615,921, Cl. 294-170.000.
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Charbonnel, Jean-Louis; Marey, Daniel J.; Marois, Fabrice; and Miraucourt, Gérard G., 5,616,003, Cl. 415-209.300.
Marois, Pierre H.: *See*—
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Kunz, Hans; Sauer, Andreas; Schuhmacher, Manfred; Szczyrbowski, Joachim; and Marquardt, Dietmar, 5,616,226, Cl. 204-298.230.
Marquet, Michel E. J.; and Le, Phuoc T., to Goodyear Tire & Rubber Company, The. Low aspect ratio truck tire. 5,616,195, Cl. 152-209.00R.
Marr, Andrew W., Jr., to BioCon, Incorporated. Method and apparatus for destruction of waste by thermal scission and chemical recombination. 5,615,627, Cl. 110-346.000.
Marrack, Philippa: *See*—
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Mars Incorporated: *See*—
Simpkins, Joseph A.; and Hudis, Scott, 5,616,915, Cl. 250-221.000.
Vaks, Jeffrey E., 5,615,760, Cl. 194-206.000.
Winstanley, Nigel A.; Weston, John A.; and Musto, Colin A. G., 5,616,075, Cl. 453-41.000.
Marshall, Richard: *See*—
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Kelsay, Curtis D.; and Ness, Alan J., 5,615,445, Cl. 15-245.100.
Marsilio, Ronald M.; Weisburn, James T.; Sankey, James K.; and Mundorf, Larry K., to Alpha Enterprises, Inc. Storage and display rack for recorded media. 5,615,779, Cl. 211-40.000.
Marti, Jacques: *See*—
Armengaud, Jean-Francois; Martignon, Alain; Cortiade, Simeon; and Marti, Jacques, 5,616,842, Cl. 73-152.180.
Martignon, Alain: *See*—
Armengaud, Jean-Francois; Martignon, Alain; Cortiade, Simeon; and Marti, Jacques, 5,616,842, Cl. 73-152.180.
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Martin, David. Combination diaper bag and portable changing table having inlet air flow. 5,615,433, Cl. 5-655.000.
Martin, Georg: *See*—
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Martin, George R.: *See*—
Shenoy, Vivek N.; Revak, Timothy T.; Chu, George H.; McMullin, Hugh R.; Rosenblatt, Joel S.; and Martin, George R., 5,616,689, Cl. 530-356.000.
Martin, Gérard; and Gaulard, Robert, to Institut Francais du Petrole. Process and device for treating waste by direct contact. 5,616,216, Cl. 201-25.000.
Martin, Hans-Peter: *See*—
Richter, Robin; Martin, Hans-Peter; Roewer, Gerhard; Mueller, Eberhard; Kraemer, Hans; Sartori, Peter; Oelschlaeger, Andreas; Habel, Wolfgang; and Harnack, Bernhard, 5,616,308, Cl. 423-345.000.
Martin, Timothy F. Convertible packing frame. 5,615,812, Cl. 224-153.000.
Martin, Tracy: *See*—
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Martinez, Abelardo P.: *See*—
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Marue, Edward A.; and Pereira, Kenneth J., to Tri-Ex Tower Corporation. Telescoping mast with integral payload. 5,615,855, Cl. 248-405.000.
Maruta, Kouichi: *See*—
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Maruyama, Katsumi: *See*—
Yamada, Shigeki; Maruyama, Katsumi; Kubota, Minoru; and Tanaka, Satoshi, 5,617,537, Cl. 395-200.010.
Marz, Daniel, to General Instrument Corporation, G.I. Communications Division. Scrambling and descrambling of video signals using horizontal line combinations. 5,617,475, Cl. 380-14.000.
Mas, Jean-Manuel; and Massonneau, Viviane, to Rhone-Poulenc Rorer, S.A. Method of preparing taxane derivatives. 5,616,739, Cl. 549-510.000.
Masco Corporation: *See*—
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Masghati, Mohammad: *See*—
Heidorn, Richard H.; and Masghati, Mohammad, 5,615,852, Cl. 248-74.500.
Mash, Deborah C.: *See*—
Efange, S. Mbua N.; and Mash, Deborah C., 5,616,575, Cl. 514-215.000.
Mashrocola, Todd L. Insulating sole cover. 5,615,495, Cl. 36-7.10R.
Masicovetere, Roland; and Angelella, Stefano, to AG Für Industrielle Elektronik. Wire preparation for wire cutting electro-erosion. 5,616,260, Cl. 219-69.120.
Masnaghetti, Douglas: *See*—
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Massachusetts Inst. of Technology: *See*—
Tamura, Kohichi R.; Ippen, Erich P.; Haus, Hermann A.; Nelson, Lynn E.; and Doerr, Christopher R., 5,617,434, Cl. 372-6.000.
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Masterman, Thomas C.; and Spencer, Jean L., to Gillette Canada Inc. Particles including degradable material and anti-microbial agent. 5,616,315, Cl. 424-54.000.
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Masuda, Natsuo; Yamamoto, Hiroshi; Horizoe, Haruhiko; Hiramatsu, Shinji; Hizuka, Hidehiko; Matsumoto, Manabu; and Motoseko, Toshihiko, to Fujitsu Limited. Power supply apparatus for package. 5,616,034, Cl. 439-78.000.
Masuda, Yuichi: *See*—
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Masumori, Hideo: *See*—
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Matau, Max: *See*—
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Mateescu, Mircea A.: *See*—
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Matereials Research Corporation: *See*—
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Mather, John C.: *See*—
McLaughlin, Steven R.; Wieloch, Christopher J.; and Mather, John C., 5,616,888, Cl. 174-260.000.
Mathieu, Bernd, to Fresenius AG. Flexible medical hemodialysis packaging unit for the production of concentrated dialysis solution including a device for the same. 5,616,305, Cl. 422-261.000.
Mathis, Christian. Fuel-injection system for an internal combustion engine, in particular for a diesel motor, and a method for monitoring the same. 5,615,656, Cl. 123-447.000.
Matkovich, Vlado I.: *See*—
Pall, David B.; Gsell, Thomas C.; Matkovich, Vlado I.; and Bormann, Thomas, 5,616,254, Cl. 210-806.000.
Matousek, Robert A.; and Minnihan, James W., to Case Corporation. Converging member and related apparatus for conveying granular material. 5,615,989, Cl. 414-502.000.
Matrana, Barry A.: *See*—
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Matsuda, Akira: *See*—
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Matsuda, Shinya, to Minolta Co., Ltd. Image reading apparatus with correction of image signals. 5,616,914, Cl. 250-208.100.
Matsuda, Tsukasa; Hosoi, Kiyoshi; and Hashimoto, Ken, to Fuji Xerox Co., Ltd. Ink jet recording medium and recording method. 5,616,409, Cl. 428-323.000.
Matsuda, Yoshio; Kato, Hidenobu; and Ikeguchi, Yoshito, to YKK Corporation. Knit slide fastener with zigzag weft anchoring stitches. 5,615,563, Cl. 66-193.000.
Matsui, Hiroshi: *See*—
Sugimoto, Masakazu; Kojima, Hiroyuki; Tanaka, Akiko; Matsui, Hiroshi; Sato, Katsuaki; and Nakamatsu, Tsuyoshi, 5,616,480, Cl. 435-172.300.
Matsui, Izumi: *See*—
Shimokoriyama, Makoto; Matsui, Izumi; Hamanaka, Akiyoshi; and Yamamoto, Yukinori, 5,617,143, Cl. 348-407.000.
Matsumae, Iwao: *See*—
Murakami, Eisaku; Yuasa, Kazuhiro; Endoh, Shuichi; Matsumae, Iwao; Tanaka, Yoshiaki; Hosokawa, Hiroshi; Uno, Mugijiroh; Saitoh, Hiroshi; Takenaka, Eiji; Sugiyama, Toshihiro; Yamanaka, Tetsuo; and Komatsubara, Satoru, 5,617,191, Cl. 399-286.000.
Matsumi, Chiyoko: *See*—
Mizushima, Tetsuya; Juri, Tatsuro; Matsumi, Chiyoko; and Kawakami, Kazuo, 5,617,263, Cl. 360-48.000.
Matsumoto, Hajime: *See*—
Ikawa, Hiroshi; Matsumoto, Hajime; Matsumoto, Masakatsu; Sekine, Yasuo; Nishimura, Masato; and Hosoda, Akihiko, 5,616,711, Cl. 546-141.000.
Matsumoto, Hiroshi, to NEC Corporation. Mixed analog and digital integrated circuit having a comparator to compare original digital data with data having undergone successive D/A and A/D conversion and level shifting. 5,617,037, Cl. 324-763.000.
Matsumoto, Katsutoshi; and Shiraishi, Shigeyuki, to Matsumoto, Katsutoshi. Fire extinguisher. 5,615,743, Cl. 169-74.000.
Matsumoto, Kentaro: *See*—
Takaoka, Makoto; Sugiura, Susumu; Matsumoto, Kentaro; Uda, Toyokazu; and Uda, Masami, 5,617,123, Cl. 347-15.000.
Matsumoto, Kissei; Fuchu, Katsuki; and Katsuki, Shinji, to Sony Corporation. Optical disk device capable of displaying the whole capacity and the reproduction position on the optical disk. 5,617,383, Cl. 369-32.000.
Matsumoto, Manabu: *See*—
Masuda, Natsuo; Yamamoto, Hiroshi; Horizoe, Haruhiko; Hiramatsu, Shinji; Hizuka, Hidehiko; Matsumoto, Manabu; and Motoseko, Toshihiko, 5,616,034, Cl. 439-78.000.
Matsumoto, Mariko, to NEC Corporation. CDMA communication with a propagation delay between a base and a mobile station taken into account. 5,617,410, Cl. 370-342.000.
Matsumoto, Masaharu: *See*—
Tagami, Ryou; Norimatsu, Takeshi; Matsumoto, Masaharu; Oda, Mikio; Serikawa, Mitsuhiko; Kawamura, Akihisa; and Numazu, Hiroko, 5,617,478, Cl. 381-56.000.
Matsumoto, Masakatsu: *See*—
Ikawa, Hiroshi; Matsumoto, Hajime; Matsumoto, Masakatsu; Sekine, Yasuo; Nishimura, Masato; and Hosoda, Akihiko, 5,616,711, Cl. 546-141.000.
Matsumoto, Shigeharu; Sakurai, Nobuo; and Kojima, Ichiro, to Amada Metrecs Company, Limited. Apparatus and method of detecting bender operating time. 5,615,568, Cl. 72-20.100.
Matsumoto, Syunichi: *See*—
Kawaguchi, Hirofumi; Mizuta, Yasufumi; Matsumoto, Syunichi; Akiba, Nobuko; Fukami, Toshiyuki; Yamazato, Ichiro; Uegaito, Hisakazu; and Tanaka, Yuji, 5,616,441, Cl. 430-78.000.
Matsumoto, Takanao: *See*—
Takao, Mitsunori; Kokuga, Toshiharu; Matsumoto, Takanao; and Sakurai, Hiroaki, 5,617,009, Cl. 320-23.000.
Matsumoto, Takashi: *See*—
Iwase, Takashi; Matsumoto, Takashi; Aoshima, Nobuyuki; Matsuura, Norimasa; and Goto, Takashi, 5,616,079, Cl. 463-32.000.
Matsumoto, Tohru; and Matsurugi, Sadayuki, to Mitsubishi Denki Kabushiki Kaisha. Curtain winding apparatus. 5,615,729, Cl. 160-370.220.
Matsumura, Kenichiro: *See*—
Nakazawa, Makoto; Takahashi, Akira; and Matsumura, Kenichiro, 5,616,232, Cl. 205-155.000.
Matsumura, Masafumi; and Itou, Sigeyuki, to Nippondenso Co., Ltd. Torque detecting apparatus for reducing torque ripple in an AC motor. 5,616,999, Cl. 318-632.000.
Matsumura, Mitsuie: *See*—
Kusunoki, Akira; Otsuki, Jitsuji; Kikuoka, Yasuhira; Okada, Tatsunori; Matsumura, Mitsuie; Shinoki, Toshio; Mukai, Masahiro; and Yagi, Tetsuya, 5,616,431, Cl. 429-36.000.
Matsumura, Yasushi; Nakano, Takashi; Makino, Mayumi; and Morizawa, Yoshitomi, to Asahi Glass Company Ltd. Intermediates for difluoroprostacyclins and methods for their production. 5,616,732, Cl. 549-305.000.
Matsunaga, Masafumi; Kakuta, Wataru; and Saito, Hikaru, to Nordson Corporation. Apparatus and method for supply and transport of powder particles. 5,615,830, Cl. 239-8.000.
Matsuo, Masahito; and Yoshida, Toyohiko, to Mitsubishi Denki Kabushiki Kaisha. Data processor generating jump target address of a jump instruction in parallel with decoding of the instruction. 5,617,550, Cl. 395-383.000.
Matsurugi, Sadayuki: *See*—

Matsumoto, Tohru; and Matsurugi, Sadayuki, 5,615,729, Cl. 160-370.220.
Matsushima, Hideyuki, to Nissan Motor Co., Ltd. Fuel control system. 5,615,551, Cl. 60-276.000.
Matsushima, Hiroshi: *See—*
Sugano, Shigeru; Takebayashi, Takashi; Nagai, Shigekazu; Ito, Yoshiharu; Saito, Mitsuhiro; Matsushima, Hiroshi; and Saitoh, Akio, 5,617,338, Cl. 364-558.000.
Matsushima, Toshihiko: *See—*
Oba, Fumio; Matsushima, Toshihiko; Murakami, Hitoshi; and Terada, Tomoaki, 5,615,956, Cl. 384-470.000.
Matsushita Avionics Development Corporation: *See—*
Wakai, Bruce M.; Lemmer, John E.; and Frost, William A., Jr., 5,617,331, Cl. 364-514.00A.
Matsushita Electcric Industrial Co., Ltd.: *See—*
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Matsushita Electric Industrial Co., Ltd.: *See—*
Akiyoshi, Masami; and Mitsunaga, Yuji, 5,617,100, Cl. 342-357.000.
Handa, Koji; Kubo, Keishi; Doi, Masateru; and Yoshizumi, Keiichi, 5,616,916, Cl. 250-234.000.
Hirano, Hiroshige; and Taniguchi, Takashi, 5,617,049, Cl. 327-172.000.
Huang, Si J.; and Tan, Ah P., 5,617,145, Cl. 348-423.000.
Ibaraki, Susumu; Katta, Noboru; Nakamura, Seiji; and Murakami, Hiroki, 5,617,476, Cl. 380-49.000.
Inoue, Genichiro, 5,617,346, Cl. 364-757.000.
Itoh, Akira; Terai, Hideo; and Shiraga, Kazuhiro, 5,617,115, Cl. 345-141.000.
Kakimoto, Yasuhiro; and Yamamoto, Noriyuki, 5,615,605, Cl. 99-348.000.
Kanbara, Teruhisa; Tsubaki, Yuichiro; and Takeyama, Kenichi, 5,616,274, Cl. 252-62.200.
Kane, Joji; and Nohara, Akira, 5,617,505, Cl. 395-2.180.
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Mimura, Masahiro; Hasegawa, Makoto; Yokozaki, Katsushi; Harada, Hiroyuki; Kishigami, Takaaki; and Tanaka, Yasunari, 5,617,451, Cl. 375-340.000.
Miyagawa, Naoyasu; and Gotoh, Yasuhiro, 5,616,390, Cl. 428-64.100.
Mizushima, Tetsuya; Juri, Tatsuro; Matsumi, Chiyoko; and Kawakami, Kazuo, 5,617,263, Cl. 360-48.000.
Nishimura, Akihiro; and Yao, Masahiro, 5,617,271, Cl. 360-94.000.
Noda, Kazuhiro; and Nakazato, Siniti, 5,615,823, Cl. 228-103.000.
Ohmae, Hideki; and Takahara, Hiroshi, 5,617,226, Cl. 349-10.000.
Ohml, Shinichiro; Takai, Hitoshi; and Urabe, Yoshio, 5,617,374, Cl. 368-10.000.
Reaves, Benjamin K., 5,617,508, Cl. 395-2.420.
Sakakibara, Yoshio; and Gotou, Makoto, 5,617,268, Cl. 360-77.140.
Tagami, Ryou; Norimatsu, Takeshi; Matsumoto, Masaharu; Oda, Mikio; Serikawa, Mitsuhiko; Kawamura, Akihisa; and Numazu, Hiroko, 5,617,478, Cl. 381-56.000.
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Tomotake, Kazunori, 5,617,564, Cl. 395-611.000.
Matsushita Electronics Corporation: *See—*
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Matsuura, Norimasa: *See—*
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Matsuura, Yoshinori; Kuroda, Yasushi; Higashiyama, Nobuyuki; Kimoto, Mamoru; Nogami, Mitsuzou; Nishio, Koji; and Saito, Toshihiko, to Sanyo Electric Co., Ltd. Hydrogen-absorbing alloy electrode for metal hydride alkaline battery. 5,616,435, Cl. 429-218.000.
Matsuzawa, Masafumi: *See—*
Yokota, Sumio; Matsuzawa, Masafumi; Ohba, Nobuyuki; Nagata, Toshihiro; Tachikawa, Shigehiko; Miyazawa, Takeshige; and Yanagisawa, Katsutada, 5,616,537, Cl. 504-242.000.
Matsuzawa, Masanao: *See—*
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Matsuzawa, Yoshinori; Itoh, Junichi; and Tanbara, Yasuo, to Olympus Optical Co., Ltd. Shake detecting and drift component removal apparatus. 5,617,176, Cl. 396-55.000.
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Hey-Shipton, Gregory L.; Rohlfing, Stephan M.; Matthaei, George L.; and Forse, Roger J., 5,616,539, Cl. 505-210.000.
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Edwards, Michael L.; Matthews, Donald P.; and McCarthy, James R., 5,616,702, Cl. 536-27.130.
Matthews, Wallace E., to Benchmarq Microelectronics, Inc. Programmable output device with integrated circuit. 5,617,040, Cl. 326-38.000.
Mattingly, Philip G., to Abbott Laboratories. Haptens tracers, immunogens and antibodies for 3-phenyl-1-adamantaneacetic acids. 5,616,505, Cl. 436-531.000.
Mattingly, Phillip G., to Abbott Laboratories. 5(6)-methyl substituted fluorescein derivatives. 5,616,298, Cl. 422-61.000.
Mattison, Glenn D.: *See—*
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Matumoto, Takanobu: *See—*
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Mauchle, Felix, to GEMA Volstatic AG. Injector-feed device for pneumatic feed of powder. 5,615,980, Cl. 406-19.000.
Maurer, Andreas, to Hewlett-Packard Company. Clamping contact connection. 5,615,674, Cl. 128-642.000.
Mauro, Marina; Viscardi, Carlo F.; and Gagna, Massimo, to Fructamine S.p.A. Process for the preparation of a dicarboxylic acid dichloride. 5,616,795, Cl. 562-855.000.
Maxim Integrated Products: *See—*
Bingham, David, 5,617,051, Cl. 327-317.000.
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Maxwell, Kameron W.: *See—*
Kasianovitz, Elizabeth J. M.; Bellm, Lisa A.; and Maxwell, Kameron W., 5,616,337, Cl. 424-414.000.
May, Kevin M.; Snider, S. Duke; and Messner, Daniel R., to Emerson Electric Co. Integral connector and motor housing. 5,616,975, Cl. 310-89.000.
May, Paul: *See—*
Robinson, Michael G.; Tombling, Craig; May, Paul; Ezra, David; and Woodgate, Graham J., 5,616,912, Cl. 250-201.100.
Mayer, Bruno Franz P., to NIMA Enterprises, Inc. Needleless injection site. 5,616,129, Cl. 604-167.000.
Mayer, Bruno Franz P., to Nima Enterprises, Inc. Needleless injection site. 5,616,130, Cl. 604-167.000.
Mayer, Carl W.: *See—*
Finter, Jürgen; Hilti, Bruno; Mayer, Carl W.; and Minder, Ernst, 5,616,287, Cl. 252-518.000.
Mayer, Lawrence D.; Bally, Marcel B.; Cullis, Pieter R.; Ginsberg, Richard S.; and Mitilenes, George N., to Liposome Company, Inc., The. High drug:lipid formulations of liposomal antineoplastic agents. 5,616,341, Cl. 424-450.000.
Mayet, Jean-Claude: *See—*
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Mazac, Charles J.: *See—*
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Mazda Motor Corporation: *See—*
Nakao, Norihiko; Tukahara, Yutaka; Ikeda, Naoki; Takehara, Shin; Seni, Hirofumi; Harada, Shingo; and Santo, Chiaki, 5,617,315, Cl. 364-424.045.
Okazaki, Haruki, 5,615,932, Cl. 303-121.000.
Mazgarov, Akhmet M.; Fakhriev, Akhmatfail M.; Khafizov, Rais N.; Kashevarov, Leonid A.; and Alimov, Mikhail P., to Chevron U.S.A. Inc. Method for removal of hydrogen sulfide from gases. 5,616,306, Cl. 423-228.000.
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McAllise, Gregg A.: *See—*
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McAnney, William H.: *See—*
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McCall, Mark B.: *See—*
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McCarthy, James P.; Greene, George H.; and DeWar, Anthony G., to Karlshamns AB. Cationic silicones. 5,616,758, Cl. 556-423.000.
McCarthy, James R.: *See—*
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McCauley, Phillip F.: *See—*
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McClish, Michael A.: *See—*
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McConville, Bernard: *See—*
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McCormick, Randy M., to Dionex Corporation. Method for extending the life of electrophoretic gels. 5,616,227, Cl. 204-457.000.
McCrystal, Philip J. Re-bar alignment and support clip. 5,616,272, Cl. 249-207.000.
McCue, Daniel L., III: *See—*
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Takahashi, Akihiko; Yasuda, Hitoshi; Hartwig, Karl T.; McDonald, Lacy C.; and Zou, Hong, 5,616,191, Cl. 148-690.000.
McDonald, Norman J., Jr. Stabilizers adapted to be connected to a bow. 5,615,664, Cl. 124-89.000.
McDonald, Stephen J. Aeration apparatus and method of aerating liquids. 5,616,288, Cl. 261-76.000.
McDonnell Douglas Corporation: *See—*
Anderson, Glenn A.; and Linerode, James D., 5,615,593, Cl. 91-24.000.
MCE Systems Corp.: *See—*
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McGee, James N., Jr.; and Wells, Darrel N. Bias cut, knit V-belt cover. 5,616,090, Cl. 474-267.000.
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McGrath, Michael C.; and Hedding, Michael A., to Hayes Wheels International, Inc. Electronic trailer brake controller. 5,615,930, Cl. 303-7.000.
McGuire, Christopher J.; McGuire, Matthew P.; and Scholl, Thomas W. Method of and apparatus for trenching. 5,615,499, Cl. 37-367.000.
McGuire, John D., to Brascon Architectural Products Inc. Damped one-way self-closing gate. 5,615,520, Cl. 49-237.000.
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McKay, Douglas W. Method for alleviating pain in a wound. 5,616,121, Cl. 604-35.000.
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McLaughlin, Steven R.; Wieloch, Christopher J.; and Mather, John C., to Allen-Bradley Company, Inc. Rigid-flex circuit board having a window for an insulated mounting area. 5,616,888, Cl. 174-260.000.
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McNiven, J. Peter; and Vukobratovich, Daniel, to Wescam Inc. Optical instrument with rotatable lens turret. 5,617,260, Cl. 359-821.000.
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Mengshoel, Hans C.; and Rykken, Oddvin. Arrangement in a structural element for example for use in a furniture, more specially a sitting furniture or relief furniture. 5,615,621, Cl. 108-193.000.
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- Sano, Eiichi; and Minegishi, Hiroshi, 5,617,156, Cl. 351-214.000.

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- Barber, Loren L., Jr.; Welygan, Dennis G.; and Pihl, Richard M., 5,616,411, Cl. 428-373.000.
- Behr, Frederick E.; and Cheburkov, Yuri, 5,616,794, Cl. 562-851.000.
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- Matousek, Robert A.; and Minnihan, James W., 5,615,989, Cl. 414-502.000.

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- Hall, Robert T., II; and Onstad, Bradley K., 5,616,616, Cl. 514-557.000.

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- Matsuda, Shinya, 5,616,914, Cl. 250-208.100.
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- Kenyon, Ronald W.; and Mistry, Prahalad M., 5,616,694, Cl. 534-598.000.

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- Horihata, Katsushi, 5,617,265, Cl. 360-69.000.
- Kawaguchi, Hirofumi; Mizuta, Yasufumi; Matsumoto, Syunichi; Akiba, Nobuko; Fukami, Toshiyuki; Yamazato, Ichiro; Uegaito, Hisakazu; and Tanaka, Yuji, 5,616,441, Cl. 430-78.000.
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- Shinozaki, Hiroki; Tanaka, Masayuki; and Ueda, Yonezo, 5,616,413, Cl. 428-402.000.

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- Maeda, Yutaka, 5,616,289, Cl. 261-112.200.

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- Asahina, Katsushi, 5,617,045, Cl. 327-89.000.
- Goto, Kouji, 5,617,429, Cl. 371-25.100.
- Honda, Tetsuya; and Kawajiri, Kazuhiko, 5,615,556, Cl. 62-6.000.
- Kakimoto, Syoichi, 5,617,439, Cl. 372-50.000.
- Kobayashi, Maiko; and Kuroi, Takashi, 5,616,401, Cl. 428-212.000.
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- Matsuo, Masahito; and Yoshida, Toyohiko, 5,617,550, Cl. 395-383.000.
- Mori, Shigeru; Suzuki, Tomio; and Hayashikoshi, Masanori, 5,617,362, Cl. 365-189.050.
- Morita, Shingo; and Koiwa, Mitsuru, 5,615,659, Cl. 123-634.000.
- Murakami, Shotaro, 5,617,012, Cl. 323-207.000.
- Nagaoka, Hidetada; Onoda, Atsuo; Izumi, Yukio; Nishikawa, Keiichi; Oomura, Yuuji; Suzuki, Mitinaga; and Hoshi, Kiyotaka, 5,616,994, Cl. 318-254.000.
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- Suzuki, Katsunori, 5,617,433, Cl. 371-48.000.
- Takahashi, Yoshiharu; Oseto, Jiro; Hirata, Teru; Abe, Shunichi; Ohmae, Seizo; and Kobayashi, Eiji, 5,616,516, Cl. 438-127.000.
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- Yamamoto, Yoshitsugu; and Kadoiwa, Kaoru, 5,616,181, Cl. 118-723.0ER.

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- Mita, Masaaki; Sugimoto, Kenji; and Katsumata, Haruo, 5,616,247, Cl. 210-640.000.

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- Nakai, Tetsuya; Yamaguchi, Yasuo; and Nishimura, Tadashi, 5,616,507, Cl. 438-480.000.

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- Imuta, Junichi; Fukuoka, Daisuke; Yoshida, Masayasu; Saito, Junji; Fujita, Terunori; Tashiro, Takashi; Kawaai, Koji; Ueda, Takashi; and Kiso, Yoshihisa, 5,616,663, Cl. 526-127.000.

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- Nagata, Teruyuki; Watanabe, Katsuji; Kono, Yoshitsugu; Tamaki, Akihiro; and Kobayashi, Takashi, 5,616,806, Cl. 564-423.000.
- Yoshida, Yasunori; Watanabe, Katsuji; Obuchi, Shoji; and Ohta, Masahiro, 5,616,783, Cl. 560-191.000.

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- Higashijima, Yasuhisa; and Takeuchi, Masaru, 5,617,010, Cl. 320-31.000.
- Ohsaka, Tomohiko, 5,617,279, Cl. 360-128.000.

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- Akiyoshi, Masami; and Mitsunaga, Yuji, 5,617,100, Cl. 342-357.000.

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- Yashiro, Masahiko; Sasaki, Shinichi; Ikemoto, Isao; Miura, Koji; Karakama, Toshiyuki; and Numagami, Atsushi, 5,617,579, Cl. 399-114.000.

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Miura, Yukio: *See—*
- Mizuta, Ken; Kawata, Toshihiko; Shibazaki, Ken; and Miura, Yukio, 5,617,000, Cl. 318-663.000.

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- Bertin, Claude L.; DiMaria, Donelli J.; Miyakawa, Makoto; and Sakaue, Yoshinori, 5,617,351, Cl. 365-185.050.

Miyake, Toshio: *See—*
- Yamamoto, Itaru; Muto, Norio; and Miyake, Toshio, 5,616,611, Cl. 514-474.000.

Miyake, Yoshio: *See—*
- Kobayashi, Makoto; Yamamoto, Masakazu; Miyake, Yoshio; Isemoto, Koji; Uwai, Keita; and Miyazaki, Yoshiaki, 5,616,013, Cl. 417-423.140.

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- Mitsubayashi, Masahiko; Ohnishi, Masazumi; Miyamoto, Noritaka; Kadota, Keisuke; Shimada, Tohru; and Bando, Katsuji, 5,615,570, Cl. 72-298.000.

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Miyazaki, Satoshi: *See—*
- Kato, Koji; Ando, Hiroyuki; Sugita, Yukihiko; Ichikawa, Hideaki; Inoue, Akira; and Miyazaki, Satoshi, 5,617,162, Cl. 396-318.000.

Miyazaki, Seiji: *See—*

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Miyazawa, Takeshige: *See*—
Yokota, Sumio; Matsuzawa, Masafumi; Ohba, Nobuyuki; Nagata, Toshihiro; Tachikawa, Shigehiko; Miyazawa, Takeshige; and Yanagisawa, Katsutada, 5,616,537, Cl. 504-242.000.

Miyazawa, Yoshinori: *See*—
Suzuki, Takashi; Matsuzawa, Masanao; and Miyazawa, Yoshinori, 5,615,957, Cl. 400-124.100.

Mizuno, Hiroyuki: *See*—
Iizuka, Hirokazu; Ohmura, Masashi; Kondo, Masataka; Kobayashi, Hideki; Mizuno, Hiroyuki; Yamazaki, Takaya; and Shibata, Kazuo, 5,616,017, Cl. 418-63.000.

Mizushima, Tetsuya; Juri, Tatsuro; Matsumi, Chiyoko; and Kawakami, Kazuo, to Matsushita Electric Industrial Co., Ltd. Method of and apparatus for recording data suitable for a digital recording in a multiplexed fashion. 5,617,263, Cl. 360-48.000.

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Mizuta, Yasufumi: *See*—
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Mizutani, Hidemasa; and Koizumi, Toru, to Canon Kabushiki Kaisha. Diode and semiconductor device having a controlled intrinsic or low impurity concentration region between opposite conductivity type semiconductor regions. 5,616,944, Cl. 257-365.000.

Moalem, Farhad; Bain, Benjamin H., Jr.; and Caselli, Joseph J., to Black & Decker Inc. Iron with improved connection of soleplate and steam chamber cover. 5,615,500, Cl. 38-77.830.

Mochimaru, Hideaki, to Ricoh Company, Ltd. Detachable duplex copying unit for an image forming apparatus. 5,615,872, Cl. 271-3.140.

Mochizuki, Chiaki: *See*—
Takemoto, Tadashi; Hijiya, Toyoto; Yonekawa, Teruo; and Mochizuki, Chiaki, 5,616,766, Cl. 558-38.000.

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Takahashi, Tuyoshi; Ikegaya, Kazuo; Mochizuki, Shinobu; and Nishimaki, Hideo, 5,616,691, Cl. 530-364.000.

Modak, Shanta M.: *See*—
Fox, Charles L., Jr.; Modak, Shanta M.; and Sampath, Lester A., 5,616,338, Cl. 424-423.000.

Modglin, Donald D. Rear alignment golf putter. 5,615,884, Cl. 473-238.000.

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Patel, Ramanbhai B.; and Modi, Indravadan A., 5,616,593, Cl. 514-321.000.

Moeller, Hinrich; and Hoeffkes, Horst, to Henkel Kommanditgesellschaft auf Aktien. Isatin-containing formulations for coloring keratin-containing fibers. 5,616,150, Cl. 8-405.000.

Moes, Philip H.: *See*—
Hsu, Oscar Hsien-Hsiang; Currier, Gerard M.; and Moes, Philip H., 5,616,419, Cl. 428-512.000.

Mogami, Kenji: *See*—
Egawa, Tatsuya; Kawaguchi, Yasuhiro; Mogami, Kenji; and Shimizu, Nobuaki, 5,616,812, Cl. 568-598.000.

Mohring, William R.: *See*—
Thompson, Ralph; Rockwell, Ned M.; Michels, Ann M.; Mohring, William R.; Kolbe, Kevin C.; Seibold, J. Duke; and Butterwick, James M., 5,616,782, Cl. 560-149.000.

Moignard, Renaud: *See*—
De Bougrenet De La Tocnaye, Jean-Louis; Hamam, Habib; and Moignard, Renaud, 5,617,227, Cl. 349-57.000.

Mok, Cheol-Woong, to Samsung Electronics Co., Ltd. Interface method and device in digital signal processing system. 5,617,455, Cl. 375-377.000.

Molani, Saleem R.: *See*—
Rogers, Wesley D.; Gottlieb, Louis G.; Molani, Saleem R.; Sedlock, Gregory W.; and Engdahl, Roger P., 5,617,471, Cl. 379-212.000.

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Haugland, Richard P.; Singer, Victoria L.; Jones, Laurie J.; and Steinberg, Thomas H., 5,616,502, Cl. 436-86.000.

Moley, Richard M.: *See*—
Sathe, Shirish K.; Corbalis, Charles M.; Schmidt, Uri; and Moley, Richard M., 5,617,417, Cl. 370-394.000.

Molezzi, Michael J.; Crumbacher, Harry W.; McConville, Bernard; and Shannon, Connie H., to General Electric Company. Steam precipitation jet. 5,615,831, Cl. 239-8.000.

Molimard, Jean-Charles: *See*—
Boigegrain, Robert; Gully, Danielle; Jeanjean, Francis; and Molimard, Jean-Charles, 5,616,592, Cl. 514-314.000.

Molinari, Egidio: *See*—
Bonaldi, Antonio; Molinari, Egidio; and Roda, Aldo, 5,616,741, Cl. 552-554.000.

Monacos, Steve P., to United States of America, National Aeronautics and Space Administration. Scalable wrap-around shuffle exchange network with deflection routing. 5,617,413, Cl. 370-400.000.

Mondet, Jean: *See*—
Lion, Bertrand; and Mondet, Jean, 5,616,598, Cl. 514-374.000.

Mondshine, Kenneth B.: *See*—
Dobson, James W., Jr.; Robertson, Terry D.; and Mondshine, Kenneth B., 5,616,541, Cl. 507-145.000.

Monkiewicz, Jaroslaw: *See*—
Kropfgans, Frank; Frings, Albert; Horn, Michael; Koetzsch, Hans-Joachim; Monkiewicz, Jaroslaw; Seiler, Claus-Dietrich; Srebny, Hans-Guenther; and Standke, Burkhard, 5,616,762, Cl. 556-479.000.

Monma, Jun: *See*—
Horiguchi, Akihiro; Monma, Jun; Kimura, Kazuo; Oh-Ishi, Katsuyoshi; Ueno, Fumio; Kasori, Mitsuo; and Sumino, Hiroyasu, 5,616,956, Cl. 257-703.000.

Monroe, Stephen H.: *See*—
Goettmann, James A.; Monroe, Stephen H.; Angelini, Peter J.; and Boylan, John R., 5,616,384, Cl. 428-36.100.

Monsanto Company: *See*—
Donovan, William P.; Tan, Yuping; Jany, Christine S.; and González, José M., Jr., 5,616,319, Cl. 424-93.200.
Kalota, Dennis J.; Ramsey, Skippy H.; and Spickard, Larry A., 5,616,544, Cl. 508-508.000.
South, Michael S.; and Jakuboski, Terri L., 5,616,789, Cl. 562-439.000.

Monson, Donald R.: *See*—
Barris, Marty A.; Weik, Thomas M.; Robertson, Kelly C.; Monson, Donald R.; Rothman, Jim C.; and Betts, Pete A., 5,616,171, Cl. 95-280.000.

Montgomery, Gerald D., to WavePhore, Inc. Filter by-pass for transmitting an additional signal with a video signal. 5,617,148, Cl. 348-473.000.

Montgomery, Gregg S.: *See*—
Schroeder, Alfred A.; Romanyszyn, Michael T., Jr.; Getsy, Stephen B.; Montgomery, Gregg S.; Wolfe, Joseph J.; and Wittig, Norman P., 5,615,801, Cl. 222-51.000.

Moody, Charles D.: *See*—
Murphy, Andrew P.; and Moody, Charles D., 5,616,252, Cl. 210-728.000.

Moon, Dae Y.: *See*—
Han, Gwang M.; and Moon, Dae Y., 5,617,043, Cl. 326-83.000.

Moore, Samuel B.; Leuck, James F.; and Turner, Edwin T., to Burlington Chemical Co., Inc. Bleaching composition. 5,616,280, Cl. 252-186.290.

Moran, Thomas J., IV. Barbecue ignitor and scraper. 5,616,022, Cl. 431-253.000.

Morando, Jorge A., to Alphatech, Inc. Method for making composite centrifugally cast furnace roll rings for furnace rolls. 5,615,482, Cl. 29-895.210.

Morano, Nick; Cheng, Wilfred W. T.; Allohverdi, Mohammad; and Di Marco, Anthony G., to Woodbridge Foam Corporation. High pressure mixing system and process for producing foamed isocyanate-based polymers containing filler material. 5,615,949, Cl. 366-159.100.

Morava, Irena. Power distribution system having substantially zero electromagnetic field radiation. 5,616,969, Cl. 307-91.000.

Morfey, Allistair: *See*—
Durif, Ghislain; and Morfey, Allistair, 5,617,078, Cl. 340-652.000.

Morgan, Denny: *See*—
Lark, Wayne W.; Morgan, Denny; and Turba, James R., 5,617,034, Cl. 324-635.000.

Morgan, Jeffery A.: *See*—
Crouser, Darwin S.; McAllise, Gregg A.; Morgan, Jeffery A.; and Sindlinger, Fred S., 5,615,448, Cl. 15-321.000.

Morgan, John G.: *See*—
Helfer, Farrel B.; Kim, Dong K.; Morgan, John G.; Shemenski, Robert M.; Sinopoli, Italo M.; Jeanpierre, Guy; and Nguyen, Gia V., 5,616,197, Cl. 152-527.000.

Morgan, Lowell B.: *See*—
Rhees, Raymond C.; Behrens, Ralph E.; Reid, Kathy J.; and Morgan, Lowell B., 5,616,234, Cl. 205-500.000.

Morgardshammar AB: *See*—
Söderberg, Lennart, 5,616,068, Cl. 451-49.000.

Mori, Masahiko; and Iwane, Yasuhiko, to Alps Electric Co., Ltd. Tape printing apparatus having a slot for insertion of a tape cassette. 5,615,960, Cl. 400-613.000.

Mori, Shigeru; Suzuki, Tomio; and Hayashikoshi, Masanori, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor memory device having extended data out function. 5,617,362, Cl. 365-189.050.

Morich, Robert S., to Electrodynamics, Inc. Covert light indicator. 5,617,080, Cl. 340-815.570.

Morikita, Nobuo, to Sumitomo Heavy Industries, Ltd. Machining chamber for a glass compresson molding machine. 5,616,161, Cl. 65-157.000.

Morin, Robert. Leg support for aquatic skis. 5,616,060, Cl. 441-76.000.

Morinaka, Mayuki: *See*—
Hiraoka, Hidetaka; Morinaka, Mayuki; and Kubota, Yasushi, 5,615,730, Cl. 164-4.100.

Morishita, Hiroki; Taniguchi, Susumu; and Kotera, Shinichi, to Mita Industrial, Co., Ltd. Cleaning unit including a cleaning roller and a separator plate which separates a cleaning chamber from a toner storage and which comes within a predetermined spacing from the cleaning roller. 5,617,194, Cl. 399-349.000.

Morishita, Shigeru: *See*—

Fujimoto, Tomoya; Okamura, Kenko; Morishita, Shigeru; Murakami, Masaru; Adachi, Akira; Hayashi, Mitsutoshi; Fujita, Akinari; Nagashima, Shingo; Kurashina, Minoru; and Yoshida, Kentaro, 5,615,976, Cl. 405-184.000.

Morita, Shingo; and Koiwa, Mitsuru, to Mitsubishi Denki Kabushiki Kaisha. Ignition apparatus for internal combustion engine. 5,615,659, Cl. 123-634.000.

Morita, Takashi; Takishima, Suguru; and Okuda, Isao, to Asahi Kogaku Kogyo Kabushiki Kaisha. Optical system for optical information recording/reproducing apparatus. 5,617,387, Cl. 369-44.230.

Morita, Yasuyuki: *See*—
Sanjyou, Akira; Nakatsuka, Yasuo; Morita, Yasuyuki; and Uno, Koichi, 5,616,423, Cl. 428-632.000.

Morizawa, Yoshitomi: *See*—
Matsumura, Yasushi; Nakano, Takashi; Makino, Mayumi; and Morizawa, Yoshitomi, 5,616,732, Cl. 549-305.000.

Morley, Edwin R., to Paragon Electric Company, Inc. System for selectively effecting electrical connection among a plurality of loci in a housing. 5,616,039, Cl. 439-188.000.

Morlion, Danny; Jonckheere, Luc; and Van Koetsem, Jan P. K., to Framatome Connectors International. Alignment piece for a connector for optical conductors. 5,617,494, Cl. 385-83.000.

Morohoshi, Hiroshi; Masuda, Yuichi; and Kuroki, Yasuo, to Casio Computer Co., Ltd. Azimuth indicator equipped with anemometer capable of indicating blowing direction of wind. 5,616,860, Cl. 73-170.140.

Morris, Glenn H., Sr. Condition indicating child-resistant closure. 5,615,787, Cl. 215-217.000.

Morse, Carolyn E.: *See*—
Jarvis, Barry M. F.; and Morse, Carolyn E., 5,615,966, Cl. 403-49.000.

Morton, Howard E.: *See*—
Stuk, Timothy L.; Haight, Anthony R.; Kerdesky, Francis A. J.; Leanna, M. Robert; Morton, Howard E.; Robbins, Timothy A.; Scarpetti, David; and Tien, Jien-Heh J., 5,616,776, Cl. 560-27.000.

Morton International, Inc.: *See*—
Francis, Joseph D.; and Steimke, Daniel L., 5,615,913, Cl. 280-740.000.
Hansen, David D., 5,616,881, Cl. 102-202.400.
Stanger, Randy M., 5,615,907, Cl. 280-728.200.

Morton, Lee J.: *See*—
Blackborow, John R.; and Morton, Lee J., 5,616,654, Cl. 525-333.700.

Morton, Trevor C.; Hodgkin, Jonathan H.; and Eibl, Robert, to Commonwealth Scientific and Industrial Research Organisation. Bismaleimide compounds. 5,616,666, Cl. 526-262.000.

Morvant, John D. Rubber encapsulated vee ring seal. 5,615,896, Cl. 277-229.000.

Mosci, Ricardo A., to Quigley Company, Inc. Rotary kiln with a polygonal lining. 5,616,023, Cl. 432-103.000.

Moser, Keith W.: *See*—
Bouman, David G.; Moser, Larry D.; and Moser, Keith W., 5,615,472, Cl. 29-596.000.

Moser, Larry D.: *See*—
Bouman, David G.; Moser, Larry D.; and Moser, Keith W., 5,615,472, Cl. 29-596.000.

Moser, Rolf; and Birrer, Lukas, to Hoffmann-La Roche Inc. Thermal cycler. 5,616,301, Cl. 422-104.000.

Moses, Charles J.; and Simic, Rajko M., to Continental Emsco Company. Flexible/rigid riser system. 5,615,977, Cl. 405-195.100.

Moses, Leonard C.; Kendall, John H. W.; and Hyde, Bradley G., to American Engineering Corporation. Security module. 5,615,622, Cl. 109-2.000.

Moset, Marina M.: *See*—
Keilhauer, Gerhard; Romerdahl, Cynthia; Braña, Miguel F.; Qian, Xiao-Dong; Bousquet, Peter; Berlanga, Jose M.C.; Moset, Marina M.; and de Vega, Maria J.P., 5,616,589, Cl. 514-296.000.

Mosher, Walter W., Jr.: *See*—
Peterson, Dean D.; and Mosher, Walter W., Jr., 5,615,504, Cl. 40-633.000.

Moskal, Thomas E., to Babcock & Wilcox Company, The. Boiler bank surface temperature profiler. 5,615,953, Cl. 374-7.000.

Motohara, Akira: *See*—
Ohta, Mitsuyasu; and Motohara, Akira, 5,617,427, Cl. 371-22.300.

Motorola: *See*—
Dydyk, Michael; Golio, John M.; Higgins, Robert J., Jr.; and Arvanitis, Aristotelis, 5,615,473, Cl. 29-602.100.
Maguire, Jeffrey E., 5,617,348, Cl. 365-49.000.
Romero, Guillermo L.; and Anderson, Samuel J., 5,616,886, Cl. 174-52.400.

Motorola, Inc.: *See*—
Crouch, Alfred L.; Pressly, Matthew D.; Gay, James G.; Shepard, Clark G.; and Laakso, Pamela S., 5,617,531, Cl. 395-183.060.
Dydyk, Michael, 5,617,065, Cl. 333-186.000.
Eastmond, Bruce C.; and Alameh, Rachid M., 5,617,008, Cl. 320-22.000.
Kadanka, Petr, 5,616,971, Cl. 307-130.000.
Koifman, Vladimir; and Afek, Yachin, 5,617,054, Cl. 327-362.000.
Kushner, William M.; Srenger, Edward; and Hartman, Matthew A., 5,617,509, Cl. 395-2.650.
Le, Chinh H.; and Eifert, James B., 5,617,559, Cl. 395-496.000.
Lynch, Marvin L.; McClish, Michael A.; Selfe, Margaret A.; Steinl, Gregory; and Remboski, Donald J., Jr., 5,616,834, Cl. 73-116.000.
Main, William E.; Lovelace, David K.; and Pena-Finol, Jesus S., 5,617,056, Cl. 327-538.000.
Maine, Kristioe P.; Heuvel, Dean P. V.; and McKay, Brent M., 5,617,101, Cl. 342-358.000.
Pfiester, James R., 5,616,948, Cl. 257-412.000.
Roth, Scott S.; and Kirsch, Howard C., 5,616,941, Cl. 257-315.000.
Schwendeman, Robert J.; and Petreye, David R., 5,617,083, Cl. 340-825.440.
Swapp, Mavin C., 5,617,035, Cl. 324-711.000.

Motoseko, Toshihiko: *See*—
Masuda, Natsuo; Yamamoto, Hiroshi; Horizoe, Haruhiko; Hiramatsu, Shinji; Hizuka, Hidehiko; Matsumoto, Manabu; and Motoseko, Toshihiko, 5,616,034, Cl. 439-78.000.

Mouk, Robert W.; and Abel, Albert E., to Commodore Laboratories, Inc. Methods for purifying and recovering contaminated refrigerants with solutions of bases in organic solvents. 5,616,821, Cl. 570-177.000.

Mowen, Ricky L.: *See*—
Rice, Dennis F.; Mowen, Ricky L.; and Faith, Marshall W., 5,616,070, Cl. 451-62.000.

Moyer, James C., to Micrel, Incorporated. Voltage regulator having MOS pull-off transistor for a bipolar pass transistor. 5,617,017, Cl. 323-289.000.

MTU Motoren- Und Turbinen-Union Friedrichshafen GmbH: *See*—
Koch, Dietrich; Leicht, Werner; and Wand, Norbert, 5,615,641, Cl. 123-41.82R.

Muchow, Joerg; Muenzel, Horst; Offenberg, Michael; and Waldvogel, Winfried, to Robert Bosch GmbH. Method of fabricating a micromechanical sensor. 5,616,514, Cl. 438-50.000.

Mueller, Andreas, to Daimler Benz AG. Method for digital data transmission in the zero symbol of COFDM modulation method. 5,617,411, Cl. 370-210.000.

Mueller, Eberhard: *See*—
Richter, Robin; Martin, Hans-Peter; Roewer, Gerhard; Mueller, Eberhard; Kraemer, Hans; Sartori, Peter; Oelschlaeger, Andreas; Habel, Wolfgang; and Harnack, Bernhard, 5,616,308, Cl. 423-345.000.

Mueller, Werner H.: *See*—
Foster, James A.; Mueller, Werner H.; and Ryan, Debra A., 5,616,807, Cl. 564-423.000.

Muenzel, Horst: *See*—
Benz, Gerhard; Marek, Jiri; Bantien, Frank; Muenzel, Horst; Laermer, Franz; Offenberg, Michael; and Schilp, Andrea, 5,616,523, Cl. 438-50.000.
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Muftikian, Rosy: *See*—
Fernando, Quintus; Muftikian, Rosy; and Korte, Nic, 5,616,253, Cl. 210-747.000.

Muhr, Jürgen; and Feld, Marcel, to Hüls Aktiengesellschaft. Process for the preparation of 3-amino-5-methylpyrazole. 5,616,723, Cl. 548-371.400.

Mukai, Masahiro: *See*—
Kusunoki, Akira; Otsuki, Jitsuji; Kikuoka, Yasuhira; Okada, Tatsunori; Matsumura, Mitsuie; Shinoki, Toshio; Mukai, Masahiro; and Yagi, Tetsuya, 5,616,431, Cl. 429-36.000.

Mukohzaka, Naohisa: *See*—
Kobayashi, Yuji; Yoshida, Narihiro; Mukohzaka, Naohisa; Toyoda, Haruyoshi; and Hara, Tsutomu, 5,617,203, Cl. 356-237.000.

Mulenburg, Gerald M.; and Vernikos, Joan, to United States of America, National Aeronautics and Space Administration. Human powered centrifuge. 5,616,104, Cl. 482-57.000.

Müller, Hanns-Peter: *See*—
von Bonin, Wulf; Müller, Hanns-Peter; and Kapps, Manfred, 5,616,628, Cl. 521-157.000.

Müller, Harald; and Ueba, Yoshinobu, to Sumitomo Electric Industries, Ltd. Organic charge transfer complex. 5,616,728, Cl. 549-11.000.

Muller, Paul W., to Britax Wingard Limited. Fuel tank filler pipe closure. 5,615,793, Cl. 220-295.000.

Mulligan, Seamus: *See*—
Geoghegan, Edward J.; Mulligan, Seamus; and Panoz, Donald E., 5,616,345, Cl. 424-497.000.

Mullins, John F.: *See*—
West, Harley L.; and Mullins, John F., 5,616,642, Cl. 524-439.000.

Multi-Tech Systems, Inc.: *See*—
Li, Ping; Gunn, Timothy D.; and Davis, Jeffrey P., 5,617,423, Cl. 370-426.000.

Mundorf, Larry K.: *See*—
Marsilio, Ronald M.; Weisburn, James T.; Sankey, James K.; and Mundorf, Larry K., 5,615,779, Cl. 211-40.000.

Munschauer, Rainer: *See*—
Steiner, Gerd; Munschauer, Rainer; Unger, Liliane; Teschendorf, Hans-Jürgen; and Höger, Thomas, 5,616,705, Cl. 544-105.000.

Münzmay, Thomas; Fuhrmann, Peter; Lamla, Franz; Meckel, Walter; and Rassbofer, Werner, to Bayer Aktiengesellschaft. Process for the decompostion of polyurethane plastics. 5,616,623, Cl. 521-49.500.

Murai, Shinji: *See*—
Abe, Yoshimi; and Murai, Shinji, 5,615,519, Cl. 47-59.000.

Murakami, Eisaku; Yuasa, Kazuhiro; Endoh, Sbuichi; Matsumae, Iwao; Tanaka, Yoshiaki; Hosokawa, Hiroshi; Uno, Mugijiroh; Saitoh, Hiroshi; Takenaka, Eiji; Sugiyama, Toshihiro; Yamanaka, Tetsuo; and Komatsubara, Satoru, to Ricoh Company, Ltd. Toner conveyor roller and image forming apparatus having the same. 5,617,191, Cl. 399-286.000.

Murakami, Hiroki: *See*—
Ibaraki, Susumu; Katta, Noboru; Nakamura, Seiji; and Murakami, Hiroki, 5,617,476, Cl. 380-49.000.

Murakami, Hitoshi: *See*—

Oba, Fumio; Matsushima, Toshihiko; Murakami, Hitoshi; and Terada, Tomoaki, 5,615,956, Cl. 384-470.000.
Murakami, Masaru: *See—*
Fujimoto, Tomoya; Okamura, Kenko; Morishita, Shigeru; Murakami, Masaru; Adachi, Akira; Hayashi, Mitsutoshi; Fujita, Akinari; Nagashima, Shingo; Kurashina, Minoru; and Yoshida, Kentaro, 5,615,976, Cl. 405-184.000.
Murakami, Shotaro, to Mitsubishi Denki Kabushiki Kaisha. Power converter protecting apparatus for electric power system. 5,617,012, Cl. 323-207.000.
Murakami, Yukitaka, to Jeol Ltd. Method of finding stress distribution from temperature variation pattern on surface of elastic body. 5,616,866, Cl. 73-804.000.
Murakami, Yukiyasu: *See—*
Tamazawa, Kazuharu; Kojima, Tadao; Arima, Hideki; Murakami, Yukiyasu; Isomura, Yasuo; Okada, Minoru; Takenaka, Toichi; and Takanobu, Kiyoshi, 5,616,715, Cl. 546-278.400.
Murano, Shunji; Miyauchi, Kouji; Taguchi, Akira; and Shirao, Kazuhiko, to Kyocera Corporation. Image device having a spacer with image arrays disposed in holes thereof. 5,617,131, Cl. 347-233.000.
Murasaki, Ryuichi: *See—*
Tominaga, Yutaka; Takizawa, Toshiaki; and Murasaki, Ryuichi, 5,615,461, Cl. 24-452.000.
Murasato, Masahiro: *See—*
Nobori, Kazuhiro; Ushikoshi, Ryusuke; Umemoto, Koichi; Sakon, Atsushi; Niiori, Yusuke; and Murasato, Masahiro, 5,616,024, Cl. 432-241.000.
Murase, Yuichi: *See—*
Hashima, Masayoshi; Hasegawa, Fumi; Okabayashi, Keijū; Watanabe, Ichiro; Kanda, Shinji; Sawasaki, Naoyuki; and Murase, Yuichi, 5,617,335, Cl. 364-516.000.
Murata Manufacturing Co., Ltd.: *See—*
Nagano, Koichi; Uno, Atsushi; Baba, Toshiyuki; Shimura, Takashi; and Ōyama, Yuusei, 5,616,981, Cl. 310-326.000.
Murayama, Hideki; Yoshizawa, Satoshi; Inouchi, Hidenori; Aimoto, Takeshi; Hayashi, Takehisa; and Iwamoto, Hiroshi, to Hitachi, Ltd. Method of communication between network computers by dividing packet data into parts for transfer to respective regions. 5,617,424, Cl. 370-389.000.
Murofushi, Yoshinobu: *See—*
Kaneko, Masakatsu; Murofushi, Yoshinobu; Kimura, Misako; Yamazaki, Mitsuo; and Iijima, Yasuteru, 5,616,600, Cl. 514-397.000.
Murphy, Andrew P.; and Moody, Charles D., to United States of America, Interior. Water treatment process for nitrate removal. 5,616,252, Cl. 210-728.000.
Murphy, Christopher J.; Reid, Ted W.; and Mannis, Mark J. Methods and compositions using substance P to promote wound healing. 5,616,562, Cl. 514-15.000.
Murphy, James C.: *See—*
Leonard, Michael D.; and Murphy, James C., 5,616,837, Cl. 73-119.00A.
Murphy, Martin D., to Imation Corp. Method of preparation of a monodispersed tabular silver halide grain emulsion. 5,616,455, Cl. 430-569.000.
Murphy, Michael E.: *See—*
Gordenker, Robert J. M.; Tucker, Lawrence J.; and Murphy, Michael E., 5,617,269, Cl. 360-77.120.
Murphy, Tim T.: *See—*
Tompkins, Nicholas J.; Murphy, Tim T.; and Furukawa, Andrew T., 5,616,354, Cl. 426-324.000.
Tompkins, Nicholas J.; Murphy, Tim T.; and Furukawa, Andrew T., 5,616,360, Cl. 426-615.000.
Murray, Bruce S., to Bolt Beranek and Newman Inc. Active pneumatic mount. 5,615,868, Cl. 267-64.270.
Murray, Hallam G., Jr.: *See—*
Ozveren, Cuneyt M.; Murray, Hallam G., Jr.; Waters, Gregory M.; and Simcoe, Robert J., 5,617,409, Cl. 370-235.000.
Murray, Holt, Jr., to Murray, Jr., Holt. Assembly for sealing a lid to a mating container body. 5,615,794, Cl. 220-304.000.
Murray, William M. Method and apparatus for machining bone to fit an orthopedic surgical implant. 5,616,146, Cl. 606-80.000.
Musto, Colin A. G.: *See—*
Winstanley, Nigel A.; Weston, John A.; and Musto, Colin A. G., 5,616,075, Cl. 453-41.000.
Muto, Norio: *See—*
Yamamoto, Itaru; Muto, Norio; and Miyake, Toshio, 5,616,611, Cl. 514-474.000.
MVE, Inc.: *See—*
Preston, Duane; Drube, Tom; and Drube, Paul, 5,616,838, Cl. 73-195.000.
Mycogen Corporation: *See—*
Payne, Jewel M.; Kennedy, M. Keith; Randall, John B.; Meier, Henry; Uick, Heidi J.; Foncerrada, Luis; Schnepf, Harry E.; and Schwab, George E., 5,616,495, Cl. 435-252.300.
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N.V. Michel Van De Wiele: *See—*
Derudder, Carlos; and Debaes, Johnny, 5,615,712, Cl. 139-21.000.
Naasz, Brian M.: *See—*
Bank, Howard M.; Naasz, Brian M.; and Nguyen, Binh T., 5,616,760, Cl. 556-468.000.
Nabeshima, Seiji: *See—*
Kato, Yoshiei; Nabeshima, Seiji; Ito, Yoichi; and Sorimachi, Kenichi, 5,616,188, Cl. 148-508.000.
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Naegele, Dieter: *See—*
Witt, Michael; Scherzer, Dietrich; Hahn, Klaus; and Naegele, Dieter, 5,616,624, Cl. 521-56.000.
Nagabhushan, Tattanahalli L.: *See—*
Reichert, Paul; Hammond, Gerald S.; Le, Hung V.; Nagabhushan, Tattanahalli L.; and Trotta, Paul P., 5,616,555, Cl. 514-8.000.
Nagai, Hideo; Takayama, Toru; Kume, Masahiro; and Yoshikawa, Akio, to Matsushita Electronics Corporation. Lasing system with wavelength-conversion waveguide. 5,617,435, Cl. 372-22.000.
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Sugano, Shigeru; Takebayashi, Takashi; Nagai, Shigekazu; Ito, Yoshiharu; Saito, Mitsuhiro; Matsushima, Hiroshi; and Saitoh, Akio, 5,617,338, Cl. 364-558.000.
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Koyanagi, Takurou; Andou, Hiroyuki; and Nagai, Takaaki, 5,617,098, Cl. 342-70.000.
Nagano Japan Radio Co., Ltd.: *See—*
Anzawa, Seiichi; and Yoda, Syoichi, 5,617,300, Cl. 361-795.000.
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Naganuma, Masateru, to Seikagaku Kogyo Kabushiki Kaisha (Seikagaku Corporation). Medication filled syringe equipment. 5,615,772, Cl. 206-365.000.
Nagaoka, Hidetada; Onoda, Atsuo; Izumi, Yukio; Nishikawa, Keiichi; Ōomura, Yuuji; Suzuki, Mitinaga; and Hoshi, Kiyotaka, to Mitsubishi Denki Kabushiki Kaisha. Drive circuit for brushless motor. 5,616,994, Cl. 318-254.000.
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Nagase, Tetsuya: *See—*
Hayashi, Toshio; Arimoto, Shinobu; Yoshinaga, Kazuo; Nakai, Takehiko; Utagawa, Tsutomu; Nagase, Tetsuya; and Sasanuma, Nobuatsu, 5,617,187, Cl. 399-32.000.
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Nagashima, Nobuyuki: *See—*
Yamada, Masatoshi; Kondo, Yasuhiro; Imai, Kenji; Kojima, Masahiro; and Nagashima, Nobuyuki, 5,616,000, Cl. 415-191.000.
Nagashima, Shingo: *See—*
Fujimoto, Tomoya; Okamura, Kenko; Morishita, Shigeru; Murakami, Masaru; Adachi, Akira; Hayashi, Mitsutoshi; Fujita, Akinari; Nagashima, Shingo; Kurashina, Minoru; and Yoshida, Kentaro, 5,615,976, Cl. 405-184.000.
Nagata, Hideo: *See—*
Kishi, Hajime; Odagiri, Nobuyuki; Tazaki, Tokuo; Nagata, Hideo; Terashita, Takeshi; Nishimura, Akira; and Kato, Hiroyasu, 5,616,405, Cl. 442-60.000.
Nagata, Ryu; Tanno, Norihiko; and Kodo, Toru, to Sumitomo Pharmaceuticals Company, Limited. Tricyclic quinoxalinediones. 5,616,586, Cl. 514-250.000.
Nagata, Teruyuki; Watanabe, Katsuji; Kono, Yoshitsugu; Tamaki, Akihiro; and Kobayashi, Takashi, to Mitsui Toatsu Chemicals, Inc. Process for preparing high-purity aniline. 5,616,806, Cl. 564-423.000.
Nagata, Toshihiro: *See—*
Yokota, Sumio; Matsuzawa, Masafumi; Ohba, Nobuyuki; Nagata, Toshihiro; Tachikawa, Shigehiko; Miyazawa, Takeshige; and Yanagisawa, Katsutada, 5,616,537, Cl. 504-242.000.
Nagata, Yasufumi: *See—*
Nomoto, Takashi; Hayashi, Masahiro; Shibata, Jun; Iwasawa, Yoshikazu; Mitsuya, Morihiro; Iida, Yoshiaki; Nonoshita, Katsumasa; and Nagata, Yasufumi, 5,616,803, Cl. 564-337.000.
Nagata, Yoshihiko: *See—*
Kubota, Yoshihiro; Kawakami, Satoshi; Hamada, Yuichi; Shirasaki, Toru; Nagata, Yoshihiko; and Kashida, Meguru, 5,616,927, Cl. 250-492.200.
Nagato, Michiko: *See—*
Kaneko, Manabu; Tanaka, Shinri; and Nagato, Michiko, 5,616,454, Cl. 430-554.000.
Nagatomo, Hiroyuki: *See—*
Ono, Seiji; Masuda, Kenmei; Konishi, Katsuo; and Nagatomo, Hiroyuki, 5,617,391, Cl. 369-48.000.
Nagayama, Eiji: *See—*
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Nagle, Timothy E.: *See—*
Dolby, Nigel I.; Nagle, Timothy E.; and Goessling, Thomas R., 5,617,514, Cl. 395-51.000.

Nair, Harikumar B.: *See—*
Tupuri, Raghuram S.; and Nair, Harikumar B., 5,617,431, Cl. 371-27.000.
Nakada, Masahiro: *See—*
Itami, Satoshi; Nakahara, Masaru; Nakada, Masahiro; Suzuki, Hiroshi; and Utsumi, Kenichi, 5,617,393, Cl. 369-58.000.
Nakagawa, Seiichi, to Fuji Oozx Inc. Coil retainer for engine valve and preparation of the same. 5,616,192, Cl. 148-690.000.
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Nakai, Shigeo: *See—*
Kiuchi, Kazuhiko; Nakai, Shigeo; Sawa, Masuo; Kato, Masayuki; Sakai, Mitsuru; and Nomura, Shinya, 5,616,631, Cl. 523-139.000.
Nakai, Takehiko: *See—*
Hayashi, Toshio; Arimoto, Shinobu; Yoshinaga, Kazuo; Nakai, Takehiko; Utagawa, Tsutomu; Nagase, Tetsuya; and Sasanuma, Nobuatsu, 5,617,187, Cl. 399-32.000.
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Nakai, Tetsuya; Yamaguchi, Yasuo; and Nishimura, Tadashi, to Mitsubishi Denki Kabushiki Kaisha; and Mitsubishi Materials Corporation. Method of manufacturing substrate having semiconductor on insulator. 5,616,507, Cl. 438-480.000.
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Satoh, Makoto; and Nakajima, Hiroyuki, 5,617,389, Cl. 369-44.420.
Nakajima, Junjiro: *See—*
Kurosaki, Hideki; Nakajima, Junjiro; Umehara, Hajime; Nakamura, Shozo; Kanno, Satoshi; Nishida, Koji; Bessho, Yasunori; Inagaki, Masahisa; Yokomizo, Osamu; and Yoshimoto, Yuichiro, 5,617,456, Cl. 376-260.000.
Nakajima, Yuji: *See—*
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Nakajima, Yukio, to Bridgestone Corporation. Method of determining a pitch arrangement of a tire. 5,617,341, Cl. 364-578.000.
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Sugimoto, Masakazu; Kojima, Hiroyuki; Tanaka, Akiko; Matsui, Hiroshi; Sato, Katsuaki; and Nakamatsu, Tsuyoshi, 5,616,480, Cl. 435-172.300.
Nakamura, Hiroki: *See—*
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Nakamura, Kazunari: *See—*
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Nakamura, Seiji: *See—*
Ibaraki, Susumu; Katta, Noboru; Nakamura, Seiji; and Murakami, Hiroki, 5,617,476, Cl. 380-49.000.
Nakamura, Shin: *See—*
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Nakamura, Shingo: *See—*
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Nakamura, Shinji: *See—*
Noda, Kazuhiro; Nakamura, Shinji; and Hayashi, Hisao, 5,616,960, Cl. 257-760.000.
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Kurosaki, Hideki; Nakajima, Junjiro; Umehara, Hajime; Nakamura, Shozo; Kanno, Satoshi; Nishida, Koji; Bessho, Yasunori; Inagaki, Masahisa; Yokomizo, Osamu; and Yoshimoto, Yuichiro, 5,617,456, Cl. 376-260.000.
Nakamura, Takashi: *See—*
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Nakamura, Tatsumasa: *See—*
Ise, Yoshiaki; Miyazawa, Hiroyuki; Kimura, Hiroyuki; Okoshi, Shinichi; Nakamura, Tatsumasa; and Kato, Toshiyuki, 5,617,262, Cl. 359-846.000.
Nakamura, Toru; and Toriyama, Keiji, to NEC Corporation. Semiconductor device. 5,616,931, Cl. 257-48.000.
Nakamura, Toshiyuki: *See—*
Amanuma, Tatsuo; Ohishi, Sueyuki; Imura, Yoshio; and Nakamura, Toshiyuki, 5,617,166, Cl. 396-55.000.
Nakamura, Yasushige: *See—*
Takahashi, Toru; Watanuki, Tsuneo; Takei, Fumio; Sawatari, Norio; and Nakamura, Yasushige, 5,616,440, Cl. 430-63.000.
Nakamura, Yoshikatu, to Kabushiki Kaisha Toshiba. Address reading apparatus and address printing apparatus using mail address position mark. 5,617,481, Cl. 382-101.000.
Nakane, Keiichi: *See—*
Kuwamoto, Hideki; Iwatani, Takao; Nakane, Keiichi; and Fujiwara, Masaki, 5,617,518, Cl. 395-114.000.
Nakanishi Dental Mfg. Co., Ltd.: *See—*
Suzuki, Tetsuji, 5,616,029, Cl. 433-122.000.
Nakano, Takashi; and Taniji, Yukio, to NEC Corporation. Semiconductor device with structure to decrease wiring capacitance. 5,616,952, Cl. 257-659.000.
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Matsumura, Yasushi; Nakano, Takashi; Makino, Mayumi; and Morizawa, Yoshitomi, 5,616,732, Cl. 549-305.000.
Nakano, Toshihiko: *See—*
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Nakano, Yuki: *See—*
Ikeda, Atsuhiko; Ozaki, Masami; Honami, Reijiro; Yumita, Takashi; Yano, Hiroyuki; Nakano, Yuki; Kurihara, Yutaka; and Hirano, Tadayoshi, 5,616,594, Cl. 514-340.000.
Nakao, Norihiko; Tukahara, Yutaka; Ikeda, Naoki; Takehara, Shin; Seni, Hirofumi; Harada, Shingo; and Santo, Chiaki, to Mazda Motor Corporation. Active vibration damping system for a vehicle. 5,617,315, Cl. 364-424.045.
Nakashima, Hisataka, to Dow Corning Toray Silicone Co., Ltd. Organosilicon compounds and method for the preparation thereof. 5,616,756, Cl. 556-413.000.
Nakashima, Masato: *See—*
Aritake, Hirokazu; Kato, Masayuki; Ishimoto, Manabu; Sato, Noriko; and Nakashima, Masato, 5,617,225, Cl. 359-9.000.
Nakata, Kenji. Earthquake-proof bed. 5,615,424, Cl. 5-2.100.
Nakata, Kouichi: *See—*
Kanemaru, Tetsuro; Kikuchi, Toshihiro; Senoo, Akihiro; and Nakata, Kouichi, 5,616,442, Cl. 430-83.000.
Nakata, Naotarou; Aoki, Naofumi; and Yamazaki, Kazutoshi, to Rohm Co. Ltd. Light source unit and its manufacturing method, adjusting method and adjusting apparatus. 5,617,441, Cl. 372-70.000.
Nakatsu, Hiromi: *See—*
Watanabe, Takeshi; Tsuji, Kikunosuke; Hori, Setsuo; Kado, Seiji; Satake, Kenichi; Nakatsu, Hiromi; Baba, Kohichi; Ishii, Masayuki; and Uriu, Yoshiko, 5,615,877, Cl. 271-259.000.
Nakatsuka, Yasuo: *See—*
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Nakayama, Norikazu: *See—*
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Nakayama, Shinichi: *See—*
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Nakazato, Norio: *See—*
Nishiuma, Masahiko; Nakazato, Norio; Takahashi, Hiroyuki; Kamada, Chiyoshi; and Suwa, Moton, 5,616,520, Cl. 438-125.000.
Nakazato, Siniti: *See—*
Noda, Kazuhiro; and Nakazato, Siniti, 5,615,823, Cl. 228-103.000.
Nakazawa, Makoto; Takahashi, Akira; and Matsumura, Kenichiro, to Nippon Steel Corporation. Process for producing zinc-chromium alloy-electroplated steel plate. 5,616,232, Cl. 205-155.000.
Nakazawa, Yukifumi: *See—*
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Nalco Fuel Tech: *See—*
Dubin, Leonard; Albanese, Vincent M.; and Johnson, Roy A., 5,616,307, Cl. 423-235.000.
Nam, Jae Y.; Park, Sang G.; Lee, Young S.; and Ahn, Chie T., to Electronics and Telecommunication Research Institute. Video bit rate control method. 5,617,150, Cl. 348-700.000.
Nambi, Ponnal; and Patil, Ashok D., to SmithKline Beecham Corporation. Protein Kinase C inhibitor. 5,616,577, Cl. 514-215.000.
Nambu, Kyojiro; Tomura, Masatoshi; and Kuwahara, Takayuki, to Kabushiki Kaisha Toshiba. Medical bed system. 5,615,430, Cl. 5-600.000.
Namco Ltd.: *See—*
Iwase, Takashi; Matsumoto, Takashi; Aoshima, Nobuyuki; Matsuura, Norimasa; and Goto, Takashi, 5,616,079, Cl. 463-32.000.
Namiki, Fumihiro, to Fujitsu Limited. Image displaying method. 5,617,313, Cl. 395-263.000.
Namimatsu, Ken; Tsukada, Toru; and Yabe, Toshikazu, to NSK Ltd. Linear guide apparatus with lubricant-containing polymer spacer balls. 5,615,955, Cl. 384-13.000.
Namkung, Min: *See—*
Simpson, John W.; Clendenin, C. Gerald; Fulton, James P.; Wincheski, Russell A.; Todhunter, Ronald G.; Namkung, Min; and Nath, Shridhar C., 5,617,024, Cl. 324-209.000.
Nanomotion Ltd.: *See—*
Zumeris, Jona, 5,616,980, Cl. 310-323.000.
Nara, Kei; Matsuura, Toshio; Yokota, Muneyasu; Kakizaki, Yukio; Fukami, Yoshio; Miyazaki, Seiji; and Narabe, Tsuyoshi, to Nikon Corporation. Exposure apparatus. 5,617,211, Cl. 356-401.000.
Narabe, Tsuyoshi: *See—*
Nara, Kei; Matsuura, Toshio; Yokota, Muneyasu; Kakizaki, Yukio; Fukami, Yoshio; Miyazaki, Seiji; and Narabe, Tsuyoshi, 5,617,211, Cl. 356-401.000.
Narayan, Ramani; Dubois, Philippe; and Krishnan, Mohan, to Board of Trustees operating Michigan State University. Polysaccharides grafted with aliphatic polyesters derived from cyclic esters. 5,616,671, Cl. 527-300.000.
Nario, Evelyn: *See—*

Hwang, Duk S.; Nario, Evelyn; Lepe, Mark; Luz, Lyndon; Ito, Hirokazu; and Takechi, Kazuo, 5,616,693, Cl. 530-392.000.
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Nascimento, Isaias B. D. Device for muscular elongation, flexion and physiotherapy. 5,616,110, Cl. 482-131.000.
Nasu, Hisanori; Yamamoto, Kenji; and Fujimiya, Hitoshi, to Hitachi Software Engineering Co., Ltd. Capillary electrophoresis apparatus for detecting emitted fluorescence from a sample without employing an external light source device. 5,616,228, Cl. 204-603.000.
Nath, Shridhar C.: *See—*
Simpson, John W.; Clendenin, C. Gerald; Fulton, James P.; Wincheski, Russell A.; Todhunter, Ronald G.; Namkung, Min; and Nath, Shridhar C., 5,617,024, Cl. 324-209.000.
National Graphics, Inc.: *See—*
Goggins, Timothy P., 5,617,178, Cl. 355-22.000.
National Jewish Center for Immunology and Respiratory Medicine: *See—*
Choi, Yongwon; Kappler, John; and Marrack, Philippa, 5,616,472, Cl. 435-69.100.
National Research Council of Canada: *See—*
Roth, Gerhard, 5,617,491, Cl. 382-285.000.
National Science Council: *See—*
Cheng, Soofin; and Shih, Ren-Jai, 5,616,749, Cl. 556-13.000.
Jenn-Gwo, Hwu; and Ming-Jer, Jeng, 5,616,233, Cl. 205-157.000.
National Semiconductor Corporation: *See—*
Lo, Randy; and Takiar, Hem P., 5,617,297, Cl. 361-737.000.
Phillips, Christopher E., 5,617,543, Cl. 395-250.000.
Shirani, Ramin; and Edem, Brian C., 5,617,418, Cl. 370-465.000.
Ward, Michael G.; Yarbrough, Roy L.; and Chapin, Jay R., 5,617,048, Cl. 327-143.000.
National Starch and Chemical Investment Holding Corporation: *See—*
Hung, Ju-Ming; and Nowicki, James W., 5,616,625, Cl. 521-79.000.
Natori, Kuniharu: *See—*
Honzawa, Toyoshige; Natori, Kuniharu; and Koike, Nobuhiro, 5,617,376, Cl. 368-80.000.
Natori, Yohei: *See—*
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Nature's Quarters, Inc.: *See—*
Tuckerman, Mark A.; Knuth, Russell P.; and Carey, William F., 5,616,172, Cl. 96-16.000.
Nauck, George S. System and method for evaluation of dynamics of golf clubs. 5,616,832, Cl. 73-65.030.
NAXCOR: *See—*
Albagli, David; VanAtta, Reuel; and Wood, Michael, 5,616,464, Cl. 435-6.000.
Naylor, Charles A.: *See—*
Wilz, David M.; Rockstein, George B.; Knowles, Carl H.; and Naylor, Charles A., 5,616,908, Cl. 235-462.000.
NCR Corporation: *See—*
Roth, Joseph D.; Puckett, Richard D.; and Olmstead, Michael W., 5,616,402, Cl. 428-212.000.
Nealey, Richard H., to Xerox Corporation. Coating method using an inclined surface. 5,616,365, Cl. 427-430.100.
NEC Corporation: *See—*
Andoh, Yasuhiro, 5,617,428, Cl. 371-22.300.
Aoki, Hidemitsu; Yamanaka, Koji; Imaoka, Takashi; Futatsuki, Takashi; and Yamashita, Yukinari, 5,616,221, Cl. 204-252.000.
Fukuchi, Akio, 5,617,061, Cl. 330-151.000.
Funabashi, Masaaki; and Kurata, Kazuhiko, 5,617,495, Cl. 385-92.000.
Hayashi, Shigeru, 5,616,509, Cl. 438-234.000.
Hirota, Toshiyuki, 5,616,511, Cl. 438-396.000.
Ishikawa, Kimiyasu, 5,617,370, Cl. 365-233.500.
Isobe, Akira, 5,616,212, Cl. 438-693.000.
Kajihara, Mamoru, 5,616,957, Cl. 257-712.000.
Kato, Hiroyuki; and Ito, Takaharu, 5,616,940, Cl. 257-206.000.
Kimura, Katsuji, 5,617,052, Cl. 327-356.000.
Kinouchl, Shigenori; and Sawada, Akira, 5,617,089, Cl. 341-65.000.
Kobunaya, Hideki; Ishikawa, Yutaka; Yamasaki, Yoshimori; and Chiba, Takayoshi, 5,617,382, Cl. 369-32.000.
Kodama, Noriaki, 5,617,358, Cl. 365-185.290.
Kohno, Takaki, 5,617,355, Cl. 365-185.210.
Koike, Hiroki, 5,617,349, Cl. 365-145.000.
Komatsu, Masatoshi, 5,617,562, Cl. 395-559.000.
Matsumoto, Hiroshi, 5,617,037, Cl. 324-763.000.
Matsumoto, Mariko, 5,617,410, Cl. 370-342.000.
Nakamura, Toru; and Toriyama, Keiji, 5,616,931, Cl. 257-48.000.
Nakano, Takashi; and Taniji, Yukio, 5,616,952, Cl. 257-659.000.
Ninomiya, Kazuhisa, 5,617,359, Cl. 365-185.290.
Nishimoto, Hiroshi, 5,617,493, Cl. 385-40.000.
Saitoh, Sei, 5,617,111, Cl. 345-100.000.
Saitoh, Sinichirou, 5,616,939, Cl. 257-202.000.
Sugawara, Hiroshi, 5,617,361, Cl. 365-189.010.
Tada, Hiroshi, 5,616,427, Cl. 428-690.000.
Tanaka, Masahiko, 5,617,449, Cl. 375-222.000.
Tobase, Hiromori, 5,616,954, Cl. 257-668.000.
Wada, Koji, 5,617,216, Cl. 358-298.000.
Yamaguchi, Chiseki, 5,616,416, Cl. 428-411.100.
Yokota, Ikuhiro, 5,617,322, Cl. 364-468.040.
Yoshida, Toshio; and Sisido, Michitaka, 5,617,112, Cl. 345-102.000.
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Nedderman, William H., Jr., to United States of America, Navy. Underwater vehicle and a fin assembly therefor. 5,615,632, Cl. 114-330.000.
Negus, Charles C.; and Linhares, Stephen J., to PLC Medical Systems, Inc. Non-reusable lens cell for a surgical laser handpiece. 5,617,258, Cl. 359-819.000.
Neisen, Stephen P.: *See—*
Yoshida, Stuart; Seader, Rex; and Neisen, Stephen P., 5,615,735, Cl. 165-80.300.
Nels, Terry E. Fabric arrangement and method for controlling fluid flow. 5,615,758, Cl. 192-113.360.
Nelson, Jerry L. Tool steel. 5,616,187, Cl. 148-333.000.
Nelson, Lynn E.: *See—*
Tamura, Kohichi R.; Ippen, Erich P.; Haus, Hermann A.; Nelson, Lynn E.; and Doerr, Christopher R., 5,617,434, Cl. 372-6.000.
Nelson, Philip L., to Contico International, Inc. Trigger sprayer having disc valve. 5,615,835, Cl. 239-333.000.
Nelson, Robert C.: *See—*
Brown, Fon R., Jr.; and Nelson, Robert C., 5,617,005, Cl. 320-21.000.
Nelson, William S., to DEC International, Inc. Automated milking parlor. 5,615,637, Cl. 119-14.030.
Neocardia, LLC.: *See—*
Thornton, Richard T.; Bradshaw, Anthony J.; and Snyder, Wayne W., 5,616,114, Cl. 600-3.000.
Neopost Limited: *See—*
Herbert, Raymond J., 5,617,519, Cl. 395-117.000.
NeoRx Corporation: *See—*
Axworthy, Donald B.; and Reno, John M., 5,616,690, Cl. 530-363.000.
Fritzberg, Alan R.; Kasina, Sudhakar; Rao, Tripuraneni N.; VanderHeyden, Jean-Luc; and Srinivasan, Ananthachari, 5,616,692, Cl. 530-391.500.
Ness, Alan J.: *See—*
Kelsay, Curtis D.; and Ness, Alan J., 5,615,445, Cl. 15-245.100.
Nestec S.A.: *See—*
Buhler, Marcel; Ho Dac, Thang; and Zurcher, Ulrich, 5,616,356, Cl. 426-443.000.
Nestegard, Susan K.: *See—*
Gorman, Michael R.; Becker, Dennis L.; Folske, Donald W.; Melbye, William L.; Nestegard, Susan K.; and Ott, Ronald L., 5,616,394, Cl. 428-99.000.
Nesvadba, Peter: *See—*
Evans, Samuel; Gande, Matthew E.; Nesvadba, Peter; von Ahn, Volker H.; and Winter, Roland A. E., 5,616,774, Cl. 560-4.000.
Netshisaulu, Khathutshelo S.: *See—*
Cassidy, Gerald A.; Netshisaulu, Khathutshelo S.; and Lubashevsky, Aharon, 5,615,625, Cl. 109-45.000.
Neubert, Johannes: *See—*
Binneberg, Armin; Neubert, Johannes; Spoerl, Gabriele; and Wolf, Walter, 5,615,557, Cl. 62-51.100.
Neuert, Richard; and Miess, Georg-Emerich, to Hoechst AG. Process for maintaining of improving the mechanical properties of fibers of aromatic copolyamides in alkaline media and shaped articles containing such fibers. 5,616,683, Cl. 528-480.000.
Neumann, Uwe: *See—*
Pfeil, Armin; Hoenel, Michael; and Neumann, Uwe, 5,616,634, Cl. 523-404.000.
New England Biolabs, Inc.: *See—*
Xu, Shuang-yong, 5,616,484, Cl. 435-199.000.
New England Medical Center Hospitals, Inc.: *See—*
Androphy, Elliot J.; and Barsoum, James G., 5,616,559, Cl. 514-12.000.
New Holland North America, Inc.: *See—*
Berger, John G.; Chow, Mark K.; and Clevenger, James T., Jr., 5,615,544, Cl. 56-341.000.
New Media Corporation: *See—*
Corder, Rodney J., 5,617,551, Cl. 395-401.000.
New York Medical College: *See—*
Judd, Amrit K.; and Bucher, Doris J., 5,616,327, Cl. 424-206.100.
New York University: *See—*
Levy, David E., 5,616,489, Cl. 435-325.000.
Newcomb, Richard: *See—*
Sieck, Peter A.; Newcomb, Richard; Trumbly, Terry A.; and Schulz, Stephen C., 5,616,225, Cl. 204-298.140.
Newman, Duncan, to Subot, Inc. Injection device. 5,616,132, Cl. 604-185.000.
Newman, John S.: *See—*
Mah, Dennie T.; Trainham, James A., III; Newman, John S.; Eames, Douglas J.; and Law, Clarence G., Jr., 5,616,220, Cl. 204-252.000.
Newman, Stephen G.; and Kay, William W., to Microtek Research and Development Ltd. Spray-dried antigenic products. 5,616,329, Cl. 424-261.100.
Newman, Thomas H., to Dow Chemical Company, The. Process for preparation of reduced metal titanium complexes. 5,616,748, Cl. 556-11.000.
Ng, Lian H.: *See—*
Parthasarathy, Baskar; Huang, Pui W.; Sum, Yuh W.; and Ng, Lian H., 5,615,874, Cl. 271-121.000.
NGK Insulators, Ltd.: *See—*
Nobori, Kazuhiro; Ushikoshi, Ryusuke; Umemoto, Koichi; Sakon, Atsushi; Niiori, Yusuke; and Murasato, Masahiro, 5,616,024, Cl. 432-241.000.
Takeuchi, Yukihisa; Masumori, Hideo; and Takahashi, Nobuo, 5,617,127, Cl. 347-71.000.

NGK Spark Plug Co., Ltd.: *See—*
Inagaki, Hiroshi, 5,617,032, Cl. 324-399.000.
Ngoc, Hung D.: *See—*
Niño, Mariano S.; and Ngoc, Hung D., 5,616,651, Cl. 525-305.000.
Nguyen, Binh T.: *See—*
Bank, Howard M.; Naasz, Brian M.; and Nguyen, Binh T., 5,616,760, Cl. 556-468.000.
Nguyen, Gia V.: *See—*
Helfer, Farrel B.; Kim, Dong K.; Morgan, John G.; Shemenski, Robert M.; Sinopoli, Italo M.; Jeanpierre, Guy; and Nguyen, Gia V., 5,616,197, Cl. 152-527.000.
Nguyen, Hoang P.; and Walker, John D., to AT&T Global Information Solutions Company; Hyundai Electronics America; and Symbios Logic Inc. Electrostatic discharge protection system for mixed voltage application specific integrated circuit design. 5,616,943, Cl. 257-355.000.
Nguyen, Hy V.: *See—*
Lee, Napoleon W.; Ku, Wei-Yi; Nguyen, Hy V.; and Diba, Sholeh, 5,617,041, Cl. 326-39.000.
Nguyen, Long V.: *See—*
MacLeod, Donald J.; Robinson, Peter G.; and Nguyen, Long V., 5,617,272, Cl. 360-99.080.
Nguyen, Thanh V.; Allen, John; and Yu, Qun, to Avery Dennison Corporation. Radiation-curable organopolysiloxane release compositions. 5,616,629, Cl. 522-40.000.
Ni, Eel-Jeu: *See—*
Chen, Fang; Griffen, Christopher T.; and Ni, Eel-Jeu, 5,616,839, Cl. 73-146.000.
Nichols, Robert; McKelvey, Timothy A.; and Rodgers, Stephen L., to United States of America, Air Force. High energy rocket propellant. 5,616,882, Cl. 102-287.000.
Nicholson, Jesse M.: *See—*
Scott, Kenneth R.; Nicholson, Jesse M.; and Edafiogho, Ivan O., 5,616,615, Cl. 514-511.000.
Nicklos, Carl F.: *See—*
Jones, David E.; Lyon, Michael R.; Leavitt, Richard F.; Nicklos, Carl F.; Sonderegger, Ralph L.; Thayne, Mark S.; and Ma, Yiping, 5,617,397, Cl. 369-772.000.
Nicolle, Remy; Le Rouzic, Daniel; Crisinel, Pascal; DeClerck, Gerard; and Ledon, Henry, to Chemoxal S.A. Stable thickened disinfecting aqueous composition containing an organic peroxy acid intended for human or animal use. 5,616,335, Cl. 424-405.000.
Nicollini, Germano: *See—*
Confalonieri, Pierangelo; and Nicollini, Germano, 5,617,055, Cl. 327-404.000.
Nie, Xiaoyi: *See—*
Gao, Yun; Hong, Yaping; Nie, Xiaoyi; Bakale, Roger P.; Feinberg, Richard R.; and Zepp, Charles M., 5,616,808, Cl. 564-428.000.
Nielsen, Douglas J., to Eaton Corporation. Latch assembly for a valve control system. 5,615,647, Cl. 123-90.160.
Nieminen, Juha; Tamminen, Aki; Huotari, Petri; Reinvall, Reima; Kauppinen, Marjo; and Heikkilä , Kimmo, to Kone Oy. Procedure for supplying, storing and displaying elevator control data. 5,616,894, Cl. 187-247.000.
Nier, Richard E.: *See—*
Barker, Thomas N.; Collins, Clive A.; Dapp, Michael C.; Dieffenderfer, James W.; Grice, Donald G.; Knowles, Billy J.; Lesmeister, Donald M.; Nier, Richard E.; Retter, Eric E.; Rolfe, David B.; and Smoral, Vincent J., 5,617,577, Cl. 395-800.000.
Nigatu, Tadesse G.: *See—*
Pocius, Alphonsus V.; and Nigatu, Tadesse G., 5,616,796, Cl. 564-9.000.
Niiori, Yusuke: *See—*
Nobori, Kazuhiro; Ushikoshi, Ryusuke; Umemoto, Koichi; Sakon, Atsushi; Niiori, Yusuke; and Murasato, Masahiro, 5,616,024, Cl. 432-241.000.
Nikkiso Co. Ltd.: *See—*
Suzuki, Kohmei; and Kurokawa, Junichi, 5,615,996. Cl. 415-1.000.
Nikon Corporation: *See—*
Amanuma, Tatsuo; Ohishi, Sueyuki; Imura, Yoshio; and Nakamura, Toshiyuki, 5,617,166, Cl. 396-55.000.
Imafuji, Kazuharu; and Terui, Nobuhiko, 5,617,177, Cl. 396-53.000.
Kaji, Hidenobu, 5,617,167, Cl. 396-448.000.
Nara, Kei; Matsuura, Toshio; Yokota, Muneyasu; Kakizaki, Yukio; Fukami, Yoshio; Miyazaki, Seiji; and Narabe, Tsuyoshi, 5,617,211, Cl. 356-401.000.
Ohta, Hidefumi; and Machida, Kiyosada, 5,617,172, Cl. 396-539.000.
Ohtake, Motoyuki, 5,617,163, Cl. 396-176.000.
Sakagami, Yasushi; and Kai, Tadao, 5,617,159, Cl. 396-55.000.
Sanada, Satoru, 5,617,394, Cl. 369-58.000.
Shionoya, Takashi; and Ikeda, Junji, 5,617,500, Cl. 385-132.000.
Wakamoto, Shinji; Kawai, Hidemi; and Inoue, Fuyuhiko, 5,617,182, Cl. 355-53.000.
Yanagihara, Masamitsu; Shirasu, Hiroshi; and Kikuchi, Tetsuo, 5,617,181, Cl. 355-46.000.
Nilsson, Jeanette A.: *See—*
Bjursell, Karl G.; Carlsson, Peter N. I.; Enerbäck, Curt S. M.; Hansson, Stig L.; Lidberg, Ulf F. P.; Nilsson, Jeanette A.; and Törnell, Jan B. F., 5,616,483, Cl. 435-198.000.
NIMA Enterprises, Inc.: *See—*
Mayer, Bruno Franz P., 5,616,129, Cl. 604-167.000.
Mayer, Bruno Franz P., 5,616,130, Cl. 604-167.000.
Nimetz, Caroline H.: *See—*
Nimetz, Steven A.; and Nimetz, Caroline H., 5,615,780, Cl. 211-49.100.
Nimetz, Steven A.; and Nimetz, Caroline H. Full-access, non-gravity dependent, jar storage rack. 5,615,780, Cl. 211-49.100.
Niño, Mariano S.; and Ngoc, Hung D., to Goodyear Tire & Rubber Company, The. Rubbery polymer. 5,616,651, Cl. 525-305.000.
Ninomiya, Kazuhisa, to NEC Corporation. Electrically erasable and programmable read only memory device with source voltage controller for quickly erasing data. 5,617,359, Cl. 365-185.290.
Nippon Control Industrial Co., Ltd.: *See—*
Nomura, Atsushi; and Nakamura, Takashi, 5,615,854, Cl. 248-287.100.
Nippon Mektron Limited: *See—*
Filippovich, Cherstokov V.; Rafailovich, Sterlin S.; German, S. Lev, deceased; Jeng-Tain, Lin; Saito, Satoru; and Tatsu, Haruyoshi, 5,616,813, Cl. 568-663.000.
Nippon Shokubai Co., Ltd.: *See—*
Itoh, Hiroshi; Yamamoto, Yoshinobu; Fukuhara, Koji; Shiroshima, Masahiro; and Kobayashi, Hiroya, 5,616,681, Cl. 528-279.000.
Nippon Soken Inc.: *See—*
Onimaru, Sadahisa; Inoue, Takashi; Yasuda, Masanori; and Okada, Hiroshi, 5,616,021, Cl. 431-115.000.
Nippon Steel Corporation: *See—*
Nakazawa, Makoto; Takahashi, Akira; and Matsumura, Kenichiro, 5,616,232, Cl. 205-155.000.
Nippon Sublance Probe Engineering Ltd.: *See—*
Hiraoka, Hidetaka; Morinaka, Mayuki; and Kubota, Yasushi, 5,615,730, Cl. 164-4.100.
Nippon Telegraph & Telephone Corporation: *See—*
Koga, Masafumi; Teshima, Mitsuhiro; Obara, Hitoshi; and Sato, Ken'ichi, 5,617,234, Cl. 359-131.000.
Yamada, Shigeki; Maruyama, Katsumi; Kubota, Minoru; and Tanaka, Satoshi, 5,617,537, Cl. 395-200.010.
Nippondenso Co., Ltd.: *See—*
Matsumura, Masafumi; and Itou, Sigeyuki, 5,616,999, Cl. 318-632.000.
Niro Holding A/S/: *See—*
Funder, Christian R., 5,615,493, Cl. 34-583.000.
Nishi, Katsuo; Terada, Kazuo; Ohkase, Wataru; and Yamaga, Kenichi, to Tokyo Electron Limited; and Tokyo Electron Tohqku Limited. Method and apparatus for controlling temperature in rapid heat treatment system. 5,616,264, Cl. 219-494.000.
Nishida, Koji: *See—*
Kurosaki, Hideki; Nakajima, Junjiro; Umehara, Hajime; Nakamura, Shozo; Kanno, Satoshi; Nishida, Koji; Bessho, Yasunori; Inagaki, Masahisa; Yokomizo, Osamu; and Yoshimoto, Yuichiro, 5,617,456, Cl. 376-260.000.
Nishikata, Yasunari; and Pu, Lyong Sun, to Fuji Xerox Co., Ltd. Cyclobutenedione derivative, process for preparing the same, and nonlinear optical element. 5,616,802, Cl. 564-307.000.
Nishikawa, Fumikazu, to Canon Kabushiki Kaisha. Vibration driven motor apparatus. 5,616,979, Cl. 310-316.000.
Nishikawa, Keiichi: *See—*
Nagaoka, Hidetada; Onoda, Atsuo; Izumi, Yukio; Nishikawa, Keiichi; Oomura, Yuuji; Suzuki, Mitinaga; and Hoshi, Kiyotaka, 5,616,994, Cl. 318-254.000.
Nishikaze, Hayato: *See—*
Kobayashi, Yoichi; Tomii, Tsuyoshi; Endo, Koichi; Nishikaze, Hayato; and Hirano, Seiichi, 5,615,873, Cl. 271-121.000.
Nishimaki, Hideo: *See—*
Takahashi, Tuyoshi; Ikegaya, Kazuo; Mochizuki, Shinobu; and Nishimaki, Hideo, 5,616,691, Cl. 530-364.000.
Nishimoto, Hiroshi, to NEC Corporation. Waveguide type optical control device with properties of suppressed DC drift, reduced driving voltage and high speed operation. 5,617,493, Cl. 385-40.000.
Nishimura, Akihiro; and Yao, Masahiro, to Matsushita Electric Industrial Co., Ltd. Cassette loading apparatus. 5,617,271, Cl. 360-94.000.
Nishimura, Akira: *See—*
Kishi, Hajime; Odagiri, Nobuyuki; Tazaki, Tokuo; Nagata, Hideo; Terashita, Takeshi; Nishimura, Akira; and Kato, Hiroyasu, 5,616,405, Cl. 442-60.000.
Nishimura, Hideo: *See—*
Kanai, Hiroshi; Nishimura, Hideo; Okamoto, Atsuo; and Choda, Mitsunobu, 5,615,926, Cl. 297-411.270.
Nishimura, Hiroshi: *See—*
Yoshino, Hitoshi; and Nishimura, Hiroshi, 5,617,026, Cl. 324-318.000.
Nishimura, Masato: *See—*
Ikawa, Hiroshi; Matsumoto, Hajime; Matsumoto, Masakatsu; Sekine, Yasuo; Nishimura, Masato; and Hosoda, Akihiko, 5,616,711, Cl. 546-141.000.
Nishimura, Naoki; Omata, Hiroshi; and Honguu, Kazuoki, to Canon Kabushiki Kaisha. Magnetooptical recording medium and information recording and reproducing methods using the recording medium. 5,616,428, Cl. 428-694.0ML.
Nishimura, Ryuji; and Imaide, Takuya, to Hitachi, Ltd. Image pickup devices having an image quality control function and methods of controlling an image quality in image pickup devices. 5,617,141, Cl. 348-366.000.
Nishimura, Tadashi: *See—*
Nakai, Tetsuya; Yamaguchi, Yasuo; and Nishimura, Tadashi, 5,616,507, Cl. 438-480.000.
Nishio, Koji: *See—*

Matsuura, Yoshinori; Kuroda, Yasushi; Higashiyama, Nobuyuki; Kimoto, Mamoru; Nogami, Mitsuzou; Nishio, Koji; and Saito, Toshihiko, 5,616,435, Cl. 429-218.000.
Nishiuma, Masahiko; Nakazato, Norio; Takahashi, Hiroyuki; Kamada, Chiyoshi; and Suwa, Motoo, to Hitachi, Ltd.; and Hitachi VLSI Engineering Corp. Semiconductor integrated circuit device and fabrication method thereof. 5,616,520, Cl. 438-125.000.
Nishizawa, Akira; and Kayanuma, Kanji, to Victor Company of Japan, Ltd. Optical recording medium having a disc with deformed pits. 5,617,408, Cl. 369-275.400.
Nishizawa, Junichi; Kijima, Takahiko; Ezell, Edward F.; and Makihara, Akira, to Osaka Sanso Kogyo Ltd. Apparatus for measuring the dew point or frost point of a gas having low water content. 5,615,954, Cl. 374-17.000.
Nishizawa, Katsuhiko; Koshiishi, Osamu; and Yokoyama, Kouichirou, to Seiko Epson Corporation. Serial printer using carriage for paper insertion. 5,615,959, Cl. 400-279.000.
Nissan Motor Co, Inc.: *See—*
Sakai, Hiromasa; and Hayasaki, Koichi, 5,616,100, Cl. 477-169.000.
Nissan Motor Co., Ltd.: *See—*
Iwano, Hiroshi; and Ohba, Hiraku, 5,615,660, Cl. 123-680.000.
Matsushima, Hideyuki, 5,615,551, Cl. 60-276.000.
Sakai, Hiromasa, 5,616,099, Cl. 477-169.000.
Nisshin Flour Milling Co., Ltd.: *See—*
Ohneda, Akira; Sasaki, Kazuyuki; Natori, Yohei; and Nagasaki, Tomohisa, 5,616,558, Cl. 514-12.000.
Nobe, Kenichi: *See—*
Arakawa, Takeharu; Araki, Morio; Nobe, Kenichi; and Yamanaka, Kiyoshi, 5,617,319, Cl. 364-449.100.
Nobile, John; and Hamma, John. Mail piece stacking machine. 5,615,995, Cl. 414-798.200.
Noblett, David A.: *See—*
Svetkoff, Donald J.; Rohrer, Donald K.; Noblett, David A.; and Jackson, Robert L., 5,617,209, Cl. 356-376.000.
Nobori, Kazuhiro; Ushikoshi, Ryusuke; Umemoto, Koichi; Sakon, Atsushi; Niiori, Yusuke; and Murasato, Masahiro, to NGK Insulators, Ltd. Apparatuses for heating semiconductor wafers, ceramic heaters and a process for manufacturing the same, a process for manufacturing ceramic articles. 5,616,024, Cl. 432-241.000.
Noda, Fumio; Shibata, Koichi; and Kinoshita, Taizo, to Hitachi, Ltd. Multipoint visual communication system. 5,617,135, Cl. 348-12.000.
Noda, Kazuhiro; and Nakazato, Siniti, to Matsushita Electric Industrial Co., Ltd. Soldering ball mounting apparatus and method. 5,615,823, Cl. 228-103.000.
Noda, Kazuhiro; Nakamura, Shinji; and Hayashi, Hisao, to Sony Corporation. Multilayered interconnection substrate having a resin wall formed on side surfaces of a contact hole. 5,616,960, Cl. 257-760.000.
Noda, Masayuki: *See—*
Ushida, Masayuki; Noda, Masayuki; and Ogata, Masaru, 5,616,363, Cl. 427-372.200.
Noel, Francis E.: *See—*
Christensen, Kenneth J.; Haas, Lee C.; and Noel, Francis E., 5,617,419, Cl. 370-471.000.
Nogami, Mitsuzou: *See—*
Matsuura, Yoshinori; Kuroda, Yasushi; Higashiyama, Nobuyuki; Kimoto, Mamoru; Nogami, Mitsuzou; Nishio, Koji; and Saito, Toshihiko, 5,616,435, Cl. 429-218.000.
Nogawa, Chiharu: *See—*
Ito, Osamu; Sakurai, Hideo; Nogawa, Chiharu; and Kawahara, Shinya, 5,616,534, Cl. 503-227.000.
Noguchi, Kazuo: *See—*
Kawata, Shigeru; Noguchi, Kazuo; Ako, Kenji; and Nakamura, Shin, 5,616,768, Cl. 558-146.000.
Noguchi, Takehiko: *See—*
Fujii, Kazuo; Nakazawa, Yukifumi; and Noguchi, Takehiko, 5,617,291, Cl. 361-686.000.
Noguchi, Yasunobu: *See—*
Yoshihara, Hideki; Kobayashi, Yoshihiro; Noguchi, Yasunobu; and Kitazawa, Manabu, 5,616,552, Cl. 510-490.000.
Nohara, Akira: *See—*
Kane, Joji; and Nohara, Akira, 5,617,505, Cl. 395-2.180.
Nohr, Ronald S.; MacDonald, John G.; McGinniss, Vincent D.; and Whitmore, Robert S., Jr., to Kimberly-Clark Corporation. Substrate having a mutable colored composition thereon. 5,616,443, Cl. 430-106.000.
Noise Cancellation Technologies, Inc.: *See—*
Hildebrand, Stephen; and Hu, Ziqiang, 5,617,479, Cl. 381-71.000.
Nojima, Osamu; and Yumoto, Noboru, to Casio Computer Co., Ltd. Portable telephone set for performing remote control operation of a base station telephone set. 5,617,468, Cl. 379-58.000.
Nomoto, Takashi; Hayashi, Masahiro; Shibata, Jun; Iwasawa, Yoshikazu; Mitsuya, Morihiro; Iida, Yoshiaki; Nonoshita, Katsumasa; and Nagata, Yasufumi, to Banyu Pharmaceutical Co., Ltd. Substituted amic acid derivatives. 5,616,803, Cl. 564-337.000.
Nomura, Atsushi; and Nakamura, Takashi, to Nippon Control Industrial Co., Ltd. Camera stand. 5,615,854, Cl. 248-287.100.
Nomura, Shinya: *See—*
Kiuchi, Kazuhiko; Nakai, Shigeo; Sawa, Masuo; Kato, Masayuki; Sakai, Mitsuru; and Nomura, Shinya, 5,616,631, Cl. 523-139.000.
Nonaka, Yoshiya: *See—*
Suzuki, Shinichi; Nonaka, Yoshiya; and Takahashi, Kenichi, 5,617,381, Cl. 369-32.000.
Nonoshita, Katsumasa: *See—*
Nomoto, Takashi; Hayashi, Masahiro; Shibata, Jun; Iwasawa, Yoshikazu; Mitsuya, Morihiro; Iida, Yoshiaki; Nonoshita, Katsumasa; and Nagata, Yasufumi, 5,616,803, Cl. 564-337.000.
Nonvolatile Electronics, Incorporated: *See—*
Daughton, James M., 5,617,071, Cl. 338-32.00R.
Noopro Industrial Corporation: *See—*
Tseng, Winger, 5,615,945, Cl. 362-226.000.
Norand Corporation: *See—*
Danielson, Arvin D.; Schultz, Darald R.; Silva, Dennis; Boatwright, Darrell L.; Austin, Rickey G.; and Alt, Daniel E., 5,617,343, Cl. 364-707.000.
Norbeck, Daniel W.: *See—*
Kempf, Dale J.; Norbeck, Daniel W.; Codacovi, Lynn M.; Sham, Hing L.; and Wittenberger, Steven J., 5,616,714, Cl. 546-269.700.
Kempf, Dale J.; Norbeck, Daniel W.; Sham, Hing L.; Zhao, Chen; and Reno, Daniel S., 5,616,720, Cl. 548-204.000.
Nordson Corporation: *See—*
Matsunaga, Masafumi; Kakuta, Wataru; and Saito, Hikaru, 5,615,830, Cl. 239-8.000.
Price, Richard P., 5,615,832, Cl. 239-8.000.
Nordström, Erik G. S.; and Victor, Carl-Gustav B. C., to Trelleborg AB. Pneumatic tires with cooperating track. 5,616,193, Cl. 152-185.100.
Noren, Kjell: *See—*
Hagel, Pia; Noren, Kjell; and Hoegnelid, Kurt, 5,615,684, Cl. 128-670.000.
Norimatsu, Takeshi: *See—*
Tagami, Ryou; Norimatsu, Takeshi; Matsumoto, Masaharu; Oda, Mikio; Serikawa, Mitsuhiko; Kawamura, Akihisa; and Numazu, Hiroko, 5,617,478, Cl. 381-56.000.
Noritsu Koki Co., Ltd.: *See—*
Ishikawa, Masazumi; and Tanibata, Toru, 5,617,171, Cl. 396-512.000.
Noroy, Jean-Marie; and Roussillon, Franck, to Parker Hannifin RAK SA. Jack with fixed piston for handling, moving and manipulating a workpiece. 5,615,598, Cl. 92-117.00A.
North, Stephen P., to Eastman Kodak Company. Method and apparatus for positioning film in a photographic film printer. 5,617,185, Cl. 355-75.000.
Northrop Grumman Corporation: *See—*
Clark, Stewart A., 5,617,318, Cl. 364-516.000.
Lee, Myung B.; and Vanhatalo, Jari, 5,616,180, Cl. 118-715.000.
Norton, David C.: *See—*
Fox, Michael T.; and Norton, David C., 5,616,867, Cl. 73-861.620.
Norwood, Wilbur D.: *See—*
Khazanov, Yuri; and Norwood, Wilbur D., 5,616,973, Cl. 310-54.000.
Nouchi, Charles: *See—*
Delprat, Marc; Andrieu, Vianney; Gourgue, Frédéric; Gaydu, Gladys; and Nouchi, Charles, 5,617,412, Cl. 370-281.000.
Novack, Vance: *See—*
Johnson, Graham; Smith, Neil; Geen, Graham R.; Mann, Inderjit S.; and Novack, Vance, 5,616,721, Cl. 548-253.000.
Noval, Jim V.: *See—*
Watson, Jeff R.; Goetsch, Michael N.; Noval, Jim V.; and Aspandiar, Raiyo F., 5,617,294, Cl. 361-719.000.
Novametrix Medical Systems Inc.: *See—*
Rich, David R.; Apperson, Gerald R.; Labuda, Lawrence L.; and Mace, Leslie E., 5,616,923, Cl. 250-343.000.
Novick, Michael A.: *See—*
Belanger, Roger R.; and Novick, Michael A., 5,615,878, Cl. 271-302.000.
Novo Nordisk A/S: *See—*
Heldt-Hansen, Hans P.; Fujita, Yuko; Awaji, Haruo; Shimoto, Hidesato; and Sharyou, Masaki, 5,616,215, Cl. 162-72.000.
Nowak, Stefan: *See—*
Fischer, Hubertus; Nowak, Stefan; and Schmitt, Franz, 5,617,030, Cl. 324-322.000.
Nowicki, James W.: *See—*
Hung, Ju-Ming; and Nowicki, James W., 5,616,625, Cl. 521-79.000.
Nozue, Ringi: *See—*
Hayashida, Hajime; Aoyagi, Takashi; Inoue, Satoshi; Nozue, Ringi; Kawamura, Kiyoshi; and Sato, Shigeaki, 5,616,880, Cl. 84-719.000.
NSK Ltd.: *See—*
Namimatsu, Ken; Tsukada, Toru; and Yabe, Toshikazu, 5,615,955, Cl. 384-13.000.
Yamamoto, Kazuo, 5,616,375, Cl. 428-12.000.
NTN Corporation: *See—*
Oba, Fumio; Matsushima, Toshihiko; Murakami, Hitoshi; and Terada, Tomoaki, 5,615,956, Cl. 384-470.000.
NTT Mobile Communications Network, Inc.: *See—*
Tsunekawa, Koichi; and Hagiwara, Seiji, 5,617,105, Cl. 343-702.000.
Numagami, Atsushi: *See—*
Yashiro, Masahiko; Sasaki, Shinichi; Ikemoto, Isao; Miura, Koji; Karakama, Toshiyuki; and Numagami, Atsushi, 5,617,579, Cl. 399-114.000.
Numata, Masato, to Sony Corporation. Current resonance type switching power supply circuit. 5,617,305, Cl. 363-16.000.
Numata, Yasuhiro; Takayanagi, Yoshiaki; Katayama, Akira; Kuwabara, Nobuyuki; Ebisawa, Isao; and Ohtani, Tsuyoshi, to Canon Kabushiki Kaisha. Recording apparatus and method for controlling recording head driving timing. 5,617,122, Cl. 347-14.000.
Numazu, Hiroko: *See—*

Tagami, Ryou; Norimatsu, Takeshi; Matsumoto, Masaharu; Oda, Mikio; Serikawa, Mitsuhiko; Kawamura, Akihisa; and Numazu, Hiroko, 5,617,478, Cl. 381-56.000.
Nuovo Pignone S.p.A.: *See—*
Bortoli, Giulio; Corain, Luciano; and Sora, Gianluigi, 5,615,714, Cl. 139-449.000.
Nuti, Marco, to Piaggio Veicoli Europei S.p.A. Valve arrangement in an internal combustion engine. 5,615,644, Cl. 123-65.0VB.
Nutt, Stephen L.: *See—*
Kamboj, Rajender; Nutt, Stephen L.; Shekter, Lee; and Wosnick, Michael A., 5,616,481, Cl. 435-172.300.
Nycomed AS: *See—*
Olsen, Egil; and Olsvik, Ørjan, 5,616,467, Cl. 435-7.200.
Nyflot, Loren: *See—*
Stechmann, Jonathan H.; Powell, Joel T.; and Nyflot, Loren, 5,617,528, Cl. 395-326.000.
O. Ames Co.: *See—*
Spear, Kenneth J.; Czerwinski, Frank G.; and Ritchie, Bryan S., 5,615,903, Cl. 280-47.190.
O. R. Solutions, Inc.: *See—*
Faries, Durward I., Jr.; Heymann, Bruce R.; and Licata, Mark, 5,615,423, Cl. 4-639.000.
Oatey Co.: *See—*
Kopp, Raun A., 5,615,703, Cl. 137-360.000.
Oba, Fumio; Matsushima, Toshihiko; Murakami, Hitoshi; and Terada, Tomoaki, to NTN Corporation. Roller bearing. 5,615,956, Cl. 384-470.000.
Oba, Hidehiro: *See—*
Tsukamoto, Kazumasa; Ando, Masahiko; Fukatsu, Akira; Mae, Toshiyuki; Sakai, Motoyuki; Hamajima, Tetsuo; Kaigawa, Masato; Fukumura, Kagenori; Oba, Hidehiro; Hojo, Yasuo; Tabata, Atsushi; and Takahashi, Nobuaki, 5,616,094, Cl. 475-128.000.
Obara, Hitoshi: *See—*
Koga, Masafumi; Teshima, Mitsuhiro; Obara, Hitoshi; and Sato, Ken'ichi, 5,617,234, Cl. 359-131.000.
Obayashi Corporation: *See—*
Kotani, Katsumi; Kushima, Masatoshi; and Takahashi, Eiji, 5,615,978, Cl. 405-270.000.
Oberbreckling, Lester W. Machining tool and automated air-burst control device for use with a machining tool. 5,615,984, Cl. 409-137.000.
Oberle, Daniel: *See—*
Land, Christopher A.; Pezzullo, Joseph A.; Malot, James J.; Papa, Louis C.; and Oberle, Daniel, 5,615,974, Cl. 405-128.000.
O'Brien, Michael J.; and Griswold, Roy M., to General Electric Company. Paper release compositions having improved release characteristics. 5,616,672, Cl. 528-15.000.
O'Brien, Richard W., to Colloidal Dynamics PTY LTD. Particle size and charge measurement in multi-component colloids. 5,616,872, Cl. 73-865.500.
Obuchi, Shoji: *See—*
Yoshida, Yasunori; Watanabe, Katsuji; Obuchi, Shoji; and Ohta, Masahiro, 5,616,783, Cl. 560-191.000.
Ochiai, Masayuki; Hashimoto, Kaoru; Kawahara, Toshimi; and Ōsumi, Mayumi, to Fujitsu Limited. Methods for making metal particle spherical and removing oxide film solder paste and soldering method. 5,616,164, Cl. 75-342.000.
Oda, Mikio: *See—*
Tagami, Ryou; Norimatsu, Takeshi; Matsumoto, Masaharu; Oda, Mikio; Serikawa, Mitsuhiko; Kawamura, Akihisa; and Numazu, Hiroko, 5,617,478, Cl. 381-56.000.
Odachi, Yasuharu; and Minoshima, Norimoto, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Method and apparatus for charging a battery of an electric vehicle. 5,617,003, Cl. 320-2.000.
Odagiri, Nobuyuki: *See—*
Kishi, Hajime; Odagiri, Nobuyuki; Tazaki, Tokuo; Nagata, Hideo; Terashita, Takeshi; Nishimura, Akira; and Kato, Hiroyasu, 5,616,405, Cl. 442-60.000.
O'Donnell, Matthew; and Hamilton, James D., to University of Michigan, Regents of the. Method and system for 3-D acoustic microscopy using short pulse excitation and 3-D acoustic microscope for use therein. 5,615,675, Cl. 128-653.100.
O'Dwyer, Joseph E. Apnea detection device with a remote monitor. 5,615,688, Cl. 128-716.000.
OEA, Inc.: *See—*
Hamilton, Brian K.; and Baglini, James L., 5,616,883, Cl. 102-288.000.
OEC Medical Systems, Inc.: *See—*
Spratt, R. Bruce, 5,617,462, Cl. 378-98.700.
Oelschlaeger, Andreas: *See—*
Richter, Robin; Martin, Hans-Peter; Roewer, Gerhard; Mueller, Eberhard; Kraemer, Hans; Sartori, Peter; Oelschlaeger, Andreas; Habel, Wolfgang; and Harnack, Bernhard, 5,616,308, Cl. 423-345.000.
Oetiker, Hans, to Hans Oetiker AG Maschinen- und Apparate-fabrik. Tolerance-compensating reusable clamp structure. 5,615,456, Cl. 24-20.00R.
Offenberg, Michael: *See—*
Benz, Gerhard; Marek, Jiri; Bantien, Frank; Muenzel, Horst; Laermer, Franz; Offenberg, Michael; and Schilp, Andrea, 5,616,523, Cl. 438-50.000.
Muchow, Joerg; Muenzel, Horst; Offenberg, Michael; and Waldvogel, Winfried, 5,616,514, Cl. 438-50.000.
Ogasawara, Yuuji: *See—*
Suzuki, Masayoshi; Sasayama, Takao; Hanzawa, Keizi; Ichikawa, Norio; Horie, Junichi; Sugisawa, Yukiko; and Ogasawara, Yuuji, 5,616,844, Cl. 73-514.320.
Ogata, Masaru: *See—*
Ushida, Masayuki; Noda, Masayuki; and Ogata, Masaru, 5,616,363, Cl. 427-372.200.
Ogata, Yasuhiro; Takeuchi, Shigeo; Toba, Taturu; Shutoh, Shinichi; and Hamanaka, Naoki, to Hitachi, Ltd.; and Hitachi VLSI Engineering Corporation. Arbitration circuit capable of changing the priority and arrival time of nonselected requests. 5,617,545, Cl. 395-296.000.
Ogawa, Ken; and Ehara, Yasunori, to Honda Giken Kogyo Kabushiki Kaisha. Air-fuel ratio control system for internal combustion engines. 5,615,550, Cl. 60-276.000.
Ogawa, Masao: *See—*
Yamada, Takahiro; Ogawa, Masao; and Shibata, Eiji, 5,615,629, Cl. 112-225.000.
Ogrissek, Andrew: *See—*
Wolf, Franz J.; Reichert, Uwe; Decker, Walter; Demling, Frank; Ogrissek, Andrew; Feichtiger, Dieter; Lindmayer, Martin; and Heinle, Dieter, 5,616,965, Cl. 307-10.100.
Ogura, Takashi; and Kume, Minoru, to Sanyo Electric Co., Ltd. Thin film head having a core comprising Fe-N-O in a specific atomic composition ratio. 5,617,275, Cl. 360-113.000.
Ogura, Toshihiko: *See—*
Kimura, Koichi; Ogura, Toshihiko; Aotsu, Hiroaki; Ikegami, Mitsuru; Kuwabara, Tadashi; Enomoto, Hiromichi; and Kyoda, Tadashi, 5,617,360, Cl. 365-189.010.
Oh, Ketsu, to Konami Co., Ltd. Motion-controlled video entertainment system. 5,616,078, Cl. 463-8.000.
Ohashi, Kazuyasu, to Ricoh Company, Ltd. Compact zoom lens. 5,617,254, Cl. 359-692.000.
Ohashi, Takehisa: *See—*
Mitsuda, Masaru; Hayashi, Shigeo; Hasegawa, Junzo; Ueyama, Noboru; Ohashi, Takehisa; and Shibasaki, Masakatsu, 5,616,726, Cl. 548-475.000.
Ohashi, Tatsuyuki: *See—*
Furukawa, Hideo; and Ohashi, Tatsuyuki, 5,615,578, Cl. 74-336.00R.
Ohba, Hiraku: *See—*
Iwano, Hiroshi; and Ohba, Hiraku, 5,615,660, Cl. 123-680.000.
Ohba, Nobuyuki: *See—*
Yokota, Sumio; Matsuzawa, Masafumi; Ohba, Nobuyuki; Nagata, Toshihiro; Tachikawa, Shigehiko; Miyazawa, Takeshige; and Yanagisawa, Katsutada, 5,616,537, Cl. 504-242.000.
Ohba, Yasuo: *See—*
Hatano, Ako; and Ohba, Yasuo, 5,617,438, Cl. 372-45.000.
Ohgawara, Masao; and Tsubota, Hiroyoshi, to Asahi Glass Company Ltd. Color liquid crystal display device with peripheral pixels in a light-shielded state. 5,617,230, Cl. 349-110.000.
Ohio Electronic Engravers, Inc.: *See—*
Brewer, Matthew C.; Serenius, Eric J.; and Reese, David M., 5,617,217, Cl. 358-299.000.
Ohio Medical Instrument Company, Inc.: *See—*
Dinkler, Charles; and Tew, John M., Jr., 5,616,117, Cl. 600-232.000.
Oh-Ishi, Katsuyoshi: *See—*
Horiguchi, Akihiro; Monma, Jun; Kimura, Kazuo; Oh-Ishi, Katsuyoshi; Ueno, Fumio; Kasori, Mitsuo; and Sumino, Hiroyasu, 5,616,956, Cl. 257-703.000.
Ohishi, Sueyuki: *See—*
Amanuma, Tatsuo; Ohishi, Sueyuki; Imura, Yoshio; and Nakamura, Toshiyuki, 5,617,166, Cl. 396-55.000.
Ohji Rubber & Chemicals Co., Ltd.: *See—*
Ishihara, Makiichi; Sunada, Takakazu; Hasegawa, Shigeo; Ukawa, Naohiko; Takashina, Toru; Kita, Yukio; Iwashita, Kouichiro; Yamashita, Kousuke; Ozaki, Junji; and Kaneshige, Kaname, 5,616,290, Cl. 261-115.000.
Ohkase, Wataru: *See—*
Nishi, Katsuo; Terada, Kazuo; Ohkase, Wataru; and Yamaga, Kenichi, 5,616,264, Cl. 219-494.000.
Ohkuma, Takeshi: *See—*
Hara, Tsukushi; Ohkuma, Takeshi; Yamamoto, Takahiko; Ito, Daisuke; Tsurunaga, Kazuyuki; and Tada, Takamitsu, 5,617,280, Cl. 361-19.000.
Ohmae, Hideki; and Takahara, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Polymer dispersed liquid crystal projection display having polarizing means. 5,617,226, Cl. 349-10.000.
Ohmae, Seizo: *See—*
Takahashi, Yoshiharu; Oseto, Jiro; Hirata, Teru; Abe, Shunichi; Ohmae, Seizo; and Kobayashi, Eiji, 5,616,516, Cl. 438-127.000.
Ohmeda Inc.: *See—*
Gloyd, David A.; Uribe, Emigdio A.; Koch, Robert J.; and Belsinger, Harry E., Jr., 5,616,115, Cl. 600-22.000.
Ohmi, Shinichiro; Takai, Hitoshi; and Urabe, Yoshio, to Matsushita Electric Industrial Co., Ltd. Signal detection device and clock recovery device using the same. 5,617,374, Cl. 368-10.000.
Ohmura, Masashi: *See—*
Iizuka, Hirokazu; Ohmura, Masashi; Kondo, Masataka; Kobayashi, Hideki; Mizuno, Hiroyuki; Yamazaki, Takaya; and Shibata, Kazuo, 5,616,017, Cl. 418-63.000.
Ohmura, Takayuki; Okada, Tomoyuki; Kyushima, Hiroyuki; and Oohashi, Yousuke, to Hamamatsu Photonics K.K. Electron multiplier. 5,616,987, Cl. 313-533.000.

Ohneda, Akira; Sasaki, Kazuyuki; Natori, Yohei; and Nagasaki, Tomohisa, to Nisshin Flour Milling Co., Ltd. Medicaments comprising glicentin as active ingredient. 5,616,558, Cl. 514-12.000.
Ohnishi, Masazumi: *See*—
Mitsubayashi, Masahiko; Ohnishi, Masazumi; Miyamoto, Noritaka; Kadota, Keisuke; Shimada, Tohru; and Bando, Katsuji, 5,615,570, Cl. 72-298.000.
Ohno, Kyoko: *See*—
Yamauchi, Akira; Umeyama, Yasuyuki; and Ohno, Kyoko, 5,616,879, Cl. 84-653.000.
Ohsaka, Tomohiko, to Mitsumi Electric Co., Ltd. Magnetic head with multi-layer magnetic shielding member surrounding a core and coil. 5,617,279, Cl. 360-128.000.
Ohshima, Takashi: *See*—
Shinada, Hiroyuki; Kimura, Shingo; Kuroda, Katsuhiro; Fukuhara, Satoru; and Ohshima, Takashi, 5,616,926, Cl. 250-423.00F.
Ohta, Hidefumi; and Machida, Kiyosada, to Nikon Corporation. Camera battery cover structure. 5,617,172, Cl. 396-539.000.
Ohta, Kazushige; Hanasaki, Koichi; and Konishi, Satoru, to Stanley Electric Co., Ltd. Flat lighting device. 5,617,251, Cl. 359-599.000.
Ohta, Masahiro: *See*—
Yoshida, Yasunori; Watanabe, Katsuji; Obuchi, Shoji; and Ohta, Masahiro, 5,616,783, Cl. 560-191.000.
Ohta, Mitsuyasu; and Motohara, Akira, to Matsushita Electcric Industrial Co., Ltd. Method for generating test sequences for detecting faults in target scan logical blocks. 5,617,427, Cl. 371-22.300.
Ohtake, Motoyuki, to Nikon Corporation. Camera with illuminating optical system. 5,617,163, Cl. 396-176.000.
Ohtani, Tsuyoshi: *See*—
Numata, Yasuhiro; Takayanagi, Yoshiaki; Katsyama, Akira; Kuwabara, Nobuyuki; Ebisawa, Isao; and Ohtani, Tsuyoshi, 5,617,122, Cl. 347-14.000.
Ohtomo, Naoki, to Aloka Co., Ltd. Method for measuring speed of sound in tissue and tissue assessment apparatus. 5,615,681, Cl. 128-661.030.
Ohtsuka, Tetsushi: *See*—
Yamabe, Yasuo; and Ohtsuka, Tetsushi, 5,615,701, Cl. 137-205.000.
Ohuchi, Satoshi; and Imao, Kaoru, to Ricoh Company, Ltd. Image region segmentation system. 5,617,485, Cl. 382-176.000.
Oikawa, Yoshiaki, to Sony Corporation. Apparatus and method for data compression and expansion using hybrid equal length coding and unequal length coding. 5,617,219, Cl. 386-111.000.
Oiles Corporation: *See*—
Maeda, Takashi; Furukido, Takeshi; Hoshino, Kousaku; Udo, Satoru; and Izumi, Masayoshi, 5,615,479, Cl. 29-888.300.
Nakamaru, Takashi; Yanase, Sumihide; and Okimura, Akihiko, 5,616,406, Cl. 442-19.000.
Oishi, Konosuke; Okumoto, Toyoharu; Tsukada, Masamichi; and Iino, Takashi, to Hitachi, Ltd. Plasma ion mass spectrometer and plasma mass spectrometry using the same. 5,616,918, Cl. 250-288.000.
Ojo, Adeola F.; Fitch, Frank R.; and Bülow, Martin, to BOC Group, Inc., The. Adsorptive separation of nitrogen from other gases. 5,616,170, Cl. 95-101.000.
Okabayashi, Keijü: *See*—
Hashima, Masayoshi; Hasegawa, Fumi; Okabayashi, Keijü; Watanabe, Ichiro; Kanda, Shinji; Sawasaki, Naoyuki; and Murase, Yuichi, 5,617,335, Cl. 364-516.000.
Okada, Hiroshi: *See*—
Onimaru, Sadahisa; Inoue, Takashi; Yasuda, Masanori; and Okada, Hiroshi, 5,616,021, Cl. 431-115.000.
Okada, Hiroyuki: *See*—
Serita, Yasuaki; Tsuji, Kenji; and Okada, Hiroyuki, 5,617,161, Cl. 396-319.000.
Okada, Minoru: *See*—
Tamazawa, Kazuharu; Kojima, Tadao; Arima, Hideki; Murakami, Yukiyasu; Isomura, Yasuo; Okada, Minoru; Takenaka, Toichi; and Takanobu, Kiyoshi, 5,616,715, Cl. 546-278.400.
Okada, Tatsunori: *See*—
Kusunoki, Akira; Otsuki, Jitsuji; Kikuoka, Yasuhira; Okada, Tatsunori; Matsumura, Mitsuie; Shinoki, Toshio; Mukai, Masahiro; and Yagi, Tetsuya, 5,616,431, Cl. 429-36.000.
Okada, Tomohiko; Shiozaki, Fumio; Takehara, Toshio; Kizu, Seiichi; and Ashiya, Kazuhiko, to Sharp Kabushiki Kaisha. Cleaning sheet for a paper feeding device. 5,616,386, Cl. 428-40.100.
Okada, Tomoyuki: *See*—
Ohmura, Takayuki; Okada, Tomoyuki; Kyushima, Hiroyuki; and Oohashi, Yousuke, 5,616,987, Cl. 313-533.000.
Okada, Yasushi, to Ricoh Company, Ltd. Magneto-optic disk apparatus provided with a holder having a claw catching and bending an elastic member. 5,617,404, Cl. 369-244.000.
Okamoto, Atsuo: *See*—
Kanai, Hiroshi; Nishimura, Hideo; Okamoto, Atsuo; and Choda, Mitsunobu, 5,615,926, Cl. 297-411.270.
Okamoto, Kenichi; and Taguchi, Naoto, to Yazaki Corporation. Connector-coupling-lever mounting method and assembly thereof. 5,616,038, Cl. 439-157.000.
Okamoto, Kuninori; Kuno, Hideaki; Yaguchi, Isamu; Koishikawa, Jun; and Yamamoto, Yasuo, to Du Pont de Nemours, E. I., and Company. Thick film conductor paste for automotive glass. 5,616,173, Cl. 106-117.000.
Okamoto, Shinseiro. Method and apparatus for operating a cornea. 5,616,139, Cl. 606-4.000.
Okamura, Kenko: *See*—
Fujimoto, Tomoya; Okamura, Kenko; Morishita, Shigeru; Murakami, Masaru; Adachi, Akira; Hayashi, Mitsutoshi; Fujita, Akinari; Nagashima, Shingo; Kurashina, Minoru; and Yoshida, Kentaro, 5,615,976, Cl. 405-184.000.
Okamura, Shigekazu: *See*—
Tsutsumi, Kazumichi; Okamura, Shigekazu; and Irie, Tatsuji, 5,617,085, Cl. 340-903.000.
O'Kane, John B.; and Geary, Phillip S. Illuminated magnetic pickup tool. 5,615,920, Cl. 294-65.500.
Okano, Masatoshi: *See*—
Balaschak, James J.; Fujio, Masatsugu; Hayashi, Keiichiro; Okano, Masatoshi; and Thrall, David E., 5,616,829, Cl. 73-46.000.
Okazaki, Haruki, to Mazda Motor Corporation. Antiskid braking system for vehicles. 5,615,932, Cl. 303-121.000.
Okimura, Akihiko: *See*—
Nakamaru, Takashi; Yanase, Sumihide; and Okimura, Akihiko, 5,616,406, Cl. 442-19.000.
Okino, Tadashi, to Canon Kabushiki Kaisha. Image pickup apparatus. 5,617,139, Cl. 348-223.000.
Okoro, Clement A.: *See*—
Arldt, Roy L.; Downey, Susan H.; Golden, Harry J.; Mahmoud, Issa S.; Okoro, Clement A.; and Spalik, James, 5,615,827, Cl. 228-223.000.
Okoshi, Shinichi: *See*—
Ise, Yoshiaki; Miyazawa, Hiroyuki; Kimura, Hiroyuki; Okoshi, Shinichi; Nakamura, Tatsumasa; and Kato, Toshiyuki, 5,617,262, Cl. 359-846.000.
Okuda, Isao: *See*—
Morita, Takashi; Takishima, Suguru; and Okuda, Isao, 5,617,387, Cl. 369-44.230.
Okumoto, Toyoharu: *See*—
Oishi, Konosuke; Okumoto, Toyoharu; Tsukada, Masamichi; and Iino, Takashi, 5,616,918, Cl. 250-288.000.
Okumura, Katsuya; Aoki, Riichirou; Yajima, Hiromi; Kodera, Masako; Mishima, Shirou; Shigeta, Atsushi; Hirose, Masayoshi; Kimura, Norio; and Ishikawa, Seiji, to Kabushiki Kaisya Toshiba; and Ebara Corporation. Polishing apparatus. 5,616,063, Cl. 451-1.000.
Okuno Chemical Industries Co., Ltd.: *See*—
Otsuka, Kuniaki; Yamamoto, Kazue; Konishi, Satoshi; and Yamato, Shigeru, 5,616,230, Cl. 205-125.000.
Okuno, Shiho; Hashimoto, Susumu; Yusu, Keiichiro; and Inomata, Koichiro, to Kabushiki Kaisha Toshiba. Artificial multilayer and method of manufacturing the same. 5,616,370, Cl. 427-547.000.
Okuno, Takuya: *See*—
Yokono, Tomohiko; Sonobe, Masanori; Kawaguchi, Masahiro; Okuno, Takuya; and Suitou, Ken, 5,616,008, Cl. 417-222.200.
Okuno, Yasutoshi, to Texas Instruments Incorporated. Silicon oxide germanium resonant tunneling. 5,616,515, Cl. 438-478.000.
Oldani, Jerome L.: *See*—
Ditzig, Albert; and Oldani, Jerome L., 5,617,474, Cl. 379-433.000.
O'Leary, Richard F.: *See*—
Dixon, Raymond D.; Smith, Frank M.; and O'Leary, Richard F., 5,615,826, Cl. 228-208.000.
Olek, Joachim: *See*—
Guba, Reinhold; Olek, Joachim; and Schoppe, Herbert, 5,615,612, Cl. 101-425.000.
Oleszczuk, Andrew R.; and Gessner, Scott L., to Fiberweb North America, Inc. Meltblown polyethylene fabrics and processes of making same. 5,616,408, Cl. 442-346.000.
Olin Corporation: *See*—
Galbraith, Lyle D.; and Italiane, John R., 5,615,914, Cl. 280-743.100.
Olivo, Marco: *See*—
Golla, Carla; Padoan, Silvia; and Olivo, Marco, 5,617,356, Cl. 365-185.250.
Ollman, Melvin L. Composite metal strip and methods of making same. 5,615,727, Cl. 164-98.000.
Olmstead, John A.: *See*—
Wietecha, Stanley F.; and Olmstead, John A., 5,617,473, Cl. 379-399.000.
Olmstead, Michael W.: *See*—
Roth, Joseph D.; Puckett, Richard D.; and Olmstead, Michael W., 5,616,402, Cl. 428-212.000.
Olney, John W. Pharmacological composition for preventing neurotoxic side effects of NMDA antagonists. 5,616,580, Cl. 514-226.200.
Olnowich, Howard T.: *See*—
Feeney, James W.; Jabusch, John D.; Lusch, Robert F.; Olnowich, Howard T.; and Wilhelm, George W., Jr., 5,617,547, Cl. 395-311.000.
O'Loughlin, John P.; and Hocking, James R., to TRW Vehicle Safety Systems Inc. Inflator for air bag. 5,615,912, Cl. 280-737.000.
Olsen, Egil; and Olsvik, Ørjan, to Nycomed AS. Method and kit for analyte detection employing gold-sol bound antibodies. 5,616,467, Cl. 435-7.200.
Olsen, Ib I.; and Jensen, Gert L., to Valence Technology, Inc. Method for producing low porosity electrode. 5,616,366, Cl. 427-508.000.
Olsen, Nancy J.: *See*—
Lipsky, Peter E.; Tao, Xue-Lian; Cai, Jian; Kovacs, William J.; and Olsen, Nancy J., 5,616,458, Cl. 435-4.000.
Olson, Christopher P.: *See*—
Finch, Valerie V.; Glaug, Frank S.; Olson, Christopher P.; Ratliff, Kathleen I.; and Sheldon, Donald A., 5,616,201, Cl. 156-73.100.

Olsson, Sven-Gunnar; Rydgren, Goeran; Larsson, Anders; Brauer, Stefan; and Linge, Anders, to Siemens Elema AB. Gas mixture and device for delivering the gas mixture to the lungs of a respiratory subject. 5,615,669, Cl. 128-203.120.
Olsvik, Ørjan: *See*—
Olsen, Egil; and Olsvik, Ørjan, 5,616,467, Cl. 435-7.200.
Olympus Optical Co., Ltd.: *See*—
Asakura, Yasuo; and Suzuki, Tatsuya, 5,617,175, Cl. 396-166.000.
Ichikawa, Kaori, 5,617,560, Cl. 395-500.000.
Iso, Ryouichi; and Nakamura, Kazunari, 5,617,136, Cl. 348-71.000.
Kato, Koji; Ando, Hiroyuki; Sugita, Yukihiko; Ichikawa, Hideaki; Inoue, Akira; and Miyazaki, Satoshi, 5,617,162, Cl. 396-318.000.
Kawashima, Takashi; Tamagawa, Akira; and Osanai, Akira, 5,616,910, Cl. 235-479.000.
Matsuzawa, Yoshinori; Itoh, Junichi; and Tanbara, Yasuo, 5,617,176, Cl. 396-55.000.
Mikami, Kazuo, 5,617,174, Cl. 396-95.000.
Wada, Toshiaki; and Wang, Kangda, 5,617,484, Cl. 382-172.000.
Omata, Hiroshi: *See*—
Nishimura, Naoki; Omata, Hiroshi; and Honguu, Kazuoki, 5,616,428, Cl. 428-694.0ML.
Omron Corporation: *See*—
Fujii, Hiroshi; and Kiso, Shigemitsu, 5,616,968, Cl. 307-66.000.
Onagi, Nobuaki; and Yokogawa, Fumihiko, to Pioneer Electronic Corporation. Optical disc with heat blocking bands between tracks. 5,617,406, Cl. 369-275.300.
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Arora, Ram S.; O'Neil, Walter K.; and Buuck, Bryce A., 5,617,067, Cl. 335-78.000.
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Mak, Tak W.; and Thompson, Craig B., 5,616,491, Cl. 435-354.000.
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Aoki, Hidemitsu; Yamanaka, Koji; Imaoka, Takashi; Futatsuki, Takashi; and Yamashita, Yukinari, 5,616,221, Cl. 204-252.000.
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Zhang, Yan, 5,616,285, Cl. 252-301.40R.
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Hasegawa, Kazuo; and Ouchi, Junichi, 5,616,907, Cl. 235-462.000.
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Owen, Richard D. Windshield covering system. 5,615,924, Cl. 296-95.100.
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Rapp, Charles F.; and Potter, Russell M., 5,616,525, Cl. 501-35.000.
Wells, James R.; McLaine, Denise A.; Wintgens, James C.; McFarland, Roger A.; and Blinkhorn, Arthur, 5,615,523, Cl. 52-98.000.
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Pace, Phillip E., to United States of America, Navy. High resolution encoding circuit and process for analog to digital conversion. 5,617,092, Cl. 341-159.000.
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Abrahamson, Hans, 5,617,235, Cl. 359-142.000.
Hagel, Pia; Noren, Kjell; and Hoegnelid, Kurt, 5,615,684, Cl. 128-670.000.
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Chaplik, Naom, 5,617,063, Cl. 332-103.000.
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Miller, Forrest A.; and Wheeler, Robert A., 5,615,508, Cl. 42-71.010.
Pack, Daniel: *See*—
Arnold, Frances H.; Sasaki, Darryl Y.; Shnek, Deborah; and Pack, Daniel, 5,616,790, Cl. 562-444.000.
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Foo, Pang-Dow; and Pai, Chien-Shing, 5,616,518, Cl. 438-680.000.
Painter, Jeffrey D.: *See*—
Raleigh, Mary E.; and Painter, Jeffrey D., 5,616,277, Cl. 510-220.000.
Palackal, Syriac J.: *See*—
Patsidis, Konstantinos; Peifer, Bernd; Alt, Helmut G.; Geerts, Rolf L.; Fahey, Darryl R.; Welch, M. Bruce; Palackal, Syriac J.; and Deck, Harold R., 5,616,752, Cl. 556-95.000.
Palara, Sergio; and Sueri, Stefano, to SGS-Thomson Microelectronics, S.r.l.; and Consorzio per la Ricerca sulla Microelettronica nel Mezzogiorno. Generation of a diagnostic signal when the current through a power transistor reaches a level close to a limit current. 5,617,046, Cl. 327-110.000.
Palazzo, David T. Disappearing lifting lug assembly. 5,615,799, Cl. 220-751.000.
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Pall, David B.; Gsell, Thomas C.; Matkovich, Vlado I.; and Bormann, Thomas, 5,616,254, Cl. 210-806.000.
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Pan, Hua-Tsung; and Ho, Y. M., to Hon Hai Precision Ind. Co., Ltd. Screw mounting kit for use within connector. 5,616,052, Cl. 439-573.000.
Panasonic Technologies Inc.: *See*—
Reaves, Benjamin K., 5,617,508, Cl. 395-2.420.
Pankz, Brian. Water volleyball game and apparatus. 5,615,891, Cl. 473-492.000.
Panoz, Donald E.: *See*—
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Anderson, Stephen; Bennett, William F.; Botstein, David; Higgins, Deborah L.; Paoni, Nicholas F.; and Zoller, Mark J., 5,616,486, Cl. 435-226.000.
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Land, Christopher A.; Pezzullo, Joseph A.; Malot, James J.; Papa, Louis C.; and Oberle, Daniel, 5,615,974, Cl. 405-128.000.
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Park, Thomas W. Floating word game in a body of water. 5,615,887, Cl. 273-272.000.
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Noroy, Jean-Marie; and Roussillon, Franck, 5,615,598, Cl. 92-117.00A.
Parker, John: *See*—
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Parker, Kenneth: *See*—
Fishman, Lawrence R.; and Parker, Kenneth, 5,616,873, Cl. 84-293.000.
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Khanna, Ish K.; Weier, Richard M.; Collins, Paul W.; Yu, Yi; Xu, Xiangdong; Partis, Richard A.; and Koszyk, Francis J., 5,616,601, Cl. 514-399.000.
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Patel, Kantilal D., to Goodyear Tire & Rubber Company, The. Aqueous multicolor paint. 5,616,635, Cl. 524-37.000.
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Patil, Ashok D.: *See*—
Nambi, Ponnal; and Patil, Ashok D., 5,616,577, Cl. 514-215.000.
Patsidis, Konstantinos; Peifer, Bernd; Alt, Helmut G.; Geerts, Rolf L.; Fahey, Darryl R.; Welch, M. Bruce; Palackal, Syriac J.; and Deck, Harold R., to Phillips Petroleum Company. Metallocenes and processes therefor and therewith. 5,616,752, Cl. 556-95.000.
Patterson, James A. System and method for electrolysis and heating of water. 5,616,219, Cl. 204-241.000.
Pattok, Greg R.: *See*—
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Paul, John. Apparatus for weighing a load with a pair of summing bars and suspension straps. 5,616,889, Cl. 177-256.000.
Payne, Jewel M.; Kennedy, M. Keith; Randall, John B.; Meier, Henry; Uick, Heidi J.; Foncerrada, Luis; Schnepf, Harry E.; and Schwab, George E., to Mycogen Corporation. *Bacillus thuringiensis* gene encoding hymenopteran-active toxins. 5,616,495, Cl. 435-252.300.
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Sargent, R. Richard; and Alender, Jeffrey R., 5,616,151, Cl. 8-636.000.
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Augenbraun, Joseph E.; Pearlstein, Larry A.; and Plotnick, Michael A., 5,617,565, Cl. 395-604.000.
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Peltier, Richard R., to Honeywell Inc. Methods and apparatus for providing and/or customizing display screens and operator interfaces for process control and measurement instruments. 5,617,522, Cl. 395-133.000.
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Peng, Yuenan. Convertible dripless caulking gun for variant viscosity media. 5,615,807, Cl. 222-391.000.
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Rhees, Raymond C.; Behrens, Ralph E.; Reid, Kathy J.; and Morgan, Lowell B., 5,616,234, Cl. 205-500.000.
Perazzolo, Eugenio, to Rainer S.r.l. Machine for machining sheet metal. 5,615,471, Cl. 29-560.000.
Percival, Robert M.; Davey, Steven T.; and Szebesta, Daryl, to British Telecommunications public limited company. Optical amplifier and laser. 5,617,244, Cl. 359-341.000.
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Firth, John R.; Perez, Anthony R.; and Meyer, Ronald A., 5,616,134, Cl. 604-192.000.
Perez, Libardo A.: *See*—
Carey, William S.; Solov, Andrew; Perez, Libardo A.; and Freese, Donald T., 5,616,278, Cl. 252-180.000.
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Fleming, Terry L., 5,617,107, Cl. 343-704.000.
Perlman, Kato L.: *See*—
DeLuca, Hector F.; Schnoes, Heinrich K.; Perlman, Kato L.; and Swenson, Rolf E., 5,616,759, Cl. 556-443.000.
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Perret, Gerard A., Jr. Watchband connector pin utilizing shape memory material. 5,617,377, Cl. 368-282.000.
Persello, Jacques, to Rhone-Poulenc Chimie. Dentifrice-compatible silica particulates. 5,616,316, Cl. 424-57.000.
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Rando, Joseph F., to Levelite Technology, Inc. Diode laser co-linear and intersecting light beam generator. 5,617,202, Cl. 356-138.000.
Randolph, Lucian. Exoskeletal exercise system. 5,616,111, Cl. 482-133.000.
Raney, Ella: *See—*
Wu, Grace-Ann C.; McCall, Mark B.; Raney, Ella; and Wu, Overcomer, 5,617,533, Cl. 395-183.140.
Ransom, Harry T. Fuel concentrating and conserving device for barbecue and charcoal grills. 5,615,666, Cl. 126-25.00R.
Rao, Tripuraneni N.: *See—*
Fritzberg, Alan R.; Kasina, Sudhakar; Rao, Tripuraneni N.; VanderHeyden, Jean-Luc; and Srinivasan, Ananthachari, 5,616,692, Cl. 530-391.500.
Rapaport, Eliezer; and Zamecnik, Paul C., to Worcester Foundation for Biomedical Research, Inc. Antiparasitic oligonucleotides active against drug resistant malaria. 5,616,564, Cl. 514-44.000.
Rapp, Charles F.; and Potter, Russell M., to Owens-Corning Fiberglas Technology, Inc. Irregularly shaped glass fibers and insulation therefrom. 5,616,525, Cl. 501-35.000.
Rasshofer, Werner: *See—*
Münzmay, Thomas; Fuhrmann, Peter; Lamla, Franz; Meckel, Walter; and Rasshofer, Werner, 5,616,623, Cl. 521-49.500.
Ratajczyk, James D.: *See—*
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Finch, Valerie V.; Glaug, Frank S.; Olson, Christopher P.; Ratliff, Kathleen I.; and Sheldon, Donald A., 5,616,201, Cl. 156-73.100.
Rauleder, Hartwig: *See—*
Seiler, Claus-Dietrich; Rauleder, Hartwig; Koetzsch, Hans-Joachim; and Srebny, Hans-Guenther, 5,616,755, Cl. 556-413.000.
Raus, Robert W., Sr.: *See—*
Taillie, Joseph P.; Beck, Richard A.; Raus, Robert W., Sr.; Proctor, Douglas E.; and Fullerton, Jack K., 5,616,989, Cl. 315-32.000.
Ravard, Alain: *See—*
Crooks, Peter A.; Caldwell, William S.; Dull, Gary M.; Bhatti, Balwinder S.; Deo, Niranjan M.; and Ravard, Alain, 5,616,707, Cl. 544-242.000.
Ray, Alan W.: *See—*
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Raynaud, Guy-Michel: *See—*
Legresy, Jean-Marc; and Raynaud, Guy-Michel, 5,616,190, Cl. 148-551.000.
Read-Rite Corporation: *See—*
Cheng, Shih-Cheng; Tong, Hua-Ching; and Cain, William C., 5,617,278, Cl. 360-126.000.
Reagan, Michael P., to Power Packing Company, Inc. Split face mechanical sealing rings and their use. 5,615,893, Cl. 277-81.00S.
Reaves, Benjamin K., to Panasonic Technologies Inc.; and Matsushita Electric Industrial Co., Ltd. Speech detection device for the detection of speech end points based on variance of frequency band limited energy. 5,617,508, Cl. 395-2.420.
Reaves, Herschel: *See—*
Wissmann, Siegfried R.; and Reaves, Herschel, 5,616,350, Cl. 425-133.100.
Recigno, David T., to Recigno Laboratories, Inc. System for managing cases in dental laboratory. 5,616,899, Cl. 235-375.000.
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Redden, Galen; and Luzader, Rex E., to Exide Corporation. Battery plate separator envelope and method of forming battery plate assemblies including the same. 5,616,434, Cl. 429-136.000.
Redden, John E.: *See—*
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Reddy, Chitranjan N.: *See—*
Patel, Vipul C.; Poteet, Kenneth A.; and Reddy, Chitranjan N., 5,617,555, Cl. 395-432.000.
Reddy, M. Parameswara; and Farooqui, Firdous, to Beckman Instruments, Inc. Processes for synthesizing nucleotides and modified nucleotides using N_4 protected deoxycytidines. 5,616,700, Cl. 536-25.300.
Redman, Ralph E.: *See—*
Heddon, Will; Redman, Ralph E.; Slimak, Lewis W., Jr.; Tucker, Sidney; and Truesdell, Dean H., 5,616,084, Cl. 473-73.000.
Reed, Larry E.: *See—*
Brown, Ronald E.; Reed, Larry E.; Greenwood, Gil J.; Harper, Timothy P.; and Scharre, Mark D., 5,616,236, Cl. 208-48.00R.
Reed, Lehman T. Unitary diversionary-tubing hanger and energizable rod seal. 5,615,736, Cl. 166-84.400.
Reed, Michael J.; and Potter, Barry V. L., to Imperial College of Science, Technology and Medicine. Steroid sulphatase inhibitors. 5,616,574, Cl. 514-178.000.
Reekie, George; Prosper, Jacob; Atos, Sheldon; and Dyke, Colin, to Black & Decker Inc. String trimmer having knock-down handle. 5,615,970, Cl. 403-379.000.
Rees, David B.; and Steadman, Martin J., to Cypress Semiconductor, Inc. Pass transistor voltage control circuit. 5,617,057, Cl. 327-543.000.
Reese, David M.: *See—*
Brewer, Matthew C.; Serenius, Eric J.; and Reese, David M., 5,617,217, Cl. 358-299.000.
Reffner, John A.; Milosevic, Milan; and Sting, Donald W. Optically coupled infrared transmitting composite internal reflecting elements. 5,616,922, Cl. 250-339.120.
Reflexite Corporation: *See—*
Rowland, William P., 5,617,247, Cl. 359-515.000.
Reichelt, Helmut: *See—*
Sens, Rüdiger; Schefczik, Ernst; Reichelt, Helmut; and Etzbach, Karl-Heinz, 5,616,710, Cl. 546-119.000.
Reichert, Karl-Heinz: *See—*
Ostoja-Starzewski, Karl-Heinz A.; Witte, Josef; Bartl, Herbert; Reichert, Karl-Heinz; and Vasiliou, Georgios, 5,616,529, Cl. 502-154.000.
Reichert, Paul; Hammond, Gerald S.; Le, Hung V.; Nagabhushan, Tattanahalli L.; and Trotta, Paul P., to Schering Corporation. Crystalline r-h-GM-CSF and method. 5,616,555, Cl. 514-8.000.
Reichert, Uwe: *See—*
Wolf, Franz J.; Reichert, Uwe; Decker, Walter; Demling, Frank; Ogrissek, Andrew; Feichtiger, Dieter; Lindmayer, Martin; and Heinle, Dieter, 5,616,965, Cl. 307-10.100.
Reichman, Benjamin: *See—*
Ovshinsky, Stanford R.; Fetcenko, Michael A.; Reichman, Benjamin; Young, Kwo; Chao, Benjamin; and Im, Jun, 5,616,432, Cl. 429-59.000.
Reid, Kathy J.: *See—*
Rhees, Raymond C.; Behrens, Ralph E.; Reid, Kathy J.; and Morgan, Lowell B., 5,616,234, Cl. 205-500.000.
Reid, Ted W.: *See—*
Murphy, Christopher J.; Reid, Ted W.; and Mannis, Mark J., 5,616,562, Cl. 514-15.000.
Reidelberger, Frank R., III: *See—*
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Reiffenrath, Volker: *See—*
Hittich, Reinhard; Rieger, Bernhard; Reiffenrath, Volker; Coates, David; and Plach, Herbert, 5,616,284, Cl. 252-299.630.
Reimer, Hans: *See—*
Grundei, Manfred; and Reimer, Hans, 5,615,756, Cl. 188-322.150.
Reinhart, Gregory A., to Iams Company, The. Pet food product containing fermentable fibers and process for treating gastrointestinal disorders. 5,616,569, Cl. 514-54.000.
Reinvall, Reima: *See—*
Nieminen, Juha; Tamminen, Aki; Huotari, Petri; Reinvall, Reima; Kauppinen, Marjo; and Heikkilä, Kimmo, 5,616,894, Cl. 187-247.000.
Remaley, John B.: *See—*
Simmermon, John C.; Dell, Curtis G.; Peterson, Douglas; Blakemore, Colin B.; Remaley, John B.; Golod, Anatoly; and Bear, Robert S., Jr., 5,616,827, Cl. 73-29.010.
Rembold, Helmut: *See—*
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Remboski, Donald J., Jr.: *See—*
Lynch, Marvin L.; McClish, Michael A.; Selfe, Margaret A.; Steinl, Gregory; and Remboski, Donald J., Jr., 5,616,834, Cl. 73-116.000.
Remote Metering Systems Ltd.: *See—*
Allison, Robert J.; Farnsworth, Stephen D.; Fisher, Edward J. D.; and Scholefield, David R., 5,617,329, Cl. 364-492.000.
Ren, Mingmin; and Stabel-Weinheimer, Jürgen, to Siemens Aktiengesellschaft. Pressurized-water reactor with individually adapted pressure distribution in the coolant. 5,617,457, Cl. 376-352.000.
Renard, Pierre: *See—*
Yous, Said; Lesieur, Daniel; Depreux, Patrick; Guardiola-Lemaitre, Béatrice; Adam, Gérard; Renard, Pierre; and Caignard, Daniel H., 5,616,614, Cl. 514-530.000.
Rench, Frederick A., to Boise Cascade Corporation. Container for hot food. 5,615,796, Cl. 220-441.000.
Renken, Terry L.: *See—*
Vipond, Jeffrey J.; Larkin, John M.; Renken, Terry L.; and Stridde, Howard M., 5,616,811, Cl. 564-505.000.
Renn, Michael J.: *See—*
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Reno, Daniel S.: *See—*
Kempf, Dale J.; Norbeck, Daniel W.; Sham, Hing L.; Zhao, Chen; and Reno, Daniel S., 5,616,720, Cl. 548-204.000.
Reno, John M.: *See—*
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Research Corporation Tech., Inc.: *See—*
Gray, Robert D.; Spatola, Arno F.; and Darlak, Krzysztof, 5,616,605, Cl. 514-415.000.
Research Corporation Technologies, Inc.: *See—*
Fernando, Quintus; Muftikian, Rosy; and Korte, Nic, 5,616,253, Cl. 210-747.000.
Research Development Corporation of Japan: *See—*
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Research Foundation of State University of New York, The: *See—*
Hong, Tao; and Hull, Jonathan J., 5,617,488, Cl. 382-229.000.
Pouyani, Tara; and Prestwich, Glenn D., 5,616,568, Cl. 514-54.000.
Retter, Eric E.: *See—*
Barker, Thomas N.; Collins, Clive A.; Dapp, Michael C.; Dieffenderfer, James W.; Grice, Donald G.; Knowles, Billy J.; Lesmeister, Donald M.; Nier, Richard E.; Retter, Eric E.; Rolfe, David B.; and Smoral, Vincent J., 5,617,577, Cl. 395-800.000.
Reurich, Peter. Wheeled cabinet with self-levelling removable trays. 5,615,902, Cl. 280-47.180.
Revak, Timothy T.: *See—*
Shenoy, Vivek N.; Revak, Timothy T.; Chu, George H.; McMullin, Hugh R.; Rosenblatt, Joel S.; and Martin, George R., 5,616,689, Cl. 530-356.000.
Reye, Barbara J. Roller printer for walls and the like with leveling feature. 5,615,444, Cl. 15-230.110.
Rhees, Raymond C.; Behrens, Ralph E.; Reid, Kathy J.; and Morgan, Lowell B., to Pepcon Systems, Inc. Method for producing chlorine or hypochlorite product. 5,616,234, Cl. 205-500.000.
Rhiger, David R.; Sen, Sanghamitra; and Hamilton, William J., Jr., to Santa Barbara Research Center. Gamma ray detector with improved resolution and method of fabrication. 5,616,925, Cl. 250-370.130.
Rhoads, W. Wistar: *See—*
Thoman, Jeffrey A.; Swanson, David W.; Hamlin, Mindy A.; Beeson, Robert R.; Hall, Corrina; Salter, James G.; and Rhoads, W. Wistar, 5,617,128, Cl. 347-87.000.
Rhodes, Charles W., to Advanced Television Test Center. Bi-directional television and motion picture film to magnetic tape format digital signal converter. 5,617,218, Cl. 386-129.000.
Rhodes, Ian, to Fisons plc. Powder inhaler with centrifugal force used to meter powder. 5,615,670, Cl. 128-203.150.
Rhone-Poulenc Chimie: *See—*
Favre-Bulle, Olivier; and Ricca, Jean-Marc, 5,616,498, Cl. 435-264.000.
Persello, Jacques, 5,616,316, Cl. 424-57.000.
Ponce, Arnaud; and Tournilhac, Florence, 5,616,547, Cl. 510-230.000.
Ricca, Jean-Marc, 5,616,810, Cl. 564-442.000.
Rhone-Poulenc Inc.: *See—*
Ayad, Hafez M., 5,616,336, Cl. 424-405.000.

Rhone-Poulenc Nutrition Animale: *See—*
Prud'Homme, Christian; and Rostaing, Jean-Francois, 5,616,339, Cl. 424-438.000.
Rhone-Poulenc Rorer S.A.: *See—*
Bolotin, Monique; and Menart, Sandrine, 5,616,474, Cl. 435-69.100.
Mas, Jean-Manuel; and Massonneau, Viviane, 5,616,739, Cl. 549-510.000.
Rhyne, Timothy B., to Michelin Recherche et Technique S.A. Tire uniformity correction without grinding. 5,616,859, Cl. 73-146.000.
Ri, Taiho; Amemiya, Shinichi; and Jibiki, Takao, to GE Yokogawa Medical Systems, Limited. Method of displaying ultrasonic images and apparatus for ultrasonic diagnosis. 5,615,679, Cl. 128-660.050.
Ribozyme Pharmaceuticals, Inc.: *See—*
Sullivan, Sean; Draper, Kenneth G.; McSwiggen, James; and Stinchcomb, Dan T., 5,616,488, Cl. 435-366.000.
Sullivan, Sean M.; and Draper, Kenneth G., 5,616,490, Cl. 435-366.000.
Ricca, Jean-Marc, to Rhone-Poulenc Chimie. Process for the preparation of deactivated anilines. 5,616,810, Cl. 564-442.000.
Ricca, Jean-Marc: *See—*
Favre-Bulle, Olivier; and Ricca, Jean-Marc, 5,616,498, Cl. 435-264.000.
Ricciardelli, Robert H.: *See—*
Biendarra, Bruce S.; and Ricciardelli, Robert H., 5,616,158, Cl. 55-275.000.
Rice, Dennis F.; Mowen, Ricky L.; and Faith, Marshall W., to Western Atlas Incorporated. Work drive orienting system for machine tool. 5,616,070, Cl. 451-62.000.
Rice, Samuel A. Illuminated vehicle display device. 5,615,501, Cl. 40-205.000.
Rich, Bruce A.: *See—*
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Rich, David R.; Apperson, Gerald R.; Labuda, Lawrence L.; and Mace, Leslie E., to Novametrix Medical Systems Inc. Gas analyzer cuvettes. 5,616,923, Cl. 250-343.000.
Richard, Thomas J.: *See—*
Kaufman, Robert J.; Richard, Thomas J.; and Fuhrhop, Ralph W., 5,616,330, Cl. 424-400.000.
Richardson, Richard T.: *See—*
O'Rand, Michael G.; Widgren, Esther E.; Richardson, Richard T.; and Lea, Isabel A., 5,616,322, Cl. 424-192.100.
Richardson, Roland T.: *See—*
Blomquist, William B.; Dawson, Gary D.; Richardson, Roland T.; and Tallarek, Glen, 5,616,836, Cl. 73-118.100.
Richardson-Vicks Inc.: *See—*
Blank, Roy L., 5,616,572, Cl. 514-159.000.
Richter, Robin; Martin, Hans-Peter; Roewer, Gerhard; Mueller, Eberhard; Kraemer, Hans; Sartori, Peter; Oelschlaeger, Andreas; Habel, Wolfgang; and Harnack, Bernhard, to Solvay Deutschland GmbH. Process for producing an oxygen-free or low-oxygen, high-temperature resistant shaped article of silicon carbide. 5,616,308, Cl. 423-345.000.
Richter, Utz: *See—*
Liebetrau, Christoph; and Richter, Utz, 5,615,864, Cl. 254-329.000.
Ricoh Company, Ltd.: *See—*
Ishikawa, Tomoji; Sugihara, Kazuyuki; and Kosuge, Katsuhiro, 5,617,198, Cl. 399-27.000.
Ito, Osamu; Sakurai, Hideo; Nogawa, Chiharu; and Kawahara, Shinya, 5,616,534, Cl. 503-227.000.
Itoda, Kouichi; and Sutoh, Yoshio, 5,616,262, Cl. 219-216.000.
Mochimaru, Hideaki, 5,615,872, Cl. 271-3.140.
Murakami, Eisaku; Yuasa, Kazuhiro; Endoh, Shuichi; Matsumae, Iwao; Tanaka, Yoshiaki; Hosokawa, Hiroshi; Uno, Mugijiroh; Saitoh, Hiroshi; Takenaka, Eiji; Sugiyama, Toshihiro; Yamanaka, Tetsuo; and Komatsubara, Satoru, 5,617,191, Cl. 399-286.000.
Ohashi, Kazuyasu, 5,617,254, Cl. 359-692.000.
Ohuchi, Satoshi; and Imao, Kaoru, 5,617,485, Cl. 382-176.000.
Okada, Yasushi, 5,617,404, Cl. 369-244.000.
Sakatsu, Tsutomu; and Yoshida, Yoshihiro, 5,616,206, Cl. 156-230.000.
Shimada, Tomoyuki; Sasaki, Masaomi; Hashimoto, Mitsuru; and Aruga, Tamotsu, 5,616,801, Cl. 564-307.000.
Takenaka, Eiji; and Uno, Mugijiroh, 5,617,190, Cl. 399-159.000.
Tanaka, Chiaki; Sasaki, Masaomi; Aruga, Tamotsu; Shimada, Tomoyuki; and Adachi, Hiroshi, 5,616,805, Cl. 564-405.000.
Riedel, John E.: *See—*
Augst, George W.; Liberda, Margo A.; and Riedel, John E., 5,616,387, Cl. 428-43.000.
Rieger, Bernhard: *See—*
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Rierson, David W.: *See—*
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Schoonen, Adelbert J. M.; Schmidt, Fransiscus J.; and Wientjes, Klaas-Jan C., 5,615,671, Cl. 128-632.000.
Rimko, Robert W.: *See—*
Siegfried, David G.; Rimko, Robert W.; and Corso, Anthony J., 5,615,944, Cl. 362-226.000.
Rinne, Glenn A.: *See—*
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Ripamonti, Mario B., to Otto Plastics Pty. Ltd. Insert for a rubbish bin. 5,615,797, Cl. 220-529.000.
Rissel, Eva: *See—*
Sezi, Recai; Borndoerfer, Horst; Ahne, Hellmut; Birkle, Siegfried; Kuehn, Eberhard; Leuschner, Rainer; Rissel, Eva; and Sebald, Michael, 5,616,667, Cl. 526-271.000.
Ritchie, Alexander: *See—*
Björklund, Ola; Ritchie, Alexander; and Souter, George, 5,615,776, Cl. 209-403.000.
Ritchie, Bryan S.: *See—*
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Ritscher, James S.: *See—*
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Turner, Scot M.; Ritscher, James S.; Hallden-Abberton, Michael; and McLeod, Donald, Jr., 5,616,753, Cl. 556-401.000.
Riza, Nabeel A.: *See—*
DeJule, Michael C.; and Riza, Nabeel A., 5,617,109, Cl. 345-87.000.
RMO, Inc.: *See—*
Cash, David A., 5,616,026, Cl. 433-8.000.
Roach, James A., to Accu Industries, Inc. Apparatus for runout compensation. 5,615,589, Cl. 82-112.000.
Roamer Corporation: *See—*
Blanchard, Raymond W., 5,615,922, Cl. 296-37.600.
Robbins, Timothy A.: *See—*
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Robert Bosch GmbH: *See—*
Benz, Gerhard; Marek, Jiri; Bantien, Frank; Muenzel, Horst; Laermer, Franz; Offenberg, Michael; and Schilp, Andrea, 5,616,523, Cl. 438-50.000.
Beyer, Claus; Gatza, John; Atoche, Carlos; and Totonji, Sam, 5,615,935, Cl. 303-195.000.
Brehm, Werner; and Fleischer, Walter, 5,615,860, Cl. 251-129.070.
Dobler, Karl-Otto; and Krieg, Wolfgang, 5,615,939, Cl. 362-66.000.
Eidler, Franz; Zimmermann, Werner; and Rüping, Thomas, 5,617,337, Cl. 364-551.010.
Muchow, Joerg; Muenzel, Horst; Offenberg, Michael; and Waldvogel, Winfried, 5,616,514, Cl. 438-50.000.
Pollmann, Herbert; Hodulik, Wolfgang; Peters, Klaus-Jürgen; Gmelin, Karl; Entenmann, Matthias; and Ropertz, Peter, 5,615,861, Cl. 251-306.000.
Ruoff, Manfred; and Rembold, Helmut, 5,615,648, Cl. 123-90.170.
Schnaibel, Eberhard; Schneider, Erich; Henkelmann, Konrad; Blischke, Frank; and Mallebrein, Georg, 5,616,835, Cl. 73-117.200.
Stumpe, Werner; Schlichenmaier, Andreas; and Schwendemann, Bernhard, 5,615,931, Cl. 303-22.100.
Walz, Heinz; and Härle, Vinzenz, 5,616,072, Cl. 451-356.000.
Roberts, David S.; Dearwester, Donald A.; and Swearingin, Leroy A., to Pfizer Inc. Gram-negative bacterial vaccines. 5,616,328, Cl. 424-257.100.
Robertshaw Controls Company: *See—*
Fowler, Daniel L.; Pattok, Greg R.; and Tanis, Bruce E., 5,616,269, Cl. 219-720.000.
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Barris, Marty A.; Weik, Thomas M.; Robertson, Kelly C.; Monson, Donald R.; Rothman, Jim C.; and Betts, Pete A., 5,616,171, Cl. 95-280.000.
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Robillard, Dominique; and Inizan, Michel, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. External mixing type burner. 5,615,833, Cl. 239-132.300.
Robin, Mark L.; Mazac, Charles J.; and Rubacha, John S., to Great Lakes Chemical Corporation. Noncombustible hydrogen gas containing atmospheres and their production. 5,615,742, Cl. 169-45.000.
Robinson, James W.: *See—*
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Robinson, Karl M.: *See—*
Walker, Michael A.; and Robinson, Karl M., 5,616,069, Cl. 451-56.000.
Robinson, Michael G.; Tombling, Craig; May, Paul; Ezra, David; and Woodgate, Graham J., to Sharp Kabushiki Kaisha. Three dimensional imaging apparatus, camera, and microscope using discrete shutter control to produce parallax for obtaining three dimensional images. 5,616,912, Cl. 250-201.100.
Robinson, Peter G.: *See—*
MacLeod, Donald J.; Robinson, Peter G.; and Nguyen, Long V., 5,617,272, Cl. 360-99.080.
Robotic Vision Systems, Inc.: *See—*
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Cerami, Anthony; Beutler, Bruce; and Wolpe, Stephen D., 5,616,688, Cl. 530-351.000.
Fischetti, Vincent A.; and Schneewind, Olaf, 5,616,686, Cl. 530-326.000.
Rockin' Chair Truckers Co.: *See—*
McNeal, Dennis D., 5,617,072, Cl. 340-431.000.

Rockstein, George B.: *See—*
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Rockwell, Ned M.: *See—*
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Rocky Mountain Research Center: *See—*
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Roda, Aldo: *See—*
Bonaldi, Antonio; Molinari, Egidio; and Roda, Aldo, 5,616,741, Cl. 552-554.000.

Roden, John S.: *See—*
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Rodgers, Stephen L.: *See—*
Nichols, Robert; McKelvey, Timothy A.; and Rodgers, Stephen L., 5,616,882, Cl. 102-287.000.

Rodriguez, Carlos M.; and Ledis, Stephen L., to Coulter Corporation. Reticulocyte analyzing method and apparatus utilizing light scatter techniques. 5,616,501, Cl. 436-63.000.

Roehrig, Adalbert; and Kawa, Franciszek, to Concast Standard AG. Continous casting mould for an I-shaped preliminary section. 5,615,731, Cl. 164-418.000.

Roell, Friedrich, to Tecnit-Technische Textilien und Systeme GmbH. Apparatus for production of weave-knit material. 5,615,562, Cl. 66-126.00R.

Roerden, Dorothy L.; and Frank, R. Keith, to Dow Chemical Company, The. Dicationic and polycationic monoprimary alcohols and derivatives thereof. 5,616,800, Cl. 564-292.000.

Roericht, Hans. Container for the reception of objects. 5,615,765, Cl. 206-45.230.

Roewer, Gerhard: *See—*
Richter, Robin; Martin, Hans-Peter; Roewer, Gerhard; Mueller, Eberhard; Kraemer, Hans; Sartori, Peter; Oelschlaeger, Andreas; Habel, Wolfgang; and Harnack, Bernhard, 5,616,308, Cl. 423-345.000.

Roff, Robert W., to Whitaker Corporation, The. Laser/pin assembly with integrated burn-in assembly. 5,617,036, Cl. 324-760.000.

Rogers, Conrad; and De Iuliis, Daniele G., to Apple Computer, Inc. A.C. mains adapters for international use. 5,616,051, Cl. 439-518.000.

Rogers, Wesley D.; Gottlieb, Louis G.; Molani, Saleem R.; Sedlock, Gregory W.; and Engdahl, Roger P. Telecommunications system for transferring a telephone call. 5,617,471, Cl. 379-212.000.

Rohlfing, Stephan M.: *See—*
Hey-Shipton, Gregory L.; Rohlfing, Stephan M.; Matthaei, George L.; and Forse, Roger J., 5,616,539, Cl. 505-210.000.

Rohm and Haas Company: *See—*
Hallden-Abberton, Michael; McLeod, Donald, Jr.; Ritscher, James S.; and Turner, Scot M., 5,616,638, Cl. 524-178.000.
Hsu, Oscar Hsien-Hsiang; Currier, Gerard M.; and Moes, Philip H., 5,616,419, Cl. 428-512.000.
Lavoie, Alvin C.; Bors, Daniel A.; and Brown, Ward T., 5,616,764, Cl. 556-482.000.

Rohm Co. Ltd.: *See—*
Nakata, Naotarou; Aoki, Naofumi; and Yamazaki, Kazutoshi, 5,617,441, Cl. 372-70.000.

Rohman, Stephen: *See—*
Cruse, Richard; Szalai, Veronika; Clark, Terence; Rohman, Stephen; and Mininni, Robert, 5,616,754, Cl. 556-409.000.

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Svetkoff, Donald J.; Rohrer, Donald K.; Noblett, David A.; and Jackson, Robert L., 5,617,209, Cl. 356-376.000.

Rohrmann, Jürgen; and Küber, Frank, to Hoechst Aktiengesellschaft. Process for the preparation of bridged, chiral metallocene catalysts of the bisindenyl type. 5,616,747, Cl. 556-11.000.

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Rolfe, David B.: *See—*
Barker, Thomas N.; Collins, Clive A.; Dapp, Michael C.; Dieffenderfer, James W.; Grice, Donald G.; Knowles, Billy J.; Lesmeister, Donald M.; Nier, Richard E.; Retter, Eric E.; Rolfe, David B.; and Smoral, Vincent J., 5,617,577, Cl. 395-800.000.

Roman, Gianfranco, to Claber S.p.A. Delivery nozzle for flexible-hose irrigation systems. 5,615,837, Cl. 239-530.000.

Romanyszyn, Michael T., Jr.: *See—*
Schroeder, Alfred A.; Romanyszyn, Michael T., Jr.; Getsy, Stephen B.; Montgomery, Gregg S.; Wolfe, Joseph J.; and Wittig, Norman P., 5,615,801, Cl. 222-51.000.

Romerdahl, Cynthia: *See—*
Keilhauer, Gerhard; Romerdahl, Cynthia; Brana, Miguel F.; Qian, Xiao-Dong; Bousquet, Peter; Berlanga, Jose M.C.; Moset, Marina M.; and de Vega, Maria J.P., 5,616,589, Cl. 514-296.000.

Romero, Guillermo L.; and Anderson, Samuel J., to Motorola. Wirebondless module package. 5,616,886, Cl. 174-52.400.

Ronsisvalle, Cesare, to Consorzio per la Ricerca sulla Microelettronica nel Mezzogiorno. Power semiconductor devices. 5,616,512, Cl. 438-406.000.

Roobrouck, Pascal, to Alcatel N.V. Desynchronizer and use of same. 5,617,453, Cl. 375-367.000.

Roohparvar, Frankie F. Flash memory system having reduced disturb and method. 5,617,350, Cl. 365-185.020.

Roozdar, Habib: *See—*
Alliger, Howard; and Roozdar, Habib, 5,616,347, Cl. 424-665.000.

Ropak Corporation: *See—*
Luburic, Frano; and Roper, C. Richard, 5,615,798, Cl. 220-572.000.

Roper, C. Richard: *See—*
Luburic, Frano; and Roper, C. Richard, 5,615,798, Cl. 220-572.000.

Ropertz, Peter: *See—*
Pollmann, Herbert; Hodulik, Wolfgang; Peters, Klaus-Jürgen; Gmelin, Karl; Entenmann, Matthias; and Ropertz, Peter, 5,615,861, Cl. 251-306.000.

Rose, Barbara A.; Fite, Ronald B.; and Ray, Alan W., to Senco Products, Inc. Collated fastener strip. 5,615,985, Cl. 411-442.000.

Rosemount Aerospace Inc.: *See—*
Hagen, Floyd W., 5,616,861, Cl. 73-180.000.

Rosen, Bruce I.: *See—*
Bartos, Thomas M.; and Rosen, Bruce I., 5,616,792, Cl. 562-486.000.

Rosenblatt, Joel S.: *See—*
Shenoy, Vivek N.; Revak, Timothy T.; Chu, George H.; McMullin, Hugh R.; Rosenblatt, Joel S.; and Martin, George R., 5,616,689, Cl. 530-356.000.

Rosik, Leonard O., to Mallinckrodt Medical, Inc. Thiol ligands and complexes for X-ray imaging. 5,616,312, Cl. 424-9.364.

Ross, Svante B.: *See—*
Evenden, John L.; Hammarberg, Eva M.; Hansson, Hans S.; Hellberg, Sven E.; Johansson, Lars G.; Lundkvist, Johan R. M.; Ross, Svante B.; Sohn, Daniel D.; and Thorberg, Seth O., 5,616,610, Cl. 514-456.000.

Rostaing, Jean-Francois: *See—*
Prud'Homme, Christian; and Rostaing, Jean-Francois, 5,616,339, Cl. 424-438.000.

Roth, Gerhard, to National Research Council of Canada. Estimation of surface geometry from relative range images. 5,617,491, Cl. 382-285.000.

Roth, Joseph D.; Puckett, Richard D.; and Olmstead, Michael W., to NCR Corporation. Printing ribbon for printing red scannable bar codes. 5,616,402, Cl. 428-212.000.

Roth, Scott S.; and Kirsch, Howard C., to Motorola Inc. Electrically programmable read-only memory cell. 5,616,941, Cl. 257-315.000.

Rothamel, Karl: *See—*
Drechsler, Josef; Goebel, Eickhart; Kühn, Gottfried; Rothamel, Karl; and Wowes, Jörg, 5,615,574, Cl. 73-487.000.

Rothey, James: *See—*
Briggs, Robert; Iannacone, Carmen; Rothey, James; and Evans, David, 5,617,119, Cl. 345-611.000.

Rothman, Jim C.: *See—*
Barris, Marty A.; Weik, Thomas M.; Robertson, Kelly C.; Monson, Donald R.; Rothman, Jim C.; and Betts, Pete A., 5,616,171, Cl. 95-280.000.

Rothrum, Robert J.; Chaffee, Linda C.; and McGurran, Kelly T., to Minnesota Mining and Manufacturing Company. Multi-cycle refastenable tape closure systems. 5,616,385, Cl. 428-40.100.

Roto Frank AG: *See—*
Tomanek, Harald, 5,615,522, Cl. 52-72.000.

Rotter, Jeffrey S.: *See—*
Keidl, Steven D.; Rotter, Jeffrey S.; and Steele, Steven W., 5,617,007, Cl. 320-22.000.

Rouchaud, Gilles. Device for connecting at least one braid of electric cables to a connector. 5,615,458, Cl. 24-23.00R.

Roussel UCLAF: *See—*
Boivin, Jean; Zard, Samir; and Chauvet, Christine, 5,616,743, Cl. 552-604.000.

Roussillon, Franck: *See—*
Noroy, Jean-Marie; and Roussillon, Franck, 5,615,598, Cl. 92-117.00A.

Rowland, William P., to Reflexite Corporation. Light signaling device. 5,617,247, Cl. 359-515.000.

Rubacha, John S.: *See—*
Robin, Mark L.; Mazac, Charles J.; and Rubacha, John S., 5,615,742, Cl. 169-45.000.

Rubbermaid Commercial Products Inc.: *See—*
Hardesty, Doug; and LaFollette, William A., Jr., 5,615,447, Cl. 15-264.000.

Rubbermaid Incorporated: *See—*
Feer, David L.; and Pesa, William A., 5,615,809, Cl. 222-484.000.

Ruda, Mitchell C.: *See—*
Manhart, Paul K.; Stuhlinger, Tilman W.; Castle, Kenneth R.; and Ruda, Mitchell C., 5,617,252, Cl. 359-653.000.

Rudolf, Klaus; Eberlein, Wolfgang; Engel, Wolfhard; Mihm, Gerhard; Doods, Henri; Wieland, Heike A.; Willim, Klaus-Dieter; Krause, Jürgen; Dollinger, Horst; Esser, Franz; Schnorrenberg, Gerd; Entzeroth, Michael; and Wienen, Wolfgang, to Karl Thomae GmbH. Amino acid derivatives, pharmaceutical compositions containing these compounds and their use in the treatment of obesity. 5,616,620, Cl. 514-620.000.

Ruf, Bernd: *See—*
Greive, Martin; and Ruf, Bernd, 5,615,875, Cl. 271-147.000.

Ruhe, William R., Jr.: *See—*
Harrison, James J.; and Ruhe, William R., Jr., 5,616,668, Cl. 526-271.000.

Ruiz, Oscar J., to International Business Machines Corporation. Low profile integral flexure for closely packed disks in a disk drive assembly. 5,617,274, Cl. 360-104.000.

Rulli, Paul A.: *See—*
Webster, Marc W.; Rulli, Paul A.; McCue, Daniel L., III; Saraswat, Vijay A.; and Fromherz, Markus P. J., 5,617,214, Cl. 358-296.000.

Webster, Marc W.; McCue, Daniel L., III; Rulli, Paul A.; Walker, John O.; and Stumbo, William K., 5,617,215, Cl. 358-296.000.

Ruoff, Manfred; and Rembold, Helmut, to Robert Bosch GmbH. Electrohydraulic adjusting device. 5,615,648, Cl. 123-90.170.

Rüping, Thomas: *See—*
Eidler, Franz; Zimmermann, Werner; and Rüping, Thomas, 5,617,337, Cl. 364-551.010.

Rupp, Arthur, to ZF Friedrichshafen AG. Rack-and-pinion steering gear, in particular for motor vehicles. 5,615,582, Cl. 74-498.000.

Ruppel, Irving B.: *See—*
Tenhover, Michael A.; and Ruppel, Irving B., 5,616,426, Cl. 428-688.000.

Ruppert, Heinrich W.; Schütze, Gunter; and Gätschmann, Klaus G., to EFKA-Werke Fritz Kiehn GmbH. Method and apparatus for filling cigarette-paper tubes with tobacco. 5,615,692, Cl. 131-70.000.

Rusche, James: *See—*
Farrell, Roberta L.; Gelep, Paul; Anilionis, Algis; Javaherian, Kashayar; Maione, Theodore E.; Rusche, James; Sadownick, Bruce A.; and Jackson, Jennifer A., 5,616,473, Cl. 435-69.100.

Russell, Charles T., Jr.: *See—*
Hillman, Darrel D.; and Russell, Charles T., Jr., 5,616,012, Cl. 417-383.000.

Russell, Edward A.; and Tang, Raymond T., to Wang Laboratories, Inc. Server for executing client operation calls, having a dispatcher, worker tasks, dispatcher shared memory area and worker control block with a task memory for each worker task and dispatcher/worker task semaphore communication. 5,617,570, Cl. 395-684.000.

Russell, James W., administrator: *See—*
Russell, Virginia; and Russell, James W., administrator, 5,616,928, Cl. 250-515.100.

Russell, Virginia; and Russell, James W., administrator. Protecting personnel and the environment from radioactive emissions by controlling such emissions and safely disposing of their energy. 5,616,928, Cl. 250-515.100.

Rutgers University: *See—*
Safari, Ahmad; Janas, Victor F.; and McNulty, Thomas F., 5,615,466, Cl. 29-25.350.

RWE Entsorgung Aktiengesellschaft: *See—*
Kaiser, Dieter; and Wintrich, Franz, 5,615,778, Cl. 209-578.000.

Ryan, Debra A.: *See—*
Foster, James A.; Mueller, Werner H.; and Ryan, Debra A., 5,616,807, Cl. 564-423.000.

Ryan, Joseph W., to Cerdec Corporation. Lead-free glass frits for ceramic enamels. 5,616,417, Cl. 428-428.000.

Rydgren, Goeran: *See—*
Olsson, Sven-Gunnar; Rydgren, Goeran; Larsson, Anders; Brauer, Stefan; and Linge, Anders, 5,615,669, Cl. 128-203.120.

Rykken, Oddvin: *See—*
Mengshoel, Hans C.; and Rykken, Oddvin, 5,615,621, Cl. 108-193.000.

Ryklin, Irma: *See—*
Sajic, Branko; Ryklin, Irma; and Frank, Brian L., 5,616,781, Cl. 510-221.000.

Ryles, Christine W.: *See—*
Williams, David R.; Ryles, Christine W.; and Barrow, Stephen R., 5,616,313, Cl. 424-49.000.

Ryll, Jürgen: *See—*
Schwäger, Michael; Ryll, Jürgen; and Wittig, Lutz, 5,616,049, Cl. 439-455.000.

Ryser, Elliot T.: *See—*
Eckner, Karl F.; Ryser, Elliot T.; and Smittle, Richard B., 5,616,499, Cl. 435-309.100.

Ryuo, Toshihiko: *See—*
Fukuda, Satoru; Tanno, Masayuki; and Ryuo, Toshihiko, 5,616,176, Cl. 117-34.000.

SAB WABCO AB: *See—*
Karlsson, Uno, 5,615,755, Cl. 188-322.120.

Sabirov, Aydar N.: *See—*
Samukov, Vladimir V.; Sabirov, Aydar N.; and Pozdnyakov, Pavel I., 5,616,788, Cl. 562-430.000.

Sada, Toshio: *See—*
Yanagisawa, Hiroaki; Fujimoto, Koichi; Amemiya, Yoshiya; Shimoji, Yasuo; Kanazaki, Takuro; Koike, Hiroyuki; and Sada, Toshio, 5,616,599, Cl. 514-381.000.

Sadownick, Bruce A.: *See—*
Farrell, Roberta L.; Gelep, Paul; Anilionis, Algis; Javaherian, Kashayar; Maione, Theodore E.; Rusche, James; Sadownick, Bruce A.; and Jackson, Jennifer A., 5,616,473, Cl. 435-69.100.

Safari, Ahmad; Janas, Victor F.; and McNulty, Thomas F., to Rutgers University. Mehtod for making piezoelectric composites. 5,615,466, Cl. 29-25.350.

Safe-T Products, Inc.: *See—*
Stoneberg, Bruce, 5,615,485, Cl. 33-27.030.

Safety Syringes, Inc.: *See—*
Firth, John R.; Perez, Anthony R.; and Meyer, Ronald A., 5,616,134, Cl. 604-192.000.

Saffles, David: *See—*
Lawson, David F.; Stayer, Mark L., Jr.; Saffles, David; and Harwood, H. James, 5,616,704, Cl. 540-450.000.

Sagami Chemical Research Center: *See—*
Nagase, Yu; Aoyagi, Takao; Akimoto, Tomoko; Tanaka, Kazunori; Iwabuchi, Kouichi; and Konagai, Yoshihiro, 5,616,317, Cl. 424-78.300.

Sage, Gerald P., to Gas Research Institute. Emissions measuring system and method. 5,616,850, Cl. 73-23.310.

Saha-Möller, Chantu R.: *See—*
Herrmann, Wolfgang A.; Correia, Joao D. G.; Fischer, Richard; Adam, Waldemar; Lin, Jianhua; Saha-Möller, Chantu R.; and Shimizu, Masao, 5,616,734, Cl. 549-406.000.

Saito, Hikaru: *See—*
Matsunaga, Masafumi; Kakuta, Wataru; and Saito, Hikaru, 5,615,830, Cl. 239-8.000.

Saito, Junji: *See—*
Imuta, Junichi; Fukuoka, Daisuke; Yoshida, Masayasu; Saito, Junji; Fujita, Terunori; Tashiro, Takashi; Kawaai, Koji; Ueda, Takashi; and Kiso, Yoshihisa, 5,616,663, Cl. 526-127.000.

Saito, Kazuo: *See—*
Hattori, Hitoshi; Futamura, Motonori; Saito, Kazuo; and Ozu, Masao, 5,616,019, Cl. 418-66.000.

Saito, Kimitoshi; and Yamamoto, Takashi, to Fuji Photo Film Co., Ltd. Photometric system structure. 5,617,183, Cl. 355-71.000.

Saito, Masaji, to Daiwa Seiko Inc. Fishline entrance preventive device for a fishing reel. 5,615,841, Cl. 242-231.000.

Saito, Mitsuhiro: *See—*
Sugano, Shigeru; Takebayashi, Takashi; Nagai, Shigekazu; Ito, Yoshiharu; Saito, Mitsuhiro; Matsushima, Hiroshi; and Saitoh, Akio, 5,617,338, Cl. 364-558.000.

Saito, Mitsuo: *See—*
Minagawa, Kenji; Aikawa, Takeshi; and Saito, Mitsuo, 5,617,553, Cl. 395-416.000.

Saito, Satoru: *See—*
Filippovich, Cherstokov V.; Rafailovich, Sterlin S.; German, S. Lev, deceased; Jeng-Tain, Lin; Saito, Satoru; and Tatsu, Haruyoshi, 5,616,813, Cl. 568-663.000.

Saito, Toshihiko: *See—*
Matsuura, Yoshinori; Kuroda, Yasushi; Higashiyama, Nobuyuki; Kimoto, Mamoru; Nogami, Mitsuzou; Nishio, Koji; and Saito, Toshihiko, 5,616,435, Cl. 429-218.000.

Saito, Yukie: *See—*
Kawai, Hideki; Tamaoka, Masami; and Saito, Yukie, 5,616,613, Cl. 514-492.000.

Saitoh, Akio: *See—*
Sugano, Shigeru; Takebayashi, Takashi; Nagai, Shigekazu; Ito, Yoshiharu; Saito, Mitsuhiro; Matsushima, Hiroshi; and Saitoh, Akio, 5,617,338, Cl. 364-558.000.

Saitoh, Hiroshi: *See—*
Murakami, Eisaku; Yuasa, Kazuhiro; Endoh, Shuichi; Matsumae, Iwao; Tanaka, Yoshiaki; Hosokawa, Hiroshi; Uno, Mugijiroh; Saitoh, Hiroshi; Takenaka, Eiji; Sugiyama, Toshihiro; Yamanaka, Tetsuo; and Komatsubara, Satoru, 5,617,191, Cl. 399-286.000.

Saitoh, Masayoshi, to Japan Tobacco Inc. Cigarette rod manufacturing apparatus. 5,615,693, Cl. 131-84.100.

Saitoh, Sei, to NEC Corporation. Circuit for driving liquid crystal device. 5,617,111, Cl. 345-100.000.

Saitoh, Sinichirou, to NEC Corporation. Semiconductor device including rectangular functional blocks having at least one common length. 5,616,939, Cl. 257-202.000.

Sajic, Branko; Ryklin, Irma; and Frank, Brian L., to Stepan Company. Liquid detergent compositions comprising salts of alpha sulfonated fatty acid esters and anionic surfactants. 5,616,781, Cl. 510-221.000.

Sakagami, Yasushi; and Kai, Tadao, to Nikon Corporation. Image blur suppression device with inertial pendulum system for a camera. 5,617,159, Cl. 396-55.000.

Sakai, Hiromasa, to Nissan Motor Co., Ltd. Lock-up control system for torque converter. 5,616,099, Cl. 477-169.000.

Sakai, Hiromasa; and Hayasaki, Koichi, to Nissan Motor Co, Inc. Lockup control system for torque converter. 5,616,100, Cl. 477-169.000.

Sakai, Mitsuru: *See—*
Kiuchi, Kazuhiko; Nakai, Shigeo; Sawa, Masuo; Kato, Masayuki; Sakai, Mitsuru; and Nomura, Shinya, 5,616,631, Cl. 523-139.000.

Sakai, Motoyuki: *See—*
Tsukamoto, Kazumasa; Ando, Masahiko; Fukatsu, Akira; Mae, Toshiyuki; Sakai, Motoyuki; Hamajima, Tetsuo; Kaigawa, Masato; Fukumura, Kagenori; Oba, Hidehiro; Hojo, Yasuo; Tabata, Atsushi; and Takahashi, Nobuaki, 5,616,094, Cl. 475-128.000.

Sakakibara, Tadayuki; Tanaka, Teruo; Kitai, Katsuyoshi; Isobe, Tadaaki; Hashimoto, Shigeko; Inagami, Yasuhiro; and Tamaki, Yoshiko, to Hitachi, Ltd. Interprocessor priority control system for multivector processor. 5,617,575, Cl. 395-800.000.

Sakakibara, Yoshio; and Gotou, Makoto, to Matsushita Electric Industrial Co. Ltd. Tracking control apparatus that switches polarity of tracking error signal according to detected kind of pilot signal. 5,617,268, Cl. 360-77.140.

Sakamaki, Akira, to Yukiwa Seiko Kabushiki Kaisha. Chuck apparatus. 5,615,899, Cl. 279-62.000.

Sakamoto, Akinobu: *See—*
Sakurai, Tadashi; Asao, Kouichirou; and Sakamoto, Akinobu, 5,616,627, Cl. 521-134.000.

Sakamoto, Yoshiaki, to Fuji Photo Film Co., Ltd. Method of and apparatus for charging nonaqueous electrolytic battery. 5,617,002, Cl. 320-2.000.

Sakatsu, Tsutomu; and Yoshida, Yoshihiro, to Ricoh Company, Ltd. Method for arranging conductive particles on electrodes of substrate. 5,616,206, Cl. 156-230.000.

Sakaue, Yoshinori: *See—*

Bertin, Claude L.; DiMaria, Donelli J.; Miyakawa, Makoto; and Sakaue, Yoshinori, 5,617,351, Cl. 365-185.050.
Sakaya, Taiichi: *See—*
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Sakito, Yoji; Shirahata, Mamoru; Kiyoshima, Yujiro; Minamisaka, Kazuya; and Iwata, Atukazu, to Sumitomo Chemical Company, Limited. Method for purifying O,S-dimethyl N-acetylphosphoramidothioate. 5,616,769, Cl. 558-146.000.
Sakon, Atsushi: *See—*
Nobori, Kazuhiro; Ushikoshi, Ryusuke; Umemoto, Koichi; Sakon, Atsushi; Niiori, Yusuke; and Murasato, Masahiro, 5,616,024, Cl. 432-241.000.
Saksena, Vikram R.: *See—*
Civanlar, Seyhan; and Saksena, Vikram R., 5,617,540, Cl. 395-200.110.
Sakura Color Products Corp.: *See—*
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Sakurai, Hideo: *See—*
Ito, Osamu; Sakurai, Hideo; Nogawa, Chiharu; and Kawahara, Shinya, 5,616,534, Cl. 503-227.000.
Sakurai, Hiroaki: *See—*
Takao, Mitsunori; Kokuga, Toshiharu; Matsumoto, Takanao; and Sakurai, Hiroaki, 5,617,009, Cl. 320-23.000.
Sakurai, Nobuo: *See—*
Matsumoto, Shigeharu; Sakurai, Nobuo; and Kojima, Ichiro, 5,615,568, Cl. 72-20.100.
Sakurai, Tadashi; Asao, Kouichirou; and Sakamoto, Akinobu, to Sumitomo Chemical Company, Limited. Polypropylene resin composition, polypropylene resin foamed material and process for producing the same. 5,616,627, Cl. 521-134.000.
Salisbury, Jonathan T. Microwave deicing and anti-icing system for aircraft. 5,615,849, Cl. 244-134.00R.
Salisbury, Roger S.: *See—*
Wei, Ching Y.; Liu, Jianqiang; Salisbury, Roger S.; Kwasnick, Robert F.; Possin, George E.; and Albagli, Douglas, 5,616,524, Cl. 438-4.000.
Salmi, Marko; and Jalkanen, Sirpa. Compositions and diagnostic methods using monoclonal antibodies against CD44v6. 5,616,468, Cl. 435-7.230.
Salomon S.A.: *See—*
Challande, Christian; Desarmaux, Pierre; and Thomas, Pascal, 5,615,498, Cl. 36-117.300.
Salter, James G.: *See—*
Thoman, Jeffrey A.; Swanson, David W.; Hamlin, Mindy A.; Beeson, Robert R.; Hall, Corrina; Salter, James G.; and Rhoads, W. Wistar, 5,617,128, Cl. 347-87.000.
Salter, Timothy L.: *See—*
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Samaras, John E.: *See—*
Fraas, Lewis M.; Williams, Douglas J.; and Samaras, John E., 5,616,186, Cl. 136-253.000.
Sameshima, Junichirou: *See—*
Torimaru, Satoru; Sameshima, Junichirou; Hokari, Norio; Hayashi, Yukio; Kobayashi, Mikio; Iseki, Shuji; and Tsuruoka, Ryouichi, 5,617,195, Cl. 399-27.000.
Sammler, Robert L.: *See—*
Harris, William I.; and Sammler, Robert L., 5,616,622, Cl. 521-33.000.
Sampath, Lester A.: *See—*
Fox, Charles L., Jr.; Modak, Shanta M.; and Sampath, Lester A., 5,616,338, Cl. 424-423.000.
Samsonov, Victor; and Hiterer, Misha, to Almag AL. Process for coating metals. 5,616,229, Cl. 205-107.000.
Samsung Aerospace Industries, LTD.: *See—*
Kang, Geon-mo, 5,617,253, Cl. 359-692.000.
Kuwayama, Masahiko; and Yamamoto, Yoshihiro, 5,617,184, Cl. 355-75.000.
Samsung Display Devices Co., Ltd.: *See—*
Jin, Sung-ho; and Kang, Shin-woong, 5,616,669, Cl. 526-285.000.
Samsung Electronics Co., Ltd.: *See—*
Choi, Hae-Min, 5,617,386, Cl. 369-32.000.
Choi, Sang-kook; Kwon, Chung-hwan; and Kim, Hong-keun, 5,616,025, Cl. 432-241.000.
Lee, Chul-woo; Jeong, Jong-sam; and Kim, Eung-ho, 5,617,398, Cl. 369-110.000.
Lee, Deok-hyun; and Kang, Jae-yong, 5,616,878, Cl. 84-645.000.
Lee, Deok-hyun; Park, Gyoung-chan; You, Won-jae; and Kang, Jae-yong, 5,617,385, Cl. 369-32.000.
Lee, Taek-ho, 5,617,151, Cl. 348-731.000.
Lim, Young-Ho; and Suh, Kang-Deog, 5,617,353, Cl. 365-185.170.
Mok, Cheol-Woong, 5,617,455, Cl. 375-377.000.
Park, Byeng-Jun, 5,616,270, Cl. 219-722.000.
Shim, Jae-seong, 5,617,392, Cl. 369-50.000.
Tang, Shi-Ming; and Lee, Sang-Yong, 5,616,996, Cl. 318-439.000.
Yoo, Jei-Hwan, 5,617,366, Cl. 365-201.000.
Samsung Heavy Industries Co., Inc.: *See—*
Cho, Hyung J., 5,615,705, Cl. 137-596.200.
Samsung Heavy Industries Co., Ltd.: *See—*
Chung, Dae S., 5,615,991, Cl. 414-685.000.
Samukov, Vladimir V.; Sabirov, Aydar N.; and Pozdnyakov, Pavel I., to Hyundai Pharm. Ind. Co., Ltd. N$_{\alpha}$-2-(4-Nitrophenylsulfonyl) ethoxycarbonyl-amino acids. 5,616,788, Cl. 562-430.000.
Sanada, Satoru, to Nikon Corporation. Optical disk recording method and device. 5,617,394, Cl. 369-58.000.
Sanden Corporation: *See—*
Inoue, Atsuo, 5,615,560, Cl. 62-212.000.
Terauchi, Kiyoshi, 5,615,599, Cl. 92-165.00R.
Sanders, Gary H.: *See—*
Shillington, Richard A.; McCord, Kenneth R.; and Sanders, Gary H., 5,616,136, Cl. 604-240.000.
Sandoz Ltd.: *See—*
Avar, Lajos; Staniek, Peter; Stoll, Klaus; Habicher, Wolf D.; and Hähner, Uwe, 5,616,636, Cl. 524-102.000.
Goldmann, Jürgen; and Kaul, Bansi L., 5,616,778, Cl. 560-35.000.
Wang, Hugh H.; Parker, John; Przygocki, Paul; and Ameel, Mike, 5,615,975, Cl. 405-128.000.
Sandri, Paolo: *See—*
Borghi, Maria R.; and Sandri, Paolo, 5,617,016, Cl. 323-284.000.
Sandvik AB: *See—*
Andersson, Mats; and Collin, Marianne, 5,616,526, Cl. 501-89.000.
Sanjyou, Akira; Nakatsuka, Yasuo; Morita, Yasuyuki; and Uno, Koichi, to Sumitomo Metal Industries, Ltd. Ceramic substrate having a multilayered metallic thin film. 5,616,423, Cl. 428-632.000.
Sankey, James K.: *See—*
Marsilio, Ronald M.; Weisburn, James T.; Sankey, James K.; and Mundorf, Larry K., 5,615,779, Cl. 211-40.000.
Sankyo Company, Limited: *See—*
Fukumi, Hiroshi; Sugiyama, Mitsuo; Tabata, Keiichi; and Kojima, Koichi, 5,616,579, Cl. 514-222.500.
Kaneko, Masakatsu; Murofushi, Yoshinobu; Kimura, Misako; Yamazaki, Mitsuo; and Iijima, Yasuteru, 5,616,600, Cl. 514-397.000.
Sasaki, Takuma; Matsuda, Akira; Ueda, Tohru, deceased, 5,616,567, Cl. 514-49.000.
Yanagisawa, Hiroaki; Fujimoto, Koichi; Amemiya, Yoshiya; Shimoji, Yasuo; Kanazaki, Takuro; Koike, Hiroyuki; and Sada, Toshio, 5,616,599, Cl. 514-381.000.
Sano, Akihiro, to Kabushiki Kaisha Toshiba. Method of imaging in ultrasound diagnosis and diagnostic ultrasound system. 5,615,680, Cl. 128-661.090.
Sano, Chiaki: *See—*
Sato, Takeru; and Sano, Chiaki, 5,616,786, Cl. 562-401.000.
Sano, Eiichi; and Minegishi, Hiroshi, to Kabushiki Kaisha Topcon. Fundus camera. 5,617,156, Cl. 351-214.000.
Sano, Keiichi; and Aya, Yoichiro, to Sanyo Electric Co., Ltd. Amorphous silicon germanium film and semiconductor device using the same, 5,616,932, Cl. 257-52.000.
Sano, Mitsuharu: *See—*
Kawakita, Takeshi; Sano, Mitsuharu; Yutoku, Yuko; Ikeda, Yoshifumi; and Haga, Keiichiro, 5,616,581, Cl. 514-234.500.
Sanofi: *See—*
Boigegrain, Robert; Gully, Danielle; Jeanjean, Francis; and Molimard, Jean-Charles, 5,616,592, Cl. 514-314.000.
Sanshin Kogyo Kabushiki Kaisha: *See—*
Kanno, Isao, 5,615,645, Cl. 123-73.00C.
Nakai, Hiroshi, 5,616,058, Cl. 440-53.000.
Santa Barbara Research Center: *See—*
Rhiger, David R.; Sen, Sanghamitra; and Hamilton, William J., Jr., 5,616,925, Cl. 250-370.130.
Santel, Hans-Joachim: *See—*
Fischer, Reiner; Krüger, Bernd-Wieland; Bretschneider, Thomas; Erdelen, Christoph; Wachendorff-Neumann, Ulrike; Lürssen, Klaus; Santel, Hans-Joachim; and Schmidt, Robert R., 5,616,536, Cl. 504-225.000.
Santo, Chiaki: *See—*
Nakao, Norihiko; Tukahara, Yutaka; Ikeda, Naoki; Takehara, Shin; Seni, Hirofumi; Harada, Shingo; and Santo, Chiaki, 5,617,315, Cl. 364-424.045.
Santo, Hendrik: *See—*
Goder, Dimitry; and Santo, Hendrik, 5,617,015, Cl. 323-282.000.
Santucci, Robert J.: *See—*
Duffy, Joseph J.; Kirayoglu, Birol; Lin, Pui-Yan; Marin, Robert A.; and Santucci, Robert J., 5,616,204, Cl. 156-156.000.
Sanyo Denki Co., Ltd.: *See—*
Kodama, Nobumasa; and Watanabe, Jiro, 5,615,998, Cl. 415-177.000.
Sanyo Electric Co., Ltd.: *See—*
Kume, Masao; and Kanade, Takeo, 5,617,490, Cl. 382-275.000.
Matsuura, Yoshinori; Kuroda, Yasushi; Higashiyama, Nobuyuki; Kimoto, Mamoru; Nogami, Mitsuzou; Nishio, Koji; and Saito, Toshihiko, 5,616,435, Cl. 429-218.000.
Ogura, Takashi; and Kume, Minoru, 5,617,275, Cl. 360-113.000.
Sano, Keiichi; and Aya, Yoichiro, 5,616,932, Cl. 257-52.000.
Takao, Mitsunori; Kokuga, Toshiharu; Matsumoto, Takanao; and Sakurai, Hiroaki, 5,617,009, Cl. 320-23.000.
Sapieszko, Ronald S.: *See—*
Hopstock, David M.; Roden, John S.; Dierssen, Gunther H.; and Sapieszko, Ronald S., 5,616,414, Cl. 428-402.000.
Sarantila, Kari: *See—*
Koskinen, Jukka; Andtsjö , Henrik; Takakarhu, Jouni; and Sarantila, Kari, 5,616,662, Cl. 526-88.000.
Saraswat, Vijay A.: *See—*
Webster, Marc W.; Rulli, Paul A.; McCue, Daniel L., III; Saraswat, Vijay A.; and Fromherz, Markus P. J., 5,617,214, Cl. 358-296.000.
Sargent, R. Richard; and Alender, Jeffrey R., to Peach State Labs, Inc. Method for adjusting pH in textile processing solutions with urea hydrochloride salt. 5,616,151, Cl. 8-636.000.
Sartoni, Massimo: *See—*

Draghetti, Fiorenzo; and Sartoni, Massimo, 5,615,761, Cl. 198-441.000.
Sartori, Peter: *See—*
Richter, Robin; Martin, Hans-Peter; Roewer, Gerhard; Mueller, Eberhard; Kraemer, Hans; Sartori, Peter; Oelschlaeger, Andreas; Habel, Wolfgang; and Harnack, Bernhard, 5,616,308, Cl. 423-345.000.
Sasaki, Darryl Y.: *See—*
Arnold, Frances H.; Sasaki, Darryl Y.; Shnek, Deborah; and Pack, Daniel, 5,616,790, Cl. 562-444.000.
Sasaki, Kazuyuki: *See—*
Ohneda, Akira; Sasaki, Kazuyuki; Natori, Yohei; and Nagasaki, Tomohisa, 5,616,558, Cl. 514-12.000.
Sasaki, Masaomi: *See—*
Shimada, Tomoyuki; Sasaki, Masaomi; Hashimoto, Mitsuru; and Aruga, Tamotsu, 5,616,801, Cl. 564-307.000.
Tanaka, Chiaki; Sasaki, Masaomi; Aruga, Tamotsu; Shimada, Tomoyuki; and Adachi, Hiroshi, 5,616,805, Cl. 564-405.000.
Sasaki, Mitsuo. Movable slab form unit. 5,616,349, Cl. 425-62.000.
Sasaki, Naoya: *See—*
Tsubota, Haruji; and Sasaki, Naoya, 5,616,852, Cl. 73-37.000.
Sasaki, Shinichi: *See—*
Yashiro, Masahiko; Sasaki, Shinichi; Ikemoto, Isao; Miura, Koji; Karakama, Toshiyuki; and Numagami, Atsushi, 5,617,579, Cl. 399-114.000.
Sasaki, Takuma; Matsuda, Akira; Ueda, Tohru, deceased (by Sumiko Ueda, legal representative), to Sankyo Company, Limited. 2'-Cyano pyrimidine nucleoside compounds. 5,616,567, Cl. 514-49.000.
Sasano, Toshiaki, to Kabushiki Kaisha Shinkawa. Wire bonding method and apparatus. 5,615,821, Cl. 228-102.000.
Sasanuma, Nobuatsu: *See—*
Hayashi, Toshio; Arimoto, Shinobu; Yoshinaga, Kazuo; Nakai, Takehiko; Utagawa, Tsutomu; Nagase, Tetsuya; and Sasanuma, Nobuatsu, 5,617,187, Cl. 399-32.000.
Sasayama, Takao: *See—*
Suzuki, Masayoshi; Sasayama, Takao; Hanzawa, Keizi; Ichikawa, Norio; Horie, Junichi; Sugisawa, Yukiko; and Ogasawara, Yuuji, 5,616,844, Cl. 73-514.320.
Satake, Kenichi: *See—*
Watanabe, Takeshi; Tsuji, Kikunosuke; Hori, Setsuo; Kado, Seiji; Satake, Kenichi; Nakatsu, Hiromi; Baba, Kohichi; Ishii, Masayuki; and Uriu, Yoshiko, 5,615,877, Cl. 271-259.000.
Sathe, Shirish K.; Corbalis, Charles M.; Schmidt, Uri; and Moley, Richard M., to Stratacom, Inc. Asynchronous transfer mode communication in inverse multiplexing over multiple communication links. 5,617,417, Cl. 370-394.000.
Sato, Hideharu, to SMC Corporation. Pilot-type change-over valve. 5,615,710, Cl. 137-625.640.
Sato, Hiroyo: *See—*
Oyamada, Ouichi; Arayashiki, Akifumi; Sato, Hiroyo; and Yokokawa, Eiji, 5,617,333, Cl. 364-514.00R.
Sato, Katsuaki: *See—*
Sugimoto, Masakazu; Kojima, Hiroyuki; Tanaka, Akiko; Matsui, Hiroshi; Sato, Katsuaki; and Nakamatsu, Tsuyoshi, 5,616,480, Cl. 435-172.300.
Sato, Ken'ichi: *See—*
Koga, Masafumi; Teshima, Mitsuhiro; Obara, Hitoshi; and Sato, Ken'ichi, 5,617,234, Cl. 359-131.000.
Sato, Kunihiko: *See—*
Tonomoto, Yoshihiro; Fuke, Kenji; Sugimoto, Katsumi; Suzuki, Eiji; Tonai, Keiko; Tonai, Shozo; Yoshii, Hitoshi; Kawai, Tsutomu; Sato, Kunihiko; and Shimatsu, Katsuya, 5,617,192, Cl. 399-263.000.
Sato, Masaaki: *See—*
Ueda, Noriyoshi; Sato, Masaaki; and Hirai, Katsuaki, 5,617,196, Cl. 399-379.000.
Sato, Noriko: *See—*
Aritake, Hirokazu; Kato, Masayuki; Ishimoto, Manabu; Sato, Noriko; and Nakashima, Masato, 5,617,225, Cl. 359-9.000.
Sato, Shigeaki: *See—*
Hayashida, Hajime; Aoyagi, Takashi; Inoue, Satoshi; Nozue, Ringi; Kawamura, Kiyoshi; and Sato, Shigeaki, 5,616,880, Cl. 84-719.000.
Sato, Shuichi: *See—*
Igarashi, Takashi; and Sato, Shuichi, 5,615,486, Cl. 33-200.000.
Sato, Takeru; and Sano, Chiaki, to Ajinomoto Co., Inc. Method of obtaining anhydrous phenylalanine crystals. 5,616,786, Cl. 562-401.000.
Sato, Youji; Nakajima, Yuji; Taki, Kinji; and Konno, Toshikazu, to Kabushiki Kaisha Toshiba. Compact electronic apparatus and method of assembling the same. 5,617,301, Cl. 361-796.000.
Satoh, Hiroshi: *See—*
Horino, Morikatsu; and Satoh, Hiroshi, 5,615,802, Cl. 222-66.000.
Satoh, Makoto; and Nakajima, Hiroyuki, to Pioneer Electronic Corporation. Method of reproducing information of optical disc, method of recording and reproducing the same, apparatus for reproducing the same, and light detecting apparatus used in the reproducing apparatus. 5,617,389, Cl. 369-44.420.
Satoh, Yukimasa. Electrolytic ionized water producer. 5,615,764, Cl. 204-252.000.
Sauer, Andreas: *See—*
Kunz, Hans; Sauer, Andreas; Schuhmacher, Manfred; Szczyrbowski, Joachim; and Marquardt, Dietmar, 5,616,226, Cl. 204-298.230.
Sauer, Jude S.; Oravecz, Michael G.; and Greenwald, Roger J., to LaserSurge, Inc. Apparatus and method for anchoring surgical instrumentation. 5,616,131, Cl. 604-174.000.
Saurat, Jean; Bigand, Dominique; and Chevalier, Jean-Louis, to Sofamor S.N.C. Device for interconnecting an elongate element and a support for said element. 5,615,965, Cl. 403-24.000.
Sauterel, Gérard: *See—*
Scheuchzer, Antoine; Schelling, Gérard; Wenger, Christian; and Sauterel, Gérard, 5,615,616, Cl. 104-2.000.
Savini, Daniel J. Lottery ticket scraper and brush device. 5,615,441, Cl. 15-111.000.
Sawa, Masuo: *See—*
Kiuchi, Kazuhiko; Nakai, Shigeo; Sawa, Masuo; Kato, Masayuki; Sakai, Mitsuru; and Nomura, Shinya, 5,616,631, Cl. 523-139.000.
Sawada, Akira: *See—*
Kinouchi, Shigenori; and Sawada, Akira, 5,617,089, Cl. 341-65.000.
Sawasaki, Naoyuki: *See—*
Hashima, Masayoshi; Hasegawa, Fumi; Okabayashi, Keijū; Watanabe, Ichiro; Kanda, Shinji; Sawasaki, Naoyuki; and Murase, Yuichi, 5,617,335, Cl. 364-516.000.
Sawatari, Norio: *See—*
Takahashi, Toru; Watanuki, Tsuneo; Takei, Fumio; Sawatari, Norio; and Nakamura, Yasushige, 5,616,440, Cl. 430-63.000.
Sawatari, Yoshihiro: *See—*
Kanaya, Miharu; Owatari, Akio; Takatsuna, Junko; Yatake, Masahiro; Hayashi, Hiroko; Ono, Takashi; Sawatari, Yoshihiro; and Yagyu, Tatsuya, 5,616,174, Cl. 106-22.00K.
Sawtell, Ralph R.; Premkumar, Mosur K.; and Yun, David I., to Aluminum Company of America. Metal matrix composites containing electrical insulators. 5,616,421, Cl. 428-614.000.
Sawyer, James K. Multiple cylinder engine featuring a reciprocating non-rotating piston rod. 5,616,010, Cl. 417-364.000.
Sayo, Noboru: *See—*
Nakai, Takeshi; Kitamoto, Dai; and Sayo, Noboru, 5,616,751, Cl. 556-54.000.
Scarpetti, David: *See—*
Stuk, Timothy L.; Haight, Anthony R.; Kerdesky, Francis A. J.; Leanna, M. Robert; Morton, Howard E.; Robbins, Timothy A.; Scarpetti, David; and Tien, Jien-Heh J., 5,616,776, Cl. 560-27.000.
Schaap, Arthur P.; and Akhavan-Tafti, Hashem, to Board of Governors of Wayne State University. Enhanced chemiluminescence from 1,2-dioxetanes through energy transfer to tethered fluorescers. 5,616,729, Cl. 549-223.000.
Schaefer, Thomas J., to VLSI Technology, Inc. Method for estimating interconnect delays in integrated circuits. 5,617,325, Cl. 364-488.000.
Schaffer, Priscilla A.; and Dabrowski Amaral, Christine E., to Dana-Farber Cancer Institute. Assay for antiviral activity using complex of herpesvirus origin of replication and cellular protein. 5,616,461, Cl. 435-6.000.
Schal, Wilfried. Method for the preparation of hemodialysis fluids containing bicarbonate. 5,616,248, Cl. 210-647.000.
Scharre, Mark D.: *See—*
Brown, Ronald E.; Reed, Larry E.; Greenwood, Gil J.; Harper, Timothy P.; and Scharre, Mark D., 5,616,236, Cl. 208-48.00R.
Schefczik, Ernst: *See—*
Sens, Rüdiger; Schefczik, Ernst; Reichelt, Helmut; and Etzbach, Karl-Heinz, 5,616,710, Cl. 546-119.000.
Schelling, Gérard: *See—*
Scheuchzer, Antoine; Schelling, Gérard; Wenger, Christian; and Sauterel, Gérard, 5,615,616, Cl. 104-2.000.
Scherch, Richard P.; Schrand, Timothy A.; Shirk, James A.; and Mitchell, Danny J., to Premark FEG Corporation. Food product slicer having an interlock mechanism. 5,615,591, Cl. 83-399.000.
Schering Aktiengesellschaft: *See—*
Zentel, Hans J.; Töpert, Michael; Laurent, Henry; Brumby, Thomas; and Esperling, Peter, 5,616,573, Cl. 514-172.000.
Schering Corporation: *See—*
Andrews, David R.; and Sudhakar, Anantha, 5,616,777, Cl. 560-29.000.
Fu, Xiaoyong; Thiruvengadam, Tiruvettipuram K.; Tann, Chou-Hong; and Colon, Cesar, 5,616,742, Cl. 552-595.000.
Reichert, Paul; Hammond, Gerald S.; Le, Hung V.; Nagabhushan, Tattanahalli L.; and Trotta, Paul P., 5,616,555, Cl. 514-8.000.
Schermerhorn, David W. Magnifying holder for a remote control unit. 5,615,768, Cl. 206-305.000.
Scherzer, Dietrich: *See—*
Witt, Michael; Scherzer, Dietrich; Hahn, Klaus; and Naegele, Dieter, 5,616,624, Cl. 521-56.000.
Scheuchzer, Antoine; Schelling, Gérard; Wenger, Christian; and Sauterel, Gérard, to Scheuchzer S.A. Process for screwing and unscrewing the tie screws of a railroad and machine for implementing the process. 5,615,616, Cl. 104-2.000.
Scheuchzer S.A.: *See—*
Scheuchzer, Antoine; Schelling, Gérard; Wenger, Christian; and Sauterel, Gérard, 5,615,616, Cl. 104-2.000.
Schewe, Franz-Clemens: *See—*
Abert, Michael; Block, Siegfried; Bozenhardt, Johannes; Leigsnering, Franz; Pfatteicher, Werner; and Schewe, Franz-Clemens, 5,617,309, Cl. 364-133.000.
Schieb, Thomas: *See—*
Pirkl, Hans-Georg; Schomäcker, Reinhard; Klingler, Uwe; Schieb, Thomas; Wiechers, Gerhard; and Zimmermann, Jürgen, 5,616,818, Cl. 568-932.000.
Schieber, Douglas A., to Carrier Vibrating Equipment, Inc. Vibratory conveyor system for adjusting the periodic resultant forces supplied to a conveyor trough. 5,615,763, Cl. 198-751.000.

Schifferl, Ludwig; and Wildgen, Andreas, to Siemens Aktiengesellschaft. Method and circuit configuration for protecting a heated temperature-dependent sensor resistor against overheating. 5,616,843, Cl. 73-204.150.

Schilp, Andrea: *See—*
Benz, Gerhard; Marek, Jiri; Bantien, Frank; Muenzel, Horst; Laermer, Franz; Offenberg, Michael; and Schilp, Andrea, 5,616,523, Cl. 438-50.000.

Schlagel, Mark E.: *See—*
Duncan, Gregory S.; Calvin, Olin W.; Schlagel, Mark E.; Keene, Darren S.; and Edwards, Russell J., 5,616,184, Cl. 134-22.100.

Schlager, Karl M.: *See—*
Lu, Li-Hsin D.; and Schlager, Karl M., 5,616,993, Cl. 318-254.000.

Schlapfer, Bruno. Sensor for expansion measurement. 5,616,847, Cl. 73-774.000.

Schlapfer, Johannes F.; and Hess, Martin. Surgical forceps. 5,616,143, Cl. 606-61.000.

Schlarb, Bernhard; Wendel, Kurt; Bellaire, Helmut; and Beck, Karin H., to BASF Aktiengesellschaft. Dyestuff-containing aqueous dispersions. 5,616,644, Cl. 524-522.000.

Schlatter, Walter, to COLCON Anstalt. Wobble press. 5,615,569, Cl. 72-67.000.

Schlichenmaier, Andreas: *See—*
Stumpe, Werner; Schlichenmaier, Andreas; and Schwendemann, Bernhard, 5,615,931, Cl. 303-22.100.

Schlumberger Technologies Inc.: *See—*
Talbot, Christopher G.; Masnaghetti, Douglas; and Ximen, Hongyu, 5,616,921, Cl. 250-307.000.

Schlumberger Technology Corporation: *See—*
Keyrouz, Walid T.; Kramer, Glenn A.; and Pabon, Jahir A., 5,617,510, Cl. 395-10.000.

Schmed, Arthur-Joachim, to J. Lough Limited. Emulsifying unit, particularly for emulsifying air and milk with steam to prepare cappuccino and the like. 5,615,602, Cl. 99-323.100.

Schmid, Gerhard: *See—*
Crause, Peter; Habermann, Paul; Tripier, Dominique; Ulmer, Wolfgang; and Schmid, Gerhard, 5,616,476, Cl. 435-69.100.

Schmidt, Fransiscus J.: *See—*
Schoonen, Adelbert J. M.; Schmidt, Fransiscus J.; and Wientjes, Klaas-Jan C., 5,615,671, Cl. 128-632.000.

Schmidt, Robert R.: *See—*
Fischer, Reiner; Krüger, Bernd-Wieland; Bretschneider, Thomas; Erdelen, Christoph; Wachendorff-Neumann, Ulrike; Lürssen, Klaus; Santel, Hans-Joachim; and Schmidt, Robert R., 5,616,536, Cl. 504-225.000.

Schmidt, Uri: *See—*
Sathe, Shirish K.; Corbalis, Charles M.; Schmidt, Uri; and Moley, Richard M., 5,617,417, Cl. 370-394.000.

Schmiedl, Reinhard: *See—*
Bar, Klaus; and Schmiedl, Reinhard, 5,617,261, Cl. 359-845.000.

Schmitt, Franz: *See—*
Fischer, Hubertus; Nowak, Stefan; and Schmitt, Franz, 5,617,030, Cl. 324-322.000.

Schnaibel, Eberhard; Schneider, Erich; Henkelmann, Konrad; Blischke, Frank; and Mallebrein, Georg, to Robert Bosch GmbH. System for operating a heating element for a ceramic sensor in a motor vehicle. 5,616,835, Cl. 73-117.200.

Schneewind, Olaf: *See—*
Fischetti, Vincent A.; and Schneewind, Olaf, 5,616,686, Cl. 530-326.000.

Schneider Electric SA: *See—*
Durif, Ghislain; and Morfey, Allistair, 5,617,078, Cl. 340-652.000.
Guigueno, Hervé, 5,617,307, Cl. 363-37.000.

Schneider, Erich: *See—*
Schnaibel, Eberhard; Schneider, Erich; Henkelmann, Konrad; Blischke, Frank; and Mallebrein, Georg, 5,616,835, Cl. 73-117.200.

Schneider, Erika, to General Electric Company. Method of magnet shimming. 5,617,029, Cl. 324-320.000.

Schnepf, Harry E.: *See—*
Payne, Jewel M.; Kennedy, M. Keith; Randall, John B.; Meier, Henry; Uick, Heidi J.; Foncerrada, Luis; Schnepf, Harry E.; and Schwab, George E., 5,616,495, Cl. 435-252.300.

Schnitta, Bonnie S. Method for analyzing activity in a signal. 5,617,513, Cl. 395-50.000.

Schnoes, Heinrich K.: *See—*
DeLuca, Hector F.; Schnoes, Heinrich K.; and Aria, Fariba, 5,616,744, Cl. 552-653.000.
DeLuca, Hector F.; Schnoes, Heinrich K.; Perlman, Kato L.; and Swenson, Rolf E., 5,616,759, Cl. 556-443.000.

Schnorrenberg, Gerd: *See—*
Rudolf, Klaus; Eberlein, Wolfgang; Engel, Wolfhard; Mihm, Gerhard; Doods, Henri; Wieland, Heike A.; Willim, Klaus-Dieter; Krause, Jürgen; Dollinger, Horst; Esser, Franz; Schnorrenberg, Gerd; Entzeroth, Michael; and Wienen, Wolfgang, 5,616,620, Cl. 514-620.000.

Schoenberg, Thomas G.; Otterson, Richard J.; and Zehner, Darrell J., to McIntyre Group, Ltd. Antimicrobial solution of formaldehyde substituted hydantoin and process for preparation. 5,616,722, Cl. 548-319.100.

Schoenmeyr, Ivar, to Aquatec Water Systems, Inc. Composite diaphragm for diaphragm pumps having two different shore-hardness materials. 5,615,597, Cl. 92-103.0SD.

Schoeters, Emile: *See—*
Janssens, Danny; Schoeters, Emile; Vuylsteke, Pieter; and Dhaenens, Frans, 5,616,930, Cl. 250-584.000.

Scholefield, David R.: *See—*
Allison, Robert J.; Farnsworth, Stephen D.; Fisher, Edward J. D.; and Scholefield, David R., 5,617,329, Cl. 364-492.000.

Scholl, Thomas W.: *See—*
McGuire, Christopher J.; McGuire, Matthew P.; and Scholl, Thomas W., 5,615,499, Cl. 37-367.000.

Schomäcker, Reinhard: *See—*
Pirkl, Hans-Georg; Schomäcker, Reinhard; Klingler, Uwe; Schieb, Thomas; Wiechers, Gerhard; and Zimmermann, Jürgen, 5,616,818, Cl. 568-932.000.

Schoofs, Franciscus A. C. M.: *See—*
Fronen, Robert J.; Van Leest, Paulus J. C.; and Schoofs, Franciscus A. C. M., 5,617,503, Cl. 388-815.000.

Schoonen, Adelbert J. M.; Schmidt, Fransiscus J.; and Wientjes, Klaas-Jan C., to Siemens-Elema AB; and Rijksuniversiteit te Groningen. Processes and devices for continuously monitoring levels of analyte. 5,615,671, Cl. 128-632.000.

Schoppe, Herbert: *See—*
Guba, Reinhold; Olek, Joachim; and Schoppe, Herbert, 5,615,612, Cl. 101-425.000.

Schow, Steven R.: *See—*
Ayral-Kaloustian, Semiramis; Schow, Steven R.; Du, Mila T.; and Gibbons, James J., Jr., 5,616,612, Cl. 514-478.000.

Schrand, Timothy A.: *See—*
Scherch, Richard P.; Schrand, Timothy A.; Shirk, James A.; and Mitchell, Danny J., 5,615,591, Cl. 83-399.000.

Schreiner, Horst, to Siemens Aktiengesellschaft. Method for the operation of a digital imaging system of an X-ray diagnostic apparatus. 5,617,461, Cl. 378-98.500.

Schroeck, Calvin W.: *See—*
Burjes, Louis; and Schroeck, Calvin W., 5,616,816, Cl. 568-727.000.

Schroeck, Harold J.; and Burger, Paul R., to Vining Industries, Inc. Mop including mop connector. 5,615,442, Cl. 15-147.100.

Schroeder, Alfred A.; Romanyszyn, Michael T., Jr.; Getsy, Stephen B.; Montgomery, Gregg S.; Wolfe, Joseph J.; and Wittig, Norman P., to Coca-Cola Company, The. Juice concentrate package for postmix dispenser. 5,615,801, Cl. 222-51.000.

Schroeder, Ellwyn J.: *See—*
Miller, James R.; and Schroeder, Ellwyn J., 5,617,501, Cl. 385-134.000.

Schroeder, Ronald W.: *See—*
Casey, John F.; Schroeder, Ronald W.; Dove, Lewis R.; and Yearsley, Philip J., 5,617,298, Cl. 361-766.000.

Schuhmacher, Manfred: *See—*
Kunz, Hans; Sauer, Andreas; Schuhmacher, Manfred; Szczyrbowski, Joachim; and Marquardt, Dietmar, 5,616,226, Cl. 204-298.230.

Schulte-Werning, Burkhard: *See—*
Althaus, Rolf; Keller, Jakob J.; and Schulte-Werning, Burkhard, 5,615,546, Cl. 60-39.020.

Schultz, Darald R.: *See—*
Danielson, Arvin D.; Schultz, Darald R.; Silva, Dennis; Boatwright, Darrell L.; Austin, Rickey G.; and Alt, Daniel E., 5,617,343, Cl. 364-707.000.

Schultz, David P.: *See—*
Goetting, F. Erich; Peterson, Wade K.; and Schultz, David P., 5,617,021, Cl. 324-158.100.

Schultz, Paul B.: *See—*
Askin, Albert L.; Schultz, Paul B.; and Serafin, Daniel L., 5,616,231, Cl. 205-153.000.

Schulz, Stephen C.: *See—*
Sieck, Peter A.; Newcomb, Richard; Trumbly, Terry A.; and Schulz, Stephen C., 5,616,225, Cl. 204-298.140.

Schulze, Gerhard; Spanke, Reinhold; and Sommer, Karl-Heinz, to Siemens Aktiengesellschaft. Bridge module. 5,617,293, Cl. 361-715.000.

Schuster, Ludwig; and Eggersdorfer, Manfred, to BASF Aktiengesellschaft. Preparation of 1,2-propanediol. 5,616,817, Cl. 568-861.000.

Schütze, Gunter: *See—*
Ruppert, Heinrich W.; Schütze, Gunter; and Gätschmann, Klaus G., 5,615,692, Cl. 131-70.000.

Schwab, George E.: *See—*
Payne, Jewel M.; Kennedy, M. Keith; Randall, John B.; Meier, Henry; Uick, Heidi J.; Foncerrada, Luis; Schnepf, Harry E.; and Schwab, George E., 5,616,495, Cl. 435-252.300.

Schwäger, Michael; Ryll, Jürgen; and Wittig, Lutz, to Whitaker Corporation, The. Connector assembly for metal-jacketed lambda probe conductor. 5,616,049, Cl. 439-455.000.

Schwarz, Hans V.; Otterbach, Andreas; Mattner, Otto; Merger, Franz; Schwarz, Wolfgang; Brandt, Eckhardt; Magnussen, Peter; and Minges, Roland, to BASF Aktiengesellschaft. Thermal cleavage of carbamic esters. 5,616,784, Cl. 560-345.000.

Schwarz, Wolfgang: *See—*
Schwarz, Hans V.; Otterbach, Andreas; Mattner, Otto; Merger, Franz; Schwarz, Wolfgang; Brandt, Eckhardt; Magnussen, Peter; and Minges, Roland, 5,616,784, Cl. 560-345.000.

Schwarzel, William C.: *See—*
Cheng, Chieh-Min; Giudice, Anthony C.; Liang, Rong-Chang; Schwarzel, William C.; and Wan, Leonard C., 5,616,449, Cl. 430-302.000.

Schweigl, Larry: *See—*
Pech, David; and Schweigl, Larry, 5,615,784, Cl. 212-178.000.

Schwendeman, Robert J.; and Petreye, David R., to Motorola, Inc. Data communication receiver having variable length message carry-on. 5,617,083, Cl. 340-825.440.

Schwendemann, Bernhard: *See—*
Stumpe, Werner; Schlichenmaier, Andreas; and Schwendemann, Bernhard, 5,615,931, Cl. 303-22.100.

Sciacca, Thomas; and Slavin, Neil. Cogeneration system and control therefor with auxiliary heating elements and thermal barrier. 5,617,504, Cl. 392-307.000.

Scialla, Stefano: *See—*
Hardy, Frederick E.; Willey, Alan D.; and Scialla, Stefano, 5,616,281, Cl. 252-186.380.

Scott, Frederick: *See—*
Chin, Hon W.; and Scott, Frederick, 5,617,421, Cl. 370-402.000.

Scott, Kenneth R.; Nicholson, Jesse M.; and Edafiogho, Ivan O., to Howard University. Enaminone esters. 5,616,615, Cl. 514-511.000.

Scott, Thomas J. Parking aid for parking vehicles in a covered garage. 5,617,087, Cl. 340-932.200.

Seader, Rex: *See—*
Yoshida, Stuart; Seader, Rex; and Neisen, Stephen P., 5,615,735, Cl. 165-80.300.

Seagate Technology, Inc.: *See—*
Anderson, David B., 5,617,425, Cl. 371-10.200.
MacLeod, Donald J.; Robinson, Peter G.; and Nguyen, Long V., 5,617,272, Cl. 360-99.080.

Sealock, L. John, Jr.: *See—*
Elliott, Douglas C.; Sealock, L. John, Jr.; and Baker, Eddie G., 5,616,154, Cl. 48-197.00R.

Seamans, Tom M.: *See—*
Stephenson, Stanley W., III; and Seamans, Tom M., 5,617,168, Cl. 396-413.000.

Sears, Lawrence M. Apparatus for communicating utility usage-related information from a utility usage location to a utility usage registering device. 5,617,084, Cl. 340-870.020.

Sebald, Michael: *See—*
Sezi, Recai; Borndoerfer, Horst; Ahne, Hellmut; Birkle, Siegfried; Kuehn, Eberhard; Leuschner, Rainer; Rissel, Eva; and Sebald, Michael, 5,616,667, Cl. 526-271.000.

Sebek, Oldrich K.: *See—*
Argoudelis, Alexander D., deceased; Shilliday, Franklin B.; Laborde, Alice L.; Truesdell, Scott E.; and Sebek, Oldrich K., 5,616,320, Cl. 424-71.300.

Sedepro: *See—*
Laurent, Daniel; and Mayet, Jean-Claude, 5,616,209, Cl. 156-397.000.

Sedlock, Gregory W.: *See—*
Rogers, Wesley D.; Gottlieb, Louis G.; Molani, Saleem R.; Sedlock, Gregory W.; and Engdahl, Roger P., 5,617,471, Cl. 379-212.000.

Seeley, Patricia M.; and Seeley, Roger L. Splatter or grease guard. 5,615,667, Cl. 126-42.000.

Seeley, Roger L.: *See—*
Seeley, Patricia M.; and Seeley, Roger L., 5,615,667, Cl. 126-42.000.

Seewoster, O. Ben. ATM keypad operating device. 5,616,900, Cl. 235-379.000.

Segerbäck, Pér M.: *See—*
Haulin, Tord L.; Segerbäck, Pér M.; and Mäder, Heinz, 5,617,452, Cl. 375-354.000.

Segmuller, Brigitte E.: *See—*
Unruh, Jerry D.; Segmuller, Brigitte E.; Chapa, Gabriel R.; and Pryor, Kent E., 5,616,785, Cl. 562-25.000.

Seibold, J. Duke: *See—*
Thompson, Ralph; Rockwell, Ned M.; Michels, Ann M.; Mohring, William R.; Kolbe, Kevin C.; Seibold, J. Duke; and Butterwick, James M., 5,616,782, Cl. 560-149.000.

Seikagaku Kogyo Kabushiki Kaisha (Seikagaku Corporation): *See—*
Naganuma, Masateru, 5,615,772, Cl. 206-365.000.

Seiko Epson Corporation: *See—*
Chi, Shan, 5,617,517, Cl. 395-114.000.
Honzawa, Toyoshige; Natori, Kuniharu; and Koike, Nobuhiro, 5,617,376, Cl. 368-80.000.
Kanaya, Miharu; Owatari, Akio; Takatsuna, Junko; Yatake, Masahiro; Hayashi, Hiroko; Ono, Takashi; Sawatari, Yoshihiro; and Yagyu, Tatsuya, 5,616,174, Cl. 106-22.00K.
Kobayashi, Yoichi; Tomii, Tsuyoshi; Endo, Koichi; Nishikaze, Hayato; and Hirano, Seiichi, 5,615,873, Cl. 271-121.000.
Misawa, Toshiyuki; and Oshima, Hiroyuki, 5,616,936, Cl. 257-72.000.
Nishizawa, Katsuhiko; Koshiishi, Osamu; and Yokoyama, Kouichirou, 5,615,959, Cl. 400-279.000.
Suzuki, Takashi; Matsuzawa, Masanao; and Miyazawa, Yoshinori, 5,615,957, Cl. 400-124.100.
Takeuchi, Yukihisa; Masumori, Hideo; and Takahashi, Nobuo, 5,617,127, Cl. 347-71.000.
Ushiyama, Yuichi, 5,617,532, Cl. 395-183.120.

Seiler, Claus-Dietrich; Rauleder, Hartwig; Koetzsch, Hans-Joachim; and Srebny, Hans-Guenther, to Huels Aktiengesellschaft. Process for preparing low-chloride or chloride-free aminofunctional organosilanes. 5,616,755, Cl. 556-413.000.

Seiler, Claus-Dietrich: *See—*
Kropfgans, Frank; Frings, Albert; Horn, Michael; Koetzsch, Hans-Joachim; Monkiewicz, Jaroslaw; Seiler, Claus-Dietrich; Srebny, Hans-Guenther; and Standke, Burkhard, 5,616,762, Cl. 556-479.000.

Sekine, Yasuo: *See—*
Ikawa, Hiroshi; Matsumoto, Hajime; Matsumoto, Masakatsu; Sekine, Yasuo; Nishimura, Masato; and Hosoda, Akihiko, 5,616,711, Cl. 546-141.000.

Sekisui Kagaku Kogyo Kabushiki Kaisha: *See—*
Nakai, Kiyooki; and Kita, Shigeru, 5,615,531, Cl. 53-136.400.
Yamabe, Yasuo; and Ohtsuka, Tetsushi, 5,615,701, Cl. 137-205.000.

Sekiya, Tadanobu; and Haraga, Hideaki, to Konica Corporation. Silver halide light-sensitive color photographic material. 5,616,453, Cl. 430-504.000.

Self, Colin H. Determination of haptens. 5,616,503, Cl. 436-518.000.

Selfe, Margaret A.: *See—*
Lynch, Marvin L.; McClish, Michael A.; Selfe, Margaret A.; Steinl, Gregory; and Remboski, Donald J., Jr., 5,616,834, Cl. 73-116.000.

Sell, Leslie J., to Ingersoll-Rand Company. Push Button Pendant for a hoist or winch. 5,615,704, Cl. 137-596.100.

Semeria, Didier: *See—*
Mahieu, Claude; Semeria, Didier; Cauwet, Danièle; and Vanlerberghe, Guy, 5,616,746, Cl. 554-66.000.

Semiconductor Energy Laboratory Co., Ltd.: *See—*
Koyama, Jun; and Takemura, Yasuhiko, 5,616,935, Cl. 257-69.000.
Takemura, Yasuhiko, 5,616,506, Cl. 438-150.000.
Yamazaki, Shunpei; and Takemura, Yasuhiko, 5,617,243, Cl. 359-309.000.

Sen, Sanghamitra: *See—*
Rhiger, David R.; Sen, Sanghamitra; and Hamilton, William J., Jr., 5,616,925, Cl. 250-370.130.

Senco Products, Inc.: *See—*
Rose, Barbara A.; Fite, Ronald B.; and Ray, Alan W., 5,615,985, Cl. 411-442.000.

Seni, Hirofumi: *See—*
Nakao, Norihiko; Tukahara, Yutaka; Ikeda, Naoki; Takehara, Shin; Seni, Hirofumi; Harada, Shingo; and Santo, Chiaki, 5,617,315, Cl. 364-424.045.

Senoo, Akihiro: *See—*
Kanemaru, Tetsuro; Kikuchi, Toshihiro; Senoo, Akihiro; and Nakata, Kouichi, 5,616,442, Cl. 430-83.000.

Sens, Rüdiger; Schefczik, Ernst; Reichelt, Helmut; and Etzbach, Karl-Heinz, to BASF Aktiengesellschaft. Triazolopyridine dyes. 5,616,710, Cl. 546-119.000.

Sens, Rüdiger: *See—*
Beckmann, Stefan; Etzbach, Karl-Heinz; Sens, Rüdiger; and Häberle, Karl, 5,616,678, Cl. 528-73.000.

Sensym, Incorporated: *See—*
Cook, James T., Sr.; Arnold, David D.; and Cartsonas, Christos, 5,616,521, Cl. 438-51.000.

Sepehri, Nariman; Corbet, Todd A.; and Lawrence, Peter D., to University of British Columbia, The; and University of Manitoba, The. Proportional derivitive control system with low speed offset compensation. 5,616,998, Cl. 318-568.220.

Sepke, Arnold L., to White Consolidated Industries, Inc. Glass cleaning device. 5,615,449, Cl. 15-322.000.

Sepracor, Inc.: *See—*
Gao, Yun; Hong, Yaping; Nie, Xiaoyi; Bakale, Roger P.; Feinberg, Richard R.; and Zepp, Charles M., 5,616,808, Cl. 564-428.000.

Serafin, Daniel L.: *See—*
Askin, Albert L.; Schultz, Paul B.; and Serafin, Daniel L., 5,616,231, Cl. 205-153.000.

Serenius, Eric J.: *See—*
Brewer, Matthew C.; Serenius, Eric J.; and Reese, David M., 5,617,217, Cl. 358-299.000.

Serikawa, Mitsuhiko: *See—*
Tagami, Ryou; Norimatsu, Takeshi; Matsumoto, Masaharu; Oda, Mikio; Serikawa, Mitsuhiko; Kawamura, Akihisa; and Numazu, Hiroko, 5,617,478, Cl. 381-56.000.

Serita, Yasuaki; Tsuji, Kenji; and Okada, Hiroyuki, to Minolta Co., Ltd. Camera provided with a magnetic recording device. 5,617,161, Cl. 396-319.000.

Serrador, Teresa A.: *See—*
Oran, Daniel P.; Serrador, Teresa A.; Belfiore, Joseph D.; and Pitt, George H., III, 5,617,526, Cl. 395-326.000.

Serrano, Louis J.: *See—*
Freitas, David A.; Serrano, Louis J.; and Yu, Mantle Man-Hon, 5,617,536, Cl. 395-185.010.

Service Chemicals plc.: *See—*
Bowey, Kenneth G.; and Baldwin, Neil A., 5,616,535, Cl. 504-206.000.

Seto, Yoshiharu; and Hirose, Shunzo, to Amada Mfg America Inc. Turret punch press with die exchanging. 5,616,112, Cl. 483-29.000.

Setogawa, Toshiaki: *See—*
Miyamori, Shinji; Ueno, Masatoshi; Kubo, Matayasu; Takanashi, Kenji; Setogawa, Toshiaki; Kohut, Michael J.; and Taylor, Jeffrey E., 5,617,158, Cl. 352-37.000.

Seureau, Jacques; and Hoyack, Mark, to Elf Aquitaine Production. Cyclone separator having an incorporated coalescer. 5,616,244, Cl. 210-295.000.

Sezi, Recai; Borndoerfer, Horst; Ahne, Hellmut; Birkle, Siegfried; Kuehn, Eberhard; Leuschner, Rainer; Rissel, Eva; and Sebald, Michael, to Siemens Aktiengesellschaft. Copolymers. 5,616,667, Cl. 526-271.000.

Sferruzza, Gerald A., Jr. Holder for shaver. 5,615,858, Cl. 248-682.000.

SGS Microelectronics, S.r.l.: *See—*
Borghi, Maria R.; and Sandri, Paolo, 5,617,016, Cl. 323-284.000.

SGS-Thomson Microelectronics, Inc.: *See—*
Danstrom, Eric J., 5,617,014, Cl. 323-267.000.
Lu, Li-Hsin D.; and Schlager, Karl M., 5,616,993, Cl. 318-254.000.

SGS-Thomson Microelectronics S.A.: *See—*
Bildgen, Marco, 5,616,992, Cl. 315-209.00T.
SGS-Thomson Microelectronics S.r.l.: *See—*
Confalonieri, Pierangelo; and Nicollini, Germano, 5,617,055, Cl. 327-404.000.
Golla, Carla; Padoan, Silvia; and Olivo, Marco, 5,617,356, Cl. 365-185.250.
Palara, Sergio; and Sueri, Stefano, 5,617,046, Cl. 327-110.000.
Poinelli, Renato; Mazzola, Mauro; and Casati, Paolo, 5,617,295, Cl. 361-723.000.
Shalon, Tadmor; Pund, Marvin L.; Bragg, Susan L.; Houseman, James D.; and Free, Steven W., to Metaphase Ophthalmic Corp. Computer controlled subjective refractor. 5,617,157, Cl. 351-222.000.
Sham, Hing L.: *See—*
Kempf, Dale J.; Norbeck, Daniel W.; Codacovi, Lynn M.; Sham, Hing L.; and Wittenberger, Steven J., 5,616,714, Cl. 546-269.700.
Kempf, Dale J.; Norbeck, Daniel W.; Sham, Hing L.; Zhao, Chen; and Reno, Daniel S., 5,616,720, Cl. 548-204.000.
Shambo, George; Hodson, Robert B.; and Blackburn, Robert C., to Florida Power & Light Co. Luminaire shield. 5,615,947, Cl. 362-376.000.
Shannon, Connie H.: *See—*
Molezzi, Michael J.; Crumbacher, Harry W.; McConville, Bernard; and Shannon, Connie H., 5,615,831, Cl. 239-8.000.
Sharp Corporation: *See—*
Shou, Guoliang; Takatori, Sunao; and Yamamoto, Makoto, 5,617,053, Cl. 327-361.000.
Sharp Kabushiki Kaisha: *See—*
Fuji, Hiroshi, 5,617,400, Cl. 369-116.000.
Kitagawa, Masahiko; and Tomomura, Yoshitaka, 5,616,937, Cl. 257-94.000.
Okada, Tomohiko; Shiozaki, Fumio; Takehara, Toshio; Kizu, Seiichi; and Ashiya, Kazuhiko, 5,616,386, Cl. 428-40 100.
Robinson, Michael G.; Tombling, Craig; May, Paul; Ezra, David; and Woodgate, Graham J., 5,616,912, Cl. 250-201.100.
Yamamoto, Yoshitaka; Tagawa, Akira; Ishii, Yutaka; Koden, Mitsuhiro; and Shinomiya, Tokihiko, 5,617,229, Cl. 349-42.000.
Sharpstein, Sid. Flat thong. 5,615,496, Cl. 36-11.500.
Sharyou, Masaki: *See—*
Heldt-Hansen, Hans P.; Fujita, Yuko; Awaji, Haruo; Shimoto, Hidesato; and Sharyou, Masaki, 5,616,215, Cl. 162-72.000.
Shaw, Mark D.; Heyman, J. Tad; Bierce, Laurence M.; and Ehredt, Jesse. Reinforced containment pallet. 5,615,608, Cl. 108-55.300.
Shecter, Jules. Illuminated dual lollipop holder and storage device. 5,615,941, Cl. 362-109.000.
Sheehy, James B.; Gish, Kenneth W.; Sprenger, John J.; and Finkbeiner, William H., Jr., to United States of America, Navy. Variable focus adapter. 5,617,257, Cl. 359-818.000.
Shekter, Lee: *See—*
Kamboj, Rajender; Nutt, Stephen L.; Shekter, Lee; and Wosnick, Michael A., 5,616,481, Cl. 435-172.300.
Sheldahl, Inc.: *See—*
Sweitzer, Brent N., 5,615,477, Cl. 29-840.000.
Sheldon, Donald A.: *See—*
Finch, Valerie V.; Glaug, Frank S.; Olson, Christopher P.; Ratliff, Kathleen I.; and Sheldon, Donald A., 5,616,201, Cl. 156-73.100.
Shell Oil Company: *See—*
Sutherland, Robert J., 5,616,542, Cl. 508-207.000.
Shell Research Limited: *See—*
Pfrengle, Waldemar F. A., 5,616,708, Cl. 544-332.000.
Shemenski, Robert M.: *See—*
Helfer, Farrel B.; Kim, Dong K.; Morgan, John G.; Shemenski, Robert M.; Sinopoli, Italo M.; Jeanpierre, Guy; and Nguyen, Gia V., 5,616,197, Cl. 152-527.000.
Shen, Yousheng; Joshi, Ashok V.; Krist, Kevin; Liu, Meilin; and Virkar, Anil V., to Gas Research Institute. Mixed ionic-electronic conducting composites for oxygen separation and electrocatalysis. 5,616,223, Cl. 204-295.000.
Shenoy, Vivek N.; Revak, Timothy T.; Chu, George H.; McMullin, Hugh R.; Rosenblatt, Joel S.; and Martin, George R., to Collagen Corporation. Method of controlling structure stability of collagen fibers produced form solutions or dispersions treated with sodium hydroxide for infectious agent deactivation. 5,616,689, Cl. 530-356.000.
Shepard, Clark G.: *See—*
Crouch, Alfred L.; Pressly, Matthew D.; Gay, James G.; Shepard, Clark G.; and Laakso, Pamela S., 5,617,531, Cl. 395-183.060.
Shepard, Joseph F., to International Business Machines Corporation. Shallow trench isolation with self aligned PSG layer. 5,616,513, Cl. 438-402.000.
Sherwood, David E., Jr.; Dai, Pei-Shing E.; and Campbell, Charles N., II, to Texaco Inc. Hydroconversion process employing catalyst with specified pore size distribution. 5,616,530, Cl. 502-210.000.
Shevers, Harold, Jr., to Sportsman's Market, Inc. Kneeboard with support ear. 5,615,817, Cl. 224-267.000.
Shibasaki, Koji: *See—*
Takubo, Chiaki; Tazawa, Hiroshi; Hosomi, Eiichi; and Shibasaki, Koji, 5,615,822, Cl. 228-102.000.
Shibasaki, Masakatsu: *See—*
Mitsuda, Masaru; Hayashi, Shigeo; Hasegawa, Junzo; Ueyama, Noboru; Ohashi, Takehisa; and Shibasaki, Masakatsu, 5,616,726, Cl. 548-475.000.
Shibata, Eiji: *See—*
Yamada, Takahiro; Ogawa, Masao; and Shibata, Eiji, 5,615,629, Cl. 112-225.000.
Shibata, Haruo: *See—*
Kawagoe, Seiji; Iwase, Kazuhiko; and Shibata, Haruo, 5,617,267, Cl. 360-77.020.
Shibata, Jun: *See—*
Nomoto, Takashi; Hayashi, Masahiro; Shibata, Jun; Iwasawa, Yoshikazu; Mitsuya, Morihiro; Iida, Yoshiaki; Nonoshita, Katsumasa; and Nagata, Yasufumi, 5,616,803, Cl. 564-337.000.
Shibata, Kazuo: *See—*
Iizuka, Hirokazu; Ohmura, Masashi; Kondo, Masataka; Kobayashi, Hideki; Mizuno, Hiroyuki; Yamazaki, Takaya; and Shibata, Kazuo, 5,616,017, Cl. 418-63.000.
Shibata, Koichi: *See—*
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Shibazaki, Ken: *See—*
Mizuta, Ken; Kawata, Toshihiko; Shibazaki, Ken; and Miura, Yukio, 5,617,000, Cl. 318-663.000.
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Shiflett, Mark B.: *See—*
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Shigeta, Atsushi: *See—*
Okumura, Katsuya; Aoki, Riichirou; Yajima, Hiromi; Kodera, Masako; Mishima, Shirou; Shigeta, Atsushi; Hirose, Masayoshi; Kimura, Norio; and Ishikawa, Seiji, 5,616,063, Cl. 451-1.000.
Shih, Kuo-Piao; Liao, Wen-Lu; and Chung, Yann-Lang, to Acer Incorporated. Data bus architecture compatible with 32-bit and 64-bit processors. 5,617,546, Cl. 395-307.000.
Shih, Ren-Jai: *See—*
Cheng, Soofin; and Shih, Ren-Jai, 5,616,749, Cl. 556-13.000.
Shih, Sun-Fu. Spot microdensitometer for spectral density analysis of film. 5,617,213, Cl. 356-443.000.
Shilliday, Franklin B.: *See—*
Argoudelis, Alexander D., deceased; Shilliday, Franklin B.; Laborde, Alice L.; Truesdell, Scott E.; and Sebek, Oldrich K., 5,616,320, Cl. 424-71.300.
Shillington, Richard A.; McCord, Kenneth R.; and Sanders, Gary H., to Med-Safe Systems, Inc. Quick release needle removal apparatus. 5,616,136, Cl. 604-240.000.
Shim, Jae-seong, to Samsung Electronics Co., Ltd. Method and apparatus for controlling rotation of an optical disk. 5,617,392, Cl. 369-50.000.
Shimada, Tohru: *See—*
Mitsubayashi, Masahiko; Ohnishi, Masazumi; Miyamoto, Noritaka; Kadota, Keisuke; Shimada, Tohru; and Bando, Katsuji, 5,615,570, Cl. 72-298.000.
Shimada, Tomoyuki; Sasaki, Masaomi; Hashimoto, Mitsuru; and Aruga, Tamotsu, to Ricoh Company, Ltd. Charge transporting materials and electrophotographic photoconductors using the same. 5,616,801, Cl. 564-307.000.
Shimada, Tomoyuki: *See—*
Tanaka, Chiaki; Sasaki, Masaomi; Aruga, Tamotsu; Shimada, Tomoyuki; and Adachi, Hiroshi, 5,616,805, Cl. 564-405.000.
Shimadzu Corporation: *See—*
Kohno, Satoru, 5,615,676, Cl. 128-653.200.
Shimasaki, Yuichi; Komatsuda, Takashi; and Kato, Hiroaki, to Honda Giken Kogyo Kabushiki Kaisha. Secondary air pump control system for internal combustion engines. 5,615,552, Cl. 60-277.000.
Shimatsu, Katsuya: *See—*
Tonomoto, Yoshihiro; Fuke, Kenji; Sugimoto, Katsumi; Suzuki, Eiji; Tonai, Keiko; Tonai, Shozo; Yoshii, Hitoshi; Kawai, Tsutomu; Sato, Kunihiko; and Shimatsu, Katsuya, 5,617,192, Cl. 399-263.000.
Shimizu, Masao: *See—*
Herrmann, Wolfgang A.; Correia, Joao D. G.; Fischer, Richard; Adam, Waldemar; Lin, Jianhua; Saha-Möller, Chantu R.; and Shimizu, Masao, 5,616,734, Cl. 549-406.000.
Shimizu, Motohiro, to Honda Giken Kogyo K.K. Control system for internal combustion engines. 5,615,655, Cl. 123-419.000.
Shimizu, Nobuaki: *See—*
Egawa, Tatsuya; Kawaguchi, Yasuhiro; Mogami, Kenji; and Shimizu, Nobuaki, 5,616,812, Cl. 568-598.000.
Shimizu, Toshihide; Watanabe, Mikio; and Nakano, Toshihiko, to Shin-Etsu Chemical Co., Ltd. Polymerization of ethylenic monomer with scale preventive agent. 5,616,660, Cl. 526-62.000.
Shimo, Shinjiro: *See—*
Toda, Hirofumi; Shimo, Shinjiro; Fujikawa, Nobuyoshi; Isoyama, Shinji; and Maruta, Kouichi, 5,616,528, Cl. 501-136.000.
Shimoji, Yasuo: *See—*
Yanagisawa, Hiroaki; Fujimoto, Koichi; Amemiya, Yoshiya; Shimoji, Yasuo; Kanazaki, Takuro; Koike, Hiroyuki; and Sada, Toshio, 5,616,599, Cl. 514-381.000.
Shimokoriyama, Makoto; Matsui, Izumi; Hamanaka, Akiyoshi; and Yamamoto, Yukinori, to Canon Kabushiki Kaisha. Movement detection device and encoding apparatus using the same. 5,617,143, Cl. 348-407.000.
Shimoto, Hidesato: *See—*
Heldt-Hansen, Hans P.; Fujita, Yuko; Awaji, Haruo; Shimoto, Hidesato; and Sharyou, Masaki, 5,616,215, Cl. 162-72.000.
Shimura, Takashi: *See—*
Nagano, Koichi; Uno, Atsushi; Baba, Toshiyuki; Shimura, Takashi; and Oyama, Yuusei, 5,616,981, Cl. 310-326.000.
Shin-Etsu Chemical Co., Ltd.: *See—*

Fujiki, Hironao; Sbudo, Shigeki; and Kondou, Takashi, 5,616,632, Cl. 523-211.000.
Fukuda, Satoru; Tanno, Masayuki; and Ryuo, Toshihiko, 5,616,176, Cl. 117-54.000.
Kato, Hideto, 5,616,448, Cl. 430-283.100.
Kubota, Yoshihiro; Kawakami, Satoshi; Hamada, Yuichi; Shirasaki, Toru; Nagata, Yoshihiko; and Kashida, Meguru, 5,616,927, Cl. 250-492.200.
Shimizu, Toshihide; Watanabe, Mikio; and Nakano, Toshihiko, 5,616,660, Cl. 526-62.000.
Shin-Etsu Quartz Co., Ltd.: *See—*
Ise, Yoshiaki; Miyazawa, Hiroyuki; Kimura, Hiroyuki; Okoshi, Shinichi; Nakamura, Tatsumasa; and Kato, Toshiyuki, 5,617,262, Cl. 359-846.000.
Shin-Kobe Electric Machinery Co., Ltd.: *See—*
Ushida, Masayuki; Noda, Masayuki; and Ogata, Masaru, 5,616,363, Cl. 427-372.200.
Shin, Yuaki: *See—*
Arai, Yuji; Matumoto, Takanobu; Shin, Yuaki; and Ishiguro, Takashi, 5,616,450, Cl. 430-321.000.
Shinada, Hiroyuki; Kimura, Shingo; Kuroda, Katsuhiro; Fukuhara, Satoru; and Ohshima, Takashi, to Hitachi, Ltd. Schottky emission cathode and a method of stabilizing the same. 5,616,926, Cl. 250-423.00F.
Shinohara, Eiji: *See—*
Takeuchi, Shinji; Shinohara, Eiji; and Kawashiro, Masayuki, 5,615,843, Cl. 242-319.000.
Shinoki, Toshio: *See—*
Kusunoki, Akira; Otsuki, Jitsuji; Kikuoka, Yasuhira; Okada, Tatsunori; Matsumura, Mitsuie; Shinoki, Toshio; Mukai, Masahiro; and Yagi, Tetsuya, 5,616,431, Cl. 429-36.000.
Shinomiya, Tokihiko: *See—*
Yamamoto, Yoshitaka; Tagawa, Akira; Ishii, Yutaka; Koden, Mitsuhiro; and Shinomiya, Tokihiko, 5,617,229, Cl. 349-42.000.
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Shinozaki, Shimpei; Takishima, Suguru; and Yamamoto, Hiroshi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Magneto-optical disk apparatus utilizing a leakage magnetic field from a magnetic driving mechanism. 5,617,379, Cl. 369-13.000.
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Shiow-Miin, Perng. Gear structure for reduction gears. 5,615,579, Cl. 74-462.000.
Shiozaki, Fumio: *See—*
Okada, Tomohiko; Shiozaki, Fumio; Takehara, Toshio; Kizu, Seiichi; and Ashiya, Kazuhiko, 5,616,386, Cl. 428-40.100.
Shipton, Mark R.: *See—*
Borrett, Gary T.; Kitteringham, John; Porter, Roderick A.; Shipton, Mark R.; Vimal, Mythily; and Young, Rodney C., 5,616,603, Cl. 514-411.000.
Shirafuji, Hideo: *See—*
Wakimasu, Mitsuhiro; Kikuchi, Takashi; Kawada, Akira; and Shirafuji, Hideo, 5,616,684, Cl. 530-317.000.
Shiraga, Kazuhiro: *See—*
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Shirahata, Mamoru: *See—*
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Shirai, Jun-ichi: *See—*
Uchiyama, Yasufumi; Kawarazaki, Masaru; and Shirai, Jun-ichi, 5,617,130, Cl. 347-131.000.
Shiraishi, Shigeyuki: *See—*
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Shirani, Ramin; and Edem, Brian C., to National Semiconductor Corporation. Network link detection and generation. 5,617,418, Cl. 370-465.000.
Shirao, Kazuhiko: *See—*
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Shirasaki, Toru: *See—*
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Shirk, James A.: *See—*
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Shiroshima, Masahiro: *See—*
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Shmoldas, John D.; Hutchings, Michael B.; and Barlow, Christopher W., to GEC Marconi Dynamics Inc. Extendable wing for guided missles and munitions. 5,615,846, Cl. 244-3.280.
Shnek, Deborah: *See—*
Arnold, Frances H.; Sasaki, Darryl Y.; Shnek, Deborah; and Pack, Daniel, 5,616,790, Cl. 562-444.000.
Sho, Kentaro, to Zexel Corporation. Method for deposition of amorphous hard carbon films. 5,616,374, Cl. 427-577.000.
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Shoemaker, Patrick A., to United States of America, Navy. Non-volatile, bidirectional, electrically programmable integrated memory element implemented using double polysilicon. 5,617,352, Cl. 365-185.080.
Shou, Guoliang; Takatori, Sunao; and Yamamoto, Makoto, to Yozan, Inc.; and Sharp Corporation. Computational circuit. 5,617,053, Cl. 327-361.000.
Shu, Shinzui, to Berg Technology, Inc. Electrical connector. 5,616,035, Cl. 439-79.000.
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Shuey, John R.: *See—*
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Sico Incorporated: *See—*
Peterson, Virgil D.; Andert, Gary W.; and Botts, Rollin D., 5,615,451, Cl. 16-34.000.
Sieck, Peter A.; Newcomb, Richard; Trumbly, Terry A.; and Schulz, Stephen C., to BOC Group, Inc., The. Use of multiple anodes in a magnetron for improving the uniformity of its plasma. 5,616,225, Cl. 204-298.140.
Siegfried, David G.; Rimko, Robert W.; and Corso, Anthony J., to General Motors Corporation. Automotive dome light arrangement. 5,615,944, Cl. 362-226.000.
Siekierski, Roger A.; and Greene, Charles W., to Eastman Kodak Company. Camera using interference between exposure actuator and metering linkage to control motor. 5,617,164, Cl. 396-401.000.
Siemens Aktiengesellschaft: *See—*
Abert, Michael; Block, Siegfried; Bozenhardt, Johannes; Leigsnering, Franz; Pfatteicher, Werner; and Schewe, Franz-Clemens, 5,617,309, Cl. 364-133.000.
Angermeier, Anton; and Wier, Manfred, 5,616,858, Cl. 73-117.300.
Bacher, Thomas; Heineck, Frank; and Klug, Karl, 5,617,467, Cl. 379-58.000.
Beierlein, Rainer, 5,617,463, Cl. 378-98.300.
Decke, Guenther, 5,617,027, Cl. 324-318.000.
Dittmann, Michael; Stadler, Heinz; and Mitschik, Herbert, 5,617,066, Cl. 335-78.000.
Fischer, Armin; Haimerl, Stefan; and Glehr, Manfred, 5,616,966, Cl. 307-10.500.
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Mika, Norbert; and Bittorf, Hannjoerg, 5,617,464, Cl. 378-137.000.
Plies, Erich, 5,616,920, Cl. 250-296.000.
Ren, Mingmin; and Stabel-Weinheimer, Jürgen, 5,617,457, Cl. 376-352.000.
Schifferl, Ludwig; and Wildgen, Andreas, 5,616,843, Cl. 73-204.150.
Schreiner, Horst, 5,617,461, Cl. 378-98.500.
Schulze, Gerhard; Spanke, Reinhold; and Sommer, Karl-Heinz, 5,617,293, Cl. 361-715.000.
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Siemens Automotive Corporation: *See—*
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Siemens Elema AB: *See—*
Olsson, Sven-Gunnar; Rydgren, Goeran; Larsson, Anders; Brauer, Stefan; and Linge, Anders, 5,615,669, Cl. 128-203.120.
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Siemens Energy & Automation, Inc.: *See—*
Jenkins, Jeffrey A., 5,617,286, Cl. 361-93.000.
Siemens Nixdorf Informationssysteme Aktiengesellschaft: *See—*
Knoop, Franz-Josef; and Gockel, Ludger, 5,617,299, Cl. 361-788.000.
Sierra Wireless, Inc.: *See—*
Tahmassebpur, Mohammed, 5,617,106, Cl. 343-702.000.
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Kontturi, Risto; and Siikonen, Marja-Liisa, 5,616,896, Cl. 187-384.000.
Sikorsky Aircraft Corporation: *See—*
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Siliconix Incorporated: *See—*
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Silinsky, Robert E.; Boldissar, Frank, Jr.; Campbell, Gary S.; and Tahim, Raghbir S., to Hughes Electronics. Simplified tracking antenna. 5,617,108, Cl. 343-786.000.
Sillekens, Peter T. G.: *See—*

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Ozveren, Cuneyt M.; Murray, Hallam G., Jr.; Waters, Gregory M.; and Simcoe, Robert J., 5,617,409, Cl. 370-235.000.
Simerka, Richard A. Tent flooring system. 5,615,521, Cl. 52-2.220.
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Moses, Charles J.; and Simic, Rajko M., 5,615,977, Cl. 405-195.100.
Simington, George H. Book holding device and method. 5,615,856, Cl. 248-452.000.
Simmermon, John C.; Dell, Curtis G.; Peterson, Douglas; Blakemore, Colin B.; Remaley, John B.; Golod, Anatoly; and Bear, Robert S., Jr., to Ametek, Inc. Flow manifold for high purity analyzers. 5,616,827, Cl. 73-29.010.
Simmons, Danny R.; and Johnson, W. Larry, to Simmons, Danny R. Corner desk or like unit. 5,615,936, Cl. 312-238.000.
Simmons, Mark J.; and Parsons, Steven G., to Thomson Saginaw Ball Screw, Inc. Broaching device and method. 5,615,467, Cl. 29-27.00C.
Simonds, Gary L., to Bear Archery, Inc. Archery bow with improved adjustable grip. 5,615,663, Cl. 124-88.000.
Simonson, Roy, to Cybex International, Inc. Method and apparatus for leg press exercise with counterbalance. 5,616,107, Cl. 482-97.000.
Simpkins, Joseph A.; and Hudis, Scott, to Mars Incorporated. Optical sensor for monitoring the status of a bill magazine in a bill validator. 5,616,915, Cl. 250-221.000.
Simpson, John W.; Clendenin, C. Gerald; Fulton, James P.; Wincheski, Russell A.; Todhunter, Ronald G.; Namkung, Min; and Nath, Shridhar C., to United States of America, National Aeronautics and Space Administration. Flux focusing eddy current probe. 5,617,024, Cl. 324-209.000.
Sindlinger, Fred S.: *See—*
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Singer, Murray: *See—*
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Heidlas, Jürgen; Cully, Jan; and Vollbrecht, Heinz-Rüdiger, 5,616,359, Cl. 426-614.000.
Heidlas, Jürgen; Vollbrecht, Heinz-Rüdiger; and Cully, Jan, 5,616,352, Cl. 426-312.000.
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SMC Kabushiki Kaisha: *See—*
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Smith, Frank M.: *See—*
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Smith, Kevin. Expandable liquid infusion device. 5,616,127, Cl. 604-118.000.
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SmithKline Beecham Corporation: *See—*
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Snow, Richard J. Scaffold system used with wood panels. 5,615,751, Cl. 182-82.000.
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Soc Corporation: *See—*
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Societe D'Applications Generales D'Electricite et de Mecanique Sagem: *See—*
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Societe Francaise Hoechst: *See—*
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Beutin, Bruno A.; Creti, Joël; Donnadieu, Jean-Pierre; Garnier, Francis G. A.; Hugues, Michel G.; Lecordix, Jean-Loic H.; Maignan, Claude P. H.; Massot, Gilles C. G.; Pincemin, Jean-Marie N.; Thorel, Christophe J. F.; Touron, Carole C.; and Vennin, Gérard M. R. M., 5,615,547, Cl. 60-39.080.
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Societe Nationale D'Exploitation Industrielle des Tabacs et Allumettes: *See—*
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Solari, Edward L.; Heckenberg, Thomas A.; and Vanka, Subbarao, to Intel Corporation. Method of slowing down code execution in a microprocessor including an internal cache memory. 5,617,576, Cl. 395-800.000.
Solberg, Mark A.; and Hartwell, James A., to Thiokol Corporation. Propellant gas-generation system for canister ejection. 5,616,884, Cl. 102-351.000.
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Solov, Andrew: *See—*
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Sommer, Karl-Heinz: *See—*
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Jones, David E.; Lyon, Michael R.; Leavitt, Richard F.; Nicklos, Carl F.; Sonderegger, Ralph L.; Thayne, Mark S.; and Ma, Yiping, 5,617,397, Cl. 369-772.000.
Song, Bok N., to Hyundai Electronics Industries Co., Ltd. Flash EEPROM cell and manufacturing methods thereof. 5,616,942, Cl. 257-316.000.
Sonnenrein, Uwe. Device for sewage clarification. 5,616,240, Cl. 210-104.000.
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Alex, Michael, 5,616,218, Cl. 204-192.150.
Ezaki, Tadashi, 5,617,147, Cl. 348-461.000.
Iizuka, Genichi, 5,617,403, Cl. 369-244.000.
Inoue, Tatsuo, 5,617,259, Cl. 359-820.000.
Ishibashi, Akira; Nakayama, Norikazu; and Kijima, Satoru, 5,617,446, Cl. 372-96.000.
Ishioka, Hideaki; Onuki, Yoshikazu; and Takeda, Toru, 5,617,388, Cl. 369-44.280.
Kobunaya, Hideki; Ishikawa, Yutaka; Yamasaki, Yoshimori; and Chiba, Takayoshi, 5,617,382, Cl. 369-32.000.
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Numata, Masato, 5,617,305, Cl. 363-16.000.
Oikawa, Yoshiaki, 5,617,219, Cl. 386-111.000.
Taguchi, Keiichi; Maeda, Hideho; and Yanaga, Masaharu, 5,617,264, Cl. 360-54.000.
Takada, Akio; and Asada, Kazutoshi, 5,617,276, Cl. 360-113.000.
Tanaka, Shigeo, 5,617,571, Cl. 395-750.000.
Toda, Atsushi; and Imanishi, Daisuke, 5,616,178, Cl. 117-104.000.
Watanabe, Tetsu; and Aoki, Yoshio, 5,617,378, Cl. 369-13.000.
Yasuda, Nobuyuki, 5,617,088, Cl. 341-61.000.
Yonemitsu, Jun; Iwamura, Ryuichi; Yoshimura, Shunji; and Kawamura, Makoto, 5,617,384, Cl. 369-32.000.
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Banerjee, Pradip; Chuang, Patrick; and Ghia, Atul V., 5,617,563, Cl. 395-556.000.
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Hadary, Dany; Bartfeld, Daniel; Butler, Michael J.; Jenish, David; Krieger, Timothy; Malek, Lawrence T.; Soostmeyer, Gisela; and Walcyzk, Eva, 5,616,485, Cl. 435-220.000.
Sora, Gianluigi: *See—*
Bortoli, Giulio; Corain, Luciano; and Sora, Gianluigi, 5,615,714, Cl. 139-449.000.
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Sorensen, Soren C.; and Sorensen, Jens O., 5,615,455, Cl. 24-16.0PB.
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Kato, Yoshiei; Nabeshima, Seiji; Ito, Yoichi; and Sorimachi, Kenichi, 5,616,188, Cl. 148-508.000.
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Souter, George: *See—*
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South, Michael S.; and Jakuboski, Terri L., to Monsanto Company. Hydrazinecarboxylic acids. 5,616,789, Cl. 562-439.000.
Southpac Trust International, Inc.: *See—*
Weder, Donald E.; and Straeter, William F., 5,615,532, Cl. 53-399.000.
Weder, Donald E., 5,615,534, Cl. 53-410.000.
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Weder, Donald E.; Weder, Erin H.; Dunn, R. E. Jack; and Craig, Franklin J., 5,616,377, Cl. 428-35.700.
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Space Systems/Loral, Inc.: *See—*
Lenhart, Stephen J.; Hall, John C.; and Applewhite, Anthony Z., 5,617,006, Cl. 320-21.000.
Spalik, James: *See—*
Arldt, Roy L.; Downey, Susan H.; Golden, Harry J.; Mahmoud, Issa S.; Okoro, Clement A.; and Spalik, James, 5,615,827, Cl. 228-223.000.
Spanke, Reinhold: *See—*
Schulze, Gerhard; Spanke, Reinhold; and Sommer, Karl-Heinz, 5,617,293, Cl. 361-715.000.
Spater, Stuart S.: *See—*
Kolton, Chester; and Spater, Stuart S., 5,615,810, Cl. 223-85.000.
Spatola, Arno F.: *See—*
Gray, Robert D.; Spatola, Arno F.; and Darlak, Krzysztof, 5,616,605, Cl. 514-415.000.
Spear, Kenneth J.; Czerwinski, Frank G.; and Ritchie, Bryan S., to O. Ames Co. Utility cart having tool handle holding device. 5,615,903, Cl. 280-47.190.
Spearin, Elliott Y.; and Carney, James C., to Inland Steel Company. In-line application of solid lubricant to steel strip. 5,616,367, Cl. 427-532.000.
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Thorne, Gale H.; Thorne, David L.; and Owen, Charles V., 5,616,135, Cl. 604-192.000.
Speckhahn, Henry D. Guide collet adaptor for radial jaw chuck lathes. 5,615,590, Cl. 82-162.000.
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Masterman, Thomas C.; and Spencer, Jean L., 5,616,315, Cl. 424-54.000.
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Kalota, Dennis J.; Ramsey, Skippy H.; and Spickard, Larry A., 5,616,544, Cl. 508-508.000.

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Adrian, Andrew A.; Danielson, Michael S.; Meyers, David B.; and Spiegel, Leo, 5,617,058, Cl. 330-10.000.

Spiess, Peter, to Inventio AG. Door safety circuit for monitoring of story doors in lift installations. 5,616,895, Cl. 187-280.000.

Spilburg, Curtis A.: *See—*

Lange, Louis G., III; and Spilburg, Curtis A., 5,616,570, Cl. 514-54.000.

Spinelli, Silvano; and DiDomenico, Roberto, to Boehringer Mannheim GmbH. Method of synthesis for 6,9-bis[(2-aminoethyl)amino]benzo[g]isoquinoline-5,10-dione and its dimaleate salt. 5,616,709, Cl. 546-101.000.

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Binneberg, Armin; Neubert, Johannes; Spoerl, Gabriele; and Wolf, Walter, 5,615,557, Cl. 62-51.100.

Sportsman's Market, Inc.: *See—*

Shevers, Harold, Jr., 5,615,817, Cl. 224-267.000.

Spratt, R. Bruce, to OEC Medical Systems, Inc. Automatic X-ray exposure control system and method of use. 5,617,462, Cl. 378-98.700.

Sprenger, John J.: *See—*

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Springer, Jon W., to Brunton Company, The. Electronic rangefinder apparatus. 5,616,903, Cl. 235-414.000.

Springer, Wolfgang: *See—*

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Spruit, Johannes H. M.; and Bakx, Johannus L., to U.S. Philips Corporation. Write intensity calibration of a recording beam by reading a test pattern written on a buffer sector of a record carrier. 5,617,399, Cl. 369-116.000.

SPSS Corp.: *See—*

Kroll, Yury; Yasinovsky, Vadim M.; and Green, Adam B., 5,617,578, Cl. 395-800.000.

Spyderco, Inc.: *See—*

Pittman, Leon, 5,615,484, Cl. 30-161.000.

Square D Company: *See—*

Edwards, Stanley H., Jr.; and Marshall, Richard, 5,615,792, Cl. 220-3.800.

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Kropfgans, Frank; Frings, Albert; Horn, Michael; Koetzsch, Hans-Joachim; Monkiewicz, Jaroslaw; Seiler, Claus-Dietrich; Srebny, Hans-Guenther; and Standke, Burkhard, 5,616,762, Cl. 556-479.000.

Seiler, Claus-Dietrich; Rauleder, Hartwig; Koetzsch, Hans-Joachim; and Srebny, Hans-Guenther, 5,616,755, Cl. 556-413.000.

Srenger, Edward: *See—*

Kushner, William M.; Srenger, Edward; and Hartman, Matthew A., 5,617,509, Cl. 395-2.650.

SRI International: *See—*

Judd, Amrit K.; and Bucher, Doris J., 5,616,327, Cl. 424-206.100.

Lee, William W.; Brown, J. Martin; Grange, Edward W.; and Martinez, Abelardo P., 5,616,584, Cl. 514-243.000.

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Fritzberg, Alan R.; Kasina, Sudhakar; Rao, Tripuraneni N.; VanderHeyden, Jean-Luc; and Srinivasan, Ananthachari, 5,616,692, Cl. 530-391.500.

SSB Technologies, Inc.: *See—*

Eggleston, Brian E., 5,617,059, Cl. 330-66.000.

St. Luke's-Roosevelt Hospital: *See—*

Kotler, Donald P., 5,615,689, Cl. 128-734.000.

Staar Surgical Company, Inc.: *See—*

Eagles, Daniel C.; Feingold, Vladimir; and Chamber, Thomas J., 5,616,148, Cl. 606-107.000.

Stabel-Weinheimer, Jürgen: *See—*

Ren, Mingmin; and Stabel-Weinheimer, Jürgen, 5,617,457, Cl. 376-352.000.

Stadler, Heinz: *See—*

Dittmann, Michael; Stadler, Heinz; and Mitschik, Herbert, 5,617,066, Cl. 335-78.000.

Stahl, Stefan; Harder, Wolfgang; and Hoehn, Arthur, to BASF Aktiengesellschaft. Preparation of 5-cyanovalerates. 5,616,773, Cl. 558-353.000.

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Burns, Carmen D., 5,615,475, Cl. 29-827.000.

Stallmo, David C.; and Brant, William A., to EMC Corporation. Storage device array architecture with copyback cache. 5,617,530, Cl. 395-182.040.

Standke, Burkhard: *See—*

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Stanger, Randy M., to Morton International, Inc. Airbag inflator retention tabs. 5,615,907, Cl. 280-728.200.

Staniek, Peter: *See—*

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Stanley Electric Co., Ltd.: *See—*

Ohta, Kazushige; Hanasaki, Koichi; and Konishi, Satoru, 5,617,251, Cl. 359-599.000.

Stansberry, Warren W.; Carlson, Bradley D.; and Heidel, Jeffrey C. Key identifier method and apparatus. 5,617,323, Cl. 364-474.030.

Starr, Robert C., IV: *See—*

Wells, Thomas J.; and Starr, Robert C., IV, 5,615,435, Cl. 5-716.000.

Starter Corporation: *See—*

Beckerman, David A., 5,615,415, Cl. 2-195.300.

Staub, Nancy K. Lotion applicator. 5,615,962, Cl. 401-173.000.

Stayer, Mark L., Jr.: *See—*

Lawson, David F.; Stayer, Mark L., Jr.; Saffles, David; and Harwood, H. James, 5,616,704, Cl. 540-450.000.

Steadman, Martin J.: *See—*

Rees, David B.; and Steadman, Martin J., 5,617,057, Cl. 327-543.000.

Stechmann, Jonathan H.; Powell, Joel T.; and Nyflot, Loren, to DataCard Corporation. Method and apparatus for interactively creating a card which includes video and cardholder information. 5,617,528, Cl. 395-326.000.

Steele, Steven W.: *See—*

Keidl, Steven D.; Rotter, Jeffrey S.; and Steele, Steven W., 5,617,007, Cl. 320-22.000.

Steimke, Daniel L.: *See—*

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Steinberg, Thomas H.: *See—*

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Steiner, Gerd; Munschauer, Rainer; Unger, Liliane; Teschendorf, Hans-Jürgen; and Höger, Thomas, to BASF Aktiengesellschaft. N-substituted azabicycloheptane derivatives, their preparation and use. 5,616,705, Cl. 544-105.000.

Steiner, Ronald E., to International Electronic Research Corporation. Two piece clip for heat dissipating assemblies. 5,617,292, Cl. 361-704.000.

Steinert, Peter M.; Kim, In-Gyu; Chung, Soo-Il; and Park, Sang-chul, to United States of America, Health and Human Services. Trichohyalin and transglutaminase-3 and methods of using same. 5,616,500, Cl. 435-320.100.

Steinkönig, Uwe. Spring band clamp. 5,615,457, Cl. 24-20.00R.

Steinl, Gregory: *See—*

Lynch, Marvin L.; McClish, Michael A.; Selfe, Margaret A.; Steinl, Gregory; and Remboski, Donald J., Jr., 5,616,834, Cl. 73-116.000.

Steinmann, Alfred, to Ciba-Geigy Corporation. Polyethers containing hindered amine side chains as stabilizers. 5,616,637, Cl. 524-102.000.

Stellon, Andrew P.: *See—*

Gemma, Edward A., Jr.; and Stellon, Andrew P., 5,615,766, Cl. 206-63.300.

Stempin, John L.: *See—*

Alexander, M. Grayson; Stempin, John L.; and Wexell, Dale R., 5,616,160, Cl. 65-27.000.

Stepan Company: *See—*

Sajic, Branko; Ryklin, Irma; and Frank, Brian L., 5,616,781, Cl. 510-221.000.

Thompson, Ralph; Rockwell, Ned M.; Michels, Ann M.; Mohring, William R.; Kolbe, Kevin C.; Seibold, J. Duke; and Butterwick, James M., 5,616,782, Cl. 560-149.000.

Stepanek, Premek; and Wagner, Ludwig, to Marker Deutschland GmbH. System for modification of the vibrational properties of a ski. 5,615,905, Cl. 280-602.000.

Stephenson, Stanley, III; Zander, Dennis R.; and Barrett, Harold J., to Eastman Kodak Company. Camera with multi-format selection. 5,617,160, Cl. 396-60.000.

Stephenson, Stanley L. Sports ball bag. 5,615,769, Cl. 206-315.900.

Stephenson, Stanley W., III; and Seamans, Tom M., to Eastman Kodak Company. Camera with spool positioning mechanism. 5,617,168, Cl. 396-413.000.

Sterling, Bernhard B.: *See—*

Braig, James R.; Goldberger, Daniel S.; and Sterling, Bernhard B., 5,615,672, Cl. 128-633.000.

Stern, Howard, to Robotic Vision Systems, Inc. System for detecting ice or snow on surface which specularly reflects light. 5,617,076, Cl. 340-583.000.

Stevens, Brian, to Merit Medical. Method of manufacturing a split ring airless rotatable connector. 5,616,203, Cl. 156-91.000.

Stevens, Denise M. Figurine puzzle with display apparatus. 5,615,883, Cl. 273-157.00R.

Stevens, James C.: *See—*

Timmers, Francis J.; Devore, David D.; and Stevens, James C., 5,616,664, Cl. 526-127.000.

Stevens, Jeffrey C., to Compaq Computer Corporation. Using an address pin as a snoop invalidate signal during snoop cycles. 5,617,557, Cl. 395-473.000.

Stevens, Todd O.: *See—*

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Stewart, Andrew O.: *See—*

Basha, Anwer; Brooks, Clint D. W.; Bhatia, Pramila; Craig, Richard A.; Ratajczyk, James D.; and Stewart, Andrew O., 5,616,596, Cl. 514-365.000.

Stinchcomb, Dan T.: *See—*

Sullivan, Sean; Draper, Kenneth G.; McSwiggen, James; and Stinchcomb, Dan T., 5,616,488, Cl. 435-366.000.

Sting, Donald W.: *See—*

Reffner, John A.; Milosevic, Milan; and Sting, Donald W., 5,616,922, Cl. 250-339.120.

Stirling, Andrew J., to D2B Systems Company Limited. Local communication system and station for use in such a system. 5,617,330, Cl. 364-514.00A.

Stofer, Dorothy E. Topical composition for burn relief and method of use. 5,616,619, Cl. 514-574.000.

Stoll, Klaus: *See—*

Avar, Lajos; Staniek, Peter; Stoll, Klaus; Habicher, Wolf D.; and Hähner, Uwe, 5,616,636, Cl. 524-102.000.

Stolov, Adi, to UNIC View Ltd. Projector system for video and computer generated information. 5,617,152, Cl. 348-761.000.

Stone, Maureen C.: *See—*

Bier, Eric A.; Buxton, William A. S.; and Stone, Maureen C., 5,617,114, Cl. 345-113.000.

Stoneberg, Bruce, to Safe-T Products, Inc. Instruments for drawing circles. 5,615,485, Cl. 33-27.030.

Stoops, Bradley N., to Precision Dispensing Equipment, Inc. Method and apparatus for applying flux. 5,615,828, Cl. 228-223.000.

Stormo, Keith E., to Innovative BioSystems, Inc. Slurry reactor. 5,616,304, Cl. 422-227.000.

Straeter, William F.: *See—*

Weder, Donald E.; and Straeter, William F., 5,615,532, Cl. 53-399.000.

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Micale, Antonio C.; and Strand, David E., 5,615,483, Cl. 29-897.200.

Stratacom, Inc.: *See—*

Sathe, Shirish K.; Corbalis, Charles M.; Schmidt, Uri; and Moley, Richard M., 5,617,417, Cl. 370-394.000.

Stratz, James R., Sr., to Hewlett-Packard Company. Ultrasound transducer cable management system. 5,615,682, Cl. 128-662.030.

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Lucas, Joe N.; Straume, Tore; and Bogen, Kenneth T., 5,616,465, Cl. 435-6.000.

Stretto Di Messina S.P.A.: *See—*

Brown, William, 5,615,436, Cl. 14-18.000.

Strickland, Alan D., to Dow Chemical Company, The. Method of chelating a metal ion to form a chelate and biodegrading the chelate. 5,616,497, Cl. 435-262.000.

Stridde, Howard M.: *See—*

Vipond, Jeffrey J.; Larkin, John M.; Renken, Terry L.; and Stridde, Howard M., 5,616,811, Cl. 564-505.000.

Stuart, Derek, to Land Instruments International Limited. Open-path gas monitoring. 5,617,212, Cl. 356-438.000.

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Manhart, Paul K.; Stuhlinger, Tilman W.; Castle, Kenneth R.; and Ruda, Mitchell C., 5,617,252, Cl. 359-653.000.

Stuk, Timothy L.; Haight, Anthony R.; Kerdesky, Francis A. J.; Leanna, M. Robert; Morton, Howard E.; Robbins, Timothy A.; Scarpetti, David; and Tien, Jien-Heh J., to Abbott Laboratories. Process for the preparation of a substituted 2.5-diamono-3-hydroxy-hexane. 5,616,776, Cl. 560-27.000.

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Webster, Marc W.; McCue, Daniel L., III; Rulli, Paul A.; Walker, Joim O.; and Stumbo, William K., 5,617,215, Cl. 358-296.000.

Stumpe, Werner; Schlichenmaier, Andreas; and Schwendemann, Bernhard, to Robert Bosch GmbH. Method and apparatus for regulating the brake system of a vehicle. 5,615,931, Cl. 303-22.100.

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Subbaraman, Ramesh B.; and Brucker, Barry R. Apparatus for generating a deep, laminar vortex. 5,616,083, Cl. 472-67.000.

Sublett, Bobby J., to Eastman Chemical Company. Orientable, heat setable semi-crystalline copolyesters. 5,616,404, Cl. 428-221.000.

Subot, Inc.: *See—*

Newman, Duncan, 5,616,132, Cl. 604-185.000.

Sudall, Stephen J.; and Engel, Steven A., to Kimberly-Clark Corporation. Method for making uncreped throughdried towels and wipers. 5,616,207, Cl. 156-246.000.

Sudhakar, Anantha: *See—*

Andrews, David R.; and Sudhakar, Anantha, 5,616,777, Cl. 560-29.000.

Sueri, Stefano: *See—*

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Suga, Fusao, to Casio Computer Co., Ltd. Personal physical fitness measuring apparatus. 5,615,685, Cl. 128-670.000.

Sugano, Kazuyoshi: *See—*

Takaba, Tetsufumi; Fujita, Masami; Yamazaki, Masaru; Kibayashi, Hiroshi; Sugano, Kazuyoshi; and Ishii, Shizuo, 5,617,169, Cl. 396-284.000.

Sugano, Shigeru; Takebayashi, Takashi; Nagai, Shigekazu; Ito, Yoshiharu; Saito, Mitsuhiro; Matsushima, Hiroshi; and Saitoh, Akio, to SMC Kabushiki Kaisha. Method of and system for electrically processing vacuum pressure information suitable for use in vacuum unit. 5,617,338, Cl. 364-558.000.

Sugawara, Hiroshi, to NEC Corporation. Non-volatile semiconductor memory device. 5,617,361, Cl. 365-189.010.

Sugaya, Akio, to Canon Kabushiki Kaisha. Image outputting adaptable to various fonts. 5,617,525, Cl. 395-805.000.

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Ishikawa, Tomoji; Sugihara, Kazuyuki; and Kosuge, Katsuhiro, 5,617,198, Cl. 399-27.000.

Sugimoto, Katsumi: *See—*

Tonomoto, Yoshihiro; Fuke, Kenji; Sugimoto, Katsumi; Suzuki, Eiji; Tonai, Keiko; Tonai, Shozo; Yoshii, Hitoshi; Kawai, Tsutomu; Sato, Kunihiko; and Shimatsu, Katsuya, 5,617,192, Cl. 399-263.000.

Sugimoto, Kenji: *See—*

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Sugimoto, Masakazu; Kojima, Hiroyuki; Tanaka, Akiko; Matsui, Hiroshi; Sato, Katsuaki; and Nakamatsu, Tsuyoshi, to Ajinomoto Co., Inc. Temperature sensitive plasmid. 5,616,480, Cl. 435-172.300.

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Umezaki, Hiroshi; Takeuchi, Yoshiaki; and Sugimoto, Shoji, 5,616,410, Cl. 428-323.000.

Sugisawa, Yukiko: *See—*

Suzuki, Masayoshi; Sasayama, Takao; Hanzawa, Keizi; Ichikawa, Norio; Horie, Junichi; Sugisawa, Yukiko; and Ogasawara, Yuuji, 5,616,844, Cl. 73-514.320.

Sugita, Yukihiko: *See—*

Kato, Koji; Ando, Hiroyuki; Sugita, Yukihiko; Ichikawa, Hideaki; Inoue, Akira; and Miyazaki, Satoshi, 5,617,162, Cl. 396-318.000.

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Sugiyama, Mitsuo: *See—*

Fukumi, Hiroshi; Sugiyama, Mitsuo; Tabata, Keiichi; and Kojima, Koichi, 5,616,579, Cl. 514-222.500.

Sugiyama, Toshihiro: *See—*

Murakami, Eisaku; Yuasa, Kazuhiro; Endoh, Shuichi; Matsumae, Iwao; Tanaka, Yoshiaki; Hosokawa, Hiroshi; Uno, Mugijiroh; Saitoh, Hiroshi; Takenaka, Eiji; Sugiyama, Toshihiro; Yamanaka, Tetsuo; and Komatsubara, Satoru, 5,617,191, Cl. 399-286.000.

Suh, Kang-Deog: *See—*

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Suitou, Ken: *See—*

Yokono, Tomohiko; Sonobe, Masanori; Kawaguchi, Masahiro; Okuno, Takuya; and Suitou, Ken, 5,616,008, Cl. 417-222.200.

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Kusano, Manabu; Ishii, Masao; and Sukenobe, Nobuo, 5,616,652, Cl. 525-315.000.

Sukup, Charles E., to Sukup Manufacturing Company. Axial fan housing with integral venturi. 5,615,999, Cl. 415-182.100.

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Sukup, Charles E., 5,615,999, Cl. 415-182.100.

Sullivan, Sean; Draper, Kenneth G.; McSwiggen, James; and Stinchcomb, Dan T., to Ribozyme Pharmaceuticals, Inc. IL-5 targeted ribozymes. 5,616,488, Cl. 435-366.000.

Sullivan, Sean M.; and Draper, Kenneth G., to Ribozyme Pharmaceuticals, Inc. Ribozymes targeted to TNF-α RNA. 5,616,490, Cl. 435-366.000.

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Sum, Yuh W.: *See—*

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Sumino, Hiroyasu: *See—*

Horiguchi, Akihiro; Monma, Jun; Kimura, Kazuo; Oh-Ishi, Katsuyoshi; Ueno, Fumio; Kasori, Mitsuo; and Sumino, Hiroyasu, 5,616,956, Cl. 257-703.000.

Sumitomo Chemical Company, Limited: *See—*

Kotani, Kozo; Kawakita, Toshio; Sakaya, Taiichi; and Kuroda, Ryuma, 5,616,649, Cl. 525-56.000.

Sakito, Yoji; Shirahata, Mamoru; Kiyoshima, Yujiro; Minamisaka, Kazuya; and Iwata, Atukazu, 5,616,769, Cl. 558-146.000.

Sakurai, Tadashi; Asao, Kouichirou; and Sakamoto, Akinobu, 5,616,627, Cl. 521-134.000.

Takahashi, Akihiko; Yasuda, Hitoshi; Hartwig, Karl T.; McDonald, Lacy C.; and Zou, Hong, 5,616,191, Cl. 148-690.000.

Umezaki, Hiroshi; Takeuchi, Yoshiaki; and Sugimoto, Shoji, 5,616,410, Cl. 428-323.000.

Sumitomo Electric Industries, Ltd.: *See—*

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Müller, Harald; and Ueba, Yoshinobu, 5,616,728, Cl. 549-11.000.

Sumitomo Heavy Industries, Ltd.: *See—*

Morikita, Nobuo, 5,616,161, Cl. 65-157.000.

Sumitomo Metal Industries, Ltd.: *See—*

Sanjyou, Akira; Nakatsuka, Yasuo; Morita, Yasuyuki; and Uno, Koichi, 5,616,423, Cl. 428-632.000.

Sumitomo Pharmaceuticals Company, Limited: *See—*

Nagata, Ryu; Tanno, Norihiko; and Kodo, Toru, 5,616,586, Cl. 514-250.000.

Takagi, Hiroshi, 5,616,618, Cl. 514-567.000.

Sumitomo Rubber Industries, Ltd.: *See—*

Suzuki, Kazuya; and Ono, Ryo, 5,616,198, Cl. 152-556.000.

Summer, Harald: *See—*

Ludescher, Johannes; Summer, Harald; and Wolf, Siegfried, 5,616,703, Cl. 540-226.000.

Summers, Richard: *See—*

Walters, William; and Summers, Richard, 5,616,885, Cl. 102-476.000.

Sun Microsystems, Inc.: *See—*

Wu, Grace-Ann C.; McCall, Mark B.; Raney, Ella; and Wu, Overcomer, 5,617,533, Cl. 395-183.140.

Sunada, Takakazu: *See—*

Ishihara, Makiichi; Sunada, Takakazu; Hasegawa, Shigeo; Ukawa, Naohiko; Takashina, Toru; Kita, Yukio; Iwashita, Kouichiro; Yamashita, Kousuke; Ozaki, Junji; and Kaneshige, Kaname, 5,616,290, Cl. 261-115.000.

Sundholm, Göran. Ship. 5,616,057, Cl. 440-39.000.
Sundstrom, Robert A.; and Dumont, Donald R., to Lynx Enterprises, Inc. Connection device for securing two engaged members. 5,616,046, Cl. 439-367.000.
Super Vision International, Inc.: *See—*
Kingstone, Brett M., 5,617,496, Cl. 385-100.000.
Kingstone, Brett M., 5,617,497, Cl. 385-100.000.
Superconductor Technologies, Inc.: *See—*
Hey-Shipton, Gregory L.; and Matthael, George L., 5,616,538, Cl. 505-210.000.
Hey-Shipton, Gregory L.; Rohlfing, Stephan M.; Matthaei, George L.; and Forse, Roger J., 5,616,539, Cl. 505-210.000.
Suski, Edward D., to AST Research Inc. Flexible circuit connector. 5,616,050, Cl. 439-495.000.
Suspa Compart Aktiengesellschaft: *See—*
Bauer, Hans-Peter, 5,615,867, Cl. 267-64.110.
Sutherland, Robert J., to Shell Oil Company. Oil with asymmetric radial polymer having block copolymer arm. 5,616,542, Cl. 508-207.000.
Sutoh, Yoshio: *See—*
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Suwa, Motoo: *See—*
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Suzuki, Eiji: *See—*
Tonomoto, Yoshihiro; Fuke, Kenji; Sugimoto, Katsumi; Suzuki, Eiji; Tonai, Keiko; Tonai, Shozo; Yoshii, Hitoshi; Kawai, Tsutomu; Sato, Kunihiko; and Shimatsu, Katsuya, 5,617,192, Cl. 399-263.000.
Suzuki, Hiroshi: *See—*
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Suzuki, Katsunori, to Mitsubishi Denki Kabushiki Kaisha. Serial data transfer apparatus. 5,617,433, Cl. 371-48.000.
Suzuki, Kazuya; and Ono, Ryo, to Sumitomo Rubber Industries, Ltd. Pneumatic tire with carcass ply increased in thickness partially in at least the tire shoulder portions. 5,616,198, Cl. 152-556.000.
Suzuki, Kenji: *See—*
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Suzuki, Kohmei; and Kurokawa, Junichi, to Nikkiso Co. Ltd. Method for prediction of the performance of a centrifugal pump with a thrust balance mechanism. 5,615,996, Cl. 415-1.000.
Suzuki, Masayoshi; Sasayama, Takao; Hanzawa, Keizi; Ichikawa, Norio; Horie, Junichi; Sugisawa, Yukiko; and Ogasawara, Yuuji, to Hitachi, Ltd. Capacitance type acceleration sensor. 5,616,844, Cl. 73-514.320.
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Nagaoka, Hidetada; Onoda, Atsuo; Izumi, Yukio; Nishikawa, Keiichi; Oomura, Yuuji; Suzuki, Mitinaga; and Hoshi, Kiyotaka, 5,616,994, Cl. 318-254.000.
Suzuki, Shinichi; Nonaka, Yoshiya; and Takahashi, Kenichi, to Pioneer Electronic Corporation. Reproducing system for automatically reproducing optical discs. 5,617,381, Cl. 369-32.000.
Suzuki, Shinji: *See—*
Kobayashi, Kinzo; Izumi, Shinichi; Suzuki, Shinji; and Nakayama, Shinichi, 5,615,754, Cl. 188-73.350.
Suzuki, Takashi; Matsuzawa, Masanao; and Miyazawa, Yoshinori, to Seiko Epson Corporation. Ink-supply tank for a dot matrix printer. 5,615,957, Cl. 400-124.100.
Suzuki, Tatsuya: *See—*
Asakura, Yasuo; and Suzuki, Tatsuya, 5,617,175, Cl. 396-166.000.
Suzuki, Tetsuji, to Nakanishi Dental Mfg. Co., Ltd. Dental treatment device for forming screw hole for embedment of implant material. 5,616,029, Cl. 433-122.000.
Suzuki, Tomio: *See—*
Mori, Shigeru; Suzuki, Tomio; and Hayashikoshi, Masanori, 5,617,362, Cl. 365-189.050.
Suzuki, Tomosaburo; and Takizawa, Tsuneo, to Daisey Kikai Kabushiki Kaisha. Sprouted vegetable seeds sterilizing method, and sprouted vegetables cultivating method. 5,615,518, Cl. 47-58.000.
Suzuki, Toshio, to Yamaha Hatsudoki Kabushiki Kaisha. Control for engine. 5,615,661, Cl. 123-688.000.
Suzuki, Yasumichi: *See—*
Ichikawa, Hiroyuki; Ikeda, Yoshinori; Katoh, Koichi; Kurita, Mitsuru; Suzuki, Yasumichi; and Kitamura, Toshiyuki, 5,617,224, Cl. 358-530.000.
Svetkoff, Donald J.; Rohrer, Donald K.; Noblett, David A.; and Jackson, Robert L., to View Engineering, Inc. Method and system for triangulation-based, 3-D imaging utilizing an angled scaning beam of radiant energy. 5,617,209, Cl. 356-376.000.
Swanson, David W.: *See—*
Thoman, Jeffrey A.; Swanson, David W.; Hamlin, Mindy A.; Beeson, Robert R.; Hall, Corrina; Salter, James G.; and Rhoads, W. Wistar, 5,617,128, Cl. 347-87.000.
Swapp, Mavin C., to Motorola, Inc. Method for testing integrated devices. 5,617,035, Cl. 324-711.000.
Swatos, William J.: *See—*
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Swearingin, Leroy A.: *See—*
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Sweitzer, Brent N., to Sheldahl, Inc. Method for interconnecting a flip chip to a printed circuit substrate. 5,615,477, Cl. 29-840.000.
Swenson, Rolf E.: *See—*
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Sybert, Paul D.: *See—*
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Symbios Logic Inc.: *See—*
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Prater, James S., 5,617,102, Cl. 342-374.000.
Symbiosis Corporation: *See—*
Giurtino, Joel F.; Turkel, David; and Gordon, David P., 5,615,690, Cl. 128-754.000.
Symons Corporation: *See—*
Podgurski, Charles V., 5,616,271, Cl. 249-48.000.
Syndia Corporation: *See—*
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Synphar Laboratories, Inc.: *See—*
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Synthetic Industries, Inc.: *See—*
Theisen, Marc S., 5,616,399, Cl. 428-175.000.
Syracuse University: *See—*
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Syron Engineering & Manufacturing Corporation: *See—*
Taylor, John T.; Johnson, Richard R.; and Ezell, William B., 5,617,025, Cl. 324-236.000.
Systems Research & Applications Corporation: *See—*
Briggs, Robert; Iannacone, Carmen; Rothey, James; and Evans, David, 5,617,119, Cl. 345-611.000.
Szalai, Veronika: *See—*
Cruse, Richard; Szalai, Veronika; Clark, Terence; Rohman, Stephen; and Mininni, Robert, 5,616,754, Cl. 556-409.000.
Szczyrbowski, Joachim: *See—*
Kunz, Hans; Sauer, Andreas; Schuhmacher, Manfred; Szczyrbowski, Joachim; and Marquardt, Dietmar, 5,616,226, Cl. 204-298.230.
Szebesta, Daryl: *See—*
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Szilagyi, Andrei: *See—*
Um, Gregory; and Szilagyi, Andrei, 5,616,982, Cl. 310-328.000.
Szu-Ming, Huang. Resilient abdominal-arm exercise apparatus. 5,616,109, Cl. 482-123.000.
T.O.W. Inc.: *See—*
Jordan, Frank W., 5,616,286, Cl. 252-315.200.
Tabata, Atsushi: *See—*
Tsukamoto, Kazumasa; Ando, Masahiko; Fukatsu, Akira; Mae, Toshiyuki; Sakai, Motoyuki; Hamajima, Tetsuo; Kaigawa, Masato; Fukumura, Kagenori; Oba, Hidehiro; Hojo, Yasuo; Tabata, Atsushi; and Takahashi, Nobuaki, 5,616,094, Cl. 475-128.000.
Tabata, Keiichi: *See—*
Fukumi, Hiroshi; Sugiyama, Mitsuo; Tabata, Keiichi; and Kojima, Koichi, 5,616,579, Cl. 514-222.500.
Tachihara, Masayoshi; and Tamura, Yasuyuki, to Canon Kabushiki Kaisha. Ink jet recording with ink detection. 5,617,121, Cl. 347-7.000.
Tachikawa, Shigehiko: *See—*
Yokota, Sumio; Matsuzawa, Masafumi; Ohba, Nobuyuki; Nagata, Toshihiro; Tachikawa, Shigehiko; Miyazawa, Takeshige; and Yanagisawa, Katsutada, 5,616,537, Cl. 504-242.000.
Tada, Hiroshi, to NEC Corporation. Organic thin film EL device having long lifetime. 5,616,427, Cl. 428-690.000.
Tada, Takamitsu: *See—*
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Tagami, Ryou; Norimatsu, Takeshi; Matsumoto, Masaharu; Oda, Mikio; Serikawa, Mitsuhiko; Kawamura, Akihisa; and Numazu, Hiroko, to Matsushita Electric Industrial Co., Ltd. Sound reproduction system and a sound reproduction method. 5,617,478, Cl. 381-56.000.
Tagawa, Akira: *See—*
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Taguchi, Akira: *See—*
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Taguchi, Keiichi; Maeda, Hideho; and Yanaga, Masaharu, to Sony Corporation. Method and apparatus for rewriting data to a floppy disk by storing reproduced data in a memory. 5,617,264, Cl. 360-54.000.
Taguchi, Naoto: *See—*
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Taguchi, Tomishige: *See—*
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Tahim, Raghbir S.: *See—*
Silinsky, Robert E.; Boldissar, Frank, Jr.; Campbell, Gary S.; and Tahim, Raghbir S., 5,617,108, Cl. 343-786.000.
Tahmassebpur, Mohammed, to Sierra Wireless, Inc. Pivotable antenna and electrical device having a pivotable antenna. 5,617,106, Cl. 343-702.000.
Taiho Pharmaceutical Co., Ltd.: *See—*
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Taillie, Joseph P.; Beck, Richard A.; Raus, Robert W., Sr.; Proctor, Douglas E.; and Fullerton, Jack K., to Xerox Corporation. Fluorescent lamp system including an integrated heater/power harness. 5,616,989, Cl. 315-32.000.
Taillon, James K.; and Reidelberger, Frank R., III, to Mechanical Dynamics & Analysis, Inc. Two piece electrical and fluidic connector and installation method therefore. 5,616,040, Cl. 439-191.000.
Taiwan Semiconductor Manufacturing Company Ltd.: *See—*
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Taiyo Yuden Co., Ltd.: *See—*
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Tajima, Ikuo; and Suzuki, Kenji, to Tokai Kogyo Mishin Kabushiki Kaisha. Sewing machine with separate drive sources for components thereof. 5,615,628, Cl. 112-220.000.
Takaba, Tetsufumi; Fujita, Masami; Yamazaki, Masaru; Kibayashi, Hiroshi; Sugano, Kazuyoshi; and Ishii, Shizuo, to Konica Corporation. Film detection member for a single-use camera. 5,617,169, Cl. 396-284.000.
Takada, Akio; and Asada, Kazutoshi, to Sony Corporation. Magnetoresistance effect thin-film magnetic head having a laminated flux guide of permalloy and titanium films. 5,617,276, Cl. 360-113.000.
Takagi, Hiroshi, to Sumitomo Pharmaceuticals Company, Limited. Threo-3-(3,4-dihydroxyphenyl)serine analgesic composition. 5,616,618, Cl. 514-567.000.
Takahara, Hiroshi: *See—*
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Takahashi, Akihiko; Yasuda, Hitoshi; Hartwig, Karl T.; McDonald, Lacy C.; and Zou, Hong, to Sumitomo Chemical Co., Ltd.; and Texas A & M University Systems, The. Method for making a high purity aluminum conductor used at ultra low temperature. 5,616,191, Cl. 148-690.000.
Takahashi, Akira: *See—*
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Takahashi, Eiji: *See—*
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Takahashi, Hiroyuki: *See—*
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Takahashi, Masashi: *See—*
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Takahashi, Michiharu. Broad-band radio wave absorber. 5,617,096, Cl. 342-4.000.
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Takahashi, Nobuo: *See—*
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Takahashi, Shinichiro; and Nagayama, Eiji, to Amano Corporation. Floor-surface polisher equipped with function for adjusting pad pressure. 5,615,437, Cl. 15-98.000.
Takahashi, Susumu; and Toda, Toshiki, to Toppan Printing Co., Ltd. Diffraction grating array and display having a diffraction grating. 5,617,248, Cl. 359-567.000.
Takahashi, Taro: *See—*
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Takahashi, Toru; Watanuki, Tsuneo; Takei, Fumio; Sawatari, Norio; and Nakamura, Yasushige, to Fujitsu, Ltd. Photosensitive member, electrophotographic apparatus using the photosensitive member, and process for producing the photosensitive member. 5,616,440, Cl. 430-63.000.
Takahashi, Tuyoshi; Ikegaya, Kazuo; Mochizuki, Shinobu; and Nishimaki, Hideo, to Green Cross Corporation, The. Process for producing albumin preparation. 5,616,691, Cl. 530-364.000.
Takahashi, Yoshiharu; Oseto, Jiro; Hirata, Teru; Abe, Shunichi; Ohmae, Seizo; and Kobayashi, Eiji, to Mitsubishi Denki Kabushiki Kaisha. Method of making resin encapsulated semiconductor device with bump electrodes. 5,616,516, Cl. 438-127.000.
Takai, Hitoshi: *See—*
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Takakarhu, Jouni: *See—*
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Takamoto, Masahiro, to Kabushiki Kaisha Toshiba. Comparator circuit. 5,617,044, Cl. 327-77.000.
Takanashi, Kenji: *See—*
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Takao, Mitsunori; Kokuga, Toshiharu; Matsumoto, Takanao; and Sakurai, Hiroaki, to Sanyo Electric Co., Ltd. Rechargeable battery charging circuit which sets supplemental charging capacity according to ambient temperature. 5,617,009, Cl. 320-23.000.
Takaoka, Makoto; Sugiura, Susumu; Matsumoto, Kentaro; Uda, Toyokazu; and Uda, Masami, to Canon Kabushiki Kaisha. Image processing method utilizing multiple binarizing and recording agent depositing steps. 5,617,123, Cl. 347-15.000.
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Takashina, Toru: *See—*
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Takayama, Toru: *See—*
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Takayanagi, Yoshiaki: *See—*
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Takechi, Kazuo: *See—*
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Takeda, Toru: *See—*
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Takehara, Toshio: *See—*
Okada, Tomohiko; Shiozaki, Fumio; Takehara, Toshio; Kizu, Seiichi; and Ashiya, Kazuhiko, 5,616,386, Cl. 428-40.100.
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Takahashi, Toru; Watanuki, Tsuneo; Takei, Fumio; Sawatari, Norio; and Nakamura, Yasushige, 5,616,440, Cl. 430-63.000.
Takemori, Tamiki, to Hamamatsu Photonics K.K. Optical digital holding apparatus. 5,617,232, Cl. 359-108.000.
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Koyama, Jun; and Takemura, Yasuhiko, 5,616,935, Cl. 257-69.000.
Yamazaki, Shunpei; and Takemura, Yasuhiko, 5,617,243, Cl. 359-309.000.
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Murakami, Eisaku; Yuasa, Kazuhiro; Endoh, Shuichi; Matsumae, Iwao; Tanaka, Yoshiaki; Hosokawa, Hiroshi; Uno, Mugijiroh; Saitoh, Hiroshi; Takenaka, Eiji; Sugiyama, Toshihiro; Yamanaka, Tetsuo; and Komatsubara, Satoru, 5,617,191, Cl. 399-286.000.
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Takeuchi, Masaru: *See—*
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Takeuchi, Yoshiaki: *See—*
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Taki, Kinji: *See—*
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Lo, Randy; and Takiar, Hem P., 5,617,297, Cl. 361-737.000.
Takikawa, Yoshihiro: *See—*
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Takishima, Suguru: *See—*
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Shinozaki, Shimpei; Takishima, Suguru; and Yamamoto, Hiroshi, 5,617,379, Cl. 369-13.000.
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Crandall, William, 5,616,901, Cl. 235-379.000.
Tallarek, Glen: *See—*
Blomquist, William B.; Dawson, Gary D.; Richardson, Roland T.; and Tallarek, Glen, 5,616,836, Cl. 73-118.100.
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Tamaki, Akihiro: *See—*
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Tamazawa, Kazuharu; Kojima, Tadao; Arima, Hideki; Murakami, Yukiyasu; Isomura, Yasuo; Okada, Minoru; Takenaka, Toichi; and Takanobu, Kiyoshi, to Yamanouchi Pharmaceutical Co., Ltd. Dihydropyridine-3, 5-dicarboxylic acid ester derivatives. 5,616,715, Cl. 546-278.400.
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Tamura, Kohichi R.; Ippen, Erich P.; Haus, Hermann A.; Nelson, Lynn E.; and Doerr, Christopher R., to Massachusetts Inst. of Technology. Stretched-pulse fiber laser. 5,617,434, Cl. 372-6.000.
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Tan, Ah P.: *See—*
Huang, Si J.; and Tan, Ah P., 5,617,145, Cl. 348-423.000.
Tan, Loon-Seng; and Venkatasubramanian, Narayanan, to United States of America, Air Force. Method for the preparation of 4-hydroxy-and 4-trimethylsiloxybenzocyclobutene. 5,616,765, Cl. 556-486.000.
Tan, Yuping: *See—*
Donovan, William P.; Tan, Yuping; Jany, Christine S.; and González, José M., Jr., 5,616,319, Cl. 424-93.200.
Tanaka, Akiko: *See—*
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Tanaka, Kaz: *See—*
Berger, Andrew J.; Brennan, James F., III; Dasari, Ramanchandra R.; Feld, Michael S.; Itzkan, Irving; Tanaka, Kaz; and Wang, Yang, 5,615,673, Cl. 128-633.000.
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Tanaka, Masahiko, to NEC Corporation. IC memory card type radio modem. 5,617,449, Cl. 375-222.000.
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Tanaka, Nobuhiro, to Kao Corporation. Method and apparatus for accommodating goods in container. 5,615,536, Cl. 53-447.000.
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Tanaka, Satoshi: *See—*
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Tanaka, Shigeo, to Sony Corporation. Method for controlling power to individual audio-video units making up an audio-video system. 5,617,571, Cl. 395-750.000.
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Tanaka, Yuji: *See—*
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Tang, Raymond T.: *See—*
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Tang, Shi-Ming; and Lee, Sang-Yong, to Samsung Electronics Co., Ltd. Model reference following commutation circuit and adjusting method thereof. 5,616,996, Cl. 318-439.000.
Tang, Xiaoming, to Western Atlas International. Method for estimating the hydraulic conductivity of a borehole sidewall fracture. 5,616,840, Cl. 73-152.050.
Tanibata, Toru: *See—*
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Taniguchi, Susumu: *See—*
Morishita, Hiroki; Taniguchi, Susumu; and Kotera, Shinichi, 5,617,194, Cl. 399-349.000.
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Tanuma, Ryohei, to Fuji Electric Co., Ltd. Solid-state laser device with diffused-light excitation, and integrating sphere. 5,617,442, Cl. 372-72.000.
Tao, Xue-Lian: *See—*
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Tatsuno, Tadayoshi; Wakimoto, Mitsuo; and Kashiwada, Seiji, to Kansai Paint Company, Ltd. Water repellent coating. 5,616,388, Cl. 428-421.000.
Tavlarides, Lawrence L.; and Deorkar, Nandu, to Syracuse University. Chemically active ceramic compositions with a thiol and/or amine moiety. 5,616,533, Cl. 502-407.000.
Tawara, Hiroshi; Hiramatsu, Mineyuki; and Maeda, Jun, to Daidotokushuko Kabushikikaisha. Floating furnace. 5,616,295, Cl. 266-92.000.
Taylor, Bret; and Osborne, William S., to Hewlett-Packard Company. Self-cleaning service station for inkjet printing mechanisms. 5,617,124, Cl. 347-35.000.
Taylor, Douglas: *See—*
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Taylor, John T.; Johnson, Richard R.; and Ezell, William B., to Syron Engineering & Manufacturing Corporation. Side part sensor for determining the presence or absence of a nut and a hole disposed adjacent the nut. 5,617,025, Cl. 324-236.000.
Taylor, Lloyd D.: *See—*
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Taylor, Mark E., to Texaco Chemical Inc. Controlled alkali treatment in the recovery of methyl tertiary butyl ether. 5,616,217, Cl. 203-97.000.
Taylor, Matthew J.; Bunke, Paul R.; and Pflaumer, Phillip F., to Procter & Gamble Company, The. Stable beverages containing emulsion with unweighted oil and process of making. 5,616,358, Cl. 426-590.000.
Taylor, Peter W.; Love, William G.; and van der Zanden, Brigitte C. H., to Ciba-Geigy Corporation. Topically administrable zinc phthalocyanine compositions. 5,616,602, Cl. 514-410.000.
Tazaki, Tokuo: *See—*
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TDK Corporation: *See—*
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Teng, Min; Beard, Richard L.; Colon, Diana; Duong, Tien T.; and Chandraratna, Roshantha A., to Allergan. Acetylenes disubstituted with a phenyl or heteroaryl group and a 2-thio-1,2,3,4-tetrahdroquinolinyl, 2-alkylthio-3,4-dihydroquinolinyl or 2-alkoxy-3,4-dihydroquinolinyl group having retinoid-like biological activity. 5,616,712, Cl. 546-158.000.
Tenhover, Michael A.; and Ruppel, Irving B., to Carborundum Company, The. Ceramic substrate with silicon carbide smoothing layer. 5,616,426, Cl. 428-688.000.
Tentler, Lynn A.; and Linsmeyer, Louis R., to Tru-Fire Corporation. Continuous loop wrist strap for bow string release. 5,615,662, Cl. 124-35.200.
Terada, Kazuo: *See—*
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Terauchi, Kiyoshi, to Sanden Corporation. Guiding mechanism for reciprocating piston of piston-type compressor. 5,615,599, Cl. 92-165.00R.
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Land, Christopher A.; Pezzullo, Joseph A.; Malot, James J.; Papa, Louis C.; and Oberle, Daniel, 5,615,974, Cl. 405-128.000.
Terry, Dan L.; and Weaver, Jackson G., to MCE Systems Corp. Pass through transaction drawer with a hinged security flap. 5,615,624, Cl. 109-19.000.
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Taylor, Mark E., 5,616,217, Cl. 203-97.000.
Texaco Inc.: *See—*
Sherwood, David E., Jr.; Dai, Pei-Shing E.; and Campbell, Charles N., II, 5,616,530, Cl. 502-210.000.
Texas A & M University Systems, The: *See—*
Takahashi, Akihiko; Yasuda, Hitoshi; Hartwig, Karl T.; McDonald, Lacy C.; and Zou, Hong, 5,616,191, Cl. 148-690.000.
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Texas Instruments Incorporated: *See—*
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Henderson, Timothy S.; and Plumton, Donald L., 5,616,213, Cl. 438-718.000.
Houston, Theodore W., 5,617,038, Cl. 324-765.000.
Jeng, Shin-Puu, 5,616,959, Cl. 257-758.000.
Johnson, F. Scott, 5,616,508, Cl. 438-350.000.
Kulwicki, Bernard M.; and Tsu, Robert, 5,617,290, Cl. 361-321.400.
Liu, William U., 5,616,950, Cl. 257-469.000.
Nacewicz, Stanley J.; and Geishecker, Stephen P., 5,617,001, Cl. 318-788.000.
Okuno, Yasutoshi, 5,616,515, Cl. 438-478.000.
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Texas United Chemical Company, LLC.: *See—*
Dobson, James W., Jr.; Robertson, Terry D.; and Mondshine, Kenneth B., 5,616,541, Cl. 507-145.000.
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Theisen, Marc S., to Synthetic Industries, Inc. Geotextile fabric woven in a waffle or honeycomb weave pattern and having a cuspated profile after heating. 5,616,399, Cl. 428-175.000.
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Theurer, Josef; and Peitl, Friedrich, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H. Track working machine. 5,615,615, Cl. 104-2.000.
Thigpen, Hubert H., to Hoechst Celanese Corporation. Method of preparing cyclic formals. 5,616,736, Cl. 549-430.000.
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Solberg, Mark A.; and Hartwell, James A., 5,616,884, Cl. 102-351.000.
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Thiruvengadam, Tiruvettipuram K.: *See—*
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Thoman, Gary E.: *See—*
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Thoman, Jeffrey A.; Swanson, David W.; Hamlin, Mindy A.; Beeson, Robert R.; Hall, Corrina; Salter, James G.; and Rhoads, W. Wistar, to Hewlett-Packard Company. Alignment of multiple nozzle members in a printer. 5,617,128, Cl. 347-87.000.
Thomas, Barbara; Mehreteab, Ammanuel; Erilli, Rita; Gomes, Gilbert; Bala, Frank, Jr.; Tarng, Jiashi; Lysy, Regis; and Broze, Guy, to Colgate-Palmolive Co. Stable microemulsion cleaning composition. 5,616,548, Cl. 510-242.000.
Thomas, Danial T.: *See—*
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Challande, Christian; Desarmaux, Pierre; and Thomas, Pascal, 5,615,498, Cl. 36-117.300.
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Mak, Tak W.; and Thompson, Craig B., 5,616,491, Cl. 435-354.000.
Thompson, Dennis P.: *See—*
Anderson, Patricia P.; and Thompson, Dennis P., 5,616,673, Cl. 528-23.000.
Thompson Intellectual Properties, Ltd.: *See—*
French, Kendrick L., 5,615,507, Cl. 42-69.020.
Thompson, Ralph; Rockwell, Ned M.; Michels, Ann M.; Mohring, William R.; Kolbe, Kevin C.; Seibold, J. Duke; and Butterwick, James M., to Stepan Company. Method of producing alkyl sulfoacetate compositions. 5,616,782, Cl. 560-149.000.
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Thomson-Brandt Armements: *See—*
Broussoux, Dominique; Collard, Jean; and Daumas, Marie-Thérèse, 5,615,465, Cl. 29-1.210.
Thomson Consumer Electronics, Inc.: *See—*
Duffield, David J.; Landis, Michael D.; and Edde, Gabriel A., 5,617,146, Cl. 348-460.000.
Thomson-CSF: *See—*
Hergault, Stéphane; and Hardy, Patrick, 5,617,240, Cl. 359-194.000.
Thomson Saginaw Ball Screw, Inc.: *See—*
Simmons, Mark J.; and Parsons, Steven G., 5,615,467, Cl. 29-27.00C.
Thorberg, Seth O.: *See—*
Evenden, John L.; Hammarberg, Eva M.; Hansson, Hans S.; Hellberg, Sven E.; Johansson, Lars G.; Lundkvist, Johan R. M.; Ross, Svante B.; Sohn, Daniel D.; and Thorberg, Seth O., 5,616,610, Cl. 514-456.000.
Thorel, Christophe J. F.: *See—*
Beutin, Bruno A.; Creti, Joël; Donnadieu, Jean-Pierre; Garnier, Francis G. A.; Hugues, Michel G.; Lecordix, Jean-Loic H.; Maignan, Claude P. H.; Massot, Gilles C. G.; Pincemin, Jean-Marie N.; Thorel, Christophe J. F.; Touron, Carole C.; and Vennin, Gérard M. R. M., 5,615,547, Cl. 60-39.080.
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Thorne, Gale H.; Thorne, David L.; and Owen, Charles V., 5,616,135, Cl. 604-192.000.
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Thornton, Billy I. Cat litter collection device. 5,615,638, Cl. 119-165.000.
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Thorud, Richard A.; and Friberg, Nathan J., to Toro Company, The. Mulching blade for lawn mower. 5,615,542, Cl. 56-255.000.
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Stuk, Timothy L.; Haight, Anthony R.; Kerdesky, Francis A. J.; Leanna, M. Robert; Morton, Howard E.; Robbins, Timothy A.; Scarpetti, David; and Tien, Jien-Heh J., 5,616,776, Cl. 560-27.000.
Timmers, Francis J.; Devore, David D.; and Stevens, James C., to Dow Chemical Company, The. Polymerization process with biscyclopentadienyl diene complex containing catalysts. 5,616,664, Cl. 526-127.000.
Tippmann, Dennis J. Leather cutting apparatus. 5,615,592, Cl. 83-529.000.
Tipps, Steven V. Hazardous materials container. 5,615,795, Cl. 220-410.000.
TM Patents, L.P.: *See—*
Heller, Steven K., 5,617,538, Cl. 395-200.020.
Toba, Taturu: *See—*
Ogata, Yasuhiro; Takeuchi, Shigeo; Toba, Taturu; Shutoh, Shinichi; and Hamanaka, Naoki, 5,617,545, Cl. 395-296.000.
Tobase, Hiromori, to NEC Corporation. Flat package for semiconductor IC. 5,616,954, Cl. 257-668.000.
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Toda, Toshiki: *See—*
Takahashi, Susumu; and Toda, Toshiki, 5,617,248, Cl. 359-567.000.
Todd, Robert W.: *See—*
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Todhunter, Ronald G.: *See—*
Simpson, John W.; Clendenin, C. Gerald; Fulton, James P.; Wincheski, Russell A.; Todhunter, Ronald G.; Namkung, Min; and Nath, Shridhar C., 5,617,024, Cl. 324-209.000.
Toge, Yoshiyuki; and Tanaka, Shinya, to Canon Kabushiki Kaisha. Ophthalmologic measuring apparatus. 5,615,683, Cl. 128-666.000.
Tokai Kogyo Mishin Kabushiki Kaisha: *See—*
Tajima, Ikuo; and Suzuki, Kenji, 5,615,628, Cl. 112-220.000.
Tokico Ltd.: *See—*
Kobayashi, Kinzo; Izumi, Shinichi; Suzuki, Shinji; and Nakayama, Shinichi, 5,615,754, Cl. 188-73.350.
Tokunaga, Masaaki: *See—*
Kawabata, Takashi; Hyakutake, Nobuo; Furusawa, Fumio; Tokunaga, Masaaki; and Tsuruoka, Ryoichi, 5,617,197, Cl. 399-398.000.
Tokyo Electric Power Company, Incorporated, The: *See—*
Hara, Tsukushi; Ohkuma, Takeshi; Yamamoto, Takahiko; Ito, Daisuke; Tsurunaga, Kazuyuki; and Tada, Takamitsu, 5,617,280, Cl. 361-19.000.
Tokyo Electron Limited: *See—*
Lee, Hideki, 5,616,208, Cl. 156-345.000.
Nishi, Katsuo; Terada, Kazuo; Ohkase, Wataru; and Yamaga, Kenichi, 5,616,264, Cl. 219-494.000.
Tokyo Electron Tohoku Limited: *See—*
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Tokyo Gas Co. Ltd.: *See—*
Fujimoto, Tomoya; Okamura, Kenko; Morishita, Shigeru; Murakami, Masaru; Adachi, Akira; Hayashi, Mitsutoshi; Fujita, Akinari; Nagashima, Shingo; Kurashina, Minoru; and Yoshida, Kentaro, 5,615,976, Cl. 405-184.000.
Tomanek, Harald, to Roto Frank AG. Roof window with positioning assembly. 5,615,522, Cl. 52-72.000.
Tombling, Craig: *See—*
Robinson, Michael G.; Tombling, Craig; May, Paul; Ezra, David; and Woodgate, Graham J., 5,616,912, Cl. 250-201.100.
Tomecanic: *See—*
Thiriet, Abel, 5,615,665, Cl. 125-23.020.
Tomii, Tsuyoshi: *See—*
Kobayashi, Yoichi; Tomii, Tsuyoshi; Endo, Koichi; Nishikaze, Hayato; and Hirano, Seiichi, 5,615,873, Cl. 271-121.000.
Tominaga, Yutaka; Takizawa, Toshiaki; and Murasaki, Ryuichi, to YKK Corporation. Fastening device. 5,615,461, Cl. 24-452.000.
Tomishima, Shigeki; and Arimoto, Kazutami, to Mitsubishi Denki Kabushiki Kaisha. Dynamic semiconductor memory device having excellent charge retention characteristics. 5,617,369, Cl. 365-230.060.
Tomita, Saburo, to Asia Optical Co., Ltd. Sight scope. 5,615,487, Cl. 33-245.000.
Tomoe, Tetsuro: *See—*
Ban, Keiji; Tomoe, Tetsuro; Fuchi, Masami; Tsuchiya, Hiroaki; Yoshimura, Osamu; and Tanaka, Shinichi, 5,617,193, Cl. 399-316.000.
Tomoi, Masaaki: *See—*
Fujii, Takashi; and Tomoi, Masaaki, 5,616,556, Cl. 514-11.000.
Tomomura, Yoshitaka: *See—*
Kitagawa, Masahiko; and Tomomura, Yoshitaka, 5,616,937, Cl. 257-94.000.
Tomotake, Kazunori, to Matsushita Electric Industrial Co., Ltd. Program source file preprocessing method and apparatus to detect modifications and generate a class of files. 5,617,564, Cl. 395-611.000.
Tompkins, Nicholas J.; Murphy, Tim T.; and Furukawa, Andrew T. Method for processing fresh strawberries for extended shelf life. 5,616,354, Cl. 426-324.000.
Tompkins, Nicholas J.; Murphy, Tim T.; and Furukawa, Andrew T. Method for processing fresh melons. 5,616,360, Cl. 426-615.000.
Tomura, Masatoshi: *See—*
Nambu, Kyojiro; Tomura, Masatoshi; and Kuwahara, Takayuki, 5,615,430, Cl. 5-600.000.
Tonai, Keiko: *See—*
Tonomoto, Yoshihiro; Fuke, Kenji; Sugimoto, Katsumi; Suzuki, Eiji; Tonai, Keiko; Tonai, Shozo; Yoshii, Hitoshi; Kawai, Tsutomu; Sato, Kunihiko; and Shimatsu, Katsuya, 5,617,192, Cl. 399-263.000.
Tonai, Shozo: *See—*
Tonomoto, Yoshihiro; Fuke, Kenji; Sugimoto, Katsumi; Suzuki, Eiji; Tonai, Keiko; Tonai, Shozo; Yoshii, Hitoshi; Kawai, Tsutomu; Sato, Kunihiko; and Shimatsu, Katsuya, 5,617,192, Cl. 399-263.000.
Tong, Hua-Ching: *See—*
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Tonomoto, Yoshihiro; Fuke, Kenji; Sugimoto, Katsumi; Suzuki, Eiji; Tonai, Keiko; Tonai, Shozo; Yoshii, Hitoshi; Kawai, Tsutomu; Sato, Kunihiko; and Shimatsu, Katsuya, to Fujitsu Limited. Multicolor electrostatic recording apparatus and electrostatic latent image recording apparatus used therefor. 5,617,192, Cl. 399-263.000.
Tooltrend, Inc.: *See—*
Venditto, Carlo M., 5,615,718, Cl. 144-135.200.
Töpert, Michael: *See—*
Zentel, Hans J.; Töpert, Michael; Laurent, Henry; Brumby, Thomas; and Esperling, Peter, 5,616,573, Cl. 514-172.000.
Toppan Printing Co., Ltd.: *See—*
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Toray Industries, Inc.: *See—*
Kawai, Hideki; Tamaoka, Masami; and Saito, Yukie, 5,616,613, Cl. 514-492.000.
Kishi, Hajime; Odagiri, Nobuyuki; Tazaki, Tokuo; Nagata, Hideo; Terashita, Takeshi; Nishimura, Akira; and Kato, Hiroyasu, 5,616,405, Cl. 442-60.000.
Torimaru, Satoru; Sameshima, Junichirou; Hokari, Norio; Hayashi, Yukio; Kobayashi, Mikio; Iseki, Shuji; and Tsuruoka, Ryouichi, to Fuji Xerox Co., Ltd. Cleaning unit and toner recovery system for image formation unit. 5,617,195, Cl. 399-27.000.
Toriyama, Keiji: *See—*
Nakamura, Toru; and Toriyama, Keiji, 5,616,931, Cl. 257-48.000.
Tornblom, Jonas: *See—*
de Ruiter, Ernest; and Tornblom, Jonas, 5,616,169, Cl. 95-90.000.
Törnell, Jan B. F.: *See—*
Bjursell, Karl G.; Carlsson, Peter N. I.; Enerbäck, Curt S. M.; Hansson, Stig L.; Lidberg, Ulf F. P.; Nilsson, Jeanette A.; and Törnell, Jan B. F., 5,616,483, Cl. 435-198.000.
Toro Company, The: *See—*
Thorud, Richard A.; and Friberg, Nathan J., 5,615,542, Cl. 56-255.000.
Totonji, Sam: *See—*
Beyer, Claus; Gatza, John; Atoche, Carlos; and Totonji, Sam, 5,615,935, Cl. 303-195.000.
Toub, Melvin R.: *See—*
Eckberg, Richard P.; Evans, Edwin R.; and Toub, Melvin R., 5,616,403, Cl. 428-215.000.
Tournier-Lasserve, Elisabeth A.: *See—*
Joutel, Anne M. G.; Bousser, Marie-Germaine M.; and Tournier-Lasserve, Elisabeth A., 5,616,462, Cl. 435-6.000.
Tournilhac, Florence: *See—*
Ponce, Arnaud; and Tournilhac, Florence, 5,616,547, Cl. 510-230.000.
Touron, Carole C.: *See—*
Beutin, Bruno A.; Creti, Joël; Donnadieu, Jean-Pierre; Garnier, Francis G. A.; Hugues, Michel G.; Lecordix, Jean-Loic H.; Maignan, Claude P. H.; Massot, Gilles C. G.; Pincemin, Jean-Marie N.; Thorel, Christophe J. F.; Touron, Carole C.; and Vennin, Gérard M. R. M., 5,615,547, Cl. 60-39.080.
Toyo Boseki Kabushiki Kaisha: *See—*
Katsuo, Kenichi, 5,616,676, Cl. 528-61.000.
Toyoda, Haruyoshi: *See—*
Kobayashi, Yuji; Yoshida, Narihiro; Mukohzaka, Naohisa; Toyoda, Haruyoshi; and Hara, Tsutomu, 5,617,203, Cl. 356-237.000.
Toyota Jidosha Kabushiki Kaisha: *See—*
Aoyama, Satoshi, 5,616,430, Cl. 429-17.000.
Kato, Yoshihisa, 5,615,749, Cl. 180-274.000.
Mitsubayashi, Masahiko; Ohnishi, Masazumi; Miyamoto, Noritaka; Kadota, Keisuke; Shimada, Tohru; and Bando, Katsuji, 5,615,570, Cl. 72-298.000.
Ota, Atsushi; Uda, Seizi; Nakamura, Shingo; and Kadono, Hidehiko, 5,615,726, Cl. 164-32.000.
Tsukamoto, Kazumasa; Ando, Masahiko; Fukatsu, Akira; Mae, Toshiyuki; Sakai, Motoyuki; Hamajima, Tetsuo; Kaigawa, Masato; Fukumura, Kagenori; Oba, Hidehiro; Hojo, Yasuo; Tabata, Atsushi; and Takahashi, Nobuaki, 5,616,094, Cl. 475-128.000.
Yamada, Masatoshi; Kondo, Yasuhiro; Imai, Kenji; Kojima, Masahiro; and Nagashima, Nobuyuki, 5,616,000, Cl. 415-191.000.
Trainham, James A., III: *See—*
Mah, Dennie T.; Trainham, James A., III; Newman, John S.; Eames, Douglas J.; and Law, Clarence G., Jr., 5,616,220, Cl. 204-252.000.
Trammell, Quinn E.: *See—*
Ford, Douglas W.; Todd, Robert W.; Trammell, Quinn E.; and Higley, Dennis A., 5,616,300, Cl. 422-103.000.
Trantham, Richardson J.: *See—*
Cogdill, Bobby J.; and Trantham, Richardson J., 5,616,205, Cl. 156-229.000.
Treib, Volker: *See—*
Proske, Hans; Treib, Volker; and Wuttke, Horst, 5,615,992, Cl. 414-786.000.
Trelleborg AB: *See—*
Nordström, Erik G. S.; and Victor, Carl-Gustav B. C., 5,616,193, Cl. 152-185.100.
Tremblay, Leopold: *See—*
Ferland, Pierre; Tremblay, Leopold; and Doucet, Jean, 5,616,831, Cl. 73-61.630.
Treutwein, Georg. Buffet platter. 5,616,392, Cl. 428-80.000.
Tri-Ex Tower Corporation: *See—*
Marue, Edward A.; and Pereira, Kenneth J., 5,615,855, Cl. 248-405.000.
Tri-Seal International, Inc.: *See—*
Finkelstein, Harvey; Flores, Victor; Singer, Murray; and Verdel, Anatoly, 5,615,789, Cl. 215-348.000.
Tri State Hospital Supply Corporation: *See—*
Propp, Donald J., 5,616,138, Cl. 604-317.000.
Tricon Colors Incorporated: *See—*
Leary, William P., Jr., 5,616,696, Cl. 534-667.000.
Tripier, Dominique: *See—*
Crause, Peter; Habermann, Paul; Tripier, Dominique; Ulmer, Wolfgang; and Schmid, Gerhard, 5,616,476, Cl. 435-69.100.
Trotta, Paul P.: *See—*
Reichert, Paul; Hammond, Gerald S.; Le, Hung V.; Nagabhushan, Tattanahalli L.; and Trotta, Paul P., 5,616,555, Cl. 514-8.000.
Troy, Patrick E.: *See—*
Garbowicz, Glenn D.; Troy, Patrick E.; and Wetterich, Janis L., 5,616,990, Cl. 315-103.000.
Tru-Fire Corporation: *See—*
Tentler, Lynn A.; and Linsmeyer, Louis R., 5,615,662, Cl. 124-35.200.
Truche, Jean L.: *See—*
Broadbent, Carolyn C.; Kernan, Jeffrey T.; and Truche, Jean L., 5,616,919, Cl. 250-292.000.
Truesdell, Dean H.: *See—*
Heddon, Will; Redman, Ralph E.; Slimak, Lewis W., Jr.; Tucker, Sidney; and Truesdell, Dean H., 5,616,084, Cl. 473-73.000.
Truesdell, Scott E.: *See—*
Argoudelis, Alexander D., deceased; Shilliday, Franklin B.; Laborde, Alice L.; Truesdell, Scott E.; and Sebek, Oldrich K., 5,616,320, Cl. 424-71.300.
Trumbly, Terry A.: *See—*
Sieck, Peter A.; Newcomb, Richard; Trumbly, Terry A.; and Schulz, Stephen C., 5,616,225, Cl. 204-298.140.
Trustees of Columbia University in The City of New York: *See—*
Fox, Charles L., Jr.; Modak, Shanta M.; and Sampath, Lester A., 5,616,338, Cl. 424-423.000.
Tseng, Belle L.; and Anastassiou, Dimitris, 5,617,334, Cl. 364-514.00R.
Trützschler GmbH & Co. KG: *See—*
Leifeld, Ferdinand, 5,615,453, Cl. 19-288.000.
TRW Inc.: *See—*
Magoteaux, David G., 5,615,915, Cl. 280-743.100.
Margetak, Glen P.; Heidorn, Michael E.; and Wright, Eric W., 5,615,910, Cl. 280-731.000.
TRW Vehicle Safety Systems Inc.: *See—*
Bauer, Barney J., 5,615,917, Cl. 280-806.000.
O'Loughlin, John P.; and Hocking, James R., 5,615,912, Cl. 280-737.000.
Phillion, Jack A.; Klomhaus, Jamie L.; Meyers, Gary M.; and Barton, Richard J., 5,615,908, Cl. 280-728.300.
Wipasuramonton, Pongdet P.; and Brown, Louis R., 5,615,909, Cl. 280-730.200.
Tsai, Chiu-Mei; Kuo, Mei-Ling; and Huang, Kuo-Chih, to Winbond Electronics Corporation. Automatic code pattern generator for repetitious patterns in an integrated circuit layout. 5,617,328, Cl. 364-490.000.
Tsai, Chou-Hsuan. Zero insert-force integrated circuit socket assembly and conductive terminal pin therefor. 5,616,044, Cl. 439-342.000.
Tsai, Shih-Tien. Power grease pump. 5,616,014, Cl. 417-464.000.
Tseng, Belle L.; and Anastassiou, Dimitris, to Trustees of Columbia University in the City of New York, The. Multi-viewpoint digital video coder/decoder and method. 5,617,334, Cl. 364-514.00R.
Tseng, Wenjea J.: *See—*
Kita, Hideki; and Tseng, Wenjea J., 5,616,527, Cl. 501-97.000.
Tseng, Winger, to Noopro Industrial Corporation. Lighting device for use with computers. 5,615,945, Cl. 362-226.000.
Tsu, Robert: *See—*
Kulwicki, Bernard M.; and Tsu, Robert, 5,617,290, Cl. 361-321.400.
Tsubaki, Yuichiro: *See—*
Kanbara, Teruhisa; Tsubaki, Yuichiro; and Takeyama, Kenichi, 5,616,274, Cl. 252-62.200.
Tsubota, Haruji; and Sasaki, Naoya, to Kajima Corporation. Method and apparatus for measuring fabric stress. 5,616,852, Cl. 73-37.000.
Tsubota, Hiroyoshi: *See—*
Ohgawara, Masao; and Tsubota, Hiroyoshi, 5,617,230, Cl. 349-110.000.
Tsuchiya, Hiroaki: *See—*
Ban, Keiji; Tomoe, Tetsuro; Fuchi, Masami; Tsuchiya, Hiroaki; Yoshimura, Osamu; and Tanaka, Shinichi, 5,617,193, Cl. 399-316.000.
Tsuchiya, Masakazu; and Harada, Kazuaki, to Wako Pure Chemical Industries, Ltd. Process for selectively inhibiting activity of endotoxin. 5,616,557, Cl. 514-11.000.
Tsuji, Kenji: *See—*
Serita, Yasuaki; Tsuji, Kenji; and Okada, Hiroyuki, 5,617,161, Cl. 396-319.000.
Tsuji, Kikunosuke: *See—*
Watanabe, Takeshi; Tsuji, Kikunosuke; Hori, Setsuo; Kado, Seiji; Satake, Kenichi; Nakatsu, Hiromi; Baba, Kohichi; Ishii, Masayuki; and Uriu, Yoshiko, 5,615,877, Cl. 271-259.000.
Tsukada, Masamichi: *See—*
Oishi, Konosuke; Okumoto, Toyoharu; Tsukada, Masamichi; and Iino, Takashi, 5,616,918, Cl. 250-288.000.
Tsukada, Toru: *See—*
Namimatsu, Ken; Tsukada, Toru; and Yabe, Toshikazu, 5,615,955, Cl. 384-13.000.

Tsukamoto, Kazumasa; Ando, Masahiko; Fukatsu, Akira; Mae, Toshiyuki; Sakai, Motoyuki; Hamajima, Tetsuo; Kaigawa, Masato; Fukumura, Kagenori; Oba, Hidehiro; Hojo, Yasuo; Tabata, Atsushi; and Takahashi, Nobuaki, to Aisin Aw Co., Ltd.; and Toyota Jidosha Kabushiki Kaisha. Hydraulic control system for automatic transmission. 5,616,094, Cl. 475-128.000.
Tsunekawa, Koichi; and Hagiwara, Seiji, to NTT Mobile Communications Network, Inc. Antenna equipment. 5,617,105, Cl. 343-702.000.
Tsurunaga, Kazuyuki: *See*—
  Hara, Tsukushi; Ohkuma, Takeshi; Yamamoto, Takahiko; Ito, Daisuke; Tsurunaga, Kazuyuki; and Tada, Takamitsu, 5,617,280, Cl. 361-19.000.
Tsuruoka, Ryoichi: *See*—
  Kawabata, Takashi; Hyakutake, Nobuo; Furusawa, Fumio; Tokunaga, Masaaki; and Tsuruoka, Ryoichi, 5,617,197, Cl. 399-398.000.
Tsuruoka, Ryouichi: *See*—
  Torimaru, Satoru; Sameshima, Junichirou; Hokari, Norio; Hayashi, Yukio; Kobayashi, Mikio; Iseki, Shuji; and Tsuruoka, Ryouichi, 5,617,195, Cl. 399-27.000.
Tsurutani, Iwao: *See*—
  Yamaoka, Ryuso; Ishii, Yoshinori; Kondo, Kunio; Wakita, Kazuto; and Tsurutani, Iwao, 5,616,420, Cl. 428-515.000.
Tsutsumi, Kazumichi; Okamura, Shigekazu; and Irie, Tatsuji, to Mitsubishi Denki Kabushiki Kaisha. Method and apparatus for monitoring the surroundings of a vehicle and for detecting failure of the monitoring apparatus. 5,617,085, Cl. 340-903.000.
Tucker, Lawrence J.: *See*—
  Gordenker, Robert J. M.; Tucker, Lawrence J.; and Murphy, Michael E., 5,617,269, Cl. 360-77.120.
Tucker, Sidney: *See*—
  Heddon, Will; Redman, Ralph E.; Slimak, Lewis W., Jr.; Tucker, Sidney; and Trueadell, Dean H., 5,616,084, Cl. 473-73.000.
Tuckerman, Mark A.; Knuth, Russell P.; and Carey, William F., to Nature's Quarters, Inc. Air treatment system. 5,616,172, Cl. 96-16.000.
Tukahara, Yutaka: *See*—
  Nakao, Norihiko; Tukahara, Yutaka; Ikeda, Naoki; Takehara, Shin; Seni, Hirofumi; Harada, Shingo; and Santo, Chiaki, 5,617,315, Cl. 364-424.045.
Tulpule, Bhalchandra R.; Avritch, Steven A.; Blackwell, Geoffrey T.; and MacKay, Andrew M., to United Technologies Corporation. Interface having receive and transmit message label memories for providing communication between a host computer and a bus. 5,617,544, Cl. 395-281.000.
Tumminaro, Anthony J., Jr. Solution and process for chemically resharpening smoothing tools, forming tools, and cutting tools. 5,616,255, Cl. 216-11.000.
Tunnicliffe, George; Lee, John P.; and Dixon, Damian, to Kemutec Group, Ltd. Rotary drive coupling. 5,615,969, Cl. 403-348.000.
Tupuri, Raghuram S.; and Nair, Harikumar B., to Advanced Micro Devices, Inc. Method and apparatus to reuse existing test patterns to test a single integrated circuit containing previously existing cores. 5,617,431, Cl. 371-27.000.
Turba, James R.: *See*—
  Lark, Wayne W.; Morgan, Denny; and Turba, James R., 5,617,034, Cl. 324-635.000.
Turkel, David: *See*—
  Giurtino, Joel F.; Turkel, David; and Gordon, David P., 5,615,690, Cl. 128-754.000.
Turner, Edwin T.: *See*—
  Moore, Samuel B.; Leuck, James F.; and Turner, Edwin T., 5,616,280, Cl. 252-186.290.
Turner, Scot M.; Ritscher, James S.; Hallden-Abberton, Michael; and McLeod, Donald, Jr., to OSi Specialties, Inc. Stabilizers for unsaturated, polymerizable organosilicon compounds. 5,616,753, Cl. 556-401.000.
Turner, Scot M.: *See*—
  Hallden-Abberton, Michael; McLeod, Donald, Jr.; Ritscher, James S.; and Turner, Scot M., 5,616,638, Cl. 524-178.000.
Tuttle, John E. B., to United States of America, Army. Buried pipe locator utilizing a change in ground capacitance. 5,617,031, Cl. 324-326.000.
Tyagi, Dinesh: *See*—
  Wilson, John C.; and Tyagi, Dinesh, 5,616,444, Cl. 430-110.000.
Tyler, Paul S.: *See*—
  Abboud, Samir E.; Apuzzo, Nickolas C.; Brown, Jeffrey B.; Cunningham, Earl A.; Hannon, David M.; Mallette, Raymond P.; Tyler, Paul S.; Voss, Steven H.; and Wallash, Albert J., 5,617,289, Cl. 361-151.000.
Tyson Holding Company: *See*—
  Curry, Mark H.; Zimmerman, Donald M.; and Haley, John C., 5,616,073, Cl. 452-123.000.
Tzeng, Jaw-Horng; Chiu, Ming-Jer; Hwang, Yii-Wei; and Chang, Wei-Chi, to Industrial Technology Research Institute. Tape winding linkage of magnetic recording and reproducing apparatus. 5,617,270, Cl. 360-85.000.
U-Sun Gasket Corporation: *See*—
  Akita, Hiroaki, 5,615,897, Cl. 277-233.000.
Ube Industries, Ltd.: *See*—
  Yamaoka, Ryuso; Ishii, Yoshinori; Kondo, Kunio; Wakita, Kazuto; and Tsurutani, Iwao, 5,616,420, Cl. 428-515.000.
Uchida, Hiroyasu: *See*—
  Mitsumori, Koji; and Uchida, Hiroyasu, 5,617,256, Cl. 359-814.000.
Uchida Yoko Co., Ltd.: *See*—
  Kanai, Hiroshi; Nishimura, Hideo; Okamoto, Atsuo; and Choda, Mitsunobu, 5,615,926, Cl. 297-411.270.
Uchiyama, Yasufumi; Kawarazaki, Masaru; and Shirai, Jun-ichi, to Kyocera Corporation. Image smoothing method and apparatus. 5,617,130, Cl. 347-131.000.
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  Takaoka, Makoto; Sugiura, Susumu; Matsumoto, Kentaro; Uda, Toyokazu; and Uda, Masami, 5,617,123, Cl. 347-15.000.
Uda, Nobuya, to Lowe, Price, LeBlanc & Becker. Resistance ladder, D-A converter, and A-D converter. 5,617,091, Cl. 341-154.000.
Uda, Seizi: *See*—
  Ota, Atsushi; Uda, Seizi; Nakamura, Shingo; and Kadono, Hidehiko, 5,615,726, Cl. 164-32.000.
Uda, Toyokazu: *See*—
  Takaoka, Makoto; Sugiura, Susumu; Matsumoto, Kentaro; Uda, Toyokazu; and Uda, Masami, 5,617,123, Cl. 347-15.000.
Udo, Satoru: *See*—
  Maeda, Takashi; Furukido, Takeshi; Hoshino, Kousaku; Udo, Satoru; and Izumi, Masayoshi, 5,615,479, Cl. 29-888.300.
Ueba, Yoshinobu: *See*—
  Müller, Harald; and Ueba, Yoshinobu, 5,616,728, Cl. 549-11.000.
Ueda, Noriyoshi; Sato, Masaaki; and Hirai, Katsuaki, to Canon Kabushiki Kaisha. Original feeding method with originals mounted side by side. 5,617,196, Cl. 399-379.000.
Ueda, Sumiko, legal representative: *See*—
  Sasaki, Takuma; Matsuda, Akira; Ueda, Tohru, deceased, 5,616,567, Cl. 514-49.000.
Ueda, Takashi: *See*—
  Imuta, Junichi; Fukuoka, Daisuke; Yoshida, Masayasu; Saito, Junji; Fujita, Terunori; Tashiro, Takashi; Kawaai, Koji; Ueda, Takashi; and Kiso, Yoshihisa, 5,616,663, Cl. 526-127.000.
Ueda, Tohru, deceased (by Sumiko Ueda, legal representative): *See*—
  Sasaki, Takuma; Matsuda, Akira; Ueda, Tohru, deceased, 5,616,567, Cl. 514-49.000.
Ueda, Yonezo: *See*—
  Shinozaki, Hiroki; Tanaka, Masayuki; and Ueda, Yonezo, 5,616,413, Cl. 428-402.000.
Uegaito, Hisakazu: *See*—
  Kawaguchi, Hirofumi; Mizuta, Yasufumi; Matsumoto, Syunichi; Akiba, Nobuko; Fukami, Toshiyuki; Yamazato, Ichiro; Uegaito, Hisakazu; and Tanaka, Yuji, 5,616,441, Cl. 430-78.000.
Ueki, Katsuji; and Endo, Toyokazu, to Kasai Kogyo Co., Ltd. Automotive door trim with attachment joined during molding. 5,616,396, Cl. 428-139.000.
Ueno, Fumio: *See*—
  Horiguchi, Akihiro; Monma, Jun; Kimura, Kazuo; Oh-Ishi, Katsuyoshi; Ueno, Fumio; Kasori, Mitsuo; and Sumino, Hiroyasu, 5,616,956, Cl. 257-703.000.
Ueno, Masatoshi: *See*—
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Ueno, Yasuhide, to Canon Kabushiki Kaisha. Facsimile apparatus. 5,617,220, Cl. 358-434.000.
Uenoyama, Harumi: *See*—
  Dou, Xiaoming; Yamaguchi, Yoshinori; Uenoyama, Harumi; and Wang, Yung X., 5,617,205, Cl. 356-301.000.
Ueyama, Noboru: *See*—
  Mitsuda, Masaru; Hayashi, Shigeo; Hasegawa, Junzo; Ueyama, Noboru; Ohashi, Takehisa; and Shibasaki, Masakatsu, 5,616,726, Cl. 548-475.000.
Uick, Heidi J.: *See*—
  Payne, Jewel M.; Kennedy, M. Keith; Randall, John B.; Meier, Henry; Uick, Heidi J.; Foncerrada, Luis; Schnepf, Harry E.; and Schwab, George E., 5,616,495, Cl. 435-252.300.
Ukawa, Naohiko: *See*—
  Ishihara, Makiichi; Sunada, Takakazu; Hasegawa, Shigeo; Ukawa, Naohiko; Takashina, Toru; Kita, Yukio; Iwashita, Kouichiro; Yamashita, Kousuke; Ozaki, Junji; and Kaneshige, Kaname, 5,616,290, Cl. 261-115.000.
Ullman, Edwin F.: *See*—
  Davalian, Dariush; Singh, Rajendra; and Ullman, Edwin F., 5,616,719, Cl. 546-334.000.
Ulmer, Wolfgang: *See*—
  Crause, Peter; Habermann, Paul; Tripier, Dominique; Ulmer, Wolfgang; and Schmid, Gerhard, 5,616,476, Cl. 435-69.100.
Um, Gregory; and Szilagyi, Andrei, to Aura Systems, Inc. Piezoelectric actuator. 5,616,982, Cl. 310-328.000.
Umehara, Hajime: *See*—
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Umemoto, Koichi: *See*—
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Umeyama, Yasuyuki: *See*—
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Umezaki, Hiroshi; Takeuchi, Yoshiaki; and Sugimoto, Shoji, to Sumitomo Chemical Company, Limited. Magnetic recording medium. 5,616,410, Cl. 428-323.000.

Unger, Liliane: *See*—
  Steiner, Gerd; Munschauer, Rainer; Unger, Liliane; Teschendorf, Hans-Jürgen; and Höger, Thomas, 5,616,705, Cl. 544-105.000.
UNIC View Ltd.: *See*—
  Stolov, Adi, 5,617,152, Cl. 348-761.000.
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  Feldhauser, Brigitte; Koetsier, Wicher T.; and Lok, Cornelis M., 5,616,531, Cl. 502-253.000.
Union Carbide Chemicals & Plastics Technology Corporation: *See*—
  Eisinger, Ronald S.; Hunnisett, Christopher S.; Hussein, Fathi D.; Lee, Kin H.; and Cann, Kevin J., 5,616,661, Cl. 526-88.000.
UNISIA JECS Corporation: *See*—
  Yoshizawa, Keita, 5,615,657, Cl. 123-494.000.
Unisys Corporation: *See*—
  Bauman, Mitchell A.; and Federici, James L., 5,617,375, Cl. 368-10.000.
  Dolby, Nigel I.; Nagle, Timothy E.; and Goessling, Thomas R., 5,617,514, Cl. 395-51.000.
United Kingdom of Great Britain and Northern Ireland, a British Corporation Sole, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See*—
  Griffiths, Richard F.; Lawrence, John; and Williams, Aled, 5,616,822, Cl. 73-1.060.
United Microelectronics Corporation: *See*—
  Hsu, Chen-Chung; and Hong, Gary, 5,616,946, Cl. 257-390.000.
United States of America
  Air Force: *See*—
    Boncek, Raymond K., 5,617,233, Cl. 359-123.000.
    Nichols, Robert; McKelvey, Timothy A.; and Rodgers, Stephen L., 5,616,882, Cl. 102-287.000.
    Tan, Loon-Seng; and Venkatasubramanian, Narayanan, 5,616,765, Cl. 556-486.000.
  Army: *See*—
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    Koscica, Thomas E.; Tadross, Michael; and Drach, William C., 5,617,103, Cl. 343-700.0MS.
    Tuttle, John E. B., 5,617,031, Cl. 324-326.000.
    Walters, William; and Summers, Richard, 5,616,885, Cl. 102-476.000.
  Commerce: *See*—
    Cresswell, Michael W.; Allen, Richard A.; Kopanski, Joseph J.; and Linholm, Loren W., 5,617,340, Cl. 364-571.010.
  Energy: *See*—
    Dixon, Raymond D.; Smith, Frank M.; and O'Leary, Richard F., 5,615,826, Cl. 228-208.000.
  Health and Human Services: *See*—
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    Kinsella, James L.; and Sollott, Steven J., 5,616,608, Cl. 514-449.000.
    Mitsuya, Hiroaki; Broder, Samuel; and Yarchoan, Robert, 5,616,566, Cl. 514-47.000.
    Steinert, Peter M.; Kim, In-Gyu; Chung, Soo-Il; and Park, Sang-chul, 5,616,500, Cl. 435-320.100.
    Yuspa, Stuart H., 5,616,471, Cl. 435-29.000.
  Interior: *See*—
    Murphy, Andrew P.; and Moody, Charles D., 5,616,252, Cl. 210-728.000.
  National Aeronautics and Space Administration: *See*—
    Monacos, Steve P., 5,617,413, Cl. 370-400.000.
    Mulenburg, Gerald M.; and Vernikos, Joan, 5,616,104, Cl. 482-57.000.
    Simpson, John W.; Clendenin, C. Gerald; Fulton, James P.; Wincheski, Russell A.; Todhunter, Ronald G.; Namkung, Min; and Nath, Shridhar C., 5,617,024, Cl. 324-209.000.
  Navy: *See*—
    Bourlett, Steven P., 5,615,847, Cl. 244-63.000.
    Nedderman, William H., Jr., 5,615,632, Cl. 114-330.000.
    Pace, Phillip E., 5,617,092, Cl. 341-159.000.
    Sheehy, James B.; Gish, Kenneth W.; Sprenger, John J.; and Finkbeiner, William H., Jr., 5,617,257, Cl. 359-818.000.
    Shoemaker, Patrick A., 5,617,352, Cl. 365-185.080.
U.S. Philips Corporation: *See*—
  Damien, Souad, 5,617,416, Cl. 370-391.000.
  Fronen, Robert J.; Van Leest, Paulus J. C.; and Schoofs, Franciscus A. C. M., 5,617,503, Cl. 388-815.000.
  Götz, Hans-Joachim; Brachmann, Markus; Frank, Georg; and Eckart, Thomas, 5,617,454, Cl. 375-376.000.
  Häfele, Peter; and Poganitsch, Ernst, 5,616,028, Cl. 433-80.000.
  Kowalk, Wolfgang; and Keller, Hans-Georg, 5,617,415, Cl. 370-395.000.
  Makram-Ebeid, Shérif; and Breitenstein, Jacques, 5,617,459, Cl. 378-62.000.
  Spruit, Johannes H. M.; and Bakx, Johannus L., 5,617,399, Cl. 369-116.000.
United States Surgical Corporation: *See*—
  Gemma, Edward A., Jr.; and Stellon, Andrew P., 5,615,766, Cl. 206-63.300.
  Viola, Frank J., 5,615,820, Cl. 227-176.100.
United Technologies Corporation: *See*—
  Tulpule, Bhalchandra R.; Avritch, Steven A.; Blackwell, Geoffrey T.; and MacKay, Andrew M., 5,617,544, Cl. 395-281.000.
University of British Columbia, The: *See*—
  Sepehri, Nariman; Corbet, Todd A.; and Lawrence, Peter D., 5,616,998, Cl. 318-568.220.
University of California, Regents of the: *See*—
  Barcellos-Hoff, Mary H., 5,616,561, Cl. 514-13.000.
  Beach, Raymond J.; Benett, William J.; and Mills, Steven T., 5,617,492, Cl. 385-33.000.
  Campbell, Gregory A.; and White, Richard M., 5,617,020, Cl. 324-142.000.
  Lai, Zheren; and Smedley, Keyue M., 5,617,306, Cl. 363-17.000.
  Lucas, Joe N.; Straume, Tore; and Bogen, Kenneth T., 5,616,465, Cl. 435-6.000.
  Wachsman, William; Martin, Tracy; and Klump, Wolfgang, 5,616,475, Cl. 435-69.100.
  Whitehead, John C., 5,616,005, Cl. 417-46.000.
University of Georgia Research Foundation, Inc.: *See*—
  Jacobsen, Stuart M.; Jaffe, Steven M.; Eilers, Hergen; and Jones, Michieal L., 5,616,986, Cl. 313-461.000.
University of Glasgow, The University Court of the: *See*—
  Spibey, Norman, 5,616,326, Cl. 424-199.100.
University of Manitoba, The: *See*—
  Sepehri, Nariman; Corbet, Todd A.; and Lawrence, Peter D., 5,616,998, Cl. 318-568.220.
University of Maryland Baltimore Campus: *See*—
  Creighton, Donald J.; and Hamilton, Diana S., 5,616,563, Cl. 514-18.000.
University of Miami: *See*—
  Efange, S. Mbua N.; and Mash, Deborah C., 5,616,575, Cl. 514-215.000.
University of Michigan, Regents of the: *See*—
  O'Donnell, Matthew; and Hamilton, James D., 5,615,675, Cl. 128-653.100.
University of Minnesota, Regents of the: *See*—
  Efange, S. Mbua N.; and Mash, Deborah C., 5,616,575, Cl. 514-215.000.
University of New Mexico: *See*—
  Brueck, Steven R. J.; and Long, Xiang-Cun, 5,617,499, Cl. 385-122.000.
  Glicksman, Howard D.; Kodas, Toivo T.; and Majumdar, Diptarka, 5,616,165, Cl. 75-369.000.
University of North Carolina at Chapel Hill, The: *See*—
  O'Rand, Michael G.; Widgren, Esther E.; Richardson, Richard T.; and Lea, Isabel A., 5,616,322, Cl. 424-192.100.
University of Pennsylvania, Trustees of the: *See*—
  Kennedy, Ann R.; Koch, Cameron J.; Lord, Edith M.; and Wan, Xingsheng, 5,616,492, Cl. 435-341.000.
University of Rochester, The: *See*—
  Jacobs, Stephen D.; and Prokhorov, Igor V., 5,616,066, Cl. 451-36.000.
  Kennedy, Ann R.; Koch, Cameron J.; Lord, Edith M.; and Wan, Xingsheng, 5,616,492, Cl. 435-341.000.
University of South Florida: *See*—
  Garcia-Rubio, Luis H., 5,616,457, Cl. 435-4.000.
University of Toronto Innovations Foundation: *See*—
  Krepinsky, Jiri J.; Douglas, Stephen P.; and Whitfield, Dennis M., 5,616,698, Cl. 536-18.600.
University of Washington: *See*—
  Brawer, Michael K., 5,616,469, Cl. 435-7.230.
Uno, Atsushi: *See*—
  Nagano, Koichi; Uno, Atsushi; Baba, Toshiyuki; Shimura, Takashi; and Oyama, Yuusei, 5,616,981, Cl. 310-326.000.
Uno, Koichi: *See*—
  Sanjyou, Akira; Nakatsuka, Yasuo; Morita, Yasuyuki; and Uno, Koichi, 5,616,423, Cl. 428-632.000.
Uno, Mugijiroh: *See*—
  Murakami, Eisaku; Yuasa, Kazuhiro; Endoh, Shuichi; Matsumae, Iwao; Tanaka, Yoshiaki; Hosokawa, Hiroshi; Uno, Mugijiroh; Saitoh, Hiroshi; Takenaka, Eiji; Sugiyama, Toshihiro; Yamanaka, Tetsuo; and Komatsubara, Satoru, 5,617,191, Cl. 399-286.000.
  Takenaka, Eiji; and Uno, Mugijiroh, 5,617,190, Cl. 399-159.000.
Unruh, Jerry D.; Segmuller, Brigitte E.; Chapa, Gabriel R.; and Pryor, Kent E., to Hoechst Celanese Corporation. Synthesis of and hydroformylation with fluoro-substituted bidentate phosphine ligands. 5,616,785, Cl. 562-25.000.
Upjohn Company, The: *See*—
  Argoudelis, Alexander D., deceased; Shilliday, Franklin B.; Laborde, Alice L.; Truesdell, Scott E.; and Sebek, Oldrich K., 5,616,320, Cl. 424-71.300.
Urabe, Yoshio: *See*—
  Ohmi, Shinichiro; Takai, Hitoshi; and Urabe, Yoshio, 5,617,374, Cl. 368-10.000.
Uribe, Emigdio A.: *See*—
  Gloyd, David A.; Uribe, Emigdio A.; Koch, Robert J.; and Belsinger, Harry E., Jr., 5,616,115, Cl. 600-22.000.
Uriu, Yoshiko: *See*—
  Watanabe, Takeshi; Tsuji, Kikunosuke; Hori, Setsuo; Kado, Seiji; Satake, Kenichi; Nakatsu, Hiromi; Baba, Kohichi; Ishii, Masayuki; and Uriu, Yoshiko, 5,615,877, Cl. 271-259.000.
Ushida, Masayuki; Noda, Masayuki; and Ogata, Masaru, to Shin-Kobe Electric Machinery Co., Ltd. Laminate, glass fiber non-woven fabric therefor and a method of producing glass fiber non-woven fabric. 5,616,363, Cl. 427-372.200.
Ushikoshi, Ryusuke: *See*—
  Nobori, Kazuhiro; Ushikoshi, Ryusuke; Umemoto, Koichi; Sakon, Atsushi; Niiori, Yusuke; and Murasato, Masahiro, 5,616,024, Cl. 432-241.000.

Ushiyama, Yuichi, to Seiko Epson Corporation. Information processing apparatus and data back-up/restore system for the information processing apparatus. 5,617,532, Cl. 395-183.120.
Utagawa, Tsutomu: *See—*
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Utsumi, Kenichi: *See—*
Itami, Satoshi; Nakahara, Masaru; Nakada, Masahiro; Suzuki, Hiroshi; and Utsumi, Kenichi, 5,617,393, Cl. 369-58.000.
Utter, Robert E.: *See—*
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Uwai, Keita: *See—*
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Vaes, Jos Alfons: *See—*
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Vaid, Pardip K., to Smith & Wesson Corp. Magazine cartridge guide. 5,615,505, Cl. 42-50.000.
Vail, William B., III. Monolithic self sharpening rotary drill bit having tungsten carbide rods cast in steel alloys. 5,615,747, Cl. 175-379.000.
Vaks, Jeffrey E., to Mars Incorporated. Method and apparatus for validating money. 5,615,760, Cl. 194-206.000.
Valcho, Joseph J.: *See—*
Mike, Carl A.; Valcho, Joseph J.; and Yu, Daniel Yuan-Fu, 5,616,153, Cl. 44-331.000.
Valence Technology, Inc.: *See—*
Gao, Feng, 5,616,437, Cl. 429-245.000.
Olsen, Ib I.; and Jensen, Gert L., 5,616,366, Cl. 427-508.000.
Velasquez, David A.; Holmes, Douglas B.; and Gogolin, E. Lawrence, 5,616,152, Cl. 29-623.500.
Zachau-Christiansen, Birgit; and West, Keld, 5,616,309, Cl. 423-592.000.
Valent, James A., to Maxtor Corporation. Actuator torque non-linearity compensation for hard disk drives. 5,616,869, Cl. 73-862.541.
Valeo Thermique Moteur: *See—*
Alizadeh, Ahmad, 5,616,004, Cl. 416-238.000.
Vallejos, Jean-Claude; Perrard, Alain; Christidis, Yani; and Gallezot, Pierre, to Societe Francaise Hoechst. Preparation method for 2-coumaranone. 5,616,733, Cl. 549-307.000.
Valleroy, Laurent G., to Societe Hispano-Suiza. Thrust reverser for a fan-type turbojet engine. 5,615,549, Cl. 60-226.200.
Van Pelt Equipment Corporation: *See—*
Van Pelt, Christopher K., 5,615,614, Cl. 101-488.000.
VanAtta, Reuel: *See—*
Albagli, David; VanAtta, Reuel; and Wood, Michael, 5,616,464, Cl. 435-6.000.
Vance, Miles E., to Corning Incorporated. Pulse method for measurement of relative secondary path intensities in optical waveguide systems. 5,617,200, Cl. 356-73.100.
Van Daele, Georges H. P.; and Van den Keybus, Frans M. A., to Janssen Pharmaceutica N.V. N- (3-hydroxy-4-piperidinyl) (benzodioxolane, benzodioxane or benzodioxepane) carboxamide derivatives. 5,616,583, Cl. 514-235.500.
Van Daele, Georges H. P.; and Van den Keybus, Frans M. A., to Janssen Pharmaceutica N.V. N-(3-hydroxy-4-piperidinyl)(dihydrobenzofuran, dihydro-2-H-benzopyran or dihydrobenzodioxin)carboxamide derivatives. 5,616,738, Cl. 549-467.000.
Vandenberg, Elis: *See—*
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Van Den Bergh, Marc, to Web Converting Equipment, naamloze vennootschap. Machine for folding a web in a zigzag manner. 5,616,113, Cl. 493-23.000.
Van den Keybus, Frans M. A.: *See—*
Van Daele, Georges H. P.; and Van den Keybus, Frans M. A., 5,616,583, Cl. 514-235.500.
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Weichman, Frank L.; van der Schoot, Jelle; Kenway, Daniel J.; Hughes, Alan J.; and Flatman, Carl S., 5,615,777, Cl. 209-511.000.
van der Zanden, Brigitte C. H.: *See—*
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Van Dusen, Donn S.; and Gibbs, Douglas P., to Advanced Accessory Systems, LLC. Drawbar coupler for an automotive vehicle hitch rack. 5,615,904, Cl. 280-506.000.
Vanhatalo, Jari: *See—*
Lee, Myung B.; and Vanhatalo, Jari, 5,616,180, Cl. 118-715.000.
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De Cock, Etienne M.; De Schamphelaere, Lucien A.; Van Dessel, Bart J.; and Van Hoogten, Daniël L., 5,617,189, Cl. 399-254.000.
Van Hunsel, Johan H.: *See—*
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Vanka, Subbarao: *See—*
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Van Koetsem, Jan P. K.: *See—*
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Van Leest, Paulus J. C.: *See—*
Fronen, Robert J.; Van Leest, Paulus J. C.; and Schoofs, Franciscus A. C. M., 5,617,503, Cl. 388-815.000.
Vanlerberghe, Guy: *See—*
Mahieu, Claude; Semeria, Didier; Cauwet, Danièle; and Vanlerberghe, Guy, 5,616,746, Cl. 554-66.000.
Vanmaele, Luc, to Agfa-Gevaert, N.V. Thiazolylazoaniline dyes for use in thermal dye sublimination transfer. 5,616,697, Cl. 534-795.000.
Van Moerkerken, Arthur. Face pimples prevention method and compositions. 5,616,617, Cl. 514-561.000.
Van Ness, Charles L.: *See—*
Hill, Alan M.; Meeks, William R.; and Van Ness, Charles L., 5,615,609, Cl. 101-183.000.
Van Pelt, Christopher K., to Van Pelt Equipment Corporation. Thermography process and apparatus. 5,615,614, Cl. 101-488.000.
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Amesz, Willem; Van Raemdonck, Joris K. M.; De Meyer, Willy; and Verpoest, Ignace H. J. M., 5,616,391, Cl. 428-71.000.
Van Venrooij, Walter J.; Sillekens, Peter T. G.; and Habets, Winand J. A., to Akzo Nobel N.V. snRNP-A antigen and fragments thereof. 5,616,685, Cl. 530-324.000.
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Vasiliou, Georgios: *See—*
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Vennin, Gérard M. R. M.: *See—*
Beutin, Bruno A.; Creti, Joël; Donnadieu, Jean-Pierre; Garnier, Francis G. A.; Hugues, Michel G.; Lecordix, Jean-Loic H.; Maignan, Claude P. H.; Massot, Gilles C. G.; Pincemin, Jean-Marie N.; Thorel, Christophe J. F.; Touron, Carole C.; and Vennin, Gérard M. R. M., 5,615,547, Cl. 60-39.080.
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Celoudoux, Jean P.; and Verhille, Michel, 5,615,478, Cl. 29-845.000.
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Mulenburg, Gerald M.; and Vernikos, Joan, 5,616,104, Cl. 482-57.000.
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Nishizawa, Akira; and Kayanuma, Kanji, 5,617,408, Cl. 369-275.400.
Victora, Randall H.; and Farruggia, Giuseppe, to Eastman Kodak Company. Optical recording medium having at least two separate recording layers of different writing temperatures. 5,617,405, Cl. 369-275.100.
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Svetkoff, Donald J.; Rohrer, Donald K.; Noblett, David A.; and Jackson, Robert L., 5,617,209, Cl. 356-376.000.
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Borrett, Gary T.; Kitteringham, John; Porter, Roderick A.; Shipton, Mark R.; Vimal, Mythily; and Young, Rodney C., 5,616,603, Cl. 514-411.000.
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Schroeck, Harold J.; and Burger, Paul R., 5,615,442, Cl. 15-147.100.
Vinouze, Bruno; Guilbert, Martine; and Bosc, Dominique, to France Telecom. Diffusing matris liquid crystal display screen. 5,617,231, Cl. 349-112.000.
Viola, Frank J., to United States Surgical Corporation. Cartridge surgical fastener applying apparatus. 5,615,820, Cl. 227-176.100.
Vipond, Jeffrey J.; Larkin, John M.; Renken, Terry L.; and Stridde, Howard M., to Huntsman Petrochemical Corporation. Etheramine alkoxylates. 5,616,811, Cl. 564-505.000.
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Hagiwara, Makoto, 5,616,096, Cl. 475-249.000.
VLSI Technology, Inc.: *See—*
Schaefer, Thomas J., 5,617,325, Cl. 364-488.000.
Vollbrecht, Heinz-Rüdiger: *See—*
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vom Schemm, Michael, to Dichtungstechnik G. Bruss GmbH & Co. KG. Shaft seal ring and a method and a device of manufacturing same. 5,615,894, Cl. 277-134.000.
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Vos, Peter M., 5,615,606, Cl. 99-352.000.
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Egglhuber, Karl, 5,616,065, Cl. 451-10.000.
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Walance, Robert B., to Harris Corporation. Mechanism for controllably enabling test set to assert off-hook condition on telephone line in dependence upon detection of prescribed voltage level and absence of data traffic. 5,617,466, Cl. 379-28.000.
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Walker, Jim: *See—*
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Walker, John D.: *See—*
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Walker, Michael A.; and Robinson, Karl M., to Micron Technology, Inc. Directional spray pad scrubber. 5,616,069, Cl. 451-36.000.
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Walker, Randall: *See—*
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Walsh, Paul J., to Herecules Incorporated. 3-D carbon-carbon composites for crystal pulling furnace hardware. 5,616,175, Cl. 117-14.000.
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Garber, Jonathan F.; Brown, Jorg A.; and Walters, Chad P., 5,617,552, Cl. 395-401.000.
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Chen, Fu H.; and Wang, Jenny C. H., 5,615,580, Cl. 74-475.000.

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Russell, Edward A.; and Tang, Raymond T., 5,617,570, Cl. 395-684.000.

Wang, Leao; and Wu, Peter, to Greenmaster Industrial Corp. Rowing machine. 5,616,105, Cl. 482-72.000.

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Huckabee, Brian K.; and Sobieray, Denis M., 5,616,793, Cl. 562-553.000.

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Washington, Wayne. Line breaker. 5,615,509, Cl. 43-4.000.

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Watanabe, Tetsu; and Aoki, Yoshio, to Sony Corporation. Magneto-optical disc system having an objective lens with a numerical aperture related to the thickness of the protective layer. 5,617,378, Cl. 369-13.000.

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Weder, Donald E. Wrapping material for providing a decorative covering. 5,615,533, Cl. 53-410.000.

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Weder, E. H.: *See—*

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Hou, Chang Feng-Mei; and Wei, Ming-Ta, 5,615,819, Cl. 227-109.000.

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Hickling, Robert; Lee, Peng; Wei, Wei; and Chang, Shi-Tse, 5,616,845, Cl. 73-584.000.

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Duncan, Robert G., 5,617,327, Cl. 364-489.000.
Goetting, F. Erich; Peterson, Wade K.; and Schultz, David P., 5,617,021, Cl. 324-158.100.
Huang, Alan Y.; Knapp, Steven K.; and Kwatra, Sanjeev, 5,617,573, Cl. 395-376.000.
Lee, Napoleon W.; Ku, Wei-Yi; Nguyen, Hy V.; and Diba, Sholeh, 5,617,041, Cl. 326-39.000.
Ximen, Hongyu: *See*—
Talbot, Christopher G.; Masnaghetti, Douglas; and Ximen, Hongyu, 5,616,921, Cl. 250-307.000.
Xiu, Rui J. Stimulator of vascular endothelial cells and use thereof. 5,616,325, Cl. 424-195.100.
XTec, Incorporated: *See*—
Fernadez, Alberto J., 5,616,904, Cl. 235-449.000.
Xu, Shuang-yong, to New England Biolabs, Inc. Cloning and expression of the ApaLI restriction endonuclease. 5,616,484, Cl. 435-199.000.
Xu, Xiangdong: *See*—
Khanna, Ish K.; Weier, Richard M.; Collins, Paul W.; Yu, Yi; Xu, Xiangdong; Partis, Richard A.; and Koszyk, Francis J., 5,616,601, Cl. 514-399.000.
Yabe, Toshikazu: *See*—
Namimatsu, Ken; Tsukada, Toru; and Yabe, Toshikazu, 5,615,955, Cl. 384-13.000.
Yabutsuka, Mitsuo: *See*—
Fujiu, Isao; and Yabutsuka, Mitsuo, 5,615,916, Cl. 280-777.000.
Yagi, Tetsuya: *See*—
Kusunoki, Akira; Otsuki, Jitsuji; Kikuoka, Yasuhira; Okada, Tatsunori; Matsumura, Mitsuie; Shinoki, Toshio; Mukai, Masahiro; and Yagi, Tetsuya, 5,616,431, Cl. 429-36.000.
Yaguchi, Isamu: *See*—
Okamoto, Kuninori; Kuno, Hideaki; Yaguchi, Isamu; Koishikawa, Jun; and Yamamoto, Yasuo, 5,616,173, Cl. 106-117.000.
Yagyu, Tatsuya: *See*—
Kanaya, Miharu; Owatari, Akio; Takatsuna, Junko; Yatake, Masahiro; Hayashi, Hiroko; Ono, Takashi; Sawatari, Yoshihiro; and Yagyu, Tatsuya, 5,616,174, Cl. 106-22.00K.
Yajima, Hiromi: *See*—
Okumura, Katsuya; Aoki, Riichirou; Yajima, Hiromi; Kodera, Masako; Mishima, Shirou; Shigeta, Atsushi; Hirose, Masayoshi; Kimura, Norio; and Ishikawa, Seiji, 5,616,063, Cl. 451-1.000.
Yamabe, Yasuo; and Ohtsuka, Tetsushi, to Sekisui Kagaku Kogyo Kabushiki Kaisha. Vacuum valve control device and vacuum valve. 5,615,701, Cl. 137-205.000.
Yamada, Hiroshi, to Fuji Photo Optical Co., Ltd. Camera lens system. 5,617,255, Cl. 359-784.000.
Yamada, Masatoshi; Kondo, Yasuhiro; Imai, Kenji; Kojima, Masahiro; and Nagashima, Nobuyuki, to Kabushiki Kaisha Toyota Chuo Kenkyusho; and Toyota Jidosha Kabushiki Kaisha. Stator of torque converter for vehicles improved to suppress separation of working fluid. 5,616,000, Cl. 415-191.000.
Yamada, Norihide, to Hewlett-Packard Company. Group II-VI semiconductor laser and method for the manufacture thereof. 5,616,177, Cl. 117-102.000.
Yamada, Shigeki; Maruyama, Katsumi; Kubota, Minoru; and Tanaka, Satoshi, to Nippon Telegraph and Telephone Corporation. Message passing system for distributed shared memory multiprocessor system and message passing method using the same. 5,617,537, Cl. 395-200.010.
Yamada, Tadao. Fan motor. 5,616,974, Cl. 310-68.00B.
Yamada, Takahiro; Ogawa, Masao; and Shibata, Eiji, to Brother Kogyo Kabushiki Kaisha. Threading apparatus of sewing machine. 5,615,629, Cl. 112-225.000.
Yamada, Toshifusa; Soyano, Shin; Arai, Etsuo; Watanabe, Manabu; and Igarashi, Seiki, to Fuji Electric Co., Ltd. Power transistor module wiring structure. 5,616,955, Cl. 257-690.000.
Yamada, Yoichi; and Funaki, Shigeo, to Fujitsu Limited. Three-dimensional pattern editing apparatus having moving distance calculator and/or a dragging pattern holding unit. 5,617,520, Cl. 395-119.000.
Yamaga, Kenichi: *See*—
Nishi, Katsuo; Terada, Kazuo; Ohkase, Wataru; and Yamaga, Kenichi, 5,616,264, Cl. 219-494.000.
Yamaguchi, Chiseki, to NEC Corporation. Method and display panel for displaying color image. 5,616,416, Cl. 428-411.100.
Yamaguchi, Yasuo: *See*—
Nakai, Tetsuya; Yamaguchi, Yasuo; and Nishimura, Tadashi, 5,616,507, Cl. 438-480.000.
Yamaguchi, Yoshinori: *See*—
Dou, Xiaoming; Yamaguchi, Yoshinori; Uenoyama, Harumi; and Wang, Yung X., 5,617,205, Cl. 356-301.000.
Yamaha Corporation: *See*—
Hayashida, Hajime; Aoyagi, Takashi; Inoue, Satoshi; Nozue, Ringi; Kawamura, Kiyoshi; and Sato, Shigeaki, 5,616,880, Cl. 84-719.000.
Tamura, Motoichi; and Shibukawa, Takeo, 5,616,877, Cl. 84-609.000.
Yamauchi, Akira; Umeyama, Yasuyuki; and Ohno, Kyoko, 5,616,879, Cl. 84-653.000.
Yamaha Hatsudoki Kabushiki Kaisha: *See*—
Suzuki, Toshio, 5,615,661, Cl. 123-688.000.
Yamamoto, Hiroshi: *See*—
Masuda, Natsuo; Yamamoto, Hiroshi; Horizoe, Haruhiko; Hiramatsu, Shinji; Hizuka, Hidehiko; Matsumoto, Manabu; and Motoseko, Toshihiko, 5,616,034, Cl. 439-78.000.
Shinozaki, Shimpei; Takishima, Suguru; and Yamamoto, Hiroshi, 5,617,379, Cl. 369-13.000.
Yamamoto, Itaru; Muto, Norio; and Miyake, Toshio, to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo. α-glycosyl-L-ascorbic acid, and its preparation and uses. 5,616,611, Cl. 514-474.000.
Yamamoto, Kazue: *See*—
Otsuka, Kuniaki; Yamamoto, Kazue; Konishi, Satoshi; and Yamato, Shigeru, 5,616,230, Cl. 205-125.000.
Yamamoto, Kazuo, to NSK, Ltd. Air bag. 5,616,375, Cl. 428-12.000.
Yamamoto, Kenji: *See*—
Nasu, Hisanori; Yamamoto, Kenji; and Fujimiya, Hitoshi, 5,616,228, Cl. 204-603.000.
Yamamoto, Makoto: *See*—
Shou, Guoliang; Takatori, Sunao; and Yamamoto, Makoto, 5,617,053, Cl. 327-361.000.
Yamamoto, Masakazu: *See*—
Kobayashi, Makoto; Yamamoto, Masakazu; Miyake, Yoshio; Isemoto, Koji; Uwai, Keita; and Miyazaki, Yoshiaki, 5,616,013, Cl. 417-423.140.
Yamamoto, Naoki: *See*—
Iura, Noriyuki; Kudo, Yoshimichi; Ichige, Kenji; Yamamoto, Naoki; and Imaide, Takuya, 5,617,312, Cl. 364-188.000.
Yamamoto, Noriyuki: *See*—
Kakimoto, Yasuhiro; and Yamamoto, Noriyuki, 5,615,605, Cl. 99-348.000.

Yamamoto, Sozo: *See—*
Kataoka, Mitsuteru; Imanaka, Takeshi; Tanaka, Atsushi; and Yamamoto, Sozo, 5,617,117, Cl. 345-157.000.
Yamamoto, Takahiko: *See—*
Hara, Tsukushi; Ohkuma, Takeshi; Yamamoto, Takahiko; Ito, Daisuke; Tsurunaga, Kazuyuki; and Tada, Takamitsu, 5,617,280, Cl. 361-19.000.
Yamamoto, Takashi: *See—*
Saito, Kimitoshi; and Yamamoto, Takashi, 5,617,183, Cl. 355-71.000.
Yamamoto, Takeshi, to Kabushiki Kaisha Toshiba. Electronic circuit analyzing method with automatic adjustment of feedback loop effects. 5,617,326, Cl. 364-488.000.
Yamamoto, Yasuo: *See—*
Okamoto, Kuninori; Kuno, Hideaki; Yaguchi, Isamu; Koishikawa, Jun; and Yamamoto, Yasuo, 5,616,173, Cl. 106-117.000.
Yamamoto, Yoshihiro: *See—*
Kuwayama, Masahiko; and Yamamoto, Yoshihiro, 5,617,184, Cl. 355-75.000.
Yamamoto, Yoshinobu: *See—*
Itoh, Hiroshi; Yamamoto, Yoshinobu; Fukuhara, Koji; Shiroshima, Masahiro; and Kobayashi, Hiroya, 5,616,681, Cl. 528-279.000.
Yamamoto, Yoshitaka; Tagawa, Akira; Ishii, Yutaka; Koden, Mitsuhiro; and Shinomiya, Tokihiko, to Sharp Kabushiki Kaisha. Field sequential ferroelectric LCD having a single crystalline layer in which a plurality of circuit elements are formed. 5,617,229, Cl. 349-42.000.
Yamamoto, Yoshitsugu; and Kadoiwa, Kaoru, to Mitsubishi Denki Kabushiki Kaisha. MBE apparatus and gas branch piping apparatus. 5,616,181, Cl. 118-723.0ER.
Yamamoto, Yukinori: *See—*
Shimokoriyama, Makoto; Matsui, Izumi; Hamanaka, Akiyoshi; and Yamamoto, Yukinori, 5,617,143, Cl. 348-407.000.
Yamanaka, Kiyoshi: *See—*
Arakawa, Takeharu; Araki, Morio; Nobe, Kenichi; and Yamanaka, Kiyoshi, 5,617,319, Cl. 364-449.100.
Yamanaka, Koji: *See—*
Aoki, Hidemitsu; Yamanaka, Koji; Imaoka, Takashi; Futatsuki, Takashi; and Yamashita, Yukinari, 5,616,221, Cl. 204-252.000.
Yamanaka, Tetsuo: *See—*
Murakami, Eisaku; Yuasa, Kazuhiro; Endoh, Shuichi; Matsumae, Iwao; Tanaka, Yoshiaki; Hosokawa, Hiroshi; Uno, Mugijiroh; Saitoh, Hiroshi; Takenaka, Eiji; Sugiyama, Toshihiro; Yamanaka, Tetsuo; and Komatsubara, Satoru, 5,617,191, Cl. 399-286.000.
Yamanouchi Pharmaceutical Co., Ltd.: *See—*
Tamazawa, Kazuharu; Kojima, Tadao; Arima, Hideki; Murakami, Yukiyasu; Isomura, Yasuo; Okada, Minoru; Takenaka, Toichi; and Takanobu, Kiyoshi, 5,616,715, Cl. 546-278.400.
Yamaoka, Ryuso; Ishii, Yoshinori; Kondo, Kunio; Wakita, Kazuto; and Tsurutani, Iwao, to Gunze Limited; and Ube Industries, Ltd. Laminate film. 5,616,420, Cl. 428-515.000.
Yamasaki, Yoshimori: *See—*
Kobunaya, Hideki; Ishikawa, Yutaka; Yamasaki, Yoshimori; and Chiba, Takayoshi, 5,617,382, Cl. 369-32.000.
Yamashita, Kousuke: *See—*
Ishihara, Makiichi; Sunada, Takakazu; Hasegawa, Shigeo; Ukawa, Naohiko; Takashina, Toru; Kita, Yukio; Iwashita, Kouichiro; Yamashita, Kousuke; Ozaki, Junji; and Kaneshige, Kaname, 5,616,290, Cl. 261-115.000.
Yamashita, Yukinari: *See—*
Aoki, Hidemitsu; Yamanaka, Koji; Imaoka, Takashi; Futatsuki, Takashi; and Yamashita, Yukinari, 5,616,221, Cl. 204-252.000.
Yamato, Shigeru: *See—*
Otsuka, Kuniaki; Yamamoto, Kazue; Konishi, Satoshi; and Yamato, Shigeru, 5,616,230, Cl. 205-125.000.
Yamauchi, Akira; Umeyama, Yasuyuki; and Ohno, Kyoko, to Yamaha Corporation. Electronic musical instrument system formed of dynamic network of processing units. 5,616,879, Cl. 84-653.000.
Yamazaki, Kazutoshi: *See—*
Nakata, Naotarou; Aoki, Naofumi; and Yamazaki, Kazutoshi, 5,617,441, Cl. 372-70.000.
Yamazaki, Masaru: *See—*
Takaba, Tetsufumi; Fujita, Masami; Yamazaki, Masaru; Kibayashi, Hiroshi; Sugano, Kazuyoshi; and Ishii, Shizuo, 5,617,169, Cl. 396-284.000.
Yamazaki, Mitsuo: *See—*
Kaneko, Masakatsu; Murofushi, Yoshinobu; Kimura, Misako; Yamazaki, Mitsuo; and Iijima, Yasuteru, 5,616,600, Cl. 514-397.000.
Yamazaki, Shunpei; and Takemura, Yasuhiko, to Semiconductor Energy Laboratory Co., Ltd. Electro-optical system and method of displaying images. 5,617,243, Cl. 359-309.000.
Yamazaki, Takaya: *See—*
Iizuka, Hirokazu; Ohmura, Masashi; Kondo, Masataka; Kobayashi, Hideki; Mizuno, Hiroyuki; Yamazaki, Takaya; and Shibata, Kazuo, 5,616,017, Cl. 418-63.000.
Yamazato, Ichiro: *See—*
Kawaguchi, Hirofumi; Mizuta, Yasufumi; Matsumoto, Syunichi; Akiba, Nobuko; Fukami, Toshiyuki; Yamazato, Ichiro; Uegaito, Hisakazu; and Tanaka, Yuji, 5,616,441, Cl. 430-78.000.
Yanaga, Masaharu: *See—*
Taguchi, Keiichi; Maeda, Hideho; and Yanaga, Masaharu, 5,617,264, Cl. 360-54.000.
Yanagihara, Masamitsu; Shirasu, Hiroshi; and Kikuchi, Tetsuo, to Nikon Corporation. Exposure apparatus and exposure method. 5,617,181, Cl. 355-46.000.
Yanagimoto, Takekazu, to Fuji Photo Film Co., Ltd. Film carrier of photographic printer with adjustable mask. 5,617,186, Cl. 355-75.000.
Yanagisawa, Hiroaki; Fujimoto, Koichi; Amemiya, Yoshiya; Shimoji, Yasuo; Kanazaki, Takuro; Koike, Hiroyuki; and Sada, Toshio, to Sankyo Company, Limited. Angiotensin II antagonist 1-biphenylmethylimidazole compounds and their therapeutic use. 5,616,599, Cl. 514-381.000.
Yanagisawa, Katsutada: *See—*
Yokota, Sumio; Matsuzawa, Masafumi; Ohba, Nobuyuki; Nagata, Toshihiro; Tachikawa, Shigehiko; Miyazawa, Takeshige; and Yanagisawa, Katsutada, 5,616,537, Cl. 504-242.000.
Yanase, Sumihide: *See—*
Nakamaru, Takashi; Yanase, Sumihide; and Okimura, Akihiko, 5,616,406, Cl. 442-19.000.
Yang, Chen-Chi. Electricity driven device and method for increasing the rotational inertia of a rotary object or the blade of a lawn mower. 5,615,540, Cl. 56-11.900.
Yang, Ming-Chia, to Helio-Compatic Corporation. On-line monitoring system of a simulated heat-exchanger. 5,615,733, Cl. 165-11.100.
Yano, Hiroyuki: *See—*
Ikeda, Atsuhiko; Ozaki, Masami; Honami, Reijiro; Yumita, Takashi; Yano, Hiroyuki; Nakano, Yuki; Kurihara, Yutaka; and Hirano, Tadayoshi, 5,616,594, Cl. 514-340.000.
Yao, Masahiro: *See—*
Nishimura, Akihiro; and Yao, Masahiro, 5,617,271, Cl. 360-94.000.
Yapp, Ronald A.; and Worrick, Charles B., III, to Codman & Shurtleff, Inc. Osteosynthesis plate system. 5,616,144, Cl. 606-61.000.
Yarbrough, Roy L.: *See—*
Ward, Michael G.; Yarbrough, Roy L.; and Chapin, Jay R., 5,617,048, Cl. 327-143.000.
Yarchoan, Robert: *See—*
Mitsuya, Hiroaki; Broder, Samuel; and Yarchoan, Robert, 5,616,566, Cl. 514-47.000.
Yashiro, Masahiko; Sasaki, Shinichi; Ikemoto, Isao; Miura, Koji; Karakama, Toshiyuki; and Numagami, Atsushi, to Canon Kabushiki Kaisha. Process cartridge, method for assembling process cartridge and image forming apparatus. 5,617,579, Cl. 399-114.000.
Yasinovsky, Vadim M.: *See—*
Kroll, Yury; Yasinovsky, Vadim M.; and Green, Adam B., 5,617,578, Cl. 395-800.000.
Yasuda, Hitoshi: *See—*
Takahashi, Akihiko; Yasuda, Hitoshi; Hartwig, Karl T.; McDonald, Lacy C.; and Zou, Hong, 5,616,191, Cl. 148-690.000.
Yasuda, Masanori: *See—*
Onimaru, Sadahisa; Inoue, Takashi; Yasuda, Masanori; and Okada, Hiroshi, 5,616,021, Cl. 431-115.000.
Yasuda, Nobuyuki, to Sony Corporation. Sampling frequency converting device and memory address control device. 5,617,088, Cl. 341-61.000.
Yatake, Masahiro: *See—*
Kanaya, Miharu; Owatari, Akio; Takatsuna, Junko; Yatake, Masahiro; Hayashi, Hiroko; Ono, Takashi; Sawatari, Yoshihiro; and Yagyu, Tatsuya, 5,616,174, Cl. 106-22.00K.
Yates, Ashley J.: *See—*
Daifotis, Anastasia G.; and Yates, Ashley J., 5,616,571, Cl. 514-102.000.
Yazaki Corporation: *See—*
Arai, Youichi, 5,617,324, Cl. 364-483.000.
LeBeau, Howard S., 5,615,851, Cl. 248-73.000.
Okamoto, Kenichi; and Taguchi, Naoto, 5,616,038, Cl. 439-157.000.
Yeager, Walter H.: *See—*
Henrie, Robert N., II; Peake, Clinton J.; Cullen, Thomas G.; Yeager, Walter H.; Buser, John W.; Fiordeliso, James J.; and Dixson, John A., 5,616,718, Cl. 546-330.000.
Yearsley, Philip J.: *See—*
Casey, John F.; Schroeder, Ronald W.; Dove, Lewis R.; and Yearsley, Philip J., 5,617,298, Cl. 361-766.000.
Yee, Gaylin M.: *See—*
Jenkins, Andrew; Henry, Peter S.; and Yee, Gaylin M., 5,617,050, Cl. 327-205.000.
Yeh, John. Multipurpose tree lamp. 5,615,946, Cl. 362-250.000.
Yeh, Keming: *See—*
Wang, Li-Chen; and Yeh, Keming, 5,617,236, Cl. 359-172.000.
Yen, Richard C. K., to Hemosphere, Inc. Non-crosslinked protein particles for therapeutic and diagnostic use. 5,616,311, Cl. 424-1.330.
Yeomans Chicago Corporation: *See—*
Khazanov, Yuri; and Norwood, Wilbur D., 5,616,973, Cl. 310-54.000.
Yergenson, Robin P.; and Beaufort, Richard F., to Hewlett-Packard Company. Apparatus and method for sensing accordion jams in a laser printer. 5,615,876, Cl. 271-258.010.
Yeung, Clinton M.: *See—*
Klein, Larry L.; Yeung, Clinton M.; and Li, Leping, 5,616,740, Cl. 549-510.000.
YKK Corporation: *See—*
Matsuda, Yoshio; Kato, Hidenobu; and Ikeguchi, Yoshito, 5,615,563, Cl. 66-193.000.
Tominaga, Yutaka; Takizawa, Toshiaki; and Murasaki, Ryuichi, 5,615,461, Cl. 24-452.000.
Yoda, Syoichi: *See—*
Anzawa, Seiichi; and Yoda, Syoichi, 5,617,300, Cl. 361-795.000.
Yokogawa, Fumihiko: *See—*

Onagi, Nobuaki; and Yokogawa, Fumihiko, 5,617,406, Cl. 369-275.300.
Yokokawa, Eiji: *See—*
Oyamada, Ouichi; Arayashiki, Akifumi; Sato, Hiroyo; and Yokokawa, Eiji, 5,617,333, Cl. 364-514.00R.
Yokomizo, Osamu: *See—*
Kurosaki, Hideki; Nakajima, Junjiro; Umehara, Hajime; Nakamura, Shozo; Kanno, Satoshi; Nishida, Koji; Bessho, Yasunori; Inagaki, Masahisa; Yokomizo, Osamu; and Yoshimoto, Yuichiro, 5,617,456, Cl. 376-260.000.
Yokono, Tomohiko; Sonobe, Masanori; Kawaguchi, Masahiro; Okuno, Takuya; and Suitou, Ken, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Variable displacement compressor. 5,616,008, Cl. 417-222.200.
Yokota, Ikuhiro, to NEC Corporation. Mesh generator and generating method. 5,617,322, Cl. 364-468.040.
Yokota, Muneyasu: *See—*
Nara, Kei; Matsuura, Toshio; Yokota, Muneyasu; Kakizaki, Yukio; Fukami, Yoshio; Miyazaki, Seiji; and Narabe, Tsuyoshi, 5,617,211, Cl. 356-401.000.
Yokota, Sumio; Matsuzawa, Masafumi; Ohba, Nobuyuki; Nagata, Toshihiro; Tachikawa, Shigehiko; Miyazawa, Takeshige; and Yanagisawa, Katsutada, to Kumiai Chemical Industry Co., Ltd.; and Ihara Chemical Industry Co., Ltd. Condensed heterocyclic derivatives and herbicides. 5,616,537, Cl. 504-242.000.
Yokoyama, Kouichirou: *See—*
Nishizawa, Katsuhiko; Koshiishi, Osamu; and Yokoyama, Kouichirou, 5,615,959, Cl. 400-279.000.
Yokozaki, Katsushi: *See—*
Mimura, Masahiro; Hasegawa, Makoto; Yokozaki, Katsushi; Harada, Hiroyuki; Kishigami, Takaaki; and Tanaka, Yasunari, 5,617,451, Cl. 375-340.000.
Yokozeki, Akimichi: *See—*
Bivens, Donald B.; Shiflett, Mark B.; and Yokozeki, Akimichi, 5,616,276, Cl. 252-67.000.
Yoncak, Alexander T. Caulk container with heater coils. 5,615,805, Cl. 222-146.500.
Yonekawa, Teruo: *See—*
Takemoto, Tadashi; Hijiya, Toyoto; Yonekawa, Teruo; and Mochizuki, Chiaki, 5,616,766, Cl. 558-38.000.
Yonemitsu, Jun; Iwamura, Ryuichi; Yoshimura, Shunji; and Kawamura, Makoto, to Sony Corporation. Method and apparatus for recovering TOC and user information from an optical disk and using the TOC information to access user tracks. 5,617,384, Cl. 369-32.000.
Yoneyama, Tsutomu; and Kinoshita, Hiroshi, to Konica Corporation. Image cutout apparatus. 5,617,487, Cl. 382-199.000.
Yoo, Jei-Hwan, to Samsung Electronics Co., Ltd. Method and apparatus for a test control circuit of a semiconductor memory device. 5,617,366, Cl. 365-201.000.
Yore, John W., to Rainbow Recovery, Inc. Container fluid removal and recovery system. 5,615,715, Cl. 141-51.000.
Yoshida, Kentaro: *See—*
Fujimoto, Tomoya; Okamura, Kenko; Morishita, Shigeru; Murakami, Masaru; Adachi, Akira; Hayashi, Mitsutoshi; Fujita, Akinari; Nagashima, Shingo; Kurashina, Minoru; and Yoshida, Kentaro, 5,615,976, Cl. 405-184.000.
Yoshida Kogyo Co., Ltd.: *See—*
Hatakeyama, Yoshiharu; Teshima, Kenzo; and Ishikawa, Tatsuo, 5,615,803, Cl. 222-94.000.
Yoshida, Masayasu: *See—*
Imuta, Junichi; Fukuoka, Daisuke; Yoshida, Masayasu; Saito, Junji; Fujita, Terunori; Tashiro, Takashi; Kawaai, Koji; Ueda, Takashi; and Kiso, Yoshihisa, 5,616,663, Cl. 526-127.000.
Yoshida, Narihiro: *See—*
Kobayashi, Yuji; Yoshida, Narihiro; Mukohzaka, Naohisa; Toyoda, Haruyoshi; and Hara, Tsutomu, 5,617,203, Cl. 356-237.000.
Yoshida, Ryoji: *See—*
Mihara, Toshihide; Yoshida, Ryoji; Kuranaga, Yutaro; and Iwata, Tomoyuki, 5,615,982, Cl. 409-55.000.
Yoshida, Stuart; Seader, Rex; and Neisen, Stephen P., to Hewlett-Packard Co. Heat sink spring clamp. 5,615,735, Cl. 165-80.300.
Yoshida, Toshio; and Sisido, Michitaka, to NEC Corporation. Display control device for controlling brightness of a display installed in a vehicular cabin. 5,617,112, Cl. 345-102.000.
Yoshida, Toshio; and Sisido, Michitaka, to NEC Corporation. Noise suppression of acoustic signal in telephone set. 5,617,472, Cl. 379-390.000.
Yoshida, Toyohiko: *See—*
Matsuo, Masahito; and Yoshida, Toyohiko, 5,617,550, Cl. 395-383.000.
Yoshida, Yasunori; Watanabe, Katsuji; Obuchi, Shoji; and Ohta, Masahiro, to Mitsui Toatsu Chemicals, Inc. Purification process of polyhydroxycarboxylic acid. 5,616,783, Cl. 560-191.000.
Yoshida, Yoshihiro: *See—*
Sakatsu, Tsutomu; and Yoshida, Yoshihiro, 5,616,206, Cl. 156-230.000.
Yoshihara, Hideki; Kobayashi, Yoshihiro; Noguchi, Yasunobu; and Kitazawa, Manabu, to Ajinomoto Co., Inc. Detergent composition comprising N-acylthreonine salt. 5,616,552, Cl. 510-490.000.
Yoshihara, Yoshihiko, to Canon Kabushiki Kaisha. Recording apparatus for selectively recording and retrieving object images on a plurality of recording media. 5,617,179, Cl. 355-40.000.
Yoshii, Hitoshi: *See—*
Tonomoto, Yoshihiro; Fuke, Kenji; Sugimoto, Katsumi; Suzuki, Eiji; Tonai, Keiko; Tonai, Shozo; Yoshii, Hitoshi; Kawai, Tsutomu; Sato, Kunihiko; and Shimatsu, Katsuya, 5,617,192, Cl. 399-263.000.
Yoshikawa, Akio: *See—*
Nagai, Hideo; Takayama, Toru; Kume, Masahiro; and Yoshikawa, Akio, 5,617,435, Cl. 372-22.000.
Yoshikawa, Sumio, to Fuji Photo Film Co., Ltd. Apparatus for conveying photographic film. 5,617,180, Cl. 355-40.000.
Yoshimoto, Yuichiro: *See—*
Kurosaki, Hideki; Nakajima, Junjiro; Umehara, Hajime; Nakamura, Shozo; Kanno, Satoshi; Nishida, Koji; Bessho, Yasunori; Inagaki, Masahisa; Yokomizo, Osamu; and Yoshimoto, Yuichiro, 5,617,456, Cl. 376-260.000.
Yoshimura, Osamu: *See—*
Ban, Keiji; Tomoe, Tetsuro; Fuchi, Masami; Tsuchiya, Hiroaki; Yoshimura, Osamu; and Tanaka, Shinichi, 5,617,193, Cl. 399-316.000.
Yoshimura, Shunji: *See—*
Yonemitsu, Jun; Iwamura, Ryuichi; Yoshimura, Shunji; and Kawamura, Makoto, 5,617,384, Cl. 369-32.000.
Yoshinaga, Kazuo: *See—*
Hayashi, Toshio; Arimoto, Shinobu; Yoshinaga, Kazuo; Nakai, Takehiko; Utagawa, Tsutomu; Nagase, Tetsuya; and Sasanuma, Nobuatsu, 5,617,187, Cl. 399-32.000.
Yoshino, Fumio: *See—*
Kuwamura, Shin'ichi; Deguchi, Yoshinobu; Goto, Tokio; and Yoshino, Fumio, 5,616,645, Cl. 524-546.000.
Yoshino, Hitoshi; and Nishimura, Hiroshi, to Hitachi Medical Corporation. Quiet magnetic resonance imaging apparatus. 5,617,026, Cl. 324-318.000.
Yoshitomi Pharmaceutical Industries, Ltd.: *See—*
Kawakita, Takeshi; Sano, Mitsuharu; Yutoku, Yuko; Ikeda, Yoshifumi; and Haga, Keiichiro, 5,616,581, Cl. 514-234.500.
Yoshizawa, Keita, to UNISIA JECS Corporation. Method and apparatus for estimating intake air pressure and method and apparatus for controlling fuel supply for an internal combustion engine. 5,615,657, Cl. 123-494.000.
Yoshizawa, Satoshi: *See—*
Murayama, Hideki; Yoshizawa, Satoshi; Inouchi, Hidenori; Aimoto, Takeshi; Hayashi, Takehisa; and Iwamoto, Hiroshi, 5,617,424, Cl. 370-389.000.
Yoshizumi, Keiichi: *See—*
Handa, Koji; Kubo, Keishi; Doi, Masateru; and Yoshizumi, Keiichi, 5,616,916, Cl. 250-234.000.
You, Won-jae: *See—*
Lee, Deok-hyun; Park, Gyoung-chan; You, Won-jae; and Kang, Jae-yong, 5,617,385, Cl. 369-32.000.
Young, Kwo: *See—*
Ovshinsky, Stanford R.; Fetcenko, Michael A.; Reichman, Benjamin; Young, Kwo; Chao, Benjamin; and Im, Jun, 5,616,432, Cl. 429-59.000.
Young, Rodney C.: *See—*
Borrett, Gary T.; Kitteringham, John; Porter, Roderick A.; Shipton, Mark R.; Vimal, Mythily; and Young, Rodney C., 5,616,603, Cl. 514-411.000.
Young, William C.; and Darr, Richard C., to Plastipak Packaging, Inc. Plastic blow molded freestanding container. 5,615,790, Cl. 215-375.000.
Young, William R.; and Chester, David B., to Harris Corp. Fixed coefficient high decimation filter. 5,617,344, Cl. 364-724.100.
Youngs, Amy M.: *See—*
Baumgartner, Yoanna; Gregoire, Dennis G.; and Youngs, Amy M., 5,617,556, Cl. 395-468.000.
Yous, Said; Lesieur, Daniel; Depreux, Patrick; Guardiola-Lemaitre, Béatrice; Adam, Gérard; Renard, Pierre; and Caignard, Daniel H., to Adir ET Compagnie. Naphthylalkylamines. 5,616,614, Cl. 514-530.000.
Yozan, Inc.: *See—*
Shou, Guoliang; Takatori, Sunao; and Yamamoto, Makoto, 5,617,053, Cl. 327-361.000.
Yu, Daniel Yuan-Fu: *See—*
Mike, Carl A.; Valcho, Joseph J.; and Yu, Daniel Yuan-Fu, 5,616,153, Cl. 44-331.000.
Yu, Mantle Man-Hon: *See—*
Freitas, David A.; Serrano, Louis J.; and Yu, Mantle Man-Hon, 5,617,536, Cl. 395-185.010.
Yu, Qun: *See—*
Nguyen, Thanh V.; Allen, John; and Yu, Qun, 5,616,629, Cl. 522-40.000.
Yu, Yi: *See—*
Khanna, Ish K.; Weier, Richard M.; Collins, Paul W.; Yu, Yi; Xu, Xiangdong; Partis, Richard A.; and Koszyk, Francis J., 5,616,601, Cl. 514-399.000.
Yuan, Hansen A.; and Lin, Chih-I. Vertebral auxiliary fixation device. 5,616,142, Cl. 606-61.000.
Yuasa, Kazuhiro: *See—*
Murakami, Eisaku; Yuasa, Kazuhiro; Endoh, Shuichi; Matsumae, Iwao; Tanaka, Yoshiaki; Hosokawa, Hiroshi; Uno, Mugijiroh; Saitoh, Hiroshi; Takenaka, Eiji; Sugiyama, Toshihiro; Yamanaka, Tetsuo; and Komatsubara, Satoru, 5,617,191, Cl. 399-286.000.
Yukiwa Seiko Kabushiki Kaisha: *See—*
Sakamaki, Akira, 5,615,899, Cl. 279-62.000.
Yumita, Takashi: *See—*
Ikeda, Atsuhiko; Ozaki, Masami; Honami, Reijiro; Yumita, Takashi; Yano, Hiroyuki; Nakano, Yuki; Kurihara, Yutaka; and Hirano, Tadayoshi, 5,616,594, Cl. 514-340.000.
Yumitori, Fuminori; and Fujii, Yasuhiro, to Fujitsu Limited. Dynamic random access memory having sense amplifier control circuit supplied with external sense amplifier activating signal. 5,617,363, Cl. 365-190.000.

Yumoto, Noboru: *See—*
Nojima, Osamu; and Yumoto, Noboru, 5,617,468, Cl. 379-58.000.
Yun, David I.: *See—*
Sawtell, Ralph R.; Premkumar, Mosur K.; and Yun, David I., 5,616,421, Cl. 428-614.000.
Yung, Siu M., to Cosmo Solution Limited. Engine security system. 5,615,649, Cl. 123-146.50B.
Yuspa, Stuart H., to United States of America, Health and Human Services. Effects of growth factors on hair follicle cell proliferation and release of collagenolytic factors. 5,616,471, Cl. 435-29.000.
Yusu, Keiichiro: *See—*
Okuno, Shiho; Hashimoto, Susumu; Yusu, Keiichiro; and Inomata, Koichiro, 5,616,370, Cl. 427-547.000.
Yutoku, Yuko: *See—*
Kawakita, Takeshi; Sano, Mitsuharu; Yutoku, Yuko; Ikeda, Yoshifumi; and Haga, Keiichiro, 5,616,581, Cl. 514-234.500.
Zachau-Christiansen, Birgit; and West, Keld, to Valence Technology, Inc. Vanadium oxide-based cathode active material and method of making same. 5,616,309, Cl. 423-592.000.
Zalenski, John A.: *See—*
Maley, Thomas C.; D'Orazio, Paul A.; Edelman, Peter G.; and Zalenski, John A., 5,616,222, Cl. 204-294.000.
Zamanzadeh, Mehrooz: *See—*
Carey, Jay F., II; and Zamanzadeh, Mehrooz, 5,616,424, Cl. 428-647.000.
Zambounis, John S.; Hao, Zhimin; and Iqbal, Abul, to Ciba-Geigy Corporation. Pyrrolo[3,4-C]pyrrole synthesis. 5,616,725, Cl. 548-453.000.
Zamecnik, Paul C.: *See—*
Rapaport, Eliezer; and Zamecnik, Paul C., 5,616,564, Cl. 514-44.000.
Zander, Dennis R.: *See—*
Stephenson, Stanley, III; Zander, Dennis R.; and Barrett, Harold J., 5,617,160, Cl. 396-60.000.
Zanzig, David J.: *See—*
D'Sidocky, Richard M.; Zanzig, David J.; and Futamura, Shingo, 5,616,655, Cl. 525-342.000.
Zard, Samir: *See—*
Boivin, Jean; Zard, Samir; and Chauvet, Christine, 5,616,743, Cl. 552-604.000.
Zaretsky, Albert, to Leviton Manufacturing Co., In. Automatic surge suppressor disconnect protection system. 5,617,288, Cl. 361-127.000.
Zehner, Darrell J.: *See—*
Schoenberg, Thomas G.; Otterson, Richard J.; and Zehner, Darrell J., 5,616,722, Cl. 548-319.100.
Zeller, Charles P.: *See—*
Pearce, John J.; Walker, Jim; Zeller, Charles P.; and Jones, Craig S., 5,617,572, Cl. 395-750.000.
Zender, Daniel D.: *See—*
Walker, David W.; Burdick, Brent A.; Jolly, James F.; and Zender, Daniel D., 5,616,299, Cl. 422-99.000.
Zeneca Limited: *See—*
Barker, Andrew J., 5,616,582, Cl. 514-234.500.
Kenyon, Ronald W.; and Mistry, Prahalad M., 5,616,694, Cl. 534-598.000.
Zenith Products Corp.: *See—*
Winter, Paul H., 5,615,721, Cl. 160-38.000.
Zentel, Hans J.; Töpert, Michael; Laurent, Henry; Brumby, Thomas; and Esperling, Peter, to Schering Aktiengesellschaft. Glucocorticoids. 5,616,573, Cl. 514-172.000.
Zepp, Charles M.: *See—*
Gao, Yun; Hong, Yaping; Nie, Xiaoyi; Bakale, Roger P.; Feinberg, Richard R.; and Zepp, Charles M., 5,616,808, Cl. 564-428.000.
Zexel Corporation: *See—*
Sho, Kentaro, 5,616,374, Cl. 427-577.000.
ZF Friedrichshafen AG: *See—*
Gärtner, Lutz, 5,616,002, Cl. 416-180.000.
Rupp, Arthur, 5,615,582, Cl. 74-498.000.
Zhang, Shoufang; and Zhao, Xinxian. Aminopyrrolizinone analogues for anti-inflammation and analgesia (II). 5,616,604, Cl. 514-413.000.
Zhang, Tianhong, to Century International Adhesives & Coating Corporation. Cold seal adhesives, cold sealable films and packages formed therewith. 5,616,400, Cl. 428-195.000.
Zhang, Yan, to Osram Sylvania Inc. Phosphor and method of making same. 5,616,285, Cl. 252-301.40R.
Zhao, Chen: *See—*
Kempf, Dale J.; Norbeck, Daniel W.; Sham, Hing L.; Zhao, Chen; and Reno, Daniel S., 5,616,720, Cl. 548-204.000.
Zhao, Qiuyan: *See—*
Agrawal, Sudhir; Zhao, Qiuyan; and Habus, Ivan, 5,616,565, Cl. 514-44.000.
Zhao, Xinxian: *See—*
Zhang, Shoufang; and Zhao, Xinxian, 5,616,604, Cl. 514-413.000.
Zhong, Zhang, to Fujitsu Limited. Kanji conversation result amending system. 5,617,314, Cl. 395-803.000.
Zhu, Wei: *See—*
Jin, Sungho; Kochanski, Gregory P.; and Zhu, Wei, 5,616,368, Cl. 427-535.000.
Zhu, Yudong: *See—*
Pelc, Norbert J.; and Zhu, Yudong, 5,615,677, Cl. 128-653.200.
Ziff, Lisa A.: *See—*
Cowan, Michael I.; Weiss, Jordan P.; and Ziff, Lisa A., 5,615,440, Cl. 15-104.940.
Zimmerman, Donald M.: *See—*
Curry, Mark H.; Zimmerman, Donald M.; and Haley, John C., 5,616,073, Cl. 452-123.000.
Zimmerman, Robert L.: *See—*
Primeaux, Dudley J., II; and Zimmerman, Robert L., 5,616,677, Cl. 528-66.000.
Zimmermann, Jürgen: *See—*
Pirkl, Hans-Georg; Schomäcker, Reinhard; Klingler, Uwe; Schieb, Thomas; Wiechers, Gerhard; and Zimmermann, Jürgen, 5,616,818, Cl. 568-932.000.
Zimmermann, Werner: *See—*
Eidler, Franz; Zimmermann, Werner; and Rüping, Thomas, 5,617,337, Cl. 364-551.010.
Zirngiebl, Eberhard: *See—*
Jentsch, Joerg-Dietrich; Martin, Georg; and Zirngiebl, Eberhard, 5,616,730, Cl. 549-233.000.
Zitta, Heinz, to Siemens Aktiengesellschaft. Circuit configuration for detecting undervoltage. 5,617,285, Cl. 361-92.000.
Zlotsky, Dmitry. Maze game with multiple pieces. 5,615,882, Cl. 273-153.00S.
Zoller, Mark J.: *See—*
Anderson, Stephen; Bennett, William F.; Botstein, David; Higgins, Deborah L.; Paoni, Nicholas F.; and Zoller, Mark J., 5,616,486, Cl. 435-226.000.
Zou, Hong: *See—*
Takahashi, Akihiko; Yasuda, Hitoshi; Hartwig, Karl T.; McDonald, Lacy C.; and Zou, Hong, 5,616,191, Cl. 148-690.000.
Zumeris, Jona, to Nanomotion Ltd. Ceramic motor. 5,616,980, Cl. 310-323.000.
Zurcher, Ulrich: *See—*
Buhler, Marcel; Ho Dac, Thang; and Zurcher, Ulrich, 5,616,356, Cl. 426-443.000.
3COM Corporation: *See—*
Madnick, Jay L.; and Hauser, Stephen A., 5,617,081, Cl. 340-825.030.
3DO Company, The: *See—*
Burk, Phil L.; Mical, Robert J.; Hayes, Steven E.; and Platt, David C., 5,617,506, Cl. 395-2.100.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 1st DAY OF APRIL, 1997

NOTE— Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Atwood Industries, Inc.: *See—*
Stewart, David A., Re. 35,485, Cl. 248-429.000.
Bertotti, Franco; and Ferrari, Paolo, to SGS-Thomson Microelectronics S.r.l. Circuital arrangement for preventing latchup in transistors with insulated collectors. Re. 35,486, Cl. 257-555.000.
Ferrari, Paolo: *See—*
Bertotti, Franco; and Ferrari, Paolo, Re. 35,486, Cl. 257-555.000.
Lane No. 1, Inc.: *See—*
Sposato, Richard, Re. 35,488, Cl. 473-126.000.
SGS-Thomson Microelectronics S.r.l.: *See—*
Bertotti, Franco; and Ferrari, Paolo, Re. 35,486, Cl. 257-555.000.
Sposato, Richard, to Lane No. 1, Inc. Bowling ball. Re. 35,488, Cl. 473-126.000.
Stewart, David A., to Atwood Industries, Inc. Uni–brace. Re. 35,485, Cl. 248-429.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Adams, Mark F.; and Knudson, Melvin R., to Larex International, Inc. Ultrarefined arabinogalactan product. B1 5,116,969, Cl. 536-128.000.
Charmoille, Lucien: *See—*
Gago, Ignace; Charmoille, Lucien; and Detroz, Rene, B1 4,915,943, Cl. 424-93.460.
Detroz, Rene: *See—*
Gago, Ignace; Charmoille, Lucien; and Detroz, Rene, B1 4,915,943, Cl. 424-93.460.
Gago, Ignace; Charmoille, Lucien; and Detroz, Rene, to Novo Nordisk A/S. Compositions containing biosynthetic pesticide products, processes for their production and use. B1 4,915,943, Cl. 424-93.460.
Hufstetler, Patrick A.; and Hynds, James E., to Ransburg Corporation. Method and apparatus for electrostatic spray coating. B1 4,761,299, Cl. 427-483.000.
Hynds, James E.: *See—*
Hufstetler, Patrick A.; and Hynds, James E., B1 4,761,299, Cl. 427-483.000.
IVAX Industries, Inc.: *See—*
Olson, Lynne A., B1 4,912,056, Cl. 435-263.000.
Knudson, Melvin R.: *See—*
Adams, Mark F.; and Knudson, Melvin R., B1 5,116,969, Cl. 536-128.000.
Larex International, Inc.: *See—*
Adams, Mark F.; and Knudson, Melvin R., B1 5,116,969, Cl. 536-128.000.
Novo Nordisk A/S: *See—*
Gago, Ignace; Charmoille, Lucien; and Detroz, Rene, B1 4,915,943, Cl. 424-93.460.
Olson, Lynne A., to IVAX Industries, Inc. Treatment of denim with cellulase to produce a stone washed appearance. B1 4,912,056, Cl. 435-263.000.
Ransburg Corporation: *See—*
Hufstetler, Patrick A.; and Hynds, James E., B1 4,761,299, Cl. 427-483.000.

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Acushnet Company: *See—*
Cameron, Don T., 378,688, Cl. D21-219.000.
Anderson, Jerry P. Power driven golf spike wrench. 378,655, Cl. D8-70.000.
Aochi, Tak; and Pyle, Robert J., to Lockheed Missiles and Space Company, Inc. Grid structure for supporting antennas and reflective surfaces in extraterrestrial space. 378,672, Cl. D12-345.000.
Aochi, Tak; and Pyle, Robert J., to Lockheed Missiles and Space Company, Inc. Grid structure for supporting antennas and reflective surfaces in extraterrestrial space. 378,673, Cl. D12-345.000.
Azuma, Sadayoshi: *See—*
Matsumoto, Hiroyuki; Azuma, Sadayoshi; and Hiraoka, Takashi, 378,677, Cl. D14-124.000.
Bath & Body Works, Inc.: *See—*
Gobe, Marc, 378,662, Cl. D9-434.000.
Beck, Jerry G. Golf club iron head. 378,689, Cl. D21-220.000.
Beckenlehner, Cliff: *See—*
Beckenlehner, Rudolf; and Beckenlehner, Cliff, 378,641, Cl. D6-520.000.
Beckenlehner, Rudolf; and Beckenlehner, Cliff. Toilet paper roll dispenser. 378,641, Cl. D6-520.000.
Beijen, James H., to School Systems, Inc. Power press for paper cutting. 378,681, Cl. D15-127.000.
Below, Randy J.: *See—*
Volansky, Edward J.; Siemon, John A.; and Below, Randy J., 378,674, Cl. D13-147.000.
Bernoni, Claudio: *See—*
Echazabal, Alberto; and Bernoni, Claudio, 378,670, Cl. D12-209.000.
Blennov, Ole. Control cable clamp for motorcycles. 378,659, Cl. D8-396.000.
Blitz U.S.A. Inc.: *See—*
Chrisco, Larry L., 378,636, Cl. D6-443.000.
Blomquist, Peter J.; and Strand, Todd P., to Handy-Stone Corporation. Edging block. 378,702, Cl. D25-113.000.
Bonnell, Thomas A.; and Giese, Robert C., to Kohler Co. Base for bathing area. 378,696, Cl. D23-283.000.
Bried, David K.; and Daniels, James, to Newell Operating Company. Baseball-shaped finial for a curtain rod and holdback. 378,658, Cl. D8-378.000.
Brookshire, Phillip L.: *See—*
Myers, Terry L.; and Brookshire, Phillip L., 378,649, Cl. D7-379.000.
BTR plc: *See—*
Reardon, Roy H., 378,645, Cl. D6-582.000.
Cameron, Don T., to Acushnet Company. Mallet putter head. 378,688, Cl. D21-219.000.
Campbell-Scott, Peggy J. Container. 378,661, Cl. D9-432.000.
Carman, Stephen M. Key holder. 378,630, Cl. D3-207.000.
Casio Computer Co., Ltd.: *See—*
Kojima, Kazuyasu, 378,666, Cl. D10-38.000.
Cherne Industries Incorporated: *See—*
Mathison, Allen D.; and Smith, Randy D., 378,695, Cl. D23-260.000.
Chrisco, Larry L., to Blitz U.S.A. Inc. Storage bin. 378,636, Cl. D6-443.000.
Clark, Eddie; and Hazelhorst, Curtis A. Toss game. 378,687, Cl. D21-5.000.
Claxton, Bruce A.: *See—*
Tyneski, Frank M.; Siddoway, Craig F.; Claxton, Bruce A.; and Jackson, Gregory D., 378,678, Cl. D14-137.000.
Coley, Malcolm S.; and Owen, Phillip E. G. Tripod mount for binoculars. 378,682, Cl. D16-136.000.
Colling, Thomas P.; and Spitzer, Jo-Ed. Fishing rod float. 378,694, Cl. D22-139.000.
Colson Castors Limited: *See—*
Screen, Stafford T., 378,657, Cl. D8-375.000.
Consumer Promotions Inc.: *See—*
DeGennaro, Michael, 378,642, Cl. D6-542.000.
Daansen, Warren S. Pump for a soap dispenser. 378,663, Cl. D9-448.000.
Daniels, James: *See—*
Bried, David K.; and Daniels, James, 378,658, Cl. D8-378.000.
David, Henry B., to Melco Wire Products Company. Merchandise display rack. 378,637, Cl. D6-462.000.
DeGennaro, Michael, to Consumer Promotions Inc. Liquid dispenser. 378,642, Cl. D6-542.000.
DeLuccia, Robert J.: *See—*

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Duppins, Geraldine D. Set of numbers. 378,684, Cl. D18-26.000.
Dutro Company: *See—*
Dutro, William A.; and Measom, S. Ty, 378,646, Cl. D7-339.000.
Dutro, William A.; and Measom, S. Ty, to Dutro Company. Cooker and barbecue grill. 378,646, Cl. D7-339.000.
Echazabal, Alberto; and Bernoni, Claudio, to Motoring Accessories. Front face of a vehicle wheel. 378,670, Cl. D12-209.000.
Feen, Stuart H., to Plastic Bottle Corporation. Bottle for liquids. 378,664, Cl. D9-528.000.
Fenton, Russell R.; and Goss, Elmer (Chuck) H., to FWJ, Inc. Bottle. 378,665, Cl. D9-558.000.
Forte Technologies, Inc.: *See—*
Taylor, Robert E.; and Klock, Paul J., 378,700, Cl. D24-124.000.
French, Diana J.; and Odau, Charlotte M. Spiral notebook pouch. 378,685, Cl. D19-33.000.
FWJ, Inc.: *See—*
Fenton, Russell R.; and Goss, Elmer (Chuck) H., 378,665, Cl. D9-558.000.
Gaylite Enterprises Company: *See—*
Lo, Kai-Bun, 378,703, Cl. D26-46.000.
Giese, Robert C.: *See—*
Bonnell, Thomas A.; and Giese, Robert C., 378,696, Cl. D23-283.000.
Gobe, Marc, to Bath & Body Works, Inc. Pair of surface details for a cylindrical bottle. 378,662, Cl. D9-434.000.
Goodman, Walter A.; Grebe, Frank V.; Hatton, Charles R.; Podmajersky, David J.; Sherman, John H.; and Wormsbecher, Paul A., to International Business Machines Corporation. Holder for portable computing device. 378,676, Cl. D14-114.000.
Goss, Elmer (Chuck) H.: *See—*
Fenton, Russell R.; and Goss, Elmer (Chuck) H., 378,665, Cl. D9-558.000.
Granito, Joseph R. Tool pouch. 378,633, Cl. D3-228.000.
Grebe, Frank V.: *See—*
Goodman, Walter A.; Grebe, Frank V.; Hatton, Charles R.; Podmajersky, David J.; Sherman, John H.; and Wormsbecher, Paul A., 378,676, Cl. D14-114.000.
Gregory, John K. Receiver hitch. 378,669, Cl. D12-162.000.
Haag-Streit AG: *See—*
Studer, Reto; and Wolf, Theodor, 378,635, Cl. D6-429.000.
Hamamoto, Koya; Kuramochi, Izumi; and Tokizaki, Hiroshi, to Yokohama Rubber Co. Ltd., The. Automobile tire. 378,668, Cl. D12-146.000.
Hamilton Beach/Proctor-Silex, Inc.: *See—*
Myers, Terry L.; and Brookshire, Phillip L., 378,649, Cl. D7-379.000.
Handy-Stone Corporation: *See—*
Blomquist, Peter J.; and Strand, Todd P., 378,702, Cl. D25-113.000.
Hatton, Charles R.: *See—*
Goodman, Walter A.; Grebe, Frank V.; Hatton, Charles R.; Podmajersky, David J.; Sherman, John H.; and Wormsbecher, Paul A., 378,676, Cl. D14-114.000.
Hazelhorst, Curtis A.: *See—*
Clark, Eddie; and Hazelhorst, Curtis A., 378,687, Cl. D21-5.000.
Herrs, Dean L. Combination fuel tank and tool box. 378,671, Cl. D12-218.000.
Hiraoka, Takashi: *See—*
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Hitachi Koki Co., Ltd.: *See—*
Matsuoka, Takeshi; Kobayashi, Noriaki; and Mohamed, Joswari, 378,654, Cl. D8-69.000.
Ikumi, Taishi, to SMC Kabushiki Kaisha. Cylinder. 378,680, Cl. D15-7.000.
International Business Machines Corporation: *See—*
Goodman, Walter A.; Grebe, Frank V.; Hatton, Charles R.; Podmajersky, David J.; Sherman, John H.; and Wormsbecher, Paul A., 378,676, Cl. D14-114.000.
Iwai, Hiroyuki, to Tokyo Electron Limited. Wafer boat. 378,675, Cl. D13-182.000.
Izumi Products Company: *See—*
Izumi, Shunji, 378,705, Cl. D28-53.000.
Izumi, Shunji, to Izumi Products Company. Electric hair trimmer. 378,705, Cl. D28-53.000.
Jackson, Gregory D.: *See—*
Tyneski, Frank M.; Siddoway, Craig F.; Claxton, Bruce A.; and Jackson, Gregory D., 378,678, Cl. D14-137.000.
Jordan, Gary L. Towel holder. 378,643, Cl. D6-546.000.
Jordan, Gary L. Towel rack. 378,644, Cl. D6-549.000.
Klock, Paul J.: *See—*
Taylor, Robert E.; and Klock, Paul J., 378,700, Cl. D24-124.000.
Kobayashi, Noriaki: *See—*
Matsuoka, Takeshi; Kobayashi, Noriaki; and Mohamed, Joswari, 378,654, Cl. D8-69.000.
Kohler Co.: *See—*
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Kuramochi, Izumi: *See—*
Hamamoto, Koya; Kuramochi, Izumi; and Tokizaki, Hiroshi, 378,668, Cl. D12-146.000.
LaPere, Roland E. Protective case for a remote controller. 378,634, Cl. D3-273.000.
Lincoln, Bruce C. Transparent aquatic board. 378,692, Cl. D21-228.000.
Lo, Kai-Bun, to Gaylite Enterprises Company. Flashlight. 378,703, Cl. D26-46.000.
Lockheed Missiles and Space Company, Inc.: *See—*
Aochi, Tak; and Pyle, Robert J., 378,672, Cl. D12-345.000.
Aochi, Tak; and Pyle, Robert J., 378,673, Cl. D12-345.000.
Maine, Nelson D. Wood splitting maul. 378,656, Cl. D8-78.000.
Margaritis, Georgios. Human body shaped body board. 378,693, Cl. D21-236.000.
Marion, Jeffrey D. Cooler. 378,651, Cl. D7-605.000.
Mathison, Allen D.; and Smith, Randy D., to Cherne Industries Incorporated. Pipeline plug. 378,695, Cl. D23-260.000.
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Owen, Phillip E. G.: *See—*
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Passke, Joel L.; and Sell, James C., Jr., to Nike, Inc. Bladder for a shoe sole. 378,629, Cl. D2-961.000.
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Soriano, Edward. Remote control for television set. 378,679, Cl. D14-218.000.
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Colling, Thomas P.; and Spitzer, Jo-Ed, 378,694, Cl. D22-139.000.
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Taylor, Robert E.; and Klock, Paul J., to Forte Technologies, Inc. Foam pad. 378,700, Cl. D24-124.000.
Tohoku Ricoh Co., Ltd.: *See—*
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Tokizaki, Hiroshi: *See—*
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Ukai, Minoru; and Nakata, Hideaki, to Matsushita Electric Industrial Co., Ltd.; and Matsushita Seiko Co., Ltd. Ventilating louver. 378,698, Cl. D23-393.000.
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Yeh, John. Headboard for beds. 378,640, Cl. D6-505.000.
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LIST OF PLANT PATENTEES

Baxendale, Frederick P.: *See*—
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Board of Regents, University of Nebraska Lincoln: *See*—
Riordan, Terrance P.; de Shazer Steele, Susan A.; Engelke, Milton C.; Wit, Leonard A., Jr.; Baxendale, Frederick P.; Svoboda, Jeana L. F.; Johnson-Cicalese, Jennifer M.; and Kinbacher, Edward J., 9,847, Cl. Plt.-90.000.
de Shazer Steele, Susan A.: *See*—
Riordan, Terrance P.; de Shazer Steele, Susan A.; Engelke, Milton C.; Wit, Leonard A., Jr.; Baxendale, Frederick P.; Svoboda, Jeana L. F.; Johnson-Cicalese, Jennifer M.; and Kinbacher, Edward J., 9,847, Cl. Plt.-90.000.
Edwards, Mack H. Peach tree named 'Edwards Ambrosia'. 9,841, Cl. Plt.-42.100.
Engelke, Milton C.: *See*—
Riordan, Terrance P.; de Shazer Steele, Susan A.; Engelke, Milton C.; Wit, Leonard A., Jr.; Baxendale, Frederick P.; Svoboda, Jeana L. F.; Johnson-Cicalese, Jennifer M.; and Kinbacher, Edward J., 9,847, Cl. Plt.-90.000.
Gardner, Leith M.: *See*—
Zaiger, Chris F.; Gardner, Leith M.; Zaiger, Gary N.; and Zaiger, Grant G., 9,842, Cl. Plt.-43.100.
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Kinbacher, Edward J.: *See*—
Riordan, Terrance P.; de Shazer Steele, Susan A.; Engelke, Milton C.; Wit, Leonard A., Jr.; Baxendale, Frederick P.; Svoboda, Jeana L. F.; Johnson-Cicalese, Jennifer M.; and Kinbacher, Edward J., 9,847, Cl. Plt.-90.000.
Lommerse, Henry C. J. Dahlia plant named Lizzy. 9,846, Cl. Plt.-87.800.
Mayer, Eugene W.: *See*—
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OMS Investments, Inc.: *See*—
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Polys, Susan M., to Yoder Brothers, Inc. Chrysanthemum plant named 'White Cherie'. 9,845, Cl. Plt.-82.100.
Riordan, Terrance P.; de Shazer Steele, Susan A.; Engelke, Milton C.; Wit, Leonard A., Jr.; Baxendale, Frederick P.; Svoboda, Jeana L. F.; Johnson-Cicalese, Jennifer M.; and Kinbacher, Edward J., to Board of Regents, University of Nebraska Lincoln. 315 Buffalograss. 9,847, Cl. Plt.-90.000.
Svoboda, Jeana L. F.: *See*—
Riordan, Terrance P.; de Shazer Steele, Susan A.; Engelke, Milton C.; Wit, Leonard A., Jr.; Baxendale, Frederick P.; Svoboda, Jeana L. F.; Johnson-Cicalese, Jennifer M.; and Kinbacher, Edward J., 9,847, Cl. Plt.-90.000.
VandenBerg, Cornelis P., to Yoder Brothers, Inc. Chrysanthemum plant named 'White Cinderella'. 9,844, Cl. Plt.-77.000.
Van Koeveringe, John A. Chrysanthemum plant named 'Spring Delano'. 9,843, Cl. Plt.-76.000.
Wit, Leonard A., Jr.: *See*—
Riordan, Terrance P.; de Shazer Steele, Susan A.; Engelke, Milton C.; Wit, Leonard A., Jr.; Baxendale, Frederick P.; Svoboda, Jeana L. F.; Johnson-Cicalese, Jennifer M.; and Kinbacher, Edward J., 9,847, Cl. Plt.-90.000.
Yoder Brothers, Inc.: *See*—
Polys, Susan M., 9,845, Cl. Plt.-82.100.
VandenBerg, Cornelis P., 9,844, Cl. Plt.-77.000.
Zaiger, Chris F.; Gardner, Leith M.; Zaiger, Gary N.; and Zaiger, Grant G. Peach tree 'Earlitreat'. 9,842, Cl. Plt.-43.100.
Zaiger, Gary N.: *See*—
Zaiger, Chris F.; Gardner, Leith M.; Zaiger, Gary N.; and Zaiger, Grant G., 9,842, Cl. Plt.-43.100.
Zaiger, Grant G.: *See*—
Zaiger, Chris F.; Gardner, Leith M.; Zaiger, Gary N.; and Zaiger, Grant G., 9,842, Cl. Plt.-43.100.

LIST OF STATUTORY INVENTION REGISTRATIONS

APPLICANTS TO WHOM

STATUTORY INVENTION REGISTRATIONS WERE ISSUED ON THE 1st DAY OF APRIL, 1997

GTE Mobile Communications Service Corporation: *See*—
Sharman, Duane R., H1,641, Cl. 379-60.000.
Hay, Randall S., to United States of America, Air Force. Ductile metal ligament fiber coatings for ceramic composites. H1,643, Cl. 501-95.000.
Jenkins, James F., to United States of America, Navy. Wear and impact tolerant plow blade. H1,642, Cl. 405-159.000.
Sharman, Duane R., to GTE Mobile Communications Service Corporation. Connection of mobile devices to heterogenous networks. H1,641, Cl. 379-60.000.
United States of America
Air Force: *See*—
Hay, Randall S., H1,643, Cl. 501-95.000.
Navy: *See*—
Jenkins, James F., H1,642, Cl. 405-159.000.

CLASSIFICATION OF PATENTS

ISSUED APRIL 1, 1997

NOTE—First number, class; second number, subclass; third number, patent number

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22 K	5,616,174
117	5,616,173
CLASS 108	
25	5,615,619
45	5,615,620
55.3	5,615,608
193	5,615,621
CLASS 109	
2	5,615,622
	5,615,623
19	5,615,624
45	5,615,625
CLASS 110	
346	5,615,626
	5,615,627
CLASS 112	
220	5,615,628
223	5,615,629
CLASS 114	
251	5,615,630
253	5,615,631
330	5,615,632
351	5,615,633
354	5,615,634
CLASS 116	
173	5,615,635
223	5,615,636
CLASS 117	
14	5,616,175
54	5,616,176
102	5,616,177
104	5,616,178
108	5,616,179
CLASS 118	
715	5,616,180
723 ER	5,616,181
CLASS 119	
14.03	5,615,637
165	5,615,638
168	5,615,639
482	5,615,640
CLASS 123	
41.82 R	5,615,641
54.4	5,615,642
65 B	5,615,643
65 VB	5,615,644
73 C	5,615,645
90.12	5,615,646
90.16	5,615,647
90.17	5,615,648
146.5 B	5,615,649
195 R	5,615,650
198 F	5,615,651
322	5,615,653
350	5,615,654
419	5,615,655
447	5,615,656
494	5,615,657
539	5,615,658
634	5,615,659
680	5,615,660
688	5,615,661
CLASS 124	
35.2	5,615,662
88	5,615,663
89	5,615,664
CLASS 125	
23.02	5,615,665
CLASS 126	
25 R	5,615,666
42	5,615,667
360 A	5,615,668
CLASS 128	
203.12	5,615,669
203.15	5,615,670
632	5,615,671
633	5,615,672
	5,615,673
642	5,615,674
653.1	5,615,675
653.2	5,615,676
	5,615,677
660.01	5,615,678
660.05	5,615,679
661.03	5,615,681
661.09	5,615,680
662.03	5,615,682
666	5,615,683
670	5,615,684
	5,615,685
673	5,615,686
696	5,615,687
716	5,615,688
734	5,615,689
754	5,615,690
891	5,615,691
CLASS 131	
70	5,615,692
84.1	5,615,693
365	5,615,694
CLASS 134	
6	5,616,182
8	5,616,183
22.1	5,616,184
102.1	5,615,695
104.2	5,615,696
CLASS 135	
20.1	5,615,697
28	5,615,698
118	5,615,699
CLASS 136	
244	5,616,185
253	5,616,186
CLASS 137	
15	5,615,700
205	5,615,701
255	5,615,702
360	5,615,703
596.1	5,615,704
596.2	5,615,705
614.04	5,615,706
614.06	5,615,707
625.3	5,615,708
625.41	5,615,709
625.64	5,615,710
CLASS 138	
149	5,615,711
CLASS 139	
21	5,615,712
97	5,615,713
449	5,615,714
CLASS 141	
51	5,615,715
91	5,615,716
100	5,615,717
CLASS 144	
135.2	5,615,718
269	5,615,719

CLASS 148
333 5,616,187
508 5,616,188
549 5,616,189
551 5,616,190
690 5,616,191
5,616,192

CLASS 150
160 5,615,720

CLASS 152
185.1 5,616,193
209 R 5,616,194
5,616,195
426 5,616,196
527 5,616,197
556 5,616,198

CLASS 156
64 5,616,199
72 5,616,200
73.1 5,616,201
89 5,616,202
91 5,616,203
156 5,616,204
229 5,616,205
230 5,616,206
246 5,616,207
345 5,616,208
397 5,616,209
435 5,616,210
552 5,616,211

CLASS 160
38 5,615,721
5,615,722
191 5,615,723
370.22 5,615,725
5,615,729

CLASS 162
49 5,616,214
72 5,616,215

CLASS 164
4.1 5,615,730
32 5,615,726
98 5,615,727
340 5,615,728
418 5,615,731

CLASS 165
8 5,615,732
11.1 5,615,733
11.2 5,615,734
80.3 5,615,735
103 5,615,738

CLASS 166
84.4 5,615,736
85.4 5,615,737
306 5,615,739
380 5,615,740
387 5,615,741

CLASS 169
45 5,615,742
74 5,615,743

CLASS 172
22 5,615,744
811 5,615,745

CLASS 173
171 5,615,746

CLASS 174
52.4 5,616,886
84 R 5,616,887
260 5,616,888

CLASS 175
379 5,615,747

CLASS 177
256 5,616,889

CLASS 180
9.36 5,615,748
274 5,615,749

CLASS 181
131 5,616,890
141 5,616,891
155 5,616,892
235 5,616,893

CLASS 182
6 5,615,750
82 5,615,751
200 5,615,752

CLASS 187
247 5,616,894
280 5,616,895
384 5,616,896

CLASS 188
24.12 5,615,753
73.35 5,615,754
322.12 5,615,755
322.15 5,615,756

CLASS 190
115 5,615,757

CLASS 192
113.36 5,615,758

CLASS 194
206 5,615,759
5,615,760

CLASS 198
441 5,615,761
464.1 5,615,762
751 5,615,763

CLASS 200
5 A 5,616,897

CLASS 201
25 5,616,216

CLASS 203
97 5,616,217

CLASS 204
192.15 5,616,218
241 5,616,219
252 5,615,764
5,616,220
5,616,221
294 5,616,222
295 5,616,223
298.08 5,616,224
298.14 5,616,225
298.23 5,616,226
457 5,616,227
603 5,616,228

CLASS 205
107 5,616,229
125 5,616,230
153 5,616,231
155 5,616,232
157 5,616,233
500 5,616,234
766 5,616,235

CLASS 206
45.23 5,615,765
63.3 5,615,766
278 5,615,767
305 5,615,768
315.9 5,615,769
363 5,615,770
365 5,615,772
368 5,615,771
387.1 5,615,773
423 5,615,774

CLASS 208
48 R 5,616,236
120 5,616,237
314 5,616,238

CLASS 209
219 5,615,775
403 5,615,776
511 5,615,777
578 5,615,778

CLASS 210
86 5,616,239
104 5,616,240
151 5,616,241
238 5,616,242
282 5,616,243
295 5,616,244
371 5,616,245
490 5,616,246
640 5,616,247
647 5,616,248
651 5,616,249
695 5,616,250
725 5,616,251
728 5,616,252
747 5,616,253
806 5,616,254

CLASS 211
40 5,615,779
49.1 5,615,780
50 5,615,781
70.6 5,615,782
118 5,615,783

CLASS 212
178 5,615,784
180 5,615,785

CLASS 213
75 R 5,615,786

CLASS 215
217 5,615,787
274 5,615,788
348 5,615,789
375 5,615,790
382 5,615,791

CLASS 216
11 5,616,255
18 5,616,256

CLASS 218
76 5,616,898

CLASS 219
56.21 5,616,257
56.22 5,616,258
69.12 5,616,260
69.2 5,616,259
121.63 5,616,261
216 5,616,262
469 5,616,263
494 5,616,264
497 5,616,265
543 5,616,266
619 5,616,267
687 5,616,268
720 5,616,269
722 5,616,270

CLASS 220
3.8 5,615,792
295 5,615,793
304 5,615,794
410 5,615,795
441 5,615,796
529 5,615,797
572 5,615,798
751 5,615,799

CLASS 221
232 5,615,800

CLASS 222
51 5,615,801
66 5,615,802
94 5,615,803
136 5,615,804
146.5 5,615,805
153.13 5,615,806
391 5,615,807
472 5,615,808
484 5,615,809

CLASS 223
85 5,615,810

CLASS 224
150 5,615,811
153 5,615,812
267 5,615,817
326 5,615,818
405 5,615,813
488 5,615,814
571 5,615,815

CLASS 227
71 5,615,816
109 5,615,819
176.1 5,615,820

CLASS 228
102 5,615,821
5,615,822
103 5,615,823
180.1 5,615,824
206 5,615,825
208 5,615,826
223 5,615,827
5,615,828

CLASS 235
375 5,616,899
379 5,616,900
5,616,901
380 5,616,902
414 5,616,903
449 5,616,904
456 5,616,905
462 5,616,906
5,616,907
5,616,908
472 5,616,909
479 5,616,910
493 5,616,911

CLASS 236
68 B 5,615,829

CLASS 239
8 5,615,830
5,615,831
5,615,832
132.3 5,615,833
265.19 5,615,834
333 5,615,835
428.5 5,615,836
530 5,615,837
533.1 5,615,838

CLASS 241
260.1 5,615,839

CLASS 242
231 5,615,841
268 5,615,842
301 5,615,840
319 5,615,843
395 5,615,844
613.5 5,615,845

CLASS 244
3.28 5,615,846
63 5,615,847
118.5 5,615,848
134 R 5,615,849

CLASS 248
68.1 5,615,850
73 5,615,851
74.5 5,615,852
99 5,615,853
287.1 5,615,854
405 5,615,855
429 Re.35,485
452 5,615,856
549 5,615,857
682 5,615,858

CLASS 249
48 5,616,271
207 5,616,272

CLASS 250
201.1 5,616,912
203.4 5,616,913
208.1 5,616,914
221 5,616,915
234 5,616,916
237 G 5,616,917
288 5,616,918
292 5,616,919
296 5,616,920
307 5,616,921
339.12 5,616,922
343 5,616,923
368 5,616,924
370.13 5,616,925
423 F 5,616,926
492.2 5,616,927
515.1 5,616,928
573 5,616,929
584 5,616,930

CLASS 251
61.1 5,615,859
129.07 5,615,860
306 5,615,861

CLASS 252
2 5,616,273
62.2 5,616,274
67 5,616,275
5,616,276
175 5,615,862
180 5,616,278
182.17 5,616,279
186.29 5,616,280
186.38 5,616,281
186.42 5,616,282
192 5,616,283
299.63 5,616,284
301.4 R 5,616,285
315.2 5,616,286
518 5,616,287

CLASS 254
94 5,615,863
329 5,615,864
391 5,615,865

CLASS 256
1 5,615,866

CLASS 257
48 5,616,931
52 5,616,932
57 5,616,933
67 5,616,934
69 5,616,935
72 5,616,936
94 5,616,937
139 5,616,938
202 5,616,939
206 5,616,940
315 5,616,941
316 5,616,942
355 5,616,943
365 5,616,944
5,616,945
390 5,616,946
410 5,616,947
412 5,616,948
434 5,616,949
469 5,616,950
536 5,616,951
555 Re.35,486
659 5,616,952
666 5,616,953
668 5,616,954
690 5,616,955
703 5,616,956
712 5,616,957
717 5,616,958
758 5,616,959
760 5,616,960
774 5,616,961
777 5,616,962

CLASS 261
76 5,616,288
112.2 5,616,289
115 5,616,290

CLASS 264
34 5,616,291
182 5,616,292
401 5,616,293
413 5,616,294

CLASS 266
92 5,616,295
145 5,616,296
263 5,616,297

CLASS 267
64.11 5,615,867
64.27 5,615,868
103 5,615,869
167 5,615,870

CLASS 270
45 5,615,871

CLASS 271
3.14 5,615,872
121 5,615,873
5,615,874
147 5,615,875
258.01 5,615,876
259 5,615,877
302 5,615,878

CLASS 273
140 5,615,881
153 S 5,615,882
157 R 5,615,883
272 5,615,886
5,615,887
292 5,615,888
396 5,615,889

CLASS 277
81 S 5,615,893
134 5,615,894
208 5,615,895
229 5,615,896
233 5,615,897
235 B 5,615,898

CLASS 279
62 5,615,899

CLASS 280
1.22 5,615,900
7.14 5,615,901
47.18 5,615,902
47.19 5,615,903
506 5,615,904
602 5,615,905
686 5,615,906
728.2 5,615,907
728.3 5,615,908
730.2 5,615,909
731 5,615,910
734 5,615,911
737 5,615,912
740 5,615,913
743.1 5,615,914
5,615,915
777 5,615,916
806 5,615,917

CLASS 290
55 5,616,963

CLASS 292
92 5,615,918
332 5,615,919

CLASS 294
65.5 5,615,920
170 5,615,921

CLASS 296
37.6 5,615,922
95.1 5,615,923
5,615,924

CLASS 297
188.01 5,615,925
411.27 5,615,926
452.27 5,615,927
452.56 5,615,928

CLASS 303
7 5,615,929
5,615,930
22.1 5,615,931
121 5,615,932
152 5,615,933
191 5,615,934
195 5,615,935

CLASS 307
9.1 5,616,964
10.1 5,616,965
10.5 5,616,966
42 5,616,967
66 5,616,968
91 5,616,969
126 5,616,970
130 5,616,971
137 5,616,972

CLASS 310
54 5,616,973
68 B 5,616,974
89 5,616,975
90.5 5,616,976
179 5,616,977
211 5,616,978
316 5,616,979
323 5,616,980
326 5,616,981
328 5,616,982

CLASS 312
238 5,615,936

CLASS 313
51 5,616,983
318.04 5,616,984
403 5,616,985
461 5,616,986
533 5,616,987

CLASS 315
1 5,616,988
32 5,616,989
103 5,616,990
167 5,616,991
209 T 5,616,992

CLASS 318
254 5,616,993
5,616,994
432 5,616,995
439 5,616,996
467 5,616,997
568.22 5,616,998
632 5,616,999
663 5,617,000
788 5,617,001

CLASS 320
2 5,617,002
5,617,003
15 5,617,004
21 5,617,005
5,617,006
22 5,617,007
5,617,008
23 5,617,009
31 5,617,010

CLASS 322
28 5,617,011

CLASS 323
207 5,617,012
222 5,617,013

267 5,617,014
282 5,617,015
284 5,617,016
289 5,617,017

CLASS 324
72.5 5,617,018
117 R 5,617,019
142 5,617,020
158.1 5,617,021
175 5,617,022
207.17 5,617,023
209 5,617,024
236 5,617,025
318 5,617,026
5,617,027
320 5,617,028
5,617,029
322 5,617,030
326 5,617,031
399 5,617,032
540 5,617,033
635 5,617,034
711 5,617,035
760 5,617,036
763 5,617,037
765 5,617,038
771 5,617,039

CLASS 326
38 5,617,040
39 5,617,041
5,617,042
83 5,617,043

CLASS 327
77 5,617,044
89 5,617,045
110 5,617,046
142 5,617,047
143 5,617,048
172 5,617,049
205 5,617,050
317 5,617,051
356 5,617,052
361 5,617,053
362 5,617,054
404 5,617,055
538 5,617,056
543 5,617,057

CLASS 330
10 5,617,058
66 5,617,059
129 5,617,060
151 5,617,061

CLASS 331
111 5,617,062

CLASS 332
103 5,617,063

CLASS 333
22 R 5,617,064
186 5,617,065

CLASS 335
78 5,617,066
5,617,067

CLASS 337
227 5,617,069
323 5,617,070

CLASS 338
32 R 5,617,071

CLASS 340
431 5,617,072
568 5,617,073
573 5,617,074
574 5,617,075
583 5,617,076
628 5,617,077
652 5,617,078
693 5,617,079
815.57 5,617,080
825.03 5,617,081
825.31 5,617,082
825.44 5,617,083
870.02 5,617,084
903 5,617,085
907 5,617,086
932.2 5,617,087

CLASS 341
61 5,617,088
65 5,617,089
141 5,617,090
154 5,617,091
159 5,617,092
172 5,617,093
200 5,617,094

CLASS 342
1 5,617,095
4 5,617,096
68 5,617,097
70 5,617,098
159 5,617,099
357 5,617,100
358 5,617,101
374 5,617,102

CLASS 343
700 MS 5,617,103
5,617,104
702 5,617,105
5,617,106
704 5,617,107
786 5,617,108

CLASS 345
87 5,617,109
100 5,617,111
102 5,617,112
103 5,617,113
113 5,617,114
141 5,617,115
150 5,617,116
157 5,617,117
200 5,617,118
611 5,617,119

CLASS 347
7 5,617,121
14 5,617,122
15 5,617,123
35 5,617,124
36 5,617,125
71 5,617,127
87 5,617,128
123 5,617,129
131 5,617,130
233 5,617,131
235 5,617,132
261 5,617,133
264 5,617,134

CLASS 348
12 5,617,135
71 5,617,136
193 5,617,137
222 5,617,138
223 5,617,139
347 5,617,140
366 5,617,141
405 5,617,142
407 5,617,143
416 5,617,144
423 5,617,145
460 5,617,146
461 5,617,147
473 5,617,148
699 5,617,149
700 5,617,150
731 5,617,151
761 5,617,152

CLASS 349
10 5,617,226
19 5,617,228
42 5,617,229
57 5,617,227
110 5,617,230
112 5,617,231

CLASS 351
45 5,617,153
162 5,617,154
204 5,617,155
214 5,617,156
222 5,617,157

CLASS 352
37 5,617,158

CLASS 353
97 5,615,937

CLASS 355
22 5,617,178
40 5,617,179
5,617,180
46 5,617,181
53 5,617,182
71 5,617,183
75 5,617,184
5,617,185
5,617,186

CLASS 356
5.01 5,617,199
73.1 5,617,200
135 5,617,201
138 5,617,202
237 5,617,203
240 5,617,204
301 5,617,205
320 5,617,206
345 5,617,207
375 5,617,208
376 5,617,209
399 5,617,210
401 5,617,211
438 5,617,212
443 5,617,213

CLASS 358
296 5,617,214
5,617,215
298 5,617,216
299 5,617,217
434 5,617,220
442 5,617,221
5,617,222
527 5,617,223
530 5,617,224

CLASS 359
9 5,617,225
108 5,617,232
123 5,617,233
131 5,617,234
142 5,617,235
172 5,617,236
180 5,617,237
5,617,238
181 5,617,239
194 5,617,240
200 5,617,241
221 5,617,242
309 5,617,243
341 5,617,244
402 5,617,245
494 5,617,246
515 5,617,247
567 5,617,248
577 5,617,249
582 5,617,250
599 5,617,251
653 5,617,252
692 5,617,253
5,617,254
784 5,617,255
814 5,617,256
818 5,617,257
819 5,617,258
820 5,617,259
821 5,617,260
845 5,617,261
846 5,617,262

CLASS 360
48 5,617,263
54 5,617,264
69 5,617,265
70 5,617,266
77.02 5,617,267
77.12 5,617,269
77.14 5,617,268
85 5,617,270
94 5,617,271
99.08 5,617,272
104 5,617,274
105 5,617,273
113 5,617,275
5,617,276
5,617,277
126 5,617,278
128 5,617,279

CLASS 361
19 5,617,280
27 5,617,281
56 5,617,282
5,617,283
58 5,617,284
92 5,617,285
93 5,617,286
118 5,617,287
127 5,617,288
151 5,617,289
321.4 5,617,290
686 5,617,291
704 5,617,292
715 5,617,293
719 5,617,294
723 5,617,295
736 5,617,296
737 5,617,297
766 5,617,298
788 5,617,299
795 5,617,300
796 5,617,301

CLASS 362
18 5,615,938
32 5,617,302
66 5,615,939
72 5,615,940
5,617,303
109 5,615,941
118 5,617,304
220 5,615,942
5,615,943
226 5,615,944
5,615,945
250 5,615,946
376 5,615,947

CLASS 363
16 5,617,305
17 5,617,306
37 5,617,307
98 5,617,308

CLASS 364
133 5,617,309
140 5,617,310
185 5,617,311
188 5,617,312
424.014 5,617,316
424.045 5,617,315
449.1 5,617,319
449.9 5,617,317
453 5,617,320
468.04 5,617,322
468.1 5,617,321
474.03 5,617,323
483 5,617,324
488 5,617,325
5,617,326
489 5,617,327
490 5,617,328
492 5,617,329
514 A 5,617,330
5,617,331
514 R 5,617,332
5,617,333
5,617,334
516 5,617,318
5,617,335
550 5,617,336
551.01 5,617,337
558 5,617,338
569 5,617,339
571.01 5,617,340
578 5,617,341
5,617,342
707 5,617,343
724.1 5,617,344
754 5,617,345
757 5,617,346

CLASS 365
49 5,617,347
5,617,348
145 5,617,349
185.02 5,617,350
185.05 5,617,351
185.08 5,617,352
185.17 5,617,353
185.21 5,617,354
5,617,355
185.25 5,617,356
185.27 5,617,357
185.29 5,617,358
5,617,359
189.01 5,617,360
5,617,361
189.05 5,617,362
190 5,617,363
200 5,617,364
5,617,365
201 5,617,366
219 5,617,367
221 5,617,368
230.06 5,617,369
233.5 5,617,370

CLASS 366
118 5,615,948
159.1 5,615,949
173.1 5,615,950
311 5,615,951
313 5,615,952

CLASS 367
13 5,617,371
38 5,617,372

CLASS 368
5 5,617,373
10 5,617,374
5,617,375
80 5,617,376
282 5,617,377

CLASS 369
13 5,617,378
5,617,379
14 5,617,380
32 5,617,381
5,617,382
5,617,383
5,617,384
5,617,385
5,617,386
44.23 5,617,387
44.28 5,617,388
44.42 5,617,389
48 5,617,390
5,617,391
50 5,617,392
58 5,617,393
5,617,394
77.1 5,617,395
77.2 5,617,396
110 5,617,398
116 5,617,399
5,617,400
5,617,401
219 5,617,402
244 5,617,403
5,617,404
275.1 5,617,405
275.3 5,617,406
5,617,407
275.4 5,617,408
772 5,617,397

CLASS 370
210 5,617,411
235 5,617,409
281 5,617,412
342 5,617,410
374 5,617,414
389 5,617,424
391 5,617,416
394 5,617,417
395 5,617,415
400 5,617,413
401 5,617,422
402 5,617,420
5,617,421
426 5,617,423
465 5,617,418
471 5,617,419

CLASS 371
10.2 5,617,425
22.3 5,617,426
5,617,427
5,617,428
25.1 5,617,429
27 5,617,430
5,617,431
37.1 5,617,432
48 5,617,433

CLASS 372
6 5,617,434
22 5,617,435
45 5,617,436
5,617,437
5,617,438
50 5,617,439
61 5,617,440
70 5,617,441
72 5,617,442
74 5,617,443
77 5,617,444
96 5,617,445
5,617,446

CLASS 373
108 5,617,447

CLASS 374
7 5,615,953
17 5,615,954

CLASS 375
26 5,617,511
222 5,617,449
230 5,617,450
340 5,617,451
354 5,617,452
367 5,617,453
376 5,617,454
377 5,617,455

CLASS 376
260 5,617,456
352 5,617,457

CLASS 377
49 5,617,458

CLASS 378
62 5,617,459
64 5,617,460
98.3 5,617,463
98.5 5,617,461
98.7 5,617,462
137 5,617,464
146 5,617,465

CLASS 379
28 5,617,466
58 5,617,467
5,617,468
114 5,617,448
5,617,470
212 5,617,471
390 5,617,472
399 5,617,473
433 5,617,474

CLASS 380
14 5,617,475
49 5,617,476

CLASS 381
25 5,617,477
56 5,617,478
71 5,617,479
98 5,617,480

CLASS 382
101 5,617,481
107 5,617,482
159 5,617,483
172 5,617,484
176 5,617,485
181 5,617,486
199 5,617,487
229 5,617,488
275 5,617,489
5,617,490
285 5,617,491

CLASS 384
13 5,615,955
470 5,615,956

CLASS 385
33 5,617,492
40 5,617,493
83 5,617,494
92 5,617,495
100 5,617,496
5,617,497
117 5,617,498
122 5,617,499
132 5,617,500
134 5,617,501

CLASS 386
97 5,617,502
111 5,617,219
129 5,617,218

CLASS 388
815 5,617,503

CLASS 392
307 5,617,504

CLASS 395
2.09 5,617,507
2.1 5,617,506
2.18 5,617,505
2.42 5,617,508
2.65 5,617,509
10 5,617,510
27 5,617,512
50 5,617,513
51 5,617,514
99 5,617,515
113 5,617,516
114 5,617,517
5,617,518
117 5,617,519
119 5,617,520
126 5,617,521
133 5,617,522
140 5,617,523
143 5,617,524
182.04 5,617,530
183.06 5,617,531
183.12 5,617,532
183.14 5,617,533
183.18 5,617,534
183.22 5,617,535
185.01 5,617,536
200.01 5,617,537
200.02 5,617,538
5,617,539
200.11 5,617,540
200.13 5,617,541
200.14 5,617,542
250 5,617,543
263 5,617,313
281 5,617,544
296 5,617,545

307 5,617,546
311 5,617,547
326 5,617,526
5,617,527
5,617,528
5,617,548
376 5,617,573
5,617,574
382 5,617,549
383 5,617,550
401 5,617,551
5,617,552
416 5,617,553
418 5,617,554
432 5,617,555
468 5,617,556
473 5,617,557
493 5,617,558
496 5,617,559
500 5,617,560
5,617,561
515 5,617,529
556 5,617,563
559 5,617,562
602 5,617,567
604 5,617,565
611 5,617,564
612 5,617,568
614 5,617,569
615 5,617,120
620 5,617,566
684 5,617,570
750 5,617,571
5,617,572
800 5,617,575
5,617,576
5,617,577
5,617,578
803 5,617,314
805 5,617,525

CLASS 396

53 5,617,177
55 5,617,159
5,617,166
5,617,176
60 5,617,160
78 5,617,173
95 5,617,174
166 5,617,175
176 5,617,163
284 5,617,169
318 5,617,162
319 5,617,161
378 5,617,170
401 5,617,164
413 5,617,168
418 5,617,165
448 5,617,167
512 5,617,171
539 5,617,172

CLASS 399

13 5,617,188
27 5,617,195
5,617,198
32 5,617,187
114 5,617,579
159 5,617,190
254 5,617,189
263 5,617,192
286 5,617,191
316 5,617,193
349 5,617,194
379 5,617,196
398 5,617,197

CLASS 400

124.1 5,615,957
208 5,615,958
279 5,615,959
613 5,615,960
619 5,615,961

CLASS 401

173 5,615,962
206 5,615,963
210 5,615,964

CLASS 403

24 5,615,965
49 5,615,966
133 5,615,967
312 5,615,968
348 5,615,969
379 5,615,970

CLASS 404

37 5,615,971
72 5,615,972
75 5,615,973

CLASS 405

128 5,615,974
5,615,975
184 5,615,976
195.1 5,615,977
270 5,615,978
289 5,615,979

CLASS 406

19 5,615,980

CLASS 408

1 R 5,615,981

CLASS 409

55 5,615,982
132 5,615,983
137 5,615,984

CLASS 411

442 5,615,985

CLASS 412

40 5,615,986

CLASS 414

218 5,615,987
416 5,615,988
502 5,615,989
526 5,615,990
685 5,615,991
786 5,615,992
5,615,993
794.2 5,615,994
798.2 5,615,995

CLASS 415

1 5,615,996
169.1 5,615,997
177 5,615,998
182.1 5,615,999
191 5,616,000
209.2 5,616,001
209.3 5,616,003

CLASS 416

180 5,616,002
238 5,616,004

CLASS 417

46 5,616,005
54 5,616,006
65 5,616,007
222.2 5,616,008
342 5,616,009
364 5,616,010
366 5,616,011
383 5,616,012
423.14 5,616,013
464 5,616,014

CLASS 418

5 5,616,015
55.4 5,616,016
63 5,616,017
5,616,018
66 5,616,019
138 5,616,020

CLASS 422

61 5,616,298
99 5,616,299
103 5,616,300
104 5,616,301
117 5,616,302
147 5,616,303
227 5,616,304
261 5,616,305

CLASS 423

228 5,616,306
235 5,616,307
345 5,616,308
592 5,616,309
700 5,616,310

CLASS 424

1.33 5,616,311
9.364 5,616,312
49 5,616,313
5,616,314
54 5,616,315
57 5,616,316
71.3 5,616,320
78.3 5,616,317
93.1 5,616,318
93.2 5,616,319
93.46 B1 4,915,943
145.1 5,616,321
192.1 5,616,322
195.1 5,616,323
5,616,324
5,616,325
199.1 5,616,326
206.1 5,616,327
257.1 5,616,328
261.1 5,616,329
400 5,616,330
401 5,616,331
5,616,332
402 5,616,333
404 5,616,334
405 5,616,335
5,616,336
414 5,616,337
423 5,616,338
438 5,616,339
440 5,616,340
450 5,616,341
5,616,342
464 5,616,343
486 5,616,344
497 5,616,345
606 5,616,346
665 5,616,347
667 5,616,348

CLASS 425

62 5,616,349
83 5,616,092
133.1 5,616,350
262 5,616,351

CLASS 426

312 5,616,352
324 5,616,353
5,616,354
384 5,616,355
443 5,616,356
478 5,616,357
590 5,616,358
614 5,616,359
615 5,616,360
658 5,616,361

CLASS 427

328 5,616,362
372.2 5,616,363
389.9 5,616,364
430.1 5,616,365
483 B1 4,761,299
508 5,616,366
532 5,616,367
535 5,616,368
536 5,616,369
547 5,616,370
554 5,616,372
577 5,616,373
5,616,374

CLASS 428

12 5,616,375
33 5,616,376
35.7 5,616,377
5,616,378
5,616,379
5,616,380
5,616,381
5,616,382
5,616,383
36.1 5,616,384
40.1 5,616,385
5,616,386
43 5,616,387
45 5,616,389
64.1 5,616,390
71 5,616,391
80 5,616,392
99 5,616,394
102 5,616,395
139 5,616,396
141 5,616,398
175 5,616,399
195 5,616,400
212 5,616,401
5,616,402
215 5,616,403
221 5,616,404
323 5,616,409
5,616,410
373 5,616,411
5,616,412
402 5,616,413
5,616,414
411.1 5,616,415
5,616,416
421 5,616,388
428 5,616,417
474.7 5,616,418
512 5,616,419
515 5,616,420
614 5,616,421
621 5,616,422
632 5,616,423
647 5,616,424
682 5,616,425
688 5,616,426
690 5,616,427
694 ML 5,616,428

CLASS 429

3 5,616,429
17 5,616,430
36 5,616,431
59 5,616,432
121 5,616,433
136 5,616,434
218 5,616,435
5,616,436
245 5,616,437

CLASS 430

5 5,616,438
15 5,616,439
63 5,616,440
78 5,616,441
83 5,616,442
106 5,616,443
110 5,616,444
204 5,616,445
219 5,616,446
270.11 5,616,447
283.1 5,616,448
302 5,616,449
321 5,616,450
325 5,616,451
398 5,616,452
504 5,616,453
554 5,616,454
569 5,616,455
581 5,616,456

CLASS 431

115 5,616,021
253 5,616,022

CLASS 432

103 5,616,023
241 5,616,024
5,616,025

CLASS 433

8 5,616,026
37 5,616,027
80 5,616,028
122 5,616,029

CLASS 434

38 5,616,030
5,616,031
117 5,616,032
118 5,616,033

CLASS 435

4 5,616,457
5,616,458
5 5,616,459
5,616,460
6 5,616,461
5,616,462
5,616,463
5,616,464
5,616,465
5,616,466
7.2 5,616,467
7.23 5,616,468
5,616,469
7.31 5,616,470
29 5,6'6,471
69.1 5,616,472
5,616,473
5,616,474
5,616,475
5,616,476
69.5 5,616,477
91.2 5,616,478
100 5,616,479
172.3 5,616,480
5,616,481
194 5,616,482
198 5,616,483
199 5,616,484
220 5,616,485
226 5,616,486
235.1 5,616,487
246 5,616,493
252.3 5,616,494
5,616,495
5,616,496
262 5,616,497
263 B1 4,912,056
264 5,616,498
309.1 5,616,499
320.1 5,616,500
325 5,616,489
341 5,616,492
354 5,616,491
366 5,616,488
5,616,490

CLASS 436

63 5,616,501
86 5,616,502
518 5,616,503
5,616,504
531 5,616,505

CLASS 437

125 5,616,517

CLASS 438

4 5,616,324
42 5,616,522
50 5,616,314
5,616,523
51 5,616,521
125 5,616,520
127 5,616,516
150 5,616,506
234 5,616,509
259 5,616,510
350 5,616,508
396 5,616,511
402 5,616,513
406 5,616,512
478 5,616,515
480 5,616,507
626 5,616,519
680 5,616,518
693 5,616,212
718 5,616,213

CLASS 439

78 5,616,034
79 5,616,035
100 5,616,036
130 5,616,037
157 5,616,038
188 5,616,039
191 5,616,040
222 5,616,041
226 5,616,042
322 5,616,043
342 5,616,044
352 5,616,045
367 5,616,046
397 5,616,047
398 5,616,048
455 5,616,049
495 5,616,050
518 5,616,051
573 5,616,052
590 5,616,053
621 5,616,054
761 5,616,055

CLASS 440

3 5,616,056
39 5,616,057
53 5,616,058

CLASS 441

11 5,616,059
76 5,616,060

CLASS 442

19 5,616,406
60 5,616,405
118 5,616,407
346 5,616,408

CLASS 445

24 5,616,061

CLASS 451

1 5,616,063
5 5,616,064
10 5,616,065
36 5,616,066
39 5,616,067
49 5,616,068
56 5,616,069
62 5,616,070
259 5,616,071
356 5,616,072

CLASS 452

123 5,616,073

CLASS 453

30 5,616,074
41 5,616,075

CLASS 454

367 5,616,076

CLASS 460

119 5,616,077

CLASS 463

8 5,616,078
32 5,616,079

CLASS 464

35 5,616,080
145 5,616,081

CLASS 470

49 5,616,082

CLASS 472

67 5,616,083

CLASS 473

73 5,616,084
126 Re.35,488
238 5,615,884
267 5,616,085
290 5,616,086
316 5,616,087
341 5,616,088
378 5,616,640
409 5,616,089
424 5,615,879
469 5,615,890
471 5,615,880
492 5,615,891
590 5,615,892

CLASS 474

267 5,616,090

CLASS 475

72 5,616,091
120 5,616,093
128 5,616,094
178 5,616,095
249 5,616,096
331 5,616,097
346 5,616,098

CLASS 477

169 5,616,099
5,616,100

CLASS 482

34 5,616,102
51 5,616,103
57 5,616,104
72 5,616,105
96 5,616,106
97 5,616,107
104 5,616,108
123 5,616,109
131 5,616,110
133 5,616,111

CLASS 483

29 5,616,112

CLASS 493

23 5,616,113

CLASS 501

35 5,616,525
89 5,616,526
97 5,616,527
136 5,616,328

CLASS 502

154 5,616,529
210 5,616,530
242 5,616,532
253 5,616,531
407 5,616,533

CLASS 503

227 5,616,534

CLASS 504

206 5,616,535
225 5,616,536
242 5,616,537

CLASS 505

210 5,616,538
5,616,539
5,616,540

CLASS 507

145 5,616,541

CLASS 508

207 5,616,542
239 5,616,543
508 5,616,544

CLASS 510

220 5,616,277
221 5,616,781
223 5,616,546
230 5,616,547
242 5,616,548
412 5,616,549
444 5,616,550
490 5,616,552

522 5,616,553

CLASS 514

8 5,616,554
5,616,555
11 5,616,556
5,616,557
12 5,616,558
5,616,559
5,616,560
13 5,616,561
15 5,616,562
18 5,616,563
44 5,616,564
5,616,565
47 5,616,566
49 5,616,567
54 5,616,568
5,616,569
5,616,570
81 5,616,576
102 5,616,571
159 5,616,572
172 5,616,573
178 5,616,574
215 5,616,575
5,616,577
218 5,616,578
222.5 5,616,579
226.2 5,616,580
234.5 5,616,581
5,616,582
235.5 5,616,583
243 5,616,584
249 5,616,585
250 5,616,586
258 5,616,587
291 5,616,588
296 5,616,589
301 5,616,590
312 5,616,591
314 5,616,592
321 5,616,593
340 5,616,594
344 5,616,595
365 5,616,596
5,616,597
374 5,616,598
381 5,616,599
397 5,616,600
399 5,616,601
410 5,616,602
411 5,616,603
413 5,616,604
415 5,616,605
422 5,616,606
430 5,616,607
449 5,616,608
450 5,616,609
456 5,616,610
474 5,616,611
478 5,616,612
492 5,616,613
511 5,616,615
530 5,616,614
557 5,616,616
561 5,616,617
567 5,616,618
574 5,616,619
620 5,616,620
772.4 5,616,621

CLASS 521

33 5,616,622
49.5 5,616,623
56 5,616,624
79 5,616,625
94 5,616,626
134 5,616,627
157 5,616,628

CLASS 522

40 5,616,629
96 5,616,630

CLASS 523

139 5,616,631
211 5,616,632
400 5,616,633
404 5,616,634

CLASS 524

37 5,616,635
102 5,616,636
5,616,637
178 5,616,638
262 5,616,639
417 5,616,641
439 5,616,642
522 5,616,644
546 5,616,645
588 5,616,646
788 5,616,647
805 5,616,648

CLASS 525

56 5,616,649
102 5,616,650
305 5,616,651
315 5,616,652
332.5 5,616,653
333.7 5,616,654
342 5,616,655
355 5,616,656
437 5,616,657
438 5,616,658
480 5,616,659

CLASS 526

62 5,616,660
88 5,616,661
5,616,662
127 5,616,663
5,616,664
129 5,616,665
262 5,616,666
271 5,616,667
5,616,668
285 5,616,669
307.7 5,616,670

CLASS 527

300 5,616,671

CLASS 528

15 5,616,672
23 5,616,673
29 5,616,674
61 5,616,675
5,616,676
66 5,616,677
73 5,616,678
76 5,616,679
183 5,616,680
279 5,616,681
480 5,616,683

CLASS 530

317 5,616,684
324 5,616,685
326 5,616,686
334 5,616,687
351 5,616,688
356 5,616,689
363 5,616,690
364 5,616,691
391.5 5,616,692
392 5,616,693

CLASS 534

598 5,616,694
643 5,616,695
667 5,616,696
795 5,616,697

CLASS 536

18.6 5,616,698
23.1 5,616,699
25.3 5,616,700
25.4 5,616,701
27.13 5,616,702
128 B1 5,116,969

CLASS 540

226 5,616,703
450 5,616,704

CLASS 544

105 5,616,705
221 5,616,706
242 5,616,707
332 5,616,708

CLASS 546

101 5,616,709
119 5,616,710
141 5,616,711
158 5,616,712
250 5,616,713
269.7 5,616,714
278.4 5,616,715
300 5,616,716
329 5,616,717
330 5,616,718
334 5,616,719

CLASS 548

204 5,616,720
253 5,616,721
319.1 5,616,722
371.4 5,616,723
417 5,616,724
453 5,616,725
475 5,616,726
533 5,616,727

CLASS 549

11 5,616,728
223 5,616,729
233 5,616,730
282 5,616,731
305 5,616,732
307 5,616,733
406 5,616,734
413 5,616,735
430 5,616,736
458 5,616,737
467 5,616,738
510 5,616,739
5,616,740

CLASS 552

554 5,616,741
595 5,616,742
604 5,616,743
653 5,616,744

CLASS 554

56 5,616,745
66 5,616,746

CLASS 556

11 5,616,747
5,616,748
13 5,616,749
32 5,616,750
54 5,616,751
95 5,616,752
401 5,616,753
409 5,616,754
413 5,616,755
5,616,756
419 5,616,757
423 5,616,758
443 5,616,759
468 5,616,760
469 5,616,761
479 5,616,762
5,616,763
482 5,616,764
486 5,616,765

CLASS 558

38 5,616,766
92 5,616,767
146 5,616,768
5,616,769
161 5,616,770
282 5,616,771
304 5,616,772
353 5,616,773

CLASS 560

4 5,616,774
9 5,616,775
27 5,616,776
29 5,616,777
35 5,616,778
48 5,616,779
118 5,616,780
149 5,616,782
191 5,616,783
345 5,616,784

CLASS 562

25 5,616,785
401 5,616,786
423 5,616,787
430 5,616,788
439 5,616,789
444 5,616,790
450 5,616,791
486 5,616,792
553 5,616,793
851 5,616,794
855 5,616,795

CLASS 564

9 5,616,796
92 5,616,797
153 5,616,798
202 5,616,799
292 5,616,800
307 5,616,801
5,616,802
337 5,616,803
398 5,616,804
405 5,616,805
423 5,616,806
5,616,807
428 5,616,808
440 5,616,809
442 5,616,810
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39 :	H1643

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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1194 O.G. 618, on January 21, 1997.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on September 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective July 1, 1996, due to a change in the exchange rate of the U.S. dollar with regard to the German mark, and was announced in the *Official Gazette* at 1187 O.G. 73, on June 25, 1996.

International fees were changed, effective on February 1, 1997, due to a change in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1194 O.G. 617, on January 21, 1997.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective October 1, 1996, and were announced in the *Official Gazette* at 1189 O.G. 62, on August 20, 1996.

The schedule of PCT fees (in U.S. dollars), effective February 1, 1997, is as follows:

International Application (PCT Chapter I) fees:	
Transmittal fee	230.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
— No corresponding prior U.S. national application filed	680.00
— Corresponding prior U.S. national application filed	440.00
— Supplemental search fee, per additional invention (payable only upon invitation)	200.00
European Patent Office as ISA	1585.00
International fees	
Basic fee	590.00
Basic supplemental fee (for each page over 30)	12.00
Designation fee per country or region	
— For the first 11 national or regional offices designated	143.00
— For each designation in excess of 11 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
— Designation fee	143.00
— Confirmation fee	71.50
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:	
Handling fee	180.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
— USPTO was ISA in PCT Chapter I	480.00
— Additional examination fee, per additional invention (payable only upon invitation)	140.00
— USPTO was not ISA in PCT Chapter I	730.00
— Additional examination fee, per additional invention (payable only upon invitation)	260.00

U.S. National Stage Fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
— All claims presented satisfied provisions of PCT Article 33(2) to (4)	48.00	96.00
— All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	350.00	700.00
USPTO was ISA but not IPEA	385.00	770.00
USPTO was neither ISA nor IPEA		
— Search report has not been prepared by the European Patent Office or the Japanese Patent Office	520.00	1040.00
— Search report has been prepared by the European Patent Office or the Japanese Patent Office	455.00	910.00
Other National fees		
— For each independent claim in excess of 3	40.00	80.00
— For each claim in excess of 20.	11.00	22.00
— For each application containing a multiple dependent claim	130.00	260.00
— Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
— Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

Dec. 26, 1996

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on April 5, 1994 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,299,323 through 5,301,369
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on April 3, 1990 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,912,777 through 4,914,751
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on April 1, 1986 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,578,821 through 4,580,295
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1996, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $510.00
By other than a small entity..$1,020.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,025.00
By other than a small entity..$2,050.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,540.00
By other than a small entity..$3,080.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity..$130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:
(1) unavoidable $680.00
(2) unintentional..$1,600.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED January 29, 1997 DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 34,386	07/651,289	09/21/93
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4,495,669	06/456,246	01/29/85
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4,496,001	06/431,417	01/29/85
4,496,008	06/291,869	01/29/85
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4,496,029	06/480,452	01/29/85
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4,496,063	06/436,058	01/29/85
4,496,074	06/407,329	01/29/85
4,496,078	06/299,639	01/29/85
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4,496,133	06/354,053	01/29/85
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4,496,187	06/454,169	01/29/85
4,496,189	06/409,879	01/29/85
4,496,202	06/502,888	01/29/85
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4,496,498	06/398,187	01/29/85
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4,496,521	06/514,158	01/29/85
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4,496,542	06/484,729	01/29/85
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4,496,638	06/480,313	01/29/85
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4,496,645	06/545,433	01/29/85
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4,496,653	06/394,998	01/29/85
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4,496,662	06/452,471	01/29/85
4,496,664	06/361,415	01/29/85
4,496,666	06/557,725	01/29/85
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4,496,670	06/551,868	01/29/85
4,496,674	06/552,622	01/29/85
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4,496,684	06/616,349	01/29/85
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4,496,688	06/477,102	01/29/85
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4,496,693	06/557,006	01/29/85
4,496,702	06/442,147	01/29/85
4,496,707	06/502,832	01/29/85
4,496,709	06/504,918	01/29/85
4,496,711	06/536,068	01/29/85
4,496,712	06/562,116	01/29/85
4,496,717	06/444,170	01/29/85
4,496,719	06/466,709	01/29/85
4,496,724	06/452,385	01/29/85
4,496,726	06/404,500	01/29/85
4,496,730	06/420,461	01/29/85
4,496,732	06/474,856	01/29/85
4,496,741	06/460,436	01/29/85
4,496,743	06/460,972	01/29/85

Patent Number	Serial Number	Issue Date			
			4,497,051	06/345,846	01/29/85
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4,496,751	06/481,370	01/29/85	4,497,060	06/447,956	01/29/85
4,496,754	06/454,178	01/29/85	4,497,062	06/501,607	01/29/85
4,496,755	06/479,768	01/29/85	4,497,063	06/392,130	01/29/85
4,496,756	06/528,462	01/29/85	4,497,066	06/355,287	01/29/85
4,496,757	06/431,498	01/29/85	4,799,276	07/095,225	01/24/89
4,496,758	06/541,757	01/29/85	4,799,280	07/000,733	01/24/89
4,496,762	06/480,039	01/29/85	4,799,286	06/892,591	01/24/89
4,496,763	06/386,563	01/29/85	4,799,289	06/911,462	01/24/89
4,496,769	06/501,920	01/29/85	4,799,292	07/173,191	01/24/89
4,496,773	06/479,399	01/29/85	4,799,295	07/072,328	01/24/89
4,496,774	06/633,717	01/29/85	4,799,297	07/102,182	01/24/89
4,496,775	06/602,581	01/29/85	4,799,301	07/167,847	01/24/89
4,496,779	06/604,043	01/29/85	4,799,305	07/023,947	01/24/89
4,496,780	06/507,198	01/29/85	4,799,306	07/196,154	01/24/89
4,496,781	06/597,003	01/29/85	4,799,309	07/137,774	01/24/89
4,496,786	06/538,035	01/29/85	4,799,310	07/015,372	01/24/89
4,496,794	06/617,821	01/29/85	4,799,313	07/151,644	01/24/89
4,496,795	06/610,785	01/29/85	4,799,314	07/069,549	01/24/89
4,496,800	06/506,742	01/29/85	4,799,317	07/115,349	01/24/89
4,496,802	06/485,549	01/29/85	4,799,319	07/062,676	01/24/89
4,496,806	06/529,723	01/29/85	4,799,323	07/181,413	01/24/89
4,496,807	06/580,458	01/29/85	4,799,332	07/123,364	01/24/89
4,496,812	06/456,242	01/29/85	4,799,333	07/099,894	01/24/89
4,496,817	06/511,556	01/29/85	4,799,334	07/130,925	01/24/89
4,496,828	06/511,859	01/29/85	4,799,338	07/107,398	01/24/89
4,496,839	06/439,071	01/29/85	4,799,344	07/068,034	01/24/89
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4,496,850	06/347,465	01/29/85	4,799,350	06/403,598	01/24/89
4,496,851	06/353,294	01/29/85	4,799,355	06/894,858	01/24/89
4,496,852	06/441,707	01/29/85	4,799,356	06/890,035	01/24/89
4,496,862	06/520,725	01/29/85	4,799,360	07/115,647	01/24/89
4,496,867	06/577,023	01/29/85	4,799,370	07/084,200	01/24/89
4,496,869	06/447,787	01/29/85	4,799,372	06/923,215	01/24/89
4,496,875	06/506,842	01/29/85	4,799,374	07/120,131	01/24/89
4,496,879	06/554,176	01/29/85	4,799,376	06/813,359	01/24/89
4,496,880	06/391,717	01/29/85	4,799,383	07/033,064	01/24/89
4,496,883	06/556,906	01/29/85	4,799,389	07/016,335	01/24/89
4,496,886	06/439,691	01/29/85	4,799,390	07/024,458	01/24/89
4,496,895	06/492,537	01/29/85	4,799,391	07/175,973	01/24/89
4,496,897	06/320,723	01/29/85	4,799,395	06/869,966	01/24/89
4,496,899	06/508,599	01/29/85	4,799,397	07/129,116	01/24/89
4,496,903	06/262,638	01/29/85	4,799,398	07/144,802	01/24/89
4,496,905	06/293,750	01/29/85	4,799,399	06/299,905	01/24/89
4,496,918	06/461,529	01/29/85	4,799,402	07/042,956	01/24/89
4,496,921	06/398,760	01/29/85	4,799,403	07/104,078	01/24/89
4,496,928	06/498,901	01/29/85	4,799,421	06/928,063	01/24/89
4,496,935	06/368,814	01/29/85	4,799,425	06/912,007	01/24/89
4,496,939	06/384,858	01/29/85	4,799,426	07/082,319	01/24/89
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4,496,947	06/368,045	01/29/85	4,799,430	07/013,709	01/24/89
4,496,949	06/281,479	01/29/85	4,799,434	07/069,435	01/24/89
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4,496,958	06/442,064	01/29/85	4,799,440	06/397,072	01/24/89
4,496,964	06/293,794	01/29/85	4,799,442	07/193,056	01/24/89
4,496,975	06/376,790	01/29/85	4,799,452	07/077,104	01/24/89
4,496,981	06/626,594	01/29/85	4,799,455	07/020,605	01/24/89
4,496,984	06/442,555	01/29/85	4,799,458	07/093,753	01/24/89
4,496,985	06/400,552	01/29/85	4,799,459	07/076,115	01/24/89
4,496,986	06/457,308	01/29/85	4,799,468	06/922,171	01/24/89
4,496,989	06/390,373	01/29/85	4,799,471	07/160,875	01/24/89
4,496,995	06/363,319	01/29/85	4,799,472	07/087,687	01/24/89
4,497,001	06/396,186	01/29/85	4,799,482	06/916,714	01/24/89
4,497,002	06/363,135	01/29/85	4,799,488	07/151,067	01/24/89
4,497,003	06/386,277	01/29/85	4,799,498	06/792,470	01/24/89
4,497,007	06/357,828	01/29/85	4,799,501	07/009,474	01/24/89
4,497,014	06/538,270	01/29/85	4,799,505	07/196,602	01/24/89
4,497,018	06/491,983	01/29/85	4,799,514	07/173,613	01/24/89
4,497,020	06/279,204	01/29/85	4,799,518	07/096,938	01/24/89
4,497,021	06/391,857	01/29/85	4,799,523	07/058,711	01/24/89
4,497,022	06/435,192	01/29/85	4,799,531	07/077,122	01/24/89
4,497,026	06/414,348	01/29/85	4,799,532	07/122,968	01/24/89
4,497,032	06/399,588	01/29/85	4,799,533	06/876,845	01/24/89
4,497,036	06/484,319	01/29/85	4,799,540	07/068,941	01/24/89
4,497,038	06/383,102	01/29/85	4,799,541	07/083,364	01/24/89
4,497,041	06/416,177	01/29/85	4,799,542	06/892,947	01/24/89
4,497,046	06/278,300	01/29/85	4,799,547	07/150,471	01/24/89

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			4,799,872	07/118,730	01/24/89
			4,799,874	07/116,885	01/24/89
4,799,549	06/828,877	01/24/89	4,799,890	07/123,729	01/24/89
4,799,555	07/007,711	01/24/89	4,799,898	07/160,660	01/24/89
4,799,556	07/032,636	01/24/89	4,799,903	06/593,180	01/24/89
4,799,557	06/853,357	01/24/89	4,799,908	07/019,509	01/24/89
4,799,563	07/117,581	01/24/89	4,799,914	07/012,314	01/24/89
4,799,565	07/113,236	01/24/89	4,799,918	07/113,559	01/24/89
4,799,567	07/109,765	01/24/89	4,799,921	07/125,811	01/24/89
4,799,569	06/899,063	01/24/89	4,799,923	06/906,889	01/24/89
4,799,572	07/048,332	01/24/89	4,799,924	07/209,836	01/24/89
4,799,573	07/105,961	01/24/89	4,799,925	07/209,851	01/24/89
4,799,574	07/061,696	01/24/89	4,799,926	07/107,676	01/24/89
4,799,575	07/116,154	01/24/89	4,799,928	07/001,511	01/24/89
4,799,579	06/798,979	01/24/89	4,799,933	07/002,361	01/24/89
4,799,580	06/928,878	01/24/89	4,799,936	07/063,883	01/24/89
4,799,583	06/913,845	01/24/89	4,799,938	07/099,752	01/24/89
4,799,588	06/942,417	01/24/89	4,799,945	07/114,232	01/24/89
4,799,593	06/856,983	01/24/89	4,799,947	07/113,700	01/24/89
4,799,596	07/024,081	01/24/89	4,799,950	07/005,279	01/24/89
4,799,602	07/175,439	01/24/89	4,799,952	07/115,122	01/24/89
4,799,603	07/123,778	01/24/89	4,799,955	07/105,274	01/24/89
4,799,607	06/920,030	01/24/89	4,799,956	07/015,179	01/24/89
4,799,610	07/167,579	01/24/89	4,799,957	07/015,164	01/24/89
4,799,611	07/081,734	01/24/89	4,799,958	06/924,302	01/24/89
4,799,612	07/088,408	01/24/89	4,799,967	07/133,310	01/24/89
4,799,622	07/079,742	01/24/89	4,799,971	07/053,946	01/24/89
4,799,630	07/143,012	01/24/89	4,799,973	06/596,182	01/24/89
4,799,634	07/049,215	01/24/89	4,799,981	07/168,361	01/24/89
4,799,636	07/091,381	01/24/89	4,799,985	06/858,903	01/24/89
4,799,637	07/071,166	01/24/89	4,799,987	07/037,266	01/24/89
4,799,643	06/639,827	01/24/89	4,799,990	07/044,374	01/24/89
4,799,665	06/887,426	01/24/89	4,799,993	07/192,474	01/24/89
4,799,666	07/003,485	01/24/89	4,799,995	07/079,307	01/24/89
4,799,668	07/158,602	01/24/89	4,799,997	07/082,274	01/24/89
4,799,670	07/060,821	01/24/89	4,799,999	07/032,366	01/24/89
4,799,673	07/121,133	01/24/89	4,800,002	07/170,540	01/24/89
4,799,675	07/035,394	01/24/89	4,800,005	07/085,366	01/24/89
4,799,680	07/121,936	01/24/89	4,800,008	07/068,842	01/24/89
4,799,683	06/908,049	01/24/89	4,800,012	07/155,767	01/24/89
4,799,689	07/037,744	01/24/89	4,800,013	07/050,501	01/24/89
4,799,690	07/172,555	01/24/89	4,800,014	06/790,580	01/24/89
4,799,703	07/151,660	01/24/89	4,800,018	07/031,857	01/24/89
4,799,705	07/050,164	01/24/89	4,800,033	07/022,948	01/24/89
4,799,706	07/045,108	01/24/89	4,800,038	07/146,466	01/24/89
4,799,708	07/113,861	01/24/89	4,800,048	07/126,993	01/24/89
4,799,711	07/131,721	01/24/89	4,800,049	07/049,809	01/24/89
4,799,723	06/629,372	01/24/89	4,800,055	06/835,894	01/24/89
4,799,724	07/027,772	01/24/89	4,800,057	07/105,548	01/24/89
4,799,733	06/901,227	01/24/89	4,800,067	07/069,386	01/24/89
4,799,746	06/706,059	01/24/89	4,800,068	07/028,985	01/24/89
4,799,747	07/088,047	01/24/89	4,800,070	07/094,637	01/24/89
4,799,749	06/924,848	01/24/89	4,800,072	07/143,978	01/24/89
4,799,753	06/854,349	01/24/89	4,800,077	07/143,570	01/24/89
4,799,760	07/161,678	01/24/89	4,800,083	06/921,069	01/24/89
4,799,765	07/105,527	01/24/89	4,800,084	07/086,178	01/24/89
4,799,766	07/168,209	01/24/89	4,800,088	07/037,593	01/24/89
4,799,769	06/883,881	01/24/89	4,800,090	07/024,475	01/24/89
4,799,779	07/171,682	01/24/89	4,800,099	06/924,930	01/24/89
4,799,785	06/920,049	01/24/89	4,800,102	07/083,783	01/24/89
4,799,792	07/075,980	01/24/89	4,800,104	07/020,323	01/24/89
4,799,793	06/906,985	01/24/89	4,800,110	07/069,772	01/24/89
4,799,796	06/941,107	01/24/89	4,800,115	06/918,754	01/24/89
4,799,797	07/121,467	01/24/89	4,800,120	07/049,336	01/24/89
4,799,802	07/194,451	01/24/89	4,800,121	07/055,355	01/24/89
4,799,806	07/124,883	01/24/89	4,800,122	07/099,390	01/24/89
4,799,810	07/089,703	01/24/89	4,800,123	07/092,609	01/24/89
4,799,811	06/876,633	01/24/89	4,800,128	07/058,044	01/24/89
4,799,813	06/932,103	01/24/89	4,800,138	07/039,038	01/24/89
4,799,820	07/034,798	01/24/89	4,800,142	07/072,729	01/24/89
4,799,826	07/132,031	01/24/89	4,800,143	07/126,738	01/24/89
4,799,837	07/152,913	01/24/89	4,800,145	07/073,193	01/24/89
4,799,838	06/849,418	01/24/89	4,800,155	07/012,459	01/24/89
4,799,840	06/921,827	01/24/89	4,800,157	06/773,916	01/24/89
4,799,851	07/149,377	01/24/89	4,800,158	06/841,889	01/24/89
4,799,854	07/075,157	01/24/89	4,800,160	06/889,764	01/24/89
4,799,864	07/108,798	01/24/89	4,800,166	06/871,513	01/24/89
4,799,867	07/118,100	01/24/89	4,800,169	07/074,238	01/24/89
4,799,870	07/006,378	01/24/89	4,800,170	07/104,091	01/24/89

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4,800,197	07/074,821	01/24/89
4,800,198	07/045,697	01/24/89
4,800,201	06/876,860	01/24/89
4,800,206	07/057,150	01/24/89
4,800,211	06/897,576	01/24/89
4,800,212	06/742,798	01/24/89
4,800,218	07/117,001	01/24/89
4,800,220	07/124,945	01/24/89
4,800,221	07/089,119	01/24/89
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4,800,233	07/081,267	01/24/89
4,800,234	07/128,915	01/24/89
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5,181,515	07/713,248	01/26/93
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5,181,895	07/810,286	01/26/93
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5,181,900	07/879,383	01/26/93
5,181,906	07/733,711	01/26/93
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5,181,941	07/807,489	01/26/93
5,181,947	07/772,193	01/26/93
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5,181,969	07/711,308	01/26/93
5,181,979	07/682,030	01/26/93
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5,182,044	07/638,963	01/26/93
5,182,054	07/834,302	01/26/93
5,182,058	07/796,482	01/26/93
5,182,076	07/749,276	01/26/93
5,182,077	07/684,797	01/26/93
5,182,083	07/322,802	01/26/93
5,182,086	07/636,769	01/26/93
5,182,093	07/462,496	01/26/93
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5,182,177	07/837,956	01/26/93
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5,182,273	07/780,480	01/26/93
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5,182,282	07/781,070	01/26/93
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5,182,780	07/791,458	01/26/93
5,182,789	07/541,105	01/26/93
5,182,791	07/739,093	01/26/93
5,182,808	07/424,378	01/26/93

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

4,861,711, Re. S.N. 08/424,010, April 18, 1995, Cl. 436/007, SHEET-LIKE DIAGNOSTIC DEVICE, Heinz-Jurgen Friesen et. al., Owner of Record: *Behringwerke Aktiengesellschaft, Marburg/ Lahn, Germany*, Attorney or Agent: M. Paul Barker, Ex. Gp.: 1801

5,374,128, Re. S.N. 08/766,817, Dec. 13, 1996, Cl. 384/49, LINEAR BALL SLIDE, Lionel E. Herbeck, Owner of Record: *Automatic Gages, Inc., Rochester, N.Y.*, Attorney or Agent: Philip K. Fitzsimmons, Ex. Gp.: 2405

5,469,957, Re. S.N. 08/704,390, Aug. 28, 1996, Cl. 198/711, BUCKET CONVEYOR CHAIN, Timothy H. Seymour, Owner of Record: *Inventor*, Attorney or Agent: None, Ex. Gp.: 3101

5,512,396, Re. S.N. 08/783,825, Jan. 13, 1996, Cl. 430/21, METHOD OF PRODUCING PHOTOGRAPHIC PRINTS, Ray Hicks, Owner of Record: *Inventor*, Attorney or Agent: Donald L. Wood, Ex. Gp.: 1113

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,418,388, Reexam. No. 90/004,553, Feb. 14, 1997, Cl. 364/431.010, ENGINE WAVEFORD PATTERN ANALYZER, Clarence B. Allgor, et. al., Owner of Record: *SPX Corp., Muskegon, Mich.*, Attorney or Agent: Finnegan Henderson Farabow Garrett & Dunner, Washington, D.C., Ex. Gp.: 2304, Requester: Snap-On Inc., c/o Emrich & Dithmar, Chicago, Ill.

4,625,557, Reexam. No. 90/004,554, Feb. 14, 1997, Cl. 073/635.0, ACOUSTICAL IMAGING SYSTEMS, Jerry Rutherford, Owner of Record: *Lora E. Rutherford, Lake Barrington, Ill.*, Attorney or Agent: Mark D. Saralino, Renner Otto Boisselle & Sklar, Cleveland, Ohio, Ex. Gp.: 2212, Requester: Sierra Matrix, Inc., c/o Allston L. Jones, Palo Alto, Calif.

5,018,623, Reexam. No. 90/004,559, Feb. 21, 1997, Cl. 206/557, MOLDED PLASTIC OVERWRAP TRAY, John Hrenyo, Owner of Record: *Tekni-Plex, Inc., Somerville, N.J.*, Attorney or Agent: Julius Fisher, McAulay, Fisher, Nissen, Goldberg & Kiel, New York, N.Y., Ex. Gp.: 3208, Requester: Owner

5,044,412, Reexam. No. 90/004,552, Feb. 12, 1997, Cl. 144/208, METHOD AND APPARATUS FOR DEBARKING LOGS, John P. Price, et. al., Owner of Record: *Price Industries, Monticello, Ark.*, Attorney or Agent: Ray F. Cox, Jr., Wright, Lindsey & Jennings, Little Rock, Ark., Ex. Gp.: 3201, Requester: Michelle N. Lester, Cushman Darby & Cushman, Intellectual Property Group of Pillsbury Madisone Sutro, Washington, D.C.

5,052,915, Reexam. No. 90/004,556, Feb. 19, 1997, Cl. 425/556, SEQUENTIAL INJECTION MOLDING MACHINE, Robert D. Schad, et. al., Owner of Record: *Robert D. Schad, Toronto, Canada & Paul P. Brown, Orangeville, Canada*, Attorney or Agent: Robert H. Bachman, Bachman & LaPointe, New Haven, Conn., Ex. Gp.: 1305, Requester: Jens Ole Sorensen, c/o Edward W. Callan, San Diego, Calif.

5,281,607, Reexam. No. 90/004,557, Feb. 21, 1997, Cl. 514/280, METHOD OF USING ALPHA 2-ANTAGONISTS FOR THE TREATMENT OF NEURODEGENERATIVE DISEASES, Eric A. Stone, et. al., Owner of Record: *New York University, New York, N.Y.*, Attorney or Agent: Sheridan Neimark, Browdy & Neimark, Washington, D.C., Ex. Gp.: 1205, Requester: R. Danny Huntington, Burns Doane Swecker & Mathis, Alexandria, Va.

5,292,801, Reexam. No. 90/004,560, Feb. 21, 1997, Cl. 525/054.1, DOPED SOL-GEL GLASSES FOR OBTAINING CHEMICAL INTERACTIONS, David Avnir, et. al., Owner of Record: *Yissum, Research Dev. Company of the Hebrew

University of Jerusalem, Jerusalem, Israel*, Attorney or Agent: Benjamin J. Hauptman, Lowe, Price, LeBlanc & Becker, Alexandria, Va., Ex. Gp.: 1207, Requester: Alvin T. Rockhill, The Goodyear Tire & Rubber Co., Akron, Ohio.

5,379,698, Reexam. No. 90/004,555, Feb. 18, 1997, Cl. 101/454, LITHOGRAPHIC PRINTING MEMBERS FOR USE WITH LASER-DISCHARGE IMAGING, Michael T. Nowak, et. al., Owner of Record: *Presstek, Inc., Hudson, N.H.*, Attorney or Agent: Steven J. Frank, Cesari and McKenna, Boston, Mass., Ex. Gp.: 3307, Requester: Robert L. Harrington, Portland, Oreg.

5,491,411, Reexam. No. 90/004,558, Feb. 21, 1997, Cl. 324/248, METHOD AND APPARATUS FOR IMAGING MICROSCOPIC SPATIAL VARIATIONS IN SMALL CURRENTS AND MAGNETIC FIELDS, Frederick C. Wellstood, et. al., Owner of Record: *Univ. of Maryland at College Park, College Park, Md.*, Attorney or Agent: Watson Cole Stevens & Davis, Washington, D.C., Ex. Gp.: 2215, Requester: Owner

5,509,670, Reexam. No. 90/004,561, Feb. 21, 1997, Cl. 277/205, PACKING MEMBER WITH REDUCED FRICTION, Wallace Wheeler, Owner of Record: *The Texacone Co., Mesquite, Tex.*, Attorney or Agent: Edward Jorgenson, Gardere & Wynne, Dallas, Tex., Ex. Gp.: 3108, Requester: Richard E. Jenkins, Durham, N.C.

5,553,752, Reexam. No. 90/004,562, Feb. 21, 1997, Cl. 222/370, SPRING FOR TRIGGER SPRAYER, Donald D. Foster, et. al., Owner of Record: *Contico International, Inc., St. Louis, Mo.*, Attorney or Agent: Joseph M. Rolnicki, Rogers Howell & Haferkamp, St. Louis, Mo., Ex. Gp.: 3104, Requester: John Kurucz, Kane Dalsimer Sullivan, Kurucz, Levy, Eisele & Richard, New York, N.Y.

Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED
December 30, 1996
DUE TO FAILURE TO RENEW

Reg. Number	Serial Number	Reg. Date
109,247	71/090,643	03/28/1916
109,261	71/089,945	03/28/1916
333,434	71/371,671	03/24/1936
333,440	71/371,714	03/24/1936
333,464	71/370,753	03/24/1936
333,488	71/370,389	03/24/1936
333,502	71/371,356	03/24/1936
333,509	71/371,554	03/24/1936
333,511	71/371,556	03/24/1936
333,526	71/366,307	03/24/1936
333,542	71/369,057	03/24/1936
333,553	71/371,057	03/24/1936
333,563	71/372,207	03/24/1936
333,567	71/372,324	03/24/1936
333,576	71/353,494	03/24/1936
333,585	71/369,855	03/24/1936
623,763	71/684,610	03/27/1956
623,769	71/687,406	03/27/1956
623,770	71/688,894	03/27/1956
623,773	71/667,682	03/27/1956
623,775	71/683,309	03/27/1956
623,786	71/681,844	03/27/1956
623,792	71/674,053	03/27/1956
623,793	71/677,969	03/27/1956
623,806	71/675,004	03/27/1956
623,810	71/678,839	03/27/1956
623,814	71/682,164	03/27/1956
623,824	71/686,140	03/27/1956
623,825	71/686,142	03/27/1956
623,829	71/673,549	03/27/1956
623,830	71/674,090	03/27/1956
623,832	71/685,112	03/27/1956
623,833	71/688,429	03/27/1956
623,844	71/691,515	03/27/1956
623,867	71/694,916	03/27/1956
623,868	71/696,258	03/27/1956
623,869	71/696,320	03/27/1956
623,870	71/696,381	03/27/1956
623,884	71/694,679	03/27/1956
623,886	71/696,621	03/27/1956
623,891	71/672,983	03/27/1956
623,892	71/674,293	03/27/1956
623,893	71/676,015	03/27/1956
623,899	71/690,763	03/27/1956
623,901	71/691,841	03/27/1956
623,902	71/691,842	03/27/1956
623,905	71/665,139	03/27/1956
623,911	71/671,544	03/27/1956
623,916	71/691,243	03/27/1956
623,925	71/684,894	03/27/1956
623,928	71/686,579	03/27/1956
623,930	71/687,101	03/27/1956
623,932	71/687,398	03/27/1956
623,939	71/688,204	03/27/1956
623,940	71/689,153	03/27/1956
623,950	71/682,426	03/27/1956
623,954	71/648,283	03/27/1956
623,982	71/689,711	03/27/1956
623,984	71/691,022	03/27/1956
623,999	71/638,455	03/27/1956
624,000	71/641,136	03/27/1956
624,005	71/667,368	03/27/1956
624,007	71/670,958	03/27/1956
624,008	71/670,959	03/27/1956
624,016	71/674,778	03/27/1956
624,020	71/677,959	03/27/1956
624,025	71/685,132	03/27/1956
624,026	71/685,996	03/27/1956
624,034	71/691,221	03/27/1956
624,062	71/676,849	03/27/1956
624,065	71/681,135	03/27/1956
624,070	71/685,897	03/27/1956
624,071	71/686,063	03/27/1956
624,072	71/686,154	03/27/1956
624,085	71/681,427	03/27/1956
624,086	71/687,051	03/27/1956
624,092	71/615,150	03/27/1956
624,100	71/683,442	03/27/1956
624,103	71/683,908	03/27/1956
624,104	71/683,909	03/27/1956
624,105	71/684,136	03/27/1956
624,106	71/684,355	03/27/1956
624,123	71/663,410	03/27/1956
624,137	71/682,602	03/27/1956
624,139	71/682,997	03/27/1956
624,143	71/683,942	03/27/1956
624,149	71/686,656	03/27/1956
624,159	71/688,939	03/27/1956
624,162	71/662,388	03/27/1956
624,174	71/689,185	03/27/1956
624,178	71/659,294	03/27/1956
624,191	71/686,730	03/27/1956
624,193	71/687,049	03/27/1956
624,194	71/687,329	03/27/1956
624,198	71/690,065	03/27/1956
624,210	71/682,757	03/27/1956
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1,035,999	73/033,088	03/23/1976
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Reg. Number	Serial Number	Reg. Date
1,036,002	73/039,924	03/23/1976
1,036,015	73/026,057	03/23/1976
1,036,017	73/035,797	03/23/1976
1,036,021	73/040,592	03/23/1976
1,036,022	73/041,731	03/23/1976
1,036,023	73/044,966	03/23/1976
1,036,025	73/050,300	03/23/1976
1,036,026	73/050,883	03/23/1976
1,036,027	73/050,906	03/23/1976
1,036,034	73/060,797	03/23/1976
1,036,036	73/061,081	03/23/1976
1,036,040	73/031,389	03/23/1976
1,036,041	73/032,182	03/23/1976
1,036,045	73/060,885	03/23/1976
1,036,049	73/012,439	03/23/1976
1,036,055	73/041,875	03/23/1976
1,036,057	73/045,049	03/23/1976
1,036,059	73/047,111	03/23/1976
1,036,060	73/048,834	03/23/1976
1,036,065	73/063,703	03/23/1976
1,036,066	73/063,704	03/23/1976
1,036,067	73/032,520	03/23/1976
1,036,068	73/034,535	03/23/1976
1,036,070	73/042,073	03/23/1976
1,036,074	73/043,030	03/23/1976
1,036,076	73/043,032	03/23/1976
1,036,077	73/043,122	03/23/1976
1,036,079	73/049,612	03/23/1976
1,036,083	73/051,817	03/23/1976
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1,036,097	73/044,597	03/23/1976
1,036,100	73/048,279	03/23/1976
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1,036,103	73/050,719	03/23/1976
1,036,104	73/050,868	03/23/1976
1,036,109	73/006,051	03/23/1976
1,036,111	73/010,449	03/23/1976
1,036,113	73/027,226	03/23/1976
1,036,114	73/027,368	03/23/1976
1,036,115	73/027,645	03/23/1976
1,036,116	73/029,246	03/23/1976
1,036,117	73/030,604	03/23/1976
1,036,120	73/036,363	03/23/1976
1,036,124	73/038,757	03/23/1976
1,036,131	73/049,786	03/23/1976
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1,036,142	73/058,944	03/23/1976
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1,036,149	73/034,569	03/23/1976
1,036,150	73/034,928	03/23/1976
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1,036,159	73/035,635	03/23/1976
1,036,163	73/041,539	03/23/1976
1,036,166	73/044,507	03/23/1976
1,036,167	73/046,364	03/23/1976
1,036,168	73/046,372	03/23/1976
1,036,170	73/058,182	03/23/1976
1,036,173	73/058,463	03/23/1976
1,036,179	73/037,649	03/23/1976
1,036,187	73/049,004	03/23/1976
1,036,188	73/052,207	03/23/1976
1,036,189	73/053,433	03/23/1976
1,036,191	73/047,176	03/23/1976
1,036,193	73/052,852	03/23/1976
1,036,197	73/021,210	03/23/1976
1,036,198	73/028,355	03/23/1976
1,036,199	73/034,780	03/23/1976
1,036,200	73/035,110	03/23/1976
1,036,201	73/036,215	03/23/1976
1,036,203	73/040,574	03/23/1976
1,036,204	73/045,080	03/23/1976
1,036,207	73/048,668	03/23/1976
1,036,208	73/048,899	03/23/1976

1,036,211	73/003,671	03/23/1976
1,036,214	73/042,072	03/23/1976
1,036,215	73/060,707	03/23/1976
1,036,216	73/061,111	03/23/1976
1,036,217	73/061,329	03/23/1976
1,036,221	73/008,440	03/23/1976
1,036,227	73/027,350	03/23/1976
1,036,229	73/036,682	03/23/1976
1,036,232	73/047,634	03/23/1976
1,036,233	73/047,731	03/23/1976
1,036,239	73/042,716	03/23/1976
1,036,240	73/044,260	03/23/1976
1,036,246	73/032,016	03/23/1976
1,036,247	73/034,629	03/23/1976
1,036,250	73/058,916	03/23/1976
1,036,256	73/049,017	03/23/1976
1,036,258	73/050,428	03/23/1976
1,036,259	73/034,354	03/23/1976
1,036,262	73/041,921	03/23/1976
1,036,263	73/041,922	03/23/1976
1,036,264	73/043,078	03/23/1976
1,036,265	73/044,718	03/23/1976
1,036,270	73/055,827	03/23/1976
1,036,271	73/032,354	03/23/1976
1,036,272	73/033,308	03/23/1976
1,036,273	73/033,309	03/23/1976
1,036,275	73/044,205	03/23/1976
1,036,277	73/053,216	03/23/1976
1,036,281	73/025,337	03/23/1976
1,036,287	73/047,025	03/23/1976
1,036,292	73/053,155	03/23/1976
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1,036,307	73/058,339	03/23/1976
1,036,309	73/018,317	03/23/1976
1,036,311	73/0[illegible]9,524	03/23/1976
1,036,312	73/032,781	03/23/1976
1,036,316	73/047,532	03/23/1976
1,036,319	73/055,920	03/23/1976
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1,036,326	73/041,042	03/23/1976
1,036,327	73/045,411	03/23/1976
1,036,331	73/052,400	03/23/1976
1,036,332	73/053,754	03/23/1976
1,036,333	73/054,914	03/23/1976
1,036,337	73/025,252	03/23/1976
1,036,338	73/032,330	03/23/1976
1,036,339	73/035,583	03/23/1976
1,036,340	73/053,406	03/23/1976
1,036,341	73/054,573	03/23/1976
1,036,343	73/054,796	03/23/1976
1,036,349	73/029,810	03/23/1976
1,036,351	73/045,728	03/23/1976
1,036,355	73/036,582	03/23/1976
1,036,356	73/049,755	03/23/1976
1,036,363	73/022,016	03/23/1976
1,036,364	73/024,190	03/23/1976
1,036,365	73/031,283	03/23/1976
1,036,369	73/043,481	03/23/1976
1,036,372	73/049,558	03/23/1976
1,036,376	73/018,474	03/23/1976
1,036,377	73/022,315	03/23/1976
1,036,379	73/037,918	03/23/1976
1,036,381	73/050,921	03/23/1976
1,036,382	73/057,511	03/23/1976
1,036,384	73/025,075	03/23/1976
1,036,385	73/029,670	03/23/1976
1,036,388	73/050,469	03/23/1976
1,036,396	73/025,617	03/23/1976
1,036,399	73/029,540	03/23/1976
1,036,402	73/035,109	03/23/1976
1,036,407	73/047,623	03/23/1976
1,036,409	73/014,352	03/23/1976
1,036,412	73/020,198	03/23/1976
1,036,413	73/024,987	03/23/1976
1,036,414	73/030,918	03/23/1976
1,036,421	73/047,336	03/23/1976
1,036,425	72/429,064	03/23/1976
1,036,431	72/460,052	03/23/1976
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Reg. Number	Serial Number	Reg. Date
1,036,436	72/429,019	03/23/1976
1,036,440	72/446,507	03/23/1976
1,036,443	72/443,596	03/23/1976
1,036,448	72/431,474	03/23/1976
1,036,450	72/460,007	03/23/1976
1,036,456	72/447,171	03/23/1976
1,036,458	72/465,882	03/23/1976
1,036,462	73/019,849	03/23/1976
1,036,463	73/053,095	03/23/1976
1,036,464	73/045,036	03/23/1976
1,036,465	73/014,269	03/23/1976
1,036,466	73/043,990	03/23/1976
1,036,469	73/028,801	03/23/1976
1,036,473	73/022,608	03/23/1976
1,036,474	73/030,628	03/23/1976
1,036,475	73/046,719	03/23/1976

Notice of Right to Claim Priority Based Upon Applications Previously Filed in Thailand

As a result of an exchange of letters between the U.S. Patent and Trademark Office and the Department of Intellectual Property of Thailand, the following benefits for U.S. applicants in Thailand have become available:

Patent applications filed in the United States may serve as the basis for the right of priority in Thailand if a subsequent application is filed in Thailand on or after January 1, 1996. In the case of applications for invention patents, the subsequent filing must be made within 12 months from the first filing date of the application in the United States and in the case of applications for design patents, within 6 months from the first filing date in the United States.

Thailand, therefore, is deemed a foreign country which affords privileges in the case of applications filed in the United States or to citizens of the United States similar to those afforded under 35 U.S.C. § 119.

Accordingly, an application for patent for an invention or a design filed in the United States on or after January 1, 1996, by any person who has, or whose legal representatives or assigns have, previously regularly filed an application for a patent for the same invention or design in Thailand shall have the benefit of the filing date in Thailand in accordance with 35 U.S.C. § 119 and § 172.

March 11, 1997

L. J. GOFFNEY for
BRUCE A. LEHMAN
Assistant Secretary of Commerce and
Commissioner of Patents and Trademarks

Service by Publication

A petition to cancel the registrations identified below having been filed, and the notice of such proceeding sent by certified mail to registrants at their last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days of this publication, the cancellation will proceed as in the case of default.

Matthew Brown Group, Inc., Elmhurst, N.Y., Reg. No. 1,839,634, for the mark "TRU-VALU FLUID DYNAMICS, INC. EST. 1939 AND DESIGN", Canc. No. 25,231.

Kontract Coatings, Inc., Nederland, Tex., Reg. No. 1,661,109, for the mark "KCI KONTRACT COATINGS, INC. AND DESIGN", Canc. No. 25,474.

The Greenhouse Ventures, Inc., Agoura, Calif., Reg. No. 1,784,708, for the mark "GREENHOUSE BODY GARDEN", Canc. No. 25,584.

JEAN BROWN
Technical Program Manager
Trademark Trial
and Appeal Board, for
ROBERT M. ANDERSON
Deputy Assistant Commissioner
for Trademarks

Patents Available For License or Sale

4,763,547 SHINGLE REMOVING APPARATUS

Contact: Stephen C. Limone
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Melrose, Mass. 02176
(voice) : (617) 665-1716
(fax) : (617) 665-6339

4,858,503 SHINGLE REMOVING APPARATUS

Contact: Stephen C. Limone
106 West Foster Street
Melrose, Mass. 02176
(voice) : (617) 665-1716
(fax) : (617) 665-6339

5,457,820 ATTACHABLE BIB, HOLDER & CATCH

Contact: Patricia G. Yielding
5313 Verlinda Drive
Richmond, Va. 23237
(voice) : (804) 768-1030

5,465,084 METHOD TO PROVIDE SECURITY FOR A COMPUTER AND A DEVICE THEREFOR

Contact: Stephen Cottrell
1409 Duncan Street
Key West, Fla. 33040
(voice) : (305) 292-0065
(fax) : (305) 295-0934

Status of Certification Services

On November 28, 1995, the Office published an Official Gazette Notice entitled "Temporary Suspension of At Cost Services for Orders for Certified Copies" (1180 OG 121) to advise practitioners and the public of delays in filling orders for certified copies of PTO documents. This is an update of actual days to mail for orders filled during the month of February 1997:

Certified Product	Goal	Actual Calendar Days to Mail
Patent Application-As-Filed, Expedited	7	6
Patent Application-As-Filed, Regular	17	17
Patent Related File Wrapper	25	30
Patent Copy	10	7
Patent Assignments	10	10
Trademark Application-As-Filed, Expedited	7	8
Trademark Application-As-Filed, Regular	17	18
Trademark Related File Wrapper	25	22

Certified Product	Goal	Actual Calendar Days to Mail
Trademark Assignments	10	10
Trademark Registration, Expedited	5	7
Trademark Registration, Regular	14	12

Due to backlogs and varying availability of media, customers will not be advised when orders are not delivered within the published goal periods. However, customers will be advised if any unexpected delay in their order has been identified. Customers should use the above actual days to mail for each product as a guide as to when they can expect their orders.

Delivery of any specific copy will vary based on the availability of microfilm products and/or file accessibility. Customers are encouraged to fax orders for copies directly to Certification Division at (703) 308-9759 and to pay by PTO Deposit Account, MasterCard, or Visa. Information on the status of pending orders may be obtained by calling (703) 308-9726 or 1 (800) 972-6382 (outside the Washington, DC Metro area).

March 12, 1997

WESLEY H. GEWEHR
Administrator for Information Dissemination

Certificates of Correction
For the Week of April 8, 1997

P. 09,526	5,491,565	5,542,317	5,560,870
D. 363,644	5,492,547	5,543,559	5,561,137
D. 375,521	5,496,359	5,545,408	5,561,447
D. 375,820	5,496,510	5,545,666	5,562,191
D. 377,359	5,496,624	5,545,768	5,562,558
4,838,154	5,498,079	5,547,395	5,563,793
5,028,772	5,498,577	5,547,758	5,563,877
5,041,555	5,498,809	5,548,728	5,564,459
5,088,820	5,501,209	5,548,942	5,564,479
5,135,479	5,505,535	5,548,944	5,564,491
5,148,476	5,506,517	5,549,948	5,565,053
5,169,464	5,508,108	5,550,183	5,565,899
5,223,748	5,508,830	5,550,562	5,565,972
5,263,330	5,510,034	5,550,657	5,565,992
5,272,258	5,510,246	5,550,829	5,566,147
5,298,208	5,511,298	5,550,830	5,566,432
5,302,562	5,512,225	5,551,168	5,566,436
5,333,628	5,512,667	5,551,540	5,567,119
5,336,016	5,514,058	5,551,839	5,567,136
5,363,495	5,514,171	5,552,107	5,567,408
5,367,733	5,515,530	5,552,302	5,567,617
5,398,553	5,516,634	5,552,885	5,567,766
5,399,798	5,517,447	5,552,902	5,568,240
5,403,137	5,517,759	5,553,015	5,568,278
5,406,423	5,519,562	5,553,160	5,568,459
5,414,610	5,520,373	5,553,165	5,568,718
5,415,510	5,520,411	5,553,252	5,568,742
5,418,772	5,520,712	5,553,435	5,568,788
5,424,632	5,521,529	5,553,533	5,568,870
5,425,673	5,524,849	5,553,788	5,568,879
5,430,998	5,525,336	5,553,934	5,569,215
5,438,072	5,525,344	5,554,556	5,569,394
5,441,727	5,530,866	5,555,495	5,569,666
5,459,848	5,532,073	5,555,646	5,569,669
5,461,075	5,532,128	5,555,915	5,569,874
5,462,934	5,534,044	5,556,582	5,570,041
5,463,459	5,534,180	5,556,728	5,570,086
5,478,442	5,535,340	5,556,758	5,570,128
5,478,873	5,537,356	5,556,791	5,570,196
5,480,983	5,537,536	5,557,662	5,570,721
5,483,478	5,538,178	5,558,318	5,571,077
5,484,204	5,538,882	5,558,988	5,572,041
5,488,048	5,538,974	5,559,537	5,572,044
5,488,316	5,541,423	5,560,673	5,572,525
5,488,877	5,542,089	5,560,832	5,572,589

5,573,125	5,581,268	5,587,873	5,592,663
5,573,502	5,581,282	5,587,899	5,592,749
5,574,009	5,581,311	5,587,973	5,593,197
5,574,088	5,581,607	5,588,141	5,593,380
5,574,303	5,581,664	5,588,339	5,593,454
5,574,467	5,581,820	5,588,673	5,593,615
5,574,488	5,582,331	5,588,677	5,593,621
5,574,800	5,582,492	5,589,008	5,593,822
5,575,124	5,582,710	5,589,182	5,593,851
5,575,973	5,582,770	5,589,549	5,593,989
5,576,114	5,582,814	5,589,653	5,594,078
5,576,269	5,583,270	5,589,711	5,594,498
5,576,796	5,583,536	5,589,753	5,594,511
5,576,838	5,583,890	5,589,906	5,594,561
5,576,864	5,584,005	5,589,977	5,594,658
5,576,874	5,584,229	5,589,987	5,594,848
5,576,912	5,584,282	5,590,379	5,594,879
5,576,939	5,584,324	5,590,523	5,595,191
5,577,071	5,584,342	5,590,524	5,595,630
5,577,175	5,584,642	5,590,608	5,595,696
5,577,267	5,585,079	5,590,779	5,595,801
5,577,397	5,585,415	5,590,913	5,595,816
5,577,511	5,585,743	5,590,971	5,596,255
5,577,575	5,585,762	5,590,975	5,596,257
5,578,583	5,585,931	5,591,228	5,596,603
5,578,964	5,586,547	5,591,382	5,596,691
5,579,286	5,586,638	5,591,587	5,596,944
5,579,416	5,586,743	5,591,631	5,598,073
5,579,678	5,587,113	5,591,683	5,598,077
5,580,027	5,587,180	5,592,246	5,598,220
5,580,801	5,587,603	5,592,437	5,600,053
5,581,207	5,587,803	5,592,440	

Summary of Final Decisions
Issued by the
Trademark Trial and Appeal Board
February 10-14, 1997

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
2-11	EX	74/289,505	S & K Famous Brands, Inc.	Section 6 disclaimer requirement (of words "FAMOUS BRANDS")	Refusal Affirmed		"S & K FAMOUS BRANDS" [retail store services in the field of men's clothing]		No
2-11	EX	74/471,886	Neurobiological Technologies, Inc.	2(e)(1)	Refusal Affirmed (but decision will be set aside upon submission of disclaimer of word "NEUROBIO-LOGICAL")		"NEUROBIO-LOGICAL TECHNOLOGIES" [pharmaceutical preparations for the treatment of human neurological, immunological, and inflammatory diseases and addictions]		No
2-11	EX (R)	74/420,488	Carl Heyer, Inc.	whether applicant has used the mark it seeks to register (i.e., whether the specimens support registration of the mark shown in applicant's drawing]	Request for Reconsideration Denied [Refusal Affirmed]		"VALUE FOR MONEY—VFM" [manicure instruments, namely, scissors, toe nail and finger nail nipper, and nail file and pusher and tweezers]		No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SJ)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION

SPECIAL BOXES FOR PATENT MAIL

Special box designations should be used to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Such mail is forwarded to the appropriate area without being opened. Only the specified type of document should be placed in an envelope addressed to one of these special boxes. If any documents other than the specified type identified for each special box are addressed to that box, they will be significantly delayed in reaching the appropriate area for which they are intended.

Please address mail as follows:

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Assistant Commissioner for Patents
Washington, D.C. 20231

Box Designations	Explanation
Box 7	Reissue applications for patents involved in litigation and subsequently filed related papers.
Box 12	Contributions to the Examiner Education Program.
Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box Comments Patents	Public comments regarding patent related regulations and procedures.
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD	Disclosure Documents or materials related to the Disclosure Document Program.
Box Design	The filing of all design patent applications and any communications relating thereto.
Box FWC	Requests for File Wrapper Continuation Applications (under 37 CFR 1.62).
Box Issue Fee	All communications following the receipt of a PTOL-85, "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments are the exception. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
Box Missing Parts	Response to the Notice to File Missing Parts of Application and associated papers and fees.
Box MPEP	Submissions concerning the Manual of Patent Examining Procedures.
Box Non-Fee Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box PATENT APPLICATION	New patent applications and associated papers and fees.
Box Patent Ext.	Applications for patent term extension and any communications relating thereto.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Provisional Patent Application	The filing of all provisional patent applications and any communications relating thereto.
Box Reconstruction	Correspondence pertaining to the reconstruction of lost patent files.
Box Reexam	Requests for Reexamination for *original* request papers *only*.
Box Sequence	Submission of diskette for biotechnical application.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return post card or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

SPECIAL BOXES FOR TRADEMARK MAIL

Special box designations should be used to allow forwarding of particular types of trademark mail to the appropriate areas as quickly as possible. In addition to these box designations, filers are encouraged to indicate whether the contents of the envelope contain a fee. Envelopes containing a fee should be marked "FEE;" envelopes not containing a fee should be marked "NO FEE." Box designations and "FEE/NO FEE" indicators should appear on the envelope as well as on the cover sheet or first page of any document.

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Box ___________
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Assistant Commissioner for Trademarks
2900 Crystal Drive
Arlington, Virginia 22202-3513

Box Designations	Explanation
Box NEW APP FEE	New trademark applications and fees.
Box ITU FEE	Statements of Use (SOUs) and extension requests.
Box TTAB FEE	Oppositions, cancellation petitions, and ex parte appeals.
Box TTAB NO FEE	Interferences, motions, and extension requests.
Box STATUS NO FEE	Written status inquiries.
Box POST REG FEE	Affidavits, renewals, corrections and amendments.
Box RESPONSES NO FEE	Responses to Examining Attorneys' Office actions and Post Registration actions.

SPECIAL BOXES APPLICABLE TO *BOTH* PATENT AND TRADEMARK MAIL

The following special box designations are applicable to both patent and trademark related mail, and the recommendations for "Special Boxes for Patent Mail" (above) should be followed for the types of mail listed below.

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Commissioner of Patents and Trademarks
Washington, D.C. 20231

Box Designations	Explanation
Box 3	Mail for the Office of Personnel from NFC.
Box 4	Mail for the Deputy Assistant Secretary of Commerce and Deputy Commissioner of Patents and Trademarks; Office of Legislative and International Affairs.
Box 6	Mail for the Office of Procurement.
Box 8	All papers for the Office of the Solicitor *except* communications relating to *pending litigation and disciplinary proceedings*; papers relating to pending litigation in court cases shall be mailed only to Office of the Solicitor, P.O. Box 15667, Arlington, Virginia 22215 and papers relating to pending disciplinary proceedings before the Administrative Law Judge or the Commissioner shall be mailed only to the Office of the Solicitor, P.O. Box 16116, Arlington, Virginia 22215.
Box 9	Coupon orders for U.S. patent and trademark copies.
Box 10	Orders for certified copies of PTO documents.
Box 11	Electronic Ordering Service (EOS).
Box 13	Mail for the Employee and Labor Relations Division.
Box 14	Mail directed to the APS Contracts Office.
Box 16	Deposit Account Replenishment Checks.
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box Assignment	All assignment documents except those filed with new applications.
Box EEO	Mail for the Office of Civil Rights.
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box M Fee	Correspondence regarding patent maintenance fees and related matter.
Box OED	Mail for the Office of Enrollment and Discipline.

Reference Collections of U.S. Patents and Trademarks Available for Public Use in Patent and Trademark Depository Libraries

The following libraries, designated as Patent and Trademark Depository Libraries (PTDLs), receive patent and trademark information in various formats from the U.S. Patent and Trademark Office. Many PTDLs have on file all full-text patents issued since 1790, trademarks published since 1872, and select collections of foreign patents. All PTDLs have both the patent and trademark sections of the *Official Gazette of the U.S. Patent and Trademark Office*. The full-text utility and design patents are distributed numerically on 16 mm microfilm, and plant patents on color microfiche. Patent and trademark search systems on CD-ROM (Compact Disc-Read Only) format are available at all PTDLs to increase utilization of and enhance access to the information found in patents and trademarks. It is through the CD-ROM systems that preliminary patent and trademark searches can be conducted through the numerically arranged collections.

All information is available for use by the public free of charge.

In addition, each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials. Facilities for making paper copies of patent and trademark information are generally provided for a fee.

Since there are variations in the scope of patent and trademark collections among the PTDLs, and their hours of service to the public vary, anyone contemplating use of these collections at a particular library is urged to contact that library in advance about its collections, services, and hours in order to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(334) 844-1747
	Birmingham Public Library	(205) 226-3620
Alaska	Anchorage: Z.J. Loussac Public Library	(907) 562-7323
Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7010
Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 228-7220
	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
	San Francisco Public Library	(415) 557-4500
	Sunnyvale Center for Innovation, Invention and Ideas	(408) 730-7290
Colorado	Denver Public Library	(303) 640-6249
Connecticut	New Haven: Science Park Library	(203) 786-5447
Delaware	Newark: University of Delaware Library	(302) 831-2965
Dist. of Columbia	Washington: Howard University Libraries	(202) 806-7252
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami-Dade Public Library	(305) 375-2665
	Orlando: University of Central Florida Libraries	(407) 823-2562
	Tampa Campus Library, University of South Florida	(813) 974-2726
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Hawaii	Honolulu: Hawaii State Public Library System	(808) 586-3477
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 747-4450
	Springfield: Illinois State Library	(217) 782-5659
Indiana	Indianapolis-Marion County Public Library	(317) 269-1741
	West Lafayette Siegesmund Engineering Library, Purdue University	(317) 494-2872
Iowa	Des Moines: State Library of Iowa	(515) 281-4118
Kansas	Wichita: Ablah Library, Wichita State University	(316) 689-3155
Kentucky	Louisville Free Public Library	(502) 574-1611
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maine	Orono: Raymond H. Fogler Library, University of Maine	(207) 581-1678
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 405-9157
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Media Union Library, University of Michigan	(313) 647-5735
	Big Rapids: Abigail S. Timme Library, Ferris State University	(616) 592-3602
	Detroit: Great Lakes Patent and Trademark Center	(313) 833-3379
Minnesota	Minneapolis Public Library and Information Center	(612) 372-6570
Mississippi	Jackson: Mississippi Library Commission	(601) 359-1036
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4281
Nebraska	Lincoln: Engineering Library, University of Nebraska-Lincoln	(402) 472-3411
Nevada	Reno: University of Nevada, Reno Library	(702) 784-6500 Ext. 257
New Hampshire	Concord: New Hampshire State Library	(603) 271-2239
New Jersey	Newark Public Library	(201) 733-7782
	Piscataway: Library of Science and Medicine, Rutgers University	(908) 445-2895
New Mexico	Albuquerque: University of New Mexico General Library	(505) 277-4412
New York	Albany: New York State Library	(518) 474-5355
	Buffalo and Erie County Public Library	(716) 858-7101

Reference Collections of U.S. Patents and Trademarks Available for Public Use in Patent and Trademark Depository Libraries—(continued)

State	*Name of Library*	*Telephone Contact*
	New York Public Library (The Research Libraries)	(212) 592-7000
North Carolina	Raleigh: D.H. Hill Library, North Carolina State University	(919) 515-3280
North Dakota	Grand Forks: Chester Fritz Library, University of North Dakota	(701) 777-4888
Ohio	Akron - Summit County Public Library	(303) 643-9075
	Cincinnati and Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6175
	Toledo/Lucas County Public Library	(419) 259-5212
Oklahoma	Stillwater: Oklahoma State University Center for International Trade Development	(405) 744-7086
Oregon	Portland: Paul L. Boley Law Library, Lewis & Clark College	(503) 768-6786
Pennsylvania	Philadelphia, The Free Library of	(215) 686-5331
	Pittsburgh, Carnegie Library of	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Puerto Rico	Mayaquez General Library, University of Puerto Rico	(787) 832-4040 Ext. 3459
Rhode Island	Providence Public Library	(401) 455-8027
South Carolina	Clemson University Libraries	(803) 656-3024
South Dakota	Rapid City: Devereaux Library, South Dakota School of Mines and Technology	(605) 394-6822
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8877
	Nashville: Stevenson Science Library, Vanderbilt University	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 495-4500
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-3826
	Dallas Public Library	(214) 670-1468
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
	Lubbock: Texas Tech University	Not Yet Operational
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Vermont	Burlington: Bailey/Howe Library, University of Vermont	Not Yet Operational
Virginia	Richmond: James Branch Cabell Library, Virginia Commonwealth University	(804) 828-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
West Virginia	Morgantown: Evansdale Library, West Virginia University	(304) 293-2510
Wisconsin	Madison: Kurt F. Wendt Library, University of Wisconsin Madison	(608) 262-6845
	Milwaukee Public Library	(414) 286-3051
Wyoming	Casper: Natrona County Public Library	(307) 237-4935

PATENT EXAMINING CORPS

BRUCE A. LEHMAN, Commissioner
LAWRENCE J. GOFFNEY Jr., Assistant Commissioner for Patents
EDWARD R. KAZENSKE, Deputy Assistant Commissioner for Patents
STEPHEN G. KUNIN, Deputy Assistant Commissioner for Patent Policy

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, ENGINEERING AND DESIGNS, GROUP 1100—JOHN E. KITTLE, Director	308-0661	12/04/95
ORGANIC CHEMISTRY, DRUG, BIO-AFFECTING AND BODY TREATING COMPOSITION, GROUP 1200—RICHARD V. FISHER, Director	308-1235	09/13/95
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—JOHN F. TERAPANE, Director	308-0651	09/25/95
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—THEODORE MORRIS, Director	308-2351	10/23/95
BIOTECHNOLOGY, GROUP 1800—JOHN J. DOLL, Director	308-0196	03/09/95
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—STEWART LEVY, Director	308-1782	04/03/95
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	07/14/95
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—JOSEPH J. ROLLA, Director	305-9600	06/16/95
SPECIAL COMPUTER APPLICATIONS: COMPUTER GRAPHICS, BUSINESS PRACTICES, & DIAGNOSTIC TESTING, GROUP 2400—GERALD GOLDBERG, Director	305-3800	06/26/95
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	06/22/95
TELECOMMUNICATIONS, GROUP 2600—NICHOLAS P. GODICI, Director	305-4700	04/28/95
DESIGN, GROUP 2900—JOHN E. KITTLE, Director	308-0661	04/25/95
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—MARGARET FOCARINO, Director	308-1113	08/25/95
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—ETHEL CROSS, Director	308-1148	08/04/95
MEDICAL INSTRUMENTS, DIAGNOSTIC EQUIPMENT AND TREATMENT DEVICES; SURGERY AND SURGICAL SUPPLIES; AMUSEMENT AND EXERCISING DEVICES; ANIMAL HUSBANDRY; SPORTING GOODS; TOBACCO PRODUCTS AND MANUFACTURING EQUIPMENT; AND PRINTING, GROUP 3300—J.J. LOVE, Director	308-0858	10/04/95
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	08/08/95
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-1021	10/27/95

*A communication from the examiner should have been received in most applications filed prior to this date.

Patents will Expire as Follows:
(1) The term of any utility or plant patent that is in force on or results from an application filed before June 8, 1995 is the greater of the 20 year term provided in 35 U.S.C. 154(a)(2) or 17 years from grant subject to any terminal disclaimers. 35 U.S.C. 154(c)(1).
(2) All utility and plant patents granted on applications having an actual United States filing date on or after June 8, 1995 are granted for a term which begins on the date on which the patent is granted and ends 20 years from the date on which the application was filed in the United States. If the application contains a specific reference to an earlier application under 35 U.S.C. 120, 121 or 365(c), the patent term ends twenty years from that date on which the earliest application was filed. 35 U.S.C. 154(a)(2).
(3) All design patents are granted for a term of 14 years from the date of the grant.
However, the term of any patent may have been curtailed by disclaimer under the provisions of 35 U.S.C. 153, have lapsed due to failure to pay maintenance fees, or have been extended under the provisions of 35 U.S.C. 154, 155, or 156. Thus, if more reliable information is needed with respect to a particular patent, then the specific patent file should be reviewed to determine the actual date of patent expiration.

TRADEMARK OPERATION

Bruce A. Lehman, Commissioner
Philip G. Hampton, II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Office
Condition of Trademark Applications as of March 1, 1997

Law Office	Oldest Date: New*	Oldest Date: Amendment Filed
Law Office 101—Ron Williams, Managing Attorney, (703) 308-9101—4th Floor Foods, Beverages, Wines & Spirits—Int. Classes 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/25/96	12/11/96
Law Office 102—Myra Kurzbard, Managing Attorney, (703) 308-9102—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/09/96	10/25/96
Law Office 103—Michael A. Szoke, Acting Managing Attorney, (703) 308-9103—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/19/96	02/19/97
Law Office 104—Sidney Moskowitz, Managing Attorney, (703) 308-9104—6th Floor Unwrought metals, Industrial Equipment, Tools, Installation, Vehicles, Firearms, Musical Instruments, Building Materials & Floor Coverings—Int. Classes 6, 7, 8, 11, 12, 13, 15, 19, 27 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	09/06/96	11/06/96
Law Office 105—Thomas Howell, Managing Attorney, (703) 308-9105—6th Floor Chemicals, Paints, Lubricants, Pharmaceuticals, Medical Apparatus & Tobacco—Int. Classes 1, 2, 4, 5, 10, 34 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	09/03/96	11/11/96
Law Office 106—Mary Sparrow, Managing Attorney, (703) 308-9106—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/26/96	12/02/96
Law Office 107—Thomas Lamone, Managing Attorney, (703) 308-9107—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	09/23/96	12/06/96
Law Office 108—David Shallant, Managing Attorney, (703) 308-9108—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions— Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services-Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	09/30/96	12/17/96
Law Office 109—Deborah Cohn, Managing Attorney, (703) 308-9109—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/24/96	12/10/96
**Collective Marks—Class 200 **Certification Marks—Classes A & B		
Office of Trademark Services—Terron Simms, Director, (703) 308-9100 Trademark Assistance Center—(703) 308-9000 Pre-Examination—Alan Lambert, Supervisor, (703) 308-9401 ext. 188 Intent-To-Use—(ITU)—(703) 308-9500 Post Registration Section—Mary Bowman, Supervisor, (703) 308-9500 ext. 126		
Affidavits Under Sections 8 & 15 (All Classes)	01/27/97	—0—
Renewals (All Classes)	01/13/97	—0—
Section 12(c) Publications (All Classes)	09/01/96	—0—

1. ** Assigned to all Law Office

2. Applicants with inquiries concerning the status of their applications and a touch telephone should call (703) 305-8747 from 6:30 a.m. to Midnight EST, Monday through Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquiries concerning the status of their applications. See SECTION 411 of the TRADEMARK MANUAL OF EXAMINING PROCEDURE.

3. * These dates identify the oldest unassigned new case in each Law Office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examining attorney.

REEXAMINATIONS

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,743,402 (3168th)
NOVEL SUNFLOWER PRODUCTS AND METHODS FOR THEIR PRODUCTION

Gerhardt N. Fick, Breckenridge, Minn., assignor to SIGCO Research Inc., Breckenridge, Minn.

Reexamination Request Nos. 90/001,886, Nov. 9, 1989 and 90/002,516, Nov. 22, 1991.
Reexamination Certificate for Patent 4,743,402, issued May 10, 1988, Ser. No. 769,502, Aug. 26, 1985.
Division of Ser. No. 672,359, Nov. 16, 1984, Pat. No. 4,627,192.
Int. Cl.⁶ C11B *1/10*

U.S. Cl. 554—223

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–13** is confirmed.

New claims **14–21** are added and determined to be patentable.

14. A sunflower oil containing, relative to the total fatty acid content of said oil, approximately 80% or greater oleic acid, said oil having a ratio of linoleic acid content to oleic acid content of less than about 0.09, and said oil being extracted from a substantially homogeneous assemblage of sunflower seeds which are obtained from plants that are the products of crosses between (A) plants from one or more sunflower lines which are true breeding for said oleic acid content and (B) plants from a second group of one or more sunflower lines.

B1 5,015,111 (3169th)
ERASER DISPENSER AND WRITING INSTRUMENT EQUIPPED WITH ERASER DISPENSER

Tor Petterson, Rancho Palos Verdes, Calif., assignor to Pentel of America, Ltd., Torrance, Calif.

Reexamination Request No. 90/002,698, Apr. 8, 1992.
Reexamination Certificate for Patent 5,015,111, issued May 14, 1991, Ser. No. 485,229, Feb. 26, 1990.
Continuation of Ser. No. 167,549, Mar. 14, 1988, Pat. No. 4,904,101.
Int. Cl.⁶ B43K *29/02*

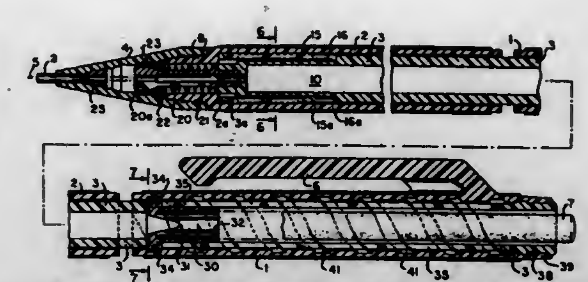
U.S. Cl. 401—52

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–10** and **18–20** is confirmed.

Claims **11–17** having been finally determined to be unpatentable, are cancelled.

New claims **21–34** are added and determined to be patentable.



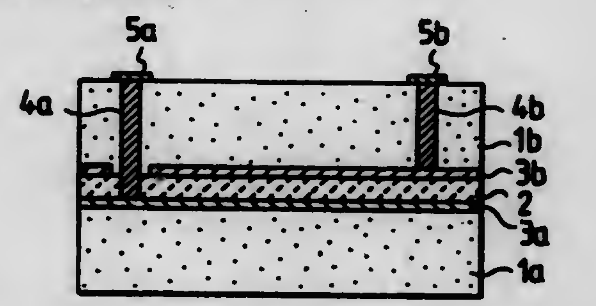
1. A writing instrument comprising: a front tubular member having a writing tip at the front end thereof; advancing means axially displaceable in forward and rearward directions for incrementally advancing a writing medium lengthwise in the forward direction through the writing tip in response to forward axial displacement of the advancing means; an inner tubular member having a front portion disposed within and encircled by the front tubular member and having a rear portion; a rear tubular member disposed over and encircling the rear portion of the inner tubular member; means mounting the rear and inner tubular members for axial displacement together as a unit in forward and rearward directions relative to the front tubular member to effect forward axial displacement of the advancing means to thereby incrementally advance the writing medium; means mounting the rear tubular member for angular displacement in opposite directions relative to the front and inner tubular members; holding means disposed within the inner tubular member for releasably holding an elongate eraser; and means mounting the holding means to undergo axial displacement in forward and rearward directions within the inner tubular member in response to angular displacement of the rear tubular member in opposite directions to thereby axially retract and extend the eraser relative to the rear end of the rear tubular member.

B1 5,099,388 (3170th)
ALUMINA MULTILAYER WIRING SUBSTRATE PROVIDED WITH HIGH DIELECTRIC MATERIAL LAYER

Masahiro Ogawa, Aichi; Kozo Yamasaki, Gifu, both of Japan; Mitsuru Hirano, Santa Clara, Calif.; Michael A. Schmitt, and Bidyut K. Bhattacharyya, both of Chandler, Ariz., assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan; NGK Spark Plugs (U.S.A.), Inc., Torrance, Calif., and Intel Corporation, Chandler, Ariz.

Reexamination Request No. 90/003,931, Aug. 28, 1995.
Reexamination Certificate for Patent 5,099,388, issued Mar. 24, 1992, Ser. No. 538,334, Jun. 15, 1990.
Claims priority, application Japan, Jun. 15, 1989, 1-153254
Int. Cl.⁶ H01G *4/06;4/228;4/20;4/10*

U.S. Cl. 361—321.2



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 2-9 are cancelled.

Claim 1 is determined to be patentable as amended.

Claims 10-12, dependent on an amended claim, are determined to be patentable.

New claims 13-26 are added and determined to be patentable.

1. A wiring substrate comprising:

a dielectric material layer *comprising alumina and from 5 to 50 weight percent of said dielectric material of a dielectric constant-raising additive selected from tungsten, molybdenum, and mixtures thereof, and* having a first dielectric material layer surface and a second dielectric material layer surface;

a first metallized layer on said first dielectric material layer surface;

a second metallized layer on said second dielectric material layer surface;

a first alumina layer having *a composition different than said dielectric material, and* an inward surface contacting said first metallized layer and an outward surface;

a second alumina layer having *a composition different than said dielectric material, and* an inward surface contacting said second metallized layer and an outward surface;

a first conductor electrically connecting to and extending from said first metallized layer through said first alumina layer; and

a second conductor electrically extending from said second metallized layer through said dielectric material layer, through but not electrically connecting said first metallized layer, and through said first alumina layer.

B1 5,320,797 (3171st)

METHOD AND APPARATUS FOR THE CONTINUOUS MANUFACTURE OF A COMPOUND PIPE WITH A PIPE SOCKET

Ralph-Peter Hegler, Bad Kissingen, and Wilhelm Hegler, Goethestrasse 2, D-873o Bad Kissingen, both of Germany, assignors to Wilhelm Hegler, Bad Kissingen, Germany

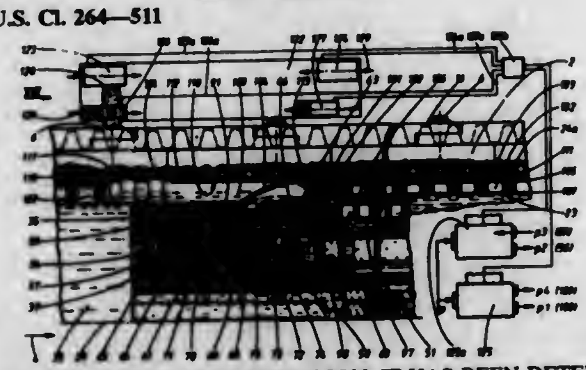
Reexamination Request No. 90/004,035, Nov. 21, 1995.

Reexamination Certificate for Patent 5,320,797, issued Jun. 14, 1994, Ser. No. 28,394, Mar. 9, 1993.

Claims priority, application Germany, Mar. 31, 1992, 4210482

Int. Cl.⁶ B29C *49/04*

U.S. Cl. 264—511



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1-3 are determined to be patentable as amended.

Claims 4-14, dependent on an amended claim, are determined to be patentable.

1. A method for the continuous manufacture of a compound pipe (23) with a pipe socket (108), the compound pipe (23) consisting *of a pipe corrugated section and a pipe socket section,* a smooth internal pipe (107) *extending the length of said corrugated section* and an external pipe (105) provided with transverse grooves (24) [and] *to form the corrugated section and a surface to form the pipe socket section, the inner diameter of said socket section being greater than an inner diameter of said corrugated section the external pipe being* welded together with the internal pipe (107), comprising the following steps:

[an external tube (104) is extruded into traveling modes (2, 2'); by a partial vacuum applied from the outside of the]

providing traveling molds (2, 2') having a mold corrugation section with a plurality of corrugating recesses (102) and a mold socket section adjacent said mold corrugation section, said mold socket section having an internal diameter sized to form a pipe socket;

extruding an external tube (104) into the traveling molds (2, 2');

applying a partial vacuum from outside of the traveling molds (2,2') to the corrugated recesses to provide the external tube (104) with a corrugation with transverse grooves (24;) providing traveling molds (2,2')[, the external tube (104) is provided with a corrugation with transverse grooves (24);] *having a mold corrugation section with a plurality of corrugating recesses and a mold socket section adjacent said mold corrugation section, said mold socket section having an internal diameter sized to form a pipe socket;*

connecting a partial vacuum to the corrugating recesses;

extruding an external tube into said traveling mold to provide said corrugating recesses with said partial vacuum to form said corrugations with transverse grooves;

extruding an internal tube (106) [is extruded] into the external tube (104);

blowing gas at a first pressure (p2) above ambient pressure (p3) [is blown] into [the] *a* space between the external tube (104) and the internal tube (106);

pressing the internal tube (106) [is pressed] against corrugation troughs (24a) of the external tube (104)[, where it is welded together with] *and welding the internal tube (106) to the* external tube (104);

shutting off said first pressure and feeding said external tube and said internal tube to said socket section;

at predetermined intervals *widening* the external tube (104) [is widened] by *applying* a partial vacuum [applied] from the outside of the traveling molds (2, 2') *to said mold socket section to hold said external wall against an inner surface of said mold socket section* to form an essentially [smooth-walled,] *smooth-wall* about cylindrical pipe socket (108);

venting a space between the external tube (104) and the internal tube (106) [is vented] by connecting said space with the atmosphere; and

applying gas at a second pressure (p4) above ambient pressure (p3) in said mold socket section to said internal tube to press the internal tube against said external tube to weld said internal tube to said external tube wherein the internal tube (106) is acted upon from the inside by *said* gas at [a] *said* second pressure (p4) above ambient pressure (p3) and while being widened is forced with its full surface against the external tube (104) *to provide the inner diameter of the pipe socket greater than the inner diameter of the pipe corrugated section.*

B1 5,353,458 (3172nd)

CURL SPRING SHOE BASED WINDOW BALANCE SYSTEM

Norman R. Westfall, Rochester, N.Y., assignor to Caldwell Manufacturing Company, Rochester, N.Y.

Reexamination Request No. 90/004,293, Jun. 28, 1996.

Reexamination Certificate for Patent 5,353,458, issued Oct. 11, 1994, Ser. No. 40,457, Apr. 1, 1993.

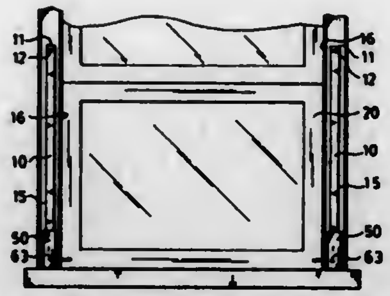
Int. Cl.⁶ E05D *13/00;15/22*

U.S. Cl. 49—446

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1-63 are confirmed.

1. A window sash balance system having a pair of sash shoes running vertically within jamb shoe channels with a sash that runs



vertically in jamb sash runs separate from the shoe channels, the sash shoes being biased upward by the force of curl springs, and connections between the shoes and the sash transmitting the upward bias force from the shoe channels to the sash in the sash runs, the balance system comprising:

a. free end regions of the curl springs being fastened in the shoe channels in regions above the vertical travel of the shoes, and uncurled lengths of the curl springs being laid against walls of the shoe channels above the shoes without sliding frictionally up and down against the shoe channel walls when the shoes move;

b. the uncurled lengths of the curl springs passing through openings in the shoes to containment regions within the shoes where variable lengths of the springs curl up in convolutions; and

c. containment of the curled convolutions of the springs within the shoes being arranged for applying the upward bias force to the shoes from a recurling force of the curl springs which is exterted in the shoe containment regions.

B1 5,407,708 (3173rd)

METHOD AND APPARATUS FOR APPLYING RADIATION CURABLE INKS IN A FLEXOGRAPHIC PRINTING SYSTEM

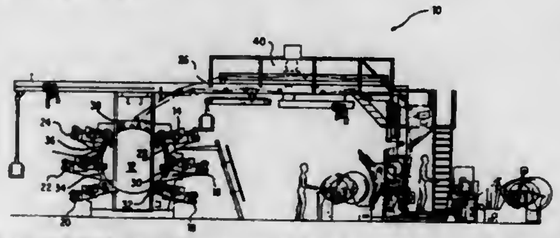
Joseph Lovin, Greer, and Lee W. Keller, Landrum, both of S.C., assignors to W. R. Grace & Co.-Conn., Duncan, S.C.

Reexamination Request No. 90/004,373, Sep. 20, 1996.

Reexamination Certificate for Patent 5,407,708, issued Apr. 18, 1995, Ser. No. 187,948, Jan. 27, 1994.

Int. Cl.⁶ B05D *1/36*

U.S. Cl. 427—493



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim 3 is cancelled.

Claims 1, 4, 6 and 7 are determined to be patentable as amended.

Claims 2, 5 and 8-13, dependent on an amended claim, are determined to be patentable.

7. A method for applying and curing radiation curable inks to a substrate at successive printing stations *in a flexographic printing system,* said method comprising:

providing a central impression cylinder, a first print station and a second print station, said first and second print stations being positioned about said central impression cylinder;

providing a substrate, applying a first coating of the radiation curable ink to [a] *the* substrate *at said first print station;*

irradiating the coated substrate with low level UV radiation for partially curing the first coating of ink on the substrate so as to prevent pick-off and smearing of the first ink coating upon application of a second ink coating to the substrate;

thereafter applying a second coating of a radiation curable ink to the substrate *at said second print station;* and

further irradiating the coated substrate with electron beam radiation for finally curing the first coating and the second coating wherein the ink is adhered to the substrate.

B1 5,468,440 (3174th)

PROCESS OF MAKING ORIENTED FILM OR STRUCTURE

James J. McAlpin, Houston; Jeffrey W. C. Kuo, Seabrook, and Donald C. Hylton, Houston, all of Tex., assignors to Exxon Chemical Patents Inc., Wilmington, Del.

Reexamination Request No. 90/004,186, Mar. 19, 1996.

Reexamination Certificate for Patent 5,468,440, issued Nov. 21, 1995, Ser. No. 239,150, May 6, 1994.

Int. Cl.⁶ B29C *55/02;55/22*

U.S. Cl. 264—291

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 13-15 are cancelled.

Claim 1 is determined to be patentable as amended.

Claims 2-12, 16 and 17, dependent on an amended claim, are determined to be patentable.

1. A process for forming an oriented structure comprising the steps of:

(a) forming a structure [from a] *consisting essentially of an isotactic* polypropylene resin, said polypropylene resin produced from a metallocene catalyst; and

(b) orienting the structure by applying stress at a temperature [in the range of from about 20° C. to] *not to exceed* about 35° C. above the HDT value of the polypropylene.

REISSUES

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 35,490

THIN FILM MAGNETIC HEAD HAVING MAGNETIC LAYERS OF DIFFERENT THICKNESS AND MANUFACTURING METHOD THEREFOR

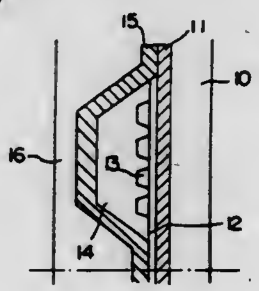
Masaki Ohura, Odawara, and Makoto Saito, Hinodemachi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Original No. 4,636,901, dated Jan. 13, 1987, Ser. No. 463,656, Feb. 3, 1983. Application for reissue Jan. 11, 1989, Ser. No. 295,777

Claims priority, application Japan, Feb. 5, 1982, 57-16220

Int. Cl.^{6} G11B *5/147;5/127*

U.S. Cl. 360—126 **10 Claims**



8. A thin film magnetic head for performing recording and reading operations to a magnetic recording medium, comprising:

a substrate;

a first magnetic layer overlaid on said substrate;

a conductor coil overlaid on said first magnetic layer; and

a second magnetic layer overlaid on said first magnetic layer and on said conductor coil, said second magnetic layer being spaced from said first magnetic layer to define a magnetic gap at one end facing toward said magnetic recording medium, said second magnetic layer being magnetically shorted to said first magnetic layer at an other end opposite to said one end, said second magnetic layer having inclined portions at parts thereof overlaying said conductor coil between said one end and said other end, said second magnetic layer having a predetermined thickness at least at said one end positioned in opposition to said magnetic recording medium of about 1.2 to about 1.4 times the thickness of said first magnetic layer.

Re. 35,491

METHODS AND COMPOSITIONS FOR DETECTING HUMAN TUMORS

Martin J. Cline, Pacific Palisades, and Dennis J. Slamon, Woodland Hills, both of Calif., assignors to The Regents of the University of california, Alameda, Calif.

Original No. 4,699,877, dated Oct. 13, 1987, Ser. No. 673,469, Nov. 20, 1984. Continuation-in-part of Ser. No. 439,252, Nov. 4, 1982, abandoned, and a continuation-in-part of Ser. No. 496,027, May 19, 1983, abandoned. Application for reissue Oct. 12, 1989, Ser. No. 421,096

Int. Cl.^{6} C12Q *1/68;* **G01N** *33/53;* **C07K** *7/06;7/08;16/10;17/00*

U.S. Cl. 435—6 **22 Claims**

1. A method for evaluating the probability of cellular malignancy in a human host, said method comprising:

bringing into close associate (1) a probe specific for a cellular product, said cellular product being mRNA or its expression product, where said mRNA is complementary to a DNA sequence of a retrovirus capable of transforming a normal cell to malignancy and said probe is a nucleic acid sequence capable of duplexing with said mRNA or antibody capable of binding to said expression product, and (2) a source from said human host suspected of containing cellular product; and

determining the level of binding of said probe to said cellular product, wherein an elevated level is indicative of the presence of cellular malignancy.

Re. 35,492

WOUND TREATMENT EMPLOYING BIOLOGICALLY ACTIVE ION CHANNEL FORMING PEPTIDES AND PROTEINS

Barry Berkowitz, Framingham, Mass., and Leonard S. Jacob, Penn Valley, Pa., assignors to Magainin Pharmaceuticals, Inc., Plymouth Meeting, Pa.

Original No. 5,045,531, dated Sep. 3, 1991, Ser. No. 451,777, Dec. 18, 1989. Application for reissue Sep. 8, 1994, Ser. No. 303,061

Int. Cl.^{6} A61K *38/16*

U.S. Cl. 514—13 **33 Claims**

1. A process for [treating a] *promoting* wound *healing* in a host, comprising administering to a host having a wound at least one biologically active amphiphilic peptide and/or biologically active protein, said peptide or protein being an ion channel-forming peptide or protein, said at least one biologically active amphiphilic peptide or protein being administered in an amount effective for [treating a] *promoting* wound *healing* in the host.

PLANT PATENTS

GRANTED APRIL 8, 1997

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

9,849

FLORIBUNDA ROSE PLANT NAMED 'MEINIPS'

Alain A. Meilland, Antibes, France, assignor to The Conard-Pyle Company, West Grove, Pa.

Filed Oct. 17, 1995, Ser. No. 544,391

Int. Cl.^{6} A01H *5/00*

U.S. Cl. Plt.—22 **1 Claim**

1. A new and distinct variety of Floribunda rose plant characterized by the following combination of characteristics:

(a) forms in abundance attractive pastel pink blossoms,
(b) exhibits a bushy growth habit,
(c) exhibits a light fragrance,
(d) forms attractive very dense medium green and glossy vegetation, and
(e) is particularly well suited for growing as ornamentation in the landscape;

substantially as herein shown and described.

9,850

PEACH TREE 'P.F. 5B'

Paul J. Friday, P.O. Box 850, Coloma, Mich. 49038, assignor to Paul J. Friday, Coloma, Mich.

Filed Jan. 16, 1996, Ser. No. 585,712

Int. Cl.^{6} A01H *5/00*

U.S. Cl. Plt.—43.1 **1 Claim**

1. A new and distinct variety of peach tree substantially as illustrated and described as a medium size tree, a consistent bearer of pleasingly colored, large fruit for the very early peach growing season, said fruit being a semi-cling peach and at maturity being of spherical shape with firm flesh and red skin color.

9,851

HIBISCUS PLANT NAMED 'BOST HYBRID NO. 3'

Georgia A. Bost, 1209 Pine Chase, Houston, Tex. 77055

Filed Jun. 19, 1995, Ser. No. 519,843

Int. Cl.^{6} A01H *5/00*

U.S. Cl. Plt.—67.8 **1 Claim**

1. A new and distinct cultivar of Hibiscus plant, as shown and described.

9,852

HIBISCUS PLANT NAMED 'BOST HYBRID NO. 2'

Georgia A. Bost, 1209 Pine Chase, Houston, Tex. 77055

Filed Jun. 16, 1995, Ser. No. 539,026

Int. Cl.^{6} A01H *5/00*

U.S. Cl. Plt.—67.8 **1 Claim**

1. A new and distinct cultivar of Hibiscus plant, as shown and described.

9,853

CHRYSANTHEMUM PLANT NAMED 'GOLDEN KENT'

Cornelis P. Vandenberg, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Oct. 24, 1995, Ser. No. 547,402

Int. Cl.^{6} A01H *5/00*

U.S. Cl. Plt.—78 **1 Claim**

1. A new and distinct Chrysanthemum plant named Golden Kent, as described and illustrated.

9,854

POINSETTIA PLANT NAMED HWD SPOTLIGHT

Günter Dümmen, Rheinberg-Eversael, Germany, assignor to Dummen Jungpflanzenkulturen, Rheinberg Eversael, Germany

Filed Aug. 17, 1995, Ser. No. 516,463

Int. Cl.^{6} A01H *5/00*

U.S. Cl. Plt.—86.4 **1 Claim**

1. A new and distinct cultivar of Poinsettia plant named HWD Spotlight, as illustrated and described.

9,855

ANTHURIUM 'ROTOLANTE NUMBER 2'

Denis W. Rotolante, Homestead, Fla., assignor to Agri-Starts, Inc., Apopka, Fla.

Filed Mar. 13, 1995, Ser. No. 403,202

Int. Cl.^{6} A01H *5/00*

U.S. Cl. Plt.—88.1 **1 Claim**

1. A new and distinct Anthurium plant substantially as herein shown and described, characterized particularly as to novelty by its vigorous growth, continuously and profusely producing blooms from red buds and with bright, solid red, very long lasting spathes which retain their color as the plant matures.

9,856

FICUS VARIETY NAMED 'MIDNIGHT'

Jan van Geest, JP's Gravenzande, Netherlands, assignor to The Plantenkwekerij J. van Geest, B.V., Netherlands

Filed Jul. 26, 1995, Ser. No. 507,751

Int. Cl.^{6} A01H *5/00*

U.S. Cl. Plt.—88.9 **1 Claim**

1. A new and distinct cultivar of *Ficus benjamina* plant named 'Midnight', substantially as illustrated and described, particularly characterized by dark green foliage and compact growth habit.

PATENTS

GRANTED April 8, 1997

ERRATA

For CLASS	See PATENT NO.
451–375	5,618,028
473–423	5,618,039
473–423	5,618,040
473–461	5,618,091
473–549	5,618,049
463–040	5,618,045
040–606	5,618,141
216–002	5,618,345
438–595	5,618,379
438–014	5,618,380
438–633	5,618,381
216–064	5,618,382
430–314	5,618,383
430–314	5,618,383
438–669	5,618,384
438–014	5,618,447
510–221	5,618,465
442–189	5,618,612
442–203	5,618,613
442–118	5,618,614
435–068	5,618,689
216–056	5,618,737
672–626	5,618,752
534–557	5,618,932
536–115	5,618,933
248–343	5,619,263
396–032	5,619,292
396–055	5,619,293
396–051	5,619,294
396–376	5,619,295
396–463	5,619,296
396–201	5,619,297
396–388	5,619,298
396–003	5,619,299
396–095	5,619,300
396–114	5,619,301

ERRATA–CONTINUED

For CLASS	See PATENT NO.
399–011	5,619,307
399–048	5,619,308
399–111	5,619,309
399–381	5,619,310
399–176	5,619,311
399–061	5,619,312
399–233	5,619,313
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386–083	5,619,337
386–070	5,619,338
386–113	5,619,339
386–099	5,619,340
349–061	5,619,351
349–089	5,619,352
349–089	5,619,353
349–089	5,619,354
349–079	5,619,355
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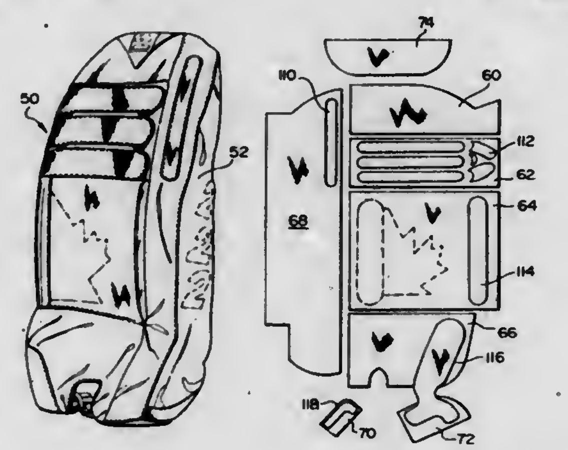
395–567	5,619,408
395–757	5,619,410

PATENTS

GRANTED APRIL 8, 1997

GENERAL AND MECHANICAL

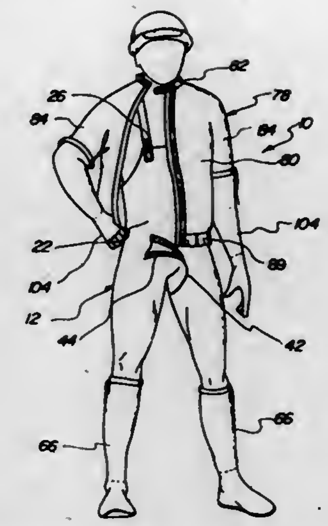
5,617,580
GOALIE PAD COVERS
Vince DiCesare, 23 Sycamore Drive, Nepean, Ontario, Canada; Grant P. Conrad, 109 Russell Avenue, Ottawa, Ontario, Canada, and Thomas J. Flood, 8 Tamblyn Crescent, Kanata, Ontario, Canada
Filed Feb. 17, 1995, Ser. No. 390,550
Claims priority, application Canada, Jan. 30, 1995, 2141374
Int. Cl.⁶ A41D *13/00*
U.S. Cl. 2—22 **25 Claims**



1. A goalie pad cover for use with a goalie pad having top, bottom, front, back, medial and lateral surfaces, the goalie pad cover comprising:
a plurality of interconnected panels conforming to the surfaces of the goalie pad;
attachment means on the interconnected panels for holding the interconnected panels to the surfaces of the goalie pad;
conforming means on the inner surface of the interconnected panels for conforming the panels to the outer surfaces of the goalie pad; and
wherein the plurality of interconnected panels, attachment means and conforming means are adapted to enable a user to selectively configure the goalie pad cover to the goalie pad or remove the goalie pad cover from the goalie pad.

5,617,581
INSULATING UNDERGARMENT
Cameron J. Robbins, NEMOC PSC 819 Box 31, FPO AE
Filed Sep. 5, 1995, Ser. No. 523,773
Int. Cl.⁶ A41D *1/00;3/00*
U.S. Cl. 2—69 **1 Claim**

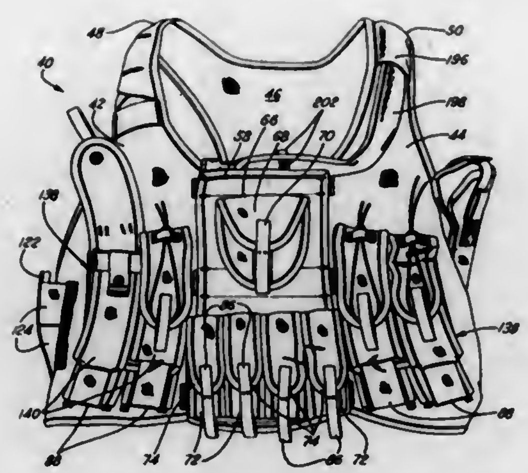
1. An insulating garment for protection of a body from the elements of cold weather comprising in combination:
a body suit for covering an area of a body formed of an insulating and breathable fabric having elastic properties, the body suit having an upper portion, a lower portion and a middle portion therebetween, the suit having a front side and a rear side, the upper portion having a pair of shoulder straps for supporting the suit over the chest area, each shoulder strap having a length for extending from the rear side to criss-cross over each other along an upper back of the body, then being positioned over a respective shoulder to couple onto the upper portion on the front side, each shoulder strap having an end portion with a pile-type fastener assembly thereon;
the front side having a fly positioned along the middle portion, the fly being shaped and sized for positioning across the upper area of the thigh, the fly having a pile-type fastener assembly being positioned thereon for allowing opening and closing as needed by the wearer, the fly being opened and closed by the wearer, using a side-ways motion, the rear side having a posterior opening along the middle portion, the posterior



opening being positioned near a middle portion of the back and extending vertically to a rear thigh area of each of the legs of a wearer, the posterior opening having a top portion horizontally extending along the middle back with a pile-type fastener assembly on an interior side for affixing to a pile-type fastener on an exterior side of the middle portion of the body suit, the posterior opening further having a pair of vertical coupling members extending downwardly from the top portion and capable of opening and closing;
a pair of boots, each boot having an upper end with an under role thereon, the under role having a drawstring positioned therein, each boot having a boot sole, the upper end of each boot positionable over the lower portion of the suit when the suit being worn over the body;
a jacket having a jacket front, a collar and jacket sleeves, the jacket front having a pair of front flaps that extend from the collar to a bottom of the jacket, the bottom of the jacket being elasticized for providing a tight fit around the waist of the wearer for the retention of body heat when the front flaps being closed, one front flap having a pile-type fastener assembly for affixing to the pile-type fastener of another front flap for opening and closing of the jacket front, the collar having on one side a collar extent for overlapping of an opposite side of the collar, the collar extent having a pile-type fastener assembly for coupling the pile-type fastener of the opposite side of the collar when the front flaps of the jacket being in a closed orientation, the jacket being positionable over the suit when the suit being worn over the body;
a pair of gloves with each glove having an upper end with an upper roll thereon, the upper roll having a draw string therein, each glove being positionable over a band and a portion of an arm, each glove capable of being positioned over a portion of a respective sleeve of the jacket when the jacket being worn; and
a cap having a eyehole and capable of being loosely positioned over a head of a person.

5,617,582
LOAD BEARING VEST
Daniel G. Burwell, 113 W. Twelve Oaks Rd., Raeford, N.C. 28376
Filed Jun. 25, 1996, Ser. No. 668,672
Int. Cl.⁶ A41D *1/04;* A41B *1/22*
U.S. Cl. 2—102 **8 Claims**

1. A load bearing vest for military and police usage comprising:
a right front panel formed of durable abrasion resistant material:
a left front panel formed of durable abrasion resistant material:
a rear panel formed of durable abrasion resistant material;



a right shoulder strap formed of durable abrasion resistant material connecting an upper portion of the right front panel with an upper portion of the rear panel:

a left shoulder strap formed of durable, abrasion resistant material connecting an upper portion of the left front panel with the upper portion of the rear panel:

an expandable right side panel form of elastic material with a high strain capacity connecting the right from panel with the rear panel below the shoulder strap defining a right arm opening therebetween and extending downward from the opening:

an expandable left side panel formed of elastic material with a high strain capacity connecting the left front panel with the rear panel below the left shoulder strap defining a left arm opening therebetween and extending downward from the left arm opening;

an expandable front closure connecting the right front panel with the left front panel;

a floating front center panel connected to the front closure wherein the front closure is elastically expandable independent of the floating panel.

5,617,583

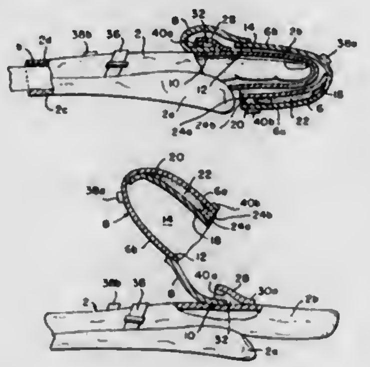
THERMAL GLOVE WITH HEATER POCKET

James W. Yates, Rt. 1, Box 585, and Ronnie L. Yates, Box 3441, both of Wise, Va. 24293

Continuation-in-part of Ser. No. 369,112, Jan. 5, 1995, Pat. No. 5,509,143. This application Mar. 21, 1996, Ser. No. 620,085

Int. Cl.⁶ A41D *19/00*

U.S. Cl. 2—160 **10 Claims**



1. A thermal glove including:

(a) a hollow glove body including a first end region having a thumb portion and a plurality of finger portions, an intermediate region containing a chamber and having opposed palm and back portions, and a second end region containing an opening through which a user inserts his hand into said chamber;

(b) a hollow cap containing a chamber and a cap opening communicating with said cap chamber, said cap having opposed palm and back portions:

(c) means including a flexible strip connecting said cap back portion with said glove body portion to permit displacement of said cap relative to said glove body between an operative position in which said cap chamber receives said glove finger portions via said cap opening and a stored position in which said cap is adjacent the back of the glove body portion with the back portions of the cap and glove being adjacent each other:

(d) means for retaining said cap in said stored position:

(e) means defining and interior heater pocket on one of the adjacent faces of said cap palm and back portions, said heater pocket containing a chamber having an opening for receiving a heating device, thereby to warm the finger portions of the glove body when said cap is in the operative position; and

(f) means defining a storage pocket on said glove body back portion, said storage pocket containing a storage chamber and an opening facing away from said glove finger portions, said storage chamber being operable, when said cap is in said storage position, to receive via said storage pocket opening said flexible strip and the cap region containing the mouth of said cap opening.

5,617,584

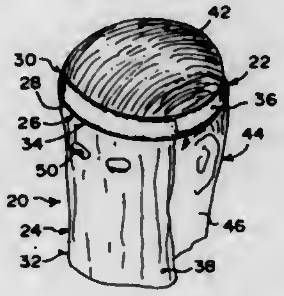
FACE COVERING

Michael K. Brennan, 141-33 13th Ave., Whitestone, N.Y. 11357-2316

Filed Apr. 10, 1995, Ser. No. 419,198

Int. Cl.⁶ A42B *3/18*

U.S. Cl. 2—206 **1 Claim**



1. A multipurpose bandanna-type article for use on the head of a user comprising:

a) an elongated band consisting of a thin strip of supple material with free ends;

b) a flexible panel comprising a thin flat rectangular piece of pliable material whose width is such as to cover only the front of the face of a user including means for permitting a user to have visibility through said panel comprising a pair of spaced openings to permit viewing therethrough when said panel covers the face of a user, said piece of pliable material being otherwise free of openings; and

c) means for fastening one edge of said flexible panel to said elongated band to permit said bandanna-type article to be worn backward over the head of a user while remaining secured to the head of the user comprising a thread sewn by stitching through said one edge of said flexible panel and into said elongated band.

5,617,585

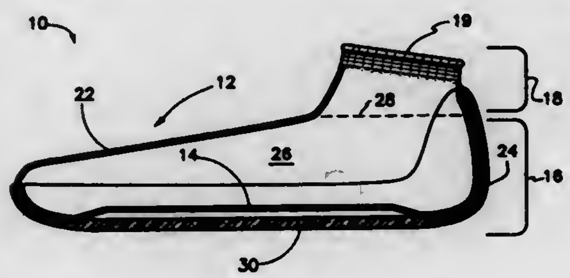
RUBBER SOLED SLIPPER SOCK

Roger D. Fons, 800 South St. Asaph, No. 203, Alexandria, Va. 22314, and Raymond H. Crissman, 11923 Dormayne Dr., Hagerstown, Md. 21742

Continuation-in-part of Ser. No. 502,254, Jul. 13, 1995. This application Jun. 19, 1996, Ser. No. 668,625

Int. Cl.⁶ A41B *11/00*

U.S. Cl. 2—239 **10 Claims**



1. A slipper sock comprising:

a shell fabricated from an interlaced fabric and including an enclosed body having

a sole portion,

a sole periphery located at the outer bounds of said sole portion,

an adjacent upper body portion having an upper panel, a heel portion, and

a sleeve open at the top for providing access for the foot of a wearer into the interior of said slipper sock, said sleeve being attached to said upper body portion proximate said heel portion;

a flexible liner bonded to said shell by embedding said shell within said flexible liner, said upper body portion projecting from said flexible liner and being embedded within said flexible liner, and said sole portion projecting above and from said flexible liner and being partially unencumbered by embedding within said flexible liner, whereby the sole of a wearer's foot may rest on a fabric portion of said shell.

5,617,586

TATTOO HOSIERY HAVING TRANSLUCENT INK

Gloria I. PeQueen, and Earl J. PeQueen, both of 319 Browns Valley Rd., Watsonville, Calif. 95076

Continuation of Ser. No. 489,537, Jun. 12, 1995, abandoned, which is a continuation of Ser. No. 308,406, Sep. 14, 1995, Pat. No. 5,450,790. This application Jul. 1, 1996, Ser. No. 673,013

Int. Cl.⁶ A41B *11/00*

U.S. Cl. 2—239 **3 Claims**

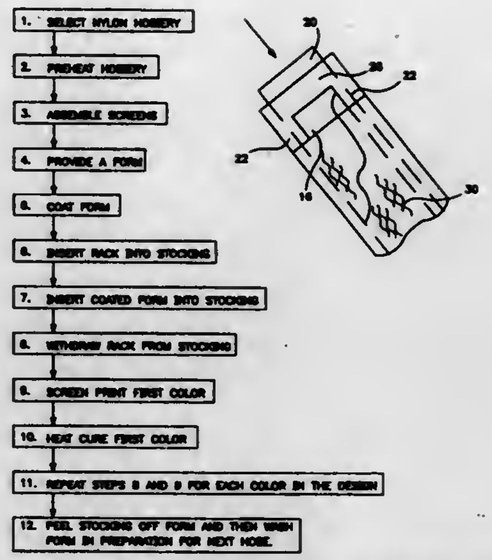
1. A decorated hose wherein a wearer of said hose has an appearance of a tattoo under said hose which comprises:

said fabric being woven from a fiber having a value of denier in the range of values from 13 to 25;

said fiber having a value of modification number lying in a range of values between 1.4 and 1.7;

said hose having a plurality of areas, each area registered with adjacent areas and having a color in accordance with a design on said hose;

each area being printed with a water based acrylic ink having a translucency;



said translucency having a value selected in operable combination with said value of denier and modification number such as to optimize said appearance of a tattoo on a leg of a wearer under said hose.

5,617,587

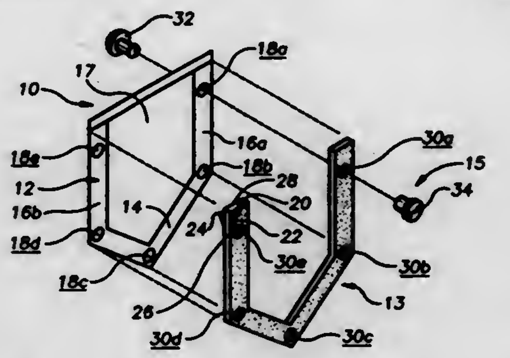
ATTACHABLE GARMENT POCKET SYSTEM

J. Ralph Marchbanks, 6416 Penrose La., Las Vegas, Nev. 89107

Filed Mar. 14, 1996, Ser. No. 615,114

Int. Cl.⁶ A41D *27/20*

U.S. Cl. 2—247 **9 Claims**



1. An attachable garment pocket system comprising:

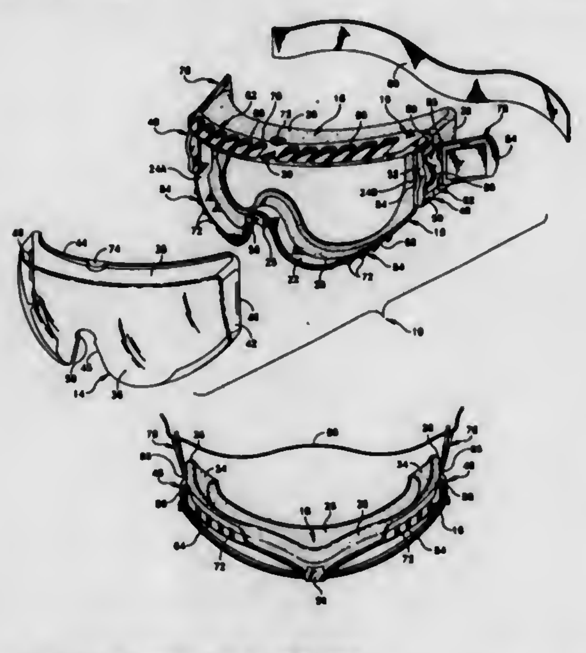
a pocket member having a plurality of pocket member securing apertures formed therethrough adjacent a portion of said perimeter thereof;

an adhesive member having a like plurality of adhesive member securing apertures formed therethrough in alignable registration with said plurality of pocket securing apertures, said adhesive member having first and second opposite sides thereof, each first and second side having a quantity of a fabric adhering adhesive deposited thereon and first and second peel away covers, respectively, disposed over one of said quantities of fabric adhering adhesive; and

a like plurality of identical pairs of permanent pocket securing fasteners having a male portion and a female portion, each male portion of said plurality of permanent pocket securing fasteners including an engagement ledge formed at a first end of a central portion thereof and a contoured cap portion formed at a second end of said central portion, each female portion of said plurality of permanent pocket securing fasteners including a receiving portion having an engagement cavity formed therein and three ledge retaining flaps extending circumferentially along a sidewall of said receiving portion defining said engagement cavity, said engagement cavity

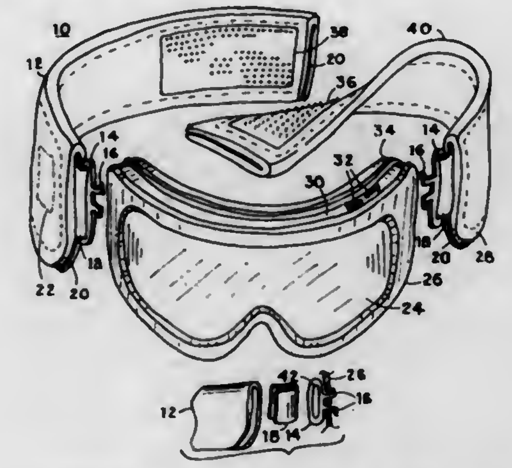
being sized and said retaining flaps being oriented in a manner such that when said engagement ledge is forced into said engagement cavity past any ledge retaining flap, contact between said engagement ledge and a ledge retaining flap prevents withdrawal of said engagement ledge from said engagement cavity.

5,617,588
SNAP TOGETHER PROTECTIVE GOGGLE CONSTRUCTION WITH TORIC LENS
Richard W. Canavan, East Woodstock, Conn., and John G. Mathews, Providence, R.I., assignors to Uvex Safety, Inc., Smithfield, R.I.
Filed Mar. 16, 1995, Ser. No. 405,144
Int. Cl.⁶ A61F *9/02*
U.S. Cl. 2—428 **20 Claims**



14. A goggle construction comprising:
a body including a rigid frame portion, and a resilient elastomeric face engaging portion, said frame portion including a top wall, a bottom wall and side walls which cooperate to define a unitary goggle interior which encloses both eyes of a wearer, said face engaging portion including a top wall, a bottom wall and side walls which depend from and cooperate with said top wall, bottom wall and side wall portions of said frame portion to further define said goggle interior;
a lens including a front wall, and further including top, bottom and side walls extending rearwardly from a peripheral edge of the front wall thereof,
said lens being received in interfitting engagement with said body wherein said top, bottom and side walls of said lens are slidably received in overlying relation with said top, said bottom and said side walls of said frame portion;
means for releasably securing said lens in interfitting engagement with said frame portion;
a first ventilation passage adjacent a bottom wall of said lens; and
a second ventilation passage adjacent a top wall of said lens, said first and second ventilation passages cooperating to provide an air flow over said front wall of said lens.

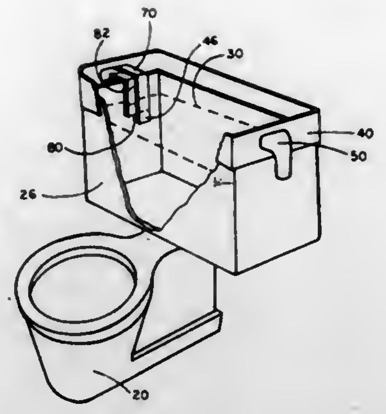
5,617,589
COMBINATION HEADBAND, EARCOVERS, AND GOGGLES
Ernest H. Lacore, 397 Main St., Cromwell, Conn. 06416, and Thomas S. Weaver, 32 Locust Hill, Shelburne, Vt. 05482
Filed Jan. 20, 1995, Ser. No. 375,294
Int. Cl.⁶ A61F *9/04;* **A41D** *21/00*
U.S. Cl. 2—452 **8 Claims**



1. A combination headband, earcovers and goggles comprising:
outdoor winter sports goggles shaped to fit the contours of a face of a wearer, wherein the outdoor winter sports goggles have two side edges;
attached to each of the two side edges of the goggles a strip of soft absorbent temperature insulating fabric at least as wide as the side edge of the goggles and sufficiently long to extend around a head of a wearer with a substantial portion of each strip of temperature insulating fabric overlapping each other, the temperature insulating fabric fabricated to soak up moisture and provide protection against the cold;
attached to each of the wide strips of temperature insulating fabric, where the wide strips overlap, mating adjustable connectors to connect the two strips of temperature insulating fabric with an adjustable connection for a comfortable fit;
an earcovering portion, wider than the side edges of the goggle, on the temperature insulating fabric, said earcovering portion having a width sufficiently wide to cover an ear of the wearer so that the soft absorbent temperature insulating fabric contacts the ear with an adjustable fit as the wide strips are connected;
wherein the temperature insulating fabric is folded over double along each strip;
connecting means for connecting each strip of temperature insulating fabric to each side of the goggles, a strip of elasticized material sewn between the folded over temperature insulating fabric, said strip of elasticized material being attached to said connecting means, so that minor adjustments of the goggles are possible after the wide strips are connected;
wherein the goggles, overlapping strips of temperature insulating fabric, and the earcovering portion of the fabric create a combination headband, earcovering, and goggles which is attachable around a head of a wearer by adjustably connecting the strips of temperature insulating fabric in an overlapping fashion.

5,617,590
FLUSH TOILET EXHAUST FIXTURE
Ignacio Gastesi, Rrt. 1, Box 591 Y, Scottsville, Va. 24590
Filed Apr. 10, 1995, Ser. No. 418,562
Int. Cl.⁶ E03D *9/05*
U.S. Cl. 4—213 **3 Claims**

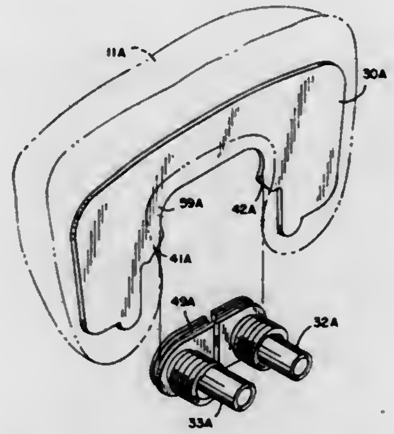
1. An exhaust fixture adapted to be connected to a toilet, said toilet having a bowl with a rim, a water tank having a normal amount of water therein and an upper peripheral edge, an overflow pipe located within said water tank, and a lid spaced from an upper



peripheral edge of said tank; the exhaust fixture comprising a flexible strip, said flexible strip being a closed loop with a perimeter smaller than the perimeter of said upper, peripheral edge of said tank, said flexible strip adapted to be configured around said water tank and said lid, said flexible strip having sealing means for sealing said flexible strip about said water tank and said lid forming a substantially air-tight band there between, said flexible strip having an air vent allowing air communication between the tank interior and the tank exterior and a hose connector having an inlet for connecting and for allowing air communication with said tank interior and an outlet, said hose connector further including an air vent for allowing air communication in between said inlet and said outlet, and blower means connected to said outlet for the withdrawal of gases from air space above said normal water level in said tank, said overflow pipe and consequently from said bowl through said exhaust fixture and said blower means to an area remote from the toilet.

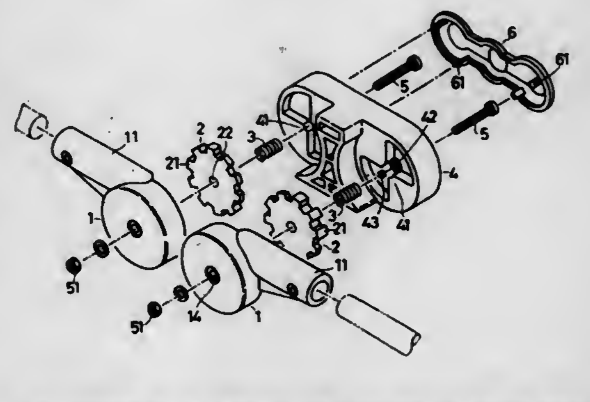
5,617,591
HEAD REST ASSEMBLY
John M. Bloemer, 1135 Morraine View Dr., Apt. 4, Madison, Wis. 53719; Michael J. Kurth, 1509 Apple Tree Rd., Howards Grove, Wis. 53083; Alan D. Bengtson, 385 Oakwood Ave., Apt. 6, East Aurora, N.Y. 14052; Robert C. Giese, 3050 Georgia Ave., Sheboygan, Wis. 53081; Edwin R. Potter, Jr., 428 N. Lincoln Dr., Howards Grove, Wis. 53083; Thomas A. Bonnell, 121 Lake Ct., Sheboygan, Wis. 53081, and Thomas W. Clarke, 3428 N. 6th St., Sheboygan, Wis. 53083
Division of Ser. No. 376,575, Jan. 23, 1995, Pat. No. 5,546,616, which is a continuation-in-part of Ser. No. 107,404, Aug. 16, 1993, Pat. No. 5,548,854. This application Mar. 20, 1996, Ser. No. 619,900
Int. Cl.⁶ A61H *33/04*
U.S. Cl. 4—541.6 **1 Claim**

1. A head rest assembly for use in conjunction with a bathing fixture comprising:



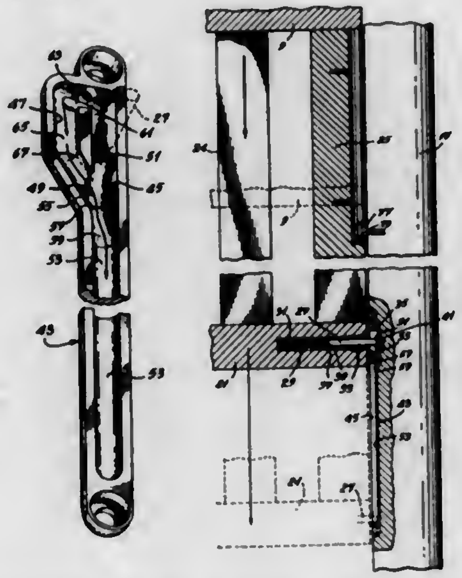
a body member including a section to support a head; a nozzle body having two fluid inlet nozzles for providing fluid to the body member;
a living hinge on said nozzle body interconnecting said nozzles; and
a support bracket on said body member for attaching said nozzle body to said body member.

5,617,592
BENDING JOINT OF A COLLAPSIBLE BABY PLAYING BED
Ying-Hsiung Cheng, San Diego, Calif., assignor to Top Fortune Ltd., San Diego, Calif.
Filed Mar. 15, 1996, Ser. No. 616,093
Int. Cl.⁶ A47D *7/00*
U.S. Cl. 5—99.1 **2 Claims**



1. In combination, a collapsible baby playing bed having upper frames and a bending joint for pivotally interconnecting two of said upper frames of said bed, wherein said bending joint comprising:
two inner tooth members, wherein each of said two inner tooth members has a through hole, a tubular portion connected to one of said two upper frames of said bed, a holding chamber, and a plurality of teeth disposed inside said holding chamber;
two fitting blocks, wherein each of said two fitting blocks has a plurality of teeth thereon for engaging with said teeth of the respective inner tooth member, a through hole, and two opposing sectorial recesses thereon;
a connector having two sections, wherein each of said two connector sections has a pair of opposing sectorial projections thereon for engaging with said two opposing sectorial recesses of the respective fitting block, a through hole, a plurality of blocking trenches, and a recessed portion;
two springs, wherein each of said two springs is disposed between and abuts one of said two connector sections and the respective fitting block;
two bolts, wherein each of said two bolts passes through said through hole of the respective connector section, one of said two springs, said through hole of the respective fitting block, and said through hole of the respective inner tooth member;
two nuts, wherein each of said two nuts screws onto an end of the respective bolt for securing together and retaining the respective connector section, said one of said springs, the respective fitting block, and the respective inner tooth member on the respective bolt to dispose said two inner tooth members adjacent to each other and to allow said two inner tooth members having the respective two upper frames attached thereto to pivot relative to each other; and
a push cap having a plurality of blocking hooks, wherein said push cap fits on said recessed portions of said two connector sections and said plurality of blocking hooks engage said plurality of blocking trenches of said two connector sections to detain the push cap within said recessed portions of said connector sections.

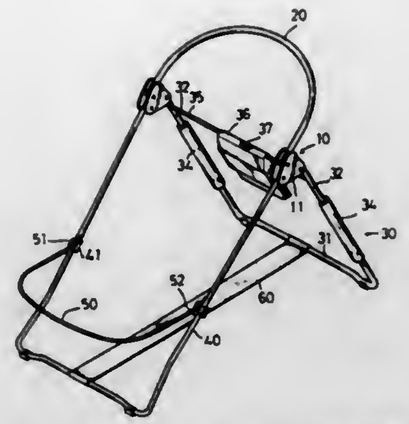
5,617,593
DEVICE FOR LIFTING AND LOWERING A MOVABLE SIDE OF A BABY'S BED
Viet Pham, 1530, St-Germain, Villa Saint-Laurent, P. Quebec, Canada
Filed Mar. 27, 1996, Ser. No. 622,262
Int. Cl.⁶ A47D *7/02*
U.S. Cl. 5—100 **9 Claims**



1. Device for lifting and lowering a movable side of a baby's crib, said movable side including two end rails connecting a top and a bottom rail, said crib comprising corner posts, including two operating posts for mounting said movable side therebetween, said device comprising
resiliently loaded pin means provided at the ends of said bottom rail,
projections, each having an engageable head portion, provided at an upper portion of said operating posts,
each said end rail formed with an engaging slide at an upper portion thereof to engage said engageable head portion of one said projection, and means enabling said engageable head portion of said projection to slide along said engaging slide,
each operating post also integrally formed with a pin guiding track at a lower portion thereof,
said track, having a vertical elongated section, and a return section provided at the top of said elongated section as a continuation of said elongated section and rejoining same at a junction short of the top of said elongated section,
a sharp depression formed in said elongated section between said junction and said elongated section top defining an abutment shoulder to engage said pin and prevent same from directly returning into said track below said shoulder,
means provided in said elongated section past said abutment shoulder and in said return section to exert continuous resistance in said pin means as the latter is moved toward said return section and into said return section, until it starts moving down in said return section.

5,617,594
FOLDABLE CRADLE FRAME
Jui-lung Chien, Taichung, Taiwan, assignor to Jina Manufacturing Thai Co., Ltd. THX
Filed Nov. 6, 1995, Ser. No. 554,291
Int. Cl.⁶ A47D *9/00*
U.S. Cl. 5—102 **10 Claims**

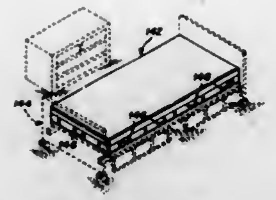
1. A foldable cradle frame, comprising:
first and second connecting bodies each comprising two side walls connected together, one side wall forming a back plate, an upper opening and a lower opening extending between the

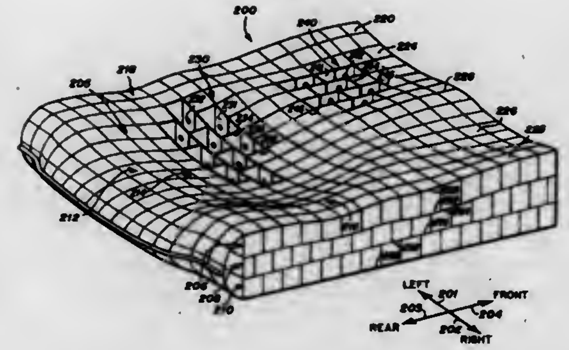


side walls along upper and lower portions thereof, and an angled slot extending between the side walls and through the lower opening;
a front foot having first and second ends respectively secured in the slots of the first and second connecting bodies;
a rear foot comprising a first rod having opposing free ends, first and second connecting rods respectively attached to opposing free ends of the first rod via first and second sleeves, first and second springs respectively disposed in the first and second sleeves, each spring extending between a respective free end of the first rod and one of the first and second connecting rods, the first and second connecting rods extending through respective lower openings of the first and second connecting bodies and being respectively pivotally secured to the first and second connecting bodies, said rear foot being rotatable through the lower opening towards said front foot; and
an upper rod pivotally connected to each of the connecting members so as to be rotatable through the respective upper openings towards the front foot.

5,617,595
CONTOURED SEAT CUSHION COMPRISED OF HONEYCOMB CORES
Curtis L. Landi; Susan L. Wilson, both of Sunnyvale, and Peter M. Cazalet, Los Altos Hills, all of Calif., assignors to Supracor Systems Corporation, San Jose, Calif.
Continuation-in-part of Ser. No. 80,745, Jun. 22, 1993, Pat. No. 5,444,881, which is a continuation-in-part of Ser. No. 974,474, Nov. 12, 1992, abandoned, which is a continuation-in-part of Ser. No. 717,523, Jun. 19, 1991, Pat. No. 5,180,619, which is a continuation-in-part of Ser. No. 446,320, Dec. 4, 1989, Pat. No. 5,039,567. This application Jun. 22, 1994, Ser. No. 264,103
Int. Cl.⁶ A47C *27/08;* **B23B** *3/12*
U.S. Cl. 5—653 **7 Claims**

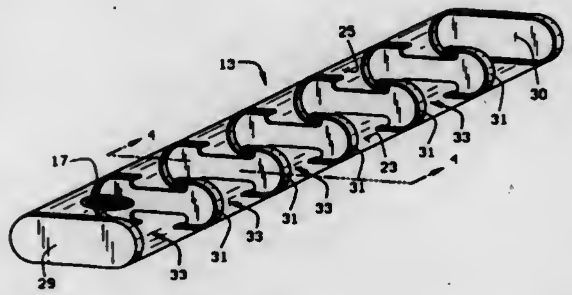
1. An improved seat cushion comprising:
a) at least one contoured substrate including
i) a first honeycomb core formed of undulated strips of resilient thermoplastic material, thermal compression bonded together to form cell walls defining a plurality of contiguous regularly shaped cells, each of said cell walls having an upper extremity and a lower extremity, at least one of said upper and said lower extremity forming a contoured surface, and
ii) means for maintaining said first core in its expanded configuration, said first core being anisotropically flexible and capable of stabilizing and spreading a load exerted thereupon by a user of said cushion;
b) at least one planar substrate attached to one of said upper and said lower extremity of said first core, said planar substrate having
i) a second honeycomb core formed of undulated strips of resilient thermoplastic material, thermal compression bonded together to form cell walls defining a plurality of contiguous regularly shaped cells, each of said cell walls





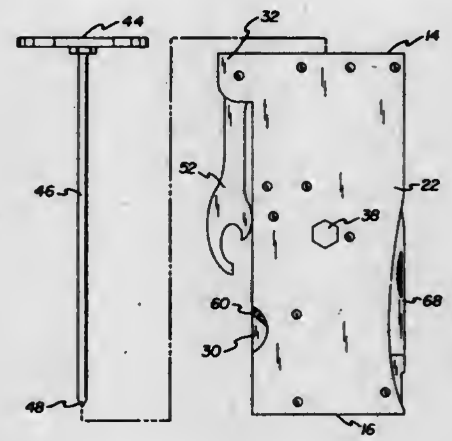
having an upper extremity and a lower extremity, each of said upper and said lower extremity forming a planar surface, and
ii) means for maintaining said second core in its expanded configuration, said second core being anisotropically flexible and capable of stabilizing and spreading a load exerted thereupon by said user of said cushion; and
c) whereby predetermined prominences of said user's body are received in said contours formed in said contoured surface.

5,617,596
TUBE FOR A WATERBED
Dennis Boyd, 14457 Rouge River, Chesterfield, Mo. 63017
Filed May 1, 1996, Ser. No. 641,578
Int. Cl.⁶ A47C *27/08*
U.S. Cl. 5—683 **16 Claims**



1. A tube for a waterbed, comprising:
a generally cylindrical tube body having a top, a bottom, and a pair of side walls extending from said top to said bottom, said tube body defining a longitudinal axis of said tube for a waterbed;
first and second tube ends, said tube ends in combination with said tube body forming a watertight enclosure;
a fill valve through which the watertight enclosure may be at least partially filled with water;
a plurality of metering walls disposed in the watertight enclosure generally transverse to the longitudinal axis of the tube, each pair of metering walls defining a tube section therebetween, said metering walls extending across the tube body from one side to the other and being sealed to each side wall;
said metering walls having a top portion which is spaced from the top of said tube body to permit the metered flow of water from one tube section to another.

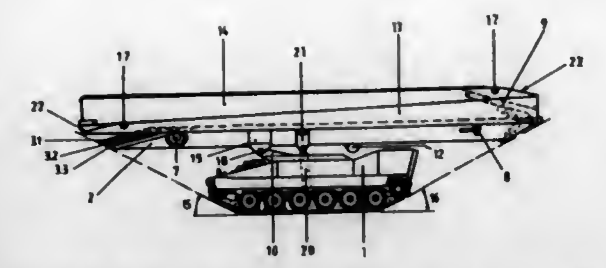
5,617,597
MULTIPURPOSE KITCHEN TOOL
David Reitz, 357 Calvert Cir., Kennett Square, Pa. 19348
Filed Mar. 19, 1996, Ser. No. 618,355
Int. Cl.⁶ B25F *1/00*
U.S. Cl. 7—113 **6 Claims**



1. A multipurpose kitchen tool for enabling performance of a number of tasks within a kitchen comprising, in combination:
a housing having a generally rectangular configuration, the housing having an upper end, a lower end, a front edge, a rear edge, and two side walls, the upper end having an opening formed in a central portion thereof extending into a channel through the housing, the front edge having a recess formed in a lower portion thereon, the lower portion having a finger recess formed in an outer edge thereof, an upper portion of the front edge having a securement bracket integral therewith, the rear edge having an elongated recess formed therein extending from the upper end to the lower end of the housing, a lower portion of the rear edge having an indentation formed therein, one of the two side walls having a hexagonal opening formed therein extending into the channel, one of the two side walls having a belt clip secured thereto;
a thermostat having an elongated shaft, the elongated shaft slidably received within the channel of the housing through the opening in the upper end thereof;
a bottle opener having a proximal end pivotally coupled with the securement bracket of the front edge of the housing, the bottle opener having a distal end adapted for opening bottles;
a cork screw having a proximal end pivotally secured within the recess formed in the lower portion of the front edge of the housing, the cork screw having a distal end adapted for removal of corks from wine bottles;
a knife blade having a proximal end pivotally secured within the recess formed in the rear edge of the housing.

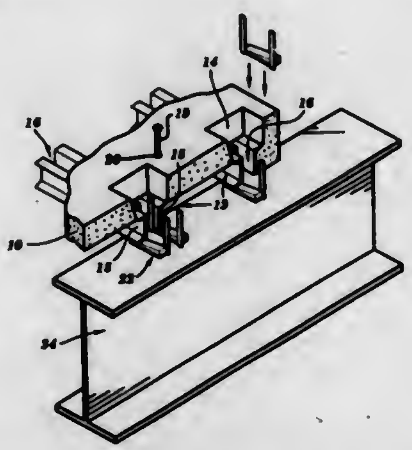
5,617,598
ARMORED BRIDGE-LAYING VEHICLE WITH LAYING MEANS
Walter Kinzel, Mainz, and Jan Ghering, Ginsheim-Gustavburg, both of Germany, assignors to MAN Gutehoffnungshütte Aktiengesellschaft, Oberhausen, Germany
Filed Jul. 21, 1995, Ser. No. 505,690
Claims priority, application Germany, Aug. 23, 1994, 44 29 808.0
Int. Cl.⁶ E01D *15/12;21/06*
U.S. Cl. 14—2.4 **4 Claims**

1. An armored bridge-laying vehicle, comprising: a tower ring supported on said vehicle; a support ring structure rotatably connected to said tower ring; a laying girder pivotably connected to said support ring structure; a bridge arm pivotably connected to



said laying girder; a plurality of U-shaped telescopic girders displaceably arranged in said laying girder, each of said U-shaped girders and said laying girder having an upper cord edge located in a common plane.

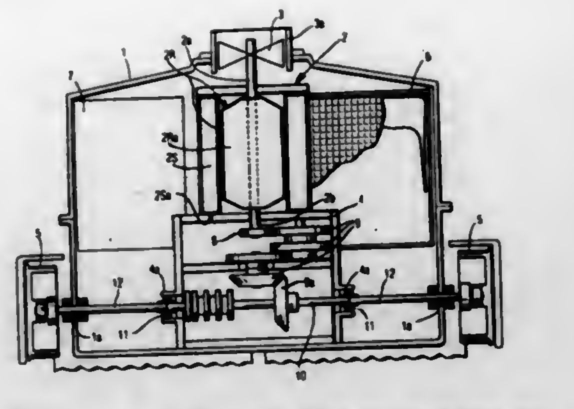
5,617,599
BRIDGE DECK PANEL INSTALLATION SYSTEM AND METHOD
Peter Smith, Gansevoort, N.Y., assignor to Fomico International, Schuylerville, N.Y.
Filed May 19, 1995, Ser. No. 444,390
Int. Cl.⁶ E01D *21/00*
U.S. Cl. 14—73 **11 Claims**



1. A prefabricated composite structural member comprising:
a deck panel having a topside and an underside;
at least one pair of support members mounted in parallel to the underside of said deck panel;
at least one channel on said underside of said deck panel formed between said at least one pair of support members wherein said channel has a predetermined width;
at least one access hole projecting from the topside to the underside of said deck panel wherein said at least one access hole has a width greater than said predetermined width of said channel; and
shimming devices wherein said devices are positionable beneath at least one pair of support members, and above an existing girder through said access hole.

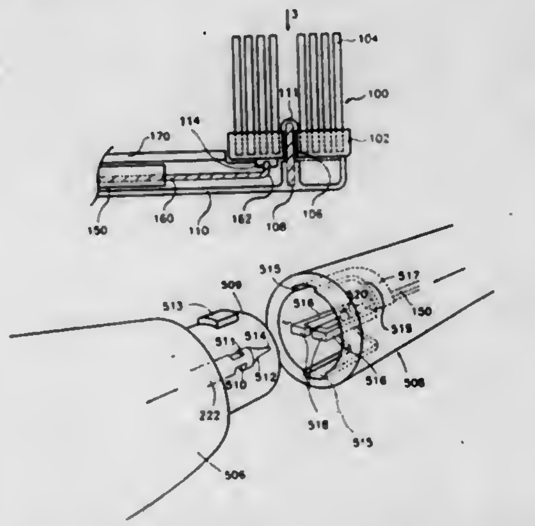
5,617,600
SELF-PROPELLED UNDERWATER ELECTROMECHANICAL APPARATUS FOR CLEANING THE BOTTOM AND WALLS OF SWIMMING POOLS
Ercole Frattini, Via Mottarone, 16, 21020 Bodio (Varese), Italy
Filed Dec. 5, 1994, Ser. No. 353,348
Claims priority, application Italy, Dec. 3, 1993, MI93A2566
Int. Cl.⁶ E04H *4/16*
U.S. Cl. 15—1.7 **20 Claims**

1. A self-propelled, underwater, electromechanical apparatus for cleaning a bottom and walls of swimming pools, comprising



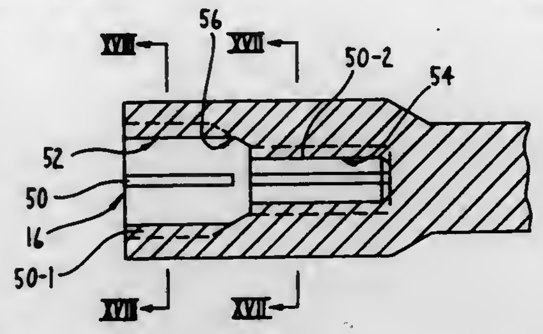
an apparatus body provided with a water suction opening and a water outlet,
a single electric motor unit in said body,
a circulating turbine connected to said electric motor for circulating water from said water suction opening to said water outlet through a filter system and,
a mechanical driving unit connected to said electric motor and,
a roller travel system connected to said driving unit, said driving unit transmitting forward, backward and rotational movement to said roller travel system, wherein at least one of said electric motor and said driving unit has an open structure exposed to the swimming-pool water.

5,617,601
BRUSHES FOR PERSONAL HYGIENE PURPOSES
Gregory J. McDougall, 1008, Telford Gardens, Kowloon Bay, Kowloon, Hong Kong
Filed Oct. 6, 1994, Ser. No. 318,980
Claims priority, application United Kingdom, Oct. 8, 1993, 9320751
Int. Cl.⁶ A61C *17/34;* **A46B** *13/02*
U.S. Cl. 15—22.1 **22 Claims**



1. A brush for personal hygiene purposes comprising an elongated housing, a rotatably mounted brush head supported on the housing, a connection member for connection to a linear reciprocal drive means providing drive in a direction generally parallel to the length of the housing, and a flexible member connected between the connection member and the head for converting linear reciprocal motion of the connection member to rotational motion of the head, the flexible member being biased in a direction away from the direction of the linear reciprocal motion of the connection member.

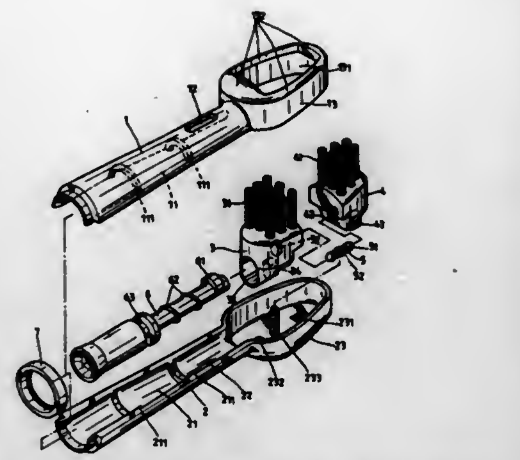
5,617,602
MOTOR-DRIVEN TOOTHBRUSH
Eiji Okada, 5-15-5, Nakanobu, Shinagawa-ku, Tokyo, Japan
Filed Jun. 27, 1995, Ser. No. 495,092
Int. Cl.⁶ A46B *13/02*
U.S. Cl. 15—22.1 **5 Claims**



1. A motorized toothbrush comprising:
a holder section including an elongated body enclosing a drive unit and a projection attached to one end of said body, said drive unit connected to said projection for moving said projection in response to actuation of said drive unit, said projection having a stem with a predetermined first diameter, a tip with a predetermined second diameter, and a tapered part positioned between said stem and said tip, said first diameter being larger than said second diameter,
a toothbrush section having opposed ends with a brush bead positioned on one said end, and a receiving section integrally formed with the other said end, said receiving section being formed of flexible material and being shaped to define a sectioned bore therein, said sectioned bore having a first section with a predetermined third diameter positioned near said other end, a second section having a predetermined fourth diameter smaller than said third diameter, and a tapered third section positioned between said first and second sections, said first section receiving said stem therein, said second section receiving said tip therein, and said third section receiving said tapered part therein, and
elongate key means fixedly secured to and extending lengthwise within one of said first and second sections and projecting radially inwardly from the respective predetermined diameter for compression securing of said projection in said receiving section.

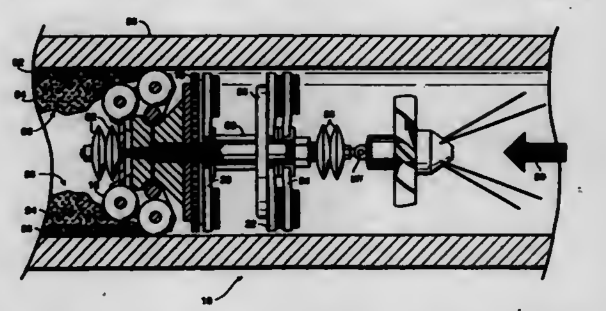
5,617,603
BRUSH HEAD ASSEMBLY OF AN ELECTRIC TOOTHBRUSH
Tzeng J. N. Mei, No. 1, Kuo-Chi Rd., Hsin-Shin Village, Tainan Hsiang, Taiwan
Filed Jul. 23, 1996, Ser. No. 681,382
Int. Cl.⁶ A61C *17/34*
U.S. Cl. 15—22.1 **1 Claim**

1. A brush head assembly of an electric toothbrush, said assembly adapted to be coupled to a motor driven shaft of said toothbrush, said assembly comprising:
an upper and lower elongated shell trunk coupled together, each shell trunk comprises a narrow first end portion and an enlarged second end portion having a width wider than said first end portion, each shell trunk forms a longitudinal recess therein at said first end portion such that together, the first end portions define a longitudinal pocket, each first end portion includes an elongated slot therethrough communicating with said pocket, each second end portion defines a head portion with a holding space therein, said head portion of said upper shell trunk has an opening therethrough which is surrounded by an extending curved blocking rim, said head portion of said lower shell trunk has two spaced concave grooves in a bottom side thereof and a pin extending from said bottom side;



adjacent first and second bristled swing bodies, each swing body having a curved top face, a curved end face, a bottom and a side, the sides of the swing bodies being in facing relationship and each side having a recess formed therein, each bottom of said swing body has a convex lug extending therefrom, said lugs being received, respectively, in said concave grooves, said second swing body has an oval blind hole in the curved end face;
an elongated swing bar, said bar is pivotally mounted to said pin and the opposite ends thereof are received into the recesses, respectively, of the swing bodies;
an elongated drive rod, said drive rod is received into the pocket for rotation therein, a first end of the drive rod has an eccentric cam thereon which is received into the oval blind hole in the second swing body, said drive rod has a helical blade extending along a surface thereof;
rotation of said drive rod causes rotation of said eccentric cam in said oval hole, such causes oscillation of the swing bodies in opposite directions due to pivoting of said swing bar, additionally, rotation of the drive rod causes rotation of the helical blade which acts to expel any water or debris present in said pocket out through the elongated slots.

5,617,604
PIVOTED ROLLER CUTTER PIPE CLEANING TOOL
Richard R. Erich, P.O. Box 324, Gualala, Calif. 95445
Filed Sep. 6, 1994, Ser. No. 301,070
Int. Cl.⁶ B08B *9/04*
U.S. Cl. 15—104.063 **16 Claims**



1. An improvement in a pipe cleaning tool having a propulsor unit and a cutting head coupled to said propulsor unit for cleaning a pipe having fluid flowing therethrough, said propulsor unit for propelling said tool through said pipe by flow of said fluid through said pipe comprising:
a plurality of paired rotatable roller cutters disposed on said cutting head, each of said paired roller cutters being pivotally coupled as a pair to said cutting head by a corresponding roller cutter pivot rigidly disposed on said cutting head, the axis of rotation of each of the roller cutters being substantially

parallel to the corresponding roller pivot and the axis of rotation of the roller cutters of each pair of roller cutters being spaced from and parallel to each other, so that radial disposition of each of said paired roller cutters with respect to said pipe cleaning tool is variable according to rotation thereof about its corresponding roller cutter pivot, the axis of rotation of the roller cutters of each pair of roller cutters being disposed on opposite sides of the corresponding roller cutter pivot so that movement of one of said roller cutters of each pair of roller cutters is generally radially opposite that of the other roller cutter of the same pair of roller of cutters,

whereby bends and internal obstructions within a pipe cleaned by said pipe cleaning tool are accommodated by said paired rollers making contact with said pipe instead of one roller.

5,617,605

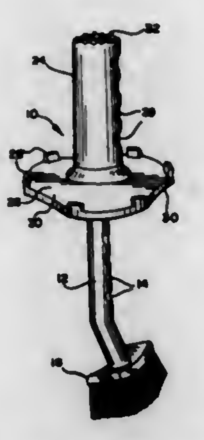
COMBINATION CLEANING AND PLUNGER TOOL

Nikolaus N. Hoerner, Des Plaines, Ill., and Paula J. Hoerner, 621 Central St., Evanston, Ill. 60201, assignors to Paula J. Hoerner, Evanston, Ill.

Filed Feb. 16, 1995, Ser. No. 389,930

Int. Cl.[6] **A46B** *5/02;* **A47L** *25/00*

U.S. Cl. 15—105 **9 Claims**



1. A tool for cleaning surfaces and forcing material into a refuse grinder opening, said tool comprising a brush at one end and a plunger means at another end thereof opposite said one end and a baffle assembly disposed intermediate said ends which includes a flat plate and a plurality of legs depending therefrom whereby the plate will be supported above said opening and liquid can flow between said legs into said grinder opening when the plunger means is located therein, said plunger means being smaller than said opening and the baffle assembly being larger than said opening but defining relatively large passageways to permit liquid to flow into said opening as the refuse is being pushed into said refuse grinder opening by said plunger means.

5,617,606

FLUTED SWIMMING POOL CLEANER DISCS

James D. Scott, II, Boca Raton; William W. Stone; William T. Clark, both of Coral Springs, and Chris A. Rice, Boca Raton, all of Fla., assignors to Baracuda International Corp., Ft. Lauderdale, Fla.

Filed Feb. 29, 1996, Ser. No. 608,703

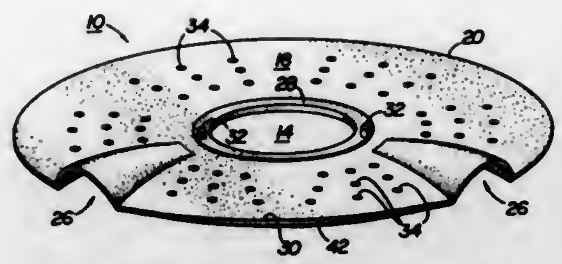
Int. Cl.[6] **E04H** *4/16*

U.S. Cl. 15—246 **11 Claims**

9. An assembly adapted to receive a footpad of an automatic swimming pool cleaner, comprising a molded plastic, flexible disc having a central aperture and comprising:

a. an upper surface having a planar portion;

b. a lower surface defining (1) a plurality of openings to the upper surface through which fluid may pass when the automatic swimming pool cleaner is immersed in the fluid and (2) an axis along a selected radius;



c. a periphery;

d. a reinforced area integrally formed with the upper surface and surrounding the central aperture;

e. a plurality of arched protrusions symmetric about the axis and extending upward from the upper surface, each arched protrusion (1) extending from adjacent the reinforced area to the periphery and (2) defining a width and height which are greatest at the periphery;

f. an annular ramp integrally formed with the lower surface and surrounding the central aperture; and

means for orienting the disc about the footpad.

5,617,607

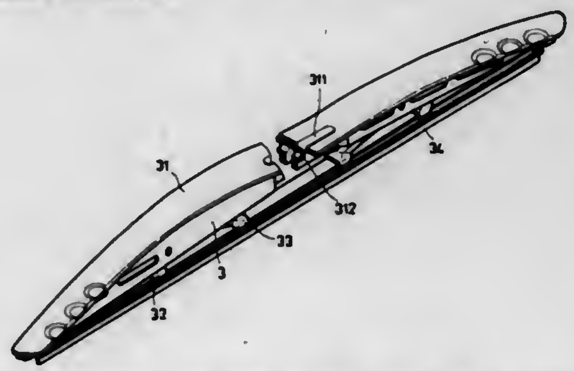
WINDSHIELD WIPER ASSEMBLY

Liang-Yuan Chen, No. 180, Hsinmin St., Tamshui, Taipei Hsien, Taiwan

Filed Aug. 15, 1995, Ser. No. 518,293

Int. Cl.[6] **B60S** *1/40; 1/38*

U.S. Cl. 15—250.201 **1 Claim**



1. A windshield wiper blade assembly comprising:

an elongated casing defining first and second ends, said casing is of substantially U-shaped transverse cross section defining two substantially parallel side walls, said side walls each having inner and outer surfaces wherein said inner surfaces face one another, said casing further includes a top wall which connects said side walls and extends laterally outwardly away from said casing past at least one outer surface to define a free edge, said top wall thereby defining an elongated cowling for interacting with air flow across the assembly, the cowling includes first and second ends and, intermediate said ends of the cowling, a longitudinally extending elongated slot therein, and the casing includes, intermediate said ends of the casing, a pair of aligned pivot holes in the side walls, each side wall includes a shoulder projecting from said outer surfaces surrounding said pivot hole therein, said cowling further includes a plurality of arcuate recesses therein at each end thereof extending into said free edge;

a master blade holder pivotally attached to said casing adjacent each end thereof;

an assistant blade holder pivotally attached to each master blade holder;

an elongated rubber blade supported by each of said master blade holders and said assistant blade holders, said rubber blade adapted to engage a windshield;

a connector adapted to connect said casing with a wiper arm, said connector comprising a substantially U-shaped member including a pair of spaced side walls, each side wall includes an aperture therethrough, said connector is coupled with said casing wherein one side wall of said connector is received in said slot and said shoulders are, respectively, received into said apertures;

wherein said recesses receive air flow over the assembly to provide downpressure to said rubber blade against the windshield.

5,617,608

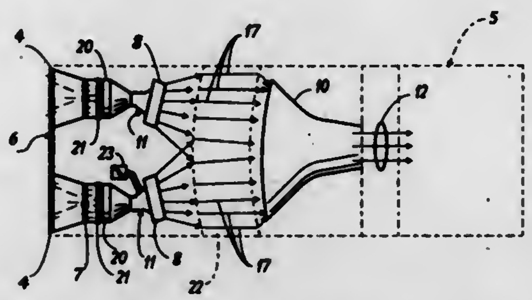
WINDSHIELD PROTECTION AND CLEANING SYSTEM

Indru J. Primlani, 2616 NE. 19th St., Renton, Wash. 98056

Filed Aug. 30, 1994, Ser. No. 299,191

Int. Cl.[6] **B60S** *1/54*

U.S. Cl. 15—313 **5 Claims**



1. A vehicle windshield ram air curtain device in a vehicle with a windshield having a top, the improvement comprising

an intake nozzle arranged on a vehicle at its front to receive ram air upon vehicle motion,

a ram air duct from said intake nozzle terminating in a broad discharge air diffuser shaped to distribute air fanned over the windshield for directing ram air upward and parallel to the vehicle windshield forming an air curtain over the windshield.

5,617,609

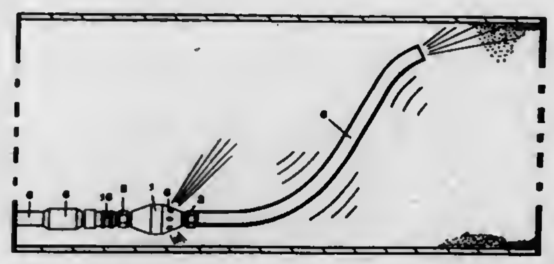
AIR NOZZLE/FLEXIBLE WHIP CLEANING MEANS FOR DUCTWORK

John F. Bently, 11153 S. Wilton River Rd., New Richland, Minn. 56072

Filed Jun. 20, 1995, Ser. No. 492,532

Int. Cl.[6] **B08B** *5/02*

U.S. Cl. 15—318 **3 Claims**



1. A means for the removal of unwanted foreign matter from the interior of ductwork, including, but not limited to heating, ventilating and air conditioning ductwork associated with Heating, Ventilating and Air Conditioning (HVAC) systems; said means employing the combined effects of the physical motion of a whip and of rapidly moving air from orifices in said means to loosen and remove unwanted matter; said means comprising:

a supply conduit made up of but not limited to a plurality of connectable lengths of semi rigid pipe, each with locking female and male quick disconnect fittings at opposing ends of said semi rigid pipe; and

at least one primary nozzle body, composed of a single tooled piece of material such as metal or plastic; said nozzle body being attachable to above said supply conduit via a locking quick disconnect fitting, said primary nozzle body having an axial bore with at least one orifice which connects radially at an acute angle with said bore; said primary nozzle body can be turned to direct pressurized fluid either in a forward or reverse direction while cleaning; said axial bore in said primary nozzle body also allows air to pass through a connecting unit such as a hose barb to

a single length of flexible tubing; said flexible tubing composed of a durable material such as rubber or plastic; said flexible tubing whips itself about when pressurized fluid is introduced, thus loosening compacted or affixed material from the ductwork and allowing the force of pressurized fluid issued from the above said nozzle body orifice to push above said unwanted material in a desirable direction.

5,617,610

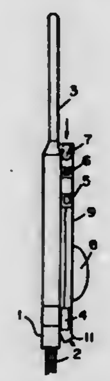
SELF-CONTAINED SWEEPER AND VACUUM PICK-UP

Paul A. Dearaujo, 14767 - 69th St. N., Lox, Fla. 33470

Filed May 24, 1996, Ser. No. 652,945

Int. Cl.[6] **A47L** *5/24*

U.S. Cl. 15—328 **4 Claims**



1. A combination self-contained sweeper and vacuum pick-up implement comprising:

a brush or broom assembly having a proximal end and a distal end with bristles extending from the distal end;

a self-contained, battery-operated vacuum assembly having a proximal end and a distal end, with a nozzle extending from the distal end;

an elongate handle rigidly attached to one of the broom assembly or the vacuum assembly at the proximal end thereof;

the other of the broom assembly or the vacuum assembly being slidably mounted to the one of the broom assembly or the vacuum assembly; and

control means for slidably positioning the bristles below the nozzle in a first mode of operation and for positioning the nozzle below the bristles in a second mode of operation.

5,617,611

SUCTION LINE ASSEMBLY

Peter Wörwag, Romanshorn, Switzerland, assignor to Firma Fedag, Romanshorn, Switzerland

Filed Jul. 15, 1996, Ser. No. 680,123

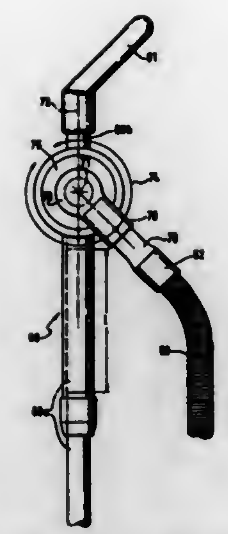
Claims priority, application Germany, Jul. 15, 1995, 19525796.0

Int. Cl.[6] **A47L** *5/32*

U.S. Cl. 15—331 **15 Claims**

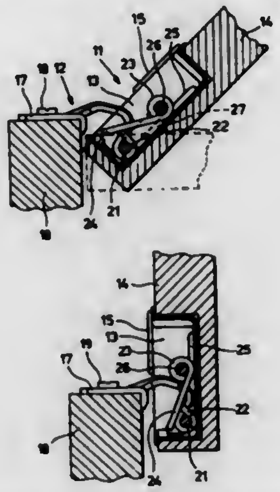
1. A suction line comprising:

a stiff suction tube;



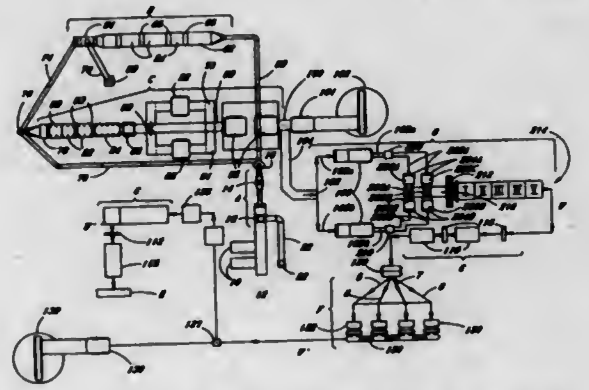
a flexible suction hose having a connecting end;
a connector for connecting said connecting end of said flexible suction hose to said stiff suction tube to form said suction line having free ends;
one of said free ends of said suction line connected to a vacuum source;
another of said free ends of said suction line having means for receiving a vacuuming tool;
said stiff suction tube having a longitudinal axis;
said connector being rotatable about an axis extending transverse to said longitudinal axis.

5,617,612
SINGLE -PIN FURNITURE HINGE
Franco Ferrari, Frazione Deviscio, 2, 22053 Lecco, and Carlo Migli, Lecco, both of Italy, assignors to Franco Ferrari, Italy
Filed Dec. 20, 1994, Ser. No. 359,574
Claims priority, application Italy, Dec. 24, 1993, MI931007 U
Int. Cl.^{6} E05F *1/08*
U.S. Cl. 16—278 **13 Claims**



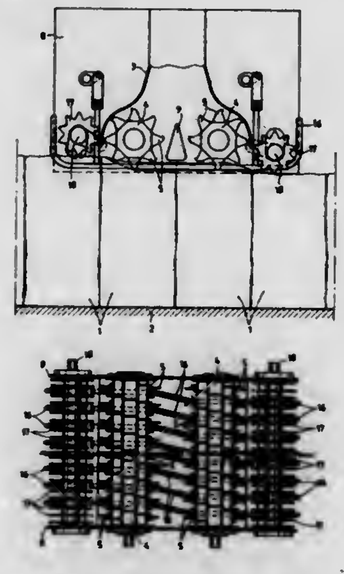
1. Furniture hinge comprising a first, cup-shaped element and a second, arm-shaped element pivoted together to enable said cup-shaped element to rotate reciprocally from an open position to a closed position, said cup-shaped element having therein a recessed cup and a hinge pin secured therein adjacent the bottom of said cup, and the arm-shaped element being made of one piece of sheet metal with at least a portion of one end thereof bent to wind around said hinge pin adjacent the bottom of said cup, a pressure spring means mounted in said cup adjacent said hinge pin, the arm-shaped element having thereon cam means which are engaged by said pressure spring means to bias the first and second elements towards the closed position starting from a position close to the latter, and characterized by the fact that, adjacent to said bent end thereof, the arm-shaped element is shaped to form thereon said cam means which comprises a plurality of spaced resting surfaces engaged by the spring means, said resting surfaces being formed on spaced fingers which extend laterally from opposite side edges of the bent arm-shaped element and overlie said hinge pin.

5,617,613
SYSTEM FOR PRODUCING A BLEACHED COTTON, NONWOVEN WEB
William G. Ripley, 4218 88th St., Lubbock, Tex. 79423
Continuation-in-part of Ser. No. 405,755, Mar. 20, 1995, which is a continuation of Ser. No. 116,740, Sep. 7, 1993, Pat. No. 5,425,158, which is a continuation-in-part of Ser. No. 950,272, Sep. 24, 1992, Pat. No. 5,253,392, and a continuation of Ser. No. 612,558, Nov. 13, 1990, Pat. No. 5,199,134. This application Apr. 24, 1996, Ser. No. 637,221
Int. Cl.^{6} D01G *21/00*
U.S. Cl. 19—66 CC **19 Claims**



1. A continuous fiber processing system for producing a bleached and blended cotton fibers comprising:
a preliminary cleaning station;
a primary cleaning station;
a bleaching station;
further processing and cleaning stations;
a plurality of fiber delivery lines for receiving fibers from and delivering fibers to said stations;
a first of said fiber delivery lines receiving a web of cleaned and blended fibers from said primary cleaning station and delivering said web to said bleaching station;
said bleaching station including a web forming section and a bleachery;
said web forming section including cross blenders which receive said web from said first delivery line and clean and blend said fibers;
said web forming section further including a plurality of chute feed devices which are each connected with a carding machine;
a conveying device arranged to receive carded fibers from said carding machines in lapped fashion;
a needle punch machine, said conveying device being operative to deliver said lapped carded fibers through said needle punch machine, said needle punch machine forming said fibers into a continuous stable fiber web;
said conveying device delivering said stable fiber web to said bleaching chambers, said bleaching chambers bleaching said stable fiber web in a continuous process;
conveying means removing said bleached fiber web from a final of said bleaching chambers and delivering said bleached fiber web to a dryer system which dries said bleached fiber web;
conveying means connecting said dryer system with further processing apparatus;
said conveying means delivering said bleached and dried fiber web to said further processing apparatus for further processing.

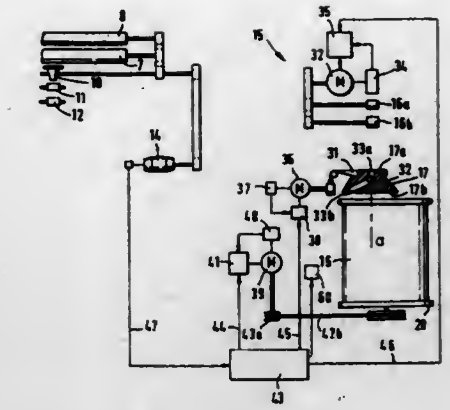
5,617,614
MACHINE FOR AUTOMATICALLY WITHDRAWING STAPLE FIBRES FROM FIBRE BALES
Claudio Locatelli, and Mario Mascheretti, both of Brescia, Italy, assignors to Fratelli Marzoli & C. S.p.A., Bergamo, Italy
Filed Jul. 6, 1995, Ser. No. 499,776
Claims priority, application Italy, Jul. 14, 1994, MI94A1475
Int. Cl.^{6} D01G *7/04;7/12*
U.S. Cl. 19—80 R **7 Claims**



1. An automatic bale opening machine for operating upon a working surface of a fibre bale during fibre bale movement in a predetermined direction comprising a suction hood (3) for upwardly conveying fibres withdrawn from an associated bale (1), at least one beater (4) rotating at high speed, said beater (4) including a plurality of spaced teeth (5) which contact the bale fibres to withdraw the fibres from the bale working surface, a series of parallel bars (16) which bear upon the working surface of the bale, said parallel bars (16) being positioned alternately between said spaced teeth (5), a pair of rotating conveying members (17) positioned externally of the beater (4) and rotating to convey bales to the beater (4), said parallel bars (16) being shoes (16) which extend substantially longitudinally into a region of the pair of rotating conveying members (17), the rotating conveying members (17) including a series of fibre conveying wheels (17) in the form of discs toothed in the direction of rotation and being carried by shafts (18), said shoes (16) having portions disposed in gaps between adjacent toothed discs (17), and the shoes (16) extending longitudinally beyond the fibre conveying wheels (17).

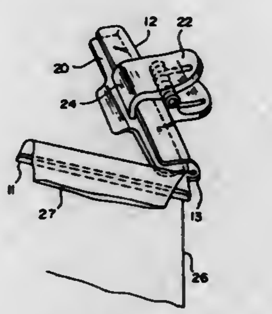
5,617,615
METHOD AND APPARATUS FOR DEPOSITING SLIVER IN A COILER CAN
Fritz Hösel, Mönchengladbach, Germany, assignor to Trüzschler GmbH & Co. KG, Mönchengladbach, Germany
Filed Jun. 2, 1995, Ser. No. 458,470
Claims priority, application Germany, Aug. 11, 1994, 44 28 475.6
Int. Cl.^{6} B65H *54/80*
U.S. Cl. 19—159 R **9 Claims**

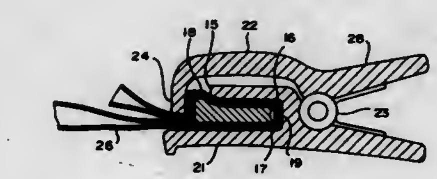
1. A method of depositing sliver into a coiler can, comprising the following steps:



(a) rotating a pair of cooperating pressure rolls;
(b) advancing the sliver by the pressure rolls to a coiler head having a sliver outlet;
(c) rotating said coiler head for causing said sliver outlet to travel in a circular path;
(d) positioning an upwardly open coiler can underneath the coiler head;
(e) moving said coiler can for continuously changing the position thereof relative to said coiler head;
(f) depositing sliver through said sliver outlet of said coiler head into said coiler can during performance of steps (b), (c) and (e), whereby the coiler can is charged with sliver in an annular pattern;
(g) discontinuing step (c) while continuing step (b) when a predetermined total sliver quantity less a terminal linear trailing sliver length portion is contained in the coiler can;
(h) after step (g), linearly moving said coiler can beyond the non-rotating coiler head for depositing a linear sliver length portion in the coiler can; and
(i) severing the sliver at a predetermined location to obtain a trailing sliver end portion hanging outward and downward across an upper wall edge of the coiler can.

5,617,616
OSTOMY POUCH CLOSURE CLAMP
Edmund A. Cutts, Sr., P.O. Box 9, Oxford, Md. 21654
Filed Jun. 7, 1995, Ser. No. 478,694
Int. Cl.^{6} B65D *77/10*
U.S. Cl. 24—30.5 R **19 Claims**





1. A clamp device for closing the lower open end of an ostomy pouch, said device including first and second clamping elements pivotally connected together by hinge means at a common end

thereof to engage and seal off the pouch lower end and also including latch means to secure the clamping elements in engagement on the pouch:

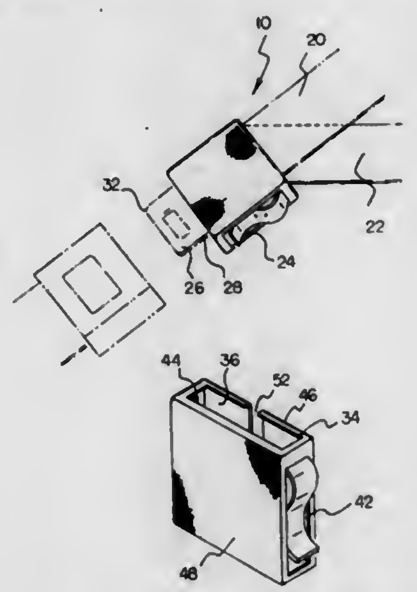
said first clamping element being an elongated blade member with top and bottom edges, said top edge extending along the length of said blade member,

said bottom edge surface having a V shape formed by a longitudinally extending lip portion,

said second clamping element being a U shaped trough member with an interior flat bottom forming an open top channel which can receive the blade member therein for clamping off the pouch;

said blade and trough members when clamped about the pouch walls producing a knife edge seal by virtue of the V-shaped lip portion on the blade member pressing the pouch walls against said flat interior bottom of the trough member; said latch means connected to one of either the trough or blade members to maintain said members in place around said pouch and wherein said latch means is connected to the clamping elements at a point between the ends of said elements.

5,617,617
FABRIC COVER FOR A SEATBELT BUCKLE
Tom E. Gustin, 6101 Imperata St. NE. #2021, Albuquerque, N.M. 87111
Filed Apr. 29, 1996, Ser. No. 638,821
Int. Cl.⁶ A44B *11/00*
U.S. Cl. 24—633 **5 Claims**



1. A new and improved supplemental seatbelt buckle cover system adapted to be removably positioned over a seatbelt buckle, comprising, in combination:

a lapbelt having a first end, a second end and an intermediate extent therebetween;

a shoulderbelt having a first end, a second and an intermediate extent therebetween;

a metallic male buckle housing having an upper extent, a lower extent, a rearward extent and a forward extent, the first end of the lapbelt and the first end of the shoulderbelt being secured to the rearward extent of the male buckle housing;

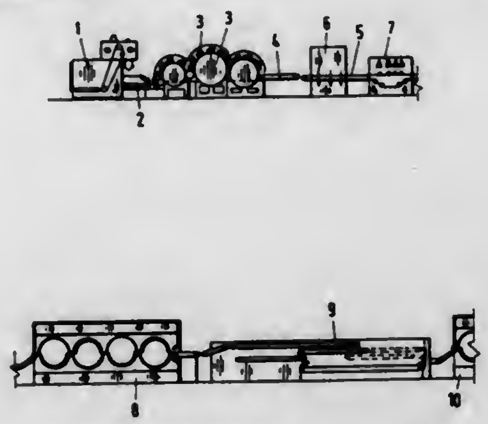
a male buckle having a first end, a second end and an intermediate extent therebetween, an aperture formed within the intermediate extent, the first end of the male buckle secured to the forward extent of the buckle housing;

a rectangular buckle housing cover constructed of a lightweight plastic with a fabric covering, the cover having an upper open end, a lower open end, a first open side, a second open side, a back side with a central extent and a front side, a slot formed along the central of the back side, the slot adapted to receive the shoulderbelt;

a first S-shaped resilient spring having an upper end secured to the first open side adjacent the upper open end of the cover such that the first S-shaped resilient spring is positioned within the first open side of the cover; and

a second S-shaped resilient spring having an upper end secured to the second open side of the cover adjacent the upper open end of the cover such that the second S-shaped resilient spring is positioned within the second open side of the cover.

5,617,618
METHOD AND DEVICE FOR FINISHING THICK CARDED FLEECES
Gerold Fleissner, Zug, Switzerland, assignor to Fleissner GmbH & Co., Maschinenfabrik, Egelsbach, Germany
Filed Dec. 13, 1995, Ser. No. 571,770
Claims priority, application Germany, Dec. 13, 1994, 44 44 206.8
Int. Cl.⁶ D04H *1/54*
U.S. Cl. 28—103 **2 Claims**



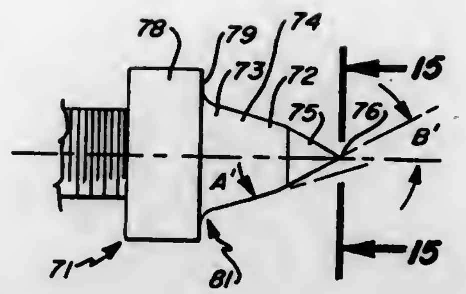
1. A method for manufacturing a carded thick fleece product, from natural fibers selected from the group consisting of wool, linen, and flax, and from synthetic fibers selected from the group consisting of bi-component and meltable fibers, which comprises initially producing a thin carded fleece from the natural and the synthetic fibers, prestrengthening the thin carded fleece by beating to effect at least melting or melting-on of the synthetic fibers, applying a fluid finishing agent to the prestrengthened fleece, heat treating the fleece with the fluid finishing agent to dry the finishing agent, then folding over the fleece containing the finishing agent on itself many times in a cross layering unit to form a thick fleece end product, and further heat treating the product to provide a finally solidified fleece product.

5,617,619
RIVET FASTENING APPARATUS AND METHOD
Gary A. Knudson, 30401 Heavenly Ct., Evergreen, Colo. 80439
Filed Aug. 11, 1994, Ser. No. 289,272
Int. Cl.⁶ B23P *19/00*
U.S. Cl. 29—21.1 **15 Claims**

1. Punch and crimp rivet fastening apparatus particularly suitable for metal pieces of about 16 to 24 gauge sheet metal comprising:

a hollow first die,

a second die opposite said first die, said second die having a generally radially extending circumferential rear crimp portion, a concavely rounded circumferential portion extending upwardly and inwardly from said rear crimp portion, a straight tapered circumferential rear section extending upwardly and inwardly from said rounded portion and a



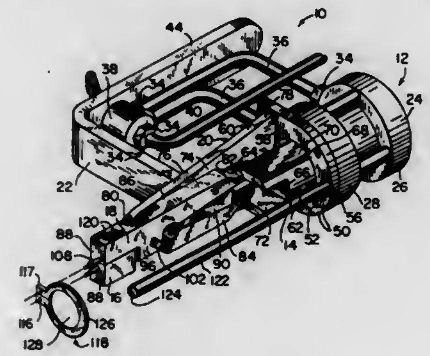
straight tapered circumferential front section extending upwardly and inwardly from said tapered rear section and terminating in an end, wherein the taper of said front section is substantially greater than the taper of said rear section, with said taper of said rear section being relatively small, and

actuating means for moving said second die into said first die,

said front and rear tapered sections forming a punched hole in superposed first and second pieces positioned between said dies and forming a first set of circumferentially spaced projecting tabs in said first piece that project away from a back face of said first piece and a second set of upstanding second projecting tabs in said second piece projecting out from a back face of said second piece when said second die is moved into said first die, and

said front and rear tapered sections directing said tabs radially outwardly at a slight taper angle, said rounded portion directing said tabs radially outwardly at an acute taper angle, and said rear crimp portion directing said tabs at a transverse angle to a substantially flattened position against one another and against a back face of said first piece to form a rivet head to secure said pieces together when the relative positions of said pieces and dies are reversed and said second die is moved into said first die.

5,617,620
SNAP RING APPLICATOR
Ralph E. Weuster, and Otis A. Hite, both of Stillwater, Okla., assignors to Brunswick Corporation, Lake Forest, Ill.
Filed Mar. 26, 1996, Ser. No. 621,992
Int. Cl.⁶ B23D *19/04*
U.S. Cl. 29—229 **22 Claims**



1. A snap ring applicator, comprising:

a mounting frame member;

a pair of scissor arms pivotally mounted to the mounting frame member, each scissor arm having a front and a rear end and a pivot connecting portion located between the front and rear ends, the rear end having an angled activating surface;

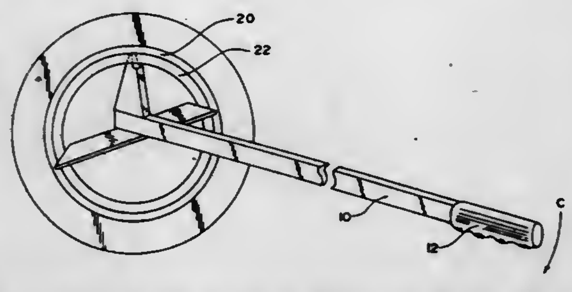
a snap ring pin mounted to the front end of each scissor arm;

a pivot element passing through the pivot connecting portion in each scissor arm, said pivot element pivotally securing the scissor arms to the mounting frame member so that the front end of each scissor arm can move from a closed position to an open position;

a driving element movable in a forward direction and a reverse direction along a linear path, the driving element contacting the angled activating surface on the rear end of the scissor arms; and

a power source that can be activated to move the driving element in the forward direction along the linear path against the angled activating surface of each scissor arm to push the rear ends of the scissor arms together and move the front ends of the scissor arms from the closed position to the open position.

5,617,621
WHEEL SEAL REMOVAL TOOL
Carman J. Fedele, Sr., 1 Main St., Tidioute, Pa. 16351
Filed Aug. 25, 1995, Ser. No. 519,813
Int. Cl.⁶ B23P *19/02*
U.S. Cl. 29—235 **2 Claims**



1. A wheel seal removal tool for insertion into the bore area of a wheel in order to remove the wheel seal, the tool comprising: a lever having a hand grip at one end and an upraised hook portion at the other end, a cross member in connection with said lever, said cross member having a rear edge and a front face that are perpendicular to said lever, said cross member having a leading edge extending from said front face to said rear edge so as to form tip portions where said leading edge approaches said rear edge, said tip portions narrowing to about ⅛" in width, said cross member of size adapted to fit within the bore area of the wheel so that said tip portions fit against the wheel, said hook portion having an upper edge extending from said front face in the direction of said handgrip, said hook portion having a notched portion so as to form a rear face and a bottom face said rear face and said bottom face meeting to form a right angle, said notched portion behind said upper edge so that said notched portion will be able to fit between said wheel seal and said wheel when said tip portions are placed in connection with said wheel.

5,617,622
ROTATABLE WORK PLATFORM WITH CLAMPS FOR WALL AND TRUSS FABRICATION
Tommy G. Anderson, 2084 Fancy Oak #1, Redding, Calif. 96003
Filed Jun. 6, 1995, Ser. No. 467,570
Int. Cl.⁶ B23P *19/00*
U.S. Cl. 29—281.3 **4 Claims**

1. A rotatable work platform for indexing and clamping building frame members during construction of a building frame section, comprising;

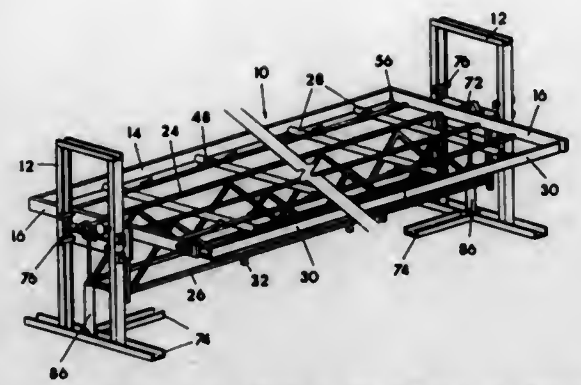
the platform structured of a plurality of spaced members defining a table-like surface at least 8 feet in width,

said platform including axles connected to

support means on each of two oppositely disposed ends of the platform,

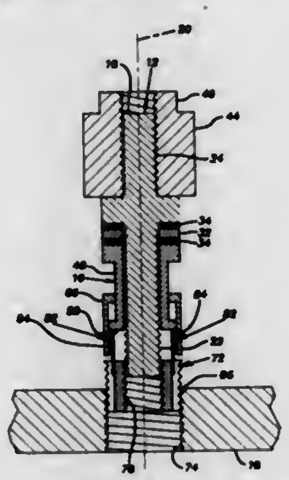
indexing means attached to said platform for indexing building frame members in predetermined locations on said platform,

first clamping means affixed to said platform for securing building frame members against said indexing means,



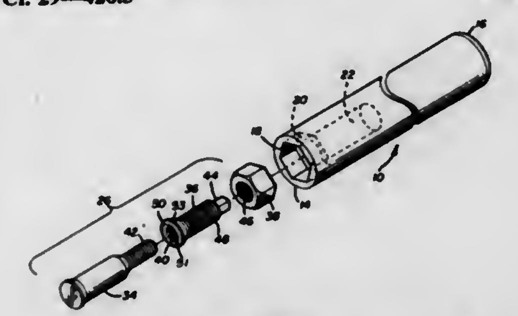
second clamping means affixed to said platform for pressing building frame members inward toward a lengthwise center axis of said platform, powering means connected to said second clamping means for powering said second clamping means inward and outward toward and away from the lengthwise center axis of said platform,
rotational powering means connected to at least one of the axles for rotating said platform from a first horizontal position to an inverted horizontal position,
said support means including vertically movable carriage means supporting said axles, and powering means for raising and lowering said carriage means for elevationally raising and lowering said platform, whereby said platform can be raised to provide grade clearance for rotating said platform, and then lowered to position said platform at a horizontal suitable work-height.

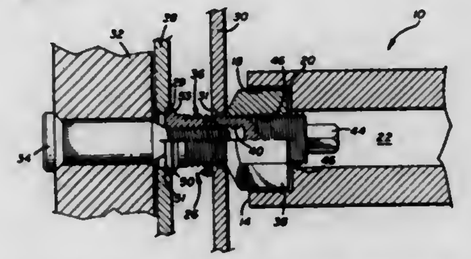
5,617,623
INSTALLATION TOOL FOR KEYLOCKING INSERTS
Jack H. Schron, Sr., Chagrin Falls, and Nicholas A. Ihnat, Twinsburg, both of Ohio, assignors to Jergens, Inc., Cleveland, Ohio
Filed May 24, 1995, Ser. No. 448,791
Int. Cl.⁶ B23Q *1/00*
U.S. Cl. 29—283.5 **19 Claims**



1. An apparatus for mounting and locking an insert in a threaded opening in a parent material, said insert having an exterior thread complementary to and for engagement with said threaded opening and lock means operable from a first position allowing rotation of the insert into the threaded opening and a second position locking the insert against rotation in the threaded opening, said apparatus comprising:
a driver having a central axis, at least a portion adapted for sequential mutual and relative rotation with the insert, and engagement means for engaging the insert to mount the insert in the parent material by threadably engaging the insert exterior thread with the threaded opening and advancing the external thread into the threaded opening in response to said mutual rotation of said driver;
drive means for rotationally driving at least a portion of said driver in response to a force applied thereto; and
a press adapted to operate the lock means from the first position to the second position in response to said relative rotation of said driver, said press including a generally tubularly-shaped press member surrounding at least a portion of said driver and rotatable relative to said driver about said central axis of said driver, said press member having a first end surface for engaging the lock means of the insert.

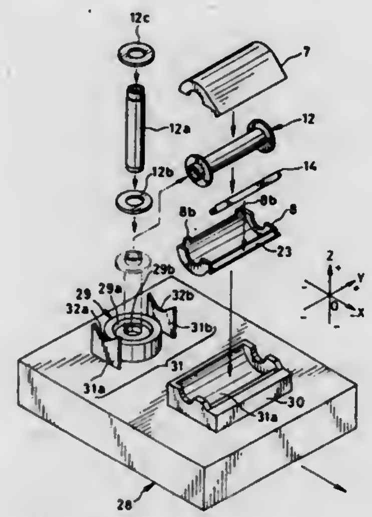
5,617,624
METHOD FOR REMOVING LARGE WHEELS FROM AN AXLE
Willard H. Walker, 36739 Magnolia St., Newark, Calif. 94560
Filed Jun. 7, 1995, Ser. No. 484,362
Int. Cl.⁶ B23P *19/04*
U.S. Cl. 29—426.5 **3 Claims**





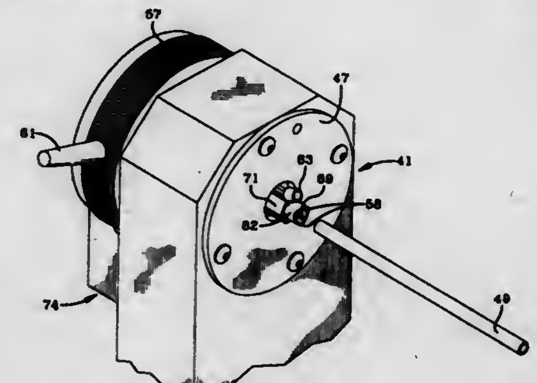
1. A method for removing a pair of wheels from a hub of an axle, said wheels mounted to said hub by a plurality of lugs, each of said lugs comprising a stud affixed to said hub, a cap nut coupled to said stud for securing an inner wheel to said hub, and a nut coupled to said cap nut for securing an outer wheel to said hub, said method comprising the steps of:
(a) providing a punch comprising an elongated cylinder having a first end and a second end, the first end of said punch having an aperture configured to receive a desired nut therein, said aperture having a depth less than the depth of said nut and an inner shoulder with a bore formed therethrough, said bore extending axially from said aperture towards the second end of said punch, the diameter of said bore being greater than the diameter of said cap nut;
(b) disposing the first end of said punch about a desired nut coupled to an associated cap nut to couple said punch to said nut;
(c) striking the second end of said punch with a substantially heavy implement in substantial axial alignment with the longitudinal axis thereof for transmitting force from said punch to said nut, said force driving said nut against the outer wheel, the outer wheel against a flange of said cap nut, said flange against the inner wheel, and said inner wheel against said hub to dislodge corrosion formed between adjacent surfaces thereof;
(d) removing said nut from the associated cap nut using a wrench;
(e) repeating steps b though d until each nut is removed from each cap nut;
(f) removing the outer wheel;
(g) threading a nut onto a desired cap nut until said nut is tight against a flange on said cap nut;
(h) disposing the first end of said punch about said nut to couple said punch to said nut, such that said cap nut extends through said aperture and into said bore;
(i) striking the second end of said punch with the substantially heavy implement in substantial axial alignment with the longitudinal axis thereof for transmitting force from said punch to said nut, said force driving said nut against said cap nut, said flange against the inner wheel, and said inner wheel against said hub to dislodge corrosion formed between adjacent surfaces thereof;
(j) removing said nut from said cap nut and removing said cap nut from said stud using said wrench;
(k) repeating steps h through j until each cap nut is removed from each stud; and
(l) removing the inner wheel from said hub.

5,617,625
METHOD FOR ASSEMBLING PHOTOGRAPHIC FILM CASSETTE
Toshiro Esaki, and Masayuki Kubota, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Apr. 12, 1995, Ser. No. 420,692
Claims priority, application Japan, Apr. 15, 1994, 6-077570
Int. Cl.⁶ B21D *39/03*
U.S. Cl. 29—430 **3 Claims**



1. In a method for assembling photographic film cassettes, each of said cassettes having at least a pair of shell halves and a spool assembly coaxially and rotatably mounted between said shell halves, comprising the steps of:
conveying a plurality of pallets having the same construction stepwise to stop at a series of stations;
feeding parts of one of said photographic film cassettes, including corresponding shell halves and parts of a corresponding spool assembly, to each of said pallets, one part per station, in a predetermined sequence;
assembling each of said spool assemblies at a corresponding spool holder provided on a corresponding pallet, with said spool holder holding its corresponding spool assembly with its axis oriented vertically; and
assembling said pair of shell halves, said spool assembly and any other parts of each photographic film cassette into a photographic film cassette at a corresponding shell holder provided on a corresponding pallet, with said shell holder holding its corresponding pair of shell halves with its axis oriented horizontally;
the improvement comprising the steps of:
providing an intermediate holder on each of said pallets for holding a corresponding spool assembly with its axis oriented horizontally;
moving each of said spool assemblies, after said spool assembling step, from said spool holder on a corresponding pallet to said intermediate holder on the same pallet; and
mounting each of said spool assemblies, after said moving step, in the pair of shell halves held in said shell holder of said same pallet.

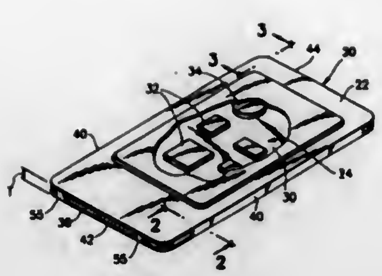
5,617,626
METHOD OF TELESCOPICALLY ASSEMBLING A FLEXIBLE PINCH VALVE ELEMENT WITH A LENGTH OF FLEXIBLE TUBING
Carl J. Piontek, 118 Beech Ridge Dr., Powell, Ohio 43065, and Bradford L. Buck, 3710 Peak Ridge Dr., Gahanna, Ohio 43230
Filed Sep. 21, 1995, Ser. No. 531,674
Int. Cl.⁶ B23P *11/02*
U.S. Cl. 29—450 **3 Claims**

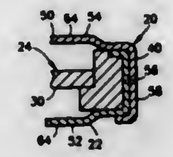


3. A method for assembling a flexible pinch valve element and a length of flexible tubing comprising the steps of:
providing a pinch valve element having a first tubular segment end portion and a second tubular segment end portion joined by a shank portion, said first and second tubular segment end portions having a diameter;
providing a length of flexible tubing having an outer diameter substantially the same as or greater than the diameter of the tubular segment end portions;
radially stretching the first tubular segment end portion;
inserting the flexible tubing into the stretched first tubular segment end portion to a first preselected depth;
allowing the stretched first tubular segment end portion to relax around the flexible tubing;
radially stretching the second tubular segment end portion;
inserting the flexible tubing into the stretched second tubular segment end portion; and
allowing the stretched second tubular segment end portion to relax around the flexible tubing.

5,617,627
METHOD FOR MAKING PERSONAL COMPUTER CARDS
Harry K. Semple, Fanwood, and Carmine Bartiromo, West Orange, both of N.J., assignors to A.K. Stamping Co. Inc., Mountainside, N.J.
Division of Ser. No. 278,640, Jul. 21, 1994, Pat. No. 5,495,664. This application Jun. 7, 1995, Ser. No. 485,800
Int. Cl.⁶ B21K *25/00*
U.S. Cl. 29—509 **4 Claims**

1. The method for completing an accurately dimensioned personal computer card having a generally rectangular plan configu-





ration including longitudinal sides and lateral ends, and prescribed dimensions including a prescribed thickness along the longitudinal sides and lateral ends of the personal computer card, the personal computer card including an enclosure constructed from a blank having first and second enclosure members, each enclosure member having a generally rectangular plan configuration and including a panel, longitudinal side edges corresponding to longitudinal sides of the personal computer card, and lateral end edges corresponding to lateral ends of the personal computer card, channels integral with the panel of at least the second enclosure member and extending longitudinally along the longitudinal side edges of the second enclosure member, the channels having an external channel width extending altitudinally and corresponding to the prescribed thickness of the personal computer card along the longitudinal sides and lateral ends of the personal computer card, and an internal channel width, and side walls integral with the panel of at least the first enclosure member and extending longitudinally along the longitudinal side edges of the first enclosure member, the side walls having a side wall width extending altitudinally, the relative dimensions and locations of the internal channel width and the side wall width being such that upon juxtaposition of the first and second enclosure members in opposed arrangement, the panels confront one another and the side walls of the first enclosure member are nested within the channels of the second enclosure member to secure the first and second enclosure members together with the panels opposed to one another and spaced apart to establish the enclosure and provide the enclosure with dimensions for accommodating an electronic device between the opposed panels, the method comprising:

nesting the side walls of the first enclosure member with the channels of the second enclosure member; and

subsequently deforming the nested side walls and channels to conform the dimensions of the enclosure to the prescribed dimensions of the completed personal computer card and thereby complete an accurately dimensioned personal computer card.

5,617,628

INTEGRATED CIRCUIT EXTRACTION TOOL

Stanley D. Harder, Richardson, and Thomas D. Selgas, Jr., Garland, both of Tex., assignors to Cyrix Corporation, Richardson, Tex.

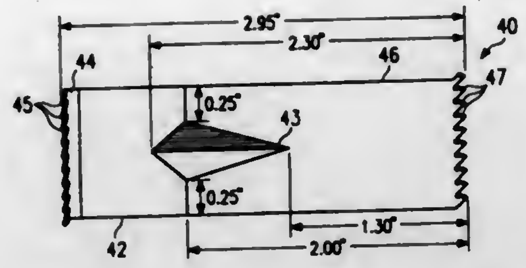
Continuation-in-part of Ser. No. 63,134, May 17, 1993, Pat. No. 5,440,803. This application Dec. 16, 1994, Ser. No. 357,482

Int. Cl.^{6} H05K *13/00*

U.S. Cl. 29—764 **5 Claims**

1. A tool for extracting an integrated circuit having a staggered pin grid array (SPGA) package from a corresponding socket, the SPGA package having at least two rows of pins arranged in a staggered pin grid array, comprising:

(a) a tool including a base portion angularly disposed to an engaging portion, the tool being adapted to engage the inte-



grated circuit by inserting an end of the engaging portion between a lower surface of the integrated circuit and an upper surface of the socket for translating applied indirect forces on the base portion to direct lifting forces from the engaging portion substantially normal to the lower surface of the integrated circuit;

(b) the tool including engaging teeth formed in the end of the engaging portion at a predetermined teeth angle, the teeth angle being selected such that, when the tool is engaged, the engaging teeth are inserted past the at least two rows of pins arranged in a staggered configuration.

5,617,629

PROCESS FOR PRODUCTION OF PRINTED CIRCUIT BOARDS AND USE THEREBY

Bernt Ekström, Tyringe, Sweden, assignor to Metfoils AB, Perstorp, Sweden

PCT No. PCT/SE93/00786, § 371 Date May 10, 1995, § 102(e) Date May 10, 1995, PCT Pub. No. WO94/12008, PCT Pub. Date May 26, 1994

PCT Filed Sep. 30, 1993, Ser. No. 424,378

Claims priority, application Sweden, Nov. 6, 1992, 9203327

Int. Cl.^{6} H05K *3/02*

U.S. Cl. 29—846 **14 Claims**

1. In a process for the production of an electrically insulated base clad for use in manufacturing printed circuit boards comprising laminating, under heat and pressure, a foil selected from the group consisting of copper, copper alloy, aluminum and aluminum alloy, which includes an unpatterned electroplated layer having a thickness of 1–35 μm on both sides of said foil, said electroplated layer being copper or a copper alloy, to an electrically insulating base containing a resin, said foil disposed such that said electroplated surface faces said base, wherein said lamination occurs in the absence of any molding plates and wherein said electroplated layer, after lamination, adheres to the insulating base but not to the foil permitting separation of the foil from said electroplated layer.

5,617,630

METHOD OF MAKING ELECTRICAL CONNECTIONS EMPLOYING A RETAINER

Takashi Kobayashi, and Masayoshi Imoto, both of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Japan

Filed Sep. 8, 1995, Ser. No. 525,220

Claims priority, application Japan, Sep. 14, 1994, 6-220547

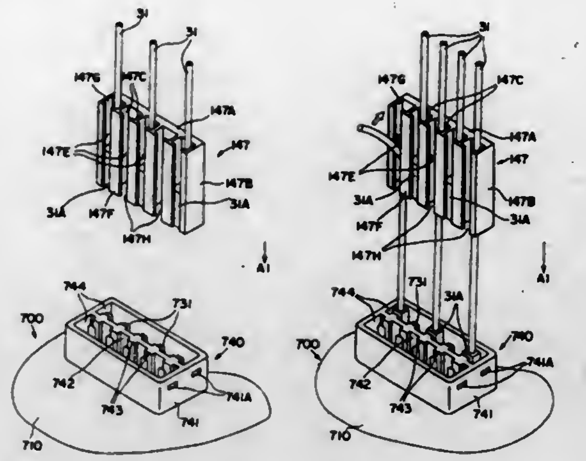
Int. Cl.^{6} H01R *43/00*

U.S. Cl. 29—857 **2 Claims**

1. A method of making an electrical connection between a plurality of terminals, each of which is in electrical contact with a different one of a plurality of cables, said plurality of cables comprising a wire harness,

a holding jig having a plurality of receiving chambers therein, each of said receiving chambers corresponding to one of a plurality of tab contacts,

a unit structure comprising an open component, said component having a contact chamber containing a plurality of said tab contacts disposed therein,



said method comprising a first insertion of each of said plurality of said terminals into one of said receiving chambers in a downstream direction, said receiving chambers being in a configuration corresponding to said tab contacts,

a second insertion of said holding jig into said contact chamber, thereby mating each of said terminals with a respective one of said tab contacts,

withdrawal of said holding jig from said contact chamber in an upstream direction opposite to said downstream direction,

a third insertion of a retainer into said contact chamber, said retainer having a plurality of holders which correspond to said tab contacts, said holders retaining said terminals in said contact chamber and mated with said tab contacts.

5,617,631

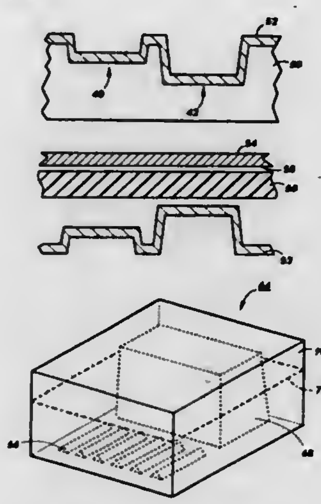
METHOD OF MAKING A LIQUID INK PRINTHEAD ORIFICE PLATE

Hung C. Nguyen, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jul. 21, 1995, Ser. No. 505,430

Int. Cl.^{6} B41J *2/16;* G01D *15/18*

U.S. Cl. 29—890.1 **17 Claims**



1. A method of fabricating a channel plate for use in an ink jet printhead, comprising:

providing a silicon wafer and a stampable material;

forming a channel plate mandrel on said silicone wafer, said plate mandrel including features corresponding to ink carrying features to be formed on the stampable material;

stamping the stampable material with said plate mandrel, thereby forming a stamped channel plate including the ink carrying features, and

removing a portion of the stamped channel plate to reveal the ink carrying features thereof.

5,617,632

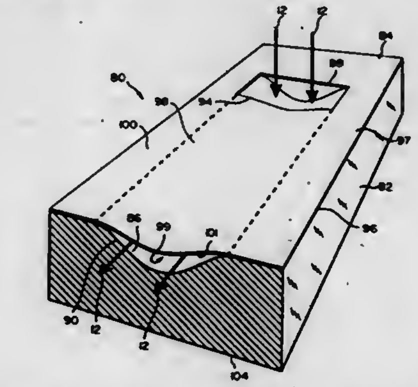
METHODS FOR FORMING A CONTOURED REGULATOR SEAT

Elric W. Saaski, Bothell, and Dale M. Lawrence, Lynnwood, both of Wash., assignors to Research International, Inc., Woodinville, Wash.

Division of Ser. No. 131,762, Oct. 4, 1993. This application May 19, 1995, Ser. No. 445,335

Int. Cl.^{6} F16K *27/00*

U.S. Cl. 29—890.122 **5 Claims**



1. A method for forming a contoured regulator seat in a fluid flow regulator, wherein said regulator comprises: a substrate; and a membrane comprising a mounting portion and a flexure; wherein said method comprises the steps of:

selecting said membrane's flexure to comprise a flexible, elastic material;

selecting a corresponding regulator seat portion of said substrate to comprise a material which is soft under a first set of conditions, and which is hard under a second set of conditions;

securing said membrane's mounting portion to a corresponding mounting portion of said substrate;

deflecting said flexure into said corresponding regulator seat portion of said substrate by subjecting said flexure to a predetermined pressure while said corresponding regulator seat portion of said substrate is under said first set of conditions;

maintaining said predetermined pressure on said flexure until said corresponding regulator seat portion of said substrate is under said second set of conditions;

and ceasing to deflect said flexure into said corresponding regulator seat portion of said substrate while said corresponding regulator seat portion of said substrate is under said second set of conditions.

5,617,633

FINGER/TOE NAIL CLIPPER ASSEMBLY

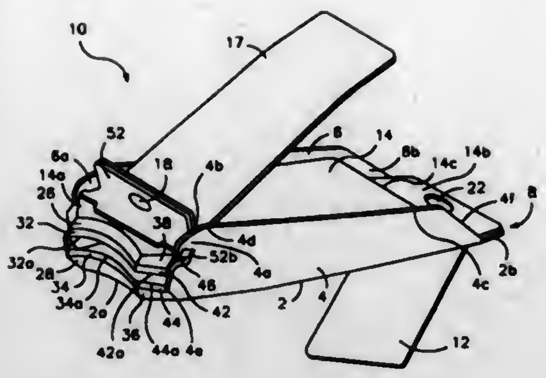
Hee U. Lee, 9237 Austin, Morton Grove, Ill. 60053

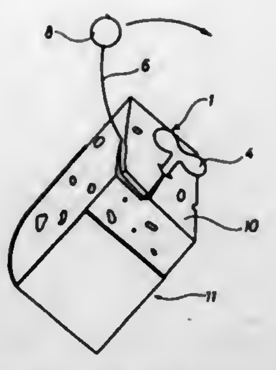
Filed Jun. 9, 1995, Ser. No. 488,925

Int. Cl.^{6} A45D *29/02*

U.S. Cl. 30—28 **38 Claims**

1. In a finger/toe nail clipper assembly including elongate upper and lower arms having first ends and opposite second ends secured together, said arms arranged in overlying horizontally spaced planes from a location proximate the secured ends thereof; the first ends terminating in facing jaw formations having concave blade sections terminating in sharpened cutting edges; generally vertical side walls formed along the longitudinal edges of the lower arm; the upper arm having limited resilience with the blade sections of the jaw formations defining an entrance for receiving the finger/toe nail introduced therebetween; aligned sockets formed in said side





walls at a location above said jaw formations and having an entrance opening, an actuating lever associated with said assembly for pivotal movement in selective bearing relationship with the upper arm at a location proximate the jaw formation thereof so as to force the cutting edges of the blade sections into engagement for severing the finger/toe nail introduced therebetween; the actuating lever having oppositely directed sidewise projections of size and configuration enabling seating thereof within said sockets via the entrance opening of the sockets; the improvement comprising:

said vertical side walls being unitary with the longitudinal edges of the lower arm along substantially the length thereof; said blade sections facing inwardly and including angular side blade sections terminating in sharpened straight-line cutting edges and engaging said side walls defining an unobstructed entrance to a fully enclosed interior chamber for receiving, storing and preventing outward scattering of nail clippings during use of said assembly while enabling said unobstructed entrance to accommodate finger/toe nails of varied length and width; said actuating lever having an angled mounting plate seatable upon the upper arm and an elongate rotatable portion, said mounting plate including a front portion having a unitary angular arm defining a canted surface; said elongate rotatable portion having a unitary bend at one end having a canted surface extending at an angle complementary to said canted surface of said unitary angular arm and an opposite end terminating in a grasping portion; bearing/fastening means coupling said unitary angular arm and said unitary bend with said canted surfaces of said unitary arm and unitary bend substantially engaged in parallel planes enabling said elongate rotatable portion to rotate about said unitary angular arm between an active condition with said elongate rotatable portion extending diagonally away from said upper arm and an inactive condition whereat said elongate rotatable portion is inverted from its active condition with said grasping portion thereof being closely proximate said upper arm.

5,617,634

SLICER FOR SLICING CHEESE AND THE LIKE ARTICLES OF FOOD

Søren Moesmann, 5, Sølstedgårdvej, DK-6240, Løgumkloster, Denmark

Filed May 16, 1995, Ser. No. 441,841

Claims priority, application Denmark, May 18, 1994, 0561/1994

Int. Cl.⁶ B26B *27/00*

U.S. Cl. 30—116 **2 Claims**

1. A slicer for slicing cheese and the like articles of food, and comprising a slicing string, being connected to a finger grip at a first end, wherein said slicer further comprises a shank provided with an insertion portion adapted to be inserted into the cheese, and a gripping portion adapted to be gripped by the user, and wherein a second end of the string is connected pivotally to the insertion portion of the shank, and wherein the pivotal connection between the shank and the string is formed of a slotted sleeve formed at a second end of the string, said sleeve being in snap engagement with a portion of the shank of a reduced diameter.

5,617,635

AUTORETRACTING BOX-CUTTING KNIFE

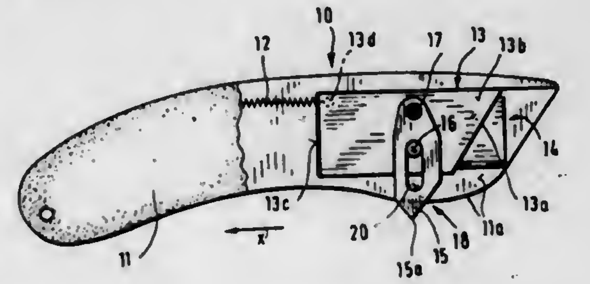
Harald Berns, Wuppertal, Germany, assignor to Martor-Argentax E.H. Beermann KG, Solingen, Germany

Filed Dec. 28, 1995, Ser. No. 579,720

Claims priority, application Germany, Mar. 3, 1995, 195 07 272.3

Int. Cl.⁶ B26B *1/08*

U.S. Cl. 30—162 **12 Claims**



1. An autoretracting box-cutting knife comprising:

a housing dimensioned to be held in a hand of a user and having a longitudinally forwardly projecting front end;

a holder slidable longitudinally in the housing between a front position and a rear position;

a blade secured in the holder, projecting forward from the housing in the front position of the holder, and retracted back into the housing in the rear position of the holder;

a blade-actuating crank having an inner end and an outer end;

a pivot on the housing connected to the crank inner end and defining for the crank a transverse pivot axis;

means on the crank and the holder including a pin and a slot in which the pin engages offset from the pivot for moving the crank with the holder between a rear position with the crank outer end projecting laterally from the housing in the rear position of the holder and a front position in the front position of the holder; and

a spring engaged between the holder and the housing urging the holder and the crank into the respective rear positions, whereby when the outer end of the crank is pushed forward to push the crank into the front position the holder is pushed forward into the front position and the blade projects from the housing.

5,617,636

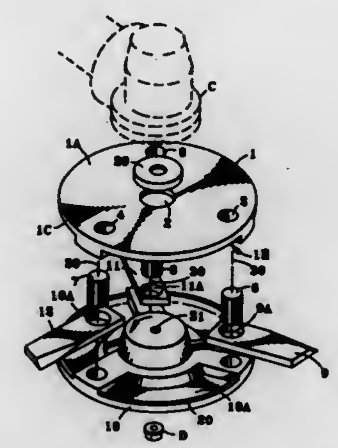
TRAIL BLAZING STUMPCUTTER

Peter T. Taggett, P.O. Box 15, Mt Holly, Vt. 05758, and Edward J. Grossi, 35 Warner Ave., Proctor, Vt. 05765

Filed Jun. 30, 1995, Ser. No. 497,021

Int. Cl.⁶ A01D *34/68*

U.S. Cl. 30—276 **4 Claims**



1. A grass and tree stump cutter tool, comprising:

a. a circular shaped top plate with depth and made of an aluminum and magnesium alloy material;

b. a circular shaped bottom plate with depth and made of an aluminum and magnesium alloy material;

c. a top side of said top plate being flat;

d. a centrally located through hole in said top plate;

e. a circumference of a bottom side of said top plate being wholly circumscribed by a circular rim with height, a surface of said circular rim being everywhere adjacent a surface of said bottom side of said top plate;

f. a solid conically shaped recession in said bottom side of said top plate, with a long vertical axis of symmetry of said conically shaped recession being collinear with a long vertical axis of symmetry of said centrally located through hole and a long vertical axis of symmetry of said top plate, said solid conically shaped recession further having a recession surface which is everywhere adjoined at an outermost perimeter of said recession surface with said surface of said bottom side of said top plate;

g. a solid cylindrically shaped well in said bottom side of said top plate located below said recession with a lateral exterior surface of said well being everywhere adjoined at an uppermost brim of said lateral exterior surface of said well with a lowest brim of said surface of said recession and with flooring of said well being characterized by said centrally located through hole in said flooring with a long vertical axis of symmetry of said well being collinear with said long vertical axis of symmetry of said centrally located through hole;

h. three identical solid rectangularly shaped abutments that are all surfacewise co-extensive with and adjoined with said surface of said bottom side of said top plate, said surface of said circular rim, said surface of said recession and said lateral exterior surface of said well;

i. three long vertical abutment axes of symmetry, one for each one of said abutments, with each one of said long vertical axes of symmetry being located 120° apart from each other;

j. a first concave depression in a top side of said well located adjacent a corner of one of said abutments;

k. a second concave depression in said top side of said well located adjacent a corner of another one of said abutments such that a long horizontal axis of symmetry of said first depression is collinear with a long horizontal axis of symmetry of said second depression;

l. three diameterwise identical abutment through holes in said top plate, one each in each one of said abutments all of which said abutment through holes are equidistant from a lateral surface of said circular shaped top plate;

m. three identical cylindrically shaped solid metallic pins, each diameter of each of said pins being equal and less than each diameter of each of said abutment through holes;

n. three identical, rectangularly shaped blades, one lateral edge of each of which is beveled beginning at an inclined first end of each of said blades;

o. three diameterwise identical blade through holes, one each in each one of said blades located each equidistant from each non-inclined second end of each said blade with each diameter of each of said blade through holes being larger than said each diameter of each of said pins;

p. a top side of said bottom plate being wholly circumscribed by a bottom plate circular rim with height, and adjoined to and everywhere co-extensive with an exterior brim of a flooring surface of said top side of said bottom plate;

q. a solid conically shaped elevation in said top side of said bottom plate, the long vertical axis of symmetry of which said conically shaped elevation in said top side of said bottom plate being collinear with a long vertical axis of symmetry of said bottom plate;

r. a hollow cylindrically shaped elevation extending upward from a top flat surface of said solid conically shaped elevation in said top side of said bottom plate, the diameter of which said cylindrically shaped elevation is less than the width of said conically shaped elevation in said top side of said bottom plate;

s. a centrally located bottom plate through hole in a top side of said cylindrically shaped elevation, a long vertical axis of symmetry of which said bottom plate through hole is collinear with said long vertical axis of symmetry of said bottom plate;

t. three identical solid rectangularly shaped bottom plate abutments that are all surfacewise co-extensive with and adjoined with said flooring surface of said top side of said bottom plate, said bottom plate circular rim and with an outer surface of said solid conically shaped elevation in said top side of said bottom plate;

u. a long vertical axis of symmetry for each one of said bottom plate abutments being 120° removed from the long vertical axes of symmetry of the two adjacent ones of said abutments;

v. a first convex ridge in a top side of said solid conically shaped elevation in said top side of said bottom plate that is surfacewise also co-extensive with and adjoined with an outer surface of said, cylindrically shaped elevation and that is located immediately adjacent a corner of a first one of said bottom plate abutments;

w. a second convex ridge in said top side of said solid conically shaped elevation in said top side of said bottom plate that is surfacewise also co-extensive with and adjoined with said outer surface of said cylindrically shaped elevation and that is located immediately adjacent a corner of a second one of said bottom plate abutments such that the long horizontal axis of symmetry of said first convex ridge and a long horizontal axis of symmetry of said second convex ridge are one and the same;

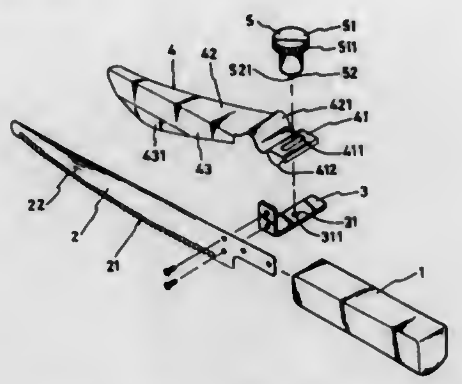
x. three diameterwise identical closed holes, one each in each one of said bottom plate abutments, all of which said closed holes are equidistant from said bottom plate circular rim;

y. the diameters of each of said closed holes being larger than said each diameter of said each of said pins;

z. a bottom side of said bottom plate being flat but circumferentially indented then flat again about a base perimeter of said conically shaped elevation, and;

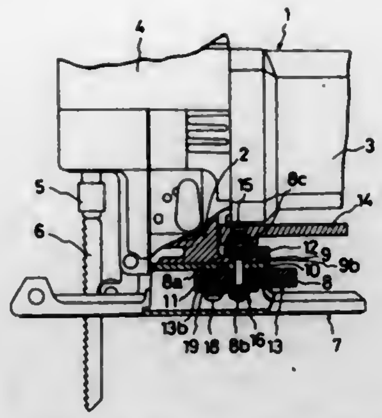
aa. said long vertical axis of symmetry of said centrally located bottom plate through hole being co-extensive with said long vertical axis of symmetry of said centrally located top plate through hole when said pins once press fitted one each to each one of said abutment through holes in said top plate are inserted one each into each one of said closed holes in said bottom plate after placement of each said pin through each said blade through hole, one said blade hole per said pin with the rotatable head of a motorized brush cutting unit extending through said centrally located top plate through hole and extending out through said centrally located bottom plate through hole.

5,617,637
CUTTING TOOL FOR CUTTING SLICES OF A PREDETERMINED THICKNESS
Chung-Jeng Pai, No. 10, Lane 423, Ching Shin Street, Chung Ho, Taipei Hsien, Taiwan
Filed Apr. 10, 1996, Ser. No. 630,573
Int. Cl.^{6} B26B *29/02*
U.S. Cl. 30—283 8 Claims



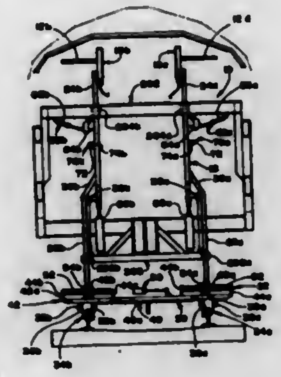
1. A cutting tool capable of cutting slices of a predetermined thickness, comprising:
an elongate handle;
a sheet-like blade connected to said handle, said blade having a lower edge sharpened to form a cutting edge;
a substantially L-shaped support piece connected onto said blade adjacent to said handle, said support piece having a part thereof perpendicular to said blade, the part being provided with a hole having multiple inner threads;
a press piece consisting of a press seat, a horizontal upper portion and a vertical portion perpendicular to said upper portion, said press seat being dimensioned to match the part of said support piece with said hole and having an elongate slot, said vertical portion having a width greater than the width of said blade; and
a rotary knob having a cap and a shaft projecting from a bottom of the cap, said shaft being dimensioned to match said hole of said support piece and having multiple threads matching said inner threads of said hole of said support piece, the shaft being passable through the slot of the press seat and threadedly engageable in said hole of said support piece.

5,617,638
BASE ATTACHMENT STRUCTURE APPLICABLE TO CUTTING TOOLS
Kunio Amano, and Masahiko Ono, both of Anjo, Japan, assignors to Makita Corporation, Aichi-Pref., Japan
Filed Dec. 4, 1995, Ser. No. 567,078
Claims priority, application Japan, Dec. 12, 1994, 6-307798
Int. Cl.^{6} B23D *51/02*
U.S. Cl. 30—376 6 Claims



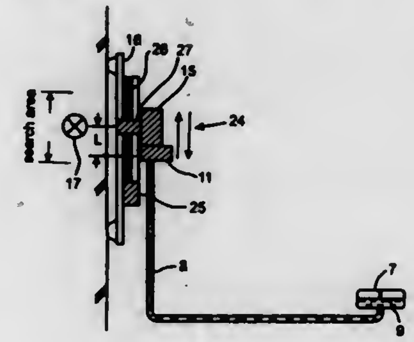
1. A combination of a base attachment structure and a cutting tool, said attachment structure clamps and fixes a base disposed below a main body of said cutting tool by means of a bolt member,
said base attachment structure further comprising
a first threaded portion arranged on an upper portion of said bolt member and having threads running in a first direction, said first threaded portion being screwed and fixed to a side close to the main body of said cutting tool, and
a second threaded portion arranged on a lower portion of said bolt member and having threads running in a second direction, which is opposite to said first direction, said second threaded portion being screwed and fixed to a side close to said base,
wherein said bolt member is rotated in a locking direction to clamp and fix said base to the main body of said cutting tool and in an unlocking direction to release said base from the main body of said cutting tool.

5,617,639
RAILROAD MAINTENANCE VEHICLE REFERENCE SYSTEM TRANSDUCER
William E. Perry, Ludington, Mich., assignor to Pandrol Jackson, Inc., Ludington, Mich.
Filed Sep. 23, 1994, Ser. No. 311,361
Int. Cl.^{6} G01B *5/20*
U.S. Cl. 33—1 Q 19 Claims



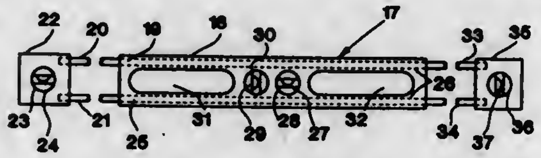
1. A transducer assembly for use in measuring the position of the rails of a railroad track with respect to a reference chord located above the track, said assembly comprising:
a housing;
a linear displacement transducer mounted within said housing and including a movable actuating member, said transducer producing a signal indicative of the position of said actuating member;
a slideway mounted adjacent said linear displacement transducer within said housing;
a carriage movably mounted to said slideway and carrying said transducer actuating member; and
an arm affixed to said carriage and extending from said housing whereby movement of said arm results in movement of said carriage along said slideway and of said actuating member.

5,617,640
LEVEL POSITION MEASURING METHOD, LEVEL MARKING METHOD AND LEVEL MARKING APPARATUS COMPRISING A TUBE, CAPABLE OF DIRECTLY MEASURING A HEIGHT
Takeshi Izumitani, 1-3-3-1410, Seishin-cho, Edogawa-ku, Tokyo, and Katsushi Kobayashi, Saitama, both of Japan, assignors to Takeshi Izumitani, and Shinwa Co., Ltd., both of Tokyo, Japan
Filed Dec. 22, 1994, Ser. No. 361,491
Claims priority, application Japan, Dec. 27, 1993, 5-332279
Int. Cl.^{6} G01C *5/04*
U.S. Cl. 33—367 5 Claims



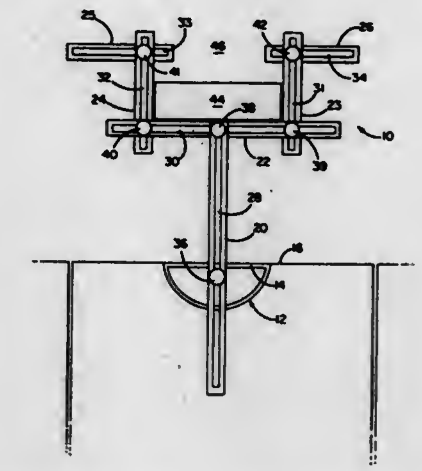
1. A method for measuring a level position and directly measuring a height, comprising:
air-tightly securing a pressure sensor to one end of an elastic resin tube and connecting a reference instrument to the other end of said tube, said reference instrument having a larger diameter and being shorter in length than said tube;
totally filling said tube with low viscosity macromolecule liquid;
connecting said pressure sensor to a micro computer programmed to find an average value of fluctuation waveform within a certain cycle of output voltage of said pressure sensor, said micro computer including means to calculate and memorize a reference level based on a pressure difference between said reference instrument and said pressure sensor when placed at different heights;
finding a level position to said reference level by said pressure sensor, said pressure sensor capable of indicating zero at a position level to said reference level, positive pressure when said pressure sensor at a position lower than said reference level, and negative pressure at a position higher than said reference level.

5,617,641
ADJUSTABLE LENGTH LEVEL
James A. Aarhus, 3624 W. Elgin St., Chandler, Ariz. 85226
Filed Sep. 19, 1995, Ser. No. 530,733
Int. Cl.^{6} G01C *9/26*
U.S. Cl. 33—374 5 Claims



1. An extendible level device extendible between a closed position and a fully open position so that said level device has a first length in said closed position and a longer length in said fully open position comprising:
at least one body member,
said body member having a first end and a second end,
said body member having a top and bottom surface,
said body member having at least four apertures,
two of said at least four apertures extending into said first end of said body member,
said two apertures extending completely through said body member, and another two of said at least four apertures extending into said second end of said body member,
said another two apertures extending completely through said body member,
at least a first and a second end member,
means attached to said first and second end members and engaged with said apertures for slidably attaching said first and second end members to said first and second ends of said body member respectfully,
level means attached to at least said first and second end members and said body member,
said means for slidably attaching said first and second end members to said first and second ends of said body member is at least four rods,
said rods being attached to said first and second end members at one end, and
said rods being inserted into said apertures in said first and second ends of said body member at their other end,
two of said rods being in a first vertical plane and another two of said rods being in a second vertical plane,
said vertical planes being parallel,
whereby, the effective length of said level device may be varied between said closed position and said fully open position.

5,617,642
TILE FITTING METHOD AND DEVICE
Ioannis E. Marios, 8201 Adenlee Ave., Fairfax, Va. 22031
Filed Jul. 24, 1995, Ser. No. 414,169
Int. Cl.^{6} G01B *5/24*; B43L *7/10*
U.S. Cl. 33—526 20 Claims



1. A device for providing a cut line pattern in a mosaic element comprising:
(a) a base section having at least one side adapted for flush alignment with an edge;
(b) at least one extension rod secured to said base section, said extension rod being slidably and rotatably engaged with the base section along a longitudinal axis thereof and including means for releasable non-sliding and non-rotating securement to the base section at least one of a plurality of positions of said longitudinal axis;
(c) a plurality of cut line adjustment rods connected to said extension rod and conformable to a predetermined cut line pattern, said cut line adjustment rods being slidably and rotatably engaged with each other and to said extension rod and having means for releasable non-sliding and non-rotating securement into said predetermined cut line pattern; and
(d) means for releasably fixing said cut line adjustment rods in said predetermined cut line pattern.

5,617,643

ELECTROLYSIS ELECTRODE PLATE FLATNESS MEASURING APPARATUS

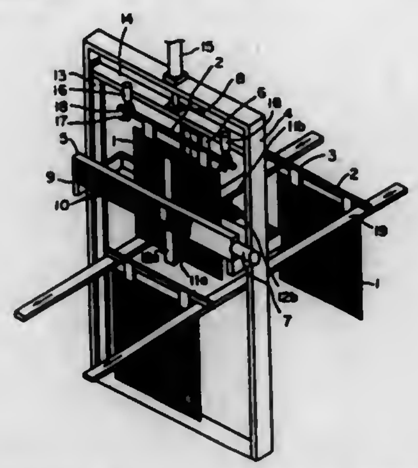
Yoshinobu Kato, Mitaka; Mitsuharu Oonishi, and Hideaki Kobayashi, both of Niihama, all of Japan, assignors to Sumitomo Metal Mining Company, Limited, Tokyo, Japan

Filed Dec. 21, 1994, Ser. No. 360,320

Claims priority, application Japan, Dec. 24, 1993, 5-348232

Int. Cl.⁶ G01B *11/30;11/06*

U.S. Cl. 33—533 **3 Claims**



1. An apparatus for measuring the flatness of electrode plates used in electrolysis, said apparatus comprising:

suspension means including a crossbar and gripping means attached thereto for gripping a generally vertically oriented electrode plate adjacent an upper edge thereof and for moving the electrode plate from a lower position to an upper measurement position,

sensor means respectively located on opposite first and second sides of said electrode plate and movable in respective planes extending parallel to said opposite first and second sides of said electrode plate when in said upper measurement position for measuring distances between said sensor means and said opposite sides of said electrode plate,

drive means for moving said sensor means vertically and horizontally in said planes relative to said electrode plate so as to scan said respective first and second sides of said electrode plate, and

a computing device for controlling said drive means and for receiving signals from said sensor means, said computer means determining the flatness of said opposite first and second sides of said electrode plate.

5,617,644

CIGAR MEASURING DEVICE

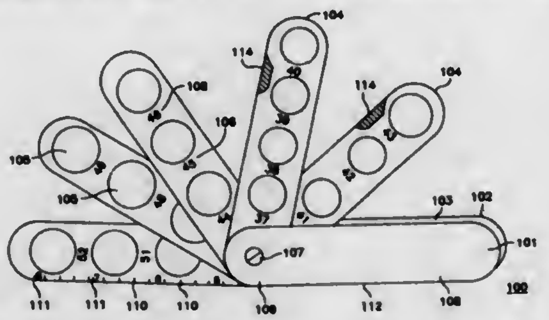
Dennis Bonelli, 1071 W. Chestnut St., Union, N.J. 07083

Filed May 26, 1995, Ser. No. 451,523

Int. Cl.⁶ G01B *121/00;3/34;3/06*

U.S. Cl. 33—548 **20 Claims**

1. A pocket-sized apparatus for determining the length and ring



gauge of a cigar comprising an outer case of rigid material, said outer case containing plural leaves of rigid material rotatably mounted on a fastening means, said fastening means having an axis of rotation perpendicular to a front portion of said outer case, whereby each of said plural leaves is rotatable through 180°, each of said plural leaves having at least one aperture therethrough, at least one of said plural leaves further being provided with ruled markings, whereby said at least one of said plural leaves when rotated through 180° forms a straight edge with the front portion of the outer case, and wherein each of said plural leaves is further provided with indicia indicative of ring gauge, wherein each indicium is adjacent a corresponding one of said at least one apertures.

5,617,645

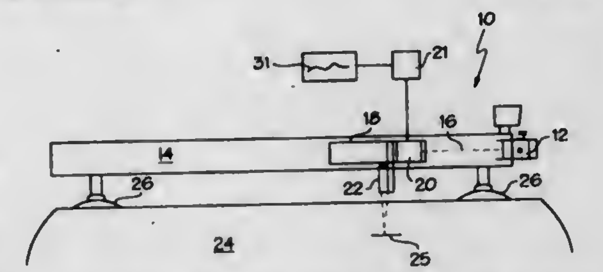
NON-CONTACT PRECISION MEASUREMENT SYSTEM

William R. W. Wick, c/o Precision Measurement Systems, Inc., 150 Breaden Dr. #C, Middletown, Ohio 45050, and Pamela G. Wood, West Chester, Ohio, assignors to William R. W. Wick, Hamilton, Ohio

Filed May 2, 1995, Ser. No. 432,630

Int. Cl.⁶ G01B *11/24*

U.S. Cl. 33—551 **25 Claims**



1. A precision measurement system for measuring the surface profile of an object, said system comprising:

a linearly displaceable carriage including non-contacting means for measuring a distance between said carriage means and said object and generating a signal indicative thereof;

means for generating a laser beam as a baseline;

means, associated with said carriage means, for detecting said baseline along a length of said object and measuring deviation of said carriage means from said baseline along said length and generating a deviation profile thereof; and

means for receiving said distance signal and said deviation profile and calculating a value representative of a true surface profile of said object, whereby said surface profile of said object is determined from addition of said deviation profile to said surface distances in which deviation in travel of said carriage means from a straight line is compensated for.

5,617,646

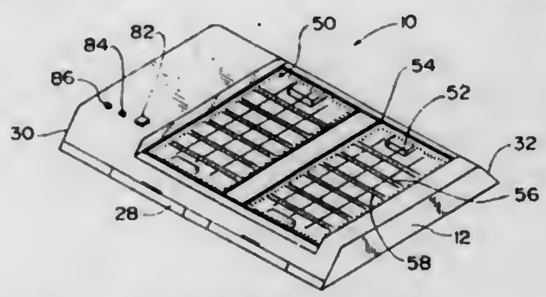
FOOTWEAR DRYER AND CLEANER

Joseph S. Viscuso, 555 Arlington Dr., Seaford, N.Y. 11783

Filed Jul. 26, 1994, Ser. No. 280,396

Int. Cl.⁶ F26B *19/00*

U.S. Cl. 34—60 **3 Claims**



1. A footwear cleaner and dryer comprising:

a housing having a shallow air chamber therein, the air chamber being open at top;

an open support grating across the opening at the top of the air chamber and supported by said housing;

a open grating of brushes across the openings at the top of air chambers and supported by said housing, the brushes having short bristles orientated in a generally upward direction;

a shallow drawer at the bottom of the chamber in the housing;

means for directing warm air into the chamber and upwardly though the open grating comprising;

an electric air heater and blower in the housing, said air heater and blower being on one side of the shallow air chamber;

duct means for conducting air from the outlet of the electric air heater and blower into the shallow air chamber;

a trigger switch connecting the electric air heater and blower to an electric power source, the trigger switch being closeable in response to weight of a person standing on the open grating.

5,617,647

COMPONENT DRIER

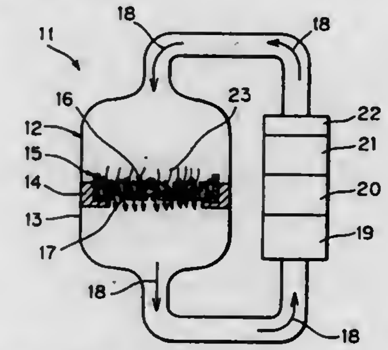
Masaaki Okane, and Masataka Mae, both of Kyoto, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Continuation of Ser. No. 802,360, Dec. 4, 1991. This application Sep. 12, 1995, Ser. No. 527,104

Claims priority, application Japan, Dec. 4, 1990, 2-400398

Int. Cl.⁶ F26B *17/00*

U.S. Cl. 34—218 **5 Claims**



1. A component drier comprising:

a drying station having a top, side walls and a cross sectional area;

a vat located in the drying station for receiving a plurality of components to be dried, at least a bottom wall of said vat having a plurality of apertures to allow passage of air therethrough, the vat bottom wall dividing the drying station into two regions and receiving the components to be dried thereon;

means for supplying recirculated hot air through an inlet in the top of said drying station to said vat for drying said components; and

means for forcing all of the recirculated hot air supplied through said inlet downwardly through said inlet, through said plurality of components to be dried, and through said bottom wall of said vat by attraction of the recirculated hot air, said bottom wall of said vat having an area extending across the cross sectional area of said drying station, all of the recirculated hot air passing through said entire area of the bottom wall of said vat, there being no space for passage of air between the bottom wall of the vat and the side walls of the vat, said means for forcing said recirculated hot air being disposed in the circulation path of substantially all of the recirculated hot air and being spaced away from a downward path of material falling from said components in said drying station;

wherein the components to be dried are electronic components having electrodes on outer surfaces thereof;

said means for forcing said recirculated hot air comprise a housing closed to the external atmosphere for providing a closed-loop circulation path for the recirculated hot air and an air attractor arranged in said housing downstream from said vat, said vat being arranged in said housing.

5,617,648

DRYER MOUNTED IN A HOUSING

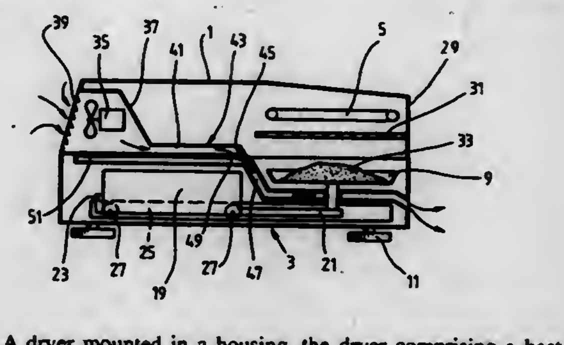
Roger Leisinger, Zurich; Florian Philipp, Bertschikon, and Tarik Oelmez, Winterthur, all of Switzerland, assignors to Mettler-Toledo AG, Greifensee, Switzerland

Filed Jan. 31, 1996, Ser. No. 594,134

Claims priority, application Switzerland, Apr. 4, 1995, 949959

Int. Cl.⁶ F26B *19/00*

U.S. Cl. 34—226 **8 Claims**



1. A dryer mounted in a housing, the dryer comprising a heat source for producing heat radiation, a precision balance comprising a weighing dish and a measuring cell, a load-receiving unit supporting the weighing dish and mounted on the measuring cell, the precision balance being configured for determining the moisture content of a material to be weighed placed on the weighing dish and subjected to the heat radiation of the heat source and comprising means for moving the precision balance into and out of the housing for making the material accessible, further comprising a duct for conducting an air flow between the weighing dish and the load-receiving unit, the duct being circumferentially closed and extending above the measuring cell and below the weighing disk without contacting the measuring cell and the weighing dish.

5,617,649

DEVICE AND METHOD FOR DRYING FLUORESCENT MATERIAL

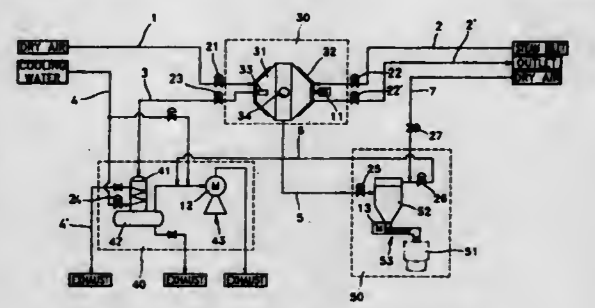
Won-geun Joo, Suwon, Rep. of Korea, assignor to Samsung Display Devices Co., Ltd., Kyungki-do, Rep. of Korea

Filed May 7, 1996, Ser. No. 647,455

Claims priority, application Rep. of Korea, May 15, 1995, 95-12000

Int. Cl.⁶ F26B *5/08*

U.S. Cl. 34—315 **6 Claims**



1. A fluorescent material drying method comprising:

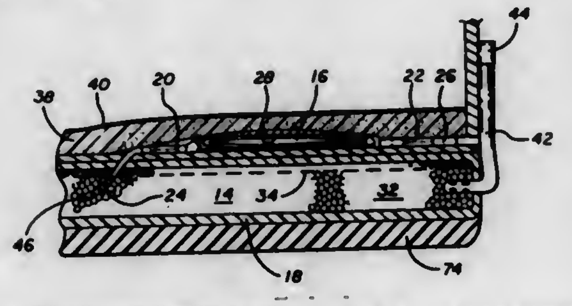
placing a fluorescent material cleaned with water into a dryer;

heating said dryer while rotating said dryer;

injecting dry air into said dryer and exhausting moist air from said dryer; and

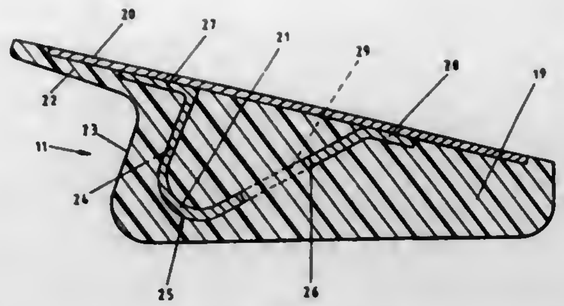
vacuuming and transferring said fluorescent material from said dryer to a storage tank.

5,617,650
VACUUM FORMED CONFORMABLE SHOE
Tracy E. Grim, 3010 W. Boston Ct., Broken Arrow, Okla. 74012
Continuation-in-part of Ser. No. 11,345, Jan. 29, 1993, Pat. No. 5,392,534, which is a continuation-in-part of Ser. No. 965,176, Oct. 23, 1992, Pat. No. 5,383,290. This application Feb. 27, 1995, Ser. No. 406,004
The portion of the term of this patent subsequent to Jan. 24, 2012, has been disclaimed.
Int. Cl.⁶ A43B *7/14*
U.S. Cl. 36—88 **36 Claims**



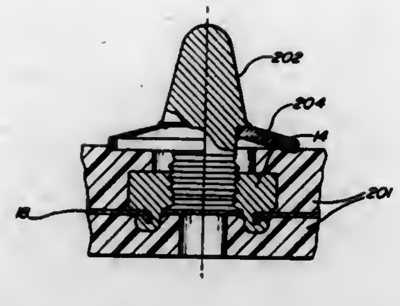
1. A conformable shoe assembly including a vacuum forming configuration, comprising:
a shoe body;
said shoe body including a sole including a sealed bladder containing particulate material of substantially interlocking properties under vacuum conditions said bladder constituting means for inherently retaining its shape and remaining conformed to its initial state under partial vacuum conditions;
said bladder being resilient under partial vacuum conditions and providing shaped support for the foot;
a vacuum pump for withdrawing air from said sealed bladder; and
said pump being mounted onto said shoe assembly;
means for actuating said pump to withdraw air from said bladder;
said shoe assembly including means for permitting removal of the shoe and remounting on a foot while the bladder is partially evacuated with the bladder retaining its conformed configuration; and
said bladder having a reduced thickness and configuration when it is partially evacuated as compared with its configuration at atmospheric pressure;
whereby said sole inherently conforms to the shape of the user's foot and retains this configuration until the partial vacuum in said bladder is released.

5,617,651
FOREFOOT RELIEVING SHOE, MORE PARTICULARLY FOR POSTOPERATIVE TREATMENT
Jan Prahl, Rullstorf, Germany, assignor to Heil- und Hilfsmittel Vertriebs GmbH, Scharnebeck, Germany
Filed May 16, 1995, Ser. No. 441,758
Claims priority, application Germany, Apr. 25, 1995, 295 06 925.2
Int. Cl.⁶ A43B *7/00;21/30*
U.S. Cl. 36—110 **8 Claims**
1. A forefoot relieving shoe for a foot having a metatarsal region and a calcaneal tuberosity, the forefoot relieving shoe having a longitudinal direction and a front and a rear, the forefoot relieving shoe comprising a single-piece sole portion having an essentially triangular cross-section in the longitudinal direction, the sole portion having an upper side, wherein a thickness of the triangular sole portion decreases toward the rear, and wherein the sole portion



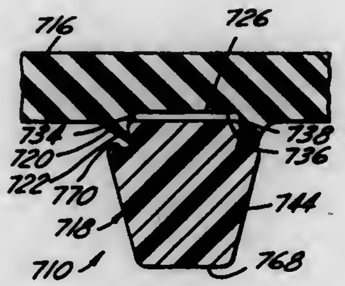
ends before the metatarsal region, the sole portion comprising a homogeneous foamed plastic body, a supporting carrier plate projecting toward the front from the triangular sole portion, a leaf spring embedded in the sole portion so as to be flush with marginal areas of the upper side of the sole portion, the leaf spring having a bottom side, further comprising a curved spring having an anterior leg and a posterior leg, and a front flat section connected to the anterior leg and a rear flat section connected to the posterior leg, wherein the front and rear flat sections of the curved spring are attached to the bottom side of the leaf spring, the anterior leg extending essentially parallel to a sole portion front face located adjacent the supporting carrier plate and perpendicular to the upper side of the sole portion, and the posterior leg extending at an angle of between 35° and 55° relative to the upper side of the sole portion, wherein the front flat section of the curved spring is located in a transition area between the support carrier plate and the triangular sole portion, and the rear flat section is located a short distance in front of the calcaneal tuberosity.

5,617,652
FASTENER INSTALLATION AND METHOD
Rudolf R. M. Müller, Frankfurt, Germany, assignor to Multifastener Corporation, Detroit, Mich.
Continuation-in-part of Ser. No. 92,593, Jul. 16, 1993, which is a division of Ser. No. 888,580, May 26, 1992, Pat. No. 5,237,733, which is a continuation-in-part of Ser. No. 806,172, Dec. 12, 1991, Pat. No. 5,146,672, which is a division of Ser. No. 457,060, Dec. 26, 1989, Pat. No. 5,072,518, which is a division of Ser. No. 271,123, Nov. 14, 1988, Pat. No. 4,893,394, which is a division of Ser. No. 111,966, Oct. 21, 1987, Pat. No. 4,831,698, which is a continuation-in-part of Ser. No. 69,804, Aug. 17, 1987, Pat. No. 4,810,143, which is a division of Ser. No. 869,507, Jun. 2, 1986, Pat. No. 4,700,470, which is a division of Ser. No. 657,570, Oct. 4, 1984, Pat. No. 4,610,072, which is a continuation-in-part of Ser. No. 563,833, Dec. 21, 1983, Pat. No. 4,555,838, which is a continuation-in-part of Ser. No. 504,074, Jun. 14, 1983, Pat. No. 4,543,701, and Ser. No. 485,099, Mar. 28, 1983, Pat. No. 4,459,073, said Ser. No. 504,074is a continuation of Ser. No. 229,274, Jan. 28, 1981, abandoned, said Ser. No. 485,099is a division of Ser. No. 229,274, Jan. 28, 1981, abandoned. This application Nov. 24, 1993, Ser. No. 157,991
Claims priority, application Germany, Feb. 2, 1980, 3003908; Nov. 25, 1992, 42 39 584.1
Int. Cl.⁶ A43B *5/00;* **A43C** *15/16*
U.S. Cl. 36—134 **15 Claims**
1. A molded part, comprising:
a panel having an opening therethrough;
a female fastener having a body portion mounted on said panel, a bore centered on an axis extending through said body portion from a first free end and to an integral annular retainer portion coaxially aligned with said bore extending through said panel opening and riveted to said panel, said bore extending from said open free end to a securing end defined by said integral annular retainer portion and spaced from said open end;
a disk-shaped slug formed as a separate part from said fastener secured in said body portion sealing said bore, and positioned



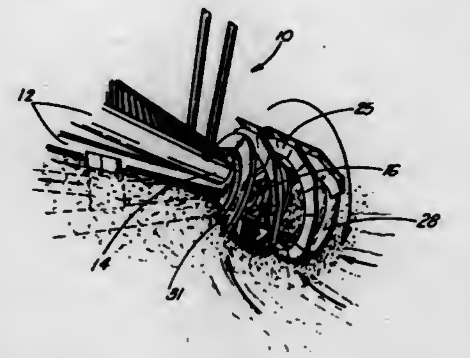
axially between said first open free end and said securing end, said disk-shaped slug having been pierced from the panel and being the same material as the panel; and
a molding material at least partially surrounding said panel portion with said female fastener body portion at least partially exposed and said annular retainer portion sealed in said molding material, said slug forming a barrier against said molding material, said molding material extending upwardly into said bore from said securing end toward said slug, said slug sealing said bore, such that said free end of said bore is free of said molding material.

5,617,653
BREAK-AWAY CLEAT ASSEMBLY FOR ATHLETIC SHOE
Andrew S. Walker, 815 Southfield Rd., Birmingham, Mich. 48009, and Elwyn Gooding, Ann Arbor, Mich., assignors to Andrew S. Walker
Continuation of Ser. No. 967,618, Oct. 28, 1992, abandoned, which is a continuation-in-part of Ser. No. 689,702, Apr. 15, 1991, abandoned. This application Apr. 4, 1995, Ser. No. 416,219
Int. Cl.⁶ A43B *5/00*
U.S. Cl. 36—134 **15 Claims**



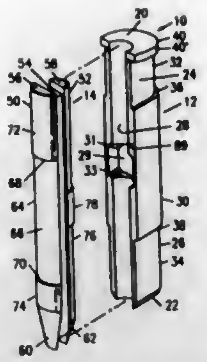
1. An athletic shoe comprising:
an upper body portion and a sole, said sole having a longitudinal axis along the length of said shoe and a substantially planar surface on one side thereof,
a plurality of cleats connected to said sole, and
means for coupling each of said cleats to said sole,
said coupling means including an angled surface, said angled surface having a plane substantially parallel to the longitudinal axis of said sole and at an angle with respect to said planar surface,
said coupling means further having a predetermined level of force associated therewith for releasing each of said cleats from said sole in response to a level of force which is directed laterally toward said angled surface,
said coupling means preventing release of said cleats in all other directions,
said cleats only being releasable from said sole during use by tilting of said cleats in a direction toward said angled surface.

5,617,654
DREDGE ROTARY CUTTER HEAD
William J. Wetta, II, 10001 Tiffany Dr., River Ridge, La. 70123
Filed Oct. 28, 1994, Ser. No. 330,750
Int. Cl.⁶ A01B *71/04;* **E02F** *3/24;* **F16C** *13/00*
U.S. Cl. 37—326 **7 Claims**



1. A dredge apparatus, comprising:
a) a hull;
b) a boom extending from the hull and including a free end portion;
c) a suction line extending along the boom and having a suction inlet adjacent the free end of the boom;
d) a rotary cutter head supported by the boom;
e) a powered drive shaft supported by the boom for rotating the cutter head;
f) the cutter head including at least a pair of spaced apart, concentric rings, including a front ring and a rear ring, each ring having an open center and a periphery;
g) a hub that is connected to the drive shaft for rotation therewith;
h) a plurality of circumferentially-spaced spokes extending radially from the hub to one of the rings; and
i) three helical vanes, the helical vanes including vane end portions, mounted entirely between the front and rear rings, each vane extending from the periphery of the front ring to the periphery of the rear ring, each of the vanes extending at least three hundred (300) degrees around the rings and being attached to each ring, wherein
each of the helical vanes is V-shaped in transverse cross section, the vanes each comprising first and second intersecting vane panels that intersect at an angle of greater than 90 degrees and less than 180 degrees, and
the vanes are spaced circumferentially about one hundred twenty degrees apart.

5,617,655
SECUREMENT PIN FOR EARTH EXCAVATION TEETH
Richard L. Launder, Whittier, Calif., and Charles Clendenning, Broken Arrow, Okla., assignors to H&L Tooth Company, Tulsa, Okla.
Filed Mar. 22, 1995, Ser. No. 454,490
Int. Cl.⁶ E02F *9/28*
U.S. Cl. 37—457 **12 Claims**
1. A pin assembly for securing an earth excavation tooth on the nosepiece of a mounting adaptor by extending in a flexed disposition through substantially aligned openings in the tooth and adaptor and bearing against portions thereof, said assembly comprising an elongated rigid bearing pin and a compressible flexpin adapted for mating engagement with the adaptor and said bearing pin, said bearing pin defining a forwardly disposed elongated concave bearing surface and a rearwardly disposed elongated convex bearing surface, said flexpin including a first elongate member defining a forwardly disposed elongated convex bearing surface and a second elongate member defining a rearwardly disposed elongated convex bearing surface and including a compressible material disposed



between and secured to said elongate members, said convex bearing surface on said bearing pin being substantially larger than both said concave bearing surface thereon and said convex bearing surfaces on said flexpin, said forwardly disposed bearing surface on said flexpin being adapted to abut and mate with portions of the mounting adaptor and said rearwardly disposed bearing surface on said flexpin being adapted to abut and mate with said concave bearing surface on said bearing pin whereby upon said bearing pin being inserted through the substantially aligned openings in the tooth and mounting adaptor and said flexpin being driven therethrough adjacent said bearing pin, said flexpin is maintained in a compressed disposition adjacent said concave surface of said bearing pin, urging said convex bearing surface on said bearing pin and said forwardly disposed bearing surface on said flexpin in opposed directions against portions of the tooth and the adaptor and securing the tooth on the adaptor.

5,617,656

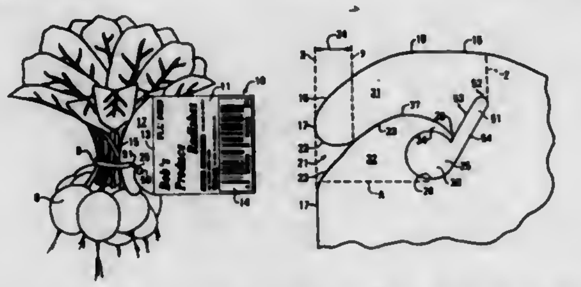
SLOTTED ORIFICE LOCKING TAG FOR BANDED MERCHANDISE

Robert B. Ludlow; Brian D. Larsen, both of Worthington, Minn.; John B. Linquist, Sibley, Iowa, and Lloyd Tinklenberg, Worthington, Minn., assignors to Bedford Industries, Inc., Worthington, Minn.

Filed Apr. 24, 1996, Ser. No. 636,984

Int. Cl.⁶ G09F *3/06*

U.S. Cl. 40—299 **11 Claims**



1. A locking tag having a slotted holding orifice for a band material about merchandise, said locking tag comprising sheet material having an information part and a resilient header part united together along a border between said parts, said information part being for printed matter, said header part comprising an outer perimeter edge about said header part except at said border, an open mouth in said outer perimeter edge, said open mouth having an upper lip edge in opposing relationship to a lower lip edge and having a depth dimension extending inwardly from said outer perimeter edge, a holding orifice inwardly spaced from said open mouth as well as from said outer perimeter edge, a slit entry channel extending from said open mouth transversely through said header part along a line terminating as a slit entrance into said orifice, an elongated hooking finger having one side defined by said entry channel and an opposite side defined by said outer perimeter edge, said hooking finger extending from said orifice outwardly to terminate at the upper edge of said open mouth, a camming surface along the side of said entry channel opposite said hooking finger, said camming surface extending from the lower edge of said open mouth to said orifice, said elongated hooking finger of said locking tag being easily latched transversely over a section of band material about merchandise to cause movement of the band material along said camming surface into said holding orifice with one sweeping hand movement, said holding orifice comprising a slotted recess extending in a general directional orientation toward said outer perimeter edge, said slotted recess having a length and width, with its length being at least about three times its width and with its width being greater than 1/32 inch and no greater than about 1/8 inch, whereby a section of band material lodged in said slotted recess is resistant to escape therefrom.

5,617,657

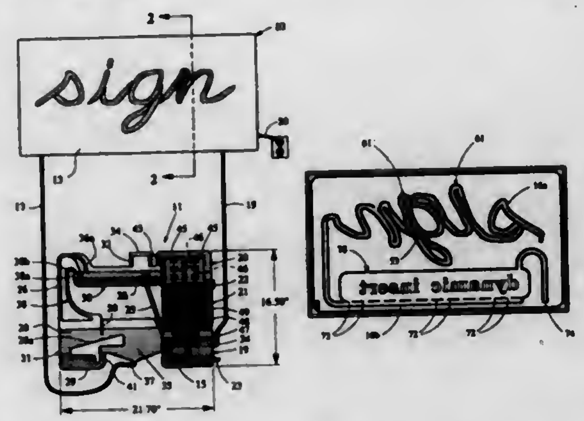
MULTI-COLOR LIQUID DISPLAY SYSTEM

Jon B. Kahn, 3002 Stargrass Ct., League City, Tex. 77573

Filed Jan. 29, 1996, Ser. No. 592,923

Int. Cl.⁶ G09F *19/00*

U.S. Cl. 40—406 **7 Claims**



1. A multi-color liquid display system comprising a liquid conduit for receiving and conveying a liquid delivered thereto, said liquid conduit having an inlet end and an exit end;

display means operatively associated with said liquid conduit for effecting a visual display of liquid delivered to said liquid conduit;

a fluid circulating system which includes said liquid conduit, said circulating system including a reservoir tank;

a pump having its inlet connected to the exit end of said liquid conduit;

first and second immiscible liquids of different specific gravities and different colors disposed in said circulating system, said first and second liquids including portions thereof arranged in strata in said reservoir tank in order of their relative specific gravities;

a first communication means comprising a first duct for fluidly communicating the stratum of liquid of highest specific gravity in the reservoir tank with said inlet end of said liquid conduit;

a second communication means comprising a second duct for fluidly communicating the stratum of liquid of lowest specific gravity in the reservoir tank with said inlet end of said liquid conduit;

filter means connected to said reservoir tank and the outlet of said pump for filtering the fluids circulated in said fluid circulating system, said filter means comprising a filter having a porosity just large enough to allow passage of dye particles in said pair of liquids;

means including a ratio valve installed in said first communications means for selectively controlling the relative flow of said first and second liquids to said liquid conduit whereby said liquids are delivered to said liquid conduit in a selected proportion of their respective quantities, said display means comprising a transparent panel assembly wherein a pair of transparent panels are bonded in a substantially parallel and spaced relation to one another, with one of said panels providing a front display surface;

means in the space between said panels for defining said liquid conduit as a fluid corridor of a desired configuration;

lighting means mounted on said transparent panel assembly for directing light through said transparent panel assembly from the rear thereof; and

means for masking all of said front panel display surface except for the portions thereof through which the fluid corridor is visible.

5,617,658

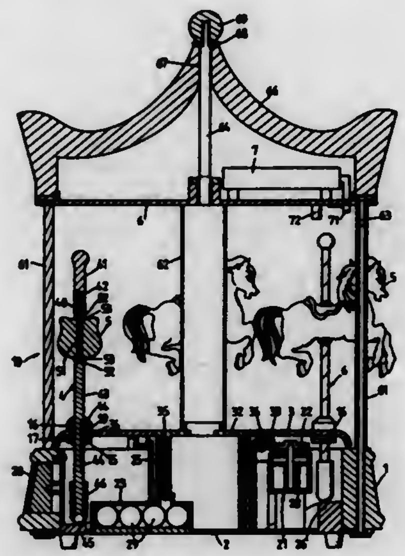
CARROUSEL

Corrina Chen, 8F, No. 185, Yung Chi Road, Taipei, Taiwan

Filed Nov. 22, 1995, Ser. No. 562,135

Int. Cl.⁶ G09F *19/08*

U.S. Cl. 40—411 **3 Claims**



1. A carousel comprising:

hollow base covered with a bottom cover, said bottom cover has a wave-like track formed directly on a top side around a center,

a rotary table supported on said bottom cover, said rotary table has a plurality of equiangularly spaced through holes around a border,

drive means mounted on said bottom cover inside said hollow base to drive said rotary table, a sleeve mounted in each of said plurality of equiangularly spaced through holes,

a plurality of tappet rods inserted into said sleeves and movably supported on said wave-like track to support an ornament above said rotary table,

a plurality of upright posts raised from said hollow base around said rotary table,

a tubular center support raised from a center of said bottom cover,

a platform supported on said upright posts and said tubular center support above said tappet rods, and

a shield supported on an upright support on said platform such that said shield covers said platform.

5,617,659

CONSTRUCTION MEMBER

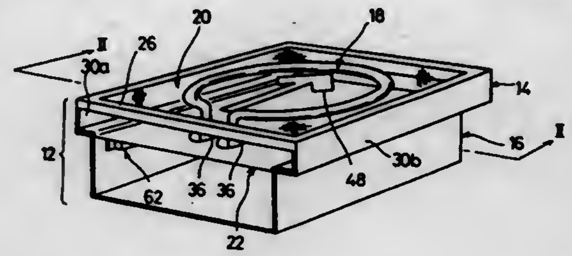
Shiroshi Okubo, Suita, Japan, assignor to Monc Co., Ltd., Osaka, Japan

Filed Jun. 19, 1995, Ser. No. 492,447

Claims priority, application Japan, Jun. 22, 1994, 6-164627; Dec. 21, 1994, 6-336563

Int. Cl.⁶ G09F *19/00*

U.S. Cl. 40—545 **12 Claims**



1. A construction member comprising:

a frame;

a plate having a front surface and a back surface and disposed in said frame;

a glass tube having a visually perceptible indicia and being filled with inert gas;

means for illuminating said glass tube; and

a reflective panel, for reflecting light transmitted from said glass tube, disposed in said frame at a spaced distance from said plate and said glass tube, wherein said glass tube is supported with said back surface of said plate by said glass tube being secured to said back surface of said plate.

5,617,660

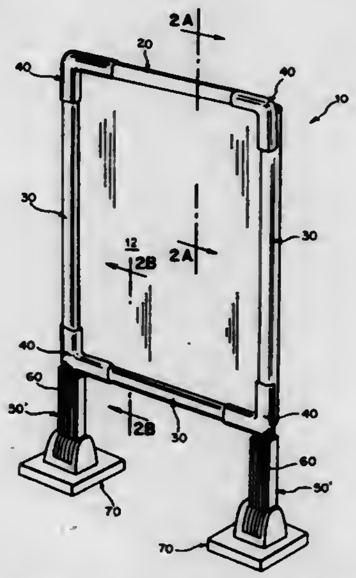
DISPLAY FRAME WITH SLOT FOR EXCHANGEABLE DISPLAY

Ronald M. Pollack, 20 Continental Ave., Forest Hills, N.Y. 11375

Filed Mar. 27, 1995, Ser. No. 410,663

Int. Cl.⁶ G09F *7/02*

U.S. Cl. 40—611 **6 Claims**



6. A display frame for a poster or other picture memorabilia having a top edge and at least two side edges comprising:

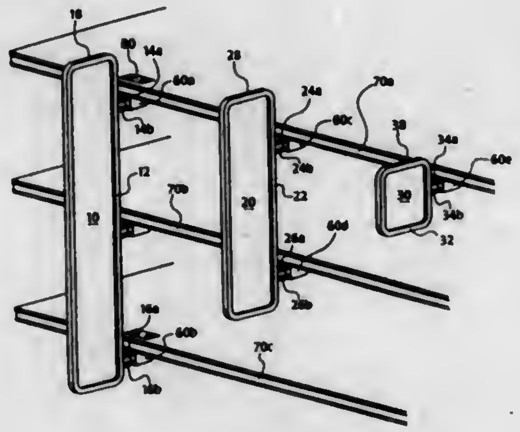
a resilient first edge support for the top edge of said poster, said first edge support extending a majority of a length of said top poster edge;

a pair of resilient second edge supports for at least the side edges of said poster, each of said second edge supports extending a majority of a length of a respective poster side edge;

a plurality of resilient fastening elements for coupling and fastening said edge supports together in a frame-like manner, said fastening elements each having first and second legs and being shaped to overlay said first and second edge supports and engage therewith in a snap fit manner; and

a pair of generally L-shaped internal angle fittings for Coupling with and securing said pair of said second edge supports to opposite ends of said first edge support in a frictional fit manner such that said first edge support is joined to said second edge supports with a rear wall of said first edge support positioned offset and forwardly of a rear wall of said second edge supports so as to define therebetween a display slot whereby a poster may be removably slid into said display frame from above, rearwardly of said first edge support with the lateral edges of said poster being slidably received in a slotted channel defined by and between said second edge supports.

5,617,661
FLEXIBLE SIGN BOARD FOR BLADE SIGNS
Joseph Mason, Huntington, N.Y., assignor to NDR Corporation, Melville, N.Y.
Filed Sep. 14, 1995, Ser. No. 528,023
Int. Cl.^{6} G09F *3/18*
U.S. Cl. 40—642.01 **9 Claims**



1. A flexible sign board for blade signs comprising:

a sign frame having a top, a bottom, and two opposite sides, said top having a slot for receiving a blade sign;

at least one attachment means disposed within one of said opposite sides of said frame and having at least one support pin extending outward from said side, said at least one attachment means comprising:

a slot formed in one of said opposite sides of said sign frame, said slot having an inner cavity;

a plurality of notches longitudinally disposed within said inner cavity of said slot;

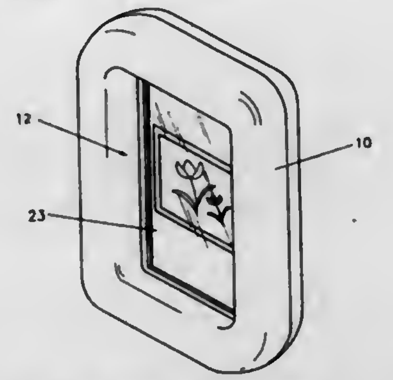
a mounting bracket slidably disposed within said slot, said at least one support pin having a circumference and being integrally formed with said mounting bracket; and

locking means coupled to said mounting bracket for engaging said plurality of notches and locking said mounting bracket in a desired position;

support means having a first end coupled to said at least one support pin and an opposite second end; and

mounting means coupled to said second end of said support means for securing said support means and thereby the sign frame to a stationary object.

5,617,662
ORNAMENTAL STRUCTURE OF PRODUCT
Juy Hwang, 3F, No. 4, Fu-An street, Si-Chu Chen, Taipei Hsien, Taiwan
Filed Nov. 28, 1995, Ser. No. 563,740
Int. Cl.^{6} G09F *1/12*
U.S. Cl. 40—736 **2 Claims**



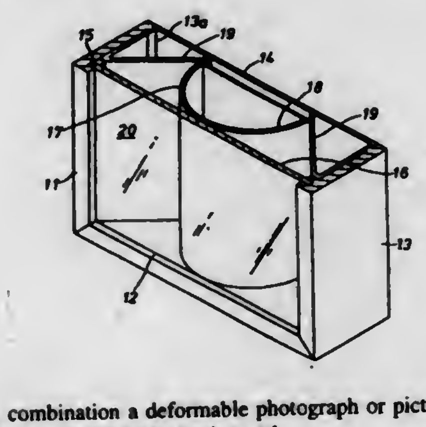
1. A structure of a display frame comprising:

a frame adapted to enclose an ornamental object, said frame is made from a soft thin-sheet material that forms a gas receiving body that expands when filled with gas and collapses when said gas is discharged,

said frame forms at least one engaging portion when said frame is filled with gas, said engaging portion adaptable to said ornamental object therein, said frame adapted to be separably disconnected from said ornamental object,

an inner perimeter of said engaging portion of said frame is slightly smaller than an outer perimeter of said ornamental object, thereby enabling said frame to tightly bind said ornamental object by means of an elasticity of said frame.

5,617,663
THREE-DIMENSIONAL PHOTOGRAPH STAND
Yoshiharu Miki, and Harukazu Miki, both of Tokyo, Japan, assignors to Miki Pulley Co., Ltd., Kanagawa-ken, Japan
Filed Jun. 23, 1994, Ser. No. 265,584
Claims priority, application Japan, Jun. 25, 1993, 5-039244 U; Aug. 16, 1993, 5-048652 U; Sep. 27, 1993, 5-056314 U; Dec. 3, 1993, 5-071129 U; Dec. 3, 1993, 5-071130 U
Int. Cl.^{6} A47G *1/06*
U.S. Cl. 40—738 **4 Claims**



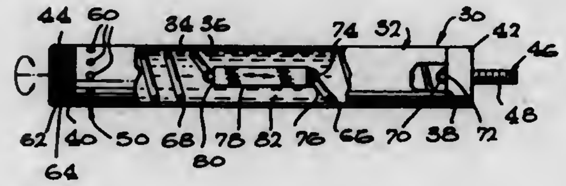
1. In combination a deformable photograph or picture having a lateral width, and a photograph stand:

said stand including a frame having an outer profile and defining a window;

a support panel for mounting the photograph or picture thereon in a fixed relation to said frame so as to show the photograph or picture through said window, wherein said support panel comprising a flexible transparent sleeve for receiving the photograph or picture therein, a circumferential length of said transparent sleeve being shorter than twice the lateral width of the photograph or picture such that the mounted photograph or picture is maintained in a part-cylindrical curved condition by and in said transparent sleeve;

means in said frame for maintaining the photograph or picture and said transparent sleeve in a curved condition with a front surface of the photograph or picture defining a convex surface.

5,617,664
RECOIL ABSORBING STABILIZER FOR A WEAPON
Vincent F. Troncoso, 14090-6100 Rd., Montrose, Colo. 81401
Filed Aug. 21, 1995, Ser. No. 517,428
Int. Cl.^{6} F41B *5/20*
U.S. Cl. 42—1.06 **8 Claims**



1. An improved recoil absorbing stabilizer for a weapon, said stabilizer comprising, in combination:

a) an elongated generally tubular housing having first and second open opposite ends and an annular sidewall defining therewith a central space extending the length of said housing and communicating with said opposite ends;

b) a first end cap fixedly secured to said first end of said housing to close said first opposite end;

c) means connected to said first end cap for releasably connecting said housing to the exterior of a weapon in operative recoil-absorbing position;

d) a second end cap rotatably secured to said second opposite end to close said second opposite end;

e) a first spring connected to the interior of said first end cap and extending into said space;

f) a second spring connected to the interior of said second end cap and extending into said space;

g) a weight positioned in said space for longitudinal movement therein, said weight having two opposite ends, one of which weight ends is connected to said first spring and the other of which two weight ends is connected to said second spring; and,

h) indexing means connected to said second end cap and to said housing to selectively hold said second end cap in a selected rotated position, whereby selective winding and unwinding of said two springs by rotation of said second end cap varies the tension on said two springs and their resistance to longitudinal displacement of said weight for tunable recoil absorption by said stabilizer.

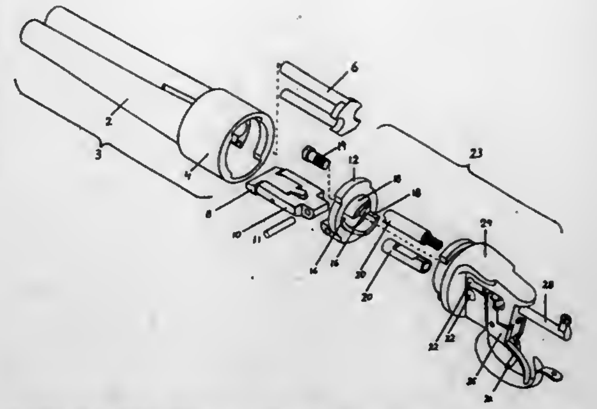
5,617,665
ROTATING BREECH GUN
George Hoenig, 6521 Morton Dr., Boise, Id. 83704
Filed Aug. 2, 1995, Ser. No. 510,257
Int. Cl.^{6} F41A *3/00*
U.S. Cl. 42—8 **6 Claims**

1. An improved firearm comprising:

a round breech with circularly spaced locking means, said breech having attached to it one of the group of one, two, three, or four barrels

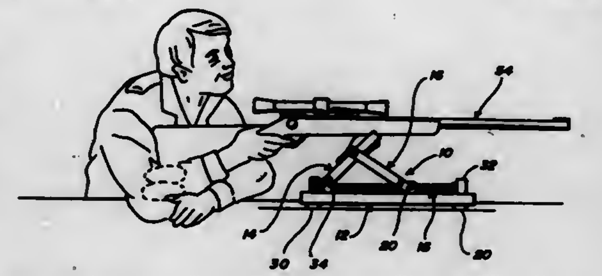
a firearm frame having mating locking means engagable with said breech

a plate being rotatably mounted on said firearm frame containing a number of firing pins equal to the number of barrels



a bar hingeably attached to the front of said plate on which the breech section of the firearm can slide and then hinge.

5,617,666
FIREARM REST
Dewey L. Scott, 4708 Black Hawk Dr., St. Louis, Mo. 63123
Filed Aug. 15, 1995, Ser. No. 515,390
Int. Cl.^{6} F41C *29/00*
U.S. Cl. 42—94 **8 Claims**

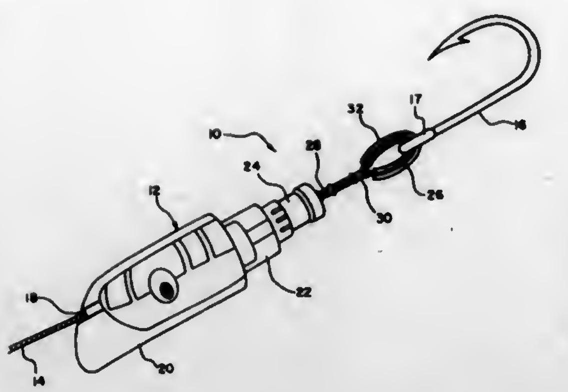


1. A firearm rest comprising a platform with a forward end and rearward end, front and rear mounting blocks attached to the forward and rearward end of the platform, a shaft journaled in the mounting blocks with an end extending though the rear mounting block and attached to an operator for rotating the shaft in the mounting blocks, a traveling nut with a threaded bore threaded on the shaft, said nut reciprocated between the mounting blocks by rotating the operator, a first link with first and second ends, said first end of the first link hinged to the rear mounting block, said second end of the first link forming a bed for resting a forward end of a stock of a firearm, a second link with first and second ends, said first end of the second link hinged to the first link rearward of the first end's forward end and said second end hinged to the traveling nut, said nut being quickly disengagable from the shaft, whereby the firearm rest can be quickly raised or lowered by taking the nut out of engagement with the shaft while fine adjustments can be made by rotating the operator with the nut engaged.

5,617,667
ADAPTABLE DEVICE FOR TROLLING JIGS
Arturo L. Gonzalez, Belisario Dominguez #123, Mexico City D.F. 04000, Mexico
Filed Aug. 24, 1995, Ser. No. 519,022
Claims priority, application Mexico, Oct. 17, 1994, 947999
Int. Cl.^{6} A01K *85/18*
U.S. Cl. 43—42.36 **13 Claims**

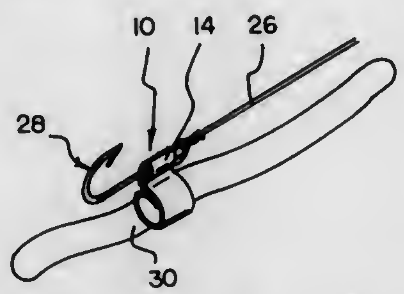
9. A fishing device for use with a trolling jig comprising:

an elongated body having a longitudinal axis with a leading end and a trailing end, and having an axial bore extending through said body, said trailing end including a recess therein, wherein said body comprises a first member having a trailing axial face and a plurality of recesses therein, and a second member



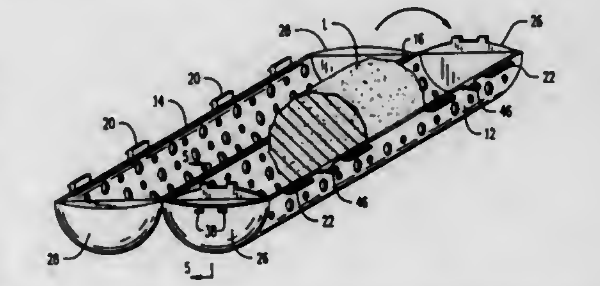
having a leading axial face with a plurality of prongs for removably coupling with said first member in a plurality of angular positions, said recess in said trailing end of said body being formed in said second member;
a leader extending through said body and having a closed loop at said trailing end of said body;
at least one hook coupled to said loop of said leader; and
a clip member on said leader for forming said loop, and being removably received in said recess for removably coupling said leader to said body and preventing rotational movement of said at least one hook with respect to said body, wherein said clip is positioned on said leader to prevent said at least one hook from becoming tangled in said leader forward of said body.

5,617,668
BAIT HOLDER APPARATUS
Donald J. Shimandle, 1096 Navajo Trail, Streetsboro, Ohio 44241
Filed Jun. 16, 1995, Ser. No. 491,546
Int. Cl.⁶ A01K *83/06*
U.S. Cl. 43—44.8 **6 Claims**



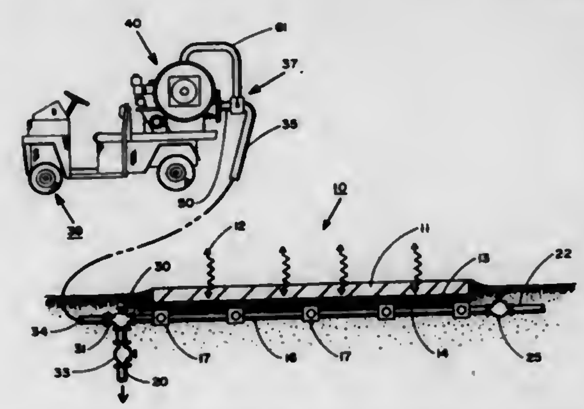
1. A bait holder apparatus, comprising in combination:
a fishing hook which includes a first end, a second end having at least one hook portion with a barb and a sharp pointed end, and a straight shank portion which is disposed between said first end and said second end, wherein the at least one hook portion is connected to said straight portion;
a flexible substrate having a first end, a second end, a first side, and a second side,
a loop, said loop being attached to said straight shank portion of said fishing hook, wherein said loop is formed from a free end portion of said first end of said flexible substrate,
a quantity of first hook-or-loop material connected to said first side of said flexible substrate adjacent to said first end of said flexible substrate, and
a quantity of second hook-or-loop material connected to said second side of said flexible substrate adjacent to said second end of said flexible substrate, wherein said second hook-or-loop material is complementary to said first hook-or-loop material,
wherein, when said first hook-or-loop material and said second hook-or-loop material are connected together, said flexible substrate is formed into a bait-encompassing loop.

5,617,669
CHUM DISTRIBUTOR
Stewart Levey, New Milford, N.J., assignor to Lure'em In, Inc., Ridgefield, N.J.
Filed May 8, 1995, Ser. No. 438,108
Int. Cl.⁶ A01K *97/02*
U.S. Cl. 43—44.99 **13 Claims**



1. A chum distributor comprising a unitary molded plastic structure having an opened and a closed condition; the structure in the open condition comprising a pair of side-by-side coextensive cylinder halves divided longitudinally and hinged together by a living hinge along their adjacent longitudinal edges, each half comprising spaced parallel semi-circular end pieces and a curved perforated side wall connected to and extending between the end pieces, the opened container forming two adjacent units, the remote longitudinal edges being formed with cooperant fastener means, at least one of the semi-circular end pieces being formed with weight-receiving pocket means; the structure in the closed condition having the two halves pivoted closed with the cooperant fastener means engaged to form a perforated cylindrical container.

5,617,670
MOBILE UNIT FOR TREATING SOIL
William M. Benson, 3537 Pebble Beach Dr., Martinez, Ga. 30907
Continuation of Ser. No. 319,122, Oct. 7, 1994, Pat. No. 5,542,208, which is a continuation-in-part of Ser. No. 177,441, Jan. 5, 1994, Pat. No. 5,433,759. This application Feb. 20, 1996, Ser. No. 603,632
Int. Cl.⁶ A63C *19/00;* **E01C** *13/00*
U.S. Cl. 47—1.01 **3 Claims**



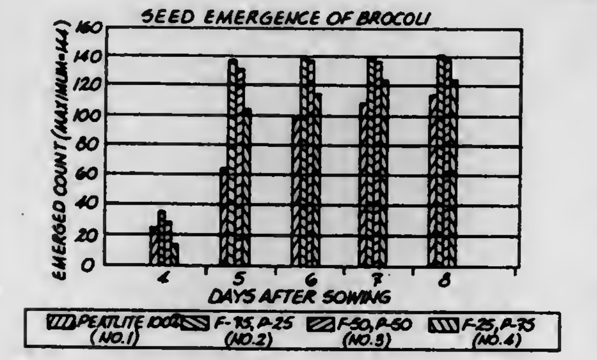
1. Apparatus for treating the soil of a grass sportsfield that includes

a duct network situated beneath the soil of a grass sportsfield in a gravel bed, ducts in said network having perforations therein that are in fluid flow communication with said gravel bed,
a drain line coupled to said duct network for draining moisture from the duct network,
a mobile unit that includes a blower means having an inlet port for creating a vacuum in the duct network such that air is drawn downwardly through the grass sportsfield,
means for coupling and decoupling the inlet port of the blower to the duct network, and
valve means operable for selectively connecting and disconnecting the drain line to said duct network, said valve means including a first valve for coupling the duct network to the drain line and a second valve for coupling the blower to the duct network, wherein said drain line can be isolated from said duct network when the blower is coupled to the duct network.

5,617,671
METHOD FOR GROWING TURFGRASS INDOORS UNDER REDUCED LIGHT CONDITIONS
John N. Rogers, III, Haslett; John C. Stier, Lansing; Paul E. Rieke, Okemos, and James R. Crum, Williamston, all of Mich., assignors to Board of Trustees operating Michigan State University, East Lansing, Mich.
Filed Jun. 10, 1994, Ser. No. 258,584
Int. Cl.⁶ A01G *9/02*
U.S. Cl. 47—58 **12 Claims**

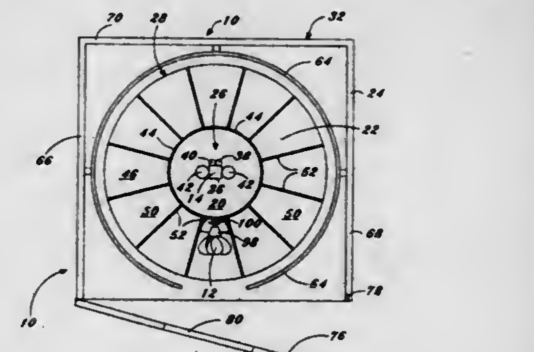
1. A method for providing an indoor activity field with natural turfgrass under reduced light conditions which limit growth of the turfgrass which comprises:
periodically applying a Type II plant growth regulator (PGR) to the turfgrass which inhibits gibberellin biosynthesis, while maintaining low surface moisture by providing air movement of 3 to 22 mph over the turfgrass, and using disease control chemicals and fertilizing chemicals, including nitrogen, potassium, phosphorus, iron, and magnesium, with a radiation level of at least about 1 mol/day PAR (Photosynthetically Active Radiation) on the indoor activity field.

5,617,672
PLANT GROWTH MEDIA AND PROCESS FOR USING SAME
J. Thomas Garrett, Florence, S.C., assignor to Clemson University, Clemson, S.C.
Filed Jun. 6, 1995, Ser. No. 467,360
Int. Cl.⁶ A01G *1/00*
U.S. Cl. 47—58 **27 Claims**



1. A method of sowing seeds comprising the step of:
planting seeds from a preselected plant into a plant growth media, said growth media comprising a soil formulation combined with a powdered foam material, said foam material comprising a predominantly open celled ureaformaldehyde foam, said ureaformaldehyde foam being present within said media in an amount effective for increasing germination onset and attainment of said seeds, for increasing the number of seeds that germinate and for causing the seeds to germinate more uniformly in comparison to seeds planted in said soil formulation only, said amount being from 5% to 90% by volume.

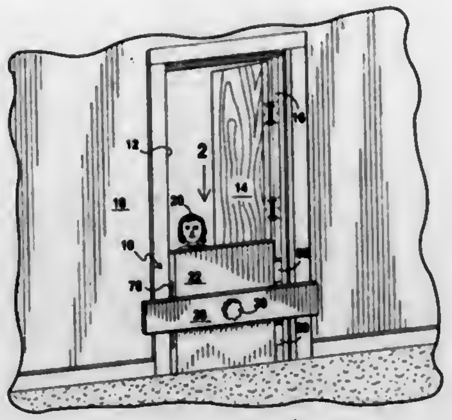
5,617,673
GRAVITY INDEPENDENT PHOTOSYNTHETIC GROWING SYSTEM
Yasukazu Takashima, 1132 San Marcos Dr., Salinas, Calif. 93901
Filed Nov. 17, 1993, Ser. No. 153,884
Int. Cl.⁶ A01G *31/00*
U.S. Cl. 47—60 **14 Claims**



1. A photosynthetic growing system for use in growing plant matter under controlled conditions, comprising:
a growing chamber subsystem including a plurality of radially separate growth chambers surrounding an excluded central core, each chamber being adapted to enclose growth substrate means and to permit expansive growth of the plant matter therewithin, each said chamber being adapted to retain plant growth substrate in the portion nearest said central core;
a motive subsystem for selectively rotating said growing chamber subsystem;
an illumination subsystem for providing and delivering photosynthetic usable electromagnetic energy to the plant matter, said illumination subsystem including lighting means situated within the central core, light transmissive means intermediate said growth chambers and reflective means situated outside and separated from said growing chamber subsystem, such that phototropic radially outward growth is encouraged in the plant matter;
a material provision subsystem for selectively providing nutrients and delivering growth fluids to the plant matter contained within the growth chambers.

5,617,674
ADJUSTABLE PASSAGEWAY GATE
Timothy T. Terrill, 32 Fox Pl., Hicksville, N.Y. 11801
Filed May 6, 1996, Ser. No. 642,200
Int. Cl.⁶ E06B *7/00*
U.S. Cl. 49—55 **24 Claims**

1. An adjustable passageway gate, comprising:
a) a thin generally rectangular-parallelpiped-shaped panel having a first side, a second side disposed opposite to said first side of said thin generally rectangular-parallelpiped-shaped panel, and a centrally-disposed and laterally-oriented threaded throughbore; said thin generally rectangular-parallelepiped-shaped panel being positionable in a passageway defined by a wall that has a first side and a second side disposed opposite to the first side of the wall;



b) a large, extendable, retractable, and generally rectangular-parallelpiped-shaped extension member extendable from and retractable into said first side of said thin generally rectangular-parallelpiped-shaped panel and being extended to contact the first side of the wall when the passageway of the wall is wider than said thin generally rectangular-parallelpiped-shaped panel;

c) a pair of small, spaced-apart, extendable, retractable, and generally rectangular-parallelpiped-shaped extension members extendable from and retractable into said second side of said thin generally rectangular-parallelepiped-shaped panel and being extended to contact the first side of the wall when the passageway of the wall is wider than said thin generally rectangular-parallelpiped-shaped panel; said pair of small, spaced-apart, extendable, retractable, and generally rectangular-parallelpiped-shaped extension members being spaced apart, so that said adjustable passageway gate can straddle a lower door hinge of a door when the passageway is created by the door being opened and can be used on doors that swing outwardly and inwardly to the right and to the left;

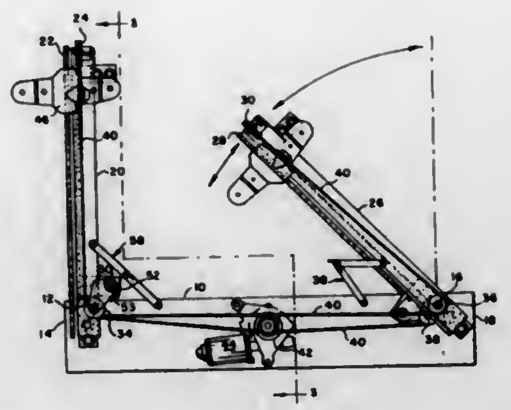
d) an elongated and generally rectangular-parallelpiped-shaped cross member displaced a distance from said thin generally rectangular-parallelpiped-shaped panel and having a centrally-disposed and laterally-oriented throughbore and contacting the second side of the wall; and

e) a bolt passing through said centrally-disposed and laterally-oriented throughbore of said elongated and generally rectangular-parallelpiped-shaped cross member and threadably engaging said centrally-disposed and laterally-oriented threaded throughbore of said thin generally rectangular-parallelpiped-shaped panel, so that the wall is sandwiched between said thin generally rectangular-parallelpiped-shaped panel and said elongated and generally rectangular-parallelepiped-shaped cross member and the passageway of the wall is blocked.

5,617,675
COLLAPSIBLE CABLE WINDOW REGULATOR
Michael D. Kobrehel, Elkhart, Ind., assignor to Excel Industries, Inc., Elkhart, Ind.
Filed Oct. 31, 1995, Ser. No. 550,577
Int. Cl.⁶ E05F *11/48*
U.S. Cl. 49—352 **20 Claims**

1. A collapsible cable regulator assembly comprising, in combination:

a) a collapsible support structure comprising
an elongate lateral member,
an elongate first swing arm having a free end and a mounted end which is pivotably mounted at a first pivot point to the lateral member, and
cable guide means, including a cable return at the free end of the swing arm,
the collapsible support structure being openable from a collapsed condition in which the swing arm is at an acute angle to the lateral

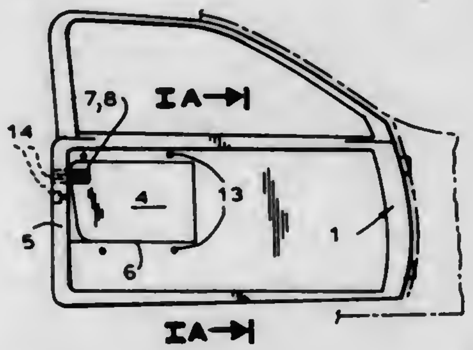


member to an operating condition in which the swing arm is at an operating angle to the lateral member which is greater than the acute angle;

b) a regulator cable mounted to the collapsible support structure; and

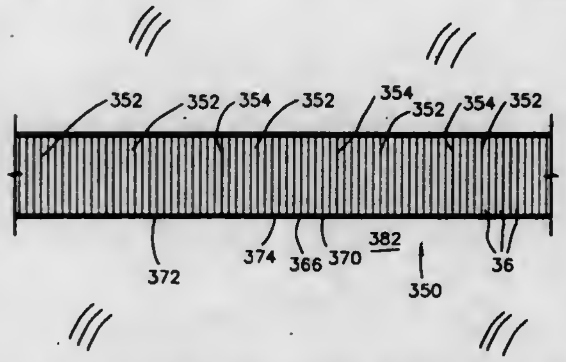
c) tensioning means for taking up slack in the regulator cable.

5,617,676
MOTOR-VEHICLE DOOR
Frank Kleefeldt, Heiligenhaus; Damien Labonde, Essen, and Klaus-Peter Reis, Detern-Velde, all of Germany, assignors to Kiekert AG, Heiligenhaus, Germany
Filed May 17, 1996, Ser. No. 650,133
Claims priority, application Germany, May 18, 1995, 195 18 300.2
Int. Cl.⁶ B60J *5/04*
U.S. Cl. 49—502 **6 Claims**



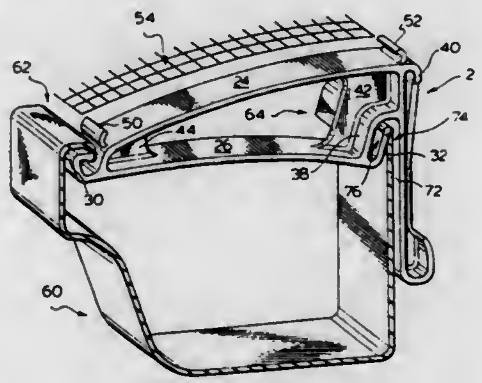
1. A motor-vehicle door comprising:
an outer skin;
an inner skin fixed to the outer skin, forming therewith a cavity, and formed with a cutout;
a mechanism holder releasably secured in the cavity at the cutout;
a latch;
means including a horizontally effective slide mount engaged between the latch and the holder for displacement of the latch horizontally on the holder and for fixing the latch on the holder in any of a plurality of horizontally offset positions thereon; and
means including a detent engaged between the slide mount and the latch for releasably securing the latch in a one of the positions.

5,617,677
TANK OR CHANNEL COVER
Jeffrey A. Hallsten, Sacramento, Calif., assignor to Hallsten Corporation, Sacramento, Calif.
Continuation-in-part of Ser. No. 932,491, Aug. 20, 1992, Pat. No. 5,325,646. This application Jul. 1, 1994, Ser. No. 270,010
Int. Cl.⁶ E04B *1/32*
U.S. Cl. 52—3 **10 Claims**



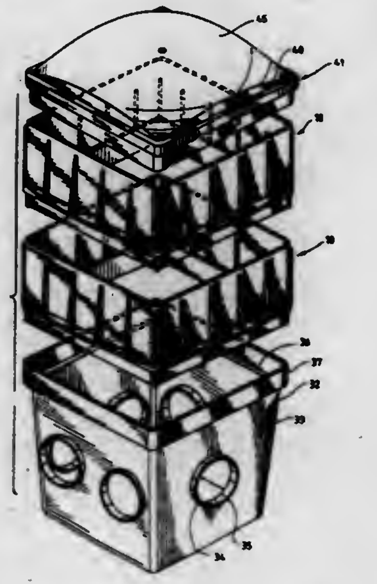
1. A cover for an open-topped structure such as a tank having a cover supporting rim or edge, comprising:
at least one panel with a plurality of planks forming each panel, said planks connected together edge-to-edge with tongue-in-groove means for connecting plank edges,
each of said panels having side members extending transversely along the planks at edges thereof, said side members having plank receiving means therein for receiving ends of planks and supporting the planks from the side member,
each side member having outside edge connection means for transferring load from the planks to adjacent structure parallel to the side member such that said load is ultimately transferred to the cover supporting rim or edge of the open-topped structure, and
isolation means between the cover and the cover supporting rim or edge, for isolating the cover from contact with the rim or edge.

5,617,678
EAVESTROUGH SYSTEM
George A. Morandin, Thornhill; Jerry Moscovitch, Toronto, and Miro Glisch, Scarborough, all of Canada, assignors to GSW Inc., Toronto, Canada
Continuation of Ser. No. 3,466, Jan. 12, 1993, abandoned. This application Oct. 3, 1994, Ser. No. 316,369
Claims priority, application Canada, Aug. 28, 1992, 2077109
Int. Cl.⁶ E04D *13/064*
U.S. Cl. 52—11 **14 Claims**



1. In combination, a plastic eavestrough hook and an eavestrough, said plastic eavestrough hook supporting in a hanging manner said eavestrough on either side thereof, said eavestrough hook having a base for securement to a facia, two angled spring arms positioned one below the other at said base and integral therewith, said spring arms extending outwardly from said base and converging to an outer eavestrough hanging position where said arms are integrally connected, said eavestrough hook adjacent the lower of said angled spring arms including aft inner eavestrough hanging position, said spring arms being connected at either end and open intermediate to define a large open space therebetween which accommodates separate deflection of each spring arm, said inner and outer eavestrough hanging positions each including a connection by means of which said eavestrough is hung from said eavestrough hook and accommodates sliding movement of the eavestrough relative to the eavestrough hook in a direction generally along the length of the eavestrough.

5,617,679
STACKABLE RISER FOR ON-SITE WASTE AND DRAINAGE SYSTEMS
Theodore W. Meyers, Inverness, Ill., assignor to Tuf-Tite, Inc., Wauconda, Ill.
Filed Dec. 29, 1994, Ser. No. 365,706
Int. Cl.⁶ E02D *29/14*
U.S. Cl. 52—20 **31 Claims**

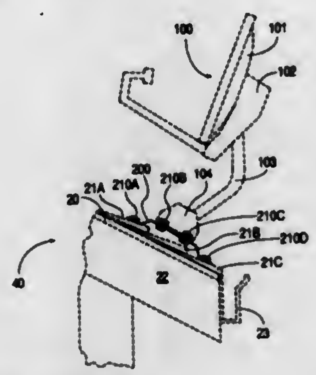


24. A stackable riser and underground component combination comprising:
an underground component positioned below grade level and including access means for allowing access to an interior of said underground component;
at least one stackable riser including an uppermost riser and a continuous peripheral side wall having inner and outer surfaces and having a top edge portion and a bottom edge portion, said inner surface of said peripheral wall defining a vertical passageway extending between said top and bottom edge portions;
said at least one stackable riser further including a U-shaped connecting member extending from said bottom edge portion of said side wall which includes a transverse intermediate portion and first and second generally perpendicular dependent legs, said U-shaped connecting member defining a channel between said dependent legs which is shaped to receive a top edge portion of another riser;
said at least one stackable riser including a first riser which has its U-shaped connecting member positioned on said underground component so that said passageway is positioned above said access means;
cover means for attaching to said uppermost riser and for covering said vertical passageway, said cover means comprising an imperforate cover including a generally U-shaped peripheral attachment portion which includes a transverse interme-

diate portion and first and second depending legs, said U-shaped attachment portion defining a channel between said first and second depending legs which is shaped to receive said top edge portion of said uppermost riser; and

a plurality of vertically-extending inner ribs positioned on said inner surface of said side wall of said at least one stackable riser, said inner ribs including terminal edges which form shoulders positioned a predetermined distance away from a tip of said top edge portion of said side wall.

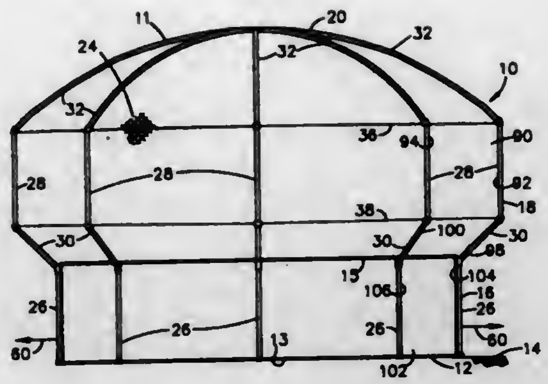
5,617,680
MOUNTING STRUCTURE FOR A SATELLITE DISH
Douglas Beatty, 3893 Glengrove Way, San Jose, Calif. 95121
Filed Jul. 21, 1994, Ser. No. 278,308
Int. Cl.⁶ H01Q *1/12*
U.S. Cl. 52—27 **21 Claims**



1. An apparatus comprising:
a building;
a mounting structure supported by said building, said mounting structure being attached to at least two support members of said building; and
a satellite dish supported by said mounting structure;
wherein said mounting structure comprises:
a first foot portion supported by said building;
a second foot portion supported by said building;
a first leg portion integrally connected to said first foot portion;
a second leg portion integrally connected to said second foot portion; and
a bridge portion integrally connected to said first leg portion and to said second leg portion, said first leg portion and said second leg portion elevating said bridge portion with respect to said first foot portion and said second foot portion, said bridge portion supporting said satellite dish;
wherein said building has a roof and each of said first foot portion and said second foot portion is supported by both a first roof eave stud of said building and a second roof eave stud of said building.

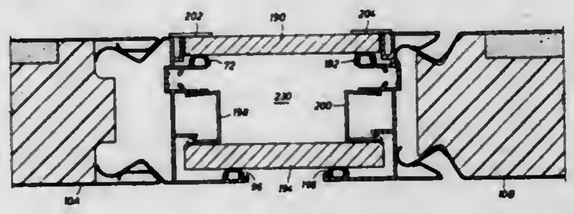
5,617,681
FREE-STANDING OUTDOOR ENCLOSURE
Richard D. Lyons, HC 61 Box 174, Clewiston, Fla. 33440
Filed Apr. 14, 1995, Ser. No. 422,999
Int. Cl.⁶ E04H *3/16*; A45F *1/00*
U.S. Cl. 52—82 **17 Claims**

1. A free-standing enclosure comprising:
a frame that includes a lower section having a plurality of elongate, substantially vertical support members and means for engaging the ground, a side section mounted to and extending upwardly from said lower section and including a like plurality of elongate, substantially vertical support segments that are arranged about the periphery of the enclosure, a lower end of each said support segment being interconnected to an upper end of a respective said support member, a roof section having a like plurality of elongate, flexible sup-



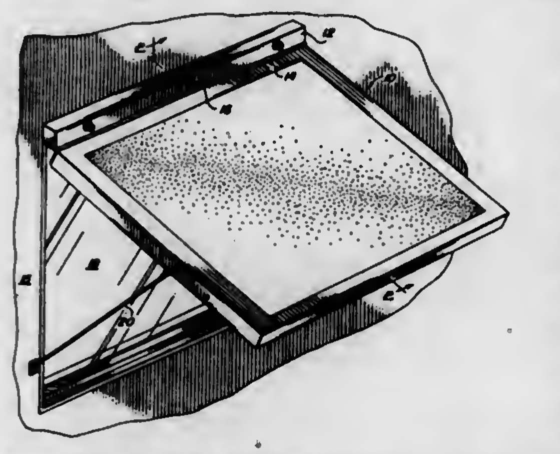
port elements interconnected in a radial arrangement, and means for attaching a distal end of each flexible support element to an upper end of a respective support segment such that said flexible support elements are flexed into an upwardly arched condition and said support segments and said support members are urged radially outwardly, and
flexible skin means, which extend across and are attached integrally to said lower, side and roof sections of said frame and which include a plurality of elongate channels, each said channel being wrapped fully around and receiving a respective interconnected support member, support segment and support element, for holding said flexible support elements in said flexed condition and resisting radially outward movement of said support segments and said support members to hold said frame in position and define an enclosed space.

5,617,682
INSULATED SKYLIGHT PANEL
Michael E. Christopher, Houston, Tex., assignor to Texas Aluminum Industries, Inc., Houston, Tex.
Filed Jun. 7, 1995, Ser. No. 474,514
Int. Cl.⁶ E04B *7/18*
U.S. Cl. 52—200 **20 Claims**



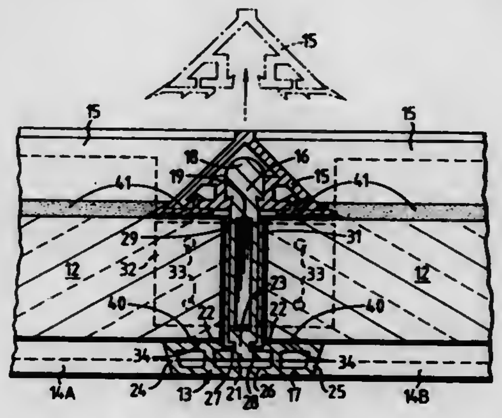
1. A skylight panel for suspending a radiation attenuating member between a first longitudinally extending building panel and a second longitudinally extending building panel, said first and second longitudinally extending building panels adapted to be mounted substantially planar to each other and spaced apart, said first longitudinally extending building panel having an upper and a lower first panel connector projecting from a first side of said first longitudinally extending building panel, said second longitudinally extending building panel having an upper and a lower second panel connector extending from a second side of said second longitudinally extending building panel, said second panel connectors adapted to be directed toward the first side of said first longitudinally extending building panel, said skylight panel comprising:
a first longitudinally extending skylight frame adapted to be adjacently positioned to the first longitudinally extending building panel, said first longitudinally extending skylight frame including:
an upper and a lower first connector, said upper first connector proximally coupled to the top of said first longitudinally extending skylight frame, said lower first connector proximally coupled to the bottom of said first longitudinally extending skylight frame, said upper and lower first connectors adapted to be coupled to the upper and lower first panel connectors of the first longitudinally extending building panel; and
a first lower flange mounted substantially perpendicularly to said first longitudinally extending skylight frame, said first lower flange having a first end proximally coupled to the bottom of said first longitudinally extending skylight frame and a second end extending away from said lower first connector;
a second longitudinally extending skylight frame adapted to be adjacently positioned to the second longitudinally extending building panel, said second longitudinally extending skylight frame including:
an upper and a lower second connector, said upper second connector proximally coupled to the top of said second longitudinally extending skylight frame, said lower second connector proximally coupled to the bottom of said second longitudinally extending skylight frame, said upper and lower second connectors adapted to be coupled to the upper and lower second panel connectors of the second longitudinally extending building panel; and
a second lower flange mounted substantially perpendicularly to said second longitudinally extending skylight frame, said second lower flange having a first end proximally coupled to the bottom of said second longitudinally extending skylight frame and a second end extending toward said first lower flange, said first and second lower flanges adapted to support the radiation attenuating member;
a first middle flange coupled to said first longitudinally extending skylight frame and positioned above said first lower flange;
a second middle flange coupled to said second longitudinally extending skylight frame and positioned above said second lower flange;
a first cleat coupled to said first middle flange; and
a second cleat coupled to said second middle flange, said first and second cleats adapted to secure said radiation attenuating member to the lower flanges.

5,617,683
SHUTTER PANEL
Theodore K. Ney, 9089 W. Shaddock Rd., Fort Myers, Fla. 33912
Filed Mar. 25, 1996, Ser. No. 621,523
Int. Cl.⁶ E06B *3/26*
U.S. Cl. 52—202 **3 Claims**



1. A shutter panel for protecting window openings comprising
a rectangular frame made of U-shaped metal channels, the flat center portion of the channels forming the outer edges of the panel, said frame enclosing a multi-layered assembly of components which include
a center sheet of metal having spaced apart parallel V-shaped grooves stamped into the sheet to increase the rigidity of the sheet,
two sheets of extruded polystyrene lying against the opposite sides of the metal sheet,
two sheets of screening each lying against the side of a sheet of extruded polystyrene remote from the center metal sheet, and
a layer of exterior finish stucco troweled over each of the two sheets of screening and the sheets of extruded polystyrene to form when dry the surfaces of the shutter panel,
each of said components being sized to fit within the rectangular metal frame.

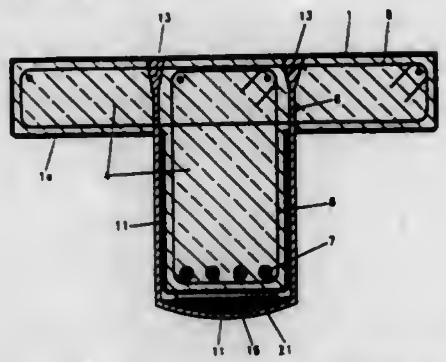
5,617,684
GLAZING BAR
Gary Sheath, 1A Roman Way, Bedhampton, Havant, Hants, United Kingdom
PCT No. PCT/GB93/02494, § 371 Date Sep. 29, 1995, § 102(e) Date Sep. 29, 1995, PCT Pub. No. WO94/13920, PCT Pub. Date Jun. 23, 1994
PCT Filed Dec. 6, 1993, Ser. No. 448,410
Claims priority, application United Kingdom, Dec. 4, 1992, 9225406
Int. Cl.⁶ E06B *3/64*
U.S. Cl. 52—204.57 **21 Claims**



1. A grid structure of mutually perpendicular glazing bars comprising at least one glazing bar extending between and substantially perpendicular to an aligned pair of glazing bars, each glazing bar comprising a central load bearing portion, a base portion which projects from either side of the central portion to provide a seat for a pane of glazing material, and a snap fit formation at a location on the central portion which is spaced from the base portion, and in combination with each glazing bar, a clamping section adapted to be releasably snap fitted onto the snap fit formation whereby to clamp a respective pane of glazing material on each of said seats, locating means embedded in the adjacent ends of the bars of the aligned pair and extending therebetween through said one glazing bar and operable to locate the aligned pair of glazing bars substantially relative on one another and to said one glazing bar, a clamping section releasably snap-fitted onto the snap-fit formation whereby to clamp a respective pane of glazing material on each of said seats, the central load bearing portion and the base portion being interlocked, wherein each glazing bar has a uniform cross-section, an outer end portion of each central load bearing portion of each glazing bar that forms said snap-fit formation and that extends outwardly beyond that part of said clamping section that is nearest to said seat when said clamping section is snap-fitted onto said formation, and the other outer end portion of each central load bearing portion that extends outwardly beyond said seat are solid, and said solid outer end portions are interconnected by a mid-portion which is hollow, the interior of the hollow portion being disposed centrally of the central load bearing portion and extending along the length thereof and the locating means embedded in the adjacent ends of the aligned pair of glazing bars are received within the interior of the hollow load bearing portions thereof and extending through a lateral aperture formed solely through the

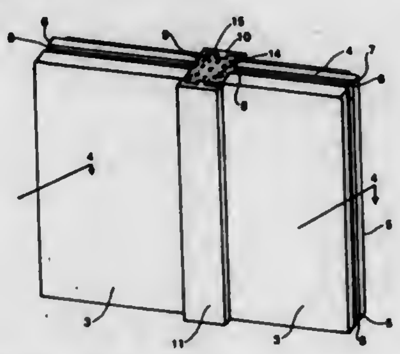
hollow mid-portion of the central load bearing portion of the intervening said one glazing bar whereby they are embedded therein.

5,617,685
METHOD AND APPARATUS FOR INCREASING THE SHEAR STRENGTH OF A CONSTRUCTION STRUCTURE
Urs Meier, Schwerzenbach; Martin Deuring, Zurich, and Heinz Meier, Winterthur, all of Switzerland, assignors to Eidgenoessische Materialpruefungs- Und Forschungsanstalt Empa, Switzerland
PCT No. PCT/CH93/00085, § 371 Date Oct. 24, 1994, § 102(e) Date Oct. 24, 1994, PCT Pub. No. WO93/20296, PCT Pub. Date Oct. 14, 1993
PCT Filed Mar. 26, 1993, Ser. No. 157,104
Claims priority, application Switzerland, Apr. 6, 1992, 1113/92
Int. Cl.⁶ E04C *3/26;3/293*
U.S. Cl. 52—223.8 **12 Claims**



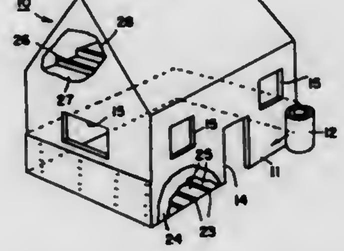
9. An elongated bearing member having a length and a width, said elongated bearing member having increased shear strength and comprising at least one pre-stressing means having a form selected from a group consisting of a lamination, belt, hose, tube, band and cable, wherein said at least one pre-stressing means is present in a pre-stressed manner in at least one cross-sectional area of said elongated bearing member, extends substantially transverse to the length of said elongated bearing member, and has ends embedded at least in part in the elongated bearing member and has an intermediate portion which rests against at least a portion of a peripheral surface of said at least one cross-sectional area.

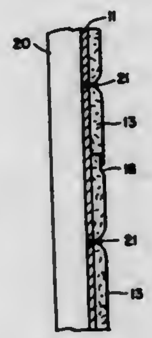
5,617,686
INSULATING POLYMER WALL PANELS
Daniel P. Gallagher, Jr., 7662 Estate Clr., Niwot, Colo. 80503
Filed Jun. 7, 1995, Ser. No. 478,201
Int. Cl.⁶ E04C *1/00*
U.S. Cl. 52—309.12 **20 Claims**



1. A wall panel assembly comprising:
a wall panel sheet having an inner surface and an outer surface and a top and side edges;
a longitudinally extending groove formed in at least one of said edges;
a first spline secured to said inner surface at said edge having said groove and a second spline secured to said outer surface at said edge having said groove, whereby said splines and said edge having said groove define walls of a channel; cement filled into said channel and said groove to form a structural post or beam.

5,617,687
INSULATION BARRIER
Harry Bussey, Jr., 440 Seaview Ct.-Apt. 1812, Marco Island, Fla. 33937, and Harry Bussey, III, 4 Windy Hill, Atlantic Highlands, N.J. 07716
Filed Oct. 24, 1995, Ser. No. 547,437
Int. Cl.⁶ E04B *1/74;5/00*
U.S. Cl. 52—404.2 **9 Claims**

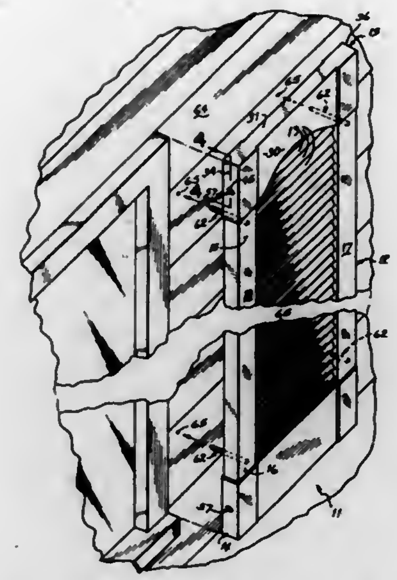




1. In combination,
a building having exterior sheathing thereon;
an insulation barrier wound peripherally around said building in a plurality of adjacent windings, said barrier including a flexible foamed polyethylene substrate in contact with said sheathing; and
a plurality of fasteners securing said barrier to said sheathing.
5. In combination
a building having at least one wall including a plurality of spaced apart vertically disposed studs;
an insulation barrier secured to said wall, said barrier being secured to and extending transversely of said studs and having a flexible foamed polyethylene substrate in contact with said studs and a polyethylene film secured to and over said substrate; and
a plurality of fasteners passing through said barrier into said studs to secure said barrier to said studs and to resiliently compress said barrier thereat.

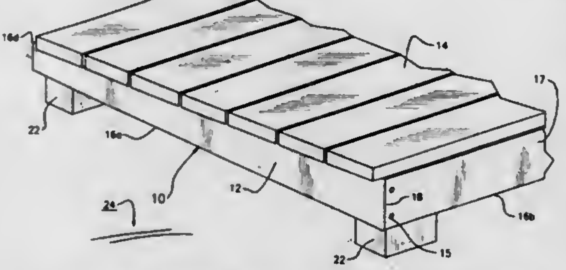
5,617,688
ADJUSTABLE SHUTTER WITH REVERSIBLE END CAP
Ginger Gandy, Cincinnati, Ohio; Doug Vagedes, Union, and Michael Vagedes, Florence, both of Ky., assignors to Richwood Building Products, Inc., Richwood, Ky.
Filed Apr. 16, 1996, Ser. No. 633,062
Int. Cl.⁶ E06B *7/08*
U.S. Cl. 52—473 **11 Claims**

1. A shutter assembly having an outer and an inner surface comprising:
a body portion having upper and lower ends including two vertical stiles;
a cap having first and second vertical side walls and a first panel extended from said first vertical side wall to said second vertical side wall, and a second panel extended from said first vertical side wall to said second vertical side wall, said first



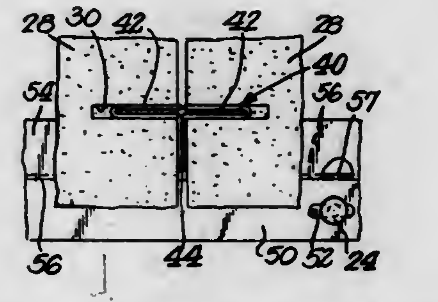
panel and said second panel being spaced apart and reversible, and each having a different ornamental appearance so that said first panel and said second panel can be alternately displayed as the outer surface of said shutter, said cap formed to receive and surround one of said upper and lower ends of said body portion in a sliding manner, thereby allowing the length of said shutter to be adjusted by covering selected lengths of said one of the ends with said cap and the ornamental appearance of the shutter can be altered by selecting which of said first and second panels cover the outer surface of said shutter.

5,617,689
SYSTEM FOR ASSEMBLING DECK STRUCTURES
Douglas J. Beane, 1062 S. Yachtsman Dr., Sanibel, Fla. 33957
Filed Jul. 12, 1995, Ser. No. 501,549
Int. Cl.⁶ E04B *5/00*
U.S. Cl. 52—489.1 **20 Claims**



1. A system for assembling for a deck structure comprising:
a peripheral frame that includes a plurality of elongate, interconnected joist members, each said member having means defining at least one inwardly facing longitudinal slot, each said slot having an interior portion and an entrance that is narrower than said interior portion;
at least one elongate stringer that extends between a pair of said joist members, each said stringer including a pair of receptacles formed in respective ends thereof;
means for interconnecting each end of each said stringer to a respective joist member, including at least one mounting bracket, each said bracket having a first leg that engages said respective joist member and a second leg that is attached angularly to and extends from said first leg and is received by said receptacle in said end of said stringer, and means for connecting each said bracket to said respective joist member, said means for connecting including at least one primary connector element, each said primary connector element being retained by and extending from said slot and engaging a corresponding opening in said first leg of said bracket and at least one secondary connector element, each said secondary connector element being engaged with a respective said primary element to restrict said bracket from disengaging said first connector element, whereby each said stringer is mounted to a pair of joist members.

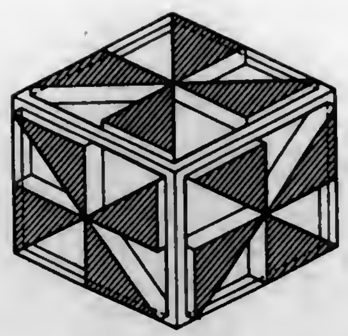
5,617,690
SLATE MOUNTING ASSEMBLY
Alden T. Gibbs, 158 Conduit St., Annapolis, Md. 21401
Filed Jan. 15, 1993, Ser. No. 4,962
Int. Cl.⁶ E04D *1/08*
U.S. Cl. 52—518 **25 Claims**



1. A mounting assembly for mounting panels to a structure for forming a roof or wall for the structure wherein the structure has framework, said assembly being in combination with said structure and said panels, said assembly comprising a plurality of spaced parallel generally flat mounting tracks, each of said tracks having a base portion mounted against and to said framework, each of said tracks having fastener accommodating structure, a plurality of rows of mounting panels, each of said rows of panels being associated with a respective one of said tracks, each of said panels having two spaced side edges, surface indentations in each of said panel side edges, a fastener in the form of an intermediary device engaged in each of said surface indentations, each of said fasteners being secured to its said track by being detachably hooked to said fastener accommodating structure, each of said panels being imperforate except for any perforations at said surface indentations, said rows of panels being mounted in an overlapping manner with respect to each other to cover and conceal said fasteners, said tracks being separate and distinct from said framework, each of said tracks having an offset portion extending away from said base and spaced from said framework, said offset portion comprising said fastener accommodating structure, said mounting track being made of a one-piece z-shaped member comprising said base portion having a bent transition portion which terminates in said offset portion, drain holes being in said transition portion, and fastening openings being in said base portion.

5,617,691
FITTING STRUCTURE OF RECTANGULAR PARALLELOPIPEDAL BLOCKS
Ken Yamamoto, Nerima-ku, Japan, assignor to Doryokuro Kakunenryo Kaihatsu Jigyodan, Tokyo-to, Japan
Filed Apr. 13, 1995, Ser. No. 422,308
Claims priority, application Japan, Apr. 22, 1994, 6-084380
Int. Cl.⁶ E04B *5/04*
U.S. Cl. 52—604 **8 Claims**

1. A rectangular parallelopipedal block for fitting with substantially identical blocks, said block comprising:
six rectangular exterior surfaces defining three pairs of opposed rectangular surfaces; and

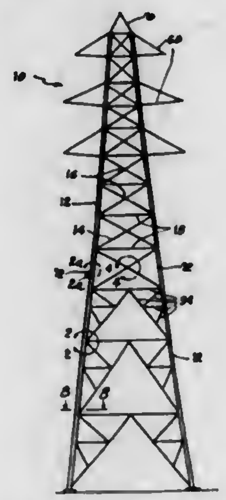


a pattern of concavities and convexities formed on each of said six rectangular surfaces of said block,

each of said patterns of concavities and convexities has a symmetry of rotation of at least every 180 degrees around the center of said rectangular surface, respectively, and a complementary symmetry of axis with respect to a center line passing through the center and being parallel with a side of said respective rectangular surface,

wherein each said pattern of concavities and convexities of at least one of said pairs of opposed rectangular surfaces has a symmetry of rotation at every 90 degrees around the center of said respective rectangular surface, and said patterns of concavities and convexities of each pair of rectangles are congruent.

5,617,692
COMPOSITE STRUCTURE
David W. Johnson, San Diego County; W. Brandt Goldsworthy, and George Korzeniowski, both of Los Angeles County, all of Calif., assignors to Ebert Composites Corporation, San Diego, Calif.
Continuation-in-part of Ser. No. 828,499, Jan. 31, 1992, Pat. No. 5,285,613, and a continuation-in-part of Ser. No. 7,079, Jan. 21, 1993, Pat. No. 5,319,901. This application Feb. 14, 1994, Ser. No. 196,650
Int. Cl.[6] E04H *12/02*
U.S. Cl. 52—651.02 **19 Claims**



1. Composite construction wherein a structure derives substantially all its structural strength and integrity from pultruded structural members interconnected at substantially fastener-free joints, comprising:

(a) columns of substantially identical cross-section throughout their lengths and each defining a pair of deeply re-entrant longitudinally extended substantially plane-defining channels each having detent sidewalls configured to present a detent structure for mating crossmember ends inserted therein along the column length;

(b) a plurality of pultruded column-supporting crossmembers having ends with opposed locking sidewalls which are compressible together to permit insertion of said ends into said channels, said locking sidewalls being configured to matingly engage the detent sidewalls of said channels when inserted therein and permitted to resiliently expand in locked relation therewith;

(c) said columns being formed with a continuous peripheral skin covering both of said channels and having a discrete crossmember-receiving window in said skin for each crossmember to be received in the respective channel, said windows being dimensioned and configured to substantially flushly fit the perimeter of the crossmember to be inserted therein;

(d) said construction substantially defining a polygon in horizontal cross-section with one of said columns at each corner of said polygon to define upright legs of said construction; and,

(e) a plurality of said column-supporting crossmembers each spanning between two of said upright legs and the ends of said crossmembers are configured to matingly engage in the channel of the respective leg and substantially completely fill the respective window in the respective leg through which the respective crossmember passes.

5,617,693
PREFABRICATED WALL TRUSSES FOR SUPER-INSULATED WALLS
Richard P. Hefner, 1905 Anhalt Dr., Madison, Wis. 53704
Filed Jan. 22, 1996, Ser. No. 589,615
Int. Cl.[6] E04C *3/292;3/16*
U.S. Cl. 52—693 **9 Claims**

1. A factory-fabricated structural truss for fabricating super-insulated walls of a building, comprising:

a) a vertically disposed first stud selected from the group of dimensioned timbers consisting of 2×4's and 2×6's, the stud positioned to form a portion of an exterior wall of a building, wherein the first stud has lower portions which face outwardly;

b) a second stud spaced outwardly from and parallel to the first stud, wherein the second stud has a thickness substantially the same as the first stud and a width in the outward direction substantially less than the width in the outward direction of the first stud;

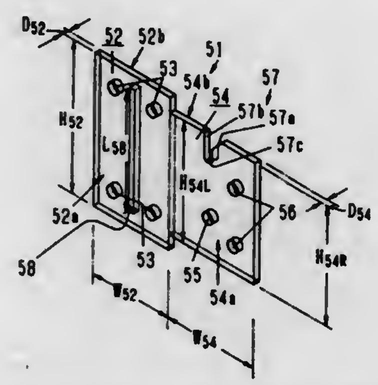
c) a plurality of wood spacers which extend horizontally between the first stud and the second stud;

d) at least one diagonal wood member extending on a diagonal between the first stud and the second stud to stiffen the truss;

e) an extension wood member that is positioned adjacent to outwardly facing lower portions and which extends below the first stud, wherein the second stud extends downwardly in spaced parallel relation to the extension member to form a portion of the truss which extends downwardly below the first stud, wherein the extension member is spaced a first distance from the second stud, and the first stud is spaced a distance from the second stud which is greater than said first distance; and

f) a plurality of pairs of metal truss plates joining the spacers, wherein the spacers and said at least one diagonal member are connected to the first stud and the second stud by said truss plates, and the extension member is connected to said first stud by said truss plates.

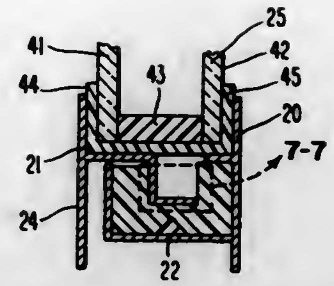
5,617,694
BEAM OR GIRDER JOINT ELEMENT
Eihachiro Baba, Tokyo, Japan, assignor to Kabushiki Kaisha Kenchiku Shiryo Kenkyusha, Tokyo, Japan
Filed Apr. 26, 1995, Ser. No. 429,136
Claims priority, application Japan, Apr. 27, 1994, 6-112316
Int. Cl.[6] E04B *1/38*
U.S. Cl. 52—712 **6 Claims**



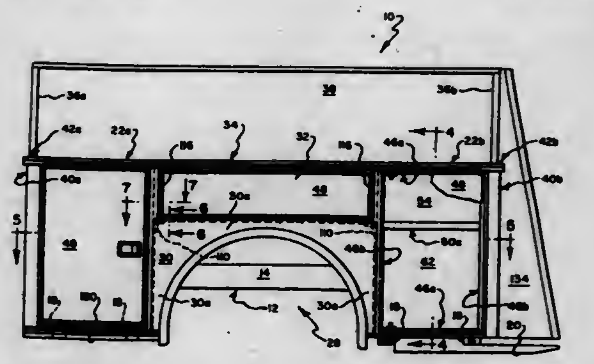
1. A beam or girder joint element formed by a flat plate member which comprises: (a) a square column connecting plate portion which has a plurality of pin receiving through holes and a vertically extending slit; and (b) a beam or girder connecting plate portion which is formed as a unitary structure with the column connecting plate portion and extended therefrom along its right- or left-hand marginal edge and has a pin receiving through hole, a plurality of bolt holes and a V-shaped guide groove defined by a slope extending down from the upper edge of the beam or girder connecting plate portion toward the column connecting plate portion and a vertical edge opposite to the slope.

5,617,695
THERMALLY INSULATED COMPOSITE FRAME MEMBER AND METHOD FOR THE MANUFACTURE THEREOF
William B. Brimmer, 1238 Valley Hill Trail, Southampton, Pa. 18966
Continuation-in-part of Ser. No. 199,999, Feb. 22, 1994, abandoned. This application Jan. 30, 1995, Ser. No. 380,700
Int. Cl.[6] E06B *3/263*
U.S. Cl. 52—717.02 **9 Claims**

6. A thermally insulated architectural frame member comprised of an elongated first metal section, an elongated second metal frame section and a preformed thermal break section; said first metal member having a longitudinal first outer wall and an extension extending laterally and inwardly from the outer wall thereof which in combination with the outer wall forms a first channel of a first predetermined cross sectional shape; the second metal frame section having a second outer wall portion and an integral extension extending laterally and inwardly from the second outer wall portion of a second predetermined cross sectional configuration including a generally ell shaped locking foot; said first and second predetermined cross sectional shapes being selected so that when the first and second metal sections are in an opposing relationship the ell shaped locking foot of the second metal section can be inserted into the channel of the first metal section in a spaced apart relationship; said preformed thermal break section being preformed from a rigid material having a low thermal conductivity as compared to metal and having an outer wall substantially mating the cross section of the channel of the first metal section and including a second channel for receiving the ell shaped locking foot in locking engagement spaced apart from the outer wall of the thermal break section; said thermal break section being positioned within the channel of the first metal section and said second metal section being positioned in an opposing relationship to the first metal section with the ell shaped locking foot engaged with the second channel in the thermal break section whereby the first metal section and the second metal section are mechanically secured together and thermally insulated from each other by the thermal break section and wherein the ell shaped locking foot includes vertical and horizontal elements which together substantially conform to the interior of the second channel and wherein the horizontal element of the locking foot is wider than the width of the second channel by an amount sufficient to cause the locking foot to snap lock in place within the second channel.



5,617,696
MODULAR COMPARTMENTS FOR UTILITY VEHICLE
Richard E. Young, Lancaster, N.Y., assignor to American LaFrance Corporation, Portland, Oreg.
Division of Ser. No. 18,200, Feb. 16, 1993, Pat. No. 5,421,645. This application Jun. 1, 1995, Ser. No. 456,765
Int. Cl.[6] E04C *3/32*
U.S. Cl. 52—730.1 **9 Claims**



1. An extrusion for use in forming a chamber upon end joining four lengths of said extrusion, said extrusion comprising:

first and second oppositely facing elongated surface portions for use in defining inwardly and outwardly facing surfaces of said chamber, respectively, and being bounded along opposite lengthwise extending edges thereof by first and second edge portions, said first edge portion having a first part upstanding from said second surface portion and defining a first surface facing transversely outwardly of said extrusion, a second part

joined to said first part and defining second, third and fourth surfaces, said second surface having an inner edge joining said first surface and facing generally towards said second surface portion, said third surface edge joining an outer edge of said second surface and facing transversely outwardly of said extrusion, said fourth surface having an outer edge joining said third surface and facing generally away from said second surface portion, and a third part joined to said second part and defining a fifth surface edge joining an inner edge of said fourth surface and facing transversely outwardly of said extrusion, and said second edge portion defining a fourth part upstanding from said second surface portion and defining a sixth surface facing transversely outwardly of said extrusion, a fifth part joined to said fourth part and defining a seventh surface having an inner edge joined to said sixth surface and facing generally towards said second surface portion, and a sixth part joined to said fifth part and defining an eighth surface edge joined to an outer edge of said seventh surface and facing transversely outwardly of said extrusion and including a reinforcing flange portion arranged intermediate said first and second edge portions.

5,617,697

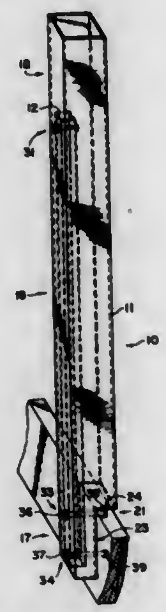
COMPOSITE DECK POST

Ronald D. Erwin, Fayetteville, Ga., assignor to Erwin Industries, Inc., Peachtree City, Ga.

Filed Jan. 3, 1996, Ser. No. 582,510

Int. Cl.⁶ E04C *3/30*

U.S. Cl. 52—737.4 **3 Claims**



1. A composite deck post for use with a wood joist of a wood deck and for attachment thereto with at least one fastener, the composite deck post comprising:

an elongate, hollow, extruded plastic shell, said plastic shell having a width and a depth and being rectangular in cross-section and having an upper end and a lower end, said plastic shell having a notch formed therein adjacent said lower end for receiving a wood joist of a wood deck, said notch having a width and a depth; and

an elongate, tubular metal stiffening member positioned within said plastic shell and extending from said lower end of said plastic shell toward, but not reaching, said upper end of said plastic shell, said metal stiffening member being rigidly secured to said plastic shell beneath and generally adjacent said upper end of said plastic shell, said plastic shell having at least one mounting hole adjacent said notch for mounting said composite deck post to the wood joist with a fastener, said metal stiffening member having at least one mounting hole aligned with said at least one mounting hole of said plastic shell and wherein said depth of said plastic shell, said depth of said notch, and said metal stiffening member are dimensioned such that an edge of said metal stiffening member protrudes into said notch or is at least coextensive with an edge of said notch.

5,617,698

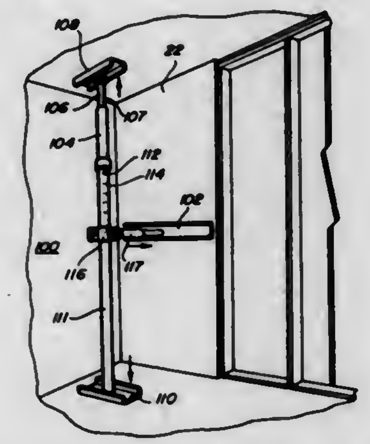
CLAMP FOR HOLDING WALL PANEL AGAINST ADHESIVE

Bruce T. Guilmette, Ortonville, Mich., assignor to Foamseal, Inc., Oxford, Mich.

Filed Jan. 30, 1995, Ser. No. 380,391

Int. Cl.⁶ E04D *15/00*

U.S. Cl. 52—749.1 **25 Claims**



1. A clamp holding a wall panel against an adhesive on a structure comprising:

a first surface to be placed in contact with a panel to be held;

a fluid control applying a fluid force to hold a panel against said first surface; and

a securement structure to secure said clamp to a location adjacent the panel.

5,617,699

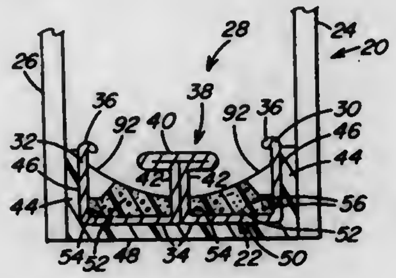
SPACER FOR AN INSULATING UNIT HAVING IMPROVED RESISTANCE TO TORSIONAL TWIST

Albert E. Thompson, Jr., New Kensington, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 326,565, Oct. 20, 1994, Pat. No. 5,553,440. This application Sep. 15, 1995, Ser. No. 529,180

Int. Cl.⁶ E04C *2/54*

U.S. Cl. 52—786.13 **23 Claims**



1. A spacer stock comprising:

an elongated member having a pair of outer legs defined as a first leg and a second leg, the first and second legs interconnected by a base, the first and second legs and the base providing a generally U-shaped cross section with the first and second legs spaced from one another and only contacting one another by way of the base, and

a strengthening member integrally formed with the base, extending away from the base, and spaced from and out of contact with the first and second legs.

5,617,700

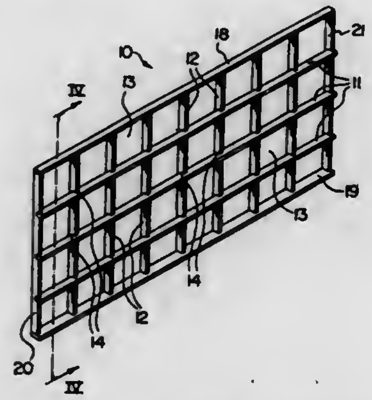
PREFABRICATED BUILDING PANEL

Jerauld G. Wright, Suite 100, 56 Sparks Street, Ottawa, Ontario, Canada, and Sidney K. Tissington, Box 2332, Chilliwack, British Columbia, Canada

Filed Jul. 17, 1995, Ser. No. 503,389

Int. Cl.⁶ E04C *2/32*

U.S. Cl. 52—793.1 **24 Claims**



1. A prefabricated building panel of predetermined length, width, and thickness which extend in mutually perpendicular directions, the panel having opposed major surfaces spaced in the thickness direction, comprising a grid formed by a first planar array of spaced parallel longitudinal members and a second planar array of spaced parallel transverse members, said longitudinal members and transverse members intersecting within the panel at a series of regularly spaced crossing points, at each crossing point at least one of said members being notched in the thickness direction of the panel to interengage with the respective member of the other array such that said arrays partially overlap in said thickness direction;

all of said members being of wood and said longitudinal members presenting nailing surfaces at one said major surface of the panel and said transverse members presenting nailing surfaces at the opposite said major surface of the panel, said transverse members being recessed with respect to said one major surface.

5,617,701

SYSTEM FOR PRODUCING AND PACKING TOBACCO ITEMS, PARTICULARLY CIGARETTES

Marco Brizzi, Zola Predosa, and Antonio Gamberini, Bologna, both of Italy, assignors to G.D. Societa' per Azioni, Bologna, Italy

Continuation of Ser. No. 304,792, Sep. 12, 1994, abandoned. This application Jan. 17, 1996, Ser. No. 587,567

Claims priority, application Italy, Sep. 20, 1993, B093A0380

Int. Cl.⁶ A65B *19/02*

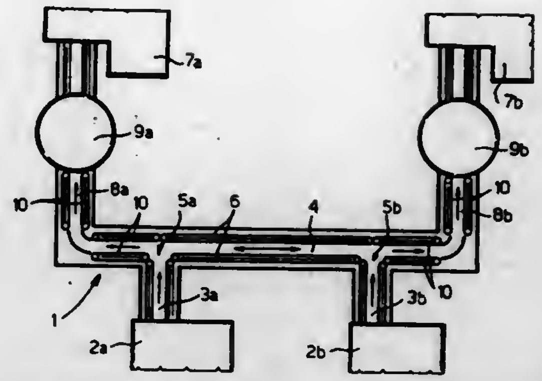
U.S. Cl. 53—168 **5 Claims**

1. A system for producing and packing tobacco articles, comprising:

first and second packing machines for said articles, each packing machine having an input channel for receiving said articles;

at least first and second article making machines having respective outputs for said articles;

at least two junctions, each junction connecting a respective said input channel of said first and second packing machines to said respective outputs of said first and second article-making machines for enabling the simultaneous straight delivery of said articles from said first article making machine to said first packing machine and from said second article making machine to said second packing machine;



a conveyor channel extending between said junctions and connecting said respective outputs to one another; and

reversible conveyor means extending along the conveyor channel between said junctions for

(1) responding to a slowing down or stopping of the first packing machine to transfer articles from the first article making machine to the second packing machine in a first cross-over delivery of the articles;

(2) responding to a slowing down or stopping of the second packing machine to transfer articles from the second article making machine to the first packing machine in a second cross-over delivery of the articles;

(3) responding to a slowing down or stopping of the first article making machine to transfer articles from the second article making machine equally between the first and second packing machines in a third cross-over delivery of the articles; and

(4) responding to a slowing down or stopping of the second article making machine to transfer articles from the first article making machine equally between the first and second packing machine in a fourth cross-over delivery of the articles.

5,617,702

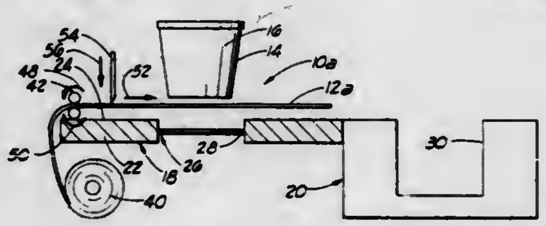
METHOD FOR SECURING A DECORATIVE COVER ABOUT A FLOWER POT

Donald E. Weder, Highland, Ill., assignor to Southpac Trust International, Inc., Oklahoma City, Okla.

Continuation of Ser. No. 165,154, Dec. 10, 1993, abandoned, which is a continuation of Ser. No. 979,389, Nov. 19, 1992, abandoned, which is a continuation of Ser. No. 832,096, Feb. 6, 1992, abandoned, which is a continuation-in-part of Ser. No. 765,416, Sep. 26, 1991, Pat. No. 5,105,599, which is a continuation of Ser. No. 530,491, May 29, 1990, abandoned, which is a continuation of Ser. No. 315,169, Feb. 24, 1989, abandoned. This application Oct. 4, 1995, Ser. No. 539,034

Int. Cl.⁶ B65B *11/58;27/00*

U.S. Cl. 53—399 **6 Claims**



1. A method for securing a sheet of material about the outer peripheral surface of a pot means wherein the pot means includes a bottom and an opening extending through an upper end of the pot means, the method comprising:

providing the pot means;
providing the sheet of material;
providing a cover former having a pot means opening for forming the sheet of material into a decorative cover about the pot means;
providing a band applicator having an object opening and a band, the band applicator being spaced a distance from the cover former;
moving the sheet of material and the pot means into the pot means opening of the cover former to form the sheet of material into a decorative cover which substantially encompasses at least the outer peripheral surface and bottom of the pot means while leaving the upper end of the pot means uncovered;
removing the pot means having the decorative cover disposed about at least the outer peripheral surface and bottom of the pot means from the pot
opening means in the cover former;
moving pot means having the decorative cover disposed about at least the outer peripheral surface and bottom of the pot means away from the cover former and into the object opening in the band applicator; and
automatically removing the band from the band applicator and automatically positioning the band about the decorative cover for securing the decorative cover in position about the outer peripheral surface and bottom of the pot means such that the opening formed through the upper end of the pot means remains substantially uncovered by the decorative cover.

5,617,703

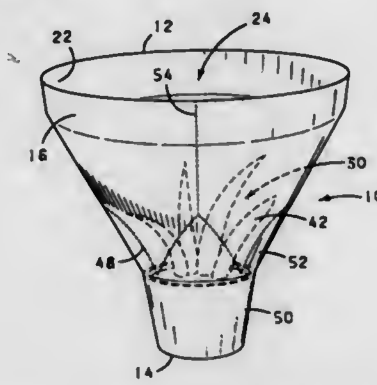
METHOD FOR FORMING A DECORATIVE COVER ABOUT A FLOWER POT

Donald E. Weder, Highland, Ill., assignor to Southpac Trust International, Inc., Okalhoma City, Okla.

Continuation of Ser. No. 237,078, May 3, 1994, which is a continuation-in-part of Ser. No. 220,852, Mar. 31, 1994, Pat. No. 5,572,851, and Ser. No. 940,930, Sep. 4, 1992, Pat. No. 5,361,482. This application Jun. 2, 1995, Ser. No. 460,180

Int. Cl.[6] A01G *9/02;* **B65B** *25/02;* **B65D** *85/52*

U.S. Cl. 53—413 **29 Claims**



1. A method of wrapping a potted plant in a decorative cover, comprising:
providing a potted plant comprising a floral grouping disposed in a pot means, the pot means having a lower end, an upper rim and an outer peripheral surface;
providing a sleeve comprising:
a base having an upper end, a lower end, an inner peripheral surface and an outer peripheral surface, the base having a flattened state wherein the base is tapered from the upper end to the lower end in the flattened state of the base and is openable from the flattened state to an opened position wherein the inner surface of the base defines and encompasses an inner retaining space, an opening being formed through the upper end of the base in communication with the inner retaining space, the base sized and tapered to fit the outer peripheral surface of the pot means and having a portion in the lower end inwardly folded to form a gusset which is unfoldable for forming a closed bottom of the base in the opened position of the base and the base having a non-linear edge in the upper end thereof;
opening the base into the opened position thereby exposing the inner retaining space of the base thereby providing a base sized and tapered for fitting the pot means;
disposing the potted plant in the inner retaining space of the base of the sleeve with the lower end of the pot means positioned upon the closed bottom of the base and with the base covering at least a portion of the outer peripheral surface of the pot means to provide the decorative cover for the potted plant; and
bondingly connecting the base to the outer peripheral surface of the pot means via bonding means.

5,617,704

METHOD OF FORMING A TUBULAR PACK OF PRINTED PRODUCTS WITH A TRANSPARENT FOIL COVER

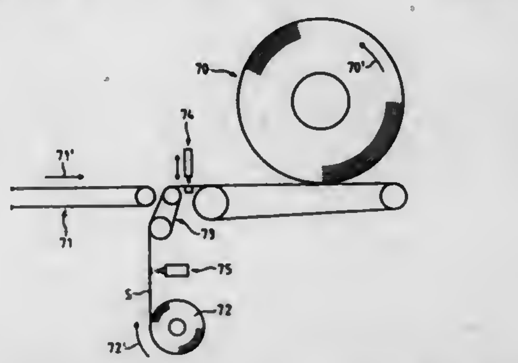
Hans-Ulrich Stauber, Grüt, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

Continuation-in-part of Ser. No. 100,976, Aug. 3, 1993, abandoned. This application Oct. 20, 1995, Ser. No. 546,214

Claims priority, application Switzerland, Sep. 15, 1992, 02899/92

Int. Cl.[6] B65B *63/04*

U.S. Cl. 53—430 **3 Claims**



1. A method for producing a sequence of tubular packs each containing a wound scale formation with a head end and a tail end, each scale formation consisting of a freely selectable number of a freely selectable kind of printed products, each pack being wrapped in a protective and holding foil, the method comprising the steps of:
delivering a first scale formation having a head end downstream toward a winding mandrel, said mandrel having an axis of rotation,
winding the scale formation onto the winding mandrel starting with the head end,
providing a supply roll of a web of transparent, self-adhesive foil for delivery to the scale formation to form a wrapper around the wound scale formation,
positioning a head end of the web on a surface of the supplied scale formation facing away from the mandrel during winding of the scale formation and moving the head end with the scale formation,
delivering and positioning the foil such that the head end of the foil is downstream of the tail end of the scale formation and such that the foil extends upstream beyond the tail end of the scale formation,
cutting the foil from the supply roll at a location along the foil spaced from the tail end of the scale formation and stopping the delivery of foil,
positioning a coating device between the supply roll and the winding mandrel so that the coating device is laterally movable relative to the foil and generally parallel with the axis of rotation of the mandrel,
with the coating device and as the foil is being delivered to the scale formation, coating the foil to form on the foil a substantially continuous, non-linear strip extending along the foil at a varying distance from a longitudinal edge of the foil, the strip having a width significantly smaller than the width of the foil, and stopping the coating when delivery of web material is stopped,
stopping the winding mandrel when the foil cut from the supply roll is fully wound around the wound scale formation to form a wrapper,
ejecting the wound and wrapped pack from the mandrel while delivery of the web is stopped and the coating device is inactive,
while the coating device is inactive, selecting coating strip width, lateral strip position, and amplitude and frequency of coating device lateral movement parameters for the coating device in accordance with characteristics of a next scale formation to be wound into a pack, and
repeating the foregoing steps for each pack to be produced.

5,617,705

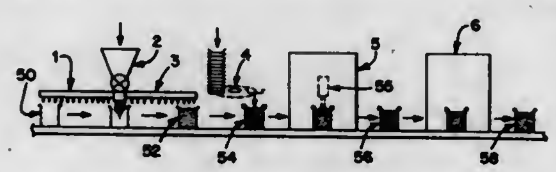
SYSTEM AND METHOD FOR SEALING CONTAINERS

James J. Sanfilippo, 505 N. Lake Shore Dr. #6806, Chicago, Ill. 60611, and John E. Sanfilippo, P.O. Box 952, Barrington, Ill. 60011

Continuation of Ser. No. 245,249, May 17, 1994, abandoned, and a continuation-in-part of Ser. No. 122,388, Sep. 16, 1993, Pat. No. 5,417,255. This application Sep. 8, 1995, Ser. No. 525,409

Int. Cl.[6] B65B *31/02*

U.S. Cl. 53—432 **11 Claims**



4. A method of operating a container sealing system comprising:
filling an open container with food product;
exposing the filled container to a select controlled environment;
pre-sealing a lid temporarily on to the filled container within a controlled environment processor, wherein said pre-sealing comprises exposing the container and lid to a sub-atmospheric pressure and then exposing the exterior of the container and lid to a higher pressure than the sub-atmospheric pressure to create a pressure differential between the interior and exterior of the container; and
thereafter permanently sealing the lid on to the pre-sealed container in a contaminating environment outside of said controlled environment processor.

5,617,706

ACCUMULATOR AND COLLATOR FOR PACKAGING APPARATUS

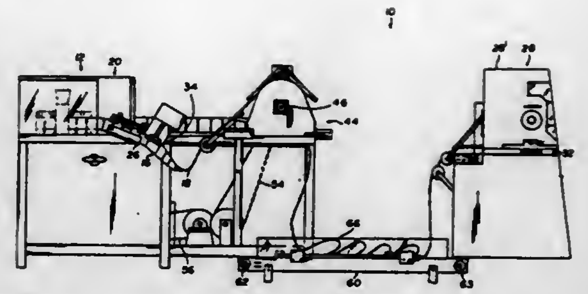
Donn A. Hartman, Gurnee, and William N. Pearson, Highland Park, both of Ill., assignors to Cloud Corporation, Des Plaines, Ill.

Continuation of Ser. No. 294,657, Aug. 23, 1994, abandoned, which is a continuation of Ser. No. 940,521, Sep. 4, 1992, Pat. No. 5,359,832. This application Jul. 27, 1995, Ser. No. 507,931

Int. Cl.[6] B65B *9/08;61/10*

U.S. Cl. 53—435 **29 Claims**

1. A method of making individual filled packages on a packaging apparatus including packaging stations for forming, filling, and sealing packages in a continuous chain, and a remote cutting



station to separate individual packages from said chain, said method including extending said chain of forming, filling and sealing packages from said packaging stations to said cutting station, causing said packaging stations and said cutting stations to operate at a uniform rate of forming filling, sealing and cutting, permitting said packaging stations to operate during periods of cutting station shutdown accumulating said chain of formed, filled and sealed packages between said cutting station and said packaging stations during said periods of cutting station shutdown on resumption of operation of said cutting station, operating said packaging station and cutting station, so as to cut more packages than the number of packages formed, filled and sealed during a given time period, and, thereafter, operating said packaging stations and cutting station at a uniform rate.

5,617,707

STRETCH WRAP FILM INHERENTLY EXHIBITING A SIGNIFICANT CLING PROPERTY

Kathryn Simmons, Macedon, N.Y., assignor to Mobil Oil Corporation, Fairfax, Va.

Continuation of Ser. No. 378,192, Jan. 25, 1995, abandoned, which is a division of Ser. No. 903,295, Jun. 24, 1992, abandoned, which is a continuation-in-part of Ser. No. 296,930, Jan. 12, 1989, abandoned, which is a continuation of Ser. No. 39,892, Apr. 17, 1987, abandoned. This application Apr. 16, 1996, Ser. No. 639,044

Int. Cl.[6] B65B *53/00*

U.S. Cl. 53—441 **123 Claims**

1. A method of packaging an article comprising providing a stretch wrap film comprising at least one thin skin or outer surface layer of a linear low density copolymer of ethylene and one to about ten weight percent of an alpha olefin of from 4 to 10 carbon atoms, said copolymer containing from 3.5 to about 15 weight percent of n-hexane extractibles, having a cling force of at least 140 grams to itself or other surfaces by virtue of the presence of said n-hexane extractibles without the addition of a cling additive to the film, wrapping an article in said film.

5,617,708

FLORAL GROUPING WRAPPING APPARATUS AND METHOD

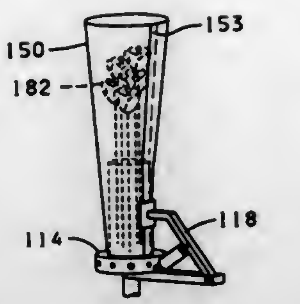
Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Southpac Trust International, Inc., Oklahoma City, Okla.

Filed Mar. 13, 1995, Ser. No. 402,747

Int. Cl.[6] B65B *11/04;25/02*

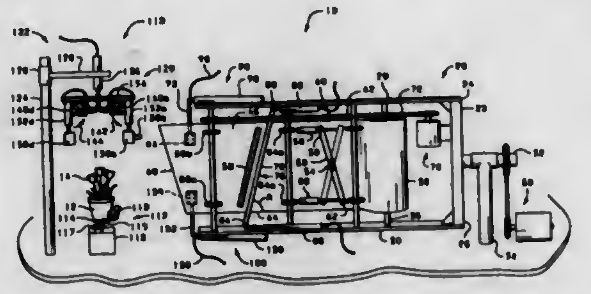
U.S. Cl. 53—465 **32 Claims**

1. A method of wrapping a sheet of material about a floral grouping, the sheet having a leading edge, a trailing edge, a lower edge and an upper edge, the method comprising the steps of:
placing a floral grouping having a stem portion at one end and a bloom portion at another end in a generally vertical or semi-vertical orientation;
automatically advancing the leading edge of the sheet of material toward the floral grouping until a portion of the sheet of material is engaged in a vertical or semi-vertical wrapping position near the floral grouping; and



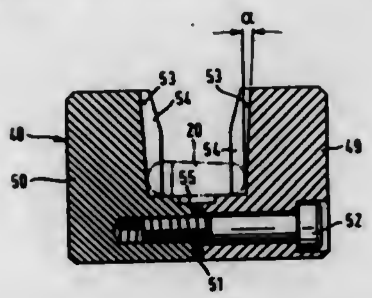
rotating the floral grouping and drawing the sheet of material about the floral grouping until the leading edge of the sheet is bondingly engaged to another portion of the sheet of material by an adhesive or cohesive bonding material thereby connecting the leading edge to the other portion of the sheet and wherein the sheet of material surrounds and engages at least a portion of the stem portion of the floral grouping.

5,617,709
POT COVER FORMING APPARATUS AND METHOD
Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Southpac Trust International, Inc., Oklahoma City, Okla.
Filed Mar. 13, 1995, Ser. No. 402,749
Int. Cl.^{6} B65B *11/04;25/02*
U.S. Cl. 53—465 **17 Claims**



1. A method of forming a pot cover from a sheet of material, the sheet having a leading edge, and a trailing edge, the method comprising the steps of:
providing a mold having an outer peripheral surface and an end portion;
automatically advancing the leading edge of the sheet of material toward the mold until a portion of the sheet of material is engaged in a vertical or semi-vertical wrapping position adjacent the mold;
rotating the sheet of material through at least about one rotation drawing the sheet of material about the outer peripheral surface of the mold until the leading edge of the sheet engages and is bondingly connected to another portion of the sheet wherein the sheet of material circumferentially encompasses at least a portion of the outer peripheral surface of the mold forming a tubular cover and wherein a portion of the sheet extends beyond the end portion of the mold;
forming a bottom in the tubular cover by folding the portion of the sheet of material which extends beyond the end portion of the mold; and
removing the tubular cover from about the mold.

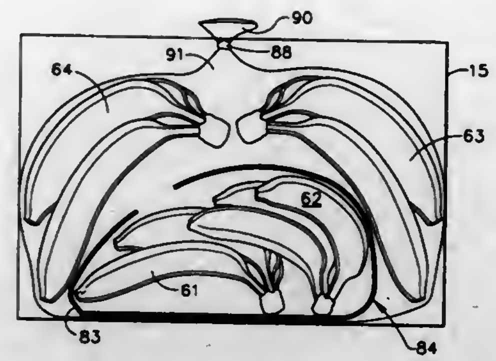
5,617,710
PROCESS AND APPARATUS FOR PRODUCING CLOSED SEALED CAPSULES
Francis Goossens, Simaal, Belgium, and Francis Petitjean, Hachimette, France, assignors to Warner-Lambert Company, Morris Plains, N.J.
Continuation of Ser. No. 260,653, Jun. 16, 1994, abandoned, and a continuation of Ser. No. 616,240, Mar. 13, 1996, abandoned. This application Sep. 16, 1996, Ser. No. 714,705
Int. Cl.^{6} B65B *1/00;7/28*
U.S. Cl. 53—471 **32 Claims**



1. A process for producing closed sealed capsules containing releasable substances packaged in at least one cavity inside the capsules which are formed of two or more joined sealed parts of substantially organic, film forming material, comprising the steps of:
(a) providing a first part of the capsule having a first contact zone;
(b) filling the first part of the capsule with the substances to be packaged;
(c) providing at least a second part of the capsule having a second contact zone;
(d) applying binding means to at least one of the contact zones;
(e) joining the parts of the capsule, so that the contact zones come into contact via the binding means; and
(f) pressing the joined parts of the capsule together with a predetermined force so that portions of opposite contact zones are kept in pressed contact for a predetermined period of time to obtain the closed sealed capsule;
wherein the joined parts of the capsules are inserted into a pressing device pressing the joined parts together and wherein the pressing device comprises a U-shaped container comprising two wings and means for adjusting the distance between the wings, such that the joined parts of the capsule are placed between the two wings and a predetermined pressure is applied to the joined parts by adjusting the distance between the two wings.

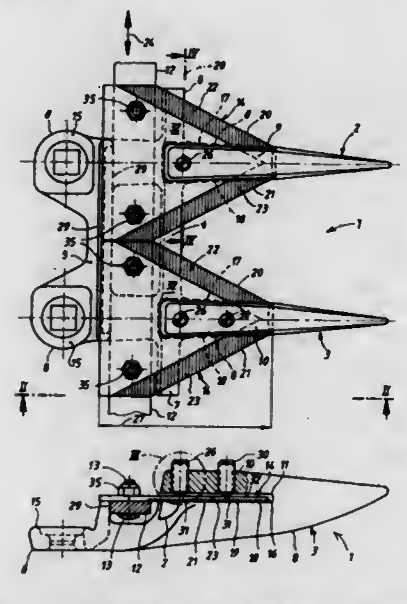
5,617,711
METHOD OF PRODUCING A CONTAINER OF BANANAS AND METHOD OF TRANSFERRING BANANAS
Francisco Rodriguez; Elmer Howell; Franklin Sanabria, and Raul Fernandez, all of San Jose, Costa Rica, assignors to Chiquita Brands, Inc., Cincinnati, Ohio
Filed Sep. 27, 1995, Ser. No. 534,498
Int. Cl.^{6} B65B *25/04*
U.S. Cl. 53—475 **17 Claims**

1. A method of producing a container of banana clusters, comprising the steps of:
(a) providing a plurality of banana clusters, each of said clusters comprising a plurality of bananas, each of said banana clusters having a tip portion and a crown, said bananas of each cluster connected to one another at said crown;
(b) providing an outer container for said bananas, said outer container being of a rectangular construction having first and second parallel sidewalls, first and second parallel endwalls, and an interior bottom;
(c) inserting a flexible inner container within said outer container prior to placing said banana clusters in said outer



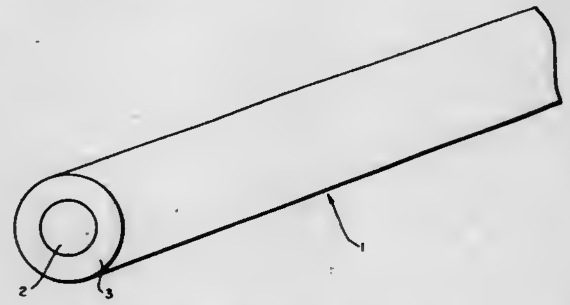
container, so that said rows of banana clusters are placed within said inner container and will thereby not contact the interior surfaces of said outer container;
(d) providing a tunnel pad having a width at least as great as the length of said sidewalls and a length greater than the length of said endwalls;
(e) placing a first row of banana clusters in said inner container atop said interior bottom;
(f) placing a second row of banana clusters in said inner container such that a portion of each banana cluster of said second row is positioned atop a portion of the bananas of said first row;
(g) positioning a portion of said tunnel pad atop and in direct contact with at least a portion of the bananas of said first and second rows;
(h) placing a third row of banana clusters in said inner container atop a portion of said tunnel pad; and
(j) placing a fourth row of banana clusters in said inner container atop at a portion of said tunnel pad.

5,617,712
CUTTER ASSEMBLY FOR MOWING APPARATUS
Adolf Ibach, Remscheid, Germany, and Robert L. Powers, Easton, Ill., assignors to Carl Sulberg GmbH & Co., Remscheid, Germany
Continuation-in-part of Ser. No. 300,056, Sep. 2, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 486,077
Int. Cl.^{6} A01D *34/17*
U.S. Cl. 56—298 **23 Claims**



1. A cutter assembly for a mowing apparatus, comprising:
a sickle guard having at least one guard, said guard comprising a guard body and an upper lip fixed to said guard body;
a knife slot between said guard body and said upper lip to receive at least one knife section secured to a reciprocable knife back;
wherein said guard body has a ledger surface facing said knife section said ledger surface having lateral cutting edges;
wherein said knife section has a bottom face and facets defining knife section cutting edges;
wherein said guard is releasably secured to a cutter bar; and
hold-down means for holding down said knife section in the direction towards said ledger surface of said guard body, wherein said hold-down means extends from said upper lip and is movable relative to said upper lip into contact with a top face of said knife section.

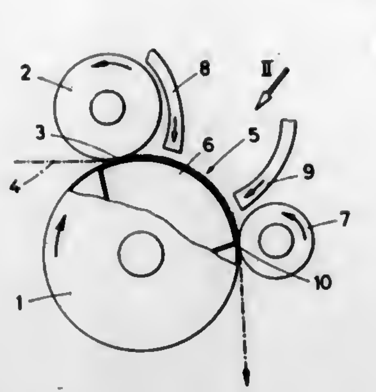
5,617,713
YARN HAVING METALLIC FIBERS AND AN ELECTROMAGNETIC SHIELD FABRIC MADE THEREFROM
Peter Mawick, Nordendorf, and Subrata Choudhury, Stadtallendorf, both of Germany, assignors to NSP Sicherheits-Produkte GmbH, Nordendorf, and TG Techno-Garne GmbH, Stadtallendorf
Continuation of Ser. No. 623,373, Oct. 18, 1991, abandoned. This application Sep. 26, 1994, Ser. No. 311,898
Claims priority, application Germany, Jun. 13, 1988, 38 20 127.5; Jun. 13, 1988, 38 20 091.0
Int. Cl.^{6} D01H *3/02;3/08*
U.S. Cl. 57—210 **7 Claims**



1. A yarn comprising at least one textile thread having a core comprised of a plurality of discrete, non-continuous substantially parallel metallic fibers and a sheath consisting essentially of non-metallic fibers.

5,617,714
DRAFTING UNIT FOR A RING SPINNING DEVICE WITH TWO DELIVERY ROLLERS DEFINING A DELIVERY NIP THEREBETWEEN FOR A ROVING
Ernst Fehrer, Auf der Gugl 28, A-4020 Linz, Austria
Filed Jan. 19, 1996, Ser. No. 588,709
Claims priority, application Austria, Jan. 25, 1995, 125/95
Int. Cl.^{6} D01H *5/28;13/04*
U.S. Cl. 57—315 **1 Claim**

1. A drafting unit for a ring spinning device comprising
(a) two delivery rollers defining therebetween a delivery nip for at least one drawframe-treated roving,
(1) one of the rollers forming a deflection length with a slot-shaped suction zone for the roving exiting the delivery nip in an arc-shaped path in a direction of delivery from a feed end of the deflection length to a discharge end thereof, the arc-shaped path having a convex outside and a concave inside,
(b) a pressure roller arranged downstream in the direction of delivery,
(1) the deflection length extending between the delivery nip and the pressure roller,



(c) a first air nozzle offset sidewards with respect to the suction zone and arranged to direct a blast of air towards the one delivery roller with a flow component transverse to the suction zone at the inside of the arc-shaped path, and

(d) a second air nozzle associated with the pressure roller and arranged to direct a blast of air towards the one delivery roller with a flow component transverse to the suction zone at the inside of the arc-shaped path.

5,617,715

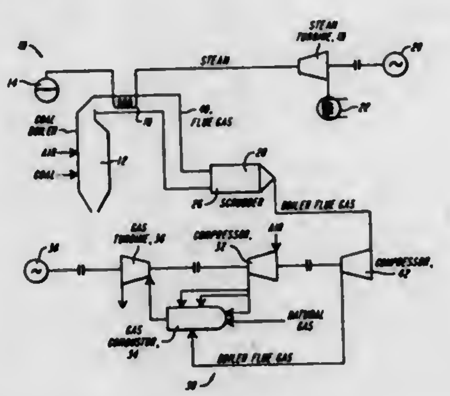
INVERSE COMBINED STEAM-GAS TURBINE CYCLE FOR THE REDUCTION OF EMISSIONS OF NITROGEN OXIDES FROM COMBUSTION PROCESSES USING FUELS HAVING A HIGH NITROGEN CONTENT

János M. Beér, Winchester, Mass., and Majed A. Toqan, Avon, Conn., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Nov. 15, 1994, Ser. No. 340,154

Int. Cl.⁶ F02G *3/00;6/00*

U.S. Cl. 60—39.02 **7 Claims**



1. A process for removing NO_x emissions from a boiler fired by a high nitrogen content fuel, comprising:

burning a high nitrogen content fuel in a boiler at atmospheric pressure to generate steam for a steam-turbine cycle and a waste gas including oxides of nitrogen;

burning a hydrocarbon fuel in a gas turbine combustor for a gas-turbine cycle to clean said waste gas of the oxides of nitrogen and to generate power;

compressing said waste gas from said boiler to a predetermined entering pressure of said gas turbine combustor;

introducing said compressed waste gas from said boiler into a fuel rich zone of said gas-turbine combustor to react with pyrolyzed fragments of said hydrocarbon fuel to convert NO_x in said waste gas to N_2;

adding an oxidant to said gas turbine combustor to complete combustion; and

directing exhaust gas from said combustor to a gas turbine.

5,617,716

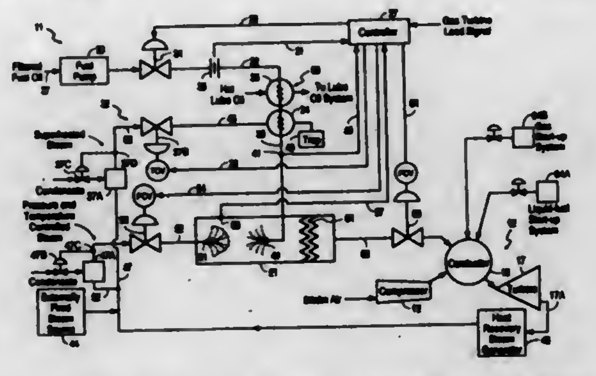
METHOD FOR SUPPLYING VAPORIZED FUEL OIL TO A GAS TURBINE COMBUSTOR AND SYSTEM FOR SAME

Henry Schreiber, San Carlos, and Norman Stewart, San Jose, both of Calif., assignors to Electric Power Research Institute, Palo Alto, Calif.

Filed Sep. 16, 1994, Ser. No. 307,999

Int. Cl.⁶ F02K *1/00*

U.S. Cl. 60—39.05 **21 Claims**



1. A method for supplying vaporized fuel oil to a gas turbine combustor comprising the steps of heating a liquid fuel oil to a predetermined temperature to produce preheated liquid fuel oil, atomizing the preheated liquid fuel oil to produce atomized liquid fuel oil, introducing a controlled amount of steam to completely vaporize the atomized liquid fuel oil and thereby produce a mixture of steam and vaporized fuel oil, and delivering the mixture of steam and vaporized fuel oil to the gas turbine combustor, wherein the temperature of the liquid fuel oil is maintained below the carbonization temperature thereof.

5,617,717

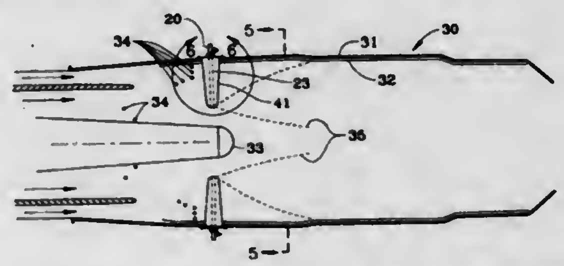
FLAME STABILIZATION SYSTEM FOR AIRCRAFT JET ENGINE AUGMENTOR USING PLASMA PLUME IGNITORS

Joseph G. Asquith, Calabasas; William P. Peschel, Venice, and Jacob L. Sperling, Carlsbad, all of Calif., assignors to Aero-Plasma, Inc., Calabasas, Calif.

Continuation-in-part of Ser. No. 222,012, Apr. 4, 1994, Pat. No. 5,442,907, and Ser. No. 258,983, Jun. 13, 1994. This application Oct. 31, 1994, Ser. No. 332,053

Int. Cl.⁶ F02K *3/10*

U.S. Cl. 60—39.06 **5 Claims**



1. In an aircraft jet engine augmentor which has an outer shell, and an inner liner spaced from said outer shell which forms the exterior of a augmenter combustion chamber, with oxygen containing gas flowing through said combustion chamber, and means for introducing fuel into said combustion chamber which mixes with said oxygen containing gas to form a flowing combustible fuel/gas mixture flowing at a velocity greater than the velocity with which flame propagates in said fuel/gas mixture, the improvement which comprises a flame stabilizing means for stabilizing flame in said flowing combustible fuel/gas mixture consisting of:

a plurality of continuously operating microwave powered plasma plume igniters projecting through said inner liner into

said augmenter combustion chamber wherein the plasma plumes generated by said igniters are immersed in said flowing combustible fuel/gas mixture, providing continuous ignition of said flowing combustible fuel/gas mixture.

5,617,718

GAS-TURBINE GROUP WITH TEMPERATURE CONTROLLED FUEL AUTO-IGNITION

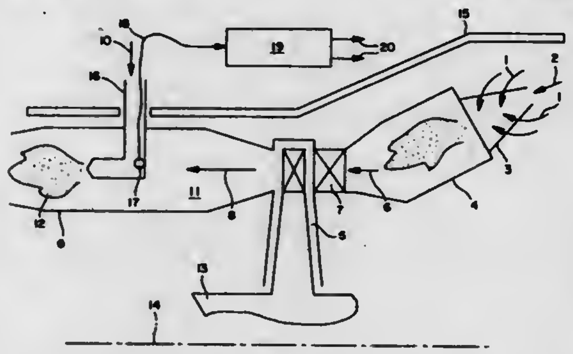
Rolf Althaus, Kobe, Japan, assignor to Asea Brown Boveri AG, Baden, Switzerland

Filed Mar. 31, 1995, Ser. No. 414,742

Claims priority, application Switzerland, May 26, 1994, 1630/94

Int. Cl.⁶ F02C *3/14*

U.S. Cl. 60—39.17 **3 Claims**



1. A gas-turbine group for self-ignition of a fuel, comprising:

a compressor unit,

a first combustion chamber arranged downstream of the compressor unit,

a first turbine arranged downstream of the first combustion chamber,

a second combustion chamber arranged downstream of the first turbine,

a second turbine arranged downstream of the second combustion chamber,

at least one generator,

wherein the second combustion chamber includes a plurality of fuel lances distributed over a periphery of an interior of the second combustion chamber, and

a thermocouple disposed in at least one fuel lance for recording a gas temperature in the second combustion chamber.

5,617,719

VAPOR-AIR STEAM ENGINE

J. Lyell Ginter, c/o Dian Ginter, 2683 Holly Vista Blvd., Highland, Calif. 92346

Filed Oct. 27, 1992, Ser. No. 967,289

Int. Cl.⁶ F02C *9/48;3/30*

U.S. Cl. 60—39.26 **27 Claims**

1. An engine comprising:

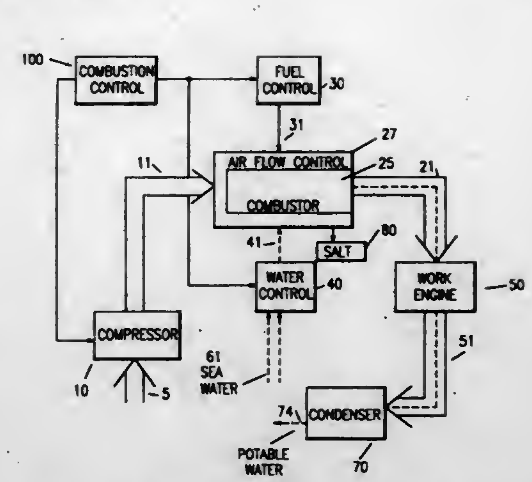
a compressor configured for compressing ambient air into compressed air having a pressure greater than or equal to six atmospheres, and having an elevated temperature; and

a combustion chamber connected to the compressor, wherein the combustion chamber is configured to duct a progressive flow of compressed air from the compressor; and

fuel injection means for injecting fuel into the combustion chamber; and

liquid injection means for injecting liquid into the combustion chamber; and

a combustion controller for independently controlling the compressed air, the fuel injection means, and liquid injection means so as to combust the injected fuel and at least a portion of the compressed air and to transform the injected liquid into



a vapor wherein a working fluid consisting of a mixture of compressed air, fuel combustion products and vapor is generated in the combustion chamber during combustion at a predetermined combustion temperature, substantially all of the cooling of the temperature of the working fluid from a combustion temperature to an exit temperature being provided by the latent heat of vaporization when the injected liquid is converted to vapor upon injection into the combustion chamber; wherein the injected liquid is seawater, engine further including desalination means to remove salt from the seawater and collect such salt from the combustion chamber and

a work engine coupled to and supplied with working fluid at the exit temperature from the combustion chamber.

5,617,720

METHOD FOR CONTROLLING THE FUEL SUPPLY FOR AN INTERNAL COMBUSTION ENGINE WITH A HEATABLE CATALYTIC CONVERTER

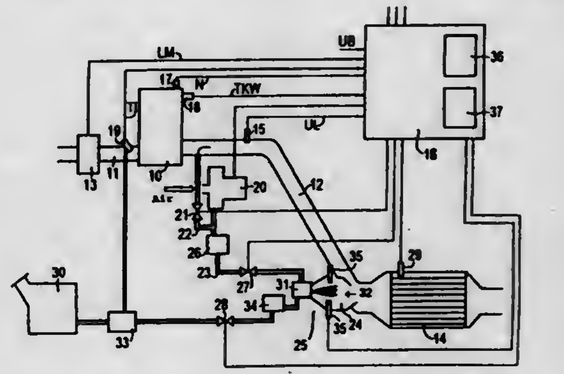
Erwin Achleitner, Regensburg, and Achim Koch, Tegernheim, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Apr. 30, 1996, Ser. No. 641,289

Claims priority, application Germany, Aug. 31, 1994, 44 30 965.1

Int. Cl.⁶ F01N *3/20*

U.S. Cl. 60—274 **14 Claims**



1. A method for controlling the fuel supply for an internal combustion engine having an intake duct, an exhaust system having an exhaust pipe, a lambda regulating device associated with the exhaust pipe, a catalytic converter being disposed in the exhaust pipe and having a combustion process and an operating temperature, a device for externally heating the catalytic converter to the operating temperature, and a secondary-air pump for injecting additional air into the exhaust pipe, which comprises:

supplying an additional fuel quantity to the combustion process of the internal combustion engine during the external heating of the catalytic converter; and

determining the additional fuel quantity by a quotient of the additional secondary-air quantity being injected into the exhaust system by the secondary-air pump and from an air mass flow entering the intake duct of the internal combustion engine.

5,617,721

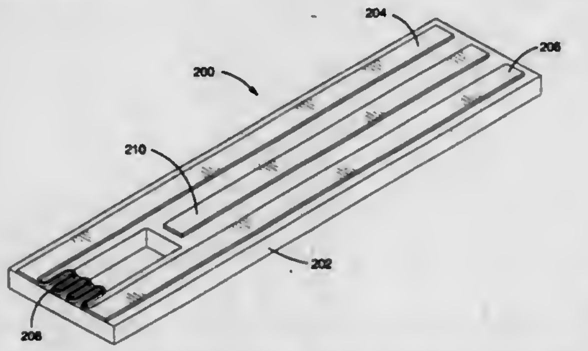
EXHAUST CATALYST PREHEATER WITH FLAME IGNITER AND SENSOR ELEMENT

Robert L. Slawson, Burton, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 14, 1995, Ser. No. 514,530

Int. Cl.⁶ F01N *3/28*

U.S. Cl. 60—277 **1 Claim**



1. A combustion engine exhaust catalyst preheater comprising:
a combustor tube having an open outlet end for exhausting an exhaust gas stream;
a fuel nozzle connected to said combustor tube for discharging fuel inside of the tube;
an opening in said tube for supplying combustion air;
a combination flame igniter and flame sensor connected to said combustor tube for igniting fuel discharged from said fuel nozzle and for detecting the presence of a flame within the combustor tube, said combination flame igniter and flame sensor comprising a flat plate substrate having a first conductor printed near a first edge of the substrate and a second conductor printed near an opposite edge of the substrate, and a resistive pattern printed between and connecting the first and second conductors, said first and second conductors and resistive pattern being operatively connected to a current source;
a third conductor printed between the first and second conductors, and a control circuitry operatively connected with the third conductor so that for applying a potential to the third conductor, and detecting current draw through the third conductor to determine the presence of a flame in the combustor tube.

5,617,722

EXHAUST CONTROL DEVICE OF INTERNAL COMBUSTION ENGINE

Yutaka Takaku, Mito, Japan, assignor to Hitachi, Ltd., Japan

Filed Dec. 26, 1995, Ser. No. 578,435

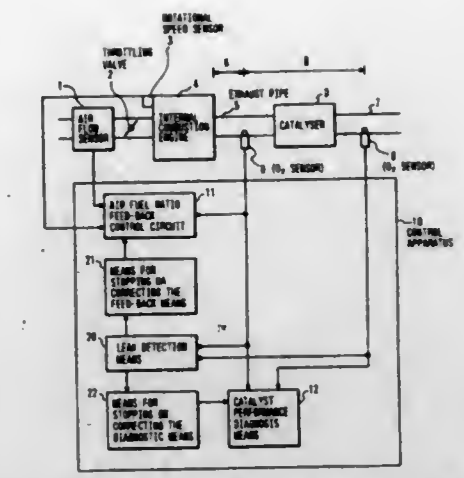
Claims priority, application Japan, Dec. 26, 1994, 6-322428

Int. Cl.⁶ F01N *3/00*

U.S. Cl. 60—277 **18 Claims**

1. An exhaust gas control apparatus of an internal combustion engine characterized by comprising a means for performing one of stopping or correcting a calculation of at least one specific component in exhaust-gas by using a signal input from an exhaust-gas sensor when a leak is detected by the signal of the exhaust gas sensor.

18. A method for controlling exhaust gas of an internal combustion engine, comprising the steps of



sensing a leak in an exhaust system of the engine, and performing one of stopping or correcting a calculation of at least one specific component in the exhaust gas by using a signal representative of the sensed leak.

5,617,723

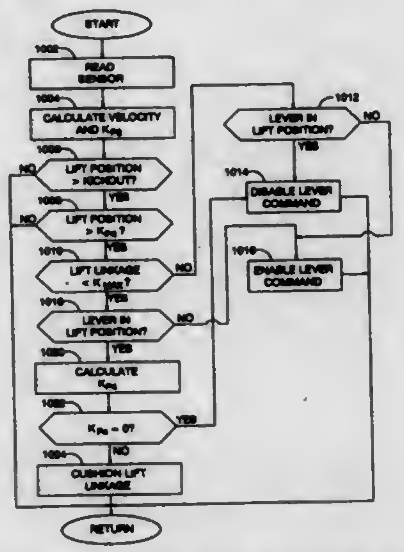
METHOD FOR CONTROLLING AN IMPLEMENT OF A WORK MACHINE

Javad Hosseini, Edelstein; Nathan T. Schenkel, Coal City, and James E. Schimpf, Plainfield, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Continuation of Ser. No. 331,449, Oct. 31, 1994, Pat. No. 5,537,818. This application Nov. 28, 1995, Ser. No. 563,478

Int. Cl.⁶ F16D *31/00;39/00*

U.S. Cl. 60—327 **1 Claim**



1. A method for controllably providing a feather-catch function for an implement, the implement being connected to a work machine and being movable between maximum and minimum implement positions in response to operation of a hydraulic actuator, comprising:
(a) sensing the position of a joystick and responsively producing a joystick position signal;
(b) if said joystick position signal is in a raise range, delivering hydraulic fluid flow to the hydraulic actuator as a function of said joystick position signal;
(c) if said joystick position signal is in a lower range:
(c)(1) calculating joystick velocity as a function of said joystick position signal and responsively producing a joystick velocity signal;

(c)(2) comparing said joystick velocity signal to a predetermined threshold, said predetermined threshold selected to prevent the implement from being lowered too fast; and
(c)(3) delivering hydraulic fluid flow to the hydraulic actuator as a function of said joystick position signal if said joystick velocity signal is not greater than said predetermined threshold; and
(c)(4) delivering modulated hydraulic fluid flow to the hydraulic actuator to lower and then stop the implement at a safe speed if said joystick velocity signal is greater than said predetermined threshold; and,
(d) returning to step (a).

5,617,724

HYDRAULIC CONTROL SYSTEM FOR USE IN A FORKLIFT TRUCK

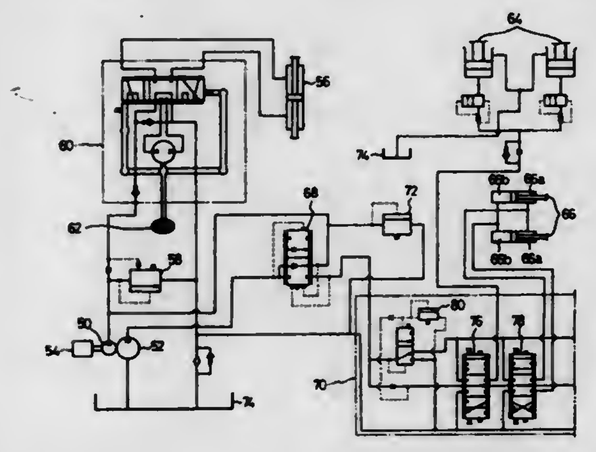
Hyun G. Ko, Incheon, Rep. of Korea, assignor to Daewoo Heavy Industries Ltd., Incheon, Rep. of Korea

Filed Dec. 29, 1995, Ser. No. 580,558

Claims priority, application Rep. of Korea, Dec. 30, 1994, 94-40199

Int. Cl.⁶ F16D *31/02*

U.S. Cl. 60—422 **5 Claims**



1. A hydraulic control system for use in a forklift truck having an engine, a steering cylinder, a lift cylinder, a tilt cylinder, a steering pump rotatably driven by the engine for producing a steering fluid under pressure to actuate the steering cylinder and a main pump for generating a working fluid under pressure to actuate the lift and tilt cylinders, comprising:
a steering control valve unit for changing flow path of the steering fluid to control movement of the steering cylinder;
a priority valve lying between the steering pump and the steering control valve unit for supplying the steering control valve unit with a controlled amount of the steering fluid;
a main control valve unit selectively connected to the main pump and adapted to control movement of the lift and tilt cylinders; and
a stall valve remaining, when the engine is rotating at no greater than a preselected rpm, in a first position in which the working fluid is bypassed to the priority valve and, when the engine is rotating at greater than the preselected rpm, shifted to a second position in which the working fluid is fed to the main control valve unit.

5,617,725

PISTON FOR A MASTER CYLINDER

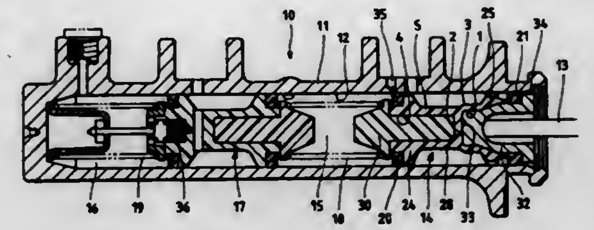
Atsushi Yasuda, Aichi, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Oct. 26, 1995, Ser. No. 548,864

Claims priority, application Japan, Oct. 27, 1994, 6-264261

Int. Cl.⁶ B60T *11/02;* **B01D** *19/00*

U.S. Cl. 60—562 **11 Claims**



1. A piston for a master cylinder, comprising:
a piston body which is made of resin and inserted in said cylinder so that said piston body is in slide contact with an inner cylindrical surface of said cylinder, said piston body including a first cylindrical portion which has a first opening at one end thereof and a bottom at the other end, a second cylindrical portion which has a second opening at one end thereof and a bottom at the other end which is integral with said bottom of said first cylindrical portion so as to be integral with said first cylindrical portion;
flanges formed on both end portions of said piston body so that said flanges are in contact with the inner cylindrical surface of said cylinder;
a first reinforcing member which is detachably inserted into said first opening; and
a second reinforcing member which is detachably inserted into said second opening.

5,617,726

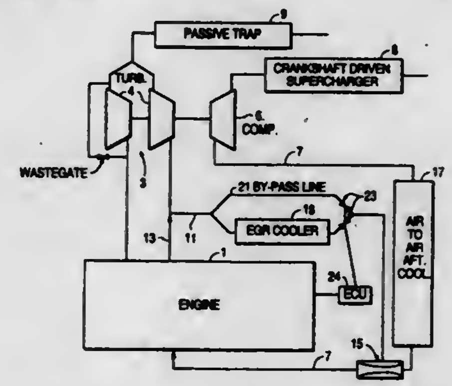
COOLED EXHAUST GAS RECIRCULATION SYSTEM WITH LOAD AND AMBIENT BYPASSES

Todd A. Sheridan, Franklin; A. S. Ghuman, Columbus; Angie R. May, Columbus; Rod Radovanovic, Columbus; John M. Janssen, Columbus, and Peter V. Woon, Columbus, all of Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Mar. 31, 1995, Ser. No. 414,492

Int. Cl.⁶ F02M *25/07*

U.S. Cl. 60—605.2 **23 Claims**



1. An exhaust gas recirculation system for an internal combustion engine by which a portion of exhaust gases produced by the engine are recirculated from an exhaust line of the engine into an intake line of the engine, said exhaust gas recirculation system comprising an exhaust gas recirculation line connecting the exhaust line of the engine to the intake line of the engine, cooler means for cooling the recirculated portion of the exhaust gases, a bypass line extending from said recirculation line in bypassing

relationship to said cooler means, and valve means for directing the recirculated portion of the exhaust gases to said intake line via said bypass line under low engine temperature operating conditions and under low engine load operating conditions, and via said cooler means under other engine operating conditions; wherein an engine driven supercharger is disposed in the intake line; and wherein the recirculated portion of the exhaust gases is introduced into the intake line by induction.

5,617,727

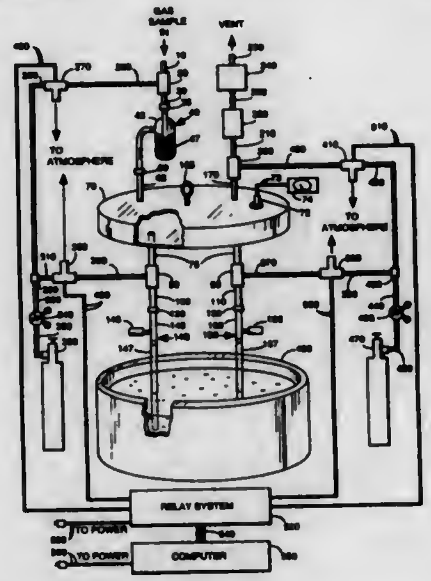
CONTROLLED MULTIPLE STORAGE VESSEL GAS TRAP

Richard R. Zito, Tucson, Ariz., assignor to Richard R. Zito R & D Corp., Tucson, Ariz.

Filed May 24, 1996, Ser. No. 653,498

Int. Cl.[6] B01D 8/00

U.S. Cl. 62—55.5 6 Claims



1. A gas trap of the type comprising:

A) an initial pneumatic valve, whereby gas samples can be let into said gas trap,
B) a foretrap connected to the outlet of said initial pneumatic valve, whereby said gas samplers may be cleaned,
C) a canister connected to said foretrap, whereby said gas samples may be temporarily stored,
D) a plurality of secondary pneumatic valves connected to said canister, whereby said gas samples may be allowed to leave said canister by any one of several routs,
E) a plurality of valved storage vessels connected to said secondary pneumatic valves in a one-to-one fashion, whereby said gas samples may be stored for periods of time longer than those for said canister,
F) a pneumatic evacuation valve connected to said canister, whereby said canister may be evacuated,
G) a roughing pump connected to said pneumatic evacuation valve, whereby said canister may be evacuated,
H) a high vacuum pump connected to said roughing pump, whereby said canister may be more thoroughly evacuated,
I) an initial solenoid valve connected to said initial pneumatic valve, whereby said initial pneumatic valve may be controlled,
J) a plurality of secondary solenoid valves connected to said secondary pneumatic valves in a one-to-one fashion, whereby said secondary pneumatic valves may be controlled,
K) an evacuation solenoid valve connected to said pneumatic evacuation valve, whereby said pneumatic evacuation valve may be controlled,
L) a plurality of pressure lines such that one of said pressure lines is connected to said initial solenoid valve, and another of said pressure lines is connected to said evacuation solenoid valve, and said pressure lines remaining are connected to said secondary solenoid valves in a one-to-one fashion, whereby pressurized control gas may be supplied to all solenoid valves,
M) a means for connecting said pressure lines together so that they all have substantially the same internal control gas pressure,
N) a regulator connected to said means, whereby control gas may be supplied to said means, and
O) a gas tank connected to said regulator, whereby control gas may be supplied to said regulator.

5,617,728

ICE REMOVAL DEVICE FOR USE IN AN ICE MAKER AND METHOD FOR CONTROLLING SAME

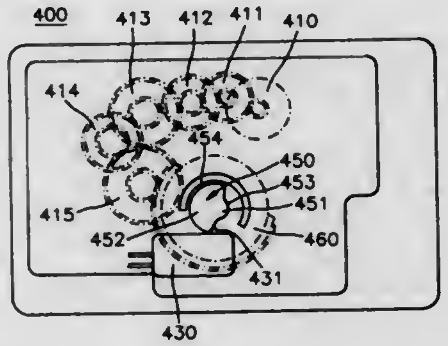
Chong-Sun Kim, Kyongki-do, and Ji-Kwang Jung, In-Cheon, both of Rep. of Korea, assignors to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Nov. 27, 1995, Ser. No. 562,926

Claims priority, application Rep. of Korea, Nov. 29, 1994, 94-31794; Nov. 29, 1994, 94-31796

Int. Cl.[6] F25C 5/04

U.S. Cl. 62—71 6 Claims



5. A method for controlling an ice removal device for use in an ice maker including a controller and an ice manufacturing unit having a shaft, the ice removal device including a driving motor, a cam gear, a cam secured on the shaft of the ice manufacturing unit, a plurality of gears for transmitting thee rotational force of the driving motor to the cam gear, and a rotation reversing sensor having a knob switch, the method comprising the steps of:

A. rotating the cam and the ice manufacturing unit in a first direction;
B. checking whether or not the rotation reversing sensor is activated, wherein, if the sensor is determined to be activated, step B proceeds to step C, but if not, returns to step A;
C. rotating the cam and the ice manufacturing unit in a second direction;
D. checking whether or not the rotation reversing sensor is deactivated, wherein, if the sensor is determined to be deactivated, step D proceeds to step E, but if not, returns to step C;
E. continuously rotating the cam and the ice manufacturing unit in the second direction;
F. checking whether or not the rotation reversing sensor is activated, wherein, if the sensor is determined to be activated, step F proceeds to step G, but if not, returns to step E;
G. rotating the cam and the ice manufacturing unit in the first direction;
H. checking whether or not the rotation reversing sensor is deactivated, wherein, if the sensor is determined to be deactivated, step H proceeds to step I, but if not, returns to step G; and
I. stopping the driving motor after a predetermined time has elapsed.

5,617,729

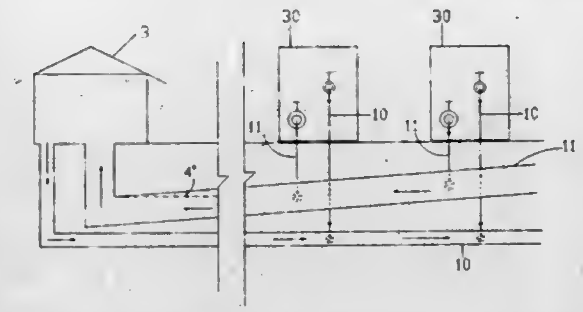
CENTRAL AIR CONDITION UTILITY SYSTEM AND METHOD OF OPERATION THEREOF

Curtis Hyman, 3922 Knotty Oaks, Houston, Tex. 77045

Filed Apr. 30, 1996, Ser. No. 641,284

Int. Cl.[6] F25B 5/02

U.S. Cl. 62—117 17 Claims



1. A system for providing air condition utility to sets of buildings, said system comprising:

(a) a number of stations, with each station being assigned to a district, providing air condition to the buildings in the district and having:
 i. an inlet manifold which allows the station to have a single input of a refrigerant,
 ii. an outlet manifold which allows the station to have a single output of the refrigerant, and
 iii. a number of compressor units being connected to the inlet manifold and to the outlet manifold and transferring the refrigerant from the inlet manifold to the outlet manifold, with some compressor units set up on line and any remaining compressor units kept in reserve,

with shut-off valves, along with control sensors, being used to allow isolation of the station from other stations and to allow connection of the station to other stations;

(b) high-pressure lines distributing the refrigerant from the station of the assigned district to the buildings served by the station;
(c) low-pressure lines returning the refrigerant from the buildings served by the station to the station; and
(d) a number of amended air conditioning systems of each building being connected, via the building and upon removal of self-contained condensing units of any previous air conditioning systems of the building, to the station through the high-pressure lines and through the low-pressure lines;

such that the high-pressure lines and the low-pressure lines of the district form a closed loop which connects the buildings of the district to the assigned station.

5,617,730

COMPRESSOR CONTROL DEVICE FOR CAR AIR CONDITIONER

Hideki Suzuki, Chita-gun, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Jan. 29, 1996, Ser. No. 593,721

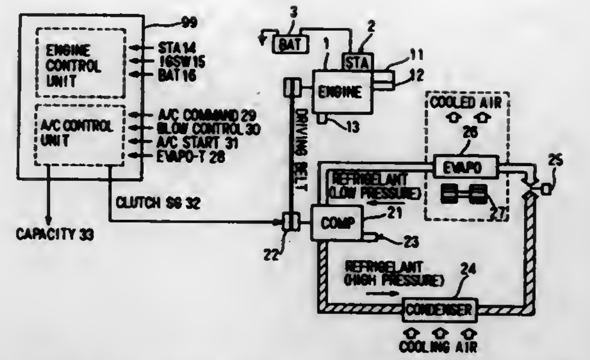
Claims priority, application Japan, Jan. 30, 1995, 7-012622

Int. Cl.[6] B60H 1/32

U.S. Cl. 62—133 11 Claims

1. A compressor control device for a car-air-conditioner having a compressor driven by an engine having a starter comprising:

means for detecting start of an engine by said starter; and



means for discharging liquid refrigerant from said compressor when said engine start detecting means detects start of said engine.

5,617,731

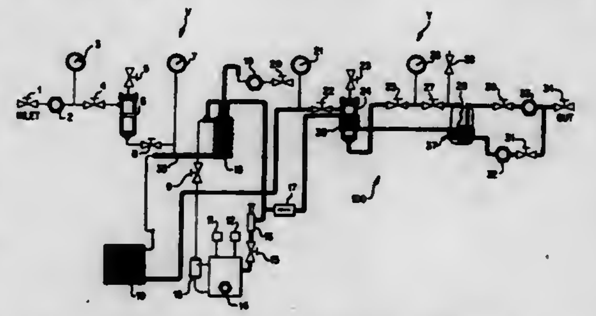
REFRIGERANT RECOVERY/RECYCLING SYSTEM

Robert P. Scaringe, Rockledge, Fla., assignor to Mainstream Engineering Corporation, Rockledge, Fla.

Filed Apr. 19, 1995, Ser. No. 425,688

Int. Cl.[6] F25B 45/00

U.S. Cl. 62—149 14 Claims



1. A refrigerant recovery/recycling system, comprising
a primary filter/dryer operatively arranged near an inlet of the system for filtering vapor refrigerant being recovered;
an oil separator located downstream of the primary filter/dryer to receive recovered vapor refrigerant from the latter;
a compressor operatively arranged downstream of the oil separator;
a condenser operatively arranged downstream of the compressor; and
a recycling apparatus operatively associated with the condenser,
wherein a crankcase pressure regulator is operatively arranged at a section inlet side of the compressor, high-pressure and low-pressured shut-off valves are operatively associated with the compressor, and the low-pressure shut-off valve is provided with an override to allow the use of lower system pressures.

5,617,732

AUTOMOTIVE AIR CONDITIONING SYSTEM

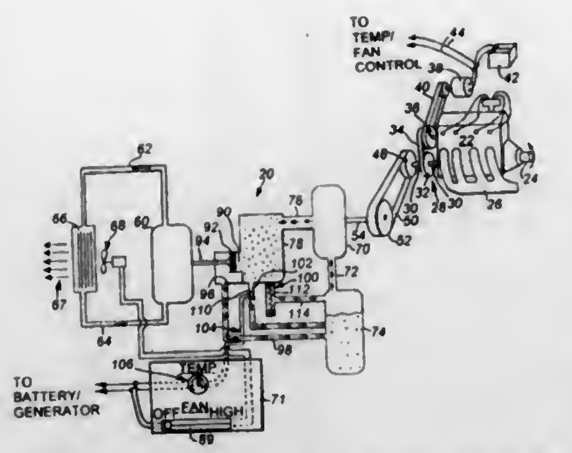
Rashaid A. Albader, 16 Harcourt St., Apt. 6-C, Boston, Mass. 02116

Filed Jun. 19, 1995, Ser. No. 491,790

Int. Cl.[6] F25B 27/00; F16D 31/02

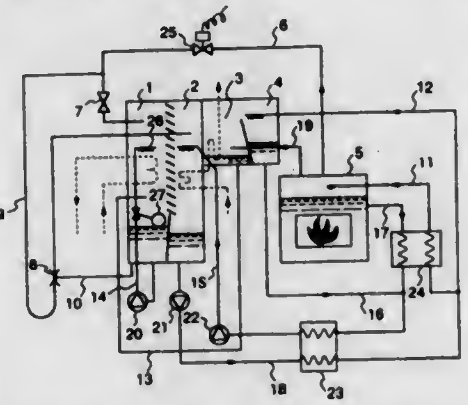
U.S. Cl. 62—228.5 10 Claims

1. An air conditioning system for vehicles comprising:
an air conditioning compressor;
a source of fluid;
a pump in communication with the fluid and operatively interconnected with and driven by an engine of the vehicle;



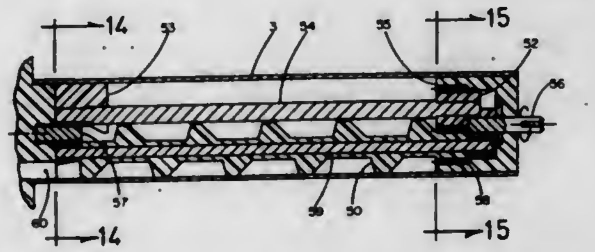
a pressure chamber interconnected with the pump and receiving fluid from the pump;
a fluid drive element, located relative to the pressure chamber, and interconnected with the air conditioning compressor, that converts passage of pressurized fluid therethrough into mechanical driving force for driving the air conditioning compressor; and
a regulator that maintains a selected level of pressure in the pressure chamber and that diverts excess fluid from the pressure chamber to the pump, the regulator including a control valve that transfers a predetermined volume of fluid from the pressure chamber in response to a control signal for selectively varying the selected level of pressure in the pressure chamber to, thereby, vary a pressure of fluid directed to the fluid drive element.

5,617,733
ABSORBING TYPE WATER COOLING-HEATING APPARATUS
Syuji Tomita, Toride, and Ryouhei Minowa, Ushiku, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Sep. 19, 1995, Ser. No. 531,202
Claims priority, application Japan, Sep. 20, 1994, 6-224774
Int. Cl.⁶ F25B *13/00;15/00*
U.S. Cl. 62—324.2 **3 Claims**



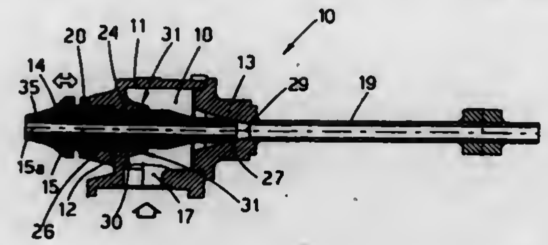
1. An absorbing type water cooling-heating apparatus comprising:
an evaporator for evaporating a cooling medium so as to cool cooling water;
an absorber for causing a solution to absorb steam of the cooling medium evaporated in said evaporator, so as to dilute the solution;
a high-temperature regenerator and a low-temperature regenerator for concentrating dilute solution, fed thereto from said absorber, by forming steam of the cooling medium;
a condenser for condensing the steam of the cooling medium, produced in said low-temperature regenerator, into a liquid;
a solution circulating pump for circulating the solution;
a cooling medium spray pump for spraying the cooling medium;
a cooling medium steam pipe connecting an interior of said high-temperature regenerator, in which the cooling medium steam is contained, to an interior of said evaporator in which the cooling medium is sprayed;
a throttle device provided in said cooling medium steam pipe;
an electrically-operated valve provided in said cooling medium steam pipe;
a cooling-heating change-over switch connected to said electrically-operated valve for switching said electrically-operated valve when changing operation of the apparatus between a cooling mode and a heating mode; and
a solution diluting pipe connecting a portion of said cooling medium steam pipe intermediate between said electrically-operated valve and said throttle device to an interior of said absorber in which the solution is sprayed, an ejector provided in said solution diluting pipe at a level substantially corresponding to a cooling medium liquid reservoir portion within said evaporator, and a cooling medium suction pipe connected between an suction side of said ejector and said cooling medium liquid reservoir portion.

5,617,734
LOW TEMPERATURE COMPOSITION PREPARATION DEVICE, AND METHODS OF CONSTRUCTING AND UTILIZING SAME
Thomas W. Chase, Alton, N.H.; Richard C. Pahl, and Gregory J. Walsh, both of Essex Junction, Vt., assignors to Island Delite, Ltd., Essex Junction, Vt.
Filed Mar. 27, 1995, Ser. No. 410,967
Int. Cl.⁶ A23G *9/12*
U.S. Cl. 62—343 **10 Claims**



10. A device for preparing and dispensing a food confection, comprising:
a container member for receiving confection ingredients, having a first port for receiving the ingredients and a second port for dispensing the prepared confection;
means, connected to said container member, for selectively maintaining an area defined within said container member at a preselected temperature;
means, connected to said second port of said container member, for selectively discharging the prepared confection from said second port of said container member;
an auger member disposed within said container member and having an auger blade in a substantially helical relationship with a central portion of said auger member defining a longitudinal axis thereof;
means, connected to said auger member, for imparting motion to said auger member so that said motion causes an edge portion of said auger blade to contact substantially an entire inner surface of said container member, said motion of said auger causing the ingredients within said container member to be substantially aerated and mixed to form the confection;
said auger motion means provides substantially planetary motion to said auger member relative to a longitudinal axis of said container member; and
said auger motion means includes an internal gear disposed in a substantially fixed engagement relative to said container member and having a plurality of recesses along an inner surface thereof, and a pinion gear disposed about said central portion of said auger member at a first end portion thereof so as to movably engage with said recesses of said internal gear.

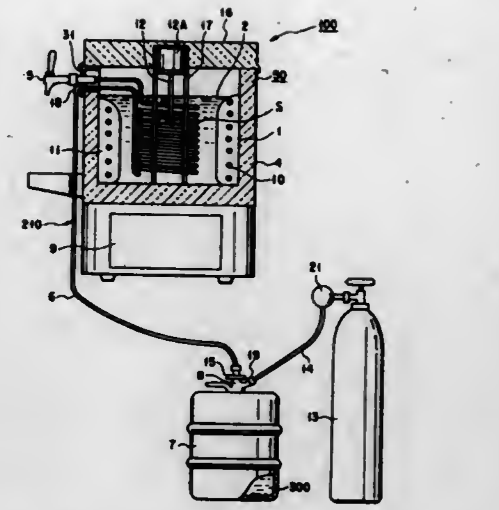
5,617,735
COOLING CHAMBER FOR ROLLED PRODUCTS
Ferruccio Tomat; Gino Cattelani, both of Udine, and Fausto De Marco, Remanzacco, all of Italy, assignors to Danieli & C. Officine Meccaniche SpA, Buttrio, Italy
Filed Apr. 5, 1996, Ser. No. 628,814
Claims priority, application Italy, Apr. 12, 1995, UD95A0065
Int. Cl.⁶ F25D *17/02*
U.S. Cl. 62—374 **20 Claims**



1. Cooling chamber to be installed downstream of a finishing stand for cooling a rolled product, comprising:
a casing having a longitudinal axis and containing a fluid circulation cavity for circulation of cooling fluid, a lateral opening permitting introduction of the cooling fluid into the fluid circulation cavity positioned on a plane perpendicular to the longitudinal axis of the casing, an axial sliding seating and a flange at a downstream end of the casing, the flange having an axial bore coaxial with the sliding seating and being narrowed with a taper β in the downstream direction;
a slider able to move longitudinally in the axial sliding seating and having an axial through bore through which the rolled product may be fed, the slider having a first downstream truncated-cone segment having its vertex facing downstream and tapered with a taper α, a first intermediate cylindrical segment with its axis substantially parallel to the longitudinal axis of the slider, a second intermediate tapered segment having a taper γ and a second upstream cylindrical segment;
wherein an outer sidewall defining the axial sliding seating extends into the fluid circulation cavity at least to the vicinity of an axis of the lateral opening and is conformed with a taper α 1 connected to the upstream sidewall of the fluid circulation cavity, and wherein the taper β of the axial bore of the flange is a function of the taper α of the slider.

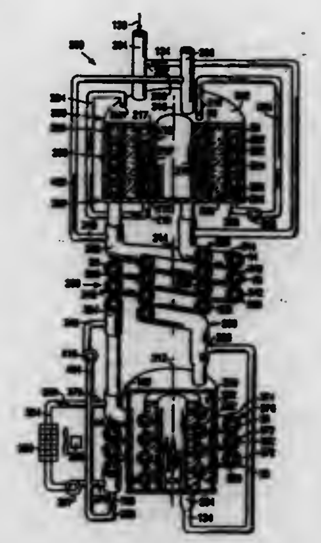
5,617,736
BEVERAGE COOLING AND DISPENSING MACHINE
Sukehide Ito, Numazu; Eiichi Kurokawa, Mishima, and Akira Morishita, Numazu, all of Japan, assignors to Toshiba Machine Co., Ltd., Tokyo, Japan
Filed Jan. 23, 1996, Ser. No. 590,196
Claims priority, application Japan, Jan. 23, 1995, 7-007946
Int. Cl.⁶ B67D *5/62*
U.S. Cl. 62—393 **2 Claims**

1. A beverage cooling and dispensing machine comprising:
a cooling water tank for storing cooing water and including an evaporator;
a refrigerator for supplying a coolant to the evaporator;
a cooling pipe through which beverage may flow, the cooling pipe being in the form of a coil and being placed within the cooling water tank;
a dispensing head attachable to a mouth of a beverage tank filled with beverage;
a hose, one end of which is connected to the dispensing head and, and the other end of which is connected to an end of the cooling pipe on a beverage introducing side thereof;
a spigot connected to the end of the cooling pipe on the beverage extracting side thereof; and
an agitator for stirring the cooling water, the agitator including a blade portion, a motor portion and supporting members supporting said motor portion, said blade portion being disposed



inside the coil formed by the cooling pipe, said motor being disposed above a surface of the cooling water and being supported by said supporting members, said supporting members being fixed to a bottom of the cooling water tank,
wherein the dispensing head, the hose, the cooling pipe and the spigot are integrated as one unit, constituting a beverage pouring unit, which is detachably attached to the cooling water tank.

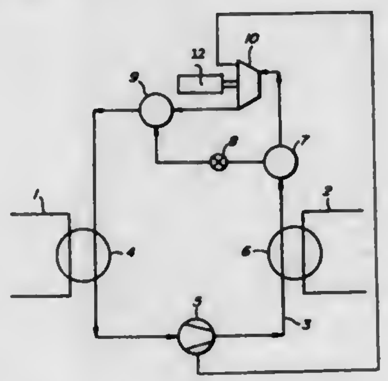
5,617,737
CAPILLARY FLUTED TUBE MASS AND HEAT TRANSFER DEVICES AND METHODS OF USE
Richard N. Christensen; F. Bert Cook, and Yong-Tae Kang, all of Columbus, Ohio, assignors to The Ohio State University Research Foundation, Columbus, Ohio
Filed Aug. 2, 1995, Ser. No. 510,592
Int. Cl.⁶ F25B *15/00;37/00;33/00*
U.S. Cl. 62—487 **218 Claims**



1. A capillary twisted fluted tube comprising a thin-wall tube having a longitudinal tube axis defining an interior tube-wall space and having at least one interior helical capillary tube flute formed at least in part to define a helical capillary channel extending for at least a portion of a length of an interior surface of said thin-wall tube; said interior helical capillary tube flute being formed from a portion of said thin-wall tube, said portion having a center section and opposing side sections, said opposing side sections of said portion of said thin-wall tube being in close proximity to each

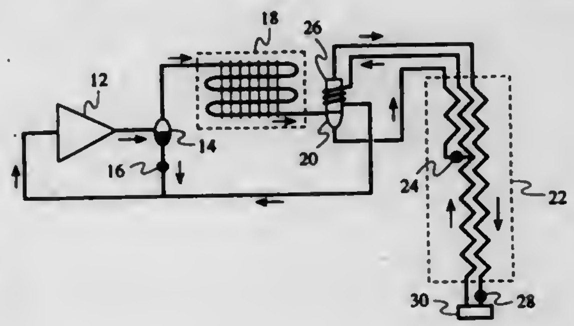
other and defining a narrow helical capillary channel slit and said center section of said portion of said thin-wall tube formed as a trough and defining said helical capillary channel; said narrow helical capillary channel slit forming a passage from said helical capillary channel to said interior thin-wall tube space; said interior helical capillary tube flute being complementary with an outwardly extending, exterior, helical crest on said exterior surface of said thin-wall tube, each rotation of said exterior helical crest about said longitudinal tube axis defining an exterior helical crest turn with adjacent exterior helical crest turns and an exterior surface portion of said thin-wall tube between said adjacent exterior helical crest turns defining an exterior helical flute with said exterior helical flute being complementary with an interior helical crest on said interior surface of said thin-wall tube.

5,617,738
ENERGY CONVERTER
Yasuyuki Ikegami, and Haruo Uehara, both of Saga, Japan, assignors to Saga University, Saga, Japan
Filed Aug. 31, 1995, Ser. No. 521,820
Claims priority, application Japan, Sep. 20, 1994, 6-224918
Int. Cl.^{6} F25B *39/04*
U.S. Cl. 62—509 **11 Claims**



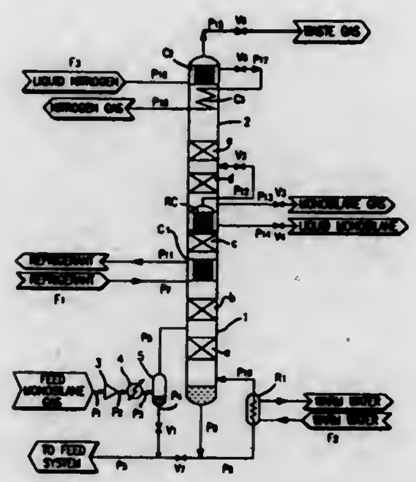
1. An energy converter, comprising:
an evaporator having an inlet for receiving a working fluid, and an outlet for discharging the working fluid therefrom, said evaporator being connected to a low heat source for thermally exchanging the working fluid with the low heat source and evaporating said working fluid;
a compressor having an inlet connected to the outlet of said evaporator for receiving said working fluid and having an outlet, said compressor compressing the working fluid and discharging the compressed working fluid through its outlet;
a condenser connected to a high heat source, and having an outlet and an inlet, said inlet being connected to the outlet of said compressor for receiving the working fluid discharged therefrom, said condenser thermally exchanging said working fluid with the high heat source and discharging the thermally exchanged working fluid through its outlet;
a vapor-liquid separator having an inlet connected to the outlet of said condenser for receiving the working fluid discharged therefrom, and having at least first and second outlets, said vapor-liquid separator separating the working fluid into a vapor and a liquid, discharging the working fluid vapor through its first outlet, and discharging the working fluid liquid through its second outlet;
a swelling device having an inlet connected to the first outlet of said vapor-liquid separator for receiving the working fluid vapor discharged therefrom, and having an outlet, said swelling device swelling the working fluid vapor and discharging the swollen working fluid vapor through its outlet;
a reducing valve having an inlet connected to the second outlet of said vapor-liquid separator for receiving the working fluid liquid discharged therefrom, and having an outlet, said reducing valve reducing the pressure of the working fluid liquid and discharging the pressure reduced working fluid liquid through its outlet; and
a mixer having at least one inlet connected to the outlet of said swelling device for receiving the swollen working fluid vapor discharged therefrom, and being connected to the outlet of said reducing valve for receiving the pressure reduced working fluid liquid discharged therefrom, said mixer further including an outlet connected to the inlet of said evaporator, said mixer mixing the swollen working fluid vapor with the pressure reduced working fluid liquid to form a working fluid mixture which is discharged through its outlet and received by said evaporator to complete a heat exchange cycle.

5,617,739
SELF-CLEANING LOW-TEMPERATURE REFRIGERATION SYSTEM
William A. Little, Palo Alto, Calif., assignor to MMR Technologies, Inc., Mountain View, Calif.
Filed Mar. 29, 1995, Ser. No. 412,529
Int. Cl.^{6} F25J *3/00*
U.S. Cl. 62—619 **20 Claims**



1. A device for removing high-molecular-weight contaminants from a vapor fraction of a multi-component refrigerant mixture in a closed-cycle cryogenic refrigeration system having a predetermined operating temperature, the device comprising:
a packing material through which the vapor fraction flows upward;
a cooling means for cooling the packing material sufficiently below the temperature of the vapor fraction so that a condensate of the vapor fraction is created on the surface of the packing material, the surface of the packing material presenting to the vapor fraction an area sufficiently large so that equilibrium between the condensate and the vapor is maintained; and
a collecting means for collecting a portion of the condensate that drips down through the packing material,
whereby the high-molecular-weight contaminants are extracted from the vapor and washed out with the portion of the condensate that drips down through the packing material.

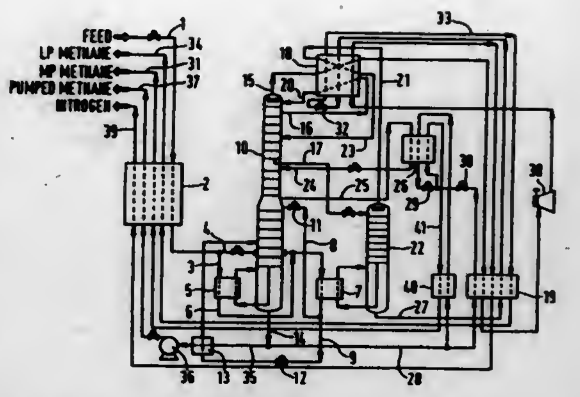
5,617,740
METHOD OF PRODUCING ULTRA HIGH PURITY MONOSILANE AND APPARATUS THEREFOR
Takashi Nagamura, and Shinji Tomita, both of Hyogo-ken, Japan, assignors to L'air Liquide, Societe Anonyme Pour L'Etude Et L'Exploitation Des Procedes Georges Claude, Paris Cedex, France
PCT No. PCT/EP95/01084, § 371 Date Dec. 27, 1995, § 102(e) Date Dec. 27, 1995, PCT Pub. No. WO95/26927, PCT Pub. Date Oct. 12, 1995
PCT Filed Mar. 22, 1995, Ser. No. 553,532
Claims priority, application Japan, Mar. 30, 1994, 6-082618
Int. Cl.^{6} F25J *3/00*
U.S. Cl. 62—620 **6 Claims**



1. A method of producing ultra high purity monosilane which comprises:
pressurizing, and partially condensing a feed monosilane gas;
separating the gas and liquid phases of the partially condensed feed monosilane;
introducing the gas phase to the middle stage of a lower rectification column (1) and rectifying the gas phase therein;
introducing a gas produced by this rectification to an upper rectification column (2) and rectifying the same gas there; and
removing at least one of a high pressure monosilane gas product and liquid monosilane product having an ultra high purity which is produced by this rectification, from the bottom portion of said upper rectification column.

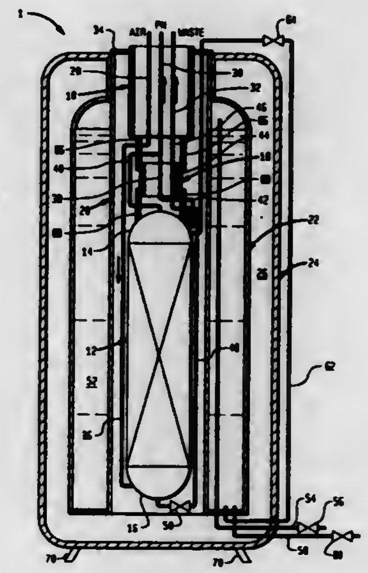
5,617,741
DUAL COLUMN PROCESS TO REMOVE NITROGEN FROM NATURAL GAS
Brian A. McNeil, Chessington, United Kingdom, and Michael H. Evans, Antwerpen, Belgium, assignors to Air Products and Chemicals, Inc., Allentown, Pa.
Filed Feb. 8, 1996, Ser. No. 597,414
Claims priority, application United Kingdom, Feb. 10, 1995, 9502657
Int. Cl.^{6} F25J *3/02;3/08*
U.S. Cl. 62—622 **26 Claims**

1. A cryogenic process for the removal of nitrogen from a natural gas feed stream comprising nitrogen and hydrocarbons primarily having a carbon content between 1 and 8 carbon atoms comprising:
(A) feeding said feed stream to a primary distillation column of a distillation column system, said system providing a primary column methane-rich bottoms liquid from the primary column, a secondary column methane-rich bottoms liquid from a secondary distillation column fed from and operating at substantially the same pressure as the primary column, a primary column nitrogen-enriched vapor from the primary column, and a nitrogen-rich overhead vapor;



(B) reducing the pressure of and at least partially vaporizing at least a portion of the primary column methane-rich bottoms liquid in heat exchange with at least a portion of the primary column nitrogen-enriched vapor to produce a methane-rich product and to at least partially condense the primary column nitrogen-enriched vapor;
(C) returning at least a portion of the at least partially condensed primary column nitrogen-enriched vapor to the primary column to provide higher temperature reflux to the distillation column system;
(D) reducing the pressure of and at least partially vaporizing at least a portion of the secondary column methane-rich bottoms liquid in heat exchange with at least a portion of the nitrogen-rich overhead vapor to produce a further methane-rich product and to at least partially condense said nitrogen-rich overhead vapor portion; and
(E) returning at least a portion of the at least partially condensed nitrogen-rich overhead vapor portion to the primary or secondary column to provide lower temperature reflux to the distillation column system.

5,617,742
DISTILLATION APPARATUS
Karl O. Toppel, Flemington, N.J., assignor to The BOC Group, Inc., New Providence, N.J.
Filed Apr. 30, 1996, Ser. No. 640,301
Int. Cl.^{6} F25J *3/04*
U.S. Cl. 62—643 **6 Claims**



1. A distillation apparatus for rectifying a mixture comprising:
heat exchange means for cooling the mixture to a temperature suitable for its rectification;

at least one distillation column;

containment means for containing said heat exchange means and said at least one distillation column; and

suspension means for suspending said heat exchange means and said at least one distillation column within a top region of said containment means so that said distillation column assumes a vertical orientation under influence of gravitational force.

5,617,743

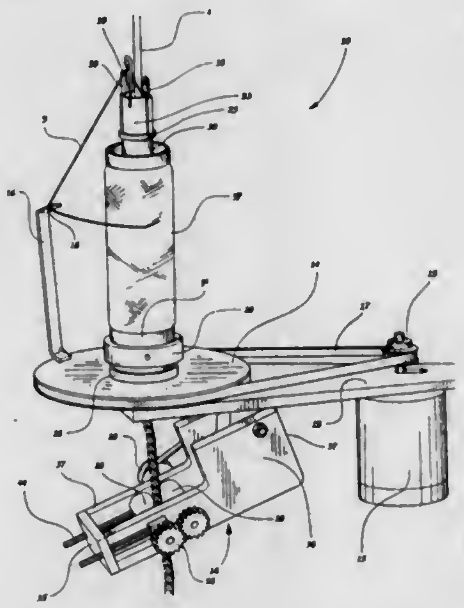
APPARATUS FOR KNITTING ABOUT A TRAVELING STRAND

Raymond J. Rednour, 5717 S. York Rd., Gastonia, N.C. 28052

Continuation-in-part of Ser. No. 298,206, Aug. 29, 1994, abandoned. This application Mar. 12, 1996, Ser. No. 613,591

Int. Cl.^{6} D04B *9/44*

U.S. Cl. 66—9 A **15 Claims**



1. An apparatus for knitting about a traveling strand comprising:

a rotatable base member mounted to a support;

means for rotating said base member;

means for supporting a yarn package rotatably mounted to said base member for rotation independently from rotation of said base member;

a strand conduit mounted to the support concentrically with respect to said means for supporting a yarn package;

means for moving a strand through said strand conduit mounted to the support; and

knitting means disposed adjacent said strand conduit for drawing yarn from a yarn package supported on said yarn package support means, and knitting the yarn about a strand traveling through said strand conduit, said knitting means being operable responsive to rotation of said base member.

5,617,744

DEVICE FOR THE AUTOMATIC FORMATION OF A CLOSED TOE IN A TUBULAR KNITTED ARTICLE

Paolo Conti, Florence, Italy, assignor to Golden Lady S.p.A., Jesi, Italy

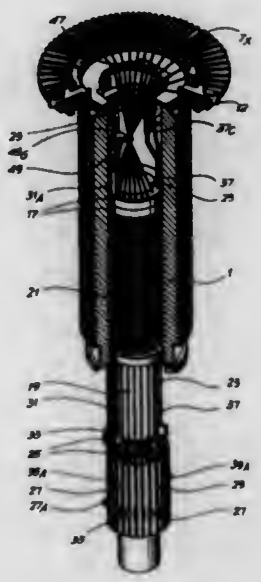
PCT No. PCT/IT95/00099, § 371 Date Apr. 26, 1996, § 102(e) Date Apr. 26, 1996, PCT Pub. No. WO95/34702, PCT Pub. Date Dec. 21, 1995

PCT Filed Jun. 7, 1995, Ser. No. 596,185

Claims priority, application Italy, Jun. 16, 1994, FI94A0125

Int. Cl.^{6} D04B *9/56*

U.S. Cl. 66—148 **7 Claims**



1. A device for automatic initial formation of a closed toe in a tubular knitted article directly on a circular knitting machine having a needle cylinder on which the article is formed, the device positioned within the cylinder and comprising a plurality of hooks for engaging an initial hem of a pocket formed by the needles of a sector covering approximately a semicircumference of the cylinder, and for transferring the initial hem to the needles of the opposite sector of needles, prior to the start of circular knitting of the article, wherein the hooks (23U) are disposed at ends of rods (23) which are elastically flexible; the rods (23) are movable longitudinally by cams of a ring of cams arranged coaxial with the needle cylinder at end opposite the hooks; one of the guide means provided for a curved support (47) which is hinged for oscillating about an axis diametric with respect to the circumferential working area of the needles (7, 7X) of the needle cylinder (1) is provided for the axial sliding of the rods, radial sliding passages (47A) for the individual rods being formed radially in this support, and means provided for moving the support between two substantially opposite positions to cause overturning of the hooks and consequently transfer of the hem.

5,617,745

SUPPORT SOCK

Michael P. Della Corte, 283 Carnation Ave., Floral Park, N.Y. 11001; Daniel Good; David Good, both of 1634 19th Ave., Hickory, N.C. 28601, and David E. Shaffer, 386 Spruce La., East Meadow, N.Y. 11554

Filed Jan. 4, 1996, Ser. No. 582,870

Int. Cl.^{6} A41B *11/00;* **D04B** *11/00;* **A61M** *31/00*

U.S. Cl. 66—178 A **5 Claims**

1. A support sock comprising:

an ankle stabilization portion having a first knit construction, the ankle stabilization portion being located to encircle an ankle joint, arch and instep of a foot and including a single stabilization section; and

a foot enclosure portion having a second knit construction integrally connected to said ankle stabilization portion, the foot enclosure portion including a toe portion, a heel portion, and a top portion located to be positioned above the ankle joint of the foot;

said ankle stabilization portion and said foot enclosure portion enclosing the surface area of a foot about which said ankle stabilization portion substantially surrounds, supports and stabilizes the ankle joint of said foot, said ankle stabilization portion interconnecting the foot enclosure portions, wherein said first and second knit constructions are a continuously knitted fabric.

5,617,746

PRESSURE DEHYDRATION LOW-FREQUENCY VIBRATION WASHING MACHINE

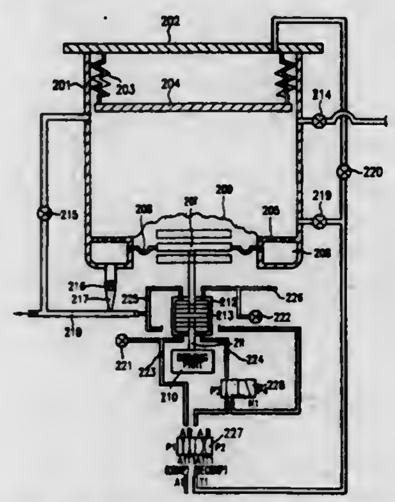
Kyung S. Hong, Incheon-si; Dong Y. Oh, Kyungki-do; Gyu S. Choi, Kyungki-do; Joo H. Lee, Kyungki-do; Oh H. Kwon, Seoul; Ha I. Lee, Kyungki-do, and Kyeong H. Kim, Seoul, all of Rep. of Korea, assignors to LG Electronics Inc., Seoul, Rep. of Korea

Filed Oct. 24, 1995, Ser. No. 547,611

Claims priority, application Rep. of Korea, Oct. 24, 1994, 27176/1994; Jul. 31, 1995, 23482/1995

Int. Cl.^{6} D06F *17/00;19/00*

U.S. Cl. 68—21 **7 Claims**



1. A driving mechanism of a pressure dehydration low-frequency washing machine comprising:

a washing tub having an oscillating plate;

an electromotive rotation shaft having first and second rotation directions and rotation forces horizontally installed below the washing tub;

selective driving means for driving the oscillating plate on the washing tub by selectively converting the rotation force of said electromotive rotation shaft to a reciprocation force when the rotation direction of said electromotive rotation shaft is in a first direction;

air-compressing means for converting the rotation force of said electromotive rotation shaft to reciprocation force and compressing air by means of a piston driven by the reciprocation force;

pressure-applying dehydration means for applying pressure and dehydrating the laundry in the washing tub by being expanded by compressed air in said air-compressing means when said electromotive rotation shaft is rotated in a second direction where said selective driving means is not driven; and

controlling means for selectively transferring the compressed air in said air-compressing means to said-pressure-applying dehydration means.

5,617,747

WASHING MACHINE WITH WATER PRESSURIZING AND SPRAYING INNER TUB WATER PASSAGES

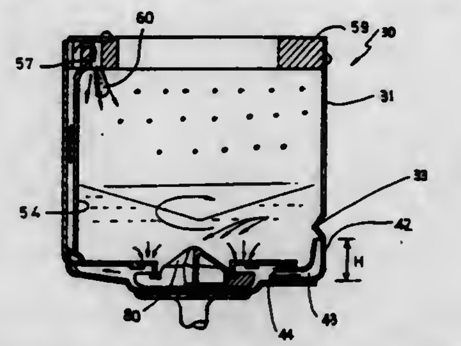
Yong S. Kim, Kyungsangnam-Do, Rep. of Korea, assignor to LG Electronics Inc., Rep. of Korea

Filed Dec. 14, 1995, Ser. No. 572,571

Claims priority, application Rep. of Korea, May 16, 1995, 10345/1995

Int. Cl.^{6} D06F *17/06*

U.S. Cl. 68—53 **10 Claims**



1. A washing machine including a hollow cylindrical inner tub for performing washing and drying operations, a rotating blade rotatably projecting from a center of a bottom surface of said inner tub to circulate cleansing water within said inner tub, and a means for ejecting said cleansing water under pressure between said rotating blade and inner tub to circulate said cleansing water within said inner tub, said inner tub including a sidewall, an outer circumference and a bottom surface, said washing machine further comprising:

a plurality of bent portions including lower ends and cutaway portions formed by being bent and cut at predetermined portions of said sidewall of said inner tub;

a plurality of waterway casings respectively coupled to said cutaway portions immediately below said lower ends of said bent portions for pressurizing said cleansing water to spray the circulating cleansing water into said inner tub; and

a hollow inner-tub base coupled to said waterway casings and housed within said inner tub for supplying said circulating cleansing water to said waterway casings.

5,617,748

DYE TUBE SPACER FOR PACKAGE DYEING

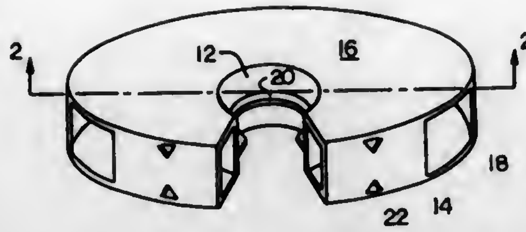
Gordon A. Wise, Statesville; Roger N. Saunders, Yadkinville; Matthew M. Thomas, Reidsville; Raymond W. Maynard, Advance, and Ronald W. Mangrum, Greensboro, all of N.C., assignors to Unifi, Inc., Reidsville, N.C.

Continuation of Ser. No. 284,305, Aug. 2, 1994, Pat. No. 5,490,401. This application Feb. 12, 1996, Ser. No. 600,032

Int. Cl.^{6} D06B *23/04*

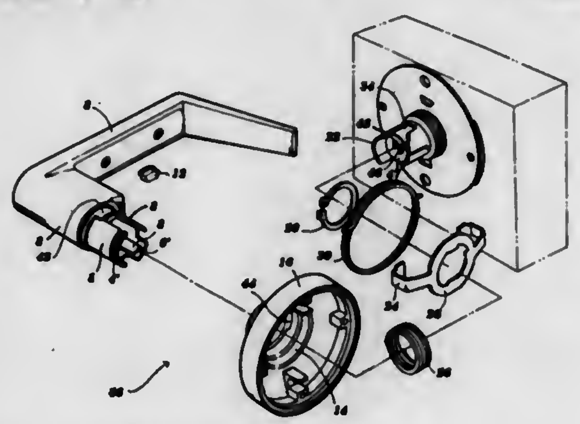
U.S. Cl. 68—198 **4 Claims**

1. An intermediate dye tube spacer for supporting facing ends of upper and lower yarn packages axially aligned and compressed on



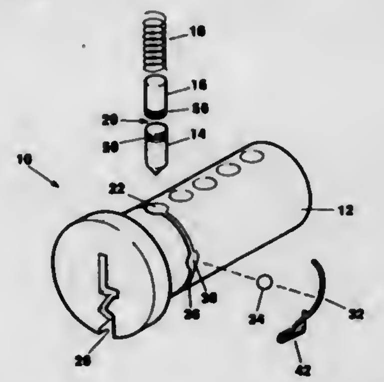
a spindle, each package including a yarn winding of a given diameter around a tube having an inner diameter substantially equal to the outer diameter of said spindle, said tube extending a given distance beyond the ends of said yarn winding, said spacer comprising:
(a) a cylindrical inner wall having an upper edge, a lower edge, and an inner diameter substantially equal to the outer diameter of said tube;
(b) a top annular wall inclined upwardly from the upper edge of said inner wall, said top wall having a diameter substantially equal to the diameter of the end of said upper yarn package;
(c) a bottom annular wall inclined downwardly from the lower edge of said inner wall, said bottom wall having a diameter substantially equal to the diameter of the end of said lower yarn package; and
(d) a tube support shelf extending inwardly from said inner wall equidistant between said upper and lower edges of said inner wall, the distance between said upper and lower edges being equal to approximately twice the length of the dye tube extending beyond the yarn winding upon being compressed, plus the thickness of said shelf, the width of said shelf being approximately equal to the thickness of said dye tube.

5,617,749
DOOR LOCK
Jung W. Park, Taegu, Rep. of Korea, assignor to Dusan Metals, Inc., Taegu, Rep. of Korea
Filed May 30, 1996, Ser. No. 650,296
Int. Cl.⁶ E05B *13/10*
U.S. Cl. 70—224 **3 Claims**



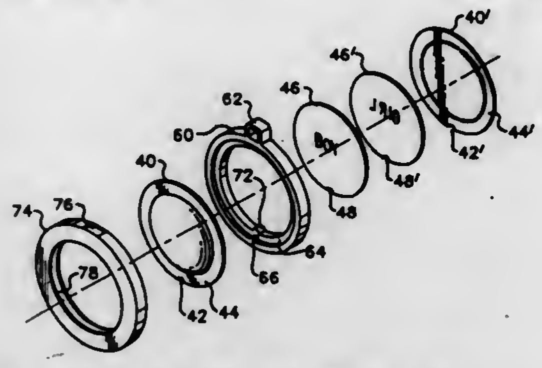
1. A door lock having:
a handle having a key cylinder;
a cylindrical open-ended outer spindle, affixed to said handle and having:
a connecting extruder projecting outward from the outer periphery of said outer spindle, proximate said handle;
a channel on said outer periphery of said outer spindle, distal from said handle; and
at least one slot formed in said outer periphery of said outer spindle, distal from said handle;
a rotating tube within said outer spindle, said rotating tube having:
a slot in an outer periphery, wherein said slot in said outer spindle is aligned with said slot in said rotating tube;
a disk having a slot with two extruding fingers therein, positioned within said rotating tube, perpendicular to the longitudinal axis of said rotating tube;
a hook, shaped to be received within said slot in said outer spindle and extending inwardly within said outer spindle into said slot of said rotating tube;
a coil spring mounted over said outer spindle and said hook;
a key operating assembly mounted within said handle, wherein a connecting bar of said key operating assembly extends outward from said handle into said outer spindle and is engaged in said slot of said disk of said rotating tube;
an open-ended hollow outer housing having a narrow end wherein said narrow end is mounted over said outer spindle and affixed to said handle and wherein an inner face of said narrow end of said housing includes a channel for receiving said connecting extruder of said outer spindle;
a ring-shaped spring holder mounted over said outer spindle within said channel, wherein said ring-shaped spring holder includes a plurality of inwardly bent arms extending from an outer periphery;
a return spring retained within said inwardly bent arms of said spring holder to provide a return force when said handle is rotated; and
a snap ring mounted onto said outer spindle within said channel.

5,617,750
PIN TUMBLER LOCKS AND KEYS THEREFOR
Brian Preddey, New South Wales, Australia, assignor to Master Locksmiths Assoc. of Australasia Limited, Victoria, Australia
Filed May 26, 1993, Ser. No. 67,536
Claims priority, application Australia, May 27, 1992, PL2648
Int. Cl.⁶ E05B *15/00*
U.S. Cl. 70—419 **17 Claims**



1. A pin tumbler lock operable with a corresponding key, the lock comprising:
a lock housing;
a core rotatable within said lock housing along a rotational path, said lock housing and said core each having a bore formed therein, wherein said bore formed in said lock housing is alignable with said bore formed in said core, said core further including a key slot formed therein which is constructed and arranged to receive the corresponding key;
a pin tumbler movable in opposite directions in said bore formed in said core and said bore formed in said, lock housing, said pin tumbler including a core pin and a housing pin with a pin junction therebetween, wherein said pin tumbler is biassed towards said core; and
a retaining mechanism constructed and arranged to selectively engage said pin tumbler to thereby prevent movement of said pin tumbler, said retaining mechanism comprising:
a spring having a first end fixedly connected to said core and a second end biassed toward said pin tumbler so as to engage said pin tumbler; and
a displaceable member disposed within said core constructed and arranged to be displaceable by the insertion of the corresponding key into said key slot, said displaced displaceable member causing said second end of said spring to disengage from said pin tumbler.

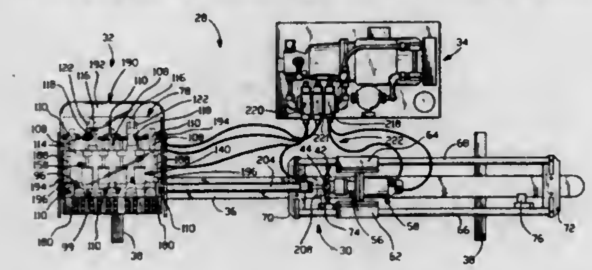
5,617,751
KEY FOB AND ATTACHMENT
Chang J. Song, 6740 Comstock Road, Richmond, Canada
Division of Ser. No. 196,534, Feb. 14, 1994, Pat. No. 5,501,089, which is a continuation-in-part of Ser. No. 49,046, Apr. 16, 1993, Pat. No. 5,528,916. This application Mar. 22, 1996, Ser. No. 621,306
Int. Cl.⁶ A44B *15/00*
U.S. Cl. 70—456 R **17 Claims**



1. A key fob for attachment to a key ring comprising:
a rim having a first inner cup, and a second inner cup;
a first dome having a first outer surface, a rear surface, and a flange, said first dome placed within said first inner cup of said rim;
a second dome having a second outer surface, a second rear surface, and a flange, said second dome placed within said second inner cup of said rim; and
a ring having a u-shaped cross-section disposed around said rim, wherein said first and second domes are secured within said rim by said ring.

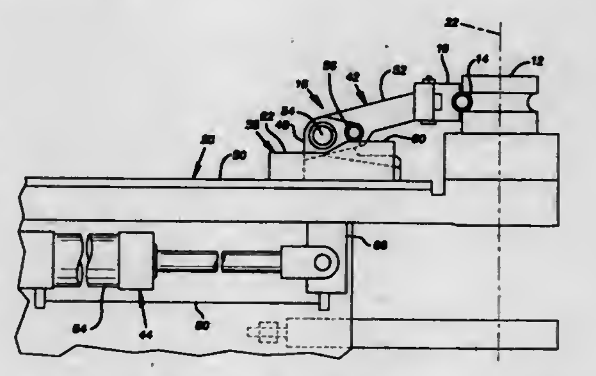
5,617,752
METHODS OF AND APPARATUS FOR STRAIGHTENING RODS
Bobby D. Hill, Amory, and Daniel M. Harrell, Ripley, both of Miss., assignors to Emhart, Inc., Newark, Del.
Filed Aug. 23, 1995, Ser. No. 518,345
Int. Cl.⁶ B21D *3/10*
U.S. Cl. 72—98 **22 Claims**

1. An apparatus for straightening a rod to conform to a desired



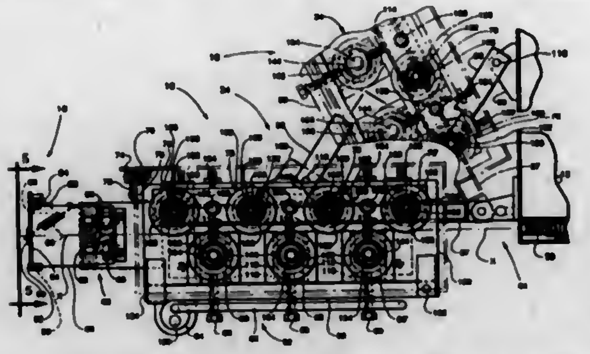
linear axis where the rod is formed with a first end and a second end spaced from the first end, which comprises:
a support for gripping the first end of the rod in such a fashion that the remainder of the rod extends in cantilever from the gripped first end;
a first non-rotatable straightening block
being movable laterally of the desired linear axis and formed with structure positionable adjacent a first section of the portion of the remainder of the rod;
a second non-rotatable straightening block angularly displaced about the desired linear axis from the first straightening block and being formed with structure positioned adjacent a second section of the portion of the remainder of the rod which, in an axial direction, is adjacent the first section of the portion of the remainder of the rod;
the structures of the first and second straightening blocks, when positioned adjacent the first and second sections of the rod-remainder portions, combining to define a confined passage having an axis coincidental with the desired linear axis of the rod and for capturing an adjacent portion of the rod within the confined passage; and
a moving mechanism coupled to the support for moving the support and the first end of the rod in an axial direction away from the first and second straightening blocks so that the portion of the rod and the second end of the rod are moved through the confined passage formed by the structures of the first and second straightening blocks to thereby straighten in the desired linear axis at least a length of the rod extending between the portion and the second end thereof.

5,617,753
LOW FORCE AUTO-OPEN TOOLING FOR TUBE BENDING MACHINE
Thomas W. Glissman, Avon, and Ajay K. Bhandari, Westlake, both of Ohio, assignors to Pines Manufacturing, Westlake, Ohio
Filed Oct. 6, 1995, Ser. No. 540,545
Int. Cl.⁶ B21B *37/08;* **B21D** *7/04;9/05*
U.S. Cl. 72—149 **21 Claims**



1. A tube bending machine for placing at least one bend in a tube, said tube bending machine comprising:
a rotatable bend die about which the tube is bent;
a rotatable clamp die disposed outwardly of said bend die and movable to secure the tube between the clamp die and the bend die at a location adjacent a selected location of the tube for the bend; and
a clamp die positioning system including a drop-away clamp die holder selectively positioning the clamp die in a clamping position and a lowered position below a centerline of said bend die, a linear actuator connected to the clamp die holder which moves in a direction perpendicular to a generally vertical clamping plane formed by an interface of said clamp die and said bend die, and a control system for automatically driving the linear actuator at variable pressure levels.

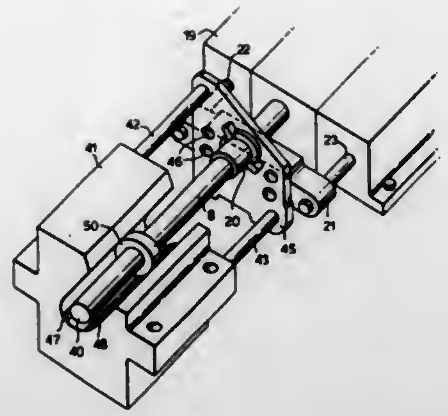
5,617,754
SINGLE STAGE TWO PLANE COILED REINFORCING BAR STOCK STRAIGHTENER
Frank Senft, Fairfield Glade, Tenn., and Joel D. McCorkel, York, Pa., assignors to Kenneth A. Kauffman, York, Pa.
Filed Dec. 21, 1995, Ser. No. 576,121
Int. Cl.⁶ B21D *3/02*
U.S. Cl. 72—165 **11 Claims**



1. A single stage two plane coiled reinforcing bar stock straightener adapted to effect vertical and horizontal plane coil set straightening of an infeed of re-bar coil stock to a stirrup bending machine, said straighiener comprising in combination a re-bar coil stock guide roll assembly adapted to receive and guide an infeed of re-bar coil stock along an infeed axis, a plurality of horizontally set vertically adjustable straightening rollers each respectively having a vertically disposed rotational axis adapted by an infeed axis horizontal adjustment bar to which said plurality of horizontally set vertically adjustable straightening rollers are each respectively assembled in an aligned spaced relationship respectively by means of a threaded mounting stud fixed to the adjustment bar which treaded mounting stud is in turn adapted to threadably receive a vertically adjustable threaded sleeve the vertical axis of which is coincidental with the vertical axis of said threaded mounting stud said threaded sleeve further in turn adapted to receive and moveably support adjustably at least one vertically adjustable straightening roller of said plurality of horizontally set vertically adjustable straightening rollers wherein said infeed axis horizontal adjustment bar is moved and set by means of a spatially aligned plurality of adjustment bolts respectively communicating through an opening in said infeed axis horizontal adjustment bar to horizontally align the same coincidental with said infeed axis, a plurality of horizontally adjustable straightening rollers each respectively having a vertically disposed rotational axis mechanically cooperative with said plurality of vertically adjustable rollers and being respectively adapted by a slide block being moveable by an adjustment bolt against the resistive force of a compression spring, an adjustment means to cooperatively extend and close said plurality of horizontally adjustable straightening rollers coincidental with said infeed axis in effecting said straightening of said re-bar coil stock infeed, and a connection means to align and affix said straightener.

5,617,755
PRESSES FOR DRAWING A HOLLOW ARTICLE
Christopher F. Cheers; Brian Hill, both of Swindon; Paul Porucznik, Kennington, and Ian Flude, East Hanney, all of United Kingdom, assignors to Carnaudmetalbox (Holdings) USA, Inc., Wilmington, Del.
Filed Aug. 11, 1995, Ser. No. 514,099
Claims priority, application United Kingdom, Aug. 27, 1994, 9417337
Int. Cl.⁶ B21D *22/00; 22/21*
U.S. Cl. 72—349 **10 Claims**

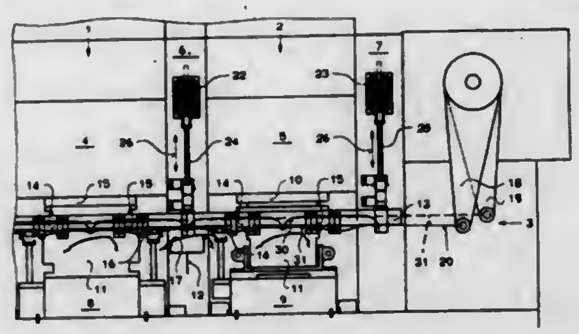
1. A subpress for use in a press comprising a first action to drive a ram (8) supporting a punch and a second action to drive a pair of drive rods (22, 23) joined by a crosshead (21) to a blankholder (20) cooperative with tools in a tool support (41), said tool support (41) having a first side wall portion, a second side wall portion parallel to the first side wall portion, and a base joining the side wall



portions to enclose a tool support surface extending from a first end surface to a second end surface of the wall portions; at least two pillars (42, 43) extending away from and slidable relative to said first end surface of the side wall portions in a direction parallel to an axis of the tool support surface;

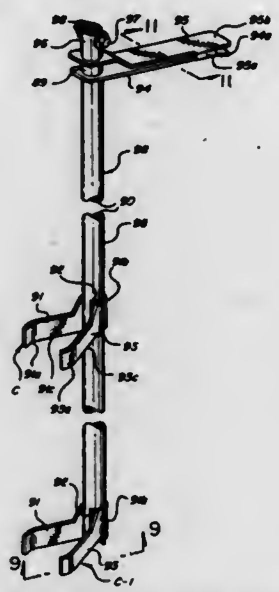
a crosshead plate (45), means for securing the pillars (42, 43) to the crossheadplate (45) for guided motion towards and away from the tool support (41), said crosshead plate (45) having a hole through it centred on the axis of the tool support surface to permit passage of the punch to the tool support by said first action, and means for connecting the crosshead plate (45) to the crosshead (21) driven by the second action.

5,617,756
TRANSFER DEVICE IN A METAL-FORMING MACHINE
Karl Thudium, Waeschenbeuren; Peter Klemm, Stuttgart, and Hans Hofele, Goeppingen, all of Germany, assignors to Schuler Pressen GmbH & Co., Goeppingen, Germany
Filed May 17, 1995, Ser. No. 443,410
Int. Cl.⁶ B21D *43/05*
U.S. Cl. 72—405.16 **4 Claims**



1. A machine in the form of a transfer press, large-piece transfer press, press facility and metal-forming machine for forming sheet metal parts, comprising a transfer device arranged to be movable in synchronization with the machine and having holding devices for gripping and transporting the sheet metal parts through the machine, and a lifting and lowering drive arranged to act, on a press-side, upon the transfer device, comprising servo motors with a vertically disposed hollow-shaft rotor extending therefrom and a high-resolution position signal generator for direct association with the transfer device, the hollow-shaft rotor of each of the servo motors being provided with a spindle nut interacting with a spindle non-rotatably fastened on the transfer device for substantially vertical lifting and lowering movements.

5,617,757
LIQUID LEVEL MONITORING SYSTEMS FOR UNDERGROUND STORAGE TANKS AND METHOD FOR ITS INSTALLATION
Jack R. Horner, Bay City, Mich., assignor to Horner Creative Products, Inc., Bay City, Mich.
Continuation-in-part of Ser. No. 241,350, May 11, 1994. This application Jan. 26, 1995, Ser. No. 378,779
Int. Cl.⁶ G01F *23/28;* B23P *19/04;* B25B *1/04*
U.S. Cl. 73—290 V **15 Claims**

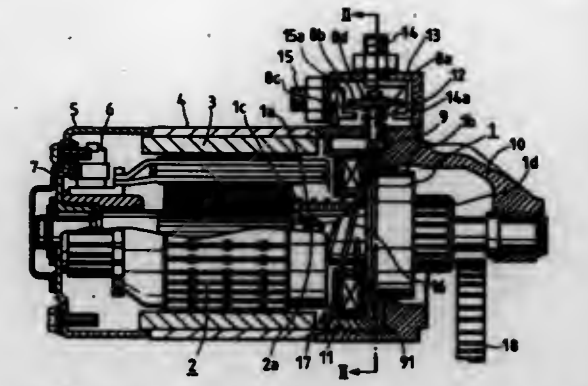


1. For use in inserting a telescopic liquid monitoring system in a laterally offset position adjacent a dedicated riser leading upwardly from the top of an underground liquid storage tank, the monitoring system including upper and lower telescopic members with a bearing surface on one of said members, and a yieldable force exerter incorporated with said telescopic members for urging them to a spread position in which they are retained between the upper and lower walls of the tank:

a) an elongate accessing member having a laterally extending openable and closable clamp jaw assembly thereon for gripping said monitoring system and holding it in a position generally parallel to said accessing member;
b) control mechanism at an upper end of said accessing member for opening and closing said clamp jaw assembly; and
c) a laterally extending bearing surface on said accessing member for engaging with the bearing surface on the monitoring system when a vertical force is exterted on said accessing member to relatively compress said upper and lower telescopic members sufficiently to enable the monitoring system to be moved to a position offset laterally from said riser in which it will clamp between the upper and lower wall portions of said underground tank when said force is released and said telescopic members are urged to said spread position.

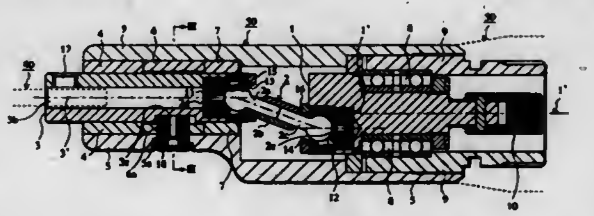
5,617,758
PERMANENT MAGNET STARTER
Tatsumi Nishida, Mito; Koki Ueta, and Yasuhiko Maruhashi, both of Hitachinaka, all of Japan, assignors to Hitachi, Ltd., Japan
Filed Dec. 28, 1995, Ser. No. 579,212
Claims priority, application Japan, Dec. 28, 1994, 6-326636
Int. Cl.⁶ F02N *15/06*
U.S. Cl. 74—7 B **7 Claims**

1. In a permanent magnet starter for starting an engine in which the rotating force of a permanent magnet magnetic field type electric motor is transmitted to a ring gear of said engine through a pinion clutch and a pinion gear provided on said pinion clutch, wherein,



said pinion clutch is smoothly engaged with a rotating shaft of said electric motor through a helical spline and;
a rotation restraint member is arranged at an outer periphery portion of said pinion clutch to be movable by an externally controlled magnet field coil.

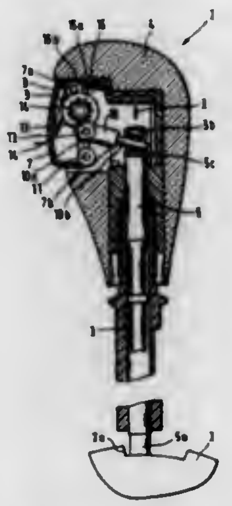
5,617,759
MECHANISM FOR MACHINING AND GRINDING TOOL FOR CONVERTING ROTATIONAL MOVEMENT INTO RECIPROCATING MOVEMENT
Eiichi Nakanishi, Kanuma, Japan, assignor to Nakanishi Dental Mfg. Co., Ltd., Tochigi-ken, Japan
Filed Jun. 12, 1995, Ser. No. 489,218
Claims priority, application Japan, Jun. 14, 1994, 6-131652
Int. Cl.⁶ F16H *21/22*
U.S. Cl. 74—44 **5 Claims**



1. A movement direction converting mechanism for a cutting tool and a grinding tool for converting a rotational movement into a reciprocating movement comprising
a casing,
a reciprocating member mounted within the casing for receiving and securing a tool to be inserted into a tool receiving opening of the reciprocating member,
a shaft member rotatably mounted within said casing for rotation by a rotational driving force exerted by a rotary driving source,
a bearing member for rotatably carrying said shaft member, and
a support member for carrying said reciprocating member for enabling reciprocating movement thereon,
said reciprocating member and the shaft member being spaced apart from each other so that a center axis of said reciprocating member and a center axis of said shaft member are offset relative to each other,
a connecting member being provided between the shaft member and the reciprocating member for interconnecting the shaft and reciprocating members for converting rotational movement of the shaft member into reciprocating movement of said reciprocating member,
one end of said connecting member being slidably received and mounted in said shaft member at a position offset from the axis of the shaft member and the other end of said connecting member being slidably received and mounted in said reciprocating member at a position offset from the axis of the shaft member,
characterized in that said connecting member has two connecting pieces each of which has shaft portions, said connecting

pieces being abutted to each other, a tubular member enclosing each outer periphery of the shaft portions for connecting and securing said shaft portions of the connecting pieces.

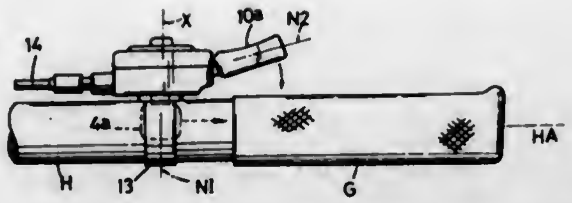
5,617,760
SHIFT LEVER FOR A MOTOR VEHICLE TRANSMISSION
Norbert Woeste, Munich, and Josef Neuner, Raubling, both of Germany, assignors to Bayerische Motoren Werke Aktiengesellschaft, Germany
Filed Jun. 9, 1995, Ser. No. 488,912
Claims priority, application Germany, Aug. 4, 1994, 44 27 695.8
Int. Cl.[6] F16H *63/38;* **F16D** *57/00*
U.S. Cl. 74—475 **18 Claims**



1. A selector lever for a motor vehicle transmission, comprising:
a hollow selector lever rod;
a detent rod arranged in said hollow selector lever rod and displaceable between a starting position and a shifting position;
a shift handle disposed on the selector lever rod;
an actuating mechanism comprising a push button, a restoring spring, and a lever,
said push button being connected to the shift handle and being movable between a push button starting position and a push button shifting position,
said restoring spring biasing the push button toward said push button starting position,
said lever pivotably disposed on said shift handle, said lever having a first end and a second end, said lever being operatively connected with said push button proximate said first end and said lever being operatively connected with said detent rod proximate said second end; and
a damping element operatively connected with said actuating mechanism, said damping element decelerating a movement of said detent rod from said shifting position toward said starting position.

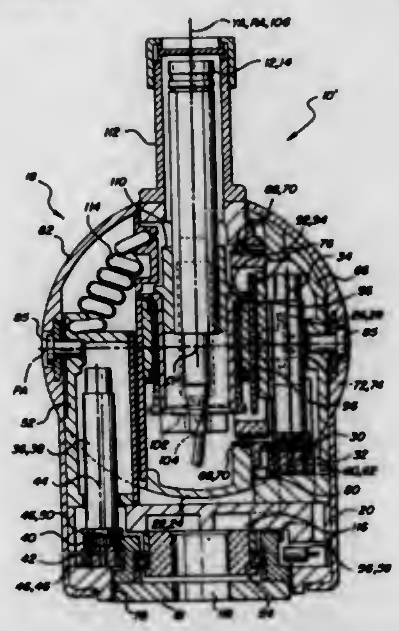
5,617,761
SHIFTING APPARATUS FOR A BICYCLE
Tatuya Kawakami, Sakai, Japan, assignor to Shimano, Inc., Osaka, Japan
Filed Aug. 23, 1995, Ser. No. 518,542
Claims priority, application Japan, Aug. 23, 1994, 6-198081
Int. Cl.[6] B62M *25/04;* **B62K** *23/06*
U.S. Cl. 74—475 **15 Claims**

1. A shifting apparatus for a bicycle comprising:
a supporting member (1) for connecting to a handlebar (H);



a take-up pan (3) which is pivotally supported to the supporting member (1) for alternately pulling and releasing a speed change member (14) for changing gears of a bicycle transmission;
a first speed change lever (4) coupled to the take-up part (3) for causing the take-up part (3) to pivot for changing gears of the bicycle transmission in response to movement of the first speed change lever (4) from a first position (N1) to a second position in the direction of a first axis (HA);
a second speed change lever (10) coupled to the take-up part (3) for causing the take-up part (3) to pivot for changing gears of the bicycle transmission in response to movement of the second speed change lever (10) from a third position (N2) to a fourth position in the direction of a second axis (X); and
an attachment band (13) for attaching the supporting member (1) to the handlebar (H), wherein the first axis (HA) is perpendicular to a plane defined by the attachment band, and wherein the second axis (X) is oriented generally perpendicularly to the first axis.

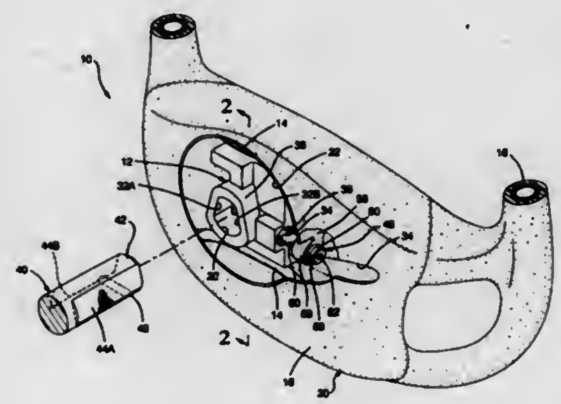
5,617,762
MINIATURE POSITIONING DEVICE
Jerry Kirsch, 3995 River Rd. #11, East China, Mich. 48054
Filed Mar. 10, 1995, Ser. No. 402,473
Int. Cl.[6] B25J *17/02;* **F41G** *1/40;* **H02K** *5/00*
U.S. Cl. 74—490.06 **69 Claims**



1. A positioning device (10, 10') for positioning an object (12), said positioning device (10, 10') comprising:
a mounting base (16);
a yaw assembly (18) for imparting yaw movement relative to said mounting base (16), said yaw assembly (18) comprising a yaw table (20) rotatably mounted to said mounting base (16);
a pitch assembly (22) for imparting pitch movement relative to said mounting base (16), said pitch assembly (22) comprising a pitch wheel (24) adapted for mounting to the object (12) and rotatably mounted to said yaw table (20);

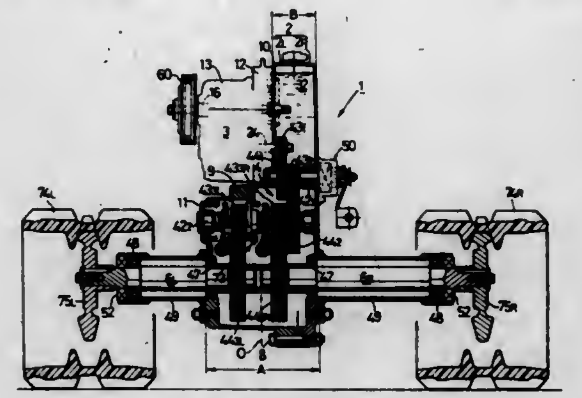
pitch drive means (26) located on said yaw table (20) for rotating said pitch wheel (24) relative to said yaw table (20), said pitch drive means (26) including a pitch motor (28) coupled to said yaw table (20) such that said pitch motor (28) rotates with table yaw table second pitch axis (PA); and
yaw drive means (36) located on said yaw table (20) for rotating said yaw table (20) relative to said mounting base (16), said yaw drive means (36) including a yaw motor (38) coupled to said yaw table (20) such that said yaw motor (38) rotates with said yaw table (20) around a first yaw axis (YA) that intersects the center of said pitch wheel (24) and said second pitch axis (PA) to define a center point (CP) about which the object (12) is positioned.

5,617,763
STEERING WHEEL FOR MOTOR VEHICLE
William D. Cymbal, Freeland, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 24, 1995, Ser. No. 562,530
Int. Cl.[6] B62D *1/04;* **G05G** *1/10*
U.S. Cl. 74—552 **3 Claims**



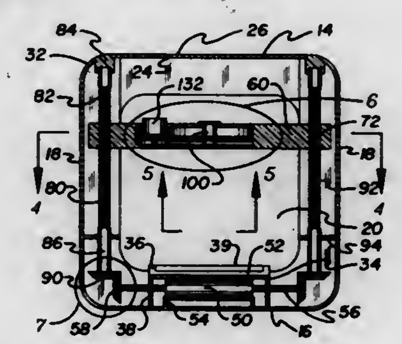
1. A motor vehicle steering wheel including
a hub,
a longitudinal bore in said hub,
a lateral bore in said hub intersecting said longitudinal bore and having a screw-threaded first end on a first side of said longitudinal bore and a second end on a second side of said longitudinal bore,
a cross bolt having a screw-threaded barrel and a pilot and a body between said barrel and said pilot, and
a plastic thin-wall shroud at least partially concealing said hub, characterized in that said steering wheel further includes a cross bolt retainer comprising:
a plastic sleeve resiliently gripping said screw-threaded barrel of said cross bolt, and
a connecting means operative to mount said plastic sleeve on said thin-wall shroud for universal pivotal movement relative to said shroud and to resiliently bias said flexible sleeve to a center position aligned with said lateral bore in said hub so that said cross bolt is supported on said shroud in a temporary position projecting into said lateral bore with said pilot partially obstructing said longitudinal bore in said hub,
a distal end of a steering shaft engaging said pilot and camming said cross bolt out of said center position when said distal end is inserted in said longitudinal bore and said connecting means resiliently returning said cross bolt to said center position when a lateral notch in said distal end of said steering shaft registers with said lateral bore in said hub thereby to snap said pilot into said lateral notch to signal complete penetration of said distal end of said steering shaft in said longitudinal bore.

5,617,764
DRIVE DEVICE FOR POWER WORKING VEHICLE
Norio Komura; Tsuyoshi Yoshigasaki, and Hiroshi Takahashi, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 1, 1994, Ser. No. 332,752
Claims priority, application Japan, Nov. 2, 1993, 5-274470; Nov. 12, 1993, 5-283158
Int. Cl.[6] F16H *57/02*
U.S. Cl. 74—606 R **6 Claims**



1. A drive device for a power working vehicle, comprising:
a transmission case including a wide portion for carrying left and right axles, and a narrow portion connected to the wide portion through a step, the transmission case being divided into two halves along a plane perpendicular to the axles;
a hydrostatic pressure type continuously variable transmission including a hydraulic pump and a hydraulic motor and mounted to one side of said narrow portion, such that said variable transmission is accommodated within a height of said step and a motor shaft of said hydraulic motor is parallel to said axles;
a differential means disposed on the wide portion for differentially operating said left and right axles relative to one another; and
a reducing gear mechanism extending from said narrow portion to said wide portion for performing speed reduction at a plurality of stages and transmitting power from said motor shaft to said axles wherein said wide portion accommodates therein at least one intermediate shaft included in said reducing gear mechanism.

5,617,765
JAR OPENER
Vivian A. Bennett, Rte. 3, Box 4032, Palatka, Fla. 32177
Filed Jul. 3, 1995, Ser. No. 497,870
Int. Cl.[6] B67B *7/00*
U.S. Cl. 81—3.2 **1 Claim**



1. A jar opener comprising, in combination:
a rigid and generally box-shaped housing including a central axis disposed therethrough, a horizontal top wall, a horizontal

bottom wall, a first pair and a second pair of opposed side walls extended therebetween to define a hollow interior, each wall further having an interior surface and an exterior surface, each side wall of the first pair further having a generally square window with round corners formed thereon for allowing access to the interior, the bottom wall further having a centrally located rigid platform extended upwards from its interior surface with the platform including a top horizontal top wall supported by a peripheral border, a recessed area, and additionally having a gripping surface for gripping a bottom of a jar that is placed within the recessed area;

a first electric motor having a fixed stator coupled to the platform and a rotatable, elongated, and rigid rotor having two ends extended outwards from the stator toward the side walls of the second pair and through the border and with each end thereof terminated with a bevel gear;

an elongated horizontal traveling plate disposed within the interior at a location above the platform, the traveling plate having an upper surface, a lower surface, a central portion aligned with the central axis of the housing, and a pair of arms extended diametrically outwards from the central portion and with each arm further having a rounded end and a threaded through hole formed thereon;

a pair of opposed rigid axially rotatable vertical shafts with each shaft having a central axis, an upper end coupled to the interior surface of the top wall with a seat, a lower end terminated with a bevel gear that is positioned in mesh with one of the bevel gears of the first motor, and an intermediate threaded portion extended between the ends and disposed within one of the through holes of the traveling plate and with rotation of the shafts allowing the traveling plate to be raised and lowered;

an axially revolvable wheel aligned with the central axis of the housing and coupled to the central portion of the traveling plate, the wheel including a cylindrical shaft extended within a through hole formed on the traveling plate and terminated at a flange, a planar disc coupled to the shaft on an end opposite the flange and positioned directly above the gripping surface of the platform, and a gear secured about the shaft between the flange and disk and with the planar disc additionally having a thin gripping surface coupled thereto with a plurality of concentrically positioned rings of gripping teeth formed thereon for gripping a lid on the jar, the rings positioned in alignment with the lower surface of the traveling plate;

a second electric motor having a fixed stator coupled to the traveling plate and a rotatable rotor with a gear formed thereon positioned in mesh with the gear on the wheel;

a sheathed power cable for supplying electrical power having a proximal end extended within the housing and a distal plug end removably securable to an external electrical power source;

a manually operated first switch having a terminal portion coupled between the proximal end of the power cable and the stator of the first motor and a toggleable portion extended from the housing and with the first switch having a first orientation that energizes the first motor to axially rotate the shafts in one direction to raise the traveling plate, a second orientation that energizes the first motor to axially rotate the shafts in an opposite direction to lower the traveling plate to a location such that the gripping surface of the wheel is in contact with the lid on the jar that is placed upon the gripping surface of the platform, and a third orientation that deenergizes the first motor and prevents traveling plate movement; and

a manually operated second switch having a terminal portion coupled between the proximal end of the power cable and the stator of the second motor and a toggleable portion extended from the housing and with the second switch having a first orientation that energizes the second motor to revolve the wheel in one direction to allow the lid positioned in contact with the gripping surfaces to be loosened, a second orientation that energizes the second motor to revolve the wheel in another direction to allow the lid positioned in contact with the gripping surfaces to be tightened, and a third orientation that deenergizes the second motor to thereby stop wheel movement.

5,617,766
TORQUE WRENCH DEVICE

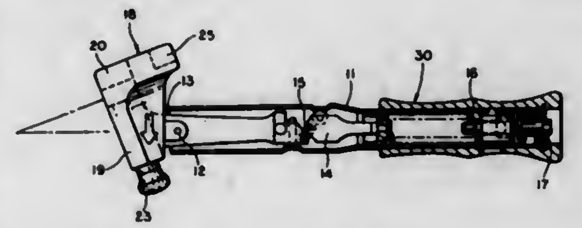
Hiroshi Tsuji, and Yoshiji Okayasu, both of Tokyo, Japan, assignors to Tonichi Manufacturing Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 309,100, Sep. 20, 1994, abandoned. This application Dec. 4, 1995, Ser. No. 566,483

Claims priority, application Japan, Oct. 12, 1993, 5-254341; Oct. 12, 1993, 5-254342

Int. Cl.[6] B25B *23/159*

U.S. Cl. 81—480 **2 Claims**



1. A torque wrench device comprising:

a torque wrench structure including a substantially tubular handle, a head pivotally secured to an end of said handle through a pivot pin, a toggle link connected to said head, a thruster coupled to said head through said toggle link, and a spring which is operatively coupled to said thruster and which resiliently urges said thruster towards said head; and

a clamp mechanism provided on an end of said head of said torque wrench structure and capable of clamping stem portions of a variety of types of wrenches by a resilient force exerted by a spring, said clamp mechanism including a fixed frame member integral with said head and having a first contact surface for contacting one side of a stem portion of a wrench to be mounted to said torque wrench structure via said clamp mechanism, a movable frame member cooperating with said fixed frame member to clamp the wrench to said torque wrench structure, and a wrench support unitary with said fixed frame member and having a second contact surface for contacting another side of the stem portion of the wrench to be mounted, said another side being opposite said one side along the stem portion of the wrench to be mounted and said second contact surface being axially spaced from said first contact surface along the stem portion of the wrench to be mounted, whereby a torque can be applied to the wrench via said first contact surface and said second contact surface, said movable frame member being different from said fixed frame member and said wrench support.

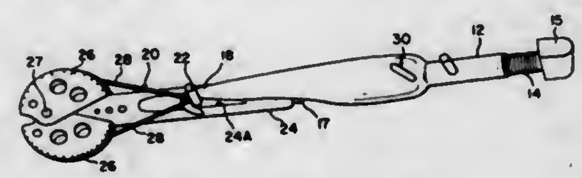
5,617,767
EXTRACTOR TOOL

James Nikoden, 1502 4th St.-#2, P.O. Box 1546, Berthoud, Colo. 80513

Filed Nov. 29, 1995, Ser. No. 564,907

Int. Cl.[6] B25B *33/00*

U.S. Cl. 81—488 **12 Claims**



1. An extractor tool for manually extracting a climber's camming device from a crevice, wherein the camming device is of the type having a handle and one or more cams carried by the handle which are movable between extended and retracted positions by movement of a release rod axially relative to the longitudinal axis of said handle; wherein said extractor tool comprises:

(a) an elongated barrel member having first and second ends and a longitudinal bore therethrough; said barrel member further including finger grip means;

(b) a plunger member axially movable in said barrel member, said plunger member including a first end adjacent said first end of said barrel member and a second end projecting outwardly from said second end of said barrel member;

(c) a pair of arms, each of said arms including hook means, carried by said second end of said barrel member for connection to said release rod of said camming device.

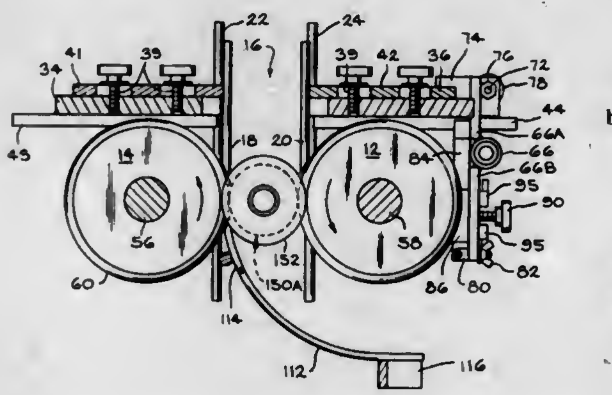
5,617,768
TRIMMER FOR REMOVING SCRAPING FROM TOPS OF PLASTIC BOTTLES

Robert J. Palazzolo, Williamston, Mich., assignor to M.C. Molds Inc., Williamston, Mich.

Filed May 11, 1995, Ser. No. 439,313

Int. Cl.[6] B23B *5/14;* **B23D** *25/00;31/04*

U.S. Cl. 82—47 **30 Claims**



1. A trimmer apparatus for removing a dome scrap from a blow molded, plastic container, which comprises:

(a) a frame defining a path through the apparatus;

(b) conveying means for rotating the container consisting essentially of a single pair of opposed circular drive wheels positioned along the path on opposite sides of the path in a common plane, wherein each of the drive wheels is connected to a drive means mounted on the frame for rotating the drive wheels in the same directions and wherein the drive wheels acting together contacts the dome scrap and provides for rotating the container about a longitudinal axis of the container wherein one of the wheels acts to move the container and dome scrap along the path;

(c) a cutting means mounted adjacent at least one of the drive wheels with a cutting edge of the cutting means projecting into the path adjacent the longitudinal axis, away from the drive wheel to provide for cutting the dome scrap from the container as the container is rotated on the longitudinal axis in the path between the drive wheels so that the container falls away from the path; and

(d) a guide means mounted adjacent the other one of the drive wheels for keeping the dome scrap in contact with the one of the drive wheels for moving the container and dome scrap along the path and for moving the dome scrap out of the path and along the other drive wheel after the dome scrap is removed.

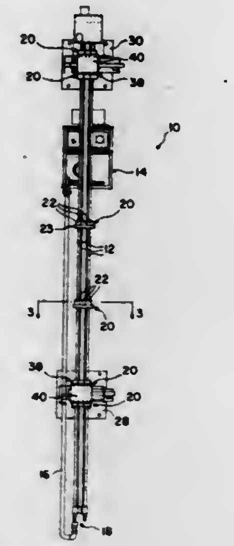
5,617,769
THERMALLY COMPLIANT BAR FEEDING MACHINE

Paul M. Bjorck, Elmira Heights; Babak R. Raj; Terrence M. Sheehan, both of Elmira, and Daniel P. Soroka, Horseheads, all of N.Y., assignors to Hardinge Brothers, Inc., Elmira, N.Y.

Filed Oct. 14, 1994, Ser. No. 323,259

Int. Cl.[6] B23B *13/00*

U.S. Cl. 82—127 **24 Claims**



1. A bar feed assembly for receiving and guiding a bar stock to be machined in a lathe, comprising:

a one-piece tubular member having two opposite ends and an intermediate portion therebetween, one of said ends being constructed and arranged for rotatably receiving and guiding the bar stock to be machined;

a movable member constructed and arranged to advance the bar stock through said tubular member; and

a plurality of stabilizing bodies disposed along a length of said tubular member in spaced apart relation, said stabilizing bodies each having a compliant surface disposed in surrounding relation to said tubular member and contacting said tubular member in a manner which permits axial thermal growth of said tubular member through said stabilizing bodies at all positions along said intermediate portion; and

a support structure disposed generally at a predetermined position along said intermediate portion of said tubular member and constructed and arranged to support said tubular member from beneath at said predetermined position, said support structure carrying said tubular member via at least one of said stabilizing bodies so as to permit said axial thermal growth of said tubular member at said predetermined position.

5,617,770
CLOSURE ARRANGEMENT FOR RECLOSABLE BAG

Timothy J. May, Greenville, Wis., assignor to Reynolds Consumer Products Inc., Appleton, Wis.

Filed May 22, 1996, Ser. No. 651,071

Int. Cl.[6] B26D *1/56*

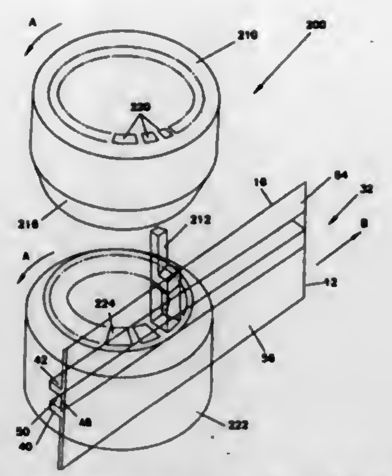
U.S. Cl. 83—37 **6 Claims**

1. A method for constructing a reclosable zipper for a bag, the method comprising:

providing an elongated zipper profile attached to a web and having first and second opposed legs with a channel therebetween, the first and second legs being substantially perpendicular to the web;

feeding the zipper profile between a die wheel and a punch wheel, the punch wheel including an L-shaped punch, and the die wheel including a punch receiver;

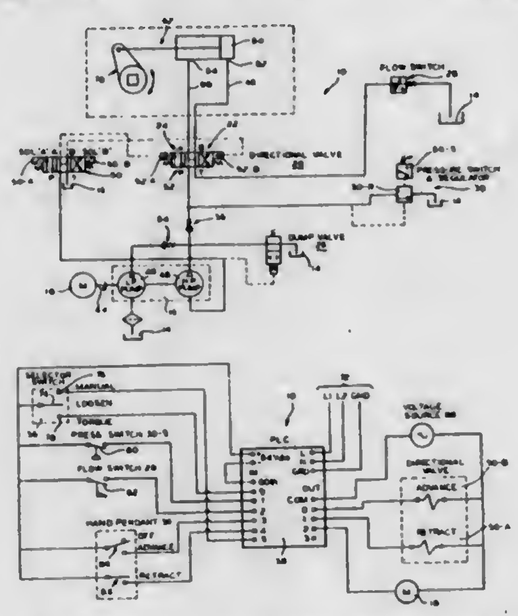
rotating the punch wheel and the die wheel coaxially;



engaging a lower end of the L-shaped punch into the channel between the first and second legs; and

punching the first leg with the punch to remove a slug from the first leg by advancing the punch with a cam, the advancement being in a direction parallel to an axis of rotation of the wheels.

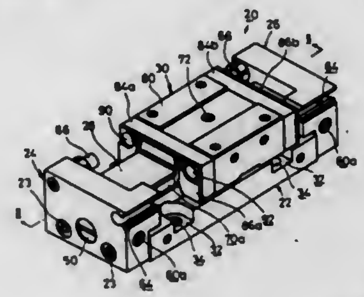
5,617,771
AUTO CYCLE PUMP
Michael T. Landrum, Waseca, Minn., assignor to Power Team Div. of SPX Corp., Owatonna, Minn.
Filed Jan. 11, 1996, Ser. No. 585,180
Int. Cl.⁶ F01B *25/06*
U.S. Cl. 91—1 **15 Claims**

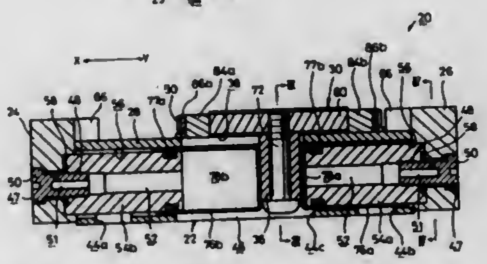


1. An auto cycle pump for controlling operation of a hydraulic tool that is cyclically and alternately advanced and retracted to operate the tool, the auto cycle pump controlling the tool operation automatically and comprising:

a housing including a reservoir for storing hydraulic fluid;
a hydraulic pump in the housing providing hydraulic flow;
a directional valve having neutral, advance and retract positions to respectively restrict hydraulic flow, direct hydraulic flow to an advance port and direct hydraulic flow to a retract port, the ports for hydraulic connection to the hydraulic tool, in use;
fluid conduit means connecting the pump and reservoir to the directional valve;
a flow switch for detecting return flow from the directional valve to the reservoir;
pressure sensing means for sensing hydraulic pressure from the pump;
a dump valve operatively connected to the pump for directing hydraulic flow back to the reservoir when the directional valve is in the neutral position; and
control means operatively connected to said pump, said directional valve, said flow switch and said pressure sensing means for controlling operation of the auto cycle pump in an automatic mode of operation, the automatic mode of operation including activating the pump and controlling a repeatable cycle, the cycle including a) operating the directional valve to the advance position or the retract to selectively advance or retract the tool, b) returning the directional valve to the neutral position when the flow switch senses loss of return flow, c) completing the cycle when the flow switch again senses loss of flow after flow from decompression of the fluid conduit means has stopped, step a) being configured to operate the valve alternately to the advance position and the retract position in alternate cycles, the repeatable cycle continuing until a select pressure is sensed by the pressure sensing means.

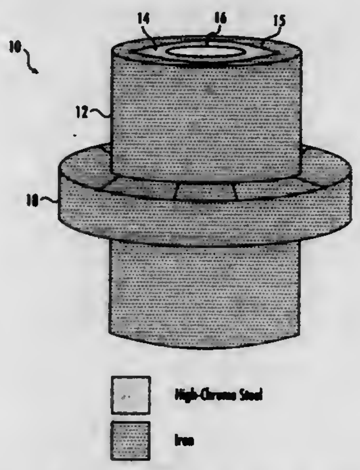
5,617,772
LINEAR ACTUATOR
Masayuki Hosono, and Yoshiteru Ueno, both of Ibaraki-ken, Japan, assignors to SMC Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 29, 1995, Ser. No. 536,605
Claims priority, application Japan, Sep. 30, 1994, 6-237415; Sep. 12, 1995, 7-234390
Int. Cl.⁶ F01B *15/02*
U.S. Cl. 92—117 A **11 Claims**





1. A linear actuator comprising:
an actuator body having a pair of fluid outlet/inlet ports defined in a side surface thereof, a through hole defined axially therein, and an opening defined in an upper surface thereof;
a pair of end blocks coupled to respective axial ends of said actuator body;
a slide table mounted on said actuator body for reciprocating movement axially along the actuator body;
a pair of tubular members coupled to said end blocks, respectively, and having respective passages communicating with said fluid outlet/inlet ports, respectively;
a joint member coupled substantially perpendicularly to a lower surface of said slide table through said opening, for displacement in unison with said slide table;
first and second cover members detached from each other and disposed respectively on opposite sides of said joint member and displaceable into surface to surface contact with said opposite sides of said joint member for moving said slide table, said cover members hermetically sealing outer circumferential surfaces of said tubular members from contact with air; and
a pair of pressure chambers defined by said tubular members and said cover members and closed by said cover members, said pressure chambers communicating with said passages in said tubular members.

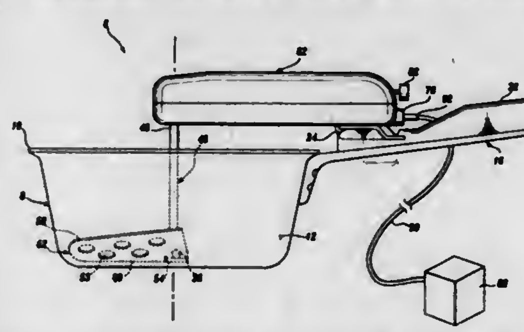
5,617,773
LINER FOR USE IN CORROSIVE AND ABRASIVE FLUID PUMP AND METHOD OF MAKING SAME
Alan Craft, 602 Saddlewood, Houston, Tex. 77024, and Charles Mabry, 4985 Littlewood Dr., Beaumont, Tex. 77706
Filed Nov. 7, 1995, Ser. No. 553,142
Int. Cl.⁶ F16J *10/04*
U.S. Cl. 92—171.1 **26 Claims**



1. A dual-metal, fluid pump liner for lining the interior of a fluid pump housing, the liner comprising:
a corrosion and abrasion resistant sleeve having an inner surface for passage of fluid and an outer surface;
a shell comprising machinable iron and having an inner surface and an outer surface shaped for engagement with the pump housing; and
a metallurgical bond between the inner surface of the shell and the outer surface of the sleeve.

5,617,774
SELF-STIRRING COOKING DEVICE
Jeffrey LaVelle, Edmonds, and Paul Shemeta, Seattle, both of Wash., assignors to J.L. Manufacturing Inc., Everett, Wash.
Filed Oct. 4, 1995, Ser. No. 539,229
Int. Cl.⁶ A47J *27/00;* **B01F** *7/20*
U.S. Cl. 99—348 **20 Claims**

1. An automatic self-stirring cooking device for stirring the contents of a container having an opening and a handle, the device comprising:

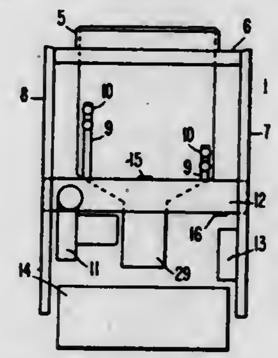


(a) connection mechanism;
(b) a motor assembly connected to the container via the connection mechanism, the motor assembly extending from a side of the container over a portion of the opening of the container, the motor assembly capable of producing rotational motion;
(c) a vertical shaft having an upper end, the shaft having at least one blade attached axially therefrom for stirring the contents of the container, the upper end of the vertical shaft in rotational communication with the motor assembly; and
(d) wherein the connection mechanism includes a bracket rigidly attached to the motor assembly and a hand grip rigidly attached to the handle, the bracket further including an elongated boss and a flat hook, the hand grip further including an elongated channel and a ridge, the channel and ridge for receiving the boss and hook, respectively.

5,617,775

Patent Not Issued For This Number

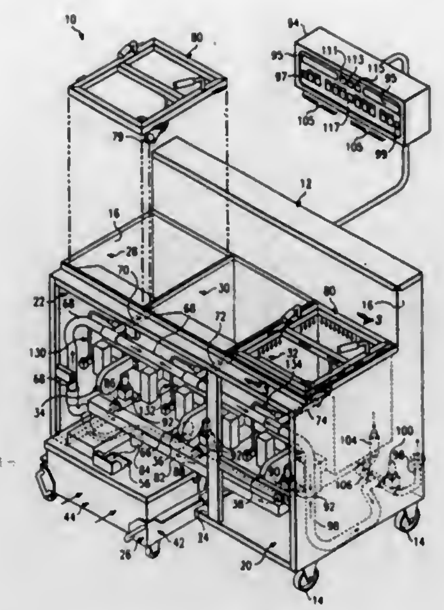
5,617,776
INDUCED DRAFT GAS FIRED FRYER
James D. King, Dayton, and Stephen Werts, Eaton, both of Ohio, assignors to Henny Penny Corporation, Eaton, Ohio
Continuation-in-part of Ser. No. 101,059, Aug. 3, 1993, Pat. No. 5,402,713. This application Feb. 28, 1995, Ser. No. 395,862
Int. Cl.⁶ A47J *27/00;37/12;* **F24D** *1/00*
U.S. Cl. 99—408 **15 Claims**



1. A cooking apparatus comprising:
a vat for holding a cooking medium;
one or more heat exchange tubes located substantially within said vat;
means for generating heat; and,
means for inducing a draft to cause heat generated by the means for generating heat to be drawn through said one or more heat exchange tubes.

5,617,777
DEEP FAT FRYING APPARATUS WITH AUTOMATED OIL MANAGEMENT
John R. Davis; Ralph L. Macy, Jr., both of Shreveport; John M. Kinch, Bossier City, all of La., and Lynn L. Stark, Tyler, Tex., assignors to The Frymaster Corporation, Shreveport, La.
Filed Jun. 1, 1995, Ser. No. 457,862
Int. Cl.⁶ A47J *37/12*
U.S. Cl. 99—408 **23 Claims**

1. Deep fat frying apparatus comprising:
a floor supportable housing having a pair of opposite sidewalls, a front wall, an open lower end, a lower internal portion, an upper internal portion positioned directly above said lower internal portion, and an access opening through said front wall into said lower internal portion for receiving an oil filter pan assembly;



a plurality of frying vats each adapted to receive and heat a cooking liquid in which food items may be cooked, such plurality of frypots being mounted in a closely adjacent side-by-side relationship within the upper internal portion of said housing, each of said frying vats having an upper cooking portion with a narrowed well portion depending therefrom;
a heating system which heats the cooking liquid in each vat;
an oil filter pan assembly receivable within the lower internal portion of said housing, said filter pan assembly having a filter pan with a top inlet opening, a bottom wall from which a drainage sump depends, front, rear, and side walls which form a reservoir sized to receive and hold the entire cooking fluid content of a frying vat and a cooking fluid filter element operatively carried by said reservoir in order to filter cooking fluid passing between said inlet and said drainage sump;
a filter pump and drive motor operatively associated with said filter pan assembly, the pump having an inlet communicating with the interior of said drainage sump and an outlet connected to a transfer line operable to convey oil under pressure through the transfer line to an oil distribution system;
an oil distribution system comprising each vat having an electrically operated drain valve fluidly coupled to a drain line leading to the inlet of the oil filter pan assembly when it is received in the housing and each vat having a return line and an electrically operated return valve fluidly coupled to the transfer line leading from the filter pump;
a control system having circuits interconnecting said electrically operated valves and filter pump comprising a programmed oil management computer having an interface for selecting oil transfer functions, displaying messages, receiving operator selections and converting operator inputs into signals effective for operating said electrically operated valves and filter pump in sequence in order to transfer oil to or from a selected vat and the filter pan assembly.

5,617,778

GAS BARBECUE ASSEMBLY

Wolfgang Schroeter, 29 Doran Road, Midhurst, Ontario, Canada; Cliff Lilley, 17 McLaughlin Street, Anten Mills, Ontario, Canada, and Steven Schwarz, 1-153 St. Vincent Street, Barrie, Ontario, Canada

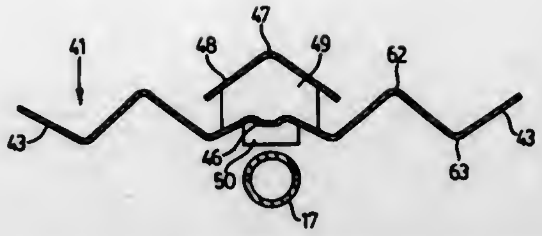
Filed Jun. 6, 1995, Ser. No. 470,418

Claims priority, application Canada, Jun. 1, 1995, 2150768

Int. Cl.[6] A47J *37/07*

U.S. Cl. 99—446 **13 Claims**

1. A gas barbecue comprising:



a housing having a generally rectangular shape with opposing side and end walls, an open interior, and an open top; a burner assembly mounted within said open interior of said housing; control means to regulate the flow of gas to said burner assembly; a cooking grill positioned above said burner assembly on first support means; at least one sear plate, said sear plate positioned on second support means between said burner assembly and said cooking grill and comprised of a series of adjacent and connected wall portions forming an undulating surface of elongate ridges and troughs for catching and searing grease drippings from said cooking grill thereby releasing vapour to enhance the flavour of food cooked on said cooking grill, wherein said adjacent and connected wall portions comprising said sear plate form obtuse angles therebetween; and a grease deflector mounted on said sear plate, said grease deflector positioned on said sear plate vertically above said tube burner, said grease deflector deflecting grease drippings away from the portion of said sear plate immediately above said tube burner.

5,617,779

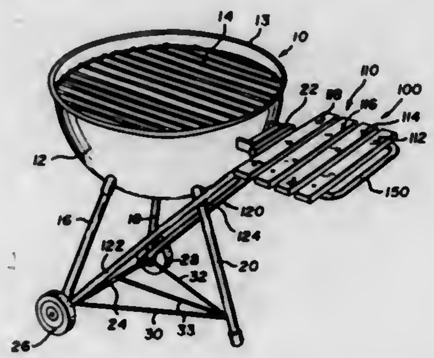
BARBECUE GRILL SHELF ATTACHMENT

Mychajlo Dutczak, 1270 Mackinaw Ave., Calumet City, Ill. 60409

Filed Aug. 1, 1996, Ser. No. 691,096

Int. Cl.[6] A47J *37/00;37/07*

U.S. Cl. 99—450 **10 Claims**



1. In a barbecue grill, the combination of:
a bowl for receiving heat producing means said bowl having a front and a rear and a top;
a front support means connected to the front of said bowl and positioned at the front of the grill and extending from the bottom of the grill to the front of said bowl;
rear support means connected to the rear of said bowl and positioned at the rear of the grill and extending from the bottom of the grill to the rear of the bowl;
a horizontal tray at the rear of the grill at approximately the height of the top of said bowl;
said tray supported by frame means connected to said tray and to said front support means at the front of the grill, near its bottom, which frame means extends rearward and upward to the rear of said bowl wherein it is attached to the rear of said bowl.

5,617,780

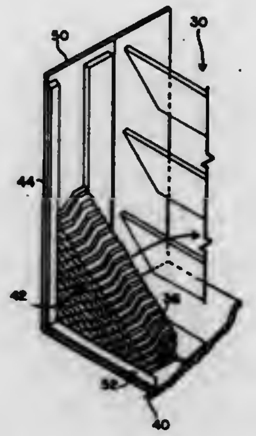
DAYLIGHT REDUCER FOR FOOD CROP STORAGE BUILDING

Steven E. Robbs, c/o Industrial Ventilation, Inc. 723 E. Karcher Rd., Nampa, Id. 83687

Filed Apr. 20, 1994, Ser. No. 230,131

Int. Cl.[6] A01J *11/04;* G02B *27/00*

U.S. Cl. 99—467 **1 Claim**



1. A free-flowing air permeable sunlight reducer for agricultural food product storage buildings comprising:
a form constructed from a plurality of panels, each panel being substantially of a wave form;
each panel being permanently attached to an adjacent panel such that any two panels are juxtaposed such that the period of their wave forms are 180° out of phase with each other, thereby forming a rigid structure having a plurality of passageways;
each passageway having a first and a second end, the passageways being of offset configuration wherein the first end is offset from the second end to an extent that a linear path does not exist between the first and second end; and
the panels are fabricated out of a non-reflective and opaque ultraviolet light-resistant polyvinyl chloride.

5,617,781

FOOD STERILIZING APPARATUS

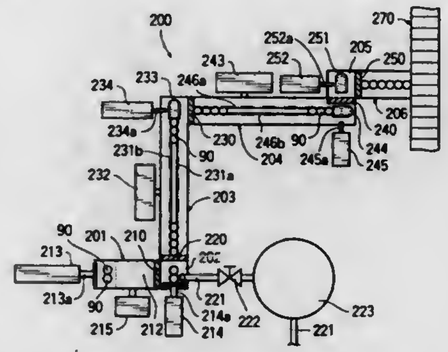
Masayuki Nakatani, Nagoya; Koji Sengoku, Chiba-Ken, and Akifumi Fujita, Ichihara, all of Japan, assignors to House Foods Corporation, Higashi-Osaka, Japan

Filed Jun. 15, 1995, Ser. No. 490,710

Claims priority, application Japan, Jun. 16, 1994, 6-134656; Jun. 16, 1994, 6-134657

Int. Cl.[6] B02C *25/00*

U.S. Cl. 99—470 **18 Claims**



1. A food sterilizing apparatus comprising:
a food feeding section in communication with an atmosphere having a pressure, said food feeding section having an upstream end and a downstream end, said upstream end receiving open containers containing food to be heated and sterilized;
a heating and sterilizing chamber for heating and sterilizing the food under pressure higher than the atmospheric pressure, said heating and sterilizing chamber having an upstream end and a downstream end;
a pressure upward regulating chamber provided between said downstream end of said food feeding section and said upstream end of said heating and sterilizing chamber;
a first sealing gate separating said pressure upward regulating chamber from said downstream end of said food feeding section;
a second sealing gate separating said pressure upward regulating chamber from said upstream end of said heating and sterilizing chamber;
means for successively advancing the open containers from said food feeding section to said heating and sterilizing chamber;
a pressurized fluid tank for storing a pressurized fluid;
a pipe providing fluid communication between said pressurized fluid tank and said pressure upward regulating chamber, said pipe having an open end opening into said pressure upward regulating chamber;
pressurized fluid blocking means provided between said open end of said pipe and openings of the open containers; and
a pressurized fluid supply source for supplying pressurized fluid to said pressurized fluid tank.

5,617,782

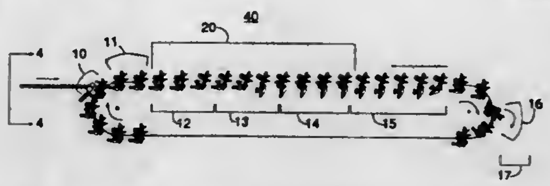
METHOD AND APPARATUS FOR BREAKING, SEPARATING, AND INSPECTING EGGS

Leslie P. Thomas, Brighton, Mich., assignor to Diamond Automations, Inc., Farmington Hills, Mich.

Filed Mar. 31, 1995, Ser. No. 414,681

Int. Cl.[6] A23J *1/09;* A47J *43/14;* A01K *43/00*

U.S. Cl. 99—500 **7 Claims**



1. An apparatus for breaking and separating eggs comprising:
a first conveyor, said first conveyor conveying a plurality of rows of eggs; and
a second conveyor, said conveyor comprising a plurality of rows of egg breaking and egg separating elements, said second conveyor comprising an egg breaking section, said egg breaking and egg separating elements breaking said eggs at said egg breaking section, said second conveyor further comprising an egg inspection section downstream of said egg breaking section, said egg breaking and egg separating elements retaining egg shells of said eggs and contents of said eggs adjacent one another at said inspection section, to thereby allow simultaneous inspection of an associated egg shell and egg contents of an egg.

5,617,783

PEELER WITH INCLINED GROOVES IN SIDE WALL

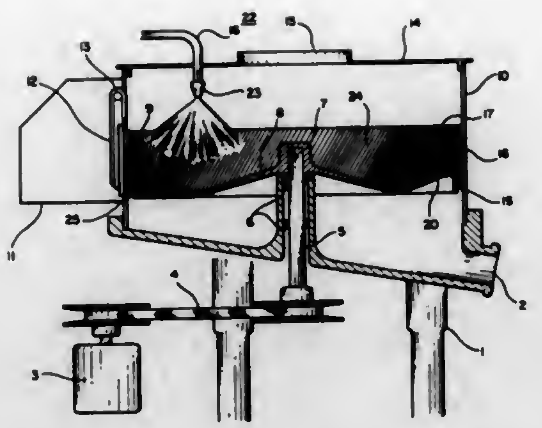
Michael L. Beeler, Modesto, Calif., assignor to Beeler Industries, Inc., Salida, Calif.

Filed Dec. 21, 1995, Ser. No. 576,210

Int. Cl.[6] A23N *7/00*

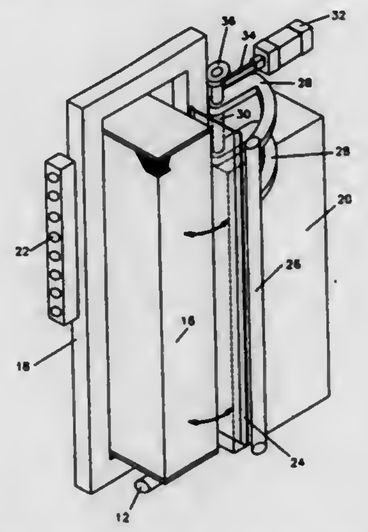
U.S. Cl. 99—631 **23 Claims**

1. A peeler comprising:
a housing with a cylindrical chamber therein for holding agricultural products for abrasive peeling;



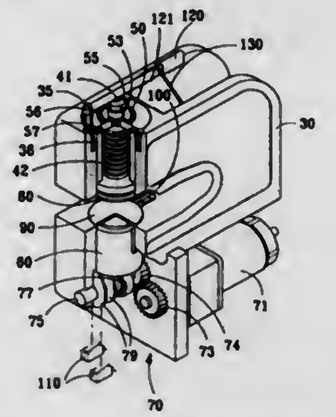
a disk serving as a lower boundary to the cylindrical chamber;
an interior surface around the cylindrical chamber, the interior surface having a plurality of inclined inwardly projecting portions with inclined valleys serving as channels between adjacent projecting portions;
a motor operably connected to cause relative rotation between the disk and the interior surface;
a debris exit located at an outer periphery of the disk, the debris exit having dimensions which allow passage of materials abraded off of agricultural products and which preclude passage of the agricultural products therethrough; and
a product exit communicating with the cylindrical chamber for allowing exit of processed agricultural product therefrom; and
wherein material abraded off of agricultural products is urged downwardly and out the debris exit from the relative rotation of the disk and the interior surface causing the debris to be moved along the inclined valleys serving as channels.

5,617,784
APPARATUS FOR BUNDLING, TRANSPORTING, AND FEEDING SHEETS
John St. John, Lake Arrowhead, and Allyn Peterson, San Bernardino, both of Calif., assignors to Baldwin Technology Corporation, Rosemont, Ill.
Filed Oct. 5, 1995, Ser. No. 539,682
Int. Cl.⁶ B65B *27/08*
U.S. Cl. 100—3 **28 Claims**



23. A method for stacking, bundling and transporting sheets comprising
I) providing an apparatus comprising:
a) sheet feeding means capable of feeding a series of sheets in signature form to sheet stacker means,
b) sheet stacker means capable of continuously receiving sheets from the sheet feeding means and stacking said sheets into a discrete stack on a support surface,
c) compressor means capable of compressing the stack on the support surface,
d) clamping means capable of securing the sheets in the compressed stack, said clamping means comprising at least one cantilevered bar extending along the length of at least one of the sides of the stack; said at least one bar being attached to driving means capable of alternately driving the at least one bar toward the stack until either the stack or a stop is reached and releasing the stack, said driving means being attached to said at least one bar at one end of said at least one bar and wherein an opposite end of said at least one bar is free of attachment to the driving means; and
II) feeding a series of sheets in signature form to the sheet stacker means;
III) continuously receiving sheets from the sheet feeding means and stacking said sheets into a discrete stack on a support surface;
IV) securing the sheets in the stack with the clamping means by driving said at least one cantilevered bar towards the stack with the driving means until the stack or a stop is reached; and
V) compressing the stack; and
VI) releasing the stack.

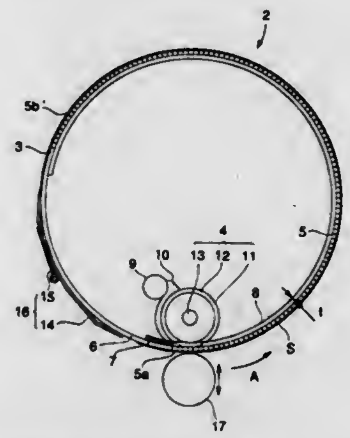
5,617,785
EMBOSSING MACHINE
Wen C. Lo, No. 4, Lane 155, Sec. 6, Yen Ping N. Rd., Shih Lin District, Taiwan
Filed Dec. 6, 1995, Ser. No. 568,141
Int. Cl.⁶ B31F *1/07*
U.S. Cl. 101—3.1 **16 Claims**



1. An electric embossing machine, comprising
a frame having an upper portion and a lower portion, in which said upper portion has a top die cavity and said lower portion has a bottom die cavity, wherein said top die cavity has a top circumference and a step circular surface which has a plurality of sliced screw holes formed in said top circumference and has a first elastic element disposed therein;
a top magnet for attaching a top die engaged with said top die cavity, wherein said top magnet has a bolt fixed therein and a second elastic element disposed inside said top magnet;
a die disk engaging with said bolt on said top magnet, wherein said die disk has a gear fixed thereon and a plurality of sliced screw holes formed on a circumference of said die disk for engaging with said top die cavity, said die disk further having an adjusting bolt which has a through opening therein to engage with said bolt on said top magnet, wherein said adjusting bolt has a bushing, a washer and a screw disposed on one end thereof;

a bottom magnet for attaching a bottom die disposed in said bottom die cavity, wherein a key way is formed on an inside surface of said bottom die cavity and a key seat is formed on an outside circumference of said bottom magnet, and that a key is engaged between said key seat and said key way for engaging said bottom magnet inside said bottom die cavity; and
a transmission mechanism including a motor and a transmission shaft connected with said motor, and that an eccentric wheel and a cam are disposed on said transmission shaft.

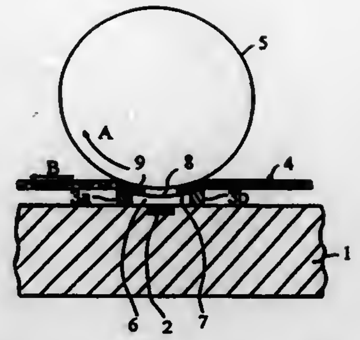
5,617,786
STENCIL PRINTING DRUM WHICH PREVENTS INK LEAKAGE
Hideo Negishi, Tokyo, Japan, assignor to Riso Kagaku Corporation, Tokyo, Japan
Filed Aug. 2, 1995, Ser. No. 510,570
Claims priority, application Japan, Aug. 2, 1994, 6-181566
Int. Cl.⁶ B41L *13/06*
U.S. Cl. 101—116 **17 Claims**



1. A stencil printing drum comprising:
a rotary cylindrical drum including an ink non-passage region, an ink passage region surrounded by said ink non-passage region, and an axis around which said rotary cylindrical drum rotates, said ink passage region including a start end portion at one end thereof and a finish end portion at an opposite end thereof as viewed in the direction of said rotation;
an ink supply roller having an axis of rotation which is in parallel with said axis of said rotary cylindrical drum, said ink supplying roller being brought into contact with an inner cylindrical surface of said rotary cylindrical drum to push a printing ink out of said rotary cylindrical drum through said ink passage region; and
an ink non-passage strip formed along the border between said ink non-passage region and said ink passage region except the start end portion thereof, in such a manner that said ink non-passage strip protrudes radially inwardly of said rotary cylindrical drum.

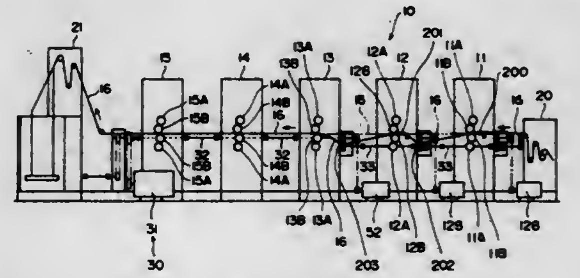
5,617,787
PROCESS FOR PERFORATING STENCIL PRINTING SHEET
Nagon Takita, and Yasuo Yamamoto, both of Tokyo, Japan, assignors to Riso Kagaku Corporation, Tokyo, Japan
Filed Sep. 22, 1995, Ser. No. 532,243
Claims priority, application Japan, Sep. 30, 1994, 6-237541
Int. Cl.⁶ B41M *1/12*
U.S. Cl. 101—129 **8 Claims**

1. A process for perforating a stencil printing sheet comprising a thermoplastic resin film, which process comprises:



melting the thermoplastic resin film with heat from heat-generating elements to form perforations while applying a pressure to the film and under such a condition that the film is spaced away from the heat-generating elements by a distance of 1 μm or less.

5,617,788
SWITCHING TYPE CONTINUOUSLY OPERATIVE PRINTING MACHINE
Takeshi Horiguchi, Ebina; Satoru Sasaki, Yamato, and Hideaki Miyake, Kanagawa-ken, all of Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 541,428, Oct. 10, 1995, abandoned, which is a continuation of Ser. No. 242,101, May 13, 1994, abandoned. This application Apr. 19, 1996, Ser. No. 635,005
Claims priority, application Japan, May 14, 1993, 5-112903
Int. Cl.⁶ B41F *5/06;13/12*
U.S. Cl. 101—181 **8 Claims**



1. A switching type continuously operative printing machine comprising a plurality of printing units capable of printing on continuous forms and collective drive means for collectively driving said plurality of printing units, said plurality of printing units including at least two switchable printing units that are switchable between independent or collective operation while other printing units of said plurality of printing units are in continuous collective operation, each said switchable printing unit comprising:
first coupling/decoupling means for coupling and decoupling the collective drive means and each of said switchable printing units;
independent drive means for independently driving each of said switchable printing units;
second coupling/decoupling means for coupling and decoupling the independent drive means and each of said switchable printing units; and
rotational control means for synchronizing a rotational speed of said independent drive means and a rotational speed of said collective drive means to one another at a printing speed so that in when a switchable printing unit of said at least two switchable printing units is decoupled from said collective drive means and is coupled to said independent drive means, the rotational speed of said independent drive means is equalized to the printing speed of said collective drive means before decoupling said switchable printing unit from said

independent drive means and coupling said switchable printing unit to said collective drive means;

upper and lower blanket cylinders disposed in staggered fashion with respect to a direction of progress of a continuous printing web such as to pinch the continuous printing web between the upper and lower blanket cylinders; and

guide rollers provided at upstream and downstream positions, with respect to the direction of progress, from the blanket cylinders, said guide rollers being moveable between a bent web passage position in which said guide rollers guide the continuous printing web so that the continuous printing web passes through the guide rollers and between the upper and lower blanket cylinders in a direction perpendicular to a line connecting centers of the upper and lower blanket cylinders so that the continuous printing web does not contact the upper and lower blanket cylinders of nonoperating switchable printing units, and a straight web passage position in which said guide rollers guide the continuous printing web so that the continuous printing web passes between the upper and lower blanket cylinders of adjacent switchable printing units in a straight line, said guide rollers being moveable between a bent web passage position and the straight web passage position while the continuous printing web is running.

5,617,789

PRINTING PRESS WITH CANTILEVERED ROLLS SIDE MOUNTED ON A RETRACTABLE ACCESS PLATE

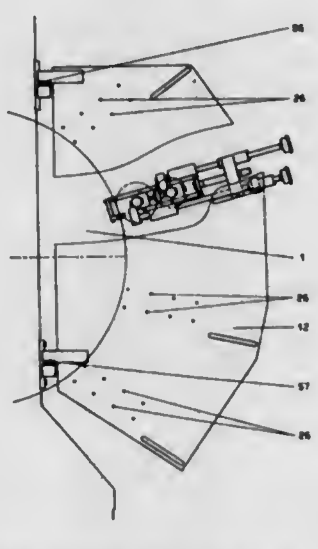
Fritz Achelpohl, Lienen; Uwe Rogge, Lengerich; Alois Thöle, Lienen, and Rainer Jendroska, Greven, all of Germany, assignors to Windmöller & Hölscher, Lengerich/Westf., Germany

Filed Apr. 18, 1996, Ser. No. 634,520

Claims priority, application Germany, May 2, 1995, 195 16 004.5

Int. Cl.⁶ B41F *5/00*

U.S. Cl. 101—216 **15 Claims**



1. A flexographic printing press, comprising at least one counterpressure cylinder and at least one printing roller cantilevered at one end in a rolling stand and at least one inking roller or screen roller of an inking system cantilevered at one end in the rolling stand, where bearings of the printing roller and screen roller travel, in guide mechanisms, relative to the counterpressure cylinder, characterized in that a carrier or plate (12) is coupled to the rolling stand (4, 5), which plates is provided with bearings in order to accommodate journals of free ends of the printing and screen rollers (2, 3) or are provided with receivers for bearings (10, 11) placed on journals (8, 9) and in that the plate (12) can be swung to either a retracted position, in which the cantilevered rollers (2, 3) are freely accessible, or to a operating position, where the journals (8, 9) of the free ends of the rollers (2, 3) are carried by the plate (12).

5,617,790

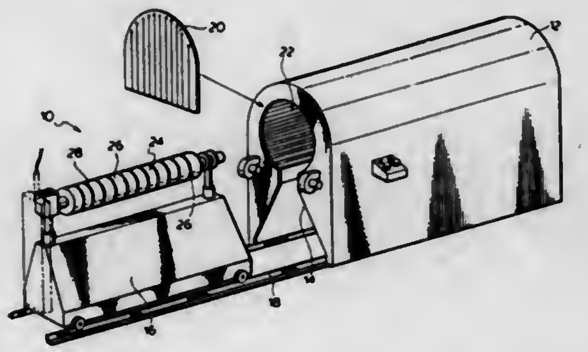
APPARATUS FOR PRODUCING FLEXOGRAPHIC PRINTING PLATES

Reinhold Chmielnik, Bolton, Canada, assignor to P.R. Graphics Limited, Mississauga, Canada

Filed May 31, 1995, Ser. No. 456,074

Int. Cl.⁶ B41F *27/06*

U.S. Cl. 101—389.1 **3 Claims**



1. Apparatus for producing flexographic one-color image printing plates, which requires:

a housing having mounted therein and arranged in a part-circular array a plurality of elongate ultra-violet lamps for exposing a flexographic printing plate to ultra-violet light, said housing being closed at one longitudinal end and open at the other longitudinal end,

a trolley movable into and out of the housing through the open end thereof, and

cylindrical flexographic printing plate mounting means comprising a plurality of segments separated one from another to define a gap between each adjacent segment,

said mounting means having an inner chamber communicating with each of said gaps and also communicating with a source of vacuum to apply vacuum through said gap to hold a flexographic printing plate to the outer surface of said mounting means for exposure to the said ultraviolet lamps when in said housing.

5,617,791

SHEET-GUIDING DRUM, IN PARTICULAR A DELIVERY DRUM, OF A SHEET-FED ROTARY PRINTING PRESS

Jürgen Fürbass, Nussloch, Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Germany

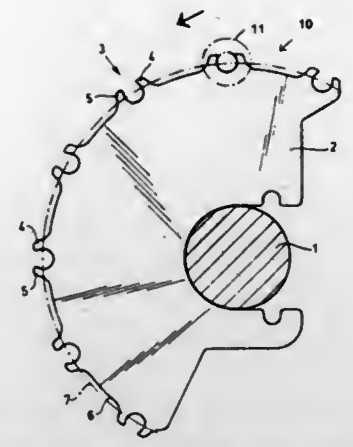
Filed May 6, 1996, Ser. No. 643,639

Claims priority, application Germany, May 4, 1995, 195 16 066.5

Int. Cl.⁶ B41F *22/00*

U.S. Cl. 101—420 **5 Claims**

1. Sheet-guiding drum of a sheet-fed rotary printing press having a drum shaft with support flanges mounted thereon for supporting paper carrier rods, respectively, having a longitudinal axis extending transversely to sheet travel direction on the drum, comprising at least one additional support formed as a segment-shaped member and mounted on the drum shaft between a respective pair of the support flanges in a sheet-guiding region of the drum, said segment-shaped member having snap holders disposed at spaced intervals on the circumference thereof, said snap holders being



formed of radially projecting, elastically deformable retaining lugs surrounding in pairs, over more than 180°, a holder bar of a paper carrier rod.

5,617,792

ROLLER ELEMENT FOR PRESSING A FLEXIBLE PRINTING PLATE ONTO THE FORM CYLINDER

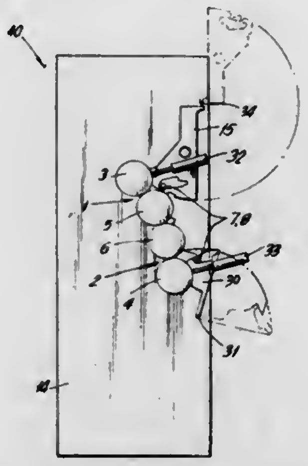
Gunnar Rau, Königsbrunn; Albert Heller, Pestenacker; Michael Scholz, Münsterhausen, and Georg Kaessmair, Zusamzell, all of Germany, assignors to MAN Roland Druckmaschinen AG, Offenbach am Main, Germany

Filed Nov. 13, 1995, Ser. No. 555,915

Claims priority, application Germany, Nov. 10, 1994, 44 40 239.2

Int. Cl.⁶ B41F *21/00*

U.S. Cl. 101—477 **12 Claims**



1. A roller element for pressing a flexible printing plate against a form cylinder of a printing unit in a rotary printing machine during a first mode of winding the printing plate on the form cylinder and a second mode of unwinding the priming plate from the form cylinder, the roller element comprising:

at least one winding roller;

first means for positioning said at least one winding roller against the printing plate during said first mode of winding the printing plate on the form cylinder and for moving the at least one winding roller away from and out of contact with the printing plate during said second mode of unwinding the printing plate from the cylinder;

at least one unwinding roller separate from said at least one winding roller; and

second means for positioning said at least one unwinding roller against the printing plate during said second mode of unwinding the printing plate from the form cylinder and for moving said at least one unwinding roller away from and out of contact with the printing plate during said first mode of winding the printing plate on the form cylinder.

5,617,793

METHOD OF TAMPING A PLURALITY OF TIES SIMULTANEOUSLY

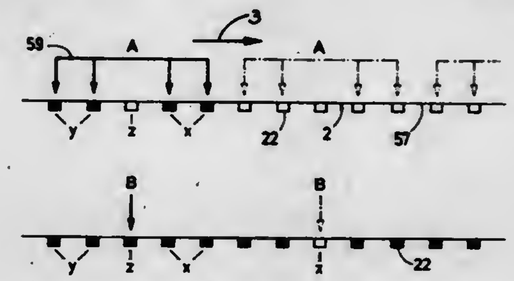
Josef Theurer, Vienna, Austria, assignor to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Filed Feb. 21, 1996, Ser. No. 604,661

Claims priority, application Austria, Mar. 7, 1995, 398/95

Int. Cl.⁶ E01B *27/13*

U.S. Cl. 104—2 **4 Claims**



1. A method of tamping a plurality of ties fastened to rails of a track, which comprises repeated cycles of

(a) a first tamping operation comprising the steps of

(1) lifting the track to a desired level and

(2) simultaneously tamping ballast under two groups of adjacent ties, each group consisting of at least two ties and the two groups being separated by at most two ties between the groups, a track position correction being effected only during the first tamping operation, and

(b) a second tamping operation independent of, and following, the first tamping operation, the second tamping operation comprising the step of

(1) tamping ballast under the ties between the two groups.

5,617,794

TRACK STABILIZATION MACHINE HAVING STABILIZATION UNITS LINKED TO OSCILLATING OUT OF PHASE WITH EACH OTHER

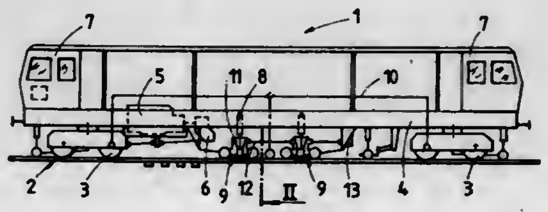
Josef Theurer, Vienna, and Bernhard Lichtberger, Leonding, both of Austria, assignors to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Filed May 15, 1996, Ser. No. 648,280

Claims priority, application Austria, Jun. 16, 1995, 1035/95

Int. Cl.⁶ E01B *33/00*

U.S. Cl. 104—7.2 **4 Claims**



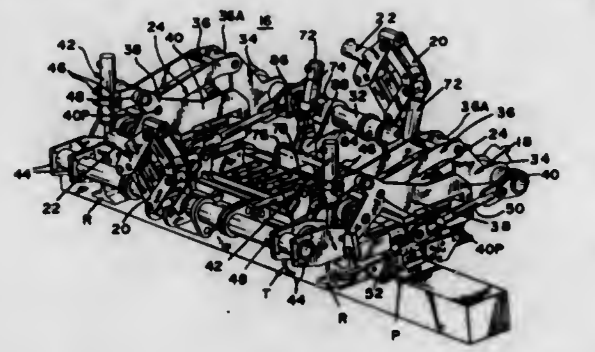
1. A machine for stabilizing a track comprised of rails fastened to ties and extending in a longitudinal direction, comprising

(a) a machine frame supported on the track by undercarriages for mobility along the track,

(b) two track stabilization units linked to the machine frame by vertical adjustment drives, the track stabilization units being

spaced from each other in the longitudinal direction and running on the track, and each track stabilization unit comprising
(1) a generator of oscillations connected to a drive for producing oscillations extending perpendicularly to the longitudinal direction, and
(2) the oscillation generators being arranged to produce oscillations which are displaced in phase.

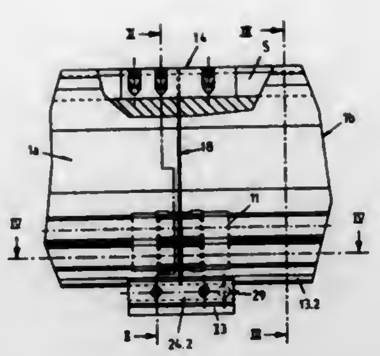
5,617,795
TIE GUIDE AND PLATE HOLDING APPARATUS
Krzysztof E. Glomski; Kurt L. Natterstad, and Thomas H. Hoover, all of Fairmont, Minn., assignors to Harsco Corporation, Camp Hill, Pa.
Filed Sep. 14, 1994, Ser. No. 305,901
Int. Cl.⁶ E01B *29/06*
U.S. Cl. 104—9 **13 Claims**



1. An apparatus for aiding in tie replacement operations comprising:
a frame; and
first and second side clamp assemblies supported by said frame, each of said first and second clamp assemblies having a pair of opposing field side mechanical grip elements and a pair of opposing gauge side mechanical grip elements, said pairs of field side and gauge side mechanical grip elements operable to grip tie plates when ties thereunder are removed and replaced; and
wherein said pairs of field side and gauge side mechanical grip elements are self-centering such that, when beginning to grip a tie plate, each pair of mechanical grip elements will automatically center about the tie plate prior to securely gripping the tie plate and without moving the tie plate.

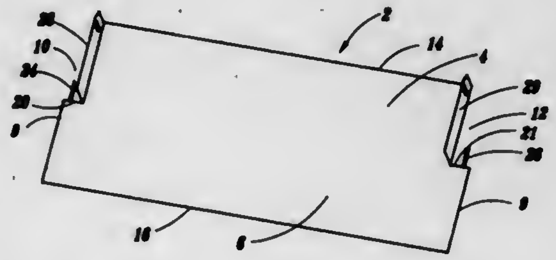
5,617,796
LONGITUDINAL TRANSFER SYSTEM
Albrecht Trenner, Langendorf, and Erich Grossenbacher, Derendingen, both of Switzerland, assignors to Montech AG, Switzerland
Filed Aug. 31, 1995, Ser. No. 521,830
Claims priority, application Germany, Sep. 1, 1994, 44 31 064.1
Int. Cl.⁶ E01B *25/22*
U.S. Cl. 104—106 **16 Claims**

1. A longitudinal transfer system, which comprises rail section having longitudinal axes for guiding transport cars from one processing station to another, with two adjacent rail sections separated by a joint therebetween being connected with one another mechanically, wherein for the mechanical connection one connecting part and profile section are rigidly connected with one of said rail sections so that said one rail section cannot slide, and with a positive connection to another adjacent second of said rail sections but only so tightly that motion of the second rail section in the longitudinal direction is possible, wherein said connecting part and



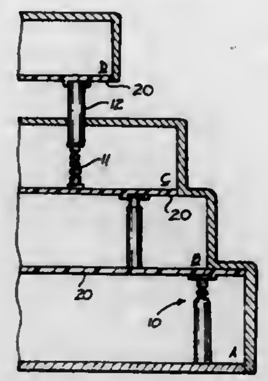
profile section overlap said joint, with said connecting part inserted into a longitudinal groove in said rail sections, and wherein the rail sections can expand along their longitudinal axes in case of temperature fluctuation and to permit precise adjustment of the rail sections.

5,617,797
STUD SHELVING
Alan F. Casey, 548 Princeway Ct., Manchester, Mo. 63011
Filed Apr. 8, 1996, Ser. No. 630,968
Int. Cl.⁶ A47B *23/00*
U.S. Cl. 108—42 **7 Claims**



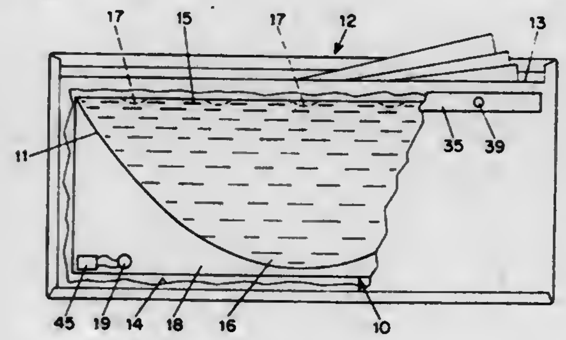
1. A shelf adapted when installed to fit horizontally between two wall forming studs in areas of buildings where the studs are exposed, the shelf being a panel member shaped in the form of a front rectangle with a smaller rear rectangle projecting from its rear longer side, the smaller rear rectangle being centered between the sides of the front rectangle so that a right angle recess is formed in the panel member on each side of the rear rectangle, edges of each right angle recess being the sides of the rear rectangle and adjoining rear surfaces of the front rectangle, which rear surfaces extend beyond the rear rectangle sides, the panel member thus having a front edge formed by the longer side of the larger front rectangle, a back edge formed by the longer side of the smaller rear rectangle, the front edge being the shelf front, the back edge being the shelf back, and sides of the shelf being offset shelf sides due to the fight angle recesses, the width between the sides of the rear rectangle being equal to the distance between two studs so that when installed the rectangle fits between two adjacent studs with a side in abutment with each stud and with the studs in the right angle recesses, the distance between the sides of the front rectangle being such that when installed each side extends half way across an adjacent stud in order to abut a side of an adjacent shelf when installed to form continuous shelving, spike means in the rear surfaces of the front rectangle, the surfaces which extend beyond the rear rectangle sides, said spike means projecting into the right angle recesses to bite into the adjacent studs to hold the shelf in place until it is securely attached to the adjacent studs, and means for attaching to the adjacent studs, sides of the rear rectangle of the shelf so supported.

5,617,798
ALL-PURPOSE ADJUSTABLE REUSABLE CAKE SUPPORT
April J. Lytell, 6518 E. Jupiter Ave., Scottsdale, Ariz. 85254
Filed Sep. 5, 1995, Ser. No. 523,182
Int. Cl.⁶ A47B *9/00*
U.S. Cl. 108—144 **12 Claims**



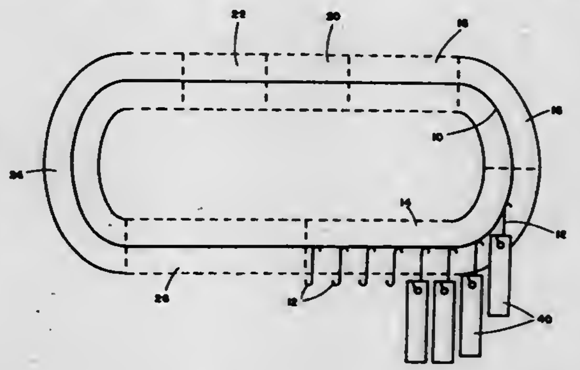
1. A cake support comprising:
a) a shaft having a proximate and distal end, the shaft further comprising:
i) a plurality of fins disposed perpendicularly to the lengthwise axis of the shaft, the fins being in spaced relation along the length of the shaft;
ii) each pair of adjacent fins define a slot therebetween, perpendicular to the lengthwise axis of the shaft;
iii) each fin having a groove, the groove of each fin in alignment with those of the other fins thereby forming a channel that runs the length of the shaft; and
b) a tube having a hollow through bore open at opposing ends and having a diameter to closely receive the fins of the shaft, the tube further comprising:
i) at least one projection integral with the tube extending into the interior of the tube sized to fit within the slots Such as to contact both the defining fins;
whereby the cake support is incrementally shortened or lengthened by inserting the shaft into the tube to the desired depth by aligning the channel with the projection, and locking the shaft in place at a desired length by rotating the shaft such that the groove of a desired fin and the projection are misaligned, so that the fins catch on the projection.

5,617,799
MARKING MATERIAL-SPRAYING ANTI-THEFT SYSTEM
Paul Kaczorowski, 80 Bay St. Landing, Staten Island, N.Y. 10301
Filed Mar. 28, 1995, Ser. No. 411,544
Int. Cl.⁶ E05G *1/00*
U.S. Cl. 109—29 **17 Claims**



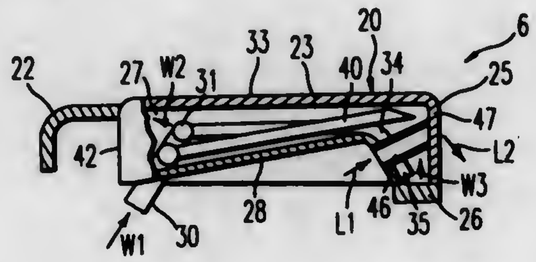
1. A marking material-spraying anti-theft system, comprising:
(a) a closed flexible container having one or more weaker aperture sections adapted to break open when sufficient pressure develops within the container;
(b) a marking material positioned within the container, such that the marking material sprays out from the weaker aperture sections when the aperture sections break open;
(c) an overpressure generating means positioned within the container such that activation of the overpressure generating means produces sufficient pressure inside the container to break open one or more of the weaker aperture sections and spray the marking material out from the broken aperture sections;
(d) a closure which may be opened;
(e) an activating means responsive to opening the closure which activates the overpressure generating means when the closure is opened;
wherein the weaker aperture sections are positioned such that upon activation of the overpressure generating means, the spray of the marking material is directed towards a person opening the closure; and
wherein the overpressure generating means is strong enough to spray the marking material out onto a person opening the closure, but weak enough to only break open the container at the weaker aperture sections.

5,617,800
SYSTEM FOR CLEANING FIXTURES UTILIZED IN SPRAY PAINTING
Elmer J. Moreschi, and Reinhart U. Piuk, both of Kernersville, N.C., assignors to Grass America, Inc., Kernersville, N.C.
Filed Feb. 24, 1995, Ser. No. 394,146
Int. Cl.⁶ B08B *1/02;* **F23G** *5/10*
U.S. Cl. 110—236 **7 Claims**



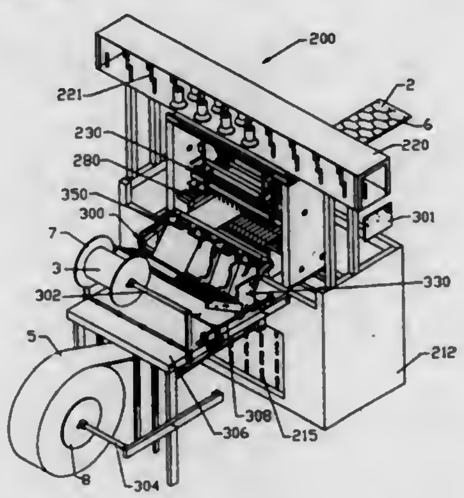
1. An apparatus for removing adhered paint particles from a fixture comprising:
induction heating means; and
means for passing a portion of the fixture, comprising adhered paint particles, sufficiently close to the induction heating means such that the paint particles are heated to a temperature sufficient to thermally decompose the paint particles to ash and gaseous combustion products.

5,617,801
COOLED GRATE BLOCK
Rolf Hauser, Gruningen, and Daniel Morant, Dinhard, both of Switzerland, assignors to Von Roll Umwelttechnik AG, Zurich, Switzerland
Filed Nov. 17, 1995, Ser. No. 560,019
Claims priority, application Switzerland, Nov. 17, 1994, 0345294
Int. Cl.^{6} F23H *7/08*
U.S. Cl. 110—282 **12 Claims**



1. A cooled grate block which is part of a grate for a plant for a thermal treatment of waste material, the cooled grate block comprising:
an upper wall having an outer surface which forms a useful surface on which the waste material to be treated comes to rest and along which the waste material is transported, wherein the upper wall bounds a cooling space which is located below the upper wall through which a water feed line and a water drainage line pass, the water feed line and the water drainage line ending in the cooling space and respectively having a plurality of outlet openings and a plurality of inlet openings.

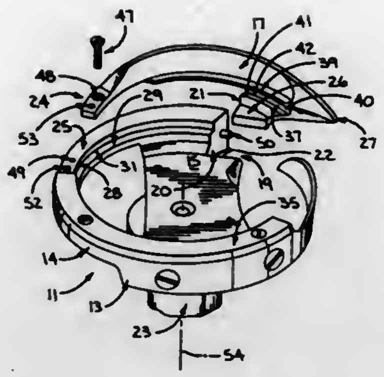
5,617,802
MULTI-NEEDLE BORDER MACHINE HAVING FOLDERS
David R. Cash, Louisville, Ky., assignor to James Cash Machine Co., Inc., Louisville, Ky.
Continuation-in-part of Ser. No. 439,963, May 12, 1995, Pat. No. 5,509,365. This application Sep. 22, 1995, Ser. No. 532,218
Int. Cl.^{6} D05B *11/00*
U.S. Cl. 112—117 **13 Claims**



1. A multi-needle sewing machine, comprising:
a sewing frame carriage having at least one upper sewing assembly and a lower sewing assembly, said at least one upper sewing assembly having an upper main shaft passing therethrough, said lower sewing assembly having a lower main shaft passing therethrough, said sewing frame carriage having means for driving said upper and lower main shafts;
said at least one upper sewing assembly having a front needle bar having at least one needle connected thereto; said at least one upper sewing assembly having a corresponding front presser foot bar having at least one presser foot connected thereto; said at least one upper sewing assembly having a rear needle bar having at least one needle connected thereto; said at least one upper sewing assembly having a corresponding rear presser foot bar having at least one presser foot connected thereto;
said at least one upper sewing assembly having means for driving said front needle bar and said corresponding front presser foot bar and said rear needle bar and said corresponding rear presser foot bar vertically up and down, said driving means being coupled to said upper main shaft, where driving means moves said front needle bar with said corresponding front presser foot bar and said rear needle bar with said corresponding rear presser foot bar in an out of phase relationship;
said lower sewing assembly having a front spreader bar having at least one spreader connected thereto; said lower sewing assembly having a corresponding front looper bar having at least one looper connected thereto; said lower sewing assembly having a rear spreader bar having at least one spreader connected thereto; said lower sewing assembly having a corresponding rear looper bar having at least one looper connected thereto;
said lower sewing assembly having means for driving said front spreader bar in a first horizontal circle and said rear spreader bar in a second out of phase horizontal circle, said driving means being coupled to said lower main shaft;
said lower sewing assembly having means for driving said front looper bar in a left and right direction and means for rocking said front looper in a front and back direction, where said front looper bar moves in a first oblong pattern;
said lower sewing assembly means for driving said front looper bar in a left and right direction also driving said rear looper bar in an out of phase right and left direction, said means for rocking said front looper in a front and back direction also rocking said rear looper bar in an out of phase left and right direction, where said rear looper bar moves in a second out of phase oblong pattern;
said machine further having means for pulling a first material and a second material between said upper and lower sewing assemblies, said first material having opposed edges, said machine even further having means for placing said first material being pulled under tension and means for folding said opposed edges of said first material underneath said first material, where said machine sews through said first material and said opposed edges folded thereunder at preselected locations, thereby producing a sewn border piece.

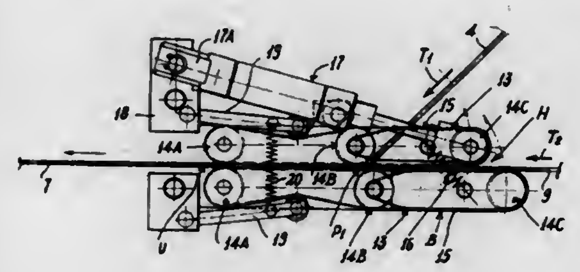
5,617,803
ROTARY LOOP TAKER WITH REPLACEABLE TIP
Paul Badillo, Littleton, Colo., assignor to Bakron Corp., Buffalo Grove, Ill.
Filed Apr. 27, 1995, Ser. No. 429,698
Int. Cl.^{6} D05B *57/14*
U.S. Cl. 112—230 **23 Claims**

1. A rotary loop taker comprising:
a frame having a rotational axis and including an annular part and a support extending radially from the rotational axis to the annular frame part;
a loop seizing point; and
first means cooperating between the frame and loop seizing point for removably maintaining the loop seizing point in an operative position on the frame,
said first cooperating means comprising a) a first fixed projection on one of the loop seizing point and annular part of the frame, b) a first receptacle for the first projection on the other of the loop seizing point and annular part of the frame, c) a second fixed projection on one of the loop seizing point and



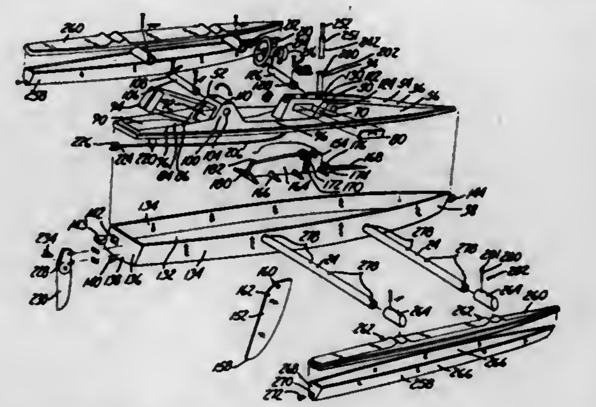
annular part of the frame, and d) a second receptacle for the second projection on one of the loop seizing point and annular part of the frame,
said first projection being spaced from the second projection at least 45° around the rotational axis of the frame.

5,617,804
CONVEYING DEVICE FOR FEEDING TEXTILE ARTICLES FROM MULTIPLE FEED STATIONS
Ferruccio Savio, Milan, Italy, assignor to Savio Macchine S.p.A., Milan, Italy
Filed Dec. 7, 1995, Ser. No. 568,972
Claims priority, application Italy, Dec. 27, 1994, MI94A2651
Int. Cl.^{6} D05B *27/14*
U.S. Cl. 112—304 **5 Claims**



1. A device for conveying textile articles from at least two feed stations to a final station, which comprises:
a first fixed guide, located at each feeding station, comprising a first pair of mutually facing conveyor belts gripping said articles and dragging them along said first guide,
a second fixed guide located at said final station and having a second pair of conveying belts similar to the first pair of belts, said second pair of belts conveying said articles originating from said feed stations towards said final station along said second guide,
said first fixed guide communicating with said second fixed guide at a point of convergence,
a movable structure located at said point of convergence and comprising a third pair of conveyor belts similar to the first pair of belts and having exit ends substantially aligned with entry ends of said second pair of belts,
a member selectively moving said movable structure between at least two positions in which an entry end of said third pair of belts is substantially aligned with an exit end of one of said first pair of belts,
a control member selectively halting said first pair of belts if, on arrival of a textile article in a predetermined position along said first guide, the entry end of said third pair of belts is not aligned with the exit end of said first pair of belts.

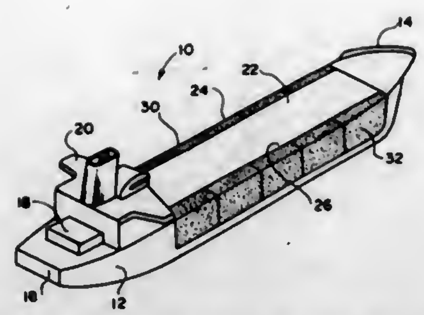
5,617,805
TRIMARAN
Charles R. Frigard, Newbury Park, Calif., assignor to North-Star Marine, Inc., Mound, Minn.
Filed Aug. 3, 1995, Ser. No. 511,042
Int. Cl.^{6} B63B *1/10*
U.S. Cl. 114—39.1 **25 Claims**



1. A trimaran comprising:
a main hull having a transom, two sides, an aft end, and a bow end;
a main deck having two sides, an aft end, and a bow end, said main deck attached to said main hull, said main deck further having a centerline axis extending the length of said deck midway between the two sides and including a steering binnacle, a front deck sleeve and a rear deck sleeve each having inside diameters, and a seat portion including a cockpit seat having a back support, said rear deck sleeve forming an opening in said main deck to the aft end of said back support and said front deck sleeve forming an opening in said main deck between said steering binnacle and said bow end of said main deck;
a sail assembly including a mast sleeve, said mast sleeve connected to said main hull and said main deck, said mast sleeve connected to said main deck between said steering binnacle and said front deck sleeve;
a steering assembly connected to said main hull and said main deck;
two floats each having a float hull and a float deck, each said float deck having two float sleeves;
a plurality of beams each having two ends, a center portion and outside diameter no larger than the inside diameter of said deck sleeves and said float sleeves; and
said center portion of each said beam removably connected to one of said deck sleeves and each of said float sleeves connected to one end of said beams.

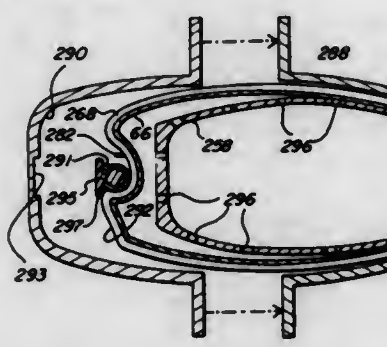
5,617,806
DEVICE FOR SECURING A COLLISION GUARD TO A VESSEL
Jerome L. Goldman, 935 Gravier St., New Orleans, La. 70112
Filed Oct. 24, 1994, Ser. No. 328,748
Int. Cl.^{6} B63B *43/18*
U.S. Cl. 114—74 A **5 Claims**

1. A device for securing a collision guard to a side of a vessel, comprising:
a vertically oriented post securely attached to and extending upwardly from the collision guard;
a retainer cap means for receiving and retaining at least a portion of said post therein, said retainer cap means comprising an upper horizontally extending retainer plate and a spaced-apart lower horizontally extended retainer plate, and an enclosure secured between said upper and lower retainer plates, said enclosure being mounted in at least partially surrounding relationship about said post, said enclosure being defined by side walls extending in a substantially parallel relationship to



vertically extending side walls of the post, each of said walls of the enclosure being provided with a through operture;
means carried by said retainer cap means for adjustably securing the post to said retainer cap means, wherein said means for adjustably securing the post to the retainer cap means comprises a plurality of adjustment screws, each adjustment screw being adjustably selectively threadably engagable within an operture formed in the side wall of the enclosure; and
means for attaching the retainer cap means to the vessel.

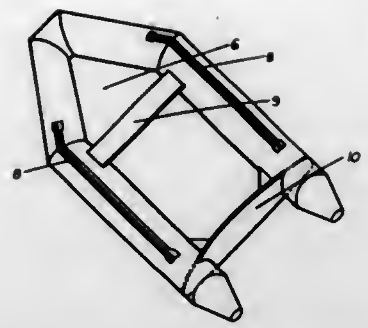
5,617,807
CARBON FIBER SPAR AND METHOD OF MAKING
David J. Hulse, Mooresville, and John G. Heinemann, Charlotte, both of N.C., assignors to Isomat, Inc., Charlotte, N.C. Continuation-in-part of Ser. No. 342,142, Nov. 18, 1994, Pat. No. 5,490,472, which is a continuation of Ser. No. 137,286, Oct. 14, 1993, abandoned. This application Jun. 13, 1995, Ser. No. 489,720
Int. Cl.⁶ B63H *15/00*
U.S. Cl. 114—90 **10 Claims**



1. In a fiber-reinforced spar having inner and outer surfaces and a sail-attaching groove, the improvement comprising:
a layer of fiber forming both an inner surface of the spar and an outer surface of the spar; and
a longitudinal insert, an outer surface of the insert bonded to an outer surface of said fiber layer, said fiber layer mechanically locking said insert in place upon curing of said fiber layer.

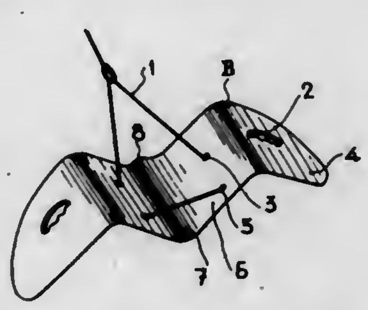
5,617,808
PORTABLE FOAM TUBE BOAT WITH FLEXIBLE SHELL
Glenn R. Robinson, P.O. Box 8125, Portland, Me. 04104 Continuation-in-part of Ser. No. 545,133, Oct. 19, 1995, abandoned, which is a continuation-in-part of Ser. No. 404,944, Mar. 15, 1995, abandoned, which is a continuation-in-part of Ser. No. 223,177, Apr. 5, 1994, abandoned. This application Jul. 5, 1996, Ser. No. 676,003
Int. Cl.⁶ B63B *43/14*
U.S. Cl. 114—123 **18 Claims**

1. An unsinkable, portable watercraft for commercial and recreational use, said watercraft comprising:



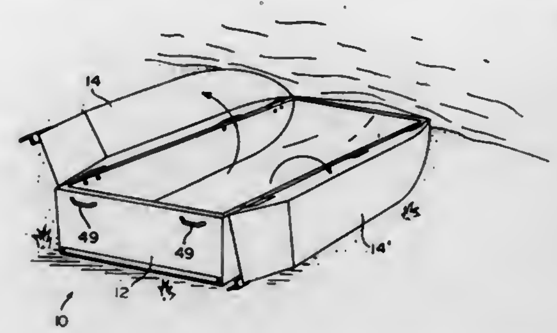
(a) a perimeter hull made of two or more cylindrical members, wherein two of said two or more cylindrical members are substantially parallel members and form port and starboard sections of said perimeter hull, and wherein a portion of said two or more cylindrical members taper inwardly from said substantially parallel members so as to form a bow section of said perimeter hull;
(b) a floor connected to said two or more cylindrical members affixed at a bottom tangential location of each of said two or more cylindrical members; and
(c) a transom connected to said floor and to said substantially parallel members so as to form a stern of said watercraft,
wherein each of said two or more cylindrical members is formed substantially of one or more solid foam pieces, and an outer shell substantially encapsulating said solid foam pieces, and wherein said two or more cylindrical members are floatational.

5,617,809
DIVING TOW BOARD
Concepcion J. Arango, Bidasoa 16, 28002 Madrid, Spain
Filed Dec. 19, 1995, Ser. No. 574,625
Int. Cl.⁶ B63B *35/79*
U.S. Cl. 114—315 **1 Claim**



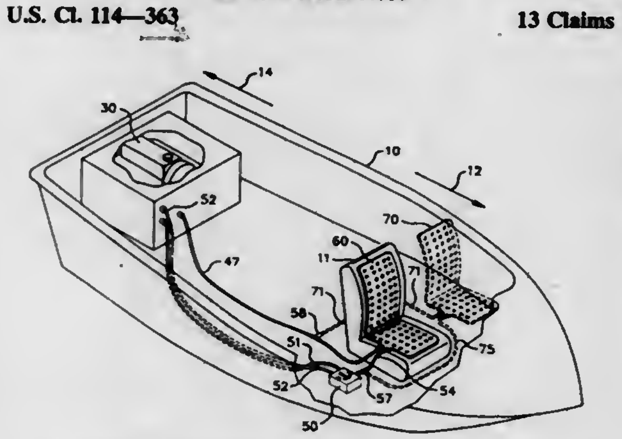
1. A diving tow board composed of a body manufactured in light and unsinkable material, of rigid constitution, manufactured from at least one of polyester reinforced with fiberglass, polypropylene, polystyrene, and wood, characterized in that the body is formed by two central planes and two lateral planes having a frontal part, the planes each having a frontal edge and meeting at junctions in such a way that at the junctions the planes form three rounded edges, one edge being a central edge which divides the body in two symmetrical parts, continues forwards in a protuberance and turns back forming a curve until it meets the frontal edges of the central planes, and which at the junction of the central planes with the lateral planes forms other edges which are substantially rounded, from which these last-mentioned lateral planes adopt a curved plantar form in their frontal part which diminishes and turns back until it meets a rear part of the board, and in which there are hollows which adapt to a diver's hand in the rear part, there being in the central planes orifices where a tow rope can be fastened; the diving tow board further comprising another hole where a rope may be fastened designed as a resting handhold.

5,617,810
COMPACT SEMI-COLLAPSIBLE WATERCRAFT
William D. Sauerwein, 4122 Cremson Dr., Phoenix, Md. 21131
Filed Jun. 7, 1995, Ser. No. 486,720
Int. Cl.⁶ B63B *7/00*
U.S. Cl. 114—353 **33 Claims**



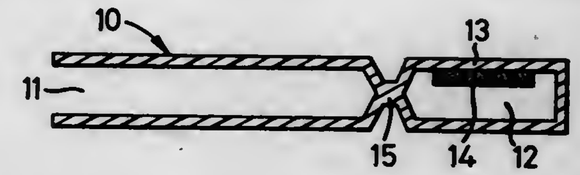
1. A rigid watercraft comprising a three-sectioned hull including a main hull portion and a pair of flotation-sealed outside sponsons at the starboard and port sides thereof, at least one double-hinge pivot between each sponson and the main hull portion of the rigid watercraft, the double-hinge pivot having respective pivot axes which are parallel to each other, wherein the rigid watercraft has a first storage or transport position in which the pair of sponsons are folded within the main hull portion, and wherein the rigid watercraft has a second operational position in which the pair of sponsons are pivoted outwardly of the main hull portion of the rigid watercraft, thereby forming a smooth continuation of the hull in the water.

5,617,811
TEMPERATURE REGULATED SEAT PAD FOR A MOTOR BOAT
Brian Johnson, 9832 American Ave. SW., Tacoma, Wash. 98498
Filed Jan. 23, 1996, Ser. No. 590,207
Int. Cl.⁶ B63B *17/00*
U.S. Cl. 114—363 **13 Claims**



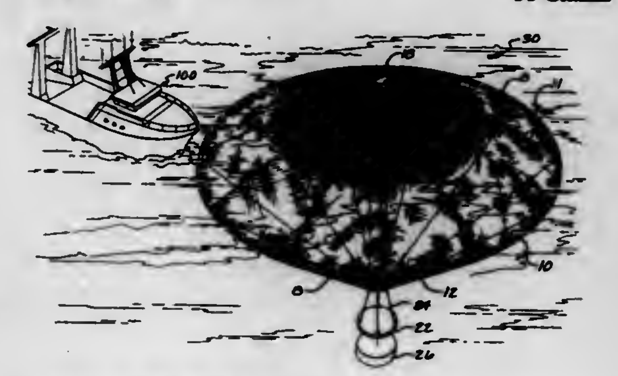
1. A temperature regulated seat pad apparatus for a boat with motor comprising:
a waterproof chamber within said seat pad;
said motor having a circulating water pump and an intake water pump having a low pressure side and a high pressure side;
a means to combine water from the circulating water pump with water from the high pressure side of the intake water pump;
a means to discharge water from the chamber; and
a means to convey the combined water to the chamber, the temperature of the seat pad regulated by the combination of water from said circulating water pump and water from the high pressure side of the intake water pump.

5,617,812
TAMPER EVIDENT SYSTEM
Simon N. Balderson, Telford, and Robert J. Whitwood, Stafford, both of United Kingdom, assignors to Sealed Air (NZ) Limited, New Zealand
Continuation of Ser. No. 241,800, May 12, 1994, abandoned. This application Jul. 16, 1996, Ser. No. 683,115
Claims priority, application United Kingdom, May 18, 1993, 9310202
Int. Cl.⁶ G01N *21/78*
U.S. Cl. 116—206 **19 Claims**



1. A tamper evident system for a closed enclosure for indicating when the closed enclosure has been opened, said tamper evident system comprising
(a) a see-through membrane provided in the enclosure,
(b) a fracturable wall separating the enclosure into first and second compartments, said first compartment containing at least one first gas, said second compartment containing at least one second gas, said fracturable wall being adapted to be fractured to allow said first and second gases to mix and form a composition of gases in the closed enclosure, the composition of gases being changed upon opening of the enclosure, and
indicating means located in the enclosure adjacent said see-through membrane and visible from the exterior of the enclosure, said indicating means being sensitive to a change in the composition of gases in the enclosure caused by the opening of the enclosure for giving a visual indication of the change in the composition of gases and thus of the opening of the enclosure.

5,617,813
ANCHORABLE MOBILE SPAR AND RING FISH PEN
Gary F. Loverich, Bainbridge Island; Kurt T. Swanson, Poulsbo, both of Wash., and Clifford A. Goudey, Charleston, Mass., assignors to Ocean Spar Technologies, LLC, Bainbridge Island, Wash.
Filed Mar. 31, 1995, Ser. No. 414,631
Int. Cl.⁶ A01K *71/00*
U.S. Cl. 119—223 **38 Claims**



1. A pen for fish farming, the pen comprising:
(a) at least one spar buoy adapted to be vertically oriented in a body of water, the buoy having an upper section and a lower section;
(b) at least one horizontal ring surrounding the at least one spar buoy and spaced apart therefrom;
(c) first flexible netting spanning the area between the at least one buoy and the at least one horizontal ring, the netting affixed in the vicinity of an upper end of the buoy and

extending outwardly and downwardly toward said at least one horizontal ring and attached to said ring to form an upper enclosure; and

(d) second flexible netting spanning the area between the at least one buoy and the at least one horizontal ring, the netting affixed to said at least one ring and extending downwardly and inwardly toward a lower end of the buoy and attached in the vicinity of said lower end of the buoy to form a lower enclosure.

5,617,814

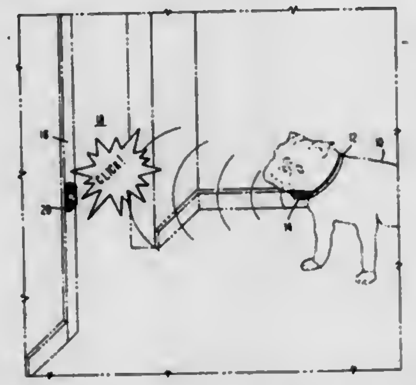
METHOD OF AND APPARATUS FOR TRAINING AN ANIMAL

Frank J. Blanco, Pembroke Pines, and Lance Ehren, Bay Harbor, both of Fla., assignors to Elexis Corporation, Miami, Fla.

Filed Jan. 8, 1993, Ser. No. 2,486

Int. Cl.^{6} A01K *29/00*

U.S. Cl. 119—720 **26 Claims**



1. A method of inhibiting movement of an animal into a barrier region comprising transmitting from a source on the animal a wave having a predetermined characteristic, and emitting compressional wave energy from the region to the animal in response to receipt in the region of the wave having the predetermined characteristic, the emitted compressional wave energy having a characteristic that can be detected by the animal and when detected by the animal tends to prevent movement of the animal into the barrier region.

5,617,815

REGULATING VALVE

Karl-Heinz Spies, Birkenau; Thomas Barth, Darmstadt, and Wolfgang Krause, Walbstadt, all of Germany, assignors to Firma Carl Freudenberg, Weinheim, Germany

Filed May 3, 1995, Ser. No. 433,114

Claims priority, application Germany, May 6, 1994, 44 16 039.9

Int. Cl.^{6} F16K *11/02*

U.S. Cl. 123—41.1 **1 Claim**

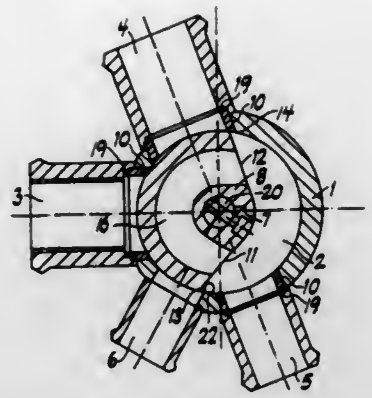
1. A liquid cooling-system of a combustion engine utilizing a regulating valve comprising:

a housing having a cylindrical valve chamber, the valve chamber having at least one inlet port and at least two outlet ports;

a valve body within the valve chamber and rotatable about an axis, the valve body being operable by an actuator, the valve body being rotatable to at least partially close the inlet port and the outlet ports;

a sealing device interposed between the valve body and at least one of the ports, the sealing device designed to be brought into sealing engagement with the valve body under an elastic preload;

wherein the valve body is shaped substantially in the form of a segment of a cylinder having a top side, a bottom side, an outer curved side, and two peripheral sides, wherein each peripheral side has an outside edge facing the housing;



wherein the outside edge of one of the peripheral sides passes over the inlet port during the opening of the inlet and has an elliptically shaped recess extending in a direction parallel to the axis of rotation of the valve body; and

wherein a duct-shaped opening is located in the valve body, extending from one peripheral side to the other;

wherein the inlet is connected with a coolant outlet of the combustion engine, the outlets are connected with a radiator circulation circuit, a bypass circulation circuit and a circulation circuit for vehicle passenger compartment heating,

wherein the outlet to the radiator circulation circuit and the outlet to the passenger compartment heating circulation circuit are adjacent to the inlet on either side,

wherein the inlet and the outlets for the radiator circulation circuit and the vehicle passenger compartment heating circulation circuit are totally closable jointly and the outlet for the bypass circulation circuit is only completely closed by the valve body when the inlet and the outlets adjacent on both sides of the inlet are completely open.

5,617,816

COOLING SYSTEM FOR AN INTERNAL-COMBUSTION ENGINE OF A MOTOR VEHICLE HAVING A THERMOSTATIC VALVE

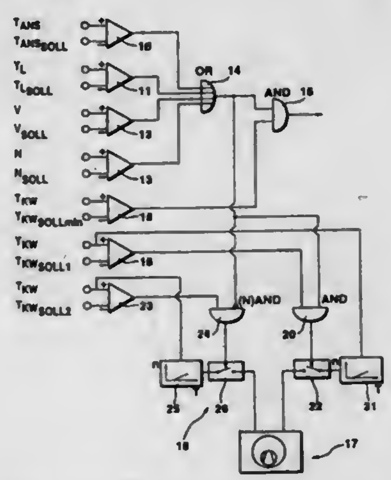
Roland Saur, Stuttgart, and Peter Leu, Denkendorf, both of Germany, assignors to Behr-Thomson-Dehnstoffregler GmbH & Co., Germany

Filed Jan. 11, 1996, Ser. No. 584,399

Claims priority, application Germany, Jan. 12, 1995, 195 00 648.8

Int. Cl.^{6} F01P *5/02*

U.S. Cl. 123—41.08 **20 Claims**



1. A cooling system for an internal-combustion engine of a motor vehicle comprising:

a thermostatic valve which controls the quantity of coolant which flows through at least one of a short-circuit pipe and a coolant radiator from an engine outlet to an engine inlet, and which thermostatic valve is switched by means of a signal depending on at least one of operating parameters of the internal-combustion engine and environmental parameters from a higher control level for the coolant temperature to a lower control level for the coolant temperature, and

a fan which is assigned to the coolant radiator and which is switched by means of a fan control circuit,

wherein the fan control circuit has a temperature comparison step which compares the actual temperature of the coolant with a first desired value and, when the first desired value is exceeded, generates a temperature signal which is applied to a first input of an AND-element, and the switching signal of the thermostatic valve being applied to a second input of the AND-element, which AND-element generates a switch-on signal for the fan.

5,617,817

FAN DRIVE WITH A FLUID-FRICTION CLUTCH

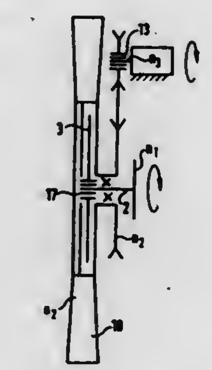
Hans Martin, Stuttgart, Germany, assignor to BEHR GmbH & Co., Stuttgart, Germany

Filed Jan. 19, 1995, Ser. No. 374,910

Claims priority, application Germany, Jan. 25, 1994, 44 01 979.3

Int. Cl.^{6} F01P *7/02*

U.S. Cl. 123—41.12 **11 Claims**



1. A fan drive for a motor vehicle comprising:

a) a temperature controlled fluid-friction clutch having an input shaft with an input disk, and

a clutch housing rotatably mounted on the input shaft and bearing a fan, the fan being adapted to be driven via the input shaft by an engine of the motor vehicle and adapted to deliver cooling air through at least one of a radiator of a cooling circuit and a condenser of a refrigerant circuit;

b) an electric motor drivingly coupled to the clutch housing via a first freewheel; and

c) a second freewheel coupled to the input disk and the engine, wherein the engine drives the input disk through the second freewheel,

wherein, to increase a speed of the fan, the clutch housing of the fluid-friction clutch is driven by the electric motor via the first freewheel.

5,617,818

MOUNTING ARRANGEMENT FOR A CAMSHAFT AND ASSOCIATED VALVE CONTROL ELEMENTS OF AN INTERNAL COMBUSTION ENGINE

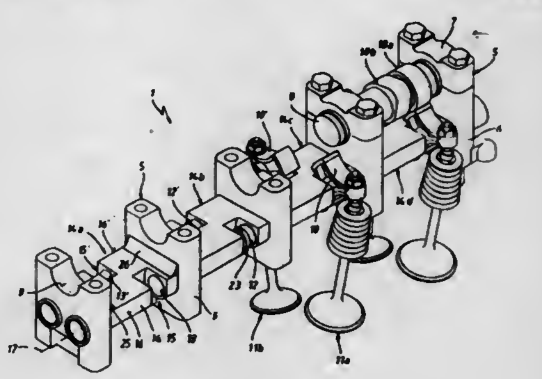
Michael Lüders, Stuttgart, Germany, assignor to Mercedes-Benz AG, Stuttgart, Germany

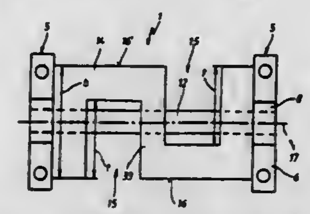
Filed Feb. 5, 1996, Ser. No. 596,672

Claims priority, application Germany, Feb. 13, 1995, 195 04 637.4

Int. Cl.^{6} F01L *1/04;1/18;* **F02F** *1/24*

U.S. Cl. 123—90.27 **13 Claims**





1. An arrangement for mounting a camshaft and associated valve control elements on an internal combustion engine having a cylinder head with intake and exhaust valves and an overhead camshaft extending longitudinally on said cylinder head for operating said intake and exhaust valves, said arrangement comprising a camshaft housing having spaced bearing blocks with bearing covers rotatably supporting said camshaft and girders extending between said bearing blocks and having at least one longitudinal bore, a rocker arm support shaft extending through said bore, said girder having recesses wherein said rocker arm support shaft is exposed and rocker arms received in said recesses and pivotally supported therein on said rocker arm support shaft.

5,617,819

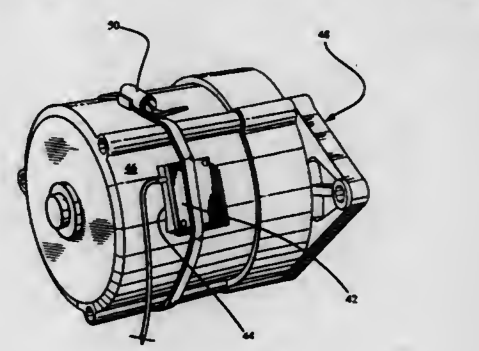
REMOTE STARTING SYSTEM FOR A VEHICLE HAVING A DIESEL ENGINE

Norman Dery, and Guy Santerre, both of Sherbrooke, Canada, assignors to Astroflex, Inc., St.-Elie D'Orford, Canada

Continuation of Ser. No. 176,036, Dec. 30, 1993, abandoned. This application Feb. 29, 1996, Ser. No. 608,932

Int. Cl.^{6} F02N *11/08;* **G01P** *3/487*

U.S. Cl. 123—179.2 **16 Claims**



1. A device for detecting the rotational speed of a rotary internal combustion engine driving an alternator having a rotor, comprising a Hall-effect sensor responsive to a pulsating magnetic field produced by the rotor for generating a signal having a period and being indicative of the rotational speed, and a dividing circuit coupled to said Hall-effect sensor for increasing said period.

11. A system for remotely starting a diesel rather than a spark-ignited internal combustion engine of a vehicle, having an alternator with a rotor, and a starting motor, said system comprising:

a portable hand-held transmitter for generating a predetermined RF command signal;

a slave controller for mounting in the vehicle, and including:

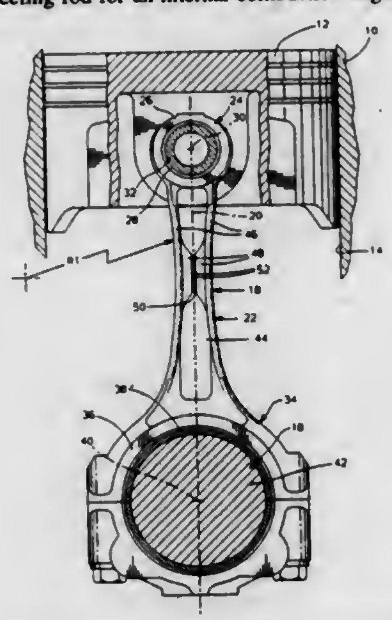
(a) a receiver for sensing said predetermined RF command signal;

(b) a processing unit coupled to said receiver, in response to detection of said predetermined RF command signal, said processing unit actuating the starter motor to crank the engine, and including an input for receiving an engine speed indicating signal, said processing unit being capable of selectively assuming either one of a plurality of engine speed indicating signal processing modes associated with respective internal spark-ignited combustion engines having different number of cylinders;

(c) a device for detecting a rotational speed of the diesel engine, said device being responsive to a pulsating magnetic field produced by the rotor for generating a periodic signal in lieu of the rotational speed of a signal from the ignition circuit of a spark-ignited combustion engine, said device being connected to said input, whereby said periodic signal is accepted by said processing unit as if it were an ignition circuit-derived tachometer signal from a spark-ignited combustion engine, said processing unit in a selected one of said processing modes acting on said periodic signal to derive data correlated to a speed of rotation of the diesel engine, said processing unit being responsive to said data to deactivate the starter motor when the speed of the diesel engine exceeds a preset limit.

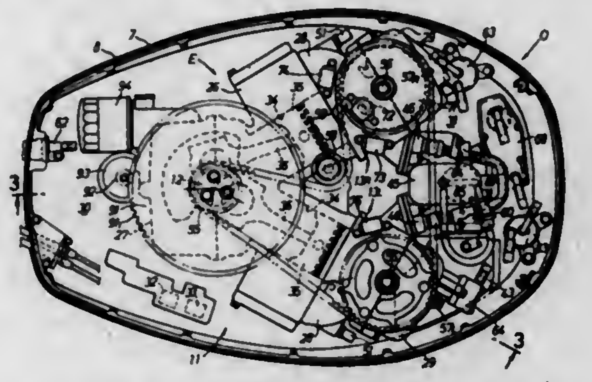
5,617,820
CONNECTING ROD FOR INTERNAL COMBUSTION ENGINE
John M. Beardmore, Howell; Bruce A. Tucker, Brighton, and David N. Leland, Farmington, all of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Oct. 17, 1995, Ser. No. 544,302
Int. Cl.^{6} G05G *1/00*
U.S. Cl. 123—197.3 **5 Claims**

1. A connecting rod for an internal combustion engine compris-



ing first and second ends connected by a longitudinally extending beam defining an axis, said first end including a piston pin bearing boss for receiving a piston pin of a piston therein, said second end including a crankpin bearing boss for receiving a crankpin of a crankshaft therein and said longitudinally extending beam having an opening therein defining opposing webs, said webs flexible inwardly, towards said beam axis, under compressive loading of said connecting rod, to absorb a portion of the loading and thereby reduce peak force amplitude, and flexible away from said beam axis, upon reduction of the compressive loading of said connecting rod, said webs including first and second stops extending into said opening towards said axis to define a minimum opening cross section, said stops operable to limit the inward movement of said webs under compressive loading of said connecting rod, by closing of said minimum opening cross section.

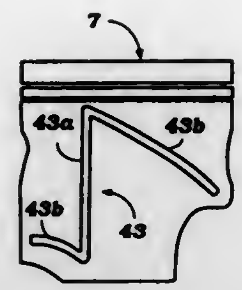
5,617,821
4-CYCLE ENGINE
Masaki Tsunoda; Shigeaki Kuwabara, and Sadafumi Shidara, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 446,519, May 22, 1995, Pat. No. 5,549,091, which is a division of Ser. No. 127,553, Sep. 28, 1993, Pat. No. 5,438,963. This application May 6, 1996, Ser. No. 642,961
Claims priority, application Japan, Sep. 30, 1992, 4-262583; Sep. 30, 1992, 4-262587
Int. Cl.^{6} F02B *75/22*
U.S. Cl. 123—195 P **1 Claim**



1. A 4-cycle engine, comprising: a pair of V-shaped banks disposed within an engine room covered with an engine cover such as to open toward an inner face of said engine cover, and an electronically controlled type fuel injection system having an injector, said 4-cycle engine further comprising a sub-tank for temporarily keeping fuel to be supplied to said injector, said injector and said sub-tank being accommodated in a space formed between said pair of banks and said inner face of said engine cover.

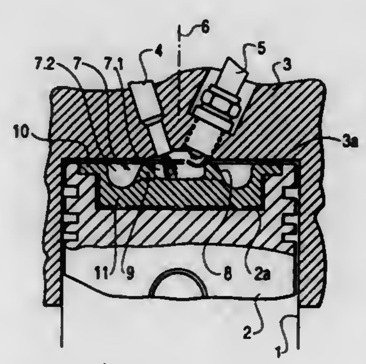
5,617,822
LUBRICATING SYSTEM FOR ENGINE
Tatsuyuki Masuda, Iwata, Japan, assignor to Yamaha Hatsudoki kabushiki Kaisha, Iwata, Japan
Division of Ser. No. 276,953, Jul. 19, 1994, Pat. No. 5,511,523. This application Aug. 11, 1995, Ser. No. 514,312
Claims priority, application Japan, Jul. 26, 1993, 5-184051
Int. Cl.^{6} F01M *1/06; 11/02;* F01B *31/10*
U.S. Cl. 123—196 R **20 Claims**

1. An arrangement for lubricating the crankshaft connecting rod journal of a reciprocating machine having a crankshaft journalled for rotation about a crankshaft axis and having a throw with a bearing portion eccentric relative to said axis for receiving the big end of a connecting rod, a first straight lubrication passage extending transversely and completely through said throw between an opening in the external surface of said throw and an inlet, a closure



for closing said opening, and a second straight lubricating passage extending from said bearing portion to said first lubricating passage and intersecting said first lubricating passage adjacent said closure for minimizing the dead volume of said first lubricating passage between the point of intersection and said closure.

5,617,823
SPARK-IGNITED RECIPROCATING PISTON ENGINE HAVING A SUBDIVIDED COMBUSTION CHAMBER
Charles Gray, Jr., 4323 Cordley Lake Rd., Pinckney, Mich. 48169; Karl H. Hellmann, 2690 Overridge, Ann Arbor, Mich. 48104; Gary W. Rogers, 610 Linden Rd., Birmingham, Mich. 48009, and Ulrich Hilger, Virchowstrasse 20, D-45147 Essen, Germany
Continuation of Ser. No. 432,423, Apr. 27, 1995, abandoned. This application Mar. 18, 1996, Ser. No. 617,422
Claims priority, application Germany, Apr. 29, 1994, 44 15 073.3
Int. Cl.^{6} F02P *1/00*
U.S. Cl. 123—254 **16 Claims**



1. An internal-combustion engine comprising

(a) a cylinder head;

(b) means, including said cylinder head, for defining a cylinder having a cylinder axis and an upper bounding surface formed by an inner wall portion of said cylinder head;

(c) a fuel injection device held in said cylinder head and opening into said cylinder;

(d) a spark plug held in said cylinder head and opening into said cylinder;

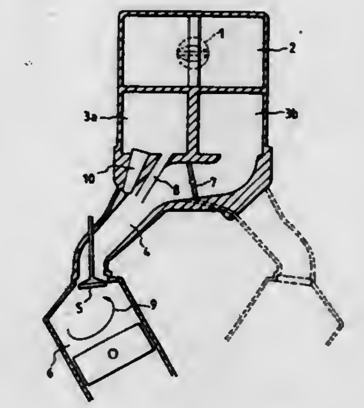
(e) a piston axially slidably disposed in said cylinder for reciprocating motions between lower and upper dead center positions; said piston having a top piston face oriented towards said upper bounding surface;

(f) a combustion chamber defined between said upper bounding surface and said top piston face when said piston is in said upper dead center position;

(g) an annular ridge situated on said top piston face; said annular ridge subdividing said combustion chamber into an inner partial combustion chamber and an outer partial combustion chamber surrounding said inner partial combustion chamber; said inner partial combustion chamber being situated is an effective proximity of said fuel injection device and said spark plug; and

(h) throughgoing apertures provided in said annular ridge for maintaining a continuous communication between said inner and outer partial combustion chambers.

5,617,824
AIR INTAKE EQUIPMENT FOR INTERNAL COMBUSTION ENGINE
Minoru Ohsuga; Jun'ichi Yamaguchi, both of Hitachinaka; Ryoichi Komuro, Hitachi, and Masakichi Momono, Hitachinaka, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Apr. 27, 1995, Ser. No. 428,486
Claims priority, application Japan, Apr. 28, 1994, 6-091062
Int. Cl.^{6} F02B *31/00*
U.S. Cl. 123—308 **2 Claims**



1. An air intake system for an internal combustion engine comprising:

a plurality of independent intake pipes, connected to a combustion chamber of the internal combustion engine via an intake valve, for introducing air into said combustion chamber;

collectors, connected to said independent intake pipes, for distributing intake air to said intake pipes;

a throttle valve, connected in an air passage to said collectors, for controlling the amount of intake air flow in said air passage;

fuel supplying means, provided on a wall of said independent intake pipes, for supplying fuel to the air supplied by said intake pipes and mixing the air and fuel; and

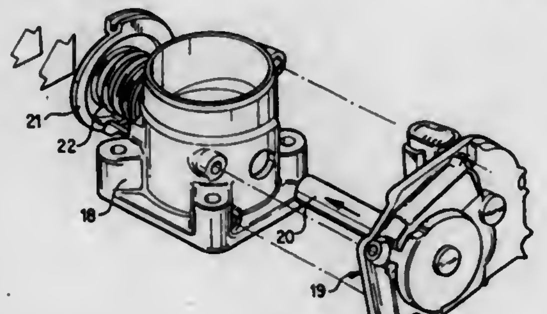
deflection means for deflecting the air flow of said independent intake pipes whereby the direction of fuel flow supplied from said fuel supplying means is constant, independent of the presence of said air flow;

further comprising valve means provided on the upper stream of a fuel nozzle of said fuel supplying means in said independent intake pipes, wherein said deflection means comprises a by-pass passage which by-passes said valve means;

wherein air flow jetted through the by-pass passage is directed to a predetermined position on the surface of the intake valve of the internal combustion engine; and

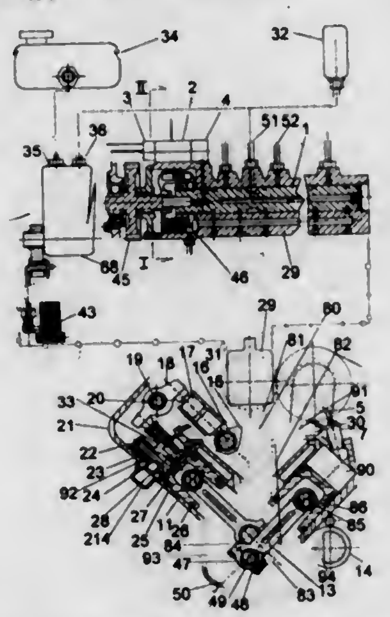
wherein the distances between points at the opening portions of the upper stream end and the down stream end of the by-pass through the by-pass and through said independent intake pipe are substantially equal.

5,617,825
THROTTLE DEVICE
Otto Altmann, Kirchseeon, and Gerhard Brenner, Asperg, both of Germany, assignors to Filterwerk Mann & Hummel GmbH, Ludwigsburg, Germany
PCT No. PCT/EP94/02852, § 371 Date May 29, 1996, § 102(e) Date May 29, 1996, PCT Pub. No. WO95/06807, PCT Pub. Date Mar. 9, 1995
PCT Filed Aug. 29, 1994, Ser. No. 602,771
Claims priority, application Japan, Sep. 2, 1993, 43 29 522.3
Int. Cl.⁶ F02D *9/08*
U.S. Cl. 123—337 **10 Claims**



1. A throttle device comprising a housing, a throttle valve mounted on a throttle valve shaft in said housing, a throttle valve position control and a position sensor, said throttle device being arranged between a filtered air outlet of an air filter and an intake manifold of an internal-combustion engine, wherein at least one of said filtered air outlet and said intake manifold are formed of synthetic resin material, and the housing, the throttle valve, the valve shaft, the position control and the position sensor are constructed as modules which can be friction fitted, screwed or clamped together.

5,617,826
SYNCHRONIZED COMPRESSION IGNITION ENGINE
James B. Brandt, Clyman, Wis., assignor to Performance Corporation, Clyman, Wis.
Filed Feb. 6, 1995, Ser. No. 383,989
Int. Cl.⁶ F02D *1/02*
U.S. Cl. 123—450 **2 Claims**



1. A rotary fuel distributor for an internal combustion engine comprising:

a rotary valve mounted in a housing, said housing having a fuel inlet and at least one fuel outlet, fuel flow between said inlet and said at least one outlet controlled by at least one groove in said valve;

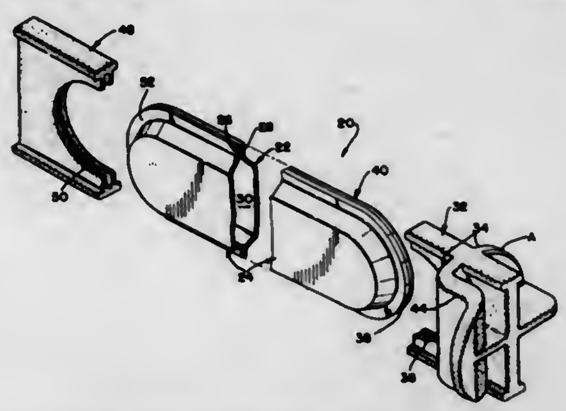
means for driving said rotary valve at a speed proportional to engine crankshaft speed;

timing adjuster means located between said rotary vave and said means for driving for varying for the relative angle therebetween and thereby an angle of fuel injection;

sensor means for detecting engine conditions;

means responsive to the sensor means for controlling the timing adjuster means to vary the crank angle of fuel injection.

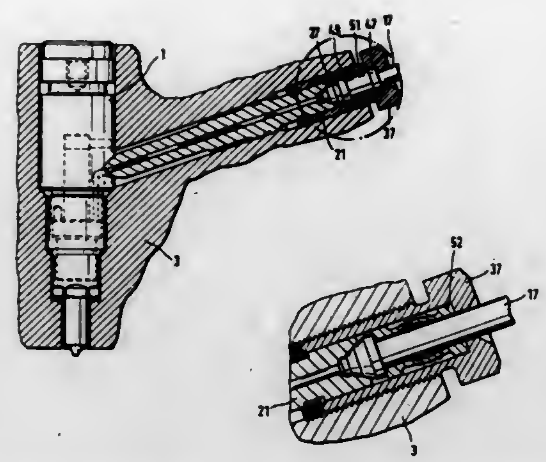
5,617,827
FUEL RAIL
Edgar S. Eshleman, Bloomfield, and David C. Shuler, Rochester, both of N.Y., assignors to General Motors Corporation, Detroit, Mich.
Filed Dec. 26, 1995, Ser. No. 578,311
Int. Cl.⁶ F02M *41/00;55/02*
U.S. Cl. 123—456 **6 Claims**



1. A fuel rail assembly comprising a fuel conduit having first and second ends, an inlet for receiving fuel and a fuel injector socket extending from said fuel conduit and including an injector port intersecting said fuel conduit for conducting fuel from said conduit to said fuel injector socket, said fuel rail assembly further comprising a compliant damper assembly constructed of first and second halves joined along a peripheral flange to thereby define an air space between said halves, a first, keyed damper support located at a first end of said compliant damper, said keyed damper support including a support slot configured to receive said peripheral flange to support said compliant damper in said fuel conduit and an outer circumference configured for sliding insertion into said first conduit end, said outer circumference having a keyway for engagement with a corresponding positioner in said conduit, said keyed damper support operable to position said damper axially and rotationally within said fuel conduit.

5,617,828
FUEL INJECTION VALVE FOR INTERNAL COMBUSITON ENGINES
Peter Kuegel; Tolunay Demir, and Thomas Kugler, all of Bursa, Turkey, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed Jul. 3, 1996, Ser. No. 675,662
Claims priority, application Germany, Jul. 5, 1995, 195 24 520.2
Int. Cl.⁶ F02M *55/02*
U.S. Cl. 123—468 **9 Claims**

1. A fuel injection valve-for internal combustion engines, which comprises a valve retaining body (1) inserted into the housing (3) of the engine, said valve retaining body is axially connected to a



valve body (5) of the injection valve by means of an adjusting nut (7), said valve retaining body protrudes into a combustion chamber of the engine, at least one fuel supply conduit (13) to an injection opening (11) is provided on the valve body (5) wherein a high pressure connection of the supply conduit (13) is constituted by a pressure pipe connector (21), said pressure pipe connector penetrates a through opening (19) in the housing (3) of the engine and is sealingly connected on an inlet end to a connecting piece of a pressure line (17) and which by means of a male pipe fitting (37) screwed into the through opening (19), this connector is pressed axially with a sealing face (23) on an outlet end, against a seat face (15) which adjoins the supply conduit (13) and is disposed on the lateral circumference wall of the valve retaining body (1), between the male pipe fitting (37), which at least indirectly clamps the pressure pipe connector (21), and its contact against the valve retaining body (1), a locally defined region is provided, which plastically deforms from a particular axial clamping force on the pressure pipe connector (21) onward.

5,617,829
METHOD FOR MAINTAINING CLEAN SPARK PLUGS IN A VARIABLE DISPLACEMENT ENGINE
David K. Bidner, Livonia; Glenn A. Zimlich, Dearborn Heights, and Daniel V. Orzel, Westland, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Nov. 20, 1995, Ser. No. 560,560
Int. Cl.⁶ F02D *43/00*
U.S. Cl. 123—481 **17 Claims**

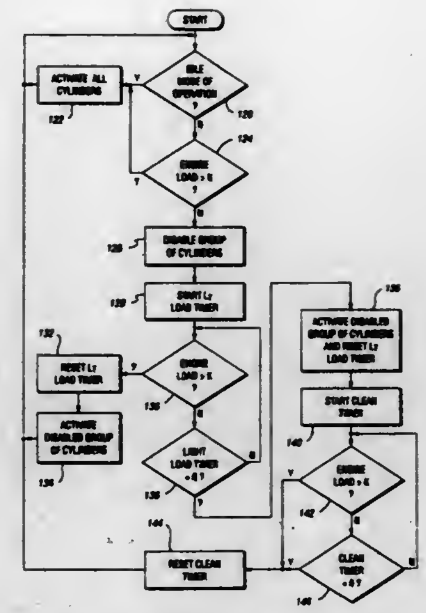
1. A method for maintaining clean spark plugs in a variable displacement, multiple cylinder engine, comprising:

generating a load signal in response to at least one of the operational parameter of the variable displacement engine;

generating a light load signal in response to said load signal being less than at least a first predetermined value;

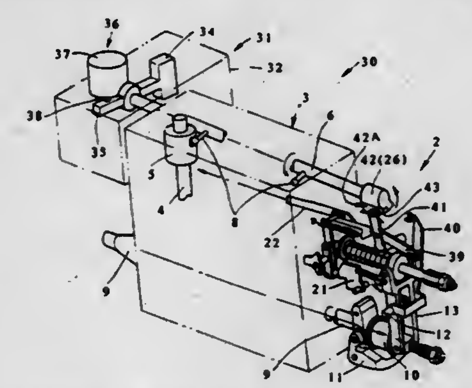
terminating the fuel delivery and the energizing of the spark plugs for at least a first group of cylinders to disable said first group of cylinders in response to said light load signal;

detecting when said at least first group of cylinders has been disabled for a first period of time to re-enable said at least first group of cylinders for a second period of time much shorter than said first period of time, said second period of time selected to be sufficient to clean said spark plugs; and



repeating said step of terminating in response to the expiration of said second period of time.

5,617,830
PRESTROKE CONTROLLER FOR ENGINE FUEL INJECTION PUMP
Hiroshi Ishiwata; Tohru Yokota; Mitsuaki Kobayashi; Tsutomu Katori, and Teruo Ohsawa, all of Higashi-Matsuyama, Japan, assignors to Zexel Corporation, Japan
Filed Jul. 27, 1995, Ser. No. 507,829
Claims priority, application Japan, Jul. 27, 1994, 6-193782; Jul. 27, 1994, 6-193839; Apr. 12, 1995, 7-110273
Int. Cl.⁶ F02M *37/04*
U.S. Cl. 123—500 **20 Claims**



1. A prestroke controller for an engine fuel injection pump comprising

a plunger which sucks in and pressurizes fuel by reciprocating axially in response to rotation of a cam shaft connected with an engine,

a control sleeve slidably fitted on the plunger,

a timing control rod connected with the control sleeve and which operates to adjust the prestroke by changing the position of the control sleeve relative to the axial direction of the plunger,

a flyweight which moves in response to rotation of the cam shaft,

a magnetic coupling provided at a displacement transfer section between the flyweight and the timing control rod,

a timing cam drivable in response to movement of the flyweight,

a flyweight side torque transfer mechanism connecting the timing cam and the magnetic coupling.

a tension lever connected to the flyweight for swinging the timing cam in response to movement of the flyweight, a connecting rod connected to the tension lever, a first lever connected to the connecting rod, a second lever which starts to rotate after being contacted by the first lever, a link connecting the second lever and the timing cam, and

a spring which urges the second lever in a direction opposite from that in which torque can be transferred from the flyweight side torque transfer mechanism on the flyweight side through the timing cam to the magnetic coupling.

5,617,831

DIESEL ENGINE STARTUP CONTROLLER

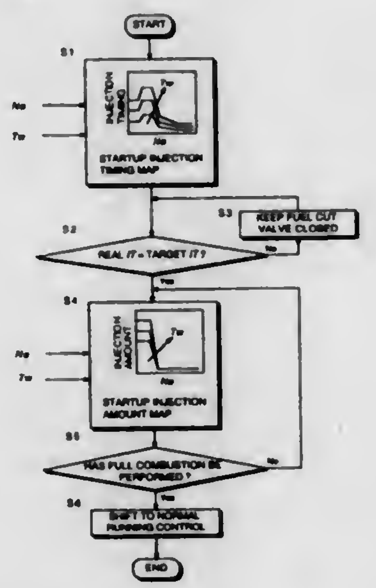
Takashi Shirakawa, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Kanagawa, Japan

Filed Mar. 21, 1996, Ser. No. 619,231

Claims priority, application Japan, Mar. 27, 1995, 7-067284; Dec. 28, 1995, 7-343992

Int. Cl.⁶ F02M *37/04*

U.S. Cl. 123—502 **12 Claims**



1. A startup controller for use with a diesel engine, said engine having cranking means to start said engine and means for injecting fuel into a combustion chamber of said engine, comprising:

means for detecting an engine running condition,

means for determining a fuel injection target timing of said injecting means based on the engine running condition,

means for controlling a fuel injection timing of said fuel injection means to said fuel injection target timing,

means for detecting an injecting action of said injecting means, and

means for preventing fuel injection by said injecting means after engine cranking by cranking means until the detected timing of said injecting action becomes identical to said fuel injection target timing.

5,617,832

EVAPORATIVE FUEL-PROCESSING SYSTEM FOR INTERNAL COMBUSTION ENGINES

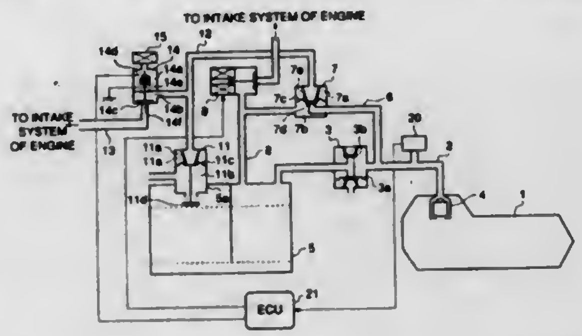
Kazumi Yamazaki; Takeshi Hara; Teruo Wakashiro, and Koichi Hidano, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 4, 1996, Ser. No. 658,077

Claims priority, application Japan, Jun. 5, 1995, 7-161383

Int. Cl.⁶ F02M *33/02*

U.S. Cl. 123—520 **6 Claims**



1. An evaporative fuel-processing system for an internal combustion engine having a fuel tank and an intake system, comprising:

an evaporative emission control system including a canister having an air inlet port formed therein, for introducing atmosphere into said canister, said canister accommodating an adsorbent for adsorbing evaporative fuel generated in said fuel tank, a charging passage connecting between said canister and said fuel tank, a two-way valve arranged across said charging passage, a purging passage connecting between said canister and said intake system, and a purge control valve arranged across said purging passage;

leak-checking means for carrying out leak-checking of said evaporative emission control system;

a bypass passage bypassing said two-way valve;

a negative pressure responsive-type bypass valve arranged across said bypass passage; and

a negative pressure responsive-type vent shut valve disposed to open and close said air inlet port of said canister;

wherein said leak-checking means controls said bypass valve and said vent shut valve to open and close, by means of negative pressure developed within said intake system.

5,617,833

APPARATUS AND METHOD FOR DIAGNOSING EXHAUST RECIRCULATION SYSTEM IN INTERNAL COMBUSTION ENGINE

Naoki Tomisawa, Takasaki, and Kenichi Machida, Isesaki, both of Japan, assignors to Unisia Jecs Corporation, Atsugi, Japan

Filed Dec. 21, 1995, Ser. No. 577,461

Claims priority, application Japan, Dec. 22, 1994, 6-320516

Int. Cl.⁶ F02M *25/07;* **G01M** *15/00*

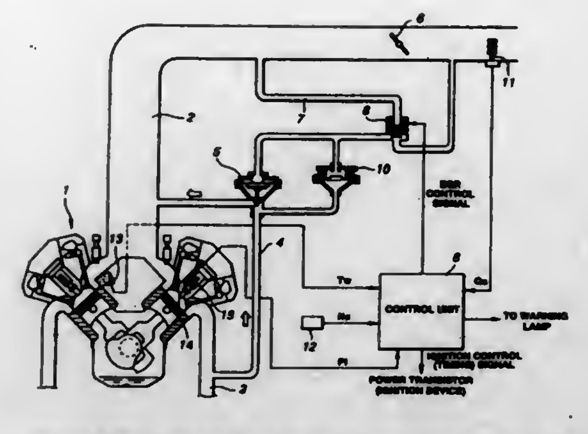
U.S. Cl. 123—571 **11 Claims**

1. An apparatus for diagnosing an exhaust gas recirculation system having exhaust gas recirculation control valve means interposed in an exhaust gas recirculation passage of an internal combustion engine so as to recirculate part of exhaust gas into a suction system of the engine in response to an EGR control signal, comprising:

a) detecting means for detecting an engine driving condition;

b) combustion state related parameter measuring means for measuring a combustion state related parameter of at least one combustion chamber of engine cylinders;

c) combustion time duration measuring means for measuring a length of a combustion time duration in one combustion stroke within the combustion chamber including at least an



approximately end period of the one combustion stroke on the basis of the measured combustion state related parameter;

d) predictive combustion time duration determining means for determining a target recirculation rate to be normally achieved by controlling an opening angle of the exhaust gas recirculation control valve means via the EGR control signal on the basis of the detected engine driving condition and for determining a length of a predictive combustion time duration on the basis of the determined target exhaust gas recirculation rate; and

e) failure diagnosing means for comparing the length of the measured combustion time duration with that of the predictive combustion time duration so as to diagnose whether a failure occurs in the exhaust gas recirculation system according to a result of the comparison.

5,617,834

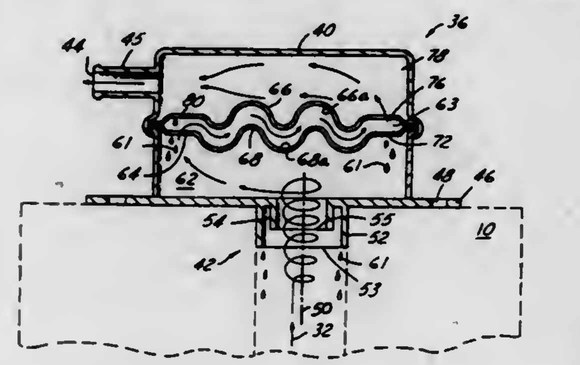
AIR-OIL SEPARATOR FOR A CRANKCASE VENTILATION SYSTEM IN AN INTERNAL COMBUSTION ENGINE

John C. Lohr, Beverly Hills, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Mar. 5, 1996, Ser. No. 611,047

Int. Cl.⁶ F02M *25/00*

U.S. Cl. 123—572 **17 Claims**



1. A crankcase ventilation system for an internal combustion engine, the engine having a cylinder block, a crankshaft, a crankcase housing the crankshaft, and an air induction system, the ventilation system comprising:

an air-oil separator for separating entrained lubricating oil from blowby gases contained within said crankcase, for returning separated oil to said crankcase and for introducing the oil-free gas to the air induction system, with said oil separator comprising:

a housing;

an inlet at a lower end of said housing and being in fluid communication with said crankcase, with said inlet receiving a stream of blowby gas, and with said inlet having an outer cylindrical tube defining an axis and an inner cylindrical tube substantially coaxial with said outer tube, said inner tube having a length less than the length of the outer tube when measured along said axis, said inner tube and said outer tube having bottom edges lying in intersecting planes, with said blowby gas in said inlet swirling in a cyclone, thereby forcing at least a portion of entrained oil to move outward and impinge on said outer tube and drain into the crankcase;

a partially enclosed baffle within said housing, said blowby gas entering said baffle at a baffle inlet at one end thereof such that at least a portion of oil entrained in said blowby gas impinges on interior walls of said baffle and drains to said inlet, with said blowby gas exiting said baffle at a baffle outlet at another end thereof;

an outlet chamber within said housing and being in fluid communication with said baffle outlet, said outlet chamber having a volume of space substantially greater than the volume of space in said baffle such that blowby gas entering said outlet chamber decreases in velocity, thereby allowing any further entrained oil in said blowby gas to fall out of said stream and drain into said baffle; and,

an outlet at an upper end of said housing and being in fluid communication with said outlet chamber for introducing the oil-free gas to the air induction system.

5,617,835

INLET VALVE FOR A COMBUSTION SPACE OF AN INTERNAL COMBUSTION ENGINE

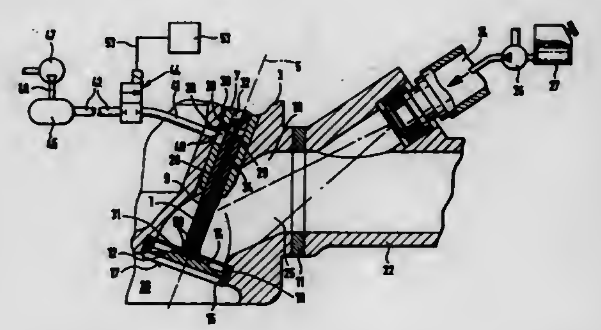
Assadollah Awarzamani, Markgroeningen, and Thomas Wilfert, Ludwigsburg, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Feb. 7, 1996, Ser. No. 597,769

Claims priority, application Germany, Feb. 9, 1995, 1 95 04 239.5

Int. Cl.⁶ F02M *23/12;* **F01L** *1/28*

U.S. Cl. 123—585 **10 Claims**



1. An inlet valve for a combustion space of an internal combustion engine, said inlet valve comprises a valve head (12) and a hollow shaft (9), a cavity (28) in said hollow shaft (9), said hollow shaft (9) has at least one inlet opening (30) in said shaft to said cavity (28) and at least one outlet opening (50) in said shaft from said cavity (28), said inlet opening (30) is provided in the shaft (9) and said outlet opening (50) is provided on a side of the inlet valve (1) facing away from the combustion space (20) of the internal combustion engine, said at least one inlet opening (30) is connected to a compressed air source for delivering compressed air to said at least one inlet opening (30), said delivered air flows from said at least one inlet shaft opening (30) to the cavity (28) in said inlet valve to said at least one outlet opening (50) in said shaft and out of said at least one outlet opening (50) whereby an air film overflows the valve head (12) facing away from the combustion space (20) of the engine whereby the flowing air prevents condensation of fuel droplets.

5,617,836

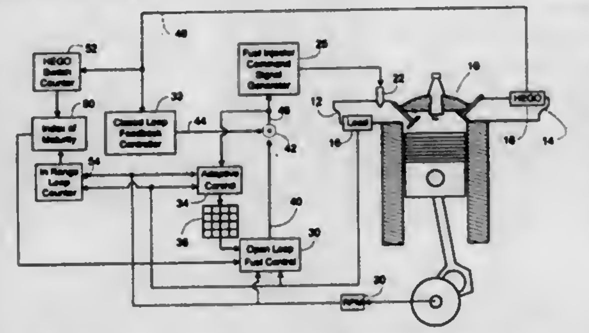
ENGINE CONTROL SYSTEM FOR PRODUCING AND RESPONDING TO AN INDEX OF MATURITY OF ADAPTIVE LEARING

Michael J. Cullen; Robert M. Marzonie, both of Northville; Alan R. Dona, Huntington Woods; Eric J. Grant, Royal Oak, and Ronald A. Yannone, Clinton, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Oct. 4, 1995, Ser. No. 538,928

Int. Cl.⁶ F02D *41/14*

U.S. Cl. 123—674 **8 Claims**



1. An electronic control system for controlling the operation of an internal combustion engine in response to varying engine operating conditions comprising:

sensing means for generating input signals having values representing said operating conditions,

memory means for storing variable control parameters,

control means for generating control signals having magnitudes determined jointly by said input signals and said control parameters,

actuator means for controlling the operation of said engine in response to at least some of said control signals,

adaptation means responsive to at least one of said input signals and at least one of said control signals for modifying a particular one of said variable control parameters toward an optimized value under a predetermined set of said engine operating conditions,

means for counting events manifested by at least one of said input signals to form an accumulated event count value indicative of the extent to which said adaptation means has been operative,

means responsive to said event count value for generating an index of maturity parameter, said index of maturity parameter having a value indicative of the extent to which said adaptation means has been operative to modify said particular control parameter toward said optimized value, and

mode control means responsive to the value of said index of maturity parameter for altering the manner in which said control means generates said control signals.

5,617,837

AIR GUN WITH PRESSURE RELIEF VALVE

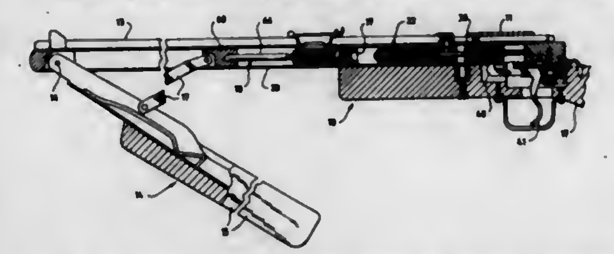
Franz Momirov, Racine, Wis., assignor to Crosman Corporation, East Bloomfield, N.Y.

Filed May 16, 1994, Ser. No. 243,250

Int. Cl.⁶ F41B *11/30*

U.S. Cl. 124—73 **9 Claims**

1. An air gun comprising a frame, a barrel mounted on the



frame, a valve body mounted on the frame and having a pressure reservoir for storing pressurized air, firing means for releasing pressurized air from the pressure reservoir to the barrel for propelling a projectile out of the barrel, and pump means for supplying pressurized air to the pressure reservoir, the pump means including a cylinder mounted on the frame, a piston reciprocally mounted within the cylinder, means for reciprocating the piston in the cylinder for pumping pressurized air into the pressure reservoir, the piston having a pressure relief opening therethrough, a valve movably mounted on the piston for movement between a closed position in which the valve seals the pressure relief opening in the piston and an open position in which air can flow through the pressure relief opening in the piston, and biasing means for resiliently biasing the valve toward the closed position, the piston including a generally cylindrical body having a cylindrical wall, an inner end, an outer end and an exhaust opening which extends through the cylindrical wall and communicates with a gap between the cylindrical body and the cylinder, said pressure relief opening in the piston being provided through the inner end of the piston, said valve being mounted within the cylindrical body of the piston, said biasing means comprising a spring within the cylindrical body and engaging the valve.

5,617,838

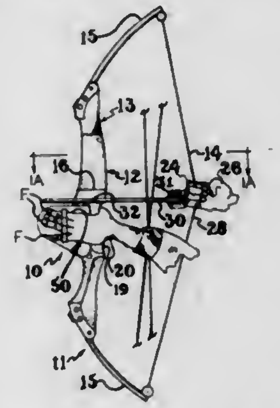
ARCHERY AID

Robert H. Peruski, 2254 Main St., Ubly, Mich. 48475

Filed Apr. 13, 1995, Ser. No. 421,230

Int. Cl.⁶ F41B *5/14*

U.S. Cl. 124—88 **51 Claims**



51. An archery aid for mounting on an archer's bow adapted to be held in an archer's bow holding hand to forwardly propel an arrow comprising:

stop means for mounting on, but adapted to extend forwardly of, an archer's bow for precluding an archer's bow holding hand from closing and gripping said bow; and mean for mounting said top means on an archer's bow.

5,617,839

RACK OVEN

Ralph E. Jennings, Overland Park, Kans., and Philip Tiberio, Jr., Shrewsbury, N.J., assignors to Premark FEG Corporation, Wilmington, Del.

Filed Feb. 26, 1996, Ser. No. 606,840

Int. Cl.⁶ A21B *1/08*

U.S. Cl. 126—20 **20 Claims**

1. A rack oven comprising:

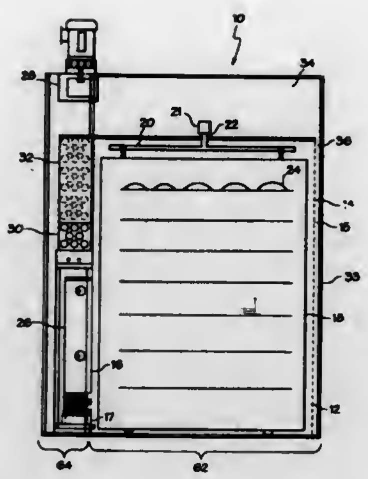
a baking chamber defined by a plurality of wall structures;

a door providing access to the interior of said baking chamber;

a steam generator located outside the oven chamber for providing moisture-containing air to said baking chamber;

a combustion chamber comprising a plurality of in-shot burners;

a heat exchanger in combination with said combustion chamber, said heat exchanger comprising a plurality of heat exchange tubes and a plurality of gas collection ducts;



a plenum;

a blower means located in said plenum for circulating air across said heat exchanger tubes and to said baking chamber; and

a flue for exhausting combustion gases.

5,617,840

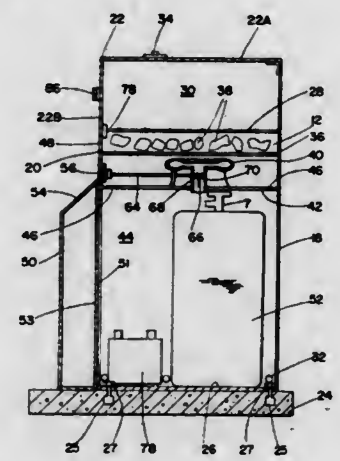
COOKING GRILL

Todd W. Clifford, 6359 S. Devonshire, Cincinnati, Ohio 45140, assignor to Convenience Technologies, Inc., and Todd W. Clifford, Cincinnati, Ohio

Continuation-in-part of Ser. No. 856,347, Mar. 23, 1992, Pat. No. 5,333,596. This application Aug. 1, 1994, Ser. No. 283,992

Int. Cl.⁶ A47J *37/00;* **F24C** *3/00*

U.S. Cl. 126—41 R **11 Claims**



1. A cooking grill, comprising:

a food-positioning rack;

a burner disposed below the rack for distributing a flame;

a conduit for conveying a cooking fuel to the burner;

a source of cooking fuel connected to said conduit, said cooking fuel of a known quantity;

an electrically actuated fuel shut-off valve interposed on the conduit between the source of fuel and the burner;

a regulator in association with said shut-off valve for maintaining a substantially constant fuel flow rate, to provide a known fuel level over time to the burner; and

a control circuit electrically connected to the fuel shut-off valve, which controls the time said valve has been open.

5,617,841

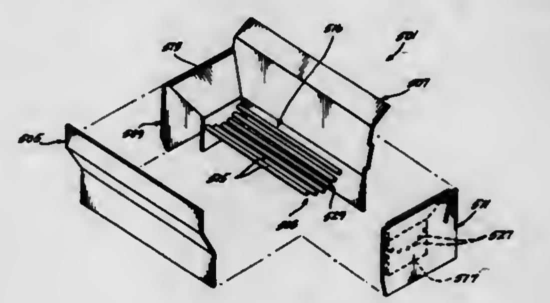
GRATE WITH SELF IGNITOR FOR BURNING PELLET FUEL

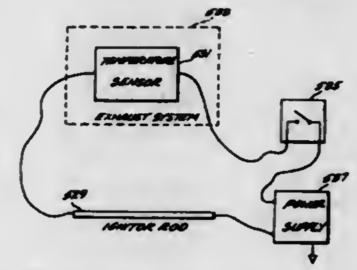
Oliver J. Whitfield, Bow, and John B. Tacke, Jr., Burlington, both of Wash., assignors to Pyro Industries, Inc., Burlington, Wash.

Continuation-in-part of Ser. No. 330,781, Oct. 28, 1994, Pat. No. 5,488,943, which is a continuation-in-part of Ser. No. 104,218, Aug. 9, 1993, Pat. No. 5,383,446, which is a continuation-in-part of Ser. No. 805,495, Dec. 11, 1991, Pat. No. 5,295,474, which is a continuation-in-part of Ser. No. 745,204, Aug. 14, 1991, Pat. No. 5,137,010. This application Jun. 7, 1995, Ser. No. 476,395

Int. Cl.⁶ F23H *13/00*

U.S. Cl. 126—152 B **11 Claims**





1. A grate assembly for use in a direct-fired apparatus fueled by biomass pellets, the grate assembly comprising:

an elongate ignitor rod; and

a plurality of elongate rods positioned in a parallel arrangement surrounding the ignitor rod, the distance between adjacent rods being sufficient to prevent unburned biomass pellets from falling between adjacent rods.

5,617,842

FIREPLACE WITH OUTER HOUSING COOLING SYSTEM

Mark R. Champion, Huntington, Ind., assignor to The Majestic Products Company, Huntington, Ind.

Continuation-in-part of Ser. No. 202,785, Feb. 28, 1994, abandoned. This application Jan. 24, 1995, Ser. No. 377,399

Int. Cl.⁶ F24B *1/188*

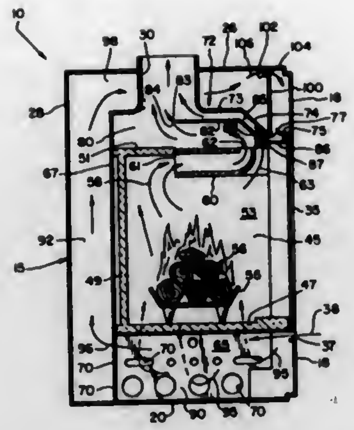
U.S. Cl. 126—528 **13 Claims**

1. A fireplace for combusting fuel comprising:

a combustion chamber whereat the fuel is combusted and products of combustion are created, said combustion chamber comprising an intake opening through which combustion air is introduced and an exhaust opening through which the products of combustion are discharged, said combustion chamber further comprising a top wall, a bottom wall, a rear wall, and opposing side walls;

a flue disposed in fluid communication with the exhaust opening of the combustion chamber for exhausting the products of combustion;

a housing comprising a plurality of outer walls, at least one of said plurality of housing outer walls disposed in spaced apart relationship with a corresponding combustion chamber wall to form at least one plenum;



a cooling air inlet in flow communication with said at least one plenum;

wherein said at least one plenum comprises an upper plenum disposed between an outer top wall of said plurality of housing outer walls and said combustion chamber top wall;

a passageway constricting baffle disposed within a forward portion of said upper plenum, said baffle sized and arranged to constrict a cross-sectional area of said upper plenum through which cooling air flows and force the flow of cooling air passing through said upper plenum over the baffle and upwardly toward said housing outer top wall; and

a passageway allowing fluid communication between said upper plenum and said flue, wherein the passageway has an upstream end for receiving cooling air which passes over the baffle and a downstream end for exhausting cooling air into the flue.

5,617,843

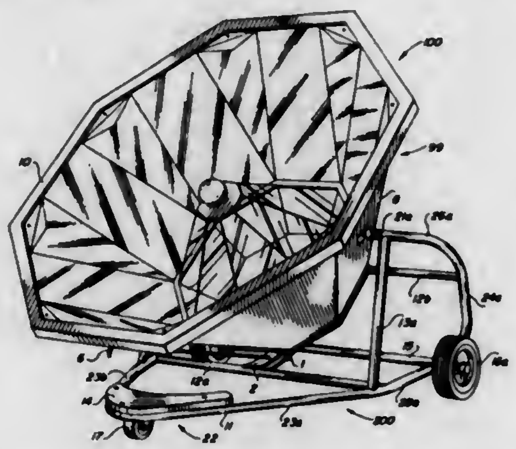
SOLAR OVEN WITH ORIENTING APPARATUS

Samuel F. Erwin, 220 Southridge Way, Grants Pass, Oreg. 97527

Filed Jul. 12, 1996, Ser. No. 678,983

Int. Cl.⁶ F24J *2/02*

U.S. Cl. 126—681 **9 Claims**



1. Apparatus for supporting and adjusting the orientation of a solar oven with respect to the sun, said apparatus comprising:

a) a horizontally disposed main support frame;

b) a pair of vertically disposed and spaced apart support members and secured to said main support frame;

c) a solar oven disposed between said vertically disposed support members and pivotally mounted to said support members so that the inclination of said oven can be adjusted with respect to the sun;

d) means for locking said oven in a variety of positions with respect to the sun, said means including:

i) a rigid arcuate shaped locking strap positioned beneath said oven and secured to said main frame, the convex side of said strap positioned downwardly, said strap being provided with a series of spaced apart openings;

ii) a rigid arcuate shaped locking bar positioned immediately above said locking strap with one end of said locking bar hingedly secured to the bottom of said oven, with said locking bar provided with locking means which can engage with said opening in said locking strap; and

iii) means for moving said locking bar toward or away from said locking strap whereby said locking means on said locking bar can be engaged or disengaged from said locking strap openings.

5,617,844

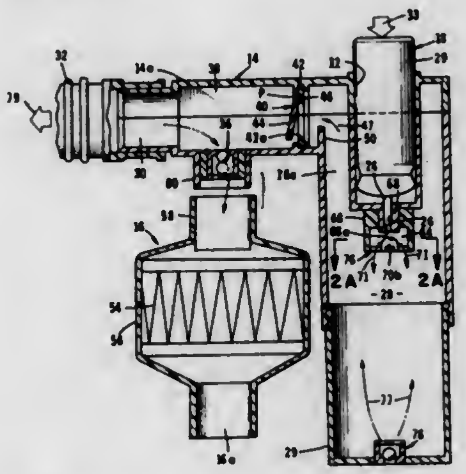
AEROSOL MEDICATION DELIVERY SYSTEM

Russell W. King, 4501 Littlejohn St., Baldwin Park, Calif. 91706

Filed Sep. 21, 1995, Ser. No. 531,697

Int. Cl.⁶ A61M *11/00*

U.S. Cl. 128—200.18 **17 Claims**



1. An aerosol inhalation apparatus for delivering a medicament containing mist to a patient comprising:

(a) a housing having interconnecting first and second chambers and a wall having an opening therein, said wall being disposed intermediate said first and second chambers;

(b) containerized medication means removably connected to said housing for introducing into said first chamber of said housing a particulate-laden spray having large and small particles of medicament;

(c) inhalation means connected to said housing for communication with said second chamber for permitting a patient to inhale particulate-laden spray residing within said housing and to exhale a portion thereof into said second chamber; and

(d) flow control means carried by said housing for controlling passage of particulate-laden spray between said first and second chambers during patient inhalation and exhalation, said flow control means comprising a valve member pivotally movably relative to said opening in said wall.

5,617,845

INHALATION DEVICE FREE FROM PROPELLENT GAS

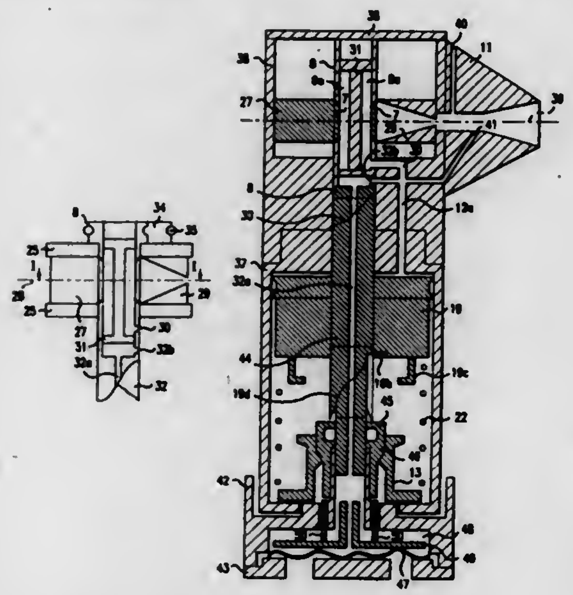
Gerhard Poss, Schriesheim; Jurgen Wittekind, Frankfurt am Main, and Andreas Kuhnel, Oberursel, all of Germany, assignors to Boehringer Ingelheim KG, Germany

Division of Ser. No. 977,450, Aug. 30, 1990, abandoned. This application May 3, 1994, Ser. No. 237,460

Claims priority, application Germany, Aug. 30, 1990, 40 27 391.1

Int. Cl.⁶ A61M *15/00; 16/00;* **B05D** *7/14;* **B65D** *83/06*

U.S. Cl. 128—203.15 **10 Claims**



1. Propellant-free inhaler comprising:

a storage chamber for containing a powdered medicinal substance to be inhaled;

a manually operable metering device connected to said storage chamber, said metering device having a metering chamber for receiving a dose of the medicinal substance;

a lateral mouth piece for active breathing in;

an air channel defined by said mouth piece for distributing the dose of medicinal substance in an air stream;

a trigger-operated pump connected to said metering chamber, said pump having a manually activated tensioning device and mechanical switching means operatively connected to said tensioning device and said air channel so that said switching means responds to a low pressure in said mouth piece produced by breathing in and actuates said tensioning device to produce a stream of foreign air which blows out the dose of medicinal substance in said metering chamber thereby dispersing the medicinal substance; and

wherein said switching means includes

a low pressure channel,

a flexible membrane having a first and a second side, wherein the low pressure in said mouth piece extends through said low pressure channel to cause said membrane to move in response to the low pressure, said first side being exposed to the low pressure, said second side being exposed to the ambient air,

a membrane pot disposed within a membrane chamber bounded on one side by said membrane, and

an actuating pin.

5,617,846

METHOD OF CONTROLLING A RESPIRATOR FOR TREATMENT OF SLEEP APNEA AND DEVICE FOR CARRYING OUT THE METHOD

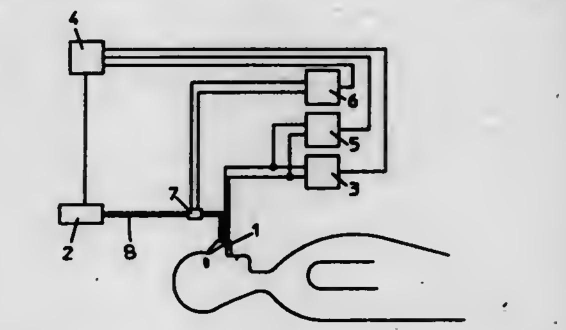
Bernd Graetz, Schenefeld, and Jörg Maurer, Oststeinbek, both of Germany, assignors to Gottlieb Weinmann Geräte für Medizin und Arbeitsschutz GmbH & Co., Hamburg, Germany

Filed Sep. 8, 1995, Ser. No. 525,963

Claims priority, application Germany, Sep. 8, 1994, 94 14 568.7

Int. Cl.⁶ A61M *16/00*

U.S. Cl. 128—204.21 **10 Claims**



1. A method of controlling a respirator for the treatment of sleep apnea, comprising the steps of:

determining the individual breathing resistance of a patient to obtain a base value of the oscillatory pressure amplitude, which corresponds to said breathing resistance of said patient;

continuously measuring, by oscilloresistometry or oscillatory resistance measuring, the oscillatory pressure amplitude of said patient;

supplying respiratory gas under pressure to said patient if deviations from said base value occur; and

terminating or minimizing said supply of respiratory gas as soon as said base value is again reached or nearly reached.

5,617,847

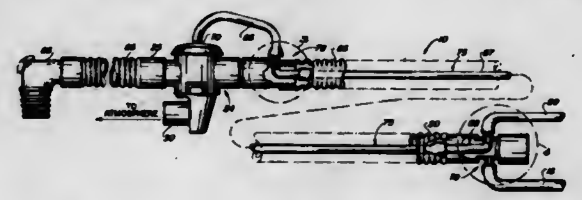
ASSISTED BREATHING APPARATUS AND TUBING THEREFORE

Stephen L. Howe, 5829 E. Bloomfield Rd., Scottsdale, Ariz. 85254

Filed Oct. 12, 1995, Ser. No. 542,070

Int. Cl.⁶ A61M *16/00*

U.S. Cl. 128—204.23 **4 Claims**



1. In combination, a tubing assembly between an exhalation valve and a ventilator, the combination comprising:

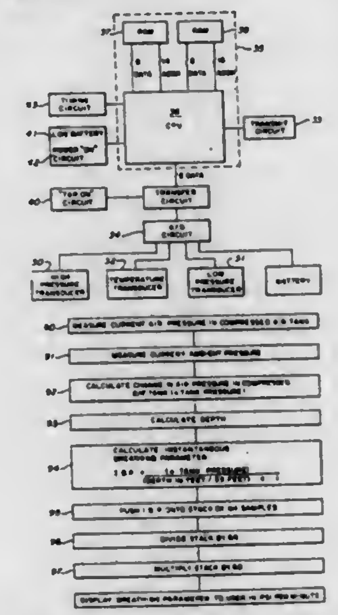
the ventilator having a patient air outlet, a exhalation valve control outlet and a sensor outlet operatively connected to a sensing mechanism;

the exhalation valve having a first outlet in gaseous communication with a patient's throat, a second outlet in gaseous communication with the ambient atmosphere, an inlet and a control air inlet, the exhalation valve having inhalation position in which gaseous communication is established between the inlet and the first outlet and an exhalation position in which gaseous communication is established between the first outlet and the second outlet, the exhalation valve being

switched between the inhalation position and the exhalation position by air pressure exerted at the control air inlet;
an intermediate tube providing gaseous communication between the patient air outlet and the inlet;
an exhalation valve connection attached at one end to the intermediate tube and at the other end to the inlet of the exhalation valve, the exhalation valve connection having a first L-shaped portion formed integrally therewith, the first L-shaped portion having a first leg extending laterally through the exhalation valve connection, the second leg extending longitudinally within the exhalation valve connection in a direction opposite the exhalation valve;
a ventilator-sensor connection attached at one end to the patient air outlet and at the other end to the intermediate tube opposite the exhalation valve connection, the ventilator-sensor connection having a second L-shaped portion formed integrally therewith, and a sensor tube opening therethrough, the second L-shaped connector having a first leg extending laterally through the ventilator-sensor connection, the second leg extending longitudinally within the ventilator-sensor connection in a direction towards the exhalation valve;
a sensor tube connected at one end to the ventilator-sensor connection and at the other end to the sensor outlet providing gaseous communication between the sensor mechanism of the ventilator and the ventilator-sensor connection; and
an exhalation valve control tube connected at one end to the control air inlet and at the opposite end to the exhalation valve control outlet providing gaseous communication between the control air inlet and the exhalation valve control outlet whereby the ventilator controls the air pressure at the control air inlet, the exhalation valve control tube extending through the first tube opening, through the intermediate tube and extending through the second tube opening.

5,617,848
ADVANCED DIVE COMPUTER THAT CALCULATES AND DISPLAYS THE USER'S BREATHING PARAMETER AND WATER SALINITY

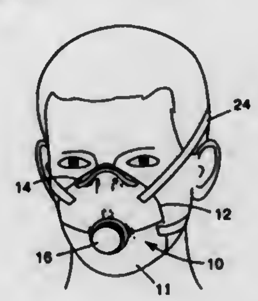
Michael J. Cochran, 2505 Evane Dr., Plano, Tex. 75075
Continuation of Ser. No. 154,022, Nov. 17, 1993, abandoned. This application Aug. 11, 1995, Ser. No. 514,363
Int. Cl.⁶ A62B *7/00;9/00;* **A61M** *16/00;* **G08B** *3/00*
U.S. Cl. 128—205.23 **34 Claims**



18. A method of monitoring a diver's breathing parameter, including the steps of:
measuring air pressure in a compressed-air tank;
measuring ambient water pressure;
measuring the salinity of the water;
calculating the depth of the diver based on the measured salinity of the water;
calculating, at predetermined time intervals, the rate at which air pressure in the compressed-air tank is decreasing;
calculating the diver's breathing parameter by dividing the calculated rate at which air pressure in the compressed-air tank is decreasing by the calculated depth of the diver; and
displaying the diver's breathing parameter.

5,617,849
RESPIRATOR HAVING THERMOCHROMIC FIT-INDICATING SEAL

James E. Springett, Hudson, Wis., and Leonard W. Barrett, Maplewood, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Sep. 12, 1995, Ser. No. 526,909
Int. Cl.⁶ A62D *5/00*
U.S. Cl. 128—206.24 **12 Claims**



1. A respirator that comprises:
a respirator body configured to fit over at least the nose and mouth of a wearer; and
a thermochromic material positioned on the respirator body such that the thermochromic material makes thermal contact with the wearer's face when the respirator is worn, the thermal contact causing the thermochromic material to change color to allow the wearer to determine if a proper fit is established.

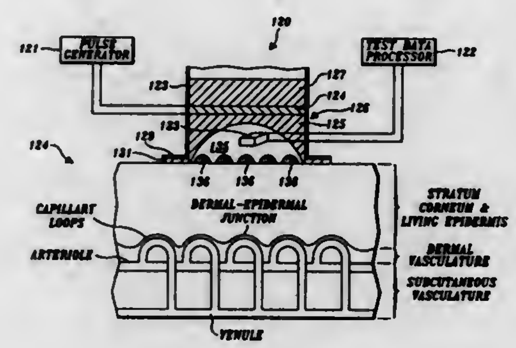
5,617,850
GAS PROBE

Stephen A. Pontzer, Plymouth, Minn., assignor to Gold Standard Medical Corp., Leawood, Kans.
Filed Mar. 24, 1994, Ser. No. 217,244
Int. Cl.⁶ A61B *5/00*
U.S. Cl. 128—632 **25 Claims**

1. A blood gas monitoring system for monitoring blood gas from blood in a blood vessel, the system comprising:
a probe having a probe chamber with a first end and a second end;
a first gas permeable membrane coupled to the probe at the first end of the probe chamber;
sensing means disposed at the second end of the probe chamber for sensing a desired characteristic of the blood gas;
wherein, when the first gas permeable membrane is introduced into the blood vessel, blood gas diffuses through the first gas permeable membrane and throughout the probe chamber and substantially equilibrates with the blood gas in the blood vessel, the sensing means being disposed to sense the desired characteristic of the blood gas in the probe chamber which has substantially equilibrated with the blood gas in the blood vessel once the blood gas in the probe chamber reaches substantial equilibrium with the blood gas in the blood vessel, support means, coupled to the probe for supporting the first gas permeable membrane; and
a second gas permeable membrane coupled to the second end of the probe.

5,617,851
ULTRASONIC TRANSDERMAL SYSTEM FOR WITHDRAWING FLUID FROM AN ORGANISM AND DETERMINING THE CONCENTRATION OF A SUBSTANCE IN THE FLUID

Lev M. Lipkovker, Bellevue, Wash., assignor to Endodermic Medical Technologies Company, Bellevue, Wash.
Division of Ser. No. 961,113, Oct. 14, 1992, Pat. No. 5,421,816. This application Mar. 14, 1995, Ser. No. 403,306
Int. Cl.⁶ A61B *5/00*
U.S. Cl. 128—632 **20 Claims**

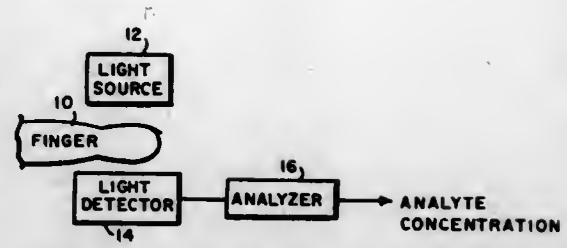


1. A noninvasive apparatus for withdrawing fluid from an organism and determining the concentration of a substance in the fluid, said noninvasive apparatus comprising:
(a) a container;
(b) attachment means for attaching said container to the skin of an organism having a skin;
(c) an ultrasonic transducer positioned in said container for generating ultrasonic energy when energized;
(d) energizing means for energizing said ultrasonic transducer;
(e) focusing means, including a cavity located adjacent to the skin of an organism when said container is attached to the skin of an organism, for focusing the ultrasonic energy generated by said ultrasonic transducer into said organism, said ultrasonic energy focused by said focusing means causing fluid to be withdrawn from said organism through said skin into said cavity;
(f) a substance sensing transducer mounted in said cavity for sensing a substance in said fluid, and
(g) analysis means coupled to said substance sensing transducer for determining the concentration of said substance sensed by said substance sensing transducer.

5,617,852
METHOD AND APPARATUS FOR NON-INVASIVELY DETERMINING BLOOD ANALYTES

Alastair R. MacGregor, Field House, Thriplow Road, Fowlmere, Royston, Hertfordshire SG8 7QT, England
Filed Apr. 6, 1995, Ser. No. 417,752
Int. Cl.⁶ A61B *5/00*
U.S. Cl. 128—633 **8 Claims**

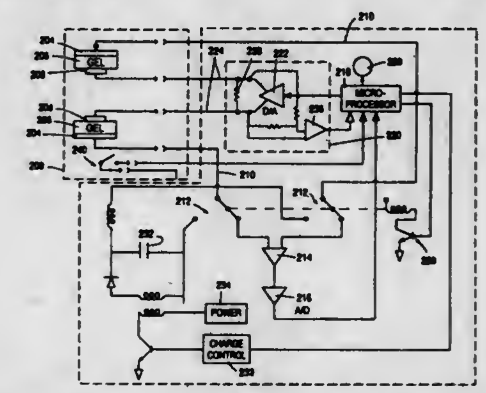
1. Method for determining concentration of blood analytes non-invasively comprising:



illuminating blood carrying tissue with incident light at at least one selected frequency;
collecting light diffusely reflected from or transmitted through the tissue, a portion of the reflected or transmitted light being frequency shifted with respect to the incident light by interaction with blood moving within the tissue; and
analyzing the frequency shifted portion of the light to determine the concentration of blood analytes.

5,617,853
DEFIBRILLATOR ELECTRODE SYSTEM USING A FLEXIBLE SUBSTRATE AND HAVING ELECTRODE TEST FEATURES

Carlton B. Morgan, Bainbridge Island, Wash., assignor to Heartstream, Inc., Seattle, Wash.
Division of Ser. No. 63,631, May 18, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 467,231
Int. Cl.⁶ A61N *1/39;1/04;* **A61B** *5/0408*
U.S. Cl. 128—640 **11 Claims**

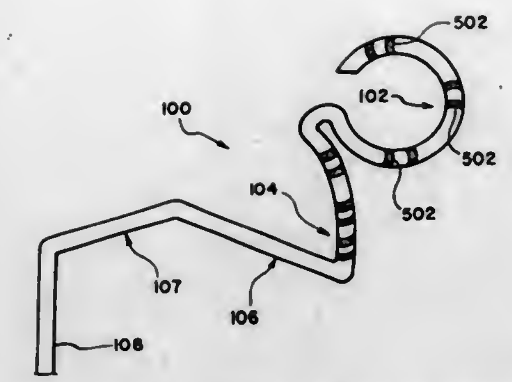


1. A medical electrode instrument system comprising: an electrode; an instrument for sending electrical signals to, or receiving electrical signals from, the electrode; and an electrical interface between the electrode and the instrument; the instrument housing a test signal source selectively connectable to the electrode through the electrode interface and an analyzer to detect a received signal across the electrode and to determine a condition of the medical electrode system from the received signal.

5,617,854
SHAPED CATHETER DEVICE AND METHOD

Anand Munsif, 127 E. Northfield Rd., Livingston, N.J. 07039
Filed Jun. 22, 1994, Ser. No. 264,069
Int. Cl.⁶ A61B *17/36;5/042*
U.S. Cl. 128—642 **24 Claims**

1. A cardiac catheter apparatus for treating atrial fibrillation by selectively mapping and ablating target endocardial portions of predefined cardiac circuitry in atrial cardiac chambers which comprises a plurality of individual preshaped catheters, each catheter comprising:
A. a preshaped, flexible, elongate tubular member manufactured of biocompatible shape memory material having a distal end and a proximal end and at least one lumen extending from said proximal end to said distal end;



B. a guide-wire slidably engaged within said lumen and extending an amount beyond said distal end of said tubular member;

C. a preshaped first curved portion at said distal end of said tubular member for positioning at a target portion of a cardiac chamber upon removal of said guide-wire;

D. a shaft at said proximal end of said tubular member;

E. a means for connecting said first curved portion and said shaft comprising at least one preshaped portion selected from the group consisting of one or more intermediate preshaped curved portions, one or more intermediate preshaped straight portions and combinations thereof;

F. an array of spaced-apart electrodes positioned around an outer surface of at least one part of at least one preshaped portion of said tubular member; and

G. insulated conductor means electrically connecting the individual electrodes to means outside of the catheter for selectively mapping and ablating electrically target portions of cardiac tissue adjacent said electrodes in said cardiac chamber; said plurality of catheters including one catheter having a partially circular shaped distal portion, one catheter having a V-shaped distal portion, one catheter have a distal portion shaped for positioning horizontally of a cardiac chamber and one catheter having a distal portion shaped for positioning vertically of a cardiac chamber whereby lesions formed by the ablations produced by said plurality of catheters create an electrical maze pattern of the same type resulting from a surgical procedure for treating atrial fibrillation.

5,617,855
MEDICAL TESTING DEVICE AND ASSOCIATED METHOD
Jeremy P. Waletzky, 5039 Lowell St., Washington, D.C. 20016, and Peter J. Wilk, 185 W. End Ave., New York, N.Y. 10023
Filed Sep. 1, 1994, Ser. No. 299,571
Int. Cl.⁶ A61B *5/00*
U.S. Cl. 128—653.1 **26 Claims**

1. A medical testing device comprising:

analog-to-digital conversion means for converting to an electrical digital signal a voice-frequency signal originating in a speech by a human speaker;

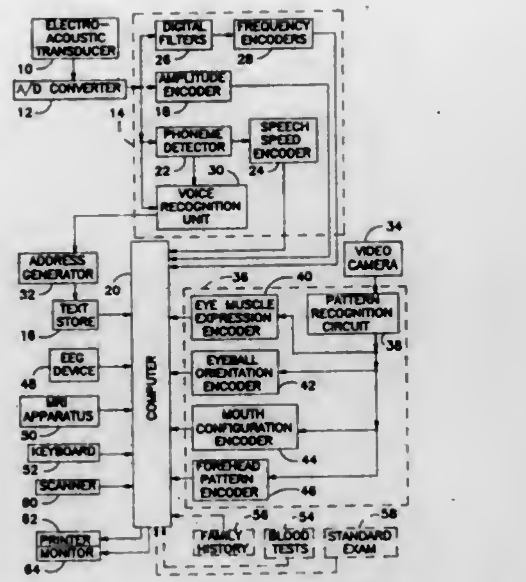
speech analyzing means operatively connected to said analog-to-digital conversion means for analyzing said digital signal to determine a value for a preselected first parameter of said speech indicative of an emotional state coexistent with said speech, said parameter being taken from the group comprising frequency or tone, amplitude or loudness, and speed;

video means for generating a video signal encoding an image of said human speaker's face during said speech;

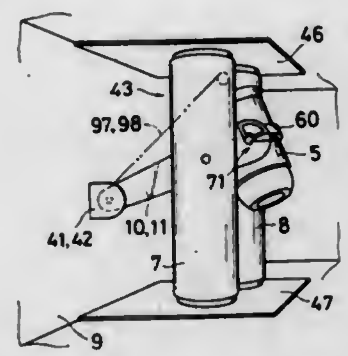
image analyzing means operatively connected to said video means for analyzing said video signal to determine a value for a preselected second parameter characteristic of an emotional expression of said human speaker during said speech;

text encoding means for encoding a text corresponding substantially to said speech; and

correlation means operatively connected to said speech analyzing means, said image analyzing means, and said text encoding means for correlating values of said first parameter and said second parameter with words of said text to characterize an emotional state of said human speaker partially induced by words of said text.



5,617,856
BIOLOGICAL INFORMATION-MEASURING APPARATUS
Itsuro Tamura, Kawachinagano; Atsushi Iida, Osaka; Tsutomu Takae, Osaka, and Masao Wada, Osaka, all of Japan, assignors to Osaka Gas Company Limited, Japan
Filed Sep. 19, 1994, Ser. No. 308,731
Claims priority, application Japan, Sep. 24, 1993, 5-238385; Sep. 24, 1993, 5-238389
Int. Cl.⁶ A61B *5/05*
U.S. Cl. 128—653.1 **10 Claims**



1. A biological information-measuring apparatus which is situated in a shielded room including a ceiling, a floor and a wall, said apparatus comprising:

measuring means for measuring biological information of a subject;

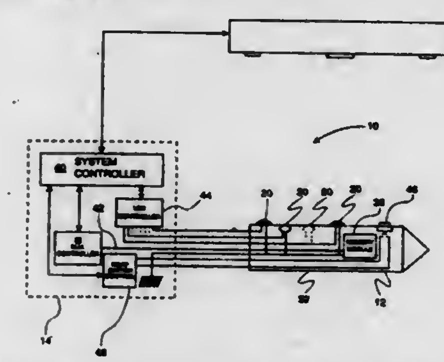
a double housing type support with a pair of supporting pillars for supporting the measuring means disposed therebetween, the supporting pillars each including a top end and a bottom end;

a pair of parallel spaced arms, fixedly disposed between the pair of supporting pillars each arm, having proximal ends and free distal ends and being connected by a connecting member;

a pair of first anchoring means provided on the wall of the shielded room at anchoring positions thereof, the pair of first anchoring means movably anchoring the proximal ends with the wall so that the proximal ends can pivot around a horizontal axis thereof; and

displacing means for angularly displacing the measuring means, the displacing means being provided at one of the free distal ends so that the measuring means can pivot around an axis parallel to the horizontal axis of the proximal ends.

5,617,857
IMAGING SYSTEM HAVING INTERACTIVE MEDICAL INSTRUMENTS AND METHODS
Martin D. Chader; Ivan Faul, both of Boulder; Timothy L. Feaver, Louisville, and Waldean A. Schulz, Boulder, all of Colo., assignors to Image Guided Technologies, Inc., Boulder, Colo.
Filed Jun. 6, 1995, Ser. No. 471,279
Int. Cl.⁶ A61B *5/00*
U.S. Cl. 128—653.1 **19 Claims**



1. An improved imaging system of the type having a medical instrument including means for emitting detectable energy and an instrument body having a work portion, the imaging system further including means for detecting the energy and a processor for determining the location of the medical instrument based on the detected energy, wherein the improvement comprises:

means on or in the medical instrument for storing information relating to the location of the energy-emitting means relative to the instrument body;

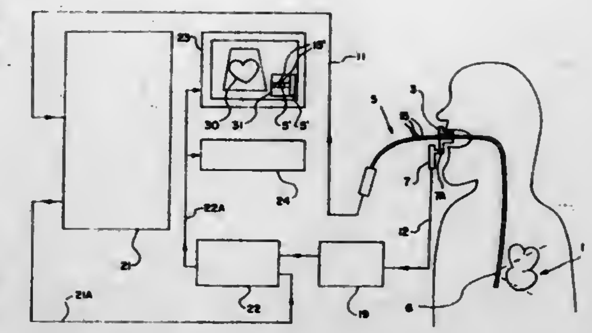
means for transferring the location information from the storing means to the processor upon connection of the medical instrument to the processor, wherein the processor may determine the location of the instrument body in three-dimensional space upon receipt of the location information and upon detection of the emitted energy, wherein the medical instrument further includes an attachment having the storing means and means for emitting detectable energy; and

means for indicating the type of instrument body that is connected to the attachment, the indicating means being formed upon connection of the attachment to the instrument body, and wherein the processor includes means for correlating the location of the work portion relative to the energy-emitting elements based on the type of instrument body that is connected to the attachment.

5,617,858
APPARATUS FOR ENDOSCOPIC OR GASTROSCOPIC EXAMINATION
Giuseppe Taverna, Zürich; Michel Boehrer, Uster, and Rolf Jenni, Zürich, all of Switzerland, assignors to Vingmed Sound A/S, Horten, Norway
Filed Jul. 28, 1995, Ser. No. 503,750
Claims priority, application Norway, Aug. 30, 1994, 943213
Int. Cl.⁶ A61B *5/05;8/12;1/005*
U.S. Cl. 128—653.1 **7 Claims**

1. An apparatus for endoscopic or gastroscopic examination of patients, comprising:

an endoscope having a probe head provided with an imaging transducer, said endoscope being adapted to be inserted through the mouth of a patient,

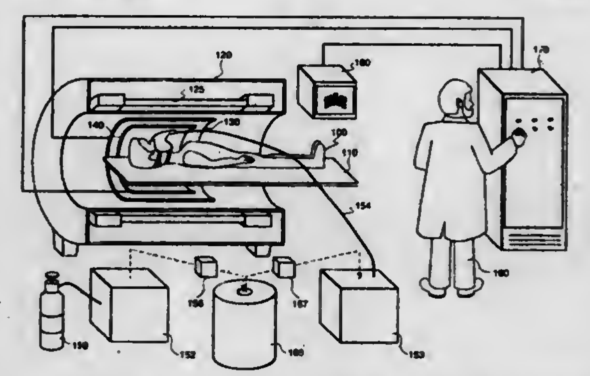


position detection means for providing probe head position information,

said endoscope having a visible distance scale along a length thereof,

said position detection means including a small video camera with a mounting device for holding the camera in a fixed position in relation to the patient's teeth and with the field of view of the camera covering said endoscope and said distance scale thereon, at the point of entering the patient's mouth.

5,617,859
APPARATUS AND METHODS FOR MAGNETIC RESONANCE (MR) IMAGING OF CAVITIES USING FLUIDS POLARIZED AT LOW TEMPERATURES
Steven P. Souza, Williamstown, Mass.; Charles L. Dumoulin, Ballston Lake, N.Y.; Robert D. Darrow, Scotia, N.Y., and Harvey E. Cline, Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed Oct. 2, 1995, Ser. No. 537,574
Int. Cl.⁶ A61B *5/055*
U.S. Cl. 128—653.2 **7 Claims**



1. A magnetic resonance (MR) imaging system for obtaining cavity-selective MR images from a subject comprising:

a) an imaging magnet for applying a substantially uniform magnetic field over said subject;

b) a cryogenic pellet-forming means for freezing a portion of a selected substance to form pellets;

c) a high-field polarizing magnet for polarizing the pellets;

d) a physiologic conditioner means for converting the polarized pellets into a polarized contrast vapor suitable for introduction into said subject;

e) a transfer conduit for routing the polarized contrast vapor from the physiologic conditioner means to said subject;

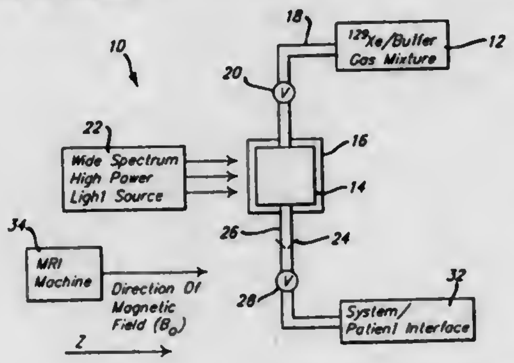
f) an RF transmitter means for transmitting RF energy into said subject of a selected duration, amplitude and frequency to cause nutation of the contrast vapor and other selected tissues within said subject;

g) a gradient means for varying the amplitude of the magnetic field in at least one spatial dimension over time;

h) an RF receive coil for detecting a set of MR response signals from the contrast vapor and other selected tissues within said subject;

i) a receiver means coupled to the RF receive coil for receiving the detected MR response signals;
j) a calculation means for calculating an image from the detected MR response signals;
k) a controller means connected to the RF transmitter means, the receiver means, the calculation means and the gradient means, for activating the RF transmitter means, the receiver means, the calculation means and the gradient means each according to a predetermined MR pulse sequence; and
l) a display means connected to the calculation means for displaying the calculated image to an operator.

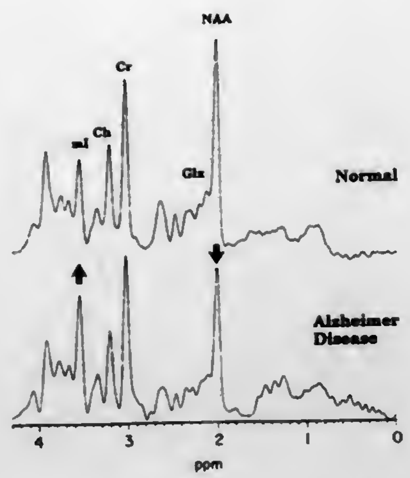
5,617,860
METHOD AND SYSTEM FOR PRODUCING POLARIZED ^{129}XE GAS
Timothy Chupp; Kevin P. Coulter, both of Ann Arbor, Mich.; Eduardo Oteiza, and Ronald Walsworth, both of Cambridge, Mass., assignors to Smithsonian Astrophysical Observatory, Cambridge, Mass., and The Regents of the University of Michigan, Ann Arbor, Mich.
Filed Jun. 7, 1995, Ser. No. 487,137
Int. Cl.^{6} A61B *5/055*
U.S. Cl. 128—653.4 **12 Claims**



1. A system for producing polarized xenon-129 gas, comprising:
a storage tank containing a quantity of non-polarized xenon-129 gas;
a polarization chamber for controllably receiving a quantity of said non-polarized xenon-129 gas from said storage tank, said polarization chamber containing a predetermined quantity of alkali metal having an associated alkali metal vapor;
a tunable broadband light source positioned relative to said polarization chamber for optically pumping said alkali metal vapor, said optically pumped metal vapor causing collisional polarization of said xenon-129 gas; and
means for separating said alkali metal vapor from said polarized xenon-129 gas subsequent to said polarization of said xenon-129 gas.

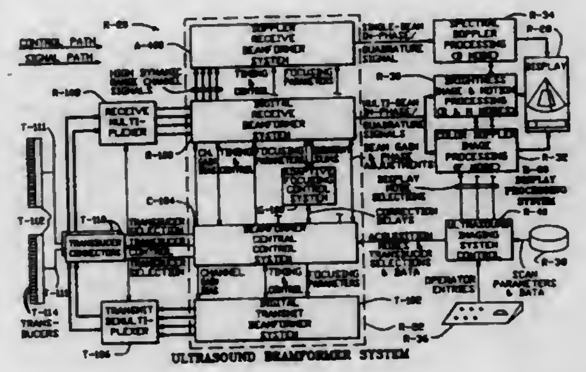
5,617,861
MAGNETIC RESONANCE SPECTRAL ANALYSIS OF THE BRAIN FOR DIAGNOSIS OF CLINICAL CONDITIONS
Brian Ross, Altadena, Calif.; Thomas Ernst, Gundelfingen, Germany, and Roland Kreis, Boll, Switzerland, assignors to Huntington Medical Research Institutes, Pasadena, Calif.
Filed Feb. 16, 1994, Ser. No. 197,099
Int. Cl.^{6} A61B *5/055*
U.S. Cl. 128—653.2 **15 Claims**

5. A method of quantitating metabolites identified by a magnetic resonance spectrum comprising:
defining a volume within the brain;
obtaining a magnetic resonance spectrum of the defined volume;
measuring the visible and invisible water content of the defined volume;



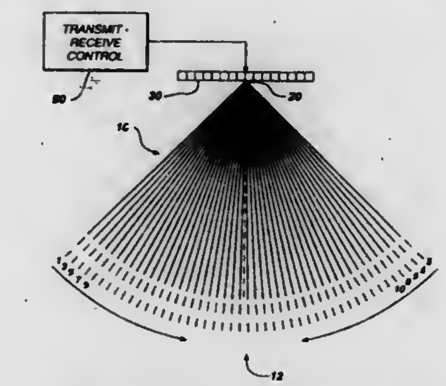
suppressing the signal from water to reveal the spectra from metabolites;
correcting the baseline;
obtaining a magnetic resonance spectrum of a standard;
comparing the signal from the metabolites to the signal from the standard; and
calculating the in vivo concentration of the metabolites.

5,617,862
METHOD AND APPARATUS FOR BEAMFORMER SYSTEM WITH VARIABLE APERTURE
Christopher R. Cole, Cupertino; Albert Gee, Los Altos, and Laurence J. Newell, Saratoga, all of Calif., assignors to Acuson Corporation, Mountainview, Calif.
Filed May 2, 1995, Ser. No. 432,547
Int. Cl.^{6} A61B *8/00*
U.S. Cl. 128—661.01 **51 Claims**



1. An ultrasonic imaging system for imaging an object comprising:
a plurality of transducer arrays, wherein the transducer arrays have a plurality of ultrasonic transducer elements;
a transmit multiplexer coupled between the transmitter and the transducer arrays to selectively connect a set of the transducer arrays to the transmitter;
a separate receive multiplexer coupled between the receiver and the transducer array to selectively connect a set of the transducers to the receiver to thereby enable independent placement of transmit and receive apertures within the transducer arrays.

5,617,863
ULTRASONIC DIAGNOSTIC IMAGE SCANNING TECHNIQUES
David N. Roundhill, Bothell; Mikhail Starosta, Snohomish; David Rust, and Clifford R. Cooley, both of Seattle, all of Wash., assignors to Advanced Technology Laboratories, Inc., Bothell, Wash.
Continuation-in-part of Ser. No. 319,757, Oct. 7, 1994, Pat. No. 5,438,994. This application Jun. 12, 1995, Ser. No. 489,668
The portion of the term of this patent subsequent to Oct. 7, 2014, has been disclaimed.
Int. Cl.^{6} A61B *8/00*
U.S. Cl. 128—661.01 **18 Claims**



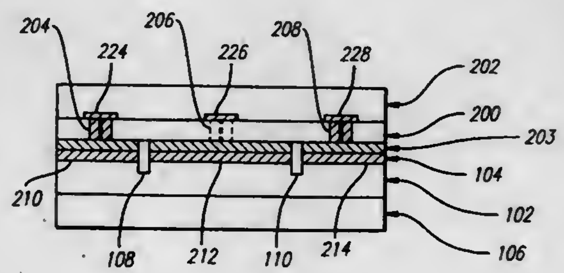
1. A method for scanning an image field with pulses of ultrasonic energy which are transmitted in a plurality of beam directions extending spatially adjacent to each other over said image field from one lateral extreme of said image field and through the center of said image field to an opposite lateral extreme, comprising:
transmitting in a first beam direction and then in a second beam direction which directions are substantially respectively located at said lateral extremes of said image field; and thereafter
transmitting in a third beam direction which is adjacent and laterally interior to said first beam direction and then in a fourth beam direction which is adjacent and laterally interior to said second beam direction; and then
continuing to scan said image field by transmitting in beam directions which are alternately on opposite lateral interior sides of previously transmitted beam directions.

5,617,864
METHOD AND APPARATUS FOR POSITIONING AN ULTRASONIC TRANSDUCER AND A DISPLAY SCREEN
James R. Stouffer; Yujun Liu, both of Ithaca, and Steven K. Newman, Lansing, all of N.Y., assignors to Animal Ultrasound Services, Inc., Ithaca, N.Y.
Filed Aug. 4, 1995, Ser. No. 511,563
Int. Cl.^{6} A61B *8/00*
U.S. Cl. 128—662.03 **16 Claims**

1. An ultrasonic transducer and display screen positioning apparatus, operatively connected to ultrasonic equipment capable of capturing a real time ultrasonic image of an animal or carcass comprising:
a) a handle;
b) a transducer housing connected to said handle for securing said ultrasonic transducer;
c) a display screen housing integral with said handle for securing said display screen connected to said transducer housing such that said display screen can display an image produced by ultrasonic scanning with said ultrasonic transducer in real time;
d) a signaling device operatively associated with said ultrasound equipment; and,

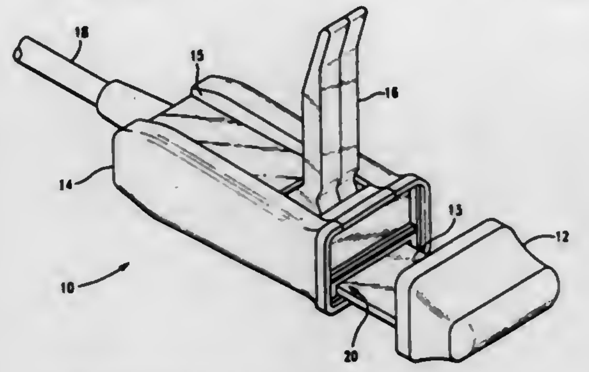
e) a ultrasonic transducer capable of providing electrical data to said ultrasound equipment such that an image of said animal or carcass being ultrasonically scanned is displayed on said display when the ultrasonic transducer is actuated.

5,617,865
MULTI-DIMENSIONAL ULTRASONIC ARRAY INTERCONNECT
Grazyna Palczewska, and Ron Ho, both of Seattle, Wash., assignors to Siemens Medical Systems, Inc., Iselin, N.J.
Filed Mar. 31, 1995, Ser. No. 414,980
Int. Cl.^{6} A61B *8/00*; H04R *17/00*
U.S. Cl. 128—662.03 **7 Claims**



1. An ultrasonic transducer array comprising:
A. a piezoelectric ceramic layer separated in a longitudinal direction into n transducer groups, with each group separated in a transverse direction into m transducer elements;
B. a flex circuit that includes:
1) a flexible, electrically non-conductive base layer;
2) for each transducer element, an electrically conductive via through the base layer in electrical contact with the respective transducer element;
3) an electrically conductive layer, on a bottom side of the flex circuit, that is divided into a plurality of flex circuit electrodes, with each flex circuit electrode being in electrical contact with a respective one of the transducer elements; and
4) for each group, electrically conductive traces that are electrically connected by vias to predetermined ones of the flex circuit electrodes and to external driving circuitry, and are located on a top side of the flex circuit
in which the electrically conductive layer, and thus the flex circuit electrodes, as well as the electrically conductive traces and vias are pre-patterned onto the flexible base layer, the flex circuit thereby forming a pre-patterned, pre-aligned unit.

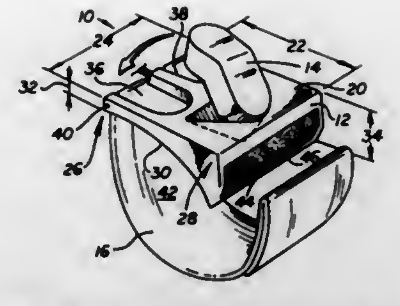
5,617,866
MODULAR TRANSDUCER SYSTEM
Vaughn R. Marian, Jr., Saratoga, Calif., assignor to Acuson Corporation, Mountain View, Calif.
Filed Jan. 5, 1996, Ser. No. 584,332
Int. Cl.[6] A61B *8/00*; H05K *1/00*
U.S. Cl. 128—662.3 **40 Claims**



1. A modular transducer system, comprising:
an ultrasound transducer module including an ultrasound transducer and a transducer printed wiring board, the transducer board having a plurality of electrical contact pads disposed on a portion of one surface and connected for carrying electrical signals between the pads and the transducer;
a system printed wiring board, the system board having a plurality of electrical contact pads disposed on a portion of one surface in corresponding opposition to contact pads of the transducer board and defining opposed pairs of contact pads, the system board having wiring termination pads spaced apart from the contact pads, and predetermined contact pads being electrically connected with predetermined wiring termination pads;
a contact module located between the transducer board and the system board, the contact module having a system surface and an opposed transducer surface, and electrical conductors extending between the opposed surfaces and aligned with opposed pairs of contact pads; and
aligning and clamping means for supporting the system board, the contact module, and the transducer board, for aligning the opposed pairs of contact pads with corresponding contact module conductors, and for clamping the contact pad portion of the transducer board and the system board to the contact module,
whereby an electrical connection is established between the system board and the ultrasound transducer, and the transducer module is supported by the aligning and clamping means.

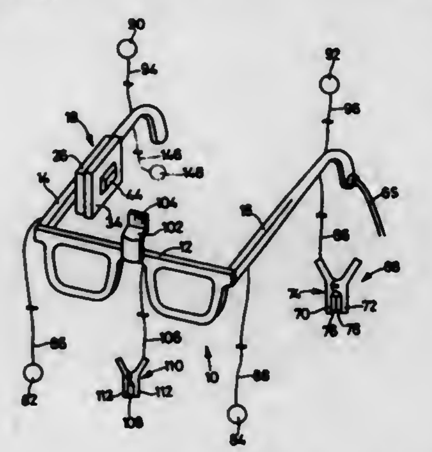
5,617,867
TONOMETER MOUNTING DEVICE
Robert D. Butterfield, Poway; Charles R. Holdaway; Stephen A. Martin, both of San Diego; Stanley J. Boyer, Carlsbad, and Christine A. Giurdanella-Renzi, San Diego, all of Calif., assignors to IVAC Medical Systems, Inc., San Diego, Calif.
Filed Nov. 23, 1994, Ser. No. 344,252
Int. Cl.[6] A61B *5/00*
U.S. Cl. 128—672 **22 Claims**

1. A mounting device for mounting a non-invasive tonometry sensor adjacent a preselected artery in a patient's wrist, comprising:
a base portion having an essentially planar outward face and a generally arcuate inward face, said outward face having a length and a width, said inward face being adapted to generally conform to an anterior side of the patient's wrist and having an arcuate length that is greater than said outward face length, said base portion having a thickness defined by a distance between said outward and inward faces, said base



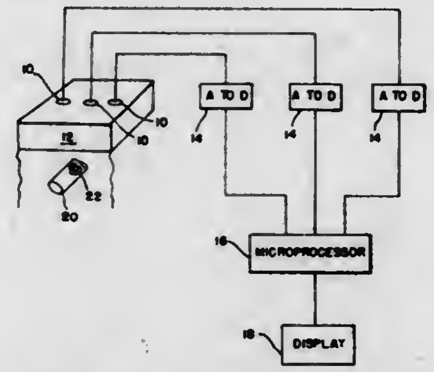
portion having two windows near a first end of said base portion, said thickness being substantially greater at a second end of said base portion distal from said windows;
a sensor housing having the tonometry sensor near one end of said housing, said housing being movably attached to said base portion such that said sensor is selectively positionable in one of said windows and thereby adapted to be put into operative communication with tissue overlying the preselected artery;
said mounting device having a combined thickness defined by said base portion thickness and a height of said sensor housing, said combined thickness being essentially equal near said first and second ends of said base portion to thereby facilitate a stable placement of the sensor relative to the preselected artery, and said sensor housing and said base portion having a combined distribution of weight that is essentially equal at said first and second ends of said base portion, respectively, to thereby further facilitate said stable placement of the sensor relative to the preselected artery; and
a strap member for releasably securing said base portion about the patient's wrist in a preselected position.

5,617,868
PULSE WAVE DETECTING APPARATUS
Chikao Harada, Komaki, and Yuji Matsubara, Nagoya, both of Japan, assignors to Colin Corporation, Aichi-ken, Japan
Filed Nov. 22, 1994, Ser. No. 347,151
Int. Cl.[6] A61B *5/00*
U.S. Cl. 128—672 **21 Claims**



1. An apparatus for detecting a pressure pulse wave produced from an arterial vessel of a living subject, comprising:
a pulse wave sensor including at least one pressure sensing element and having a press surface in which said pressure sensing element is provided, said press surface of said pulse wave sensor being adapted to be pressed against said arterial vessel of said subject via a body surface of the subject above the arterial vessel, so that the pressure sensing element detects said pressure pulse wave produced from the arterial vessel;
a support member supporting said pulse wave sensor such that the pulse wave sensor is advanceable away from, and retractable toward, said support member, the support member being adapted to be worn on said subject such that said press surface of the pulse wave sensor is opposed to said body surface of the subject;
an actuator located entirely on the support member provided between said support member and said pulse wave sensor, said actuator deforming, upon application thereto of an electric current, thereby providing a pressing force to press the pulse wave sensor against said arterial vessel of said subject via said body surface of the subject.

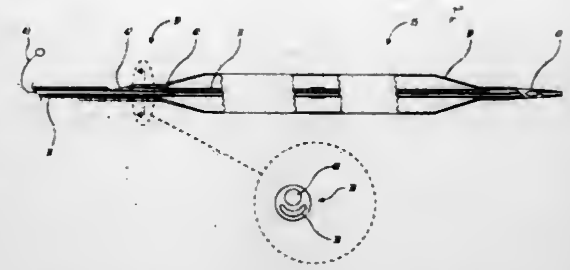
5,617,869
DEVICE AND METHOD FOR LOCATING FLOW BLOCKAGE IN A THREE-DIMENSIONAL OBJECT
Stephen A. Austin, Amston; Andrew J. Hull, New London; Norman L. Owsley, Gales Ferry, and Mark S. Peloquin, New London, all of Conn., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Jun. 16, 1995, Ser. No. 491,385
Int. Cl.[6] A61B *5/02*
U.S. Cl. 128—691 **18 Claims**



1. A method for detecting arterial blockage in a body containing blood vessels, comprising the steps of:
positioning an array of sensors on a surface of the body;
detecting waveform energy on the body surface by said positioned array of sensors;
identifying a change in waveform energy on the surface of the body by at least one sensor in said array of sensors;
determining at least spectral, directional, and intensity waveform energy characteristics sensed by each sensor in said array of sensors; and
locating the arterial blockage from said waveform energy characteristics, wherein said step of positioning includes spacing each sensor in said array from an adjacent sensor by a distance at least one-half wavelength of the waveform energy being measured.

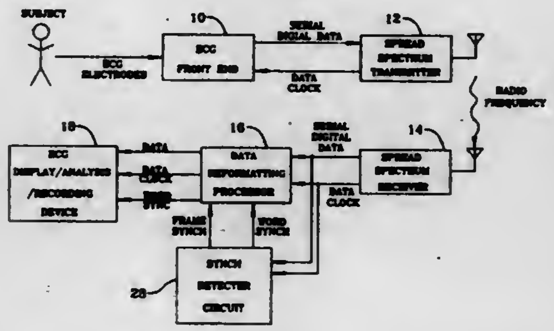
5,617,870
INTRAVASCULAR FLOW MEASUREMENT SYSTEM
Roger Hastings, Maple Grove, and Paul Feld, Buffalo, both of Minn., assignors to Scimed Life Systems, Inc., Maple Grove, Minn.
Continuation-in-part of Ser. No. 55,702, Apr. 29, 1993, Pat. No. 5,346,508. This application Sep. 12, 1994, Ser. No. 304,565
Int. Cl.[6] A61B *5/00*
U.S. Cl. 128—692 **3 Claims**

1. An intravascular flow measurement device comprising:
an elongate perfusion body having a distal end, a proximal end, and a main lumen, said main lumen having an interior wall;
a sensor coil located on the interior wall of said main lumen;
an inlet aperture proximal to said sensor coil, communicating with said main lumen; and



an outlet aperture distal to said sensor coil, communicating with said main lumen.

5,617,871
SPREAD SPECTRUM TELEMETRY OF PHYSIOLOGICAL SIGNALS
Fremont W. Burrows, Woodinville, Wash., assignor to Quinton Instrument Company, Bothell, Wash.
Continuation of Ser. No. 146,260, Nov. 2, 1993, Pat. No. 5,381,798. This application Dec. 1, 1994, Ser. No. 347,750
Int. Cl.[6] A61B *5/0402*
U.S. Cl. 128—696 **24 Claims**

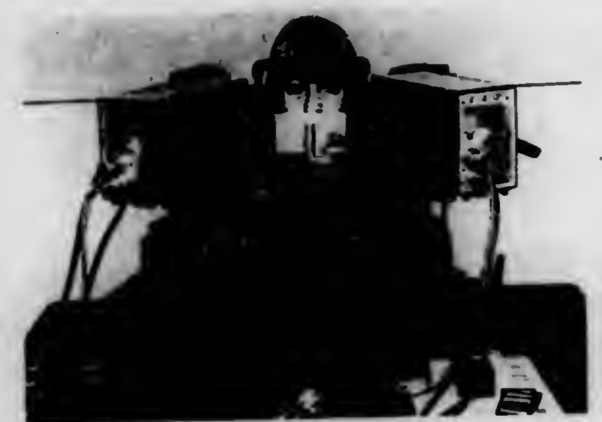


1. A spread spectrum telemetry system for the acquisition of physiological signals from a patient and transmission of said signals to a data receiving device, said system comprising:
a first device for the acquisition of the desired physiological data from the patient and for processing a physiological signal consisting of a data stream corresponding thereto;
means for producing a data stream representative of a predetermined code sequence;
said first device further including a spread spectrum signal transmission device which combines said data stream representative of said physiological signal with said data stream representative of a predetermined code sequence to form a combined data transmission signal which is transmitted continuously as a spread spectrum signal from said first device over a wide frequency bandwidth;
a second device including a spread spectrum signal receiving device which receives said spread spectrum signal from said first device;
a demodulation processor associated with said second device which separates said data stream representative of said physiological signal from said data stream representative of a predetermined code sequence and converts said data streams into a serial data stream and a clock signal;
a physiological data receiving device associated with said second device for the receipt and utilization of said data stream representative of said physiological signal; and
a synchronization detector in said second device for searching said spread spectrum signal for framing words and said synchronization detector using said framing words to synchronize

said spread spectrum signal and allow said data stream representative of said physiological signal to be separated therefrom.

5,617,872
HYPERSENSITIVE CONSTRICTION VELOCITY METHOD FOR DIAGNOSING ALZHEIMER'S DISEASE IN A LIVING HUMAN

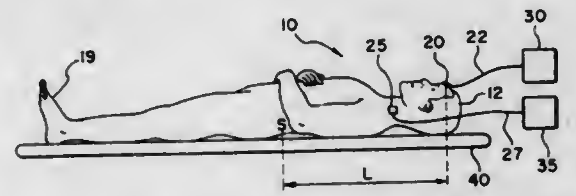
Leonard F. M. Scinto, Cambridge, and Kirk R. Daffner, Newton, both of Mass., assignors to Beth Israel Hospital Assoc. Inc., Boston, Mass.
Continuation-in-part of Ser. No. 279,795, Jul. 25, 1994, abandoned. This application May 23, 1995, Ser. No. 447,630
Int. Cl.⁶ A61B *13/00*
U.S. Cl. 128—745 **2 Claims**



1. A non-invasive method for diagnosing Alzheimer's disease in a living human subject, said diagnostic method comprising the steps of:
providing non-invasive apparatus means for
(a) introducing photostimulating visible light of predetermined wavelength and intensity to the eye on-demand sufficient to cause a constriction of the pupil, and
(b) determining the velocity of pupil constriction caused by said introduced photostimulating visible light;
identifying one eye in the living human subject as a targeted eye;
administering at least one neural transmitter mediator to said targeted eye of the living human subject in an amount insufficient to cause a marked change in pupillary dynamic response in a person not afflicted with Alzheimer's disease, said neural transmitter mediator being selected from the group consisting of cholinergic antagonists and agonists;
waiting a predetermined interval of time for said administered neural transmitter mediator to act upon said targeted eye; then
introducing photostimulating visible light of predetermined wavelength and intensity to the targeted eye sufficient to cause a constriction of the pupil using said non-invasive apparatus means; and
determining pupil constriction velocity for said photostimulated targeted eye using said non-invasive apparatus means, a marked decrease in pupil constriction velocity for said targeted eye with respect to a pre-established normative standard diagnostically establishing that living human subject as being afflicted with Alzheimer's disease.

5,617,873
NON-INVASIVE METHOD AND APPARATUS FOR MONITORING INTRACRANIAL PRESSURE AND PRESSURE VOLUME INDEX IN HUMANS

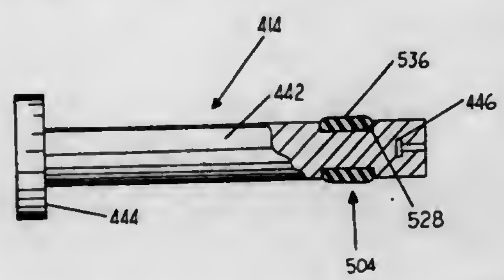
William T. Yost, Newport News, and John H. Cantrell, Jr., Yorktown, both of Va., assignors to The United States of America as represented by the Administrator, of the National Aeronautics and Space Administration, Washington, D.C.
Continuation-in-part of Ser. No. 297,474, Aug. 25, 1994, abandoned. This application May 23, 1995, Ser. No. 449,473
Int. Cl.⁶ A61B *5/05*
U.S. Cl. 128—748 **9 Claims**



1. A method for non-invasive measurement of intracranial pressure and pressure volume index in a patient, comprising the steps of:
(a) calibrating a measuring device by introducing known changes in intracranial pressure and reading the corresponding pressure changes with the measuring device;
(b) inducing known changes in the volume of the cerebrospinal fluid while measuring the corresponding changes in intracranial pressure with the calibrated measuring device;
(c) obtaining two sets of corresponding values for change in volume and change in intracranial pressure; and
(d) obtaining values for the pressure volume index and the intracranial pressure for the patient based on the values for change in volume and change in intracranial pressure.

5,617,874
AUTOMATED BIOPSY INSTRUMENT

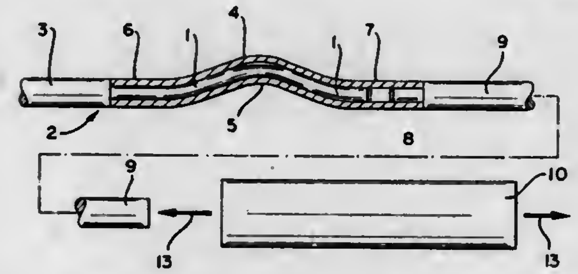
Gregory W. Baran, 8160 Belle Vernon Rd., Novelty, Ohio 44072
Continuation-in-part of Ser. No. 52,788, Apr. 23, 1993, Pat. No. 5,400,798, which is a continuation-in-part of Ser. No. 905,832, May 29, 1992, abandoned, which is a continuation of Ser. No. 686,785, Apr. 17, 1991, Pat. No. 5,125,413, which is a continuation of Ser. No. 330,230, Mar. 29, 1989, Pat. No. 5,025,797. This application Dec. 6, 1994, Ser. No. 349,936
Int. Cl.⁶ A61B *10/00*
U.S. Cl. 128—753 **18 Claims**



1. An apparatus for acquiring a biopsy specimen comprising:
a biopsy actuator;
a cannula having a predetermined inner diameter, a distal end for insertion in the body of a patient and an opposing proximal end attached to the biopsy actuator;
a stylet attached to the biopsy actuator having a predetermined outer diameter commensurate with the inner diameter of the cannula and being receivable within the cannula by way of the proximal end of the cannula; and
means for rapidly advancing the distal end of the cannula beyond the distal end of the stylet to acquire a biopsy specimen;
the biopsy actuator comprising a casing enclosing a sealed chamber in fluid communication with the cannula for creating a low-pressure area in the sealed chamber and the cannula when the cannula is advanced during acquisition of a biopsy specimen;
the biopsy actuator further comprising a coupling for connection of the sealed chamber with a low-pressure device in fluid communication therewith.

5,617,875
INTERLOCKING GUIDEWIRE CONNECTOR

Michael Schwager, Winterthur, Switzerland, assignor to Schneider (Europe) A.G., Bulach, Switzerland
Filed Apr. 11, 1995, Ser. No. 419,779
Claims priority, application European Pat. Off., Apr. 11, 1994, 94105567
Int. Cl.⁶ A61B *5/00*
U.S. Cl. 128—772 **5 Claims**

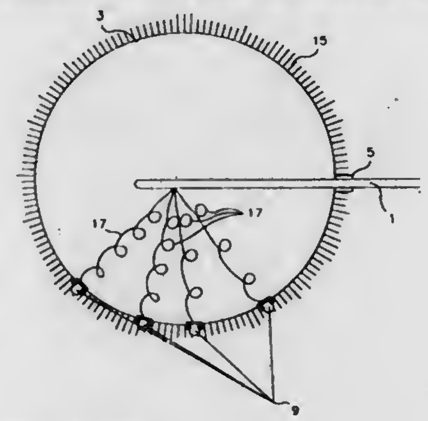


1. A guidewire attachment assembly comprising:
(a) an essentially straight elongated member; and
(b) a resilient tubular member preshaped in a non-straight configuration and adapted to assume a straighter configuration upon an application of force thereto;
wherein the resilient tubular member is adapted to receive the elongated member while the resilient tubular member is in the straighter configuration.

5,617,876
APPARATUS FOR EXAMINING THE FUNCTIONING OF BODY STRUCTURES COMPRISING SMOOTH MUSCLE WALLS

Wilhelmus A. van Duyl, Rotterdam, Netherlands, assignor to LES Enterprises Laborie, Inc., Quebec, Canada
Filed Sep. 19, 1994, Ser. No. 307,432
Int. Cl.⁶ A61B *5/103*
U.S. Cl. 128—780 **7 Claims**

1. An apparatus for measuring the micromotion of the wall of a



hollow organ comprising:
a catheter having a first end and a second end;
an inflatable balloon disposed over the first end of said catheter, said inflatable balloon being fluid tightly sealed to said catheter at a position intermediate said first and second ends;
at least four electrodes affixed to an inner surface of said balloon, said at least four electrodes being spaced apart from one another when said inflatable balloon is at least partially inflated; and
a respective electrically conductive lead electrically connected to each of said at least four electrodes, each said respective electrically conductive lead having an electrically insulative covering thereover, each said respective electrically conductive lead passing through said catheter and extending beyond said second end thereof;
whereby, in use, said catheter with said deflated balloon attached is inserted into hollow organ and said balloon is at least partially inflated with a liquid having a predetermined electrical resistivity, whereby the wall of the balloon is pressed against the wall of said organ so that said electrodes will move with movement of the organ wall, whereby movement of said electrodes produces a variation in resistance between said electrodes, which is measured and compared to a calibration of the apparatus to determine the motion of the wall.

5,617,877
METHOD FOR ACIDIFYING AN EJACULATE OF SEMEN

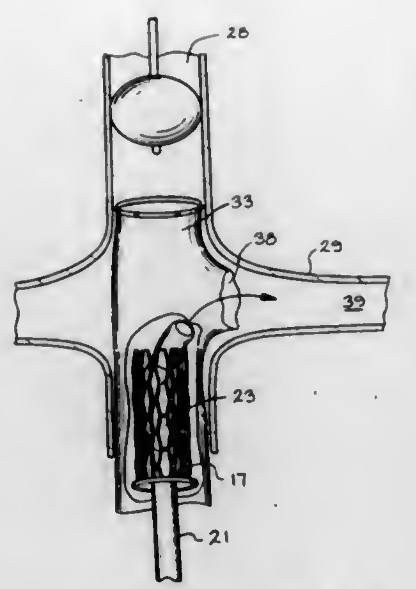
Thomas R. Moench, 703 Stags Head Rd., Baltimore, Md. 21286-1446, and Richard A. Cone, 225 W. Lafayette Ave., Baltimore, Md. 21217
Division of Ser. No. 266,777, Jun. 29, 1994. This application May 17, 1995, Ser. No. 439,171
Int. Cl.⁶ A61F *6/06*
U.S. Cl. 128—837 **10 Claims**

1. A method for acidifying an ejaculate of semen, comprising the steps of:
a) applying a dose of an acidic buffer to an area, wherein said dose of said acidic buffer has a buffering capacity to maintain a pH $\leqq 5$ after addition of at least 15 mg of sodium hydroxide and wherein said acidic buffer is comprised of at least one polymer comprised of carboxylated monomers; and
b) allowing said ejaculate to contact said polymers.

5,617,878
STENT AND METHOD FOR TREATMENT OF AORTIC OCCLUSIVE DISEASE

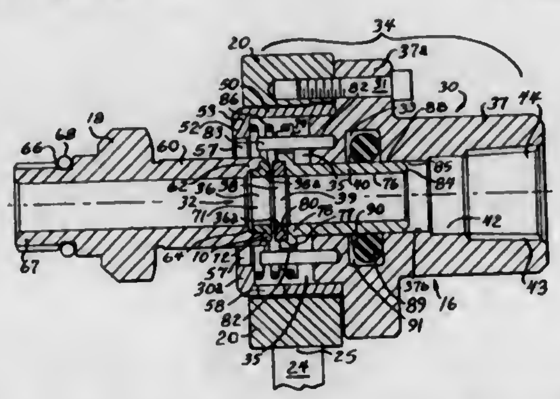
Syde A. Taheri, 268 Dan-Troy, Williamsville, N.Y. 14221
Filed May 31, 1996, Ser. No. 656,671
Int. Cl.⁶ A61B *19/00*
U.S. Cl. 128—898 **8 Claims**

1. A method for treating arterial disease at an intersection of two arteries, using a graft and stent, comprising the steps of:
providing a graft adapted to be inserted into an artery to be treated;
inserting said graft using a balloon catheter in positioning said graft to a point of intersection of two arteries to be treated;



identifying a point within said graft located at the intersection of the arteries to be treated;
manufacturing an opening in said graft at the point of said intersection of said arteries to be treated;
inserting a stent through said opening thereby creating a pathway between said arteries to be treated;
affixing said stent to said graft at the opening;
whereby the cooperation of the graft and stent inserted through the opening ensures the flow of blood at the intersection of the arteries to be treated.

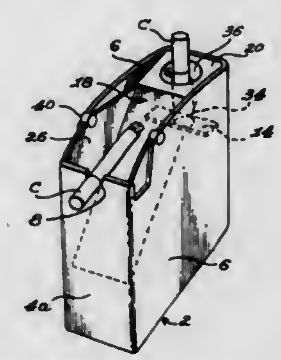
5,617,879
SEALING ARRANGEMENT FOR A COOLANT UNION HAVING A FLOATING SEAL ASSEMBLY
Zbigniew Kubala, Waukegan, Ill., assignor to Deublin Company, Waukegan, Ill.
Filed Feb. 17, 1995, Ser. No. 390,490
Int. Cl.^{6} F16L *17/06;33/16*
U.S. Cl. 285—95 **15 Claims**



1. In a fluid coupling device including a housing having a fluid inlet, a fluid outlet, and a fluid passageway through said housing which communicates said fluid inlet with said fluid outlet, said fluid passageway defining an inner surface for said housing; and a seal assembly located within said fluid passageway and including a cylindrical seal support member having an outer surface engaging said inner surface of said housing, said seal support member being adapted for axial sliding movement within said fluid passageway along said inner surface of said housing; a sealing arrangement for substantially preventing leakage forward of said seal assembly between said engaging surfaces of said support member and said housing, said sealing arrangement comprising:

an annular seal member located in an annular groove defined in said inner surface of said housing, said seal member sealingly engaging the cylindrical seal support member;
the width of said annular groove in a direction axially of said fluid passageway being greater than the outer diameter of said seal member and with the depth of said annular groove in a direction radially of said fluid passageway being greater than the outer diameter of said seal member which permits said seal member to axially translate within said groove in response to axial sliding movement of said support member within said fluid passageway; and
an annular back-up ring encircling said seal support member, said back-up ring having a radially projecting portion extending into said groove, said projecting portion of said back-up ring defining a slanting surface for a corner of the groove and the seal support member, the slanting surface of said back-up ring facing said annular seal member and being engaged by said seal member during relative axial movement during fluid pressurization of said seal support member between said seal support member and said housing for limiting the movement of said annular seal member within said groove to provide a seal between the support member add the housing during fluid pressurization.

5,617,880
ASHTRAY WITH CIGARETTE EXTINGUISHER
Louis Landuydt, 925, boul. Laird, Suite 411, Montreal, Quebec, Canada
Filed May 30, 1996, Ser. No. 655,792
Int. Cl.^{6} A24F *19/14*
U.S. Cl. 131—237 **10 Claims**



1. An ashtray with a cigarette extinguisher comprising an ash and cigarette butts receptacle having a receptacle upper portion, a receptacle closure, pivot means for pivoting said receptacle closure to said receptacle upper portion for pivoting between a closed position closing said receptacle and an open position giving access to said receptacle, biasing means biasing said cover to closed position, a tubular cigarette extinguisher carried by said receptacle closure and having an inlet end and an outlet end directed toward the inside of said receptacle, and an extinguisher closure at said outlet end, said extinguisher closure closing said outlet end when said receptacle closure is in closed position and opening said outlet end when said receptacle closure is in open position whereby a cigarette can be inserted into said tubular extinguisher to abut said extinguisher closure and become extinguished when both closures are in closed position and the extinguished cigarette can be discharged from said extinguisher through said outlet end directly into said receptacle when said first closure is in open position.

5,617,881
ROD FORMED SMOKING PRODUCT
Peter W. Kossmehl, Seelbach; Edgar Mentzel, Quickborn; Henning Seidel, Mechtersen; Wolfgang Wildenau, Bargfeld-Stegen, and Hans Noe, Quickborn, all of Germany, assignors to H. F. & PH. F. Reemtsma GmbH Co., Hamburg, Germany
Filed Oct. 7, 1994, Ser. No. 320,065
Claims priority, application Germany, Oct. 7, 1993, 43 34 222/1
Int. Cl.^{6} A24C *5/40*
U.S. Cl. 131—328 **21 Claims**

1. A rod-shaped smoking product comprising:
a) a strand-like filler rod of cut or comminuted smoking tobacco; and
b) a mantle comprising one or more layers of reconstituted tobacco sheets, wherein at least one layer comprises:
i) about 75–100% by weight of tobacco constituents including tobacco cellulose and tobacco extract, wherein the tobacco cellulose is obtained from the group consisting of tobacco leaf, scrap, rib, stalk, and mixtures thereof, where the ratio of leaf and scrap material to rib and stalk material is in the range of approximately 1:1.1 to 1:5;
ii) about 20% by weight or greater of a water-soluble tobacco extract;
iii) 0 to about 20% by weight of extraneous cellulose material; and
iv) 0 to about 15% by weight of additives selected from the group consisting of binders, fillers, burn-off agents, and aromatic substances.

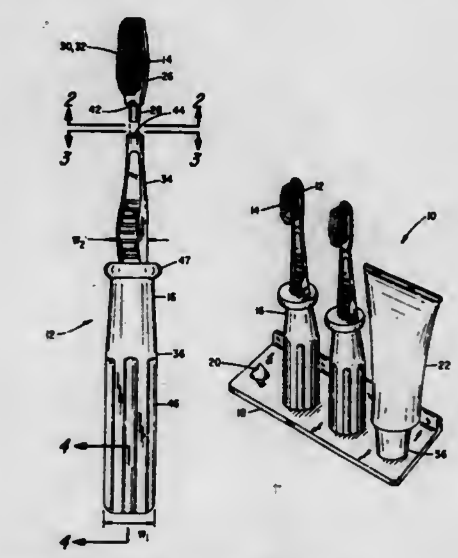
5,617,882
TOBACCO SMOKING ARTICLE FILTER WITH BASALT FIBERS
Jury G. Bushuev; Stanislav P. Polovnikov, both of Moscow; Foat A.-K. Fekhretdinov, Moskovskaya oblast; Sergei A. Karaoglanov, Moscow, and Zhanna S. Ivanenko, Moskovskaya oblast, all of Russian Federation, assignors to Nauchno-Proizvodstvennoe Obiedinenie "Kompozit", Moskovskaya, Russian Federation
Filed Nov. 2, 1994, Ser. No. 333,283
Int. Cl.^{6} A24D *1/04;3/14*
U.S. Cl. 131—331 **4 Claims**

1. A tobacco smoking article comprising a tobacco rod and a filter unit containing both organic and inorganic fibers wherein the inorganic fibers are basalt fibers with diameter of no more than 0.6 Mm.

5,617,883
REDUCING AGENTS FOR PERMANENT WAVING OF HAIR
Andrew Savaides, Norwalk; Thomas M. Schultz, Ridgefield; Sanae Kubo, Darien, all of Conn., and Edward Borish, Mahwah, N.J., assignors to Shiseido Co., Ltd., Tokyo, Japan
Filed Sep. 14, 1994, Ser. No. 305,574
Int. Cl.^{6} A45D *7/06;* **A61K** *7/09*
U.S. Cl. 132—205 **15 Claims**

1. A hair reducing or permanent waving lotion for use in the permanent waving of hair, said lotion comprising
A. between about 5% and 50% by weight of the total composition of a reducing agent selected from the group consisting essentially of glyceryl monothiopropionate, glyceryl thiolactate, and combinations of glyceryl monothiopropionate and glyceryl thiolactate whereby said selected reducing agent comprises the sole reducing agent in said lotion;
B. between about 2% and 6% by weight of an ionic or non-ionic detergent;
C. between about 1% and 3% by weight of ammonium chloride;
D. between about 2% and 5% by weight of a penetrating agent; and
E. one or more agents selected from the group consisting of protein hydrolyzates, chelating agents, wetting agents, fragrances, conditioning agents and water.

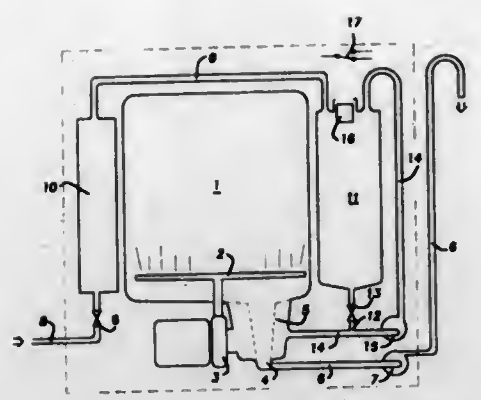
5,617,884
DENTAL HYGIENE SYSTEM WITH DETACHABLE HEAD TOOTHBRUSH
Duane M. Allison, 1250 Ryan Ave. East, Maplewood, Minn. 55109
Filed Aug. 17, 1994, Ser. No. 291,863
Int. Cl.^{6} A46B *9/04;17/00;* **A47B** *81/02*
U.S. Cl. 132—310 **21 Claims**



1. A dental hygiene apparatus, comprising:
(a) a manual toothbrush with a head and a handle, said head detachably connected to said handle and said handle having a tapered portion and an enlarged portion, said enlarged portion being adapted to provide a secure, comfortable grip to persons with limited use of the hands,
(b) rack;
(c) a plurality of projections on said rack, said plurality of projections having a spade shaped configuration; and
(d) a selected one of said projections mating with a corresponding recess on said enlarged portion of said handle.

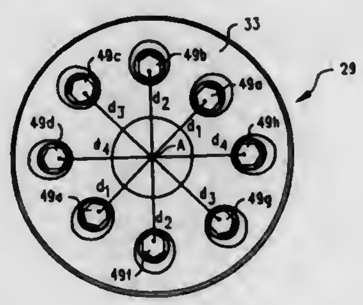
5,617,885
WASHING MACHINE WITH WATER RECOVERY ARRANGEMENT
Giovanni Centis, Fontanafredda, Italy, assignor to Electrolux Zanussi Elettrodomestici S.p.A., Pordenone, Italy
Filed Feb. 21, 1995, Ser. No. 391,581
Claims priority, application Italy, Feb. 25, 1994, PN94A0011
Int. Cl.^{6} B08B *13/00*
U.S. Cl. 134—58 D **4 Claims**

1. A washing machine having a water recovery arrangement, comprising:
a wash tank;
a normally closed water supply circuit for supplying fresh water to the wash tank;
program control means for controlling the water supply circuit to perform operating cycles; and
a volumetric metering reservoir for storing water from one of the operating cycles for re-use during a subsequent one of the operating cycles, wherein said volumetric metering reservoir (11) is a part of the water supply circuit (8–14) and is substantially filled and flushed by a volume of the fresh water each time the water supply circuit is opened, and wherein



after the volumetric metering reservoir is filled with the volume of the fresh water, the water supply circuit provides the wash tank with the volume of the fresh water.

5,617,886
ROTATING NOZZLE
George J. Mathieus, 498 Turkey Ranch Rd., Goldendale, Wash. 98620
Filed Mar. 1, 1995, Ser. No. 396,562
Int. Cl.⁶ B08B *3/02*
U.S. Cl. 134—172 **20 Claims**

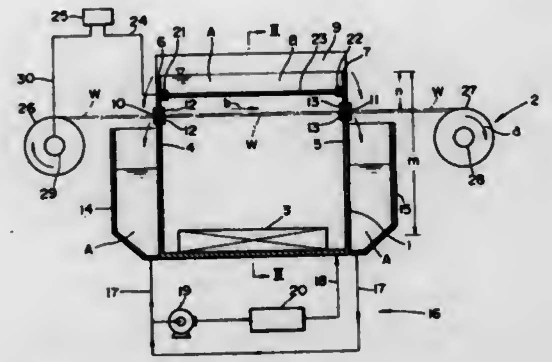


1. A rotating nozzle for use in cleaning or stripping a surface comprising:

a head adapted to be mounted on, and rotatable around, a high pressure fluid gun, said head having a longitudinal axis, a face with a center, and a fluid conduit therein; and

at least two sets of jets on said face of said head, said jets communicating with said fluid conduit for passage of high pressure fluid through said head and said jets, each of said sets having at least one jet, each of said sets of jets being disposed at an acute angle from the longitudinal axis of said head, each of said sets of jets being disposed at a different distance from the center of said face, the distances of said sets of jets being selected such that rotation of said nozzle causes separate high pressure fluid streams from each of said sets of jets to impinge upon the surface to be cleaned or stripped in a number of substantially circular concentric jet stream patterns equivalent to the number of said sets of jets, the distances of said sets of jets from the center of said face further being selected such that entire areas of the surface between adjacent ones of the circular concentric jet stream patterns are also cleaned or stripped by the high pressure fluid streams after they initially impinge on the surface and as they are angularly deflected therefrom.

5,617,887
ULTRASONIC CLEANING APPARATUS
Yoshihide Shibano, 1629-1-12, Oyama-cho, Machida-shi, Tokyo, Japan
Filed Jun. 27, 1995, Ser. No. 495,109
Claims priority, application Japan, Jun. 27, 1994, 6-144311
Int. Cl.⁶ B08B *3/12*
U.S. Cl. 134—184 **7 Claims**



1. An ultrasonic cleaning apparatus comprising:

a cleaning tank;

an ultrasonic vibrator mounted in said cleaning tank on a bottom thereof for radiating ultrasonic energy;

a deaerated cleaning solution stored in said cleaning tank and having a surface level at a position substantially corresponding to an integral multiple of half the wavelength of the ultrasonic energy radiated by the ultrasonic vibrator;

workpiece moving means for horizontally moving a web-shaped or filamentary elongate metal workpiece, which is shaped to pass the ultrasonic energy easily therethrough, in the cleaning solution at a position spaced from said surface level by a distance substantially equal to a quarter of the wavelength of the ultrasonic energy radiated by the ultrasonic vibrator;

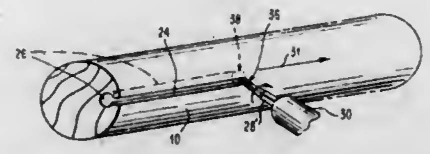
an electrode disposed in said cleaning solution and extending parallel to said workpiece, said electrode being shaped to pass the ultrasonic energy easily therethrough; and

voltage applying means for applying a voltage between said electrode and said workpiece while the workpiece is being horizontally moved in the cleaning solution by said workpiece moving means.

5,617,888
GARDEN UMBRELLA WITH SPECIALLY DRILLED PULLEY CORD GUIDE AND RETAINER MEANS IN WOOD POLE FOR MAINTAINING PULLEY CORD
Nick Wu, 12685 Prescott Ave., Tustin, Calif. 92780
Filed Jun. 20, 1996, Ser. No. 667,022
Int. Cl.⁶ A45B *11/00*
U.S. Cl. 135—20.3 **9 Claims**

9. In an umbrella having a pole made of a solid wood material, support ribs pivotally attached to a ribholder connected to said pole for slidable movement therealong, and an umbrella cover attached to said support ribs, a pulley wheel attached near the top of said pole, a hand crank mounted at the bottom of said pole, and a pulley cord attached at one end to said ribholder and at its other end to said hand crank and operatively extending around said pulley wheel for opening said umbrella cover in response to turning said hand crank, the improvement of which comprises:

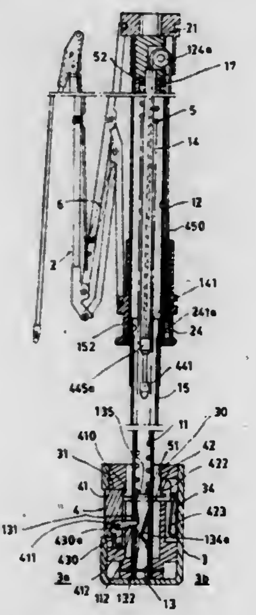
said solid pole including an external wall, a narrow neck slot formed along said external wall of said pole and extending longitudinally along said pole between said pulley wheel and said hand crank, and a cord passage located adjacent to said narrow neck slot and formed further into said solid pole near said external wall, said cord passage extending longitudinally along said pole between said pulley wheel and said hand crank and being in communication with and opening into said



narrow neck slot along said longitudinal length thereof, said cord passage having a relatively larger cross-section area than said narrow neck slot and being of such area size to accommodate said pulley cord for longitudinal movement in said cord passage, and said narrow neck slot having a smaller width than the cross section of said pulley cord thereby preventing said pulley cord from passing out of said pole through said narrow neck slot; and

a tube being adapted to receive therein a portion of the bottom of said solid pole in close fitting relationship therein, and wedge means inserted into the bottom of said solid wood pole for forcing the wood outward against an inner wall of said tube and thereby securing said pole to said tube.

5,617,889
MULTIPLE-FOLD AUTOMATIC UMBRELLA WITH REINFORCED RIBS AND SIMPLIFIED MECHANISM
Woh-Wen Wu, P.O. Box 10160, Taipei, Taiwan
Filed May 28, 1996, Ser. No. 654,142
Int. Cl.⁶ A45B *25/14*
U.S. Cl. 135—22 **4 Claims**



1. An automatic umbrella comprising:

a central shaft means having an upper tubular shaft slidably telescopically engageable with a middle tubular shaft, said middle tubular shaft telescopically engageable with a lower tubular shaft, said lower tubular shaft secured on a grip and having a rod hole formed in a lower end portion of said lower shaft at a first side of the grip, said middle tubular shaft slidably engageable with the lower shaft having an engaging hole formed in a lower portion of said middle shaft at a second side of said grip, an upper tubular shaft slidably engageable with the middle tubular shaft having an engaging hole formed in the lower end portion of the upper shaft at a second side of the grip, and an inner block formed in an upper end portion of the upper shaft having an upper guiding roller rotatably mounted in the inner block, a lower sleeve fixed in the grip within the lower shaft having a triangular block portion formed in the lower sleeve inclined inwardly downwardly, an inner rod hole formed in the lower sleeve positioned below the triangular block portion adjacent to the rod hole and to a bottom portion of the grip at a first side of the grip, an upper sleeve fixed in the inner block of the upper shaft, and a coupling sleeve detachably engageable with an upper portion of said middle shaft and having an upper portion of said coupling sleeve adjacent to said inner block;

a rib assembly having at least a top rib pivotally secured to an upper notch fixed on a top portion of said upper shaft, a stretcher rib pivotally secured with said top rib and pivotally secured to a lower runner slidably held on said central shaft means, a middle rib secured to a middle joint member pivotally connected with the top rib, a rear rib secured to an outer joint member pivotally connected with the middle rib, a connection rib pivotally connected between the stretcher rib and the middle joint member, and a resilient rib connected between the top rib and the outer joint member;

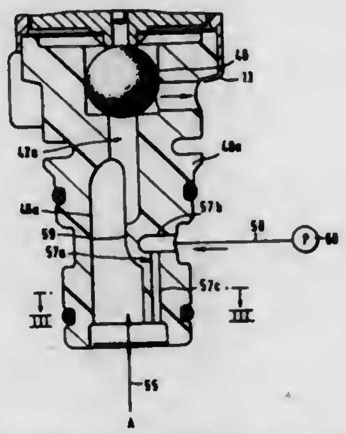
an extending spring retained in between said coupling sleeve and said lower sleeve for operatively opening the umbrella, and said extending spring disposed around said upper sleeve;

a plurality of, retraction restoring springs each said retraction restoring spring having an inner spring end secured on a lug formed on said connection rib and an outer spring end secured to said top rib for operatively closing the umbrella from an opened state of the umbrella; and

a control means including: a push button slidably held in a button hole formed in the grip at the first side of the grip; an opening controller having a pair of bifurcated members bifurcated towards the first side of the grip and slidably held in a central portion of the grip to be normally contacting with an inside button surface of the push button and slidably disposing about an outer circumferential surface of the upper shaft, a wedge portion tapered downwardly inwardly towards a center of the central shaft means and formed on a rear portion of the bifurcated members and engageable with each said engaging hole formed in said upper and middle shafts, and a controller restoring spring held in a spring socket formed in the grip at the second side of the grip for urging the wedge portion to be engaged with the engaging hole of the upper shaft when closing the umbrella, and for urging the bifurcated members forwardly to protrude the push button outwardly ready for a depression operation; a closing controller having a pushing rod pivotally secured in said push button and normally restored horizontally and protruding horizontally towards the second side of the grip through each rod hole formed in said lower shaft and in said lower sleeve; a locking head means having a locking head portion formed with an arcuate bottom portion on a bottom portion of the locking head portion and a locking shoulder portion on an upper portion of the locking head portion, and a rope connector secured with the locking head portion with a neck portion between the rope connector and the locking head portion; and a rope having a lower rope knot locked into a knot socket formed in the rope connector of the locking head means and having an upper rope end portion secured to the inner block adjacent to the upper notch by passing the rope through a central portion of the shaft means, the upper sleeve and deflectively winding the rope on the upper guiding roller formed on the inner block downwardly to the lower runner and then deflectively winding the rope upwardly through a lower guiding roller rotatably mounted on an integrally formed roller holder embedded in a bottom of the lower runner to be upwardly extended to the upper notch, said locking head portion, upon the folding of the umbrella, opera-

tively biased by a resilient plate protruding inwardly from the lower sleeve at the second side of the grip to be locked on a triangular block portion formed on the lower sleeve at the first side of the grip; and the locking head portion operatively disengaged from the triangular block portion of the lower sleeve when thrusted by the pushing rod when closing an opened umbrella.

5,617,890
ELECTROMAGNETICALLY OPERABLE PRESSURE-REGULATION VALVE
Werner Brehm, Hemmingen, and Walter Fleischer, Stuttgart, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed Jun. 7, 1995, Ser. No. 476,273
Claims priority, application Germany, Sep. 3, 1994, 44 31 457.4
Int. Cl.⁶ F15B *13/044;* **F16K** *31/06*
U.S. Cl. 137—82 **1 Claim**

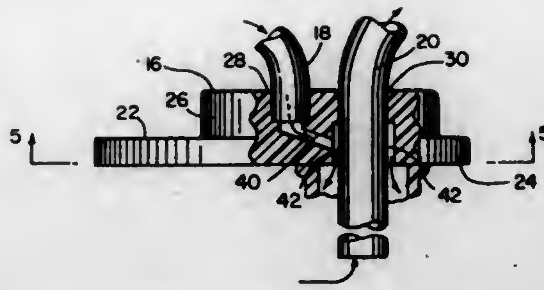


1. An electromagnetically operable pressure-regulating valve, comprising a magnet part having a housing; a magnet coil with an armature arranged in said magnet housing; a ram connected to said armature; a valve connection element connected to said magnet part and having a wall provided with ducts for a pressure medium to be controlled, said valve connection element having a valve seat; a valve element interacting with said seat; and a flow element disposed between said valve seat and a pressure medium source, said flow element being arranged integrally within said valve connection element, said valve connection element being composed of plastic, said flow element being formed as a choke bore which has a length/diameter ratio amounting to at least 2:1 so as to choke the pressure medium, said choke bore having cross-sectional areas of polygonal shape.

5,617,891
SIPHON APPARATUS
Donovan B. True, 5509 Lake Rd., Oshkosh, Wis. 54901
Filed Dec. 17, 1993, Ser. No. 169,292
The portion of the term of this patent subsequent to Mar. 17, 2011, has been disclaimed.
Int. Cl.⁶ F04F *10/00*
U.S. Cl. 137—145 **16 Claims**

1. A siphon apparatus using pressure to initiate a fluid transfer from a first site to a second site, comprising:

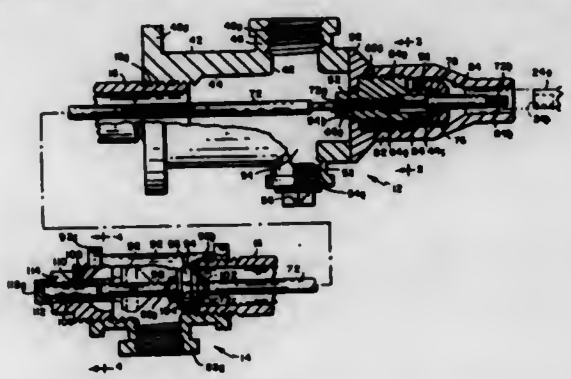
a. a fluid transfer tube for transferring the fluid from the first site to the second site;
b. a pressurizing device for introducing air into and increasing the pressure in the first site for initiating the fluid transfer to the second site;
c. a base having a top and bottom surface, said top surface including a first opening and a second opening, said first



opening extending through and forming a through hole in the bottom surface of the base and being adapted to receive the fluid transfer tube, wherein said fluid transfer tube forms a seal adjacent to the top surface of the base when the fluid transfer tube is inserted into the first opening and wherein an outlet opening is larger than the tube to form an airway adjacent to the bottom surface of the base in the through hole between the periphery of the fluid transfer tube and the base; said second opening extending partially into the base and being adapted to receive the pressurizing device, wherein said pressurizing device forms a seal with said second opening; and wherein said bottom surface of the base is placed against and completely covers an opening of the first site; and

d. an internal channel in the base extending from the second opening to the through hole in the base, whereby air introduced into the pressurizing device enters the first site through said internal channel and said airway.

5,617,892
IRRIGATION SYSTEM SHUT-OFF VALVE
Peter J. Pappas, 2 Hilltop Ter., Woburn, Mass. 01801
Filed Jul. 31, 1995, Ser. No. 509,207
Int. Cl.⁶ F16K *17/00*
U.S. Cl. 137—360 **10 Claims**



1. A shut-off valve comprising

a first hollow housing section including a first longitudinal axis, a fluid inlet into said first housing section and which lies on said first axis, a fluid outlet from said first housing section and which lies off said first axis and threaded means opposite said inlet defining a threaded passage which extends along said first axis;

a second hollow housing section including a second longitudinal axis, a fluid outlet passage from said second housing section and which lies on said second axis and a fluid inlet passage into said second housing section and which lies off said second axis;

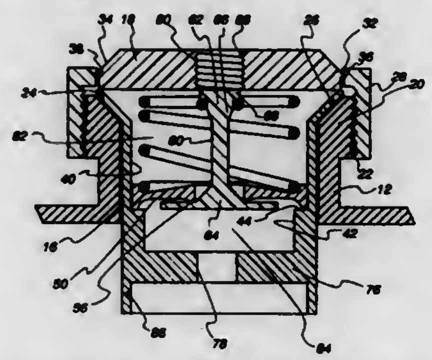
an elongated tubular bridging section connecting said first and second housing sections at said fluid inlet and said second outlet passage, respectively, so that said first and second axes are collinear and define a common axis which extends through said bridging section;

seating means in said second housing section defining a valve seat which is concentric to said common axis;

a valve member in said second housing section, said valve member being movable along said common axis between a closed position wherein said valve member seals against said valve seat and an open position wherein said valve member is positioned in said second housing section on the opposite side of said inlet passage from said seating means so that it does not appreciably obstruct fluid flow between said inlet passage and said bridging section, and

a shaft extending along said common axis from said valve member through said threaded passage in said first housing section, said shaft having a threaded segment which is screwed into said threaded passage so that when the shaft is rotated about said common axis in one direction, said valve member is moved to its said closed position and when the shaft is rotated about said common axis in the opposite direction, said valve member is moved to its said open position so that water can flow from said inlet passage to said outlet without any appreciable pressure drop.

5,617,893
VACUUM RELIEF VALVE
Earl D. Webster, Harriman, Tenn., assignor to Transport Service Co., Hinsdale, Ill.
Filed Aug. 1, 1995, Ser. No. 509,869
Int. Cl.⁶ F16K *24/00*
U.S. Cl. 137—526 **13 Claims**



13. In a transport tank for transporting bulk quantities of food-grade liquids, a vacuum breaker valve assembly for permitting atmospheric air to enter the transport tank having a vacuum pressure condition therein, the assembly comprising:

a cylindrical housing mountable to the tank;

a valve member having a stem with first and second enlarged ends where the valve member is movable in the housing between (1) a first position in which the valve assembly is closed to seal the tank from the atmospheric air, and (2) a second position in which the valve assembly is open to admit the atmospheric air to the tank when the tank reaches a predetermined vacuum pressure condition;

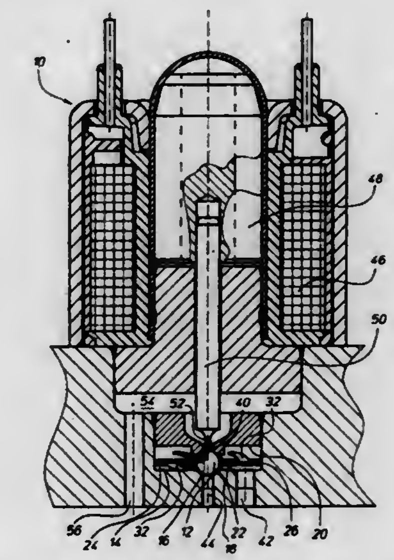
a spring biasing the movable member towards the first position with a predetermined biasing force;

an annular flexible seal member having a central aperture therethrough and opposed sides mounted in the housing with the housing having a first region on one side of the seal member and a second region on the other side of the seal member with the first region communicating with the second region with the valve member in the second position;

an annular bottom housing wall cooperating with the other side of the seal member to define the second region and having a central aperture aligned with the seal central aperture with the stem extending through the seal central aperture having the first enlarged end in the first region and the second enlarged end in the second region with the second enlarged end being sized sufficiently large to prevent the stem from fitting through the bottom wall aperture and dropping into the tank and to close the sealing member aperture sealing the first and second regions from each other with the valve member in the first position; and

lid means securely mounted to the housing cooperating with the one side of the sealing member to define the first region and having a central aperture therethrough for entry of the atmospheric air into the housing first region and being aligned with the sealing member and bottom wall apertures with the stem first enlarged end substantially blocking the lid means central aperture to limit leakage of product in the tank through the lid means aperture with the valve member in the first position.

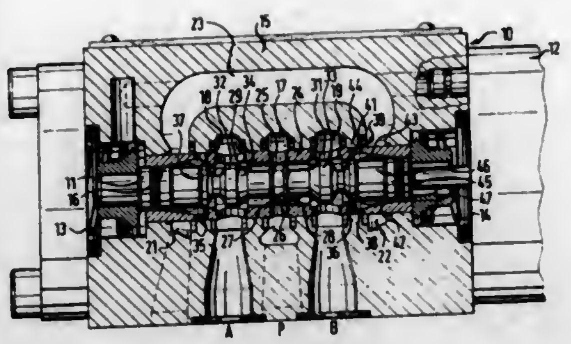
5,617,894
VALVE BODY
Guenter Wolff, Schwieberdingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany
Filed Jun. 20, 1995, Ser. No. 492,883
Claims priority, application Germany, Aug. 11, 1994, 44 28 385.7
Int. Cl.⁶ F16K *1/32; 1/14*
U.S. Cl. 137—625.5 **14 Claims**



1. A valve comprising a valve ball (12) which is held between two disks (26) which are identical in size, shape and material and are connected to each other to form a valve ball holder (24), each of said two disks is constructed as a valve spring.

5,617,895
HYDRAULIC CONTROL VALVE
Berthold Pfuhl, Markgroeningen; Friedhelm Zehner, Ludwigsburg, and Joachim Zumbraegel, Eberdingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
PCT No. PCT/DE94/00183, § 371 Date Feb. 17, 1995, § 102(e) Date Feb. 17, 1995, PCT Pub. No. WO94/21947, PCT Pub. Date Sep. 29, 1994
PCT Filed Feb. 19, 1994, Ser. No. 387,833
Claims priority, application Germany, Mar. 13, 1993, 43 07 990.3
Int. Cl.⁶ F15B *13/04;* **F16K** *11/07*
U.S. Cl. 137—625.69 **12 Claims**

1. Hydraulic control valve comprising a device for flow force compensation at an outlet control edge, comprising a spool sleeve which is arranged in a valve casing and which in its interior receives a control spool which is guided for longitudinal movement and is able to control at least a connection from an admission side via the outlet control edge to a return chamber, the outlet control edge being formed by a control edge, fast with the casing, and by an associated spool edge and the pressure medium flow guided over the outlet control edge being deflected—downstream



of the control edge viewed in the direction of flow—at least partly in the direction of the control spool in a deflecting annular groove fashioned in the inside wall of the spool sleeve, and comprising outlet opening is situated in the region of said annular groove and in a plane extending radially relative to the longitudinal axis of the sleeve and through which the pressure medium can flow off from the interior of the spool sleeve to the return chamber, and further comprising an annular external groove, situated in the region of the outlet openings, in the control spool, characterized in that the spool sleeve (24) has a one-piece configuration at least in the region comprising the control edge (36), fast with the casing, and the deflecting annular groove (42), and in that its internal control edge (36) is formed by additional radial through control openings (41) which are arranged in the spool sleeve (24) and are arranged at an axial distance from the outlet openings (43), and in that said control openings (41) in the outside wall of the spool sleeve (24) are at least substantially closed by the valve casing (15).

5,617,896

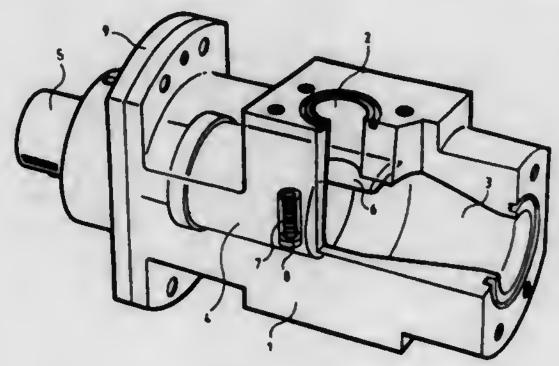
VALVE HAVING A CLOSURE MEMBER FOR CREATING FLOW TURBULENCE IN THE VALVE

Jouko Tornberg, Vantaa; Jyrki Huovila, Muurame; Pekka Kivipelto, and Jouni Pyötsiä, both of Helsinki, all of Finland, assignors to Neles-Jamesbury Oy, Helsinki, Finland

Filed May 16, 1995, Ser. No. 442,312

Int. Cl.[6] F16C *1/16*

U.S. Cl. 137—813 **5 Claims**



1. A valve including a valve body having an interior chamber, a closure member mounted for rotation in said interior chamber for adjusting the flow volume through said valve body, an inlet passage having an opening to said interior chamber, said opening being tangentially located relative to said interior chamber with said closure member being rotatable to move between an open position and a closed position relative to said opening.

5,617,897

NONRETURN VALVE FOR MEDICAL FLUID TECHNOLOGIES

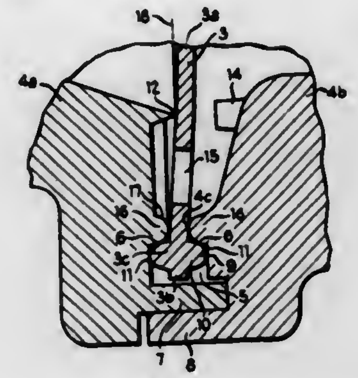
Jan W. M. Myers, Venlo, Netherlands, assignor to Schawk, Inc

Filed Feb. 16, 1994, Ser. No. 197,999

Claims priority, application Germany, Feb. 18, 1993, 43 04 949.4

Int. Cl.[6] F16K *15/14*

U.S. Cl. 137—859 **6 Claims**



4. A nonreturn valve for medical and fluid technology applications comprising a first pipe connector and a second pipe connector between which a membrane disc made of a flexible material is held lifted from a sealing seat upon overpressure in the inlet, and which requires minimum time for being pressed safely against the sealing seat upon overpressure in the outlet, the central part of the membrane disc being predominantly uniform in thickness, the outer circumferential section of the membrane disc having an annular bulge, a first shell of the first pipe connector and second shell of the second pipe connector forming a hollow space which surrounds the bulge except for a gap of approximately the same size as the thickness of the central part of the membrane disc, at least one surface of the hollow space facing outwardly pressing against the protrusion in such a way that, upon assembly of both shells, radially oriented tensile forces can be induced in the membrane disc, said at least one surface having a slope, the bulge having a rounded cross-sectional profile, and the radially outward facing surface forming part of an annual recess on the associated shell, the first shell of the first pipe connector having an annular sealing lip, the second shell having a plurality of stroke limiting knobs distributed within said second shell located opposite the sealing lip, said membrane disc having openings therethrough, and the sealing lip having a radial extent such that said lip engages said membrane disc at locations which are disposed radially inwardly of said openings.

5,617,898

FLUID PRESSURE APPARATUS

Shigekazu Nagai; Akio Saitoh, and Masahiko Suzuki, all of Ibaraki-ken, Japan, assignors to SMC Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP92/01158, § 371 Date Mar. 10, 1994, § 102(e) Date Mar. 10, 1994, PCT Pub. No. WO93/05296, PCT Pub. Date Mar. 18, 1993

PCT Filed Sep. 10, 1992, Ser. No. 196,205

Claims priority, application Japan, Sep. 10, 1991, 3-230593; Sep. 10, 1991, 3-230642

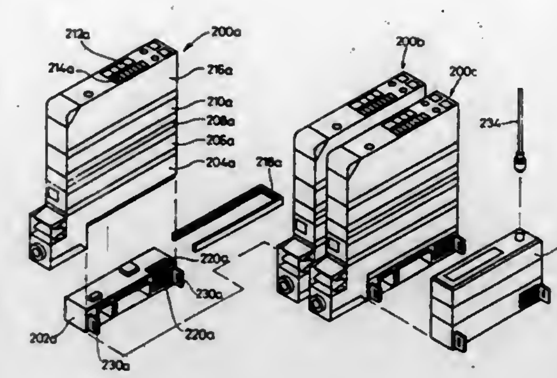
Int. Cl.[6] F16K *11/00*

U.S. Cl. 137—884 **14 Claims**

1. A fluid pressure apparatus for supplying and cutting off positive or negative fluid pressure to a fluid pressure controlled device connected to said apparatus, comprising:

a housing;

at least one directional control valve for switching between supply and cut-off of a fluid to said fluid pressure controlled device;



detecting means including a pressure sensor disposed in an interior space inside said housing for detecting an internal pressure of the fluid flowing through said fluid pressure apparatus;

control means disposed in said housing and having a memory means in which a plurality of different control steps are stored for locally controlling an operation of said at least one directional control valve; and

display means for displaying a status of said fluid pressure apparatus thereon;

wherein said fluid pressure apparatus comprises a plurality of blocks having respectively different functions, each block having at least one connector made of conductive elastic bodies, and wherein an electrical connection between adjacent blocks is made through the conductive elastic bodies included in said connector.

5,617,899

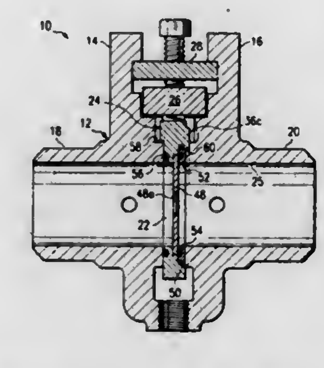
ORIFICE METERING APPARATUS AND METHOD OF FABRICATING SAME

Lloyd H. Linton, Montgomery, and Lester W. Richter, Kingwood, both of Tex., assignors to Dresser Industries, Dallas, Tex.

Filed Mar. 27, 1995, Ser. No. 410,674

Int. Cl.[6] F15D *1/02*

U.S. Cl. 138—44 **19 Claims**



1. An apparatus for metering fluid flow through a pipeline, said apparatus comprising:

a housing adapted to be connected to the pipeline and defining:

a bore in alignment with said pipeline through which fluid from said pipeline flows,

a chamber surrounding said bore, and

a neck projecting inwardly towards said chamber and having a shoulder radially spaced from said bore; and

an orifice plate assembly disposed in said chamber and defining an orifice in the path of said fluid as it passes through said bore, said assembly defining a mounting surface which engages said shoulder to align said orifice with said pipeline.

5,617,900

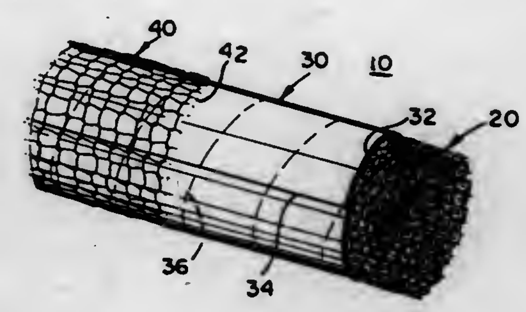
MULTILAYER FLEXIBILITY RESILIENT THERMAL SHIELDING SLEEVES

Thomas L. Weil, Elverson, Pa., assignor to Davlyn Manufacturing Co., Inc., Spring City, Pa.

Filed Jul. 20, 1993, Ser. No. 94,827

Int. Cl.[6] F16L *11/12*

U.S. Cl. 138—127 **13 Claims**



1. A thermally insulative sleeve comprising:

a seamless, hollow, flexibly resilient, inner tubular member woven of strand material including at least one metal wire strand;

a separate, integral, at least essentially unbroken, metal surfaced member applied over the inner tubular member extending along and at least essentially completely surrounding the inner tubular member, the metal surfaced member being sufficiently thin and pliable to be deformable by the flexible, resilient inner tubular member; and

a flexible outer cover woven of strand material extending along and completely around the inner tubular member and the metal surfaced member, thereby securing the metal surfaced member on the inner tubular member;

wherein the at least one metal wire strand of the inner tubular member is hardened sufficiently to spring the sleeve back to a generally original tubular cross-section configuration when the sleeve is compressed and released after compression.

5,617,901

VARIABLE DRIVE SYSTEM FOR DRIVEN LOOM COMPONENTS

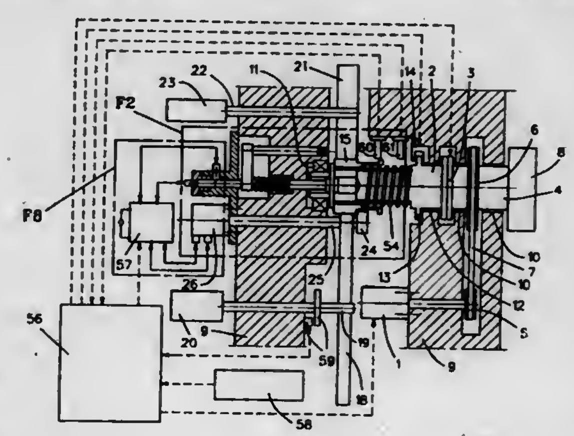
Marc Adriaen, Hollebeke; Geert Geerardyn, Nieuwkerke, and Bernard Vancayzeele, Ieper, all of Belgium, assignors to Picanol N.V., Belgium

Filed Feb. 2, 1996, Ser. No. 597,531

Claims priority, application Belgium, Feb. 7, 1995, 9500093

Int. Cl.[6] D03D *51/08*; D03C *3/28*

U.S. Cl. 139—1 E **20 Claims**

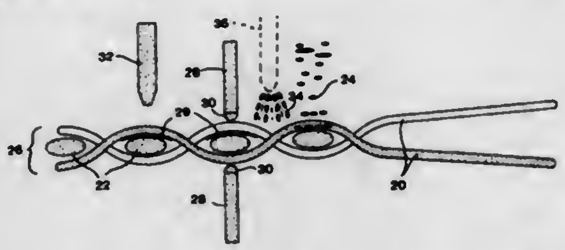


1. In a loom drive system including a main drive motor, a gear unit drivingly connected to the main drive motor and at least two

groups of driven loom components normally driven by the main motor through the gear unit, the improvement comprising:

a switching gear in the gear unit mounted so as to be movable between at least two positions whereat, in a first position, the first and second groups of driven loom components are drivingly connected to the main drive motor via the switching gear and in a second position one of the groups of driven loom components is disengaged from the switching gear and the main drive motor.

5,617,902
WEAVING AND BONDING METHOD TO PREVENT WARP AND FILL DISTORTION
Gary L. Farley, Yorktown, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Filed Jun. 26, 1995, Ser. No. 495,253
Int. Cl.⁶ D03D *13/00;23/00*
U.S. Cl. 139—1 R **19 Claims**



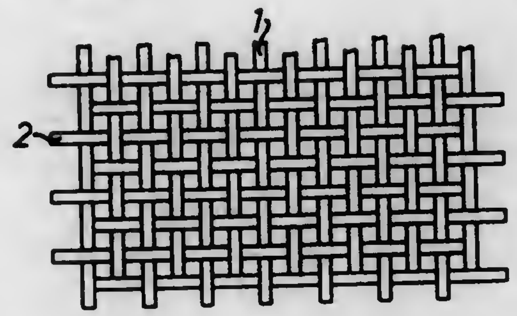
1. A method to prevent fiber and fabric distortion in woven materials when weaving fill yarns at a non-orthogonal angle to warp yarns, comprising the steps of:

(a) weaving fabric with warp and fill yarns concurrently with a weaving process for fabricating one of a straight, curved, planer and three-dimensional fabric, the fill yarns at a non-orthogonal angle to the warp yarns;
(b) depositing a tacifying material on the warp and fill yarns; and
(c) bonding the warp and fill yarns together.

5,617,903
PAPERMAKER'S FABRIC CONTAINING MULTIPOLYMERIC FILAMENTS
David Bowen, Jr., 9349 Old A1A, St. Augustine, Fla. 32086
Filed Mar. 4, 1996, Ser. No. 610,267
Int. Cl.⁶ D03D *23/00*
U.S. Cl. 139—383 A **7 Claims**

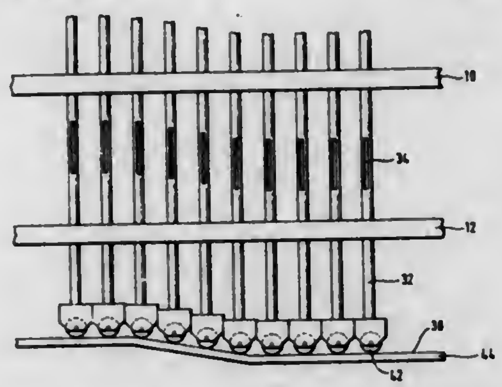
1. A woven papermaker's fabric, characterized in that more than 50 percent of the filaments of said fabric are formed from man-made polymeric materials and in that at least 15 percent of said polymeric filaments are characterized as larger than 100 denier and multipolymeric, containing two or more distinct, regular, continuous and uniform polymeric regions within the filament's cross section.

5,617,904
TEXTILE SUBSTRATE FOR SEAT COVERS
Albin Kälin, Widnau, Switzerland, assignor to Rohner Textil AG, Balgach, Switzerland
Filed May 30, 1995, Ser. No. 453,889
Claims priority, application Switzerland, May 30, 1994, 01 670/94
Int. Cl.⁶ D03D *15/00*
U.S. Cl. 139—420 R **12 Claims**



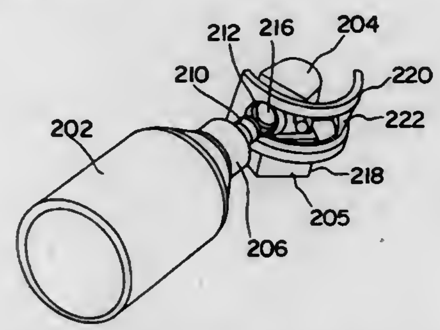
1. A textile substrate for a seat cover, having:
a wool content of at least 40 percent, by weight;
a ramie content of at least 15 percent, by weight; and
a combined wool and ramie content of more than 85 percent, by weight.

5,617,905
CIRCULAR-WEAVING MACHINE WITH VERTICALLY MOVING HEDDLES
Josef Ziegler, Arrach, Germany, assignor to RMB, Cham, Germany
Continuation of Ser. No. 198,209, Feb. 17, 1994, abandoned, which is a continuation of Ser. No. 960,454, Feb. 12, 1993, abandoned. This application Nov. 8, 1994, Ser. No. 335,666
Claims priority, application Germany, Apr. 19, 1991, 41 12 770.6
Int. Cl.⁶ D03D *37/00*
U.S. Cl. 139—459 **26 Claims**



1. A circular loom which during operation can produce tubes having warp threads (36) and weft threads (54), the weft threads having a set, the loom comprising: (a) an annular frame having an outer periphery, a rotational axis, an upper annular plate (10), and a lower annular plate (12), (b) at least one continuous circular path (38), (c) healds (32) for the warp threads (36), the healds having lower ends, (d) at least one rotary driven control disc means (44) corresponding to the continuous circular path (38), (e) heald control means for vertically displacing the healds comprising cam-following roller means (42) and the at least one rotary driven control disc means (44), and (f) at least one rotatably mounted shuttle (16) having a weft bobbin (18), each annular plate (10, 12) having bearing bores (40) corresponding to the healds (32) and in which bores (40) the healds are vertically displaceable; wherein the healds (32) are mounted in the frame and arranged on the at least one continuous circular path (38) at a constant distance apart and which healds (32) by means of the heald control means are individually vertically displaceable in the bearing bores (40), the lower ends of the healds being connected to the cam-following roller means (42), said cam-following rollers means (42) running on the at least one rotary driven control disc means (44) for vertically displacing the healds (32).

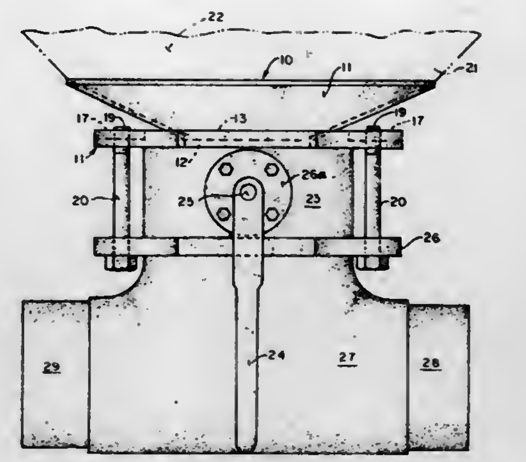
5,617,906
CONTAINER FOR ANAESTHETIC AGENT
Robert E. Braatz, Sun Prairie, Wis.; Raymond S. Gregory, Bingley, Great Britain; Robert A. Heaton, Skipton, Great Britain; Keith Whitaker, Keighley, Great Britain, and David C. Sampson, Cowling, Great Britain, assignors to The BOC Group plc, Windlesham, England
Continuation of Ser. No. 90,082, Jul. 23, 1993, abandoned. This application May 26, 1995, Ser. No. 451,352
Claims priority, application United Kingdom, Jan. 24, 1991, 9101560
Int. Cl.⁶ B65B *1/04;3/04*
U.S. Cl. 141—21 **15 Claims**



1. An anaesthetic agent container for supplying a liquid anaesthetic agent to an anaesthetic vaporizer, the container comprising:

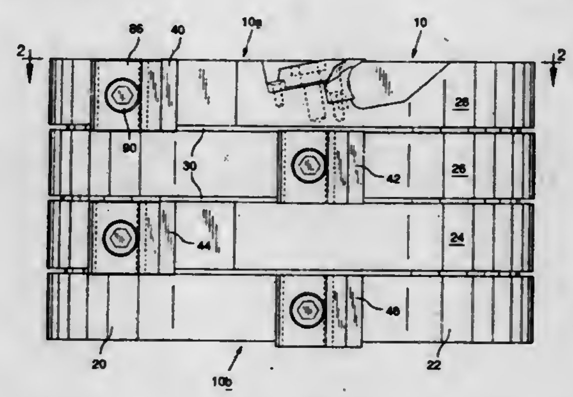
(a) a reservoir containing a quantity of a volatile liquid anaesthetic agent;
(b) a valve which, when closed, closes said reservoir and prevents the flow of said volatile liquid anesthetic agent and vapor agent from the reservoir;
(c) a tubular outlet having one passageway through which said volatile liquid anesthetic agent can leave the reservoir and a second, separate passageway in said tubular outlet through which vapor can enter the reservoir when the valve is open;
(d) a sealing surface provided towards the free end of the outlet extending around the perimeter thereof for forming a seal with a corresponding sealing surface provided at an inlet to a vaporizer to which said anaesthetic agent is to be supplied; and
(e) a formation formed on the outer surface of the tubular outlet which presents a surface facing in a direction substantially opposite to the direction in which agent passes out of the reservoir through the outlet for latching with a cooperating surface provided at the inlet to the vaporizer to which the anaesthetic agent is to be supplied.

5,617,907
RECESSED NUT BAR
David E. Sisk, 7353 Hillsboro Rd., Bonne Terre, Mo. 63628
Filed Jan. 16, 1996, Ser. No. 585,492
Int. Cl.⁶ B65B *1/04*
U.S. Cl. 141—340 **6 Claims**



5. A material container having a material discharge control assembly comprising a cone shaped bottom fitting for the container, said bottom fitting having an opening surrounded by a flange; a discharge directing fitting having a separate flange spaced from said bottom fitting flange; a material control fitting positioned in abutment between said bottom fitting flange and said discharge directing fitting separate flange; nut bars carried by said bottom fitting flange; and attachment bolts having headed ends engaged on said discharge directing fitting separate flange and threaded ends engaged in said nut bars carried by said bottom fitting flange, said attachment bolts clamping said material control fitting in abutment between said bottom fitting flange and said separate flange.

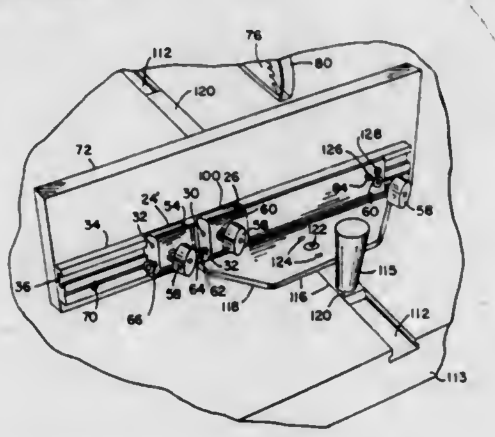
5,617,908
CHIPPING CUTTER HEAD INCLUDING END CUTTING KNIVES
William C. Toogood, Beaverton, Oreg., assignor to Key Knife, Inc., Portland, Oreg.
Filed Jun. 7, 1995, Ser. No. 487,191
Int. Cl.⁶ B27G *13/00;* **B26D** *1/12*
U.S. Cl. 144—218 **4 Claims**



1. A substantially cylindrical chipping cutter head comprising:
multiple disc-shaped body sections axially aligned with each other and collectively forming a substantially cylindrical cutter head body which is rotatable about an axis extending axially of the cutter head body, said cutter head body having at one end thereof an end face that occupies a plane which is substantially normal to the axis of the cutter head body,
multiple end-located detachably mounted knives mounted on said one end of said body and distributed about said axis, said knives having operative cutting edges movable in a plane disposed normal to said axis, and
multiple circumferentially located knives mounted on the cutter head body with operative cutting edges extending generally in an axial direction on said cutter head,
each of said end-located knives having a front side facing inwardly at the end of the cutter head body and a back side facing outwardly, and the front side of an end-located knife extending at an acute angle with respect to said plane of the

end face, the angle being such that the front side more closely parallels the plane of the end face than a plane normal to the end face plane, thus to provide for the ready flow of material thereover when cut by the knife.

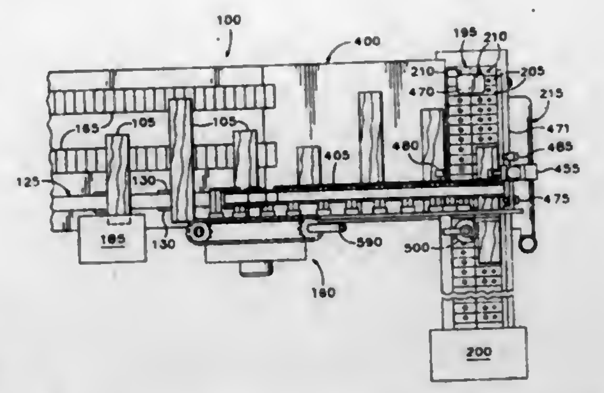
5,617,909
WOODWORKING MACHINERY JIG AND FIXTURE SYSTEM
Mark A. Duginske, 1010 First Ave., North, Wausau, Wis. 54401
Continuation-in-part of Ser. No. 944,867, Sep. 14, 1992, Pat. No. 5,337,641. This application Jul. 21, 1994, Ser. No. 278,369
Int. Cl.⁶ B27B *31/00*
U.S. Cl. 144—253.1 **6 Claims**



1. A woodworking machinery guide, comprising:
a workpiece support; and
a guide bar secured to said workpiece support for sliding in a slot of a woodworking machinery table, said guide bar having opposed sides and an anti-play feature in which:
a bore extends through said bar from one of said sides of said bar to the other side;
a bearing is received in said bore;
a set screw is received in said bore so that tightening said set screw causes said set screw to bear against one end of said bearing so as to exert pressure against a side of the slot in the woodworking machinery table at the other end of said bearing.

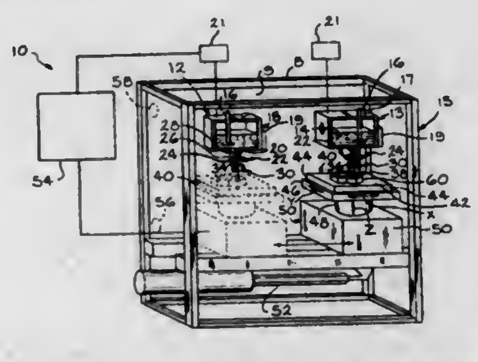
5,617,910
POSITION CONTROL APPARATUS AND METHOD FOR CONTROLLING THE MOVEMENT OF A BLOCK IN A WOODWORKING MACHINE
David A. Hill, Bend, Oreg., assignor to Bend Wood Products, Inc., Bend, Oreg.
Filed May 31, 1995, Ser. No. 455,020
Int. Cl.⁶ B27B *1/00;* **B27F** *1/00;* **B27C** *1/12;5/06*
U.S. Cl. 144—356 **20 Claims**

18. A method of loading blocks into a woodworking machine comprising:
arranging blocks side-by-side on a first conveyor;
advancing the first conveyor so that a leading block is delivered to a predetermined position underneath, but not touching, a second conveyor; and
changing the path of the second conveyor at a selected time to contact it with the underlying leading block; and



moving the leading block into the machine with second conveyor.

5,617,911
METHOD AND APPARATUS FOR CREATING A FREE-FORM THREE-DIMENSIONAL ARTICLE USING A LAYER-BY-LAYER DEPOSITION OF A SUPPORT MATERIAL AND A DEPOSITION MATERIAL
Robert A. Sterett, Jackson, and Atul M. Sudhalkar, Ann Arbor, both of Mich., assignors to Aeroquip Corporation, Maumee, Ohio
Filed Sep. 8, 1995, Ser. No. 525,000
Int. Cl.⁶ B22D *23/00*
U.S. Cl. 164—457 **22 Claims**

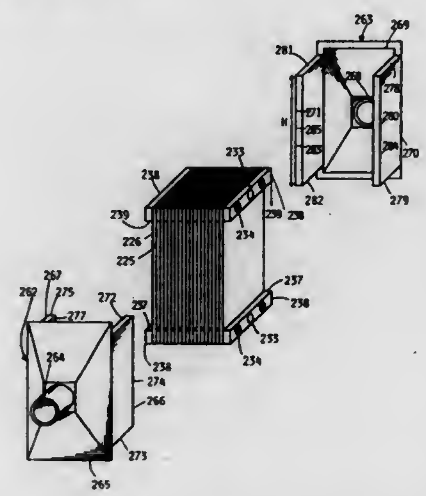


1. A method for accurate formation of a free-form three-dimensional article without use of a mold of a three-dimensional article, the method comprising:
providing a supply of substantially uniform size droplets of a desired metal material, each droplet having a positive or negative charge,
aligning each droplet in the supply of droplets into a substantially narrow stream, the droplets being aligned by allowing the droplets to pass adjacent or through at least one alignment means having the same charge as the droplets wherein the alignment means repels each droplet toward an axis extending through the alignment means,
depositing each of the aligned droplets in a predetermined pattern at a predetermined rate onto a target or a newly formed layer of the three-dimensional article to form the three-dimensional article,
providing a supply of a support material in a predetermined pattern adjacent the deposited droplets for each layer, and thereafter providing a further supply of droplets of the desired metal material onto the support material wherein the support material allows such further deposition of the droplets of the desired metal material to form at least a portion of the three-dimensional article, and
removing said support material to form the three-dimensional article.

5,617,912
PROCESS FOR PREPARING AND USING A CERAMIC SHELL AS A CASTING MOLD WITH REDUCING PROPERTIES
Heinrich Ballewski, Wittrahmsweg 39, 46506 Neukirchen Vluyn, and Wolfgang Grossman, Liebrechtstrasse 106A, 47445 Moers, both of Germany
Filed Apr. 14, 1995, Ser. No. 422,342
Claims priority, application Germany, Apr. 14, 1904, 44 12 798.7
Int. Cl.⁶ B22C *1/04*
U.S. Cl. 164—517 **20 Claims**

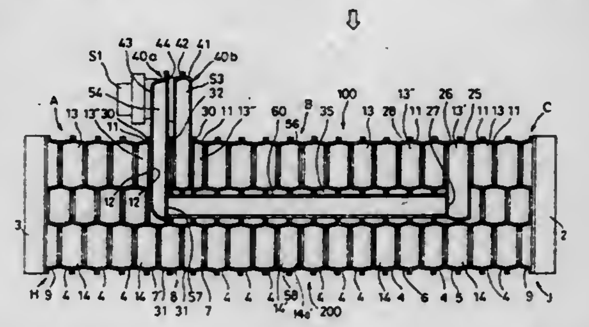
1. Process for preparing ceramic shells as casting molds, comprising the steps of:
a) preparing a pattern of a part to be cast, which pattern can be melted or dissolved out;
b) dipping the pattern into a dip-coating composition of a slurry of a refractory material and a binder in order to form a wet coating on the pattern;
c) sprinkling a coarse refractory powder onto the coating;
d) drying the coating; and
e) repeating steps b), c) and d) until a mold shell has reached the desired thickness;
f) firing the shell mold at a firing temperature; and
g) adding to at least one of the dip-coating composition and to the coarse refractory powder, a ceramic protective material, the ceramic protective material having carbon introduced to molten protective ceramic material during preparation of the protective ceramic material, the carbon chemically binding to oxygen at the time of the cooling of the casting essentially at mold temperatures above the firing temperature of the casting mold, the ceramic protective material preventing skin decarburization and pitting on carbon-containing steels and alloys.

5,617,913
ELASTOMER BED FOR HEATING AND MOISTURIZING RESPIRATORY GASES
Anthony J. DeGregoria, and Thomas J. Kaminski, both of Madison, Wis., assignors to ElasTek, Inc., Madison, Wis.
Continuation-in-part of Ser. No. 226,479, Apr. 12, 1994, Pat. No. 5,465,781, which is a division of Ser. No. 968,341, Oct. 29, 1992, Pat. No. 5,339,653. This application May 11, 1995, Ser. No. 439,430
Int. Cl.⁶ F28D *15/00*
U.S. Cl. 165—104.11 **35 Claims**



12. A heat and moisture exchange device for use in a medical artificial ventilation system comprising a housing and an elastomer regenerative heat and moisture exchanger bed disposed in said housing;
said housing having an inlet port for communication to a ventilation circuit and an outlet port for communication to a patient's respiratory system, and operatively associated with said bed for directing fluid flow through said bed;
said bed including a matrix of stretched elastomer and having flow channels therethrough; said stretched elastomer remaining taut and substantially unflexed during said fluid flow or a pressure drop.

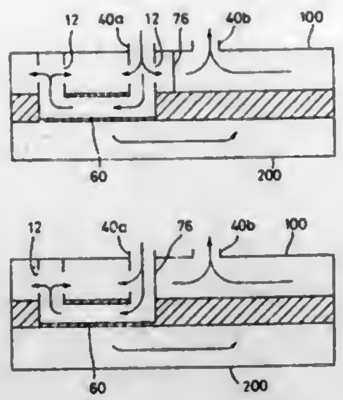
5,617,914
LAMINATED HEAT EXCHANGER
Takashi Kinugasa; Kunihiko Nishishita, and Seiji Inoue, all of Konan, Japan, assignors to Zexel Corporation, Tokyo, Japan
Division of Ser. No. 516,151, Aug. 17, 1995. This application Feb. 29, 1996, Ser. No. 609,992
Claims priority, application Japan, Aug. 25, 1994, 6-224204; May 22, 1995, 7-146717
Int. Cl.⁶ F28D *1/03*
U.S. Cl. 165—153 **6 Claims**



1. A laminated heat exchanger constituted by a plurality of tube elements and a plurality of sets of fins alternately laminated with said tube elements, each of said tube elements being constituted by two formed plates fitted together and having a pair of tanks at one end and a heat exchanging medium passage communicating between said tanks, said tanks of said plurality of tube elements constituting an intake/outlet tank group and a non-intake/outlet tank group separate from said intake/outlet tank group;
wherein said intake/outlet tank group is divided, by two non-communicating portions, into three tank sub-groups including a first end tank sub-group, a second end tank sub-group and a central tank sub-group disposed between said first and second end tank sub-groups;
wherein said non-intake/outlet tank group is divided into two tank sub-groups by one non-communicating portion provided in a tube element located between said two non-communicating portions of said intake/outlet tank group;
wherein a first intake/outlet portion is provided in said first end tank sub-group which is fluidically connected to said second end tank sub-group by a fluid relay member; and
wherein a second intake/outlet portion is provided in said central tank sub-group.

5,617,915
LAMINATED HEAT EXCHANGER
Takashi Kinugasa; Kunihiko Nishishita, and Seiji Inoue, all of Konan, Japan, assignors to Zexel Corporation, Tokyo, Japan
Division of Ser. No. 516,151, Aug. 17, 1995. This application Feb. 29, 1996, Ser. No. 609,993
Claims priority, application Japan, Aug. 25, 1994, 6-224204; May 22, 1995, 7-146717
Int. Cl.⁶ F28D *1/03*
U.S. Cl. 165—153 **7 Claims**

1. A laminated heat exchanger constituted by a plurality of tube elements and a plurality of sets of fins alternately laminated with said tube elements, each of said tube elements being constituted by two formed plates fitted together and having a pair of tanks at one end and a heat exchanging medium passage communicating



between said tanks, said tanks of said plurality of tube elements constituting an intake/outlet tank group and a non-intake/outlet tank group separate from said intake/outlet tank group;

wherein said intake/outlet tank group is divided into first and second tank sub-groups by a non-communicating portion provided at approximately a center of said intake/outlet tank group in a direction of lamination;

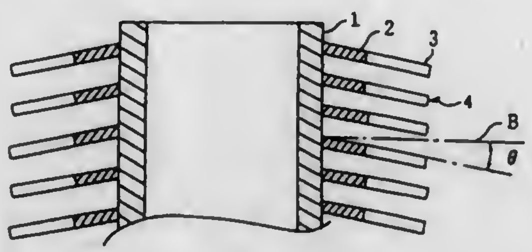
wherein said non-intake/outlet tank group is a single group of tanks, undivided by partitions, which are in communication with one another;

wherein a first intake/outlet portion is provided in said first tank sub-group and a second intake/outlet portion is provided, across said non-communicating portion from said first intake/outlet portion, in said second tank sub-group;

wherein said first intake/outlet portion communicates, via a fluid relay member, with a tank of said first tank sub-group which is located further from said non-communicating portion than said first intake/outlet portion; and

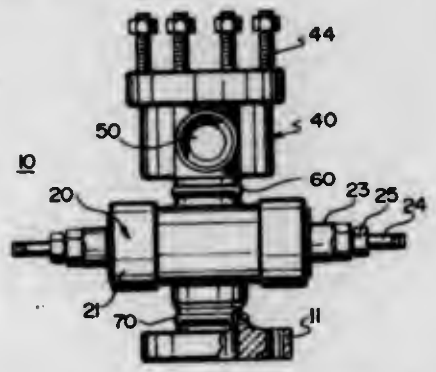
wherein a passage is formed between said intake/outlet tank group add said non-intake/outlet tank group, and said fluid relay member is disposed in said passage.

5,617,916
FIN TUBE HEAT EXCHANGER
Toshinori Shigenaka; Tetsuo Mimura; Yukitaka Machida; Ikuo Kohtaka, and Takahiro Marumoto, all of Kure, Japan, assignors to Babcock-Hitachi Kabushiki Kaisha, Japan
PCT No. PCT/JP94/01198, § 371 Date Jan. 31, 1995, § 102(e) Date Jan. 31, 1995, PCT Pub. No. WO95/03520, PCT Pub. Date Feb. 2, 1995
PCT Filed Jul. 20, 1994, Ser. No. 382,024
Claims priority, application Japan, Jul. 21, 1993, 5-180495
Int. Cl.^{6} F28F *1/14*
U.S. Cl. 165—184 **28 Claims**



1. A finned tube comprising: a tube; and a fin strip having fins formed by forming slits of a predetermined length in a fin portion of a strip perpendicularly to the length of the strip and at predetermined intervals, and a base portion in which no slit is formed, and wound around the tube so that the fins thereof extend substantially radially of the tube; characterized in that the fins are twisted at a twist angle in the range of 2° to 40° to a contact line along which the base portion of the fin strip is in contact with the tube, and inclined at an inclination angle in the range of 2° to 20° to a straight line perpendicular to the axis of the tube.

5,617,917
INTEGRAL BLOWOUT PREVENTER AND FLOW TEE
Andrew Squires, Calgary, Canada, assignor to FCE Flow Control Equipment Ltd., Edmonton, Canada
Filed Aug. 4, 1995, Ser. No. 511,432
Claims priority, application Canada, Jul. 11, 1995, 2153612
Int. Cl.^{6} E21B *33/06*
U.S. Cl. 166—85.4 **16 Claims**



1. A housing for use in providing a wellhead flow tee and blow out preventing device, said housing comprising a first upper portion with an upper mounting flange on an upper end thereof and a second lower portion with a lower mounting flange on a lower end thereof and a primary central fluid flow passage extending therethrough from one of said flanges to the other, said first upper portion having at least one secondary fluid flow passage extending through a sidewall of said housing from said primary passage to an outer surface of said housing and including means for connecting external piping to said secondary passage, said second lower portion having a pair of oppositely directed passages extending radially outwardly from said central passage to an outer surface of a sidewall of such housing portion, said oppositely directed passages providing means for mounting therein selectively movable gating members for use in preventing fluid flow through said primary passage, each of said first and second housing portions having a neck portion surrounding said primary passage with one projecting toward the other and disposed in abutting relation and means integrally connecting one such neck to the other providing a permanent connection that has continuous continuity circumferentially around said primary passage.

5,617,918
WELLBORE LOCK SYSTEM AND METHOD OF USE
Andrew Cooksey, Coppell; Jim Williamson, Carrollton; Clark Robinson, Plano, all of Tex.; Chris Dines, London, England, and James Vick, Dallas, Tex., assignors to Halliburton Company, Dallas, Tex.
Continuation-in-part of Ser. No. 933,668, Aug. 25, 1992, Pat. No. 5,348,087. This application Apr. 1, 1993, Ser. No. 41,793
Int. Cl.^{6} E21B *23/00*
U.S. Cl. 166—115 **11 Claims**

1. A lock comprising:

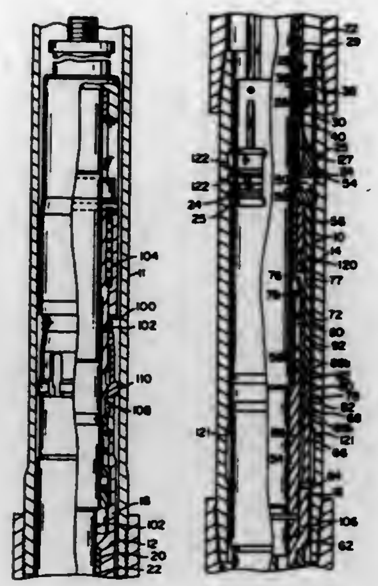
a housing assembly;

an actuation assembly operatively associated with said housing assembly and movable in relation to said housing assembly;

at least one engagement member coupled to said housing assembly, said engagement member moveable from a first position wherein said engagement member is substantially radially retracted relative to said housing assembly, to a second position wherein said engagement member is operatively extended relative to said housing assembly;

a moveable sleeve assembly operably coupled to said engagement member, said movable sleeve assembly movable from a first position to a second position, wherein in said first position said movable sleeve urges said engagement member toward said first position, and wherein in said second position said movable sleeve assembly urges said engagement member toward said second position; and

a sealing assembly coupled to said housing assembly, said sealing assembly comprising an expandable seal element and an expandable backup member, said seal element and backup member each having an interior surface, said seal element operatively associated with said actuation assembly to facilitate radial expansion of said interior surface of said seal element and said backup member upon predetermined movement of said actuation assembly.



5,617,919
GRAVEL-PACKING APPARATUS AND METHOD
Randolph J. Saucier, 8088 Winners Clr., Mandeville, La. 70448
Continuation-in-part of Ser. No. 264,724, Jun. 23, 1994, Pat. No. 5,443,121. This application Aug. 21, 1995, Ser. No. 517,530
Int. Cl.^{6} E21B *43/04;43/08*
U.S. Cl. 166—278 **20 Claims**

1. An apparatus for gravel packing between a bottom and a top of a perforated interval in a wellbore, comprising:

a screen; and

a sleeve circumscribing and movably mounted with respect to said screen, creating an annular flowpath therebetween, said sleeve movable between at least a first position, where said sleeve is interposed between said screen and at least some of the perforations, and a second position, where due to said movement said sleeve is interposed between said screen and fewer perforations than in said first position.

5,617,920
METHOD FOR MODIFYING GELATION TIME OF ORGANICALLY CROSSLINKED, AQUEOUS GELS
Hoai T. Dovan, Yorba Linda; Burton B. Sandiford, Balboa Island, and Richard D. Hutchins, Placentia, all of Calif., assignors to Union Oil Company of California, El Segundo, Calif.
Continuation-in-part of Ser. No. 119,715, Sep. 10, 1993, Pat. No. 5,486,312, which is a division of Ser. No. 940,301, Aug. 31, 1992, Pat. No. 5,246,073. This application Dec. 21, 1994, Ser. No. 361,431
Int. Cl.^{6} F21B *33/13;* **B01J** *13/00*
U.S. Cl. 166—295 **40 Claims**

24. A method for forming a gel in at least a portion of a subterranean formation, the method comprising the step of injecting a composition into at least a portion of a subterranean formation, the composition comprising:

(A) an ingredient selected from the group consisting of water soluble, crosslinkable polymers and polymerizable monomers capable of forming a crosslinkable polymer;

(B) hexamethylenetetramine;

(C) water; and

(D) a pH reducing agent,

where a sufficient amount of the pH reducing agent is present for the composition to have a pH of about 6.5 or less.

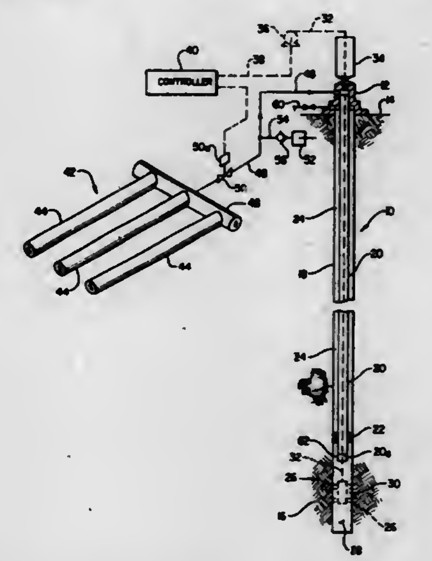
34. A recovery system comprising:

(1) a subterranean formation;

(2) a well penetrating at least a portion of the subterranean formation; and

(3) a gel located in at least a portion of the subterranean formation, the gel being formed by the method of claim 24.

5,617,921
OVER-PRESSURED WELL FRACTURING WITH SURFACE RESERVOIR AND ACTUATOR SYSTEM
Joseph H. Schmidt; Keith R. Ferguson; Andrew J. Bond, all of Anchorage, and Roger F. Keese, Eagle River, all of Ak., assignors to Atlantic Richfield Company, Los Angeles, Calif., and Schlumberger Technology Corporation, Houston, Tex.
Filed Sep. 29, 1995, Ser. No. 535,978
Int. Cl.^{6} E21B *43/26;43/267*
U.S. Cl. 166—308 **20 Claims**

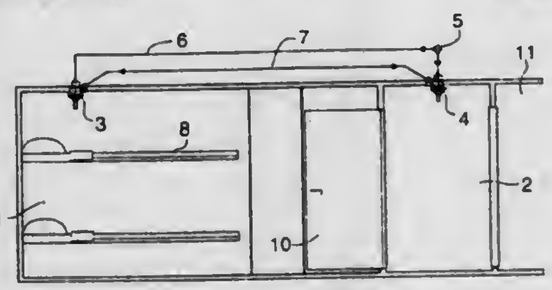


1. A method for forming a fracture in an earth formation having a wellbore penetrating said formation comprising the steps of:

connecting a reservoir of high pressure gas disposed at the earth's surface to said wellbore by conduit means in fluid flow communication with said wellbore, said conduit means having flow control means interposed therein; and

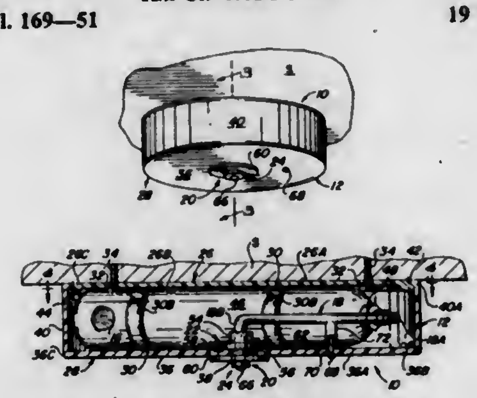
actuating said flow control means to release a charge of high pressure gas from said reservoir to flow through said wellbore to form said fracture.

5,617,922
INSTALLATION FOR FIGHTING FIRE WITH FIRST OR FIRST AND SECOND, DOOR ADJACENT SPRAY HEADS
Göran Sundholm, Ilmari Kiannon kuja 3, FIN-04310 Tuusula, Finland
PCT No. PCT/FI92/00330, § 371 Date May 20, 1994, § 102(e) Date May 20, 1994, PCT Pub. No. WO93/10861, PCT Pub. Date Jun. 10, 1993
PCT Filed Dec. 3, 1992, Ser. No. 244,214
Claims priority, application Finland, Dec. 4, 1991, 915730
Int. Cl.[6] A62C *35/60*
U.S. Cl. 169—16 **6 Claims**



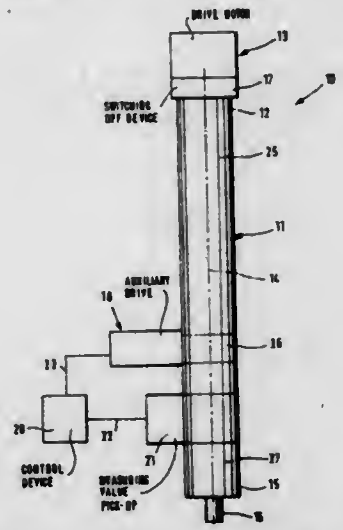
1. An installation for fighting fire, comprising:
a room having a door;
a first spray head at a first location for spraying a fluid into the room when activated to fight fire in the room;
a second spray head at a second location adjacent the door of the room for spraying a fluid as a barrier of fog-like spray when activated;
a first releasing means in the room for activating the first spray head; and
a second releasing means for activating the second spray head, wherein the second release means comprise the first releasing means and a connection line connecting the first and second spray heads for distributing fluid from the first spray head to the second spray head when the first spray head is activated.

5,617,923
MODULAR FIRE EXTINGUISHING APPARATUS FOR AN ENCLOSED ENVIRONMENT
John S. Nishikubo, and Michael J. Potter, both of San Diego, Calif., assignors to Nishikubo Family Trust, Los Angeles, Calif.
Filed Jul. 6, 1995, Ser. No. 498,952
Int. Cl.[6] A62C *35/02*
U.S. Cl. 169—51 **19 Claims**



1. A modular fire extinguishing apparatus for an enclosed environment, said apparatus comprising:
(a) a housing having an interior surface, said housing being adapted for attachment to a support structure;
(b) a canister having an outlet port and being adapted for storing a pressurized gaseous substance for the extinguishment of fires, said canister being mounted to said interior surface of said housing;
(c) a conduit having a pair of opposite open ends, a first of said open ends being attached to said outlet port of said canister for piping the pressurized gaseous substance away therefrom;
(d) a nozzle for receiving and dispersing the pressurized gaseous substance;
(e) means mounted to said housing for coupling a second of said open ends of said conduit to said nozzle; and
(f) means for sensing a preselected temperature in the enclosed environment and causing said nozzle to open in response to detecting the preselected temperature and thereby to release a flow of said pressurized gaseous substance through said nozzle and disperse said pressurized gaseous substance from said nozzle over the vicinity of the enclosed environment to extinguish a fire.

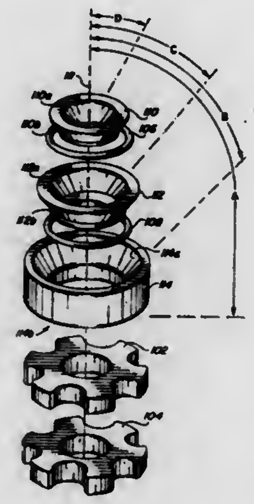
5,617,924
ARRANGEMENT FOR TIGHTENING SCREW CONNECTIONS
Wolfgang Baron, Backnang, and Erich Nold, Stuttgart, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed Jul. 20, 1994, Ser. No. 277,961
Claims priority, application Germany, Aug. 18, 1993, 9312303 U
Int. Cl.[6] B25B *21/00*
U.S. Cl. 173—181 **10 Claims**



1. An arrangement for tightening screw connections, comprising a screw spindle for turning a screwing tool; at least two-stage rotary drive for said screw spindle, said drive providing a coarse driving for pre-tightening of a screw connection and a fine driving for obtaining the desired screwing condition; a measuring value pick up fur obtaining measuring values which correspond to a value of an available screwing condition; a control device for providing switching signals for said rotary drive in dependence on the measuring values determined by said measuring value pick up, said screw spindle being subdivided into at least three spindle parts, including a first spindle part connected with said drive for providing the coarse driving, a second spindle part, and a third spindle part engageable with the screwing tool; an auxiliary drive providing the fine driving, said auxiliary drive meshing with said second spindle part and being integrated between said first spindle part connected with said drive and said third spindle part, said second spindle part being a shaft provided with couplings for fixed connection with said first spindle part and said third spindle part,

said auxiliary drive further having a torque increasing transmission arranged so that said shaft is driven by said drive element through said transmission.

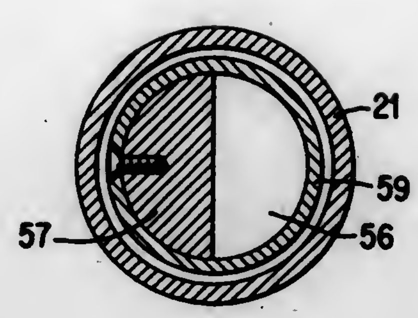
5,617,925
ASSEMBLY FOR DECELERATING A DRIVER IN A TOOL
Terry A. Boothby, Cincinnati, and Delbert E. Lucas, Fairfield, both of Ohio, assignors to Sencorp, Newport, Ky.
Filed Jun. 5, 1995, Ser. No. 463,848
Int. Cl.[6] B25D *1/12;* **B25C** *1/08*
U.S. Cl. 173—211 **19 Claims**



14. An assembly for decelerating a movable driver in a tool, comprising:
(a) a tool body;
(b) a driver movable along its axis within the tool body, the driver having a contact surface forming an acute angle with respect to the axis;
(c) a stop assembly for stopping movement of the driver in the axial direction, the stop assembly being disposed between the contact surface of the driver and a stop structure within the tool body, the stop assembly including a plurality of serially aligned conical stop members that interface with each other at predetermined acute interface angles relative to the axis, the stop member proximal to the driver contact surface forming a first predetermined acute interface angle with the driver contact surface, the stop member most distal to the driver contact surface forming a final interface angle with the stop structure with all predetermined interface angles between the stop members increasing progressively in the direction from the first to the final interface angles.

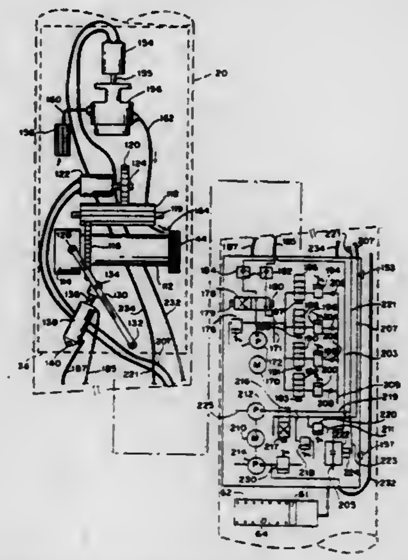
5,617,926
STEERABLE DRILLING TOOL AND SYSTEM
Alan M. Eddison, Stonehaven, United Kingdom, and Spryo J. Kotsonis, Houston, Tex., assignors to Schlumberger Technology Corporation, Sugar Land, Tex.
Continuation-in-part of Ser. No. 286,291, Aug. 5, 1994, Pat. No. 5,484,029. This application Sep. 14, 1995, Ser. No. 528,073
Int. Cl.[6] E21B *7/00*
U.S. Cl. 175—61 **12 Claims**

1. A rotary directional drilling tool apparatus, comprising: a drive shaft having a drill bit on one end thereof, said bit and shaft having a first axis of rotation; a tubular housing having a second axis of rotation and adapted to be rotated by a drill string; universal joint means for connecting said drive shaft to said housing and transmitting torque from said housing to said drive shaft and said bit; gravity responsive means for holding said first axis so that said



bit faces in one direction in space during rotation of said housing about said second axis, said holding means including normally disengaged clutch means; and means for engaging said clutch means.

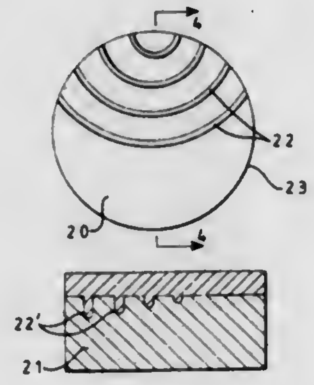
5,617,927
SIDEWALL ROTARY CORING TOOL
Jacques Maissa, Houston, Tex., assignor to Western Atlas International, Inc., Houston, Tex.
Continuation of Ser. No. 341,331, Nov. 16, 1994, abandoned, which is a continuation of Ser. No. 219,002, Mar. 29, 1994, abandoned, which is a continuation of Ser. No. 969,766, Oct. 3, 1992, abandoned. This application Oct. 16, 1995, Ser. No. 543,514
Int. Cl.[6] E21B *49/06*
U.S. Cl. 175—78 **6 Claims**



1. A sidewall coring tool for wireline use in an earth bore hole, comprising:
an elongated tool body adapted for suspension within the bore hole by the wireline cable at a selected depth;
rotary coring bit apparatus mounted within said elongated tool body and cooperating therewith for advancing and retracting a rotary coring bit transversely therefrom for drilling and recovering a large core sample from the sidewall of the bore hole, the rotary coring apparatus further including an automatic bit pressure compensation during advance of the coring bit;
decentralizing arm apparatus mounted in said tool body on the side opposite the side of the body from which said rotary coring bit is advanced, said decentralizing arm apparatus spaced above and below the location of the rotary coring apparatus for deploying decentralizing arms from said tool body into contact with the bore hole walls and forcing the side of the tool body from which the rotary coring bit will be

advanced into contact with the bore hole wall and maintaining the tool body rigidly against the bore hole wall during the coring operation;
an electrical control circuit disposed on the earth's surface for permitting selected control of preselected functions of said coring apparatus; and
monitoring apparatus and circuitry disposed in the tool body and cooperating with said rotary coring bit apparatus for permitting continuous surface visual indication of the travel of the coring bit with respect to the tool body during the coring operation.

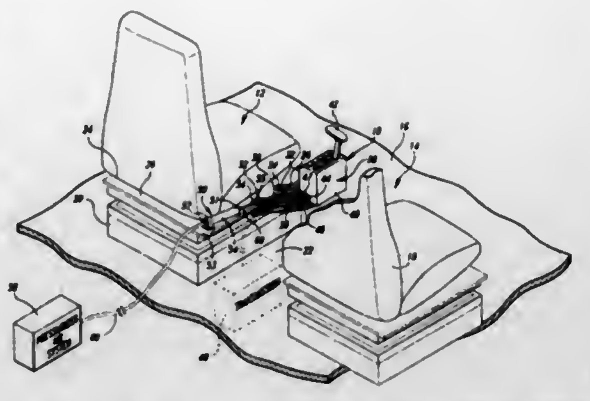
5,617,928
ELEMENTS FACED WITH SUPERHARD MATERIAL
Terry R. Matthias, Longlevens; John M. Fuller, Nailsworth, and Nigel D. Griffin, Whitminster, all of England, assignors to Camco Drilling Group Limited, Stonehouse, England
Filed Jun. 16, 1995, Ser. No. 491,063
Claims priority, application United Kingdom, Jun. 18, 1994, 9412247
Int. Cl.⁶ E21B *10/46*
U.S. Cl. 175—432 **14 Claims**



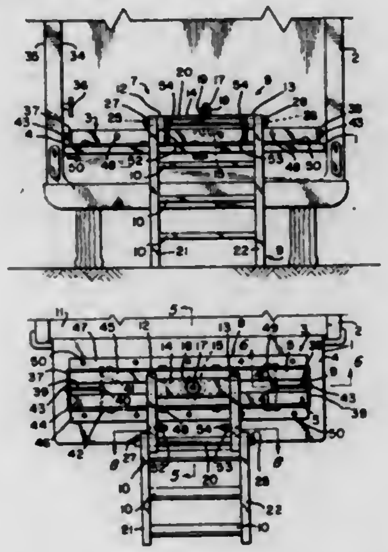
1. A preform cutting element including a facing table of superhard material having a front face, a peripheral surface, and a rear surface bonded to a substrate which is less hard than the superhard material, a cutting edge forming part of the peripheral surface of the facing table, the rear surface of the facing table being integrally formed with a plurality of spaced elongate ribs of said superhard material which project into the substrate, at least the majority of said ribs being located in the vicinity of said cutting edge.

5,617,929
MOVABLE SHIFT CONSOLE
Donald A. Richardson, Renton, and Walter E. Benz, Bonney Lake, both of Wash., assignors to PACCAR Inc, Bellevue, Wash.
Filed Oct. 10, 1995, Ser. No. 540,452
Int. Cl.⁶ B60K *20/00*
U.S. Cl. 180—326 **26 Claims**

21. A movable shift console for use in a motor vehicle having a transmission and a driving compartment, comprising:
a console support structure in the driving compartment;
an arm pivotally connected to said console support structure, said arm being pivotable relative to the console support structure about a vertical pivot axis; and
a shift console pivotally connected to said arm, said shift console being movably connected to said console support structure by the arm, said shift console having a gear shifter operatively connected to the transmission, said shift console being movable as a unit relative to said console support structure in a substantially horizontal plane between a first position and a second position.

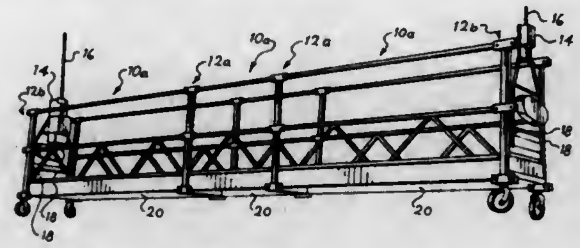


5,617,930
LADDER ASSEMBLY FOR A TAILGATE OF A TRUCK
Francis Elia, 140 Marshall Hill Rd., P.O. Box 334, West Milford, N.J. 07480
Filed Apr. 6, 1995, Ser. No. 417,989
Int. Cl.⁶ E06C *9/00*
U.S. Cl. 182—97 **20 Claims**



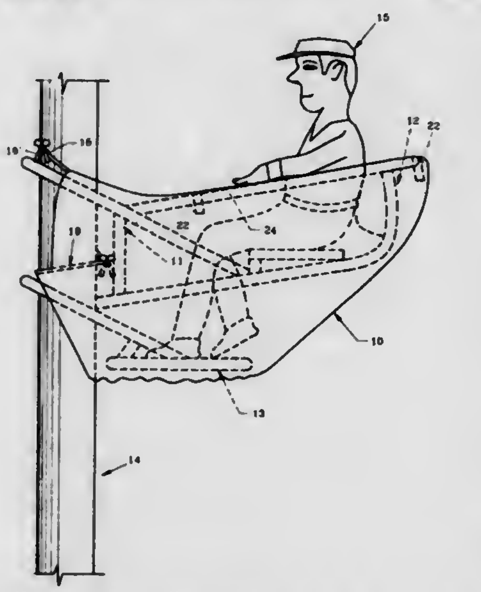
1. A ladder assembly for a tailgate of a truck comprising:
an elongated arrangement capable of being secured to an inner surface of said tailgate in a parallel relation with a rear of said truck, said elongated arrangement having a pair of first members disposed coextensive with said elongated arrangement equally spaced from and parallel to said inner surface of said tailgate and spaced from each other to form a slot in said elongated arrangement coextensive therewith;
a ladder arrangement having a first portion disposed in a rotatable and slidable relation with said slot adjacent one end thereof and a second portion pivotably and removably connected to the other end of said first portion having a plurality of steps to permit easy ingress and egress to and from a bed of said truck when said ladder arrangement is in its use position; and
a tie down arrangement disposed in a removable relation with said slot and at least two of said steps to hold said ladder arrangement when rotated from said use position to a storage position adjacent said elongated arrangement and said inner surface of said tailgate when said ladder arrangement is not in use.

5,617,931
MODULAR SCAFFOLDING SYSTEM
Leon E. Zygmun, Lake Forest, and Martin C. Conneally, Downers Grove, both of Ill., assignors to L. E. Zygmun and Company, Inc., Skokie, Ill.
Filed Aug. 11, 1994, Ser. No. 289,240
Int. Cl.⁶ E04G *5/08*
U.S. Cl. 182—145 **18 Claims**



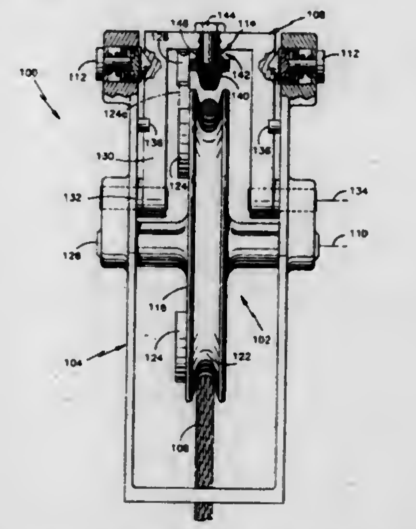
1. In a modular scaffolding system to be assembled from a plurality of detachable sections, the combination comprising:
a first side wall of substantially flat, elongated shape;
a second side wall of substantially flat, elongated shape;
a detachable deck of substantially flat, elongated shape;
means on the first and second side walls for support said deck;
at least one end connector assembly for attachment to the ends of the first and the second side walls;
means for interconnecting the first side wall and the second side wall including drop-in pins and slotted connectors therebetween; and
latch means for latching said deck; wherein said latch means comprise:
pivoted latches; and
springs attached to said pivoted latches.

5,617,932
TREE STAND SHROUD
Bobby R. Stuart, 3000 Van Noppen Rd., Greensboro, N.C. 27406
Filed Sep. 29, 1994, Ser. No. 314,670
Int. Cl.⁶ A01M *31/00*
U.S. Cl. 182—187 **13 Claims**



1. A hunter's tree stand and portable shroud in combination for attachment to a tree trunk, comprising:
(a) a climbable tree stand having separate seat and foot rest sections; and
(b) a flexible fabric shroud, said shroud surrounding said seat and said foot sections, said shroud surrounding said tree trunk, said shroud comprising means to attach said shroud to said tree stand, and means to directly attach said shroud to said tree trunk, said tree trunk attachment means joined to said shroud, whereby said tree stand is concealed by said shroud.

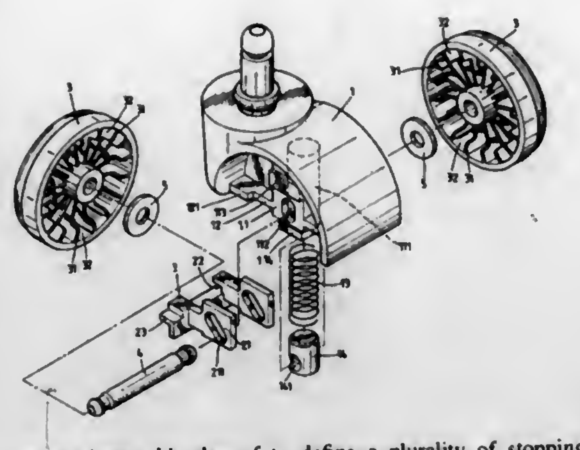
5,617,933
BI-DIRECTIONAL ELEVATOR GOVERNOR
Richard J. Ericson, Southington, Conn., assignor to Otis Elevator Company, Farmington, Conn.
Filed Jun. 13, 1995, Ser. No. 489,874
Int. Cl.⁶ B66B *5/00*
U.S. Cl. 187—350 **5 Claims**



1. In an elevator system, an elevator governor rope brake assembly for slowing governor rope movement upon the occurrence of unintended movement of an elevator cab, said assembly comprising:
(a) a governor sheave over which said governor rope passes, said governor sheave having an outer circumference and adapted to rotate about a first axis;
(b) pivotally mounted braking means disposed about said outer circumference of said governor sheave for slowing said governor rope movement, said pivotally mounted braking means capable of pivoting along a first arcuate path and a second arcuate path, said first arcuate path and second arcuate path intersecting said outer circumference of said governor sheave at symmetrical locations on said outer circumference, said intersecting of said first arcuate path and said second arcuate path with said outer circumference of said governor sheave occurring at an angle sufficient for said pivotally mounted braking means to engage said governor rope with sufficient force to slow said governor rope movement; and
(c) releasable positioning means for initially positioning said pivotally mounted braking means at a point where said first arcuate path and said second arcuate path intersect.

5,617,934
BRAKE MECHANISM OF CASTOR
Sung-Wang Yang, No. 258-15, An-Ting, An Chia Tsun, An Ting Shiang, Tainan Hsien, Taiwan
Filed May 14, 1996, Ser. No. 645,539
Int. Cl.⁶ B60B *33/00*
U.S. Cl. 188—1.12 **1 Claim**

1. A castor and breaking mechanism therefor, comprising:
an axle;
a pair of wheels coupled to opposing ends of said axle, each of said wheels having a plurality of radially spaced fins formed



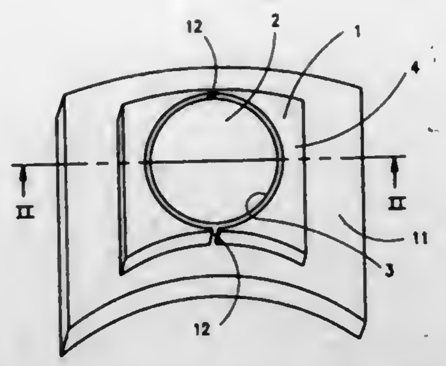
on an inner side thereof to define a plurality of stopping grooves between respective pairs of said plurality of fins;

means for supporting said pair of wheels, said wheel support means including a longitudinally directed semicircular wheel cowl and axle suspension means disposed centrally and extending longitudinally in said wheel cowl for supporting said axle in a direction transverse said longitudinal direction, said axle suspension means including (1) a housing having a vertically directed bore formed therein, said housing having a pair of vertically slotted openings formed through opposing sides thereof in open communication with said bore and aligned in said transverse direction for passage of said axle therethrough, (2) two pairs of stoppers extending transversely from said housing, each pair of said two pairs of stoppers being disposed in spaced parallel relationship and in spaced relationship with respective opposing ends of a respective one of said slotted openings, (3) a spring disposed within said bore, and (4) a slide member disposed within said bore adjacent said spring, said slide member having a through hole formed transversely therein and aligned with said slotted openings for passage of said axle therethrough; and,

a brake support having a pair of longitudinally extended plates disposed in spaced parallel relationship on opposing transverse sides of said housing, each of said plates being positioned between a respective pair of said stoppers and have a diagonally directed slotted opening formed therethrough and disposed in alignment with a respective slotted opening in said housing for passage of said axle therethrough, said brake support having a pair of opposing transversely directed lugs formed on one end thereof for reversible latching engagement with a respective one of said plurality of stopping grooves of said pair of wheels, wherein said brake support is linearly displaced in a first direction for latching engagement with said pair of wheels by displacement of said axle in a second direction within said slotted openings of said pair of plates and said housing responsive to a bias force of said spring, said brake support being linearly displaced in a direction opposite said first direction by displacement of said axle in a direction opposite said second direction within said slotted openings of said pair of plates and said housing for disengaging said brake support from said pair wheels responsive to a force applied to wheel support means sufficient to overcome said bias force of said spring.

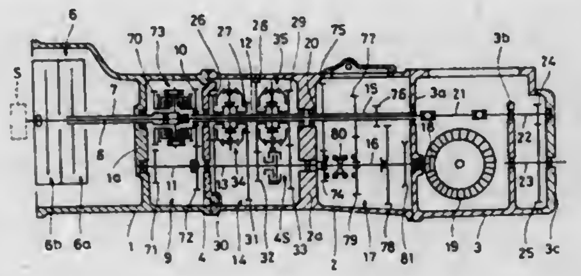
5,617,935
FRICTION PAD FOR A DISK BRAKE
William Chuang, and King Y. K. Chuang, both of 1230 Miramonte Ave., Los Altos, Calif. 94022
Filed Aug. 30, 1996, Ser. No. 697,868
Int. Cl.⁶ F16D *65/00;65/40*
U.S. Cl. 188—73.1 **3 Claims**

1. A friction pad for a disc brake comprising a stationary pad which is fixed on a backing plate, and a rotatable pad which is rotatably attached to the backing plate, wherein the rotatable pad is rotatable along an axis which is perpendicular to the backing plate,



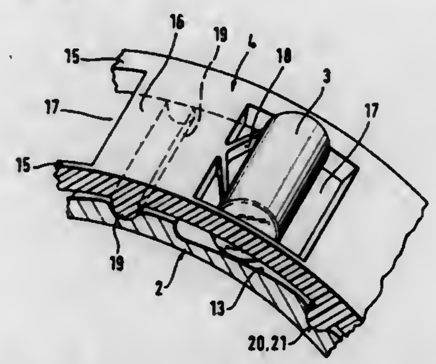
wherein at least a cut-off portion is formed on the stationary pad, the rotatable pad is rotatably accommodated in the cut-off portion of the stationary pad, a lower plate is formed with the rotatable pad, the lower plate has a tubular portion which is accommodated in a cut-off portion formed in the backing plate, a lubricating means is provided between the lower plate and a face on the backing plate contacting the rotatable pad, and an enlarged portion is formed at the lower end of the tubular portion so as to prevent the rotatable pad and the lower plate from accidentally falling off.

5,617,936
SYNCHROMESH CHANGE TRANSMISSION HAVING A NEUTRAL BRAKE
Shusuke Nemoto, Yao, Japan, assignor to Kanzaki Kokyukoki Mfg. Co., Ltd., Amagasaki, Japan
Filed Nov. 14, 1995, Ser. No. 555,699
Claims priority, application Japan, Dec. 2, 1994, 6-329443
Int. Cl.⁶ B60K *41/28*
U.S. Cl. 192—4 A **8 Claims**



1. In a vehicle transmission having a synchromesh speed-change mechanism (14) disposed between an input shaft (12) and an output shaft (13) which extend parallel with each other, said change mechanism including synchronizer clutches (34, 35) which are mounted on said input shaft, the improvement characterized in that a brake (45) is disposed on said output shaft (13) in a face-to-face relationship, as viewed in a direction across said input and output shafts (12, 13), with one (35) of said synchronizer clutches on said input shaft, said brake being operatively connected to a control mechanism (59) for controlling the operation of said synchronizer clutches (34, 35) such that said brake is actuated so as to brake said output shaft (13) when said speed change mechanism (14) is placed in its neutral condition.

5,617,937
ROTATION PREVENTING DEVICE FOR A PLASTIC CAGE OF AN OVERRUNNING CLUTCH
Herbert Zettner, Herzogenaurach, and Johann Stark, Höchstadt, both of Germany, assignors to Ina Walzlager Schaeffler KG, Germany
Filed Oct. 19, 1995, Ser. No. 545,519
Claims priority, application Germany, Nov. 30, 1994, 44 42 404.3
Int. Cl.⁶ F16D *41/06*
U.S. Cl. 192—45 **7 Claims**

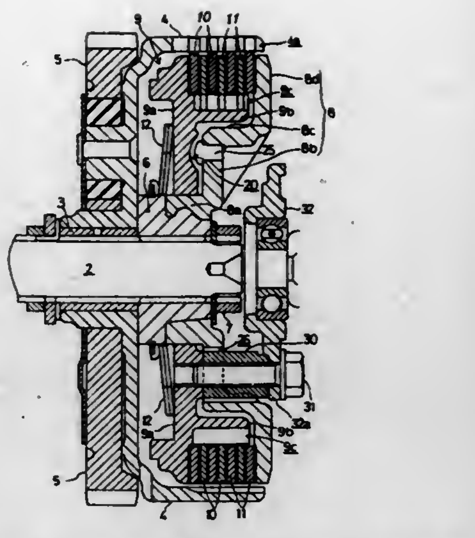


1. An overrunning clutch comprising two concentric thin-walled bushes (1,2) rotatable relative to each other and having locking surfaces (13,14) formed on their mutually facing peripheral surfaces, and, arranged therebetween, a plastic cage (4) comprising end rings (15) connected to each other by crossbars (16), pockets (17) for locking elements (3) spring-urged against the locking surfaces (13,14) being formed between circumferentially adjacent crossbars (16), the plastic cage (4) further comprising at least one radial projection (19) which engages into a recess (20) of one of the thin-walled bushes (2) to prevent rotation of the plastic cage (4) relative to this thin-walled bush (2), characterized in that the radial projection (19) is arranged on a crossbar (16), the locking surfaces being formed by a smooth cylindrical locking surface (14) of the outer bush (1) and by locking ramp surfaces (13) arranged successively in circumferential direction on the inner bush (2), the inner bush (2) comprises a smooth cylindrical inner peripheral surface and the axial groove (20) is made between, adjacent locking surfaces (13) with one axial end of the axial groove (20) being open and another axial end of the axial groove (20) being closed by a radially projecting portion (22) of the inner bush (2).

5,617,938
FRICTION CLUTCH
Yoshiaki Tsukada; Kazuhiko Nakamura; Mitsuru Saito, and Hiroaki Kayama, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 5, 1995, Ser. No. 462,883
Claims priority, application Japan, Sep. 29, 1994, 6-258996
Int. Cl.⁶ F16D *13/56;43/286*
U.S. Cl. 192—54.5 **20 Claims**

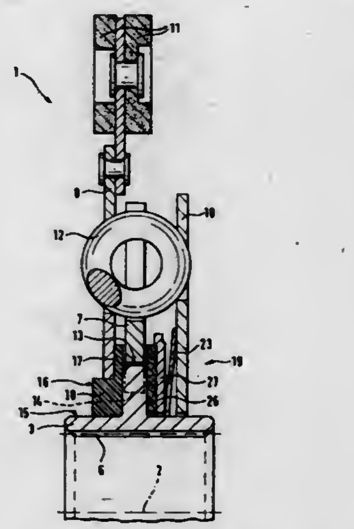
1. A friction clutch wherein a distance between a clutch center member on a driven shaft side and a pressure plate, between which an alternate arrangement of clutch friction plates on a driving shaft side and clutch plates on said driven shaft side is disposed, is increased or decreased, while said clutch center member and said pressure plate are normally biased in a direction to decrease the distance therebetween by a clutch spring, to disconnect or connect transmission of power between said driving shaft and said driven shaft, wherein said clutch center member and said pressure plate are disposed for relative displacement in a direction of rotation, said friction clutch comprising:

a conversion mechanism for converting a relative displacement in the direction of rotation between said clutch center member and said pressure plate caused by a countertorque inputted to said friction clutch into a relative displacement in a direction of an axis of rotation to increase the distance between said



clutch center member and said pressure plate, wherein said clutch friction plates are supported inside of a bottomed cylindrical clutch outer member, and wherein said clutch center member, said pressure plate and said clutch spring are disposed in this order proceeding in an inward direction from an opening end side of said bottomed cylindrical clutch outer member.

5,617,939
FRICTION CLUTCH ASSEMBLY FOR A MOTOR VEHICLE, THE FRICTION CLUTCH ASSEMBLY HAVING A CLUTCH PLATE WITH DIVIDED HUB DISC
Klaus Memmel, Gädheim; Jürgen Kleifges, Schweinfurt; Reinhard Feldhaus, Ebenhausen, and Harald Jeppe, Schweinfurt, all of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Germany
Filed Aug. 23, 1995, Ser. No. 518,789
Claims priority, application Germany, Aug. 23, 1994, 44 29 870.6
Int. Cl.⁶ F16D *3/14;13/58*
U.S. Cl. 192—70.16 **17 Claims**



1. A friction clutch assembly for a friction clutch for a motor vehicle, said friction clutch assembly comprising:

a flywheel;

a clutch housing;

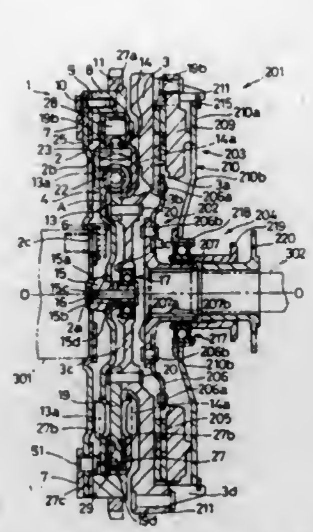
a hub;

said hub defining an axis of rotation and an axial direction parallel to the axis o rotation;

a clutch disc disposed within said clutch housing, said clutch disc coaxially surrounding said hub;
pressure plate means disposed within said clutch housing and being movable in the axial direction, said pressure plate means fur applying an axial force to said clutch disc along the axial direction;
means for biasing said pressure plate means in the axial direction;
said flywheel comprising a centrifugal mass;
said centrifugal mass being disposed substantially adjacent said clutch disc and axially opposite said pressure plate means;
said clutch disc being disposed between said pressure plate means and said flywheel;
said clutch disc comprising friction lining means;
said friction lining means being disposed substantially between said pressure plate means and said flywheel;
a cover plate;
a hub disc;
said hub disc comprising an external portion an internal contour;
said external portion of said hub disc being disposed farther from said hub than is said internal contour of said hub
said hub disc being disposed to coaxially surround said hub;
said hub disc being disposed adjacent said flywheel;
said cover plate being disposed substantially adjacent said hub disc;
said hub having an internal portion and an external portion;
said external portion of said bub being disposed farther from the axis of rotation than said internal portion of said hub;
said external portion of said hub comprising an external contour; and
said internal contour of said hub disc and said external contour of said hub comprising means for meshing tightly with one another and for preventing substantial relative rotational movement between said hub and said hub disc upon engagement of said internal contour of said hub disc with said external contour of said hub.

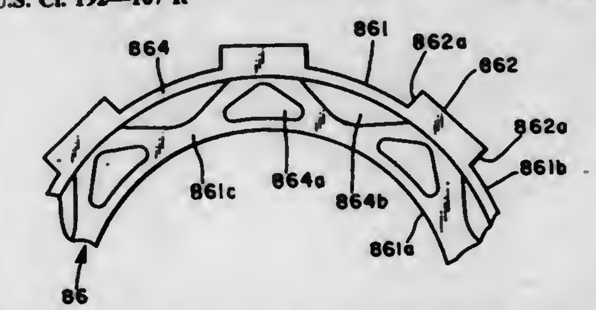
5,617,940
POWER TRANSFER APPARATUS HAVING A VIBRATION DAMPENING MECHANISM WHICH PROVIDES STRUCTURAL SUPPORT FOR THE APPARATUS
Hirotaka Fukushima, Hirakata; Koji Kajitani, Tsuzuki-gun; Hiroyoshi Tsuruta, Kadoma, and Masanobu Fukamachi, Hirakata, all of Japan, assignors to Exedy Corporation, Osaka, Japan
Filed Jan. 31, 1995, Ser. No. 382,307
Claims priority, application Japan, Feb. 8, 1994, 6-014530; Feb. 8, 1994, 6-014531; Feb. 14, 1994, 6-017675; Feb. 14, 1994, 6-017676; Feb. 14, 1994, 6-017677; Feb. 14, 1994, 6-017678; Feb. 14, 1994, 6-017679; Feb. 14, 1994, 6-017680; Feb. 14, 1994, 6-017681; Feb. 14, 1994, 6-017682; Feb. 14, 1994, 6-017683; Feb. 14, 1994, 6-017684
Int. Cl.⁶ F16D *3/14*
U.S. Cl. 192—70.17 **27 Claims**

1. A power coupling mechanism disposed between a crankshaft of a rotary power producing device and a transmission comprising:
at least a first power input plate, a dampening mechanism coupled to said first power input plate and a driven plate coupled to said dampening mechanism;
said dampening mechanism including an annular housing formed with at least one axially extending annular protrusion;
said driven plate being formed with at least one annular groove engaging and inter-fitting with said annular protrusion such that engagement between said annular protrusion and said annular groove confines said driven plate against axial movement with respect to said first power input plate and provides structural support against thrust and radial forces experienced by the power coupling mechanism;
a flexible disk-like plate having a center hole and a plurality of bolt holes radially spaced apart from one another, defining a pitch circle, said flexible disk-like plate boltable to a crankshaft of a rotary power producing device via said bolt holes;



an inertia element rigidly connected to said driven plate; and
a ring gear rigidly connected to said inertia element.

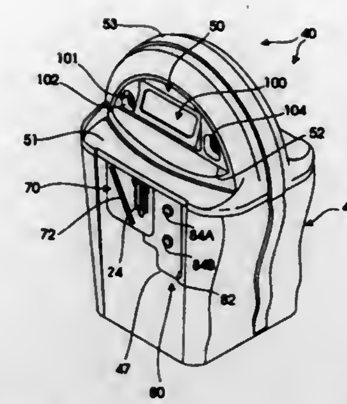
5,617,941
FORCE-RECEIVING PLATE FOR FRICTION DEVICE
Shigeo Takahashi; Yoshitaka Soga, both of Anjyo; Tatsuo Ohhashi, Ogaki, and Hirotaka Ito, Gifu-ken, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, and Marujun Seiki Ind. Co., Ltd., Ogaki, both of Japan
Filed Dec. 21, 1994, Ser. No. 360,575
Claims priority, application Japan, Dec. 22, 1993, 5-323781; Dec. 22, 1993, 5-323782; Dec. 22, 1993, 5-323783
Int. Cl.⁶ F16D *13/60*
U.S. Cl. 192—107 R **19 Claims**



10. A pressure-receiving plate for a friction device, said plate comprising:
an annular portion having one side provided with a friction surface for contacting a friction disk engaged with one of a driving member and a driven member, and an opposite side provided with at least one depression which is formed by applying crushing work, the annular portion having an inner periphery and an outer periphery; and
pawls formed integrally on the inner periphery or the outer periphery of said annular portion for engaging the other of said driving member and driven member, the thickness of said pawls being less than the thickness of the annular portion through application of crushing work to the pawls.

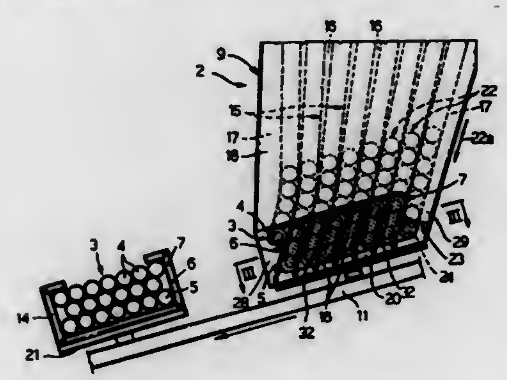
5,617,942
LOW-POWER MULTI-BAY PARKING METER
Seth Ward, II; Gary W. Speas, both of Little Rock, and R. Todd Brown, Russellville, all of Ark., assignors to POM, Inc., Russellville, Ark.
Filed Apr. 24, 1995, Ser. No. 428,771
Int. Cl.⁶ G07F *17/24*
U.S. Cl. 194—217 **20 Claims**

1. A multi-bay parking meter comprising:



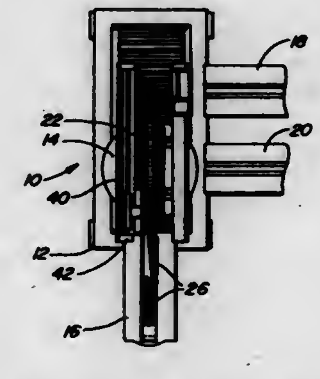
a rigid casing adapted to be disposed adjacent at least one parking space for which time is to be vended for housing components of said meter;
at least one payment slot in said casing for accepting payment for said time;
a plurality of space selection buttons for enabling a customer to choose a particular parking space, at least one button for each space;
a digital display for prompting a customer and indicating the status of parking spaces;
circuitry connected to place said meter in a low-power consumption mode when not vending time;
a circuit for crediting customers with payments and associating particular payments with particular parking spaces, said circuit activating said display for alerting a customer of his selection.

5,617,943
GROUP FORMING DEVICE FOR CIGARETTE PACKING MACHINES
Bruno Belvederi, S. Martino Di Monte S. Pietro; Alberto Manservigi, and Eros Stivani, both of Bologna, all of Italy, assignors to G.D Societa' Per Azioni, Bologna, Italy
Filed Dec. 23, 1994, Ser. No. 363,686
Claims priority, application Italy, Dec. 23, 1993, BO93A0520
Int. Cl.⁶ B65B *19/10*
U.S. Cl. 198—418.1 **4 Claims**



1. A group-forming device for cigarette packing machines (1); each group (3; 3*a*) comprising a number of cigarettes (4) arranged in at least two adjacent layers (5, 6), wherein the cigarettes (4) in one layer (5; 6) are offset in relation to the cigarettes (4) in the other layer (6; 5); the device (2; 2*a*) comprising at least one outlet (9) for said groups (3; 3*a*); and each outlet (9) comprising a number of side-by-side channels (15) for feeding respective rows (22) of cigarettes (4) transversely in a given direction (22*a*); an end wall (20) closing and crosswise to said channels (15); and a lateral opening (23) adjacent and crosswise to said end wall (20); said channels (15) being, at least at the layers (5, 6) of offset cigarettes (4), straight channels inclined approximately 60° in relation to said end wall (20); one of said channels being a shorter channel.

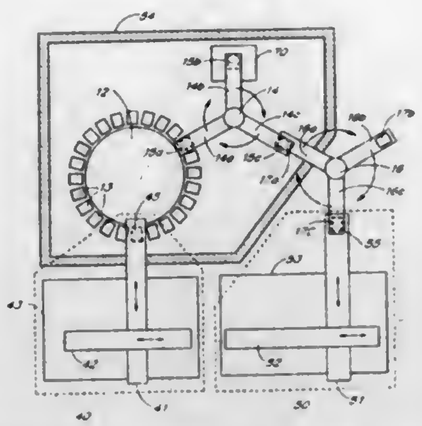
5,617,944
SHUTTLE TRANSFER ASSEMBLY
Michael D. McTaggart, Windsor, Canada, assignor to Valiant Machine & Tool, Inc., Windsor, Canada
Filed Jun. 15, 1995, Ser. No. 490,755
Int. Cl.⁶ B65G *17/12*
U.S. Cl. 198—468.6 **9 Claims**



1. A shuttle transfer assembly for transferring parts between at least two conveyor lines comprising:
a base,
a transfer table mounted to said base,
a conveyor section mounted to said transfer table,
means for moving said transfer table so that said conveyor section is aligned with a selected conveyor line,
means on said transfer table operable when said conveyor section is aligned with a first conveyor line for loading parts from said first conveyor line onto said conveyor section, and
means on said transfer table operable when said conveyor section is aligned with a second conveyor line for unloading parts from said conveyor section onto said second conveyor line
wherein said loading means comprises
a loader arm,
means for moving said loader arm between an upper position in which said loader arm is positioned above parts on one of said conveyor lines and a lower position in which said loader arm is aligned with parts on said one of said conveyor lines,
means for linearly moving said loader arm between an extended and a retracted position,
wherein in said extended position said loader arm is positioned over a portion of said one of said conveyor lines and wherein in said retracted position said loader arm is positioned over said table.

5,617,945
DEVICE TRANSFER MECHANISM FOR IC TEST HANDLER
Hiroyuki Takahashi, Kazo, and Kenpei Suzuki, Gyoda, both of Japan, assignors to Advantest Corporation, Tokyo, Japan
Filed May 11, 1995, Ser. No. 438,947
Claims priority, application Japan, May 27, 1994, 6-138085
Int. Cl.⁶ B65G *17/46*
U.S. Cl. 198—471.1 **14 Claims**

1. A device transfer mechanism for an IC test handler, comprising:
a disc-shaped rotation table (12) having a plurality of pockets (13) for storing IC devices (71) to be tested received from a supply area and transferring said IC devices to an area close to a test section (70) on said IC test handler, said rotation table (12) having a soak chamber for providing predetermined



temperature to said IC devices during the period of said transferring said devices (71);

a contact arm (14) having a plurality of pickup arms (14*a*, 14*b*, 14*c*) symmetrically arranged with respect to a vertical axis, said contact arm rotating to pickup said IC devices from said rotation table (12) and transfer said IC devices (71) to said test section (70) on said IC handler, each of said pickup arms (14*a* 14*b*, 14*c*) of said contact arm (14) having a suction section (15) at the outer end; and

storage arm (16) having a plurality of pickup arms (16*a*, 16*b*) to receive said IC devices that have been tested from said contact arm (14), each of said pickup arms (16*a*–16*c*) of said storage arm (16) having a suction section (15) at the outer end for picking up and transferring said IC devices to a storage area.

5,617,946

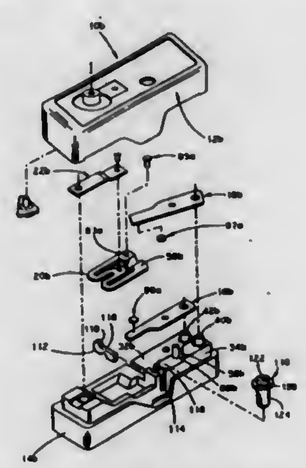
PUSH-BUTTON SWITCH

Vincent P. Acampora, Bristol, and William J. Vumback, North Ford, both of Conn., assignors to C & K Components, Inc., Watertown, Mass.

Continuation of Ser. No. 246,577, May 20, 1994, abandoned, which is a continuation of Ser. No. 60,496, May 11, 1993, abandoned, which is a continuation of Ser. No. 894,540, Mar. 11, 1992, abandoned. This application Mar. 6, 1995, Ser. No. 399,948

Int. Cl.⁶ H01H *5/20*

U.S. Cl. 200—407 **11 Claims**



1. An improved push-button switch having a base supporting normally open and closed contacts, a biased subassembly including an over-center blade contact and a beam support that supports the blade contact for movement between a biased position and an actuated position, the blade contact having a first portion of a first surface contacting the normally closed contact in the biased position and a second portion of a second opposed surface for selectively contacting the normally open contact in the actuated position, a cover and a push-button with an actuator extending through an aperture in the cover and a base portion engaging the biased subassembly such that upon urging the actuator downward relative to the cover the first portion is urged away from the normally closed contact and the second portion is urged into contact with the normally open contact, wherein the improvement comprises first means in said base for supporting the normally open contact in a first horizontal plane along a first axis and a second means in said base for supporting the normally closed contact in a second parallel horizontal plane in a second axis horizontally displaced from the first axis such that the portions of said blade contact that contact the normally open and closed contacts in the actuated and biased positions, respectively, are horizontally spaced from each other; and

said base includes first and second proximate and horizontally, parallel planar surfaces, the open and closed contacts are similarly shaped with each having first and second corresponding apertures therein, and said first and second supporting means includes contact engagement inserts with one of said contact engagement inserts extending from each of said first and second planar surfaces of the base, said contact engagement inserts being spaced a given transverse distance and sized for being received in ones of the first corresponding apertures of said contacts and first and second studs sized for being received in ones of the second corresponding apertures, one of said studs extending from each of the first and second planar surfaces of the base spaced from the contact stud along the axis of the associated one of the normally open and closed contacts and spaced the given transverse distance from the other of said studs.

5,617,947

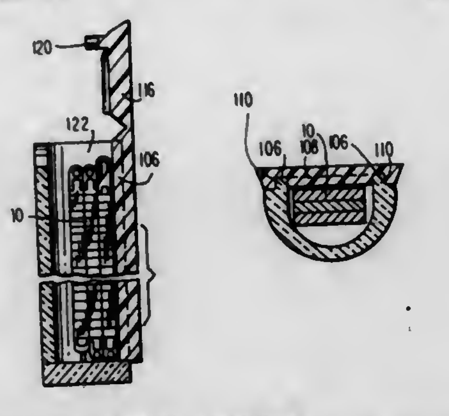
FOLDABLE STIFF METAL CHAIN NECKLACE AND BRACELET

Tsolag Momjian, and Hagop Momjian, both of P.O. Box 19379, 91193 Jerusalem, Israel

Continuation-in-part of Ser. No. 204,643, Mar. 1, 1994, Pat. No. 5,475,989. This application Dec. 5, 1994, Ser. No. 349,312

Int. Cl.⁶ A45C *11/04*

U.S. Cl. 206—6.1 **4 Claims**



1. A boxed piece of jewelry comprising:

a. adjoining stiff metal chain segments that are susceptible to permanent crimping or creasing;

b. hinged connector means pivotly attaching each metal chain segment to the adjoining segment;

whereby said chain can be flat folded at each hinged connector to a length approximately equal to the length of the longest metal chain segment without crimping or creasing the jewelry;

c. a compact container for receipt of said chain when it has been flat folded, said container comprising:

i) an elongated tubular upper wall extending the length of the container; said tubular wall bearing against said flat folded chain to prevent movement of jewelry;

ii) a flat bottom extending the length of the interior of the container and interconnected with said tubular upper wall;

iii) a long narrow interior space formed between said tubular upper wall and said flat bottom adapted for receipt of the flat folded chain;

iv) said container having an opening at one end to allow receipt of said flat folded chain within said long narrow interior space;

v) means to selectively open and close said opening.

5,617,948

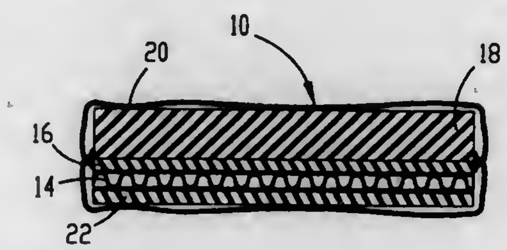
JEWELRY STORAGE APPARATUS

Claudette Rainey, 3905 Vineyard Rd., Kansas City, Mo. 64130

Filed Jan. 9, 1995, Ser. No. 370,382

Int. Cl.⁶ A45C *11/04*

U.S. Cl. 206—6.1 **3 Claims**



1. A jewelry storage apparatus for storing jewelry comprising:

a multilayered jewelry cushion for receiving and holding the jewelry, said cushion including

a planar base layer formed of thin rigid cardboard or cork-board material,

a planar intermediate layer positioned atop said base layer, said intermediate layer being formed of pliable foam rubber material,

a planar upper layer positioned atop said intermediate layer, said upper layer being formed of sponge material, and

an outer layer enveloping said base, intermediate and upper layers, said outer layer being formed of flexible cloth material and including a plurality of loops attached thereto for receiving and holding jewelry such as loop earrings; and

a carrying case for receiving said cushion, said carrying case being formed of transparent synthetic resin material for allowing visual inspection of the jewelry held on said cushion when said cushion is placed within said carrying case.

5,617,949

CASSETTE, DESIGNED TO RECIEVE FLAT OBJECTS, ESPECIALLY DATA CARRIERS

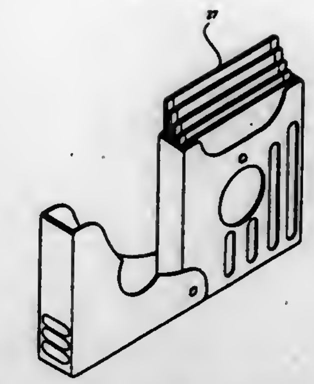
Willem de Koning, Papendrecht, and Johannes F. Ros, Huizen, both of Netherlands, assignors to Kunststoffenfabriek l'Insigne B.V., Oud Alblas, and Office Data Europe (ODE) B.V., Almere-haven, both of Netherlands

Filed Mar. 27, 1996, Ser. No. 624,788

Claims priority, application Netherlands, Apr. 6, 1995, 1000080

Int. Cl.⁶ B65D *85/30*

U.S. Cl. 206—307.1 **4 Claims**



1. A cassette for receiving a stack of flat objects, which cassette comprises a box part and a cover part:

the box part comprising a front and rear wall, a bottom wall and two side walls;

the cover part comprising a front and a rear wall, a side wall and a top wall;

the box part and said cover part being mutually hinged near one of the corners of the box part close to the bottom wall thereof; that side wall of the box part that is situated next to the hinge axis being provided with an opening at a short distance from the bottom wall;

the box and cover parts being dimensioned such that they can at least partially be fitted one inside the other in a substantially sliding fit; and

the cover part including an element that has a step-shaped series of supporting points integral with the side wall of the cover part between the hinge axis and said opening in the box part, by means of which the objects located in the cassette lie mutually aligned when the box part and cover part are in a storage position and are automatically repositioned into heights that steadily increase when the box part and cover part are moved into a usage position.

5,617,950

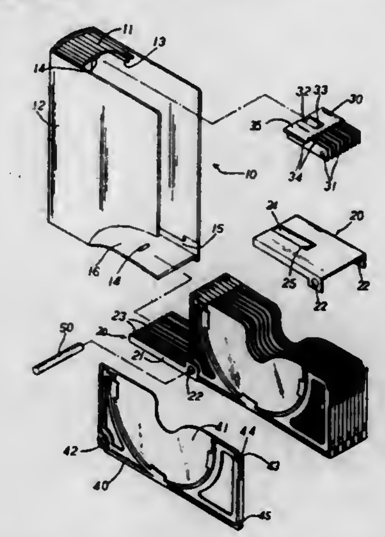
BOOK-SHAPED CD CONTAINER

M. F. Chung, Taichung, Taiwan, assignor to Min Shin Plastic Ind. Co., Ltd., Taichung, Taiwan

Filed Jun. 17, 1996, Ser. No. 664,550

Int. Cl.⁶ B65D *85/57*

U.S. Cl. 206—308.1 **11 Claims**



1. A book-shaped CD container for storage video or audio compact discs, comprising:

a book-shaped outer case having two side shelters, a closed bottom, a partially closed top side having a ceiling portion, a closed rear side and a fully opened front side;

a groove-divided pivot mount removably engaged with and secured to said closed bottom of said outer case;

a groove-divided retaining seat removably engaged with and secured to said top ceiling portion of said outer case;

a plurality of CD receiving plates pivotally disposed in juxtaposition to one another and pivotally engaged with said groove-divided pivot mount by a pivot shaft;

each said CD receiving plate having a semi-circular cavity at the central portion thereof for storage of a compact disc; and being locked in place to said retaining seat when housed in said outer case and being unlocked when pivoted outwardly for removal of a housed compact disc;

whereby said CD receiving plates can be selectively pivoted out of said outer case for picking out stored compact discs or pivotally pushed into said outer case for storage.

5,617,951

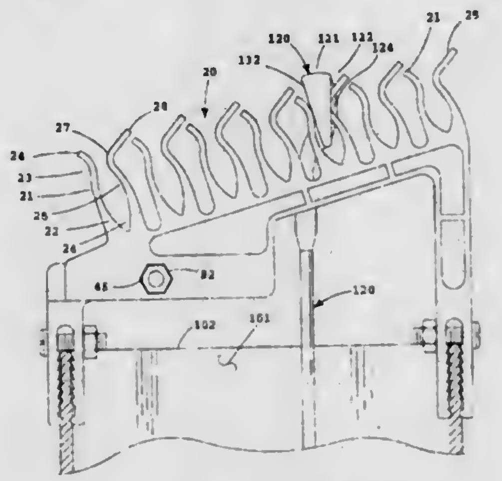
GOLF CLUB ORGANIZER FOR A GOLF BAG

Philip B. Wick, P.O. Box 3545, Hayden, Id. 83835

Filed Jan. 23, 1996, Ser. No. 590,336

Int. Cl.⁶ A63B *55/00*

U.S. Cl. 206—315.6 **7 Claims**



1. A golf club organizer for a golf bag, comprising:

(a) an adjustment brackets, comprising:

(a) a horizontal arm having an array of adjustment holes and having an outer end portion; and

(b) a first downwardly directed alligator connector connected to the outer end portion of the horizontal arm; and

(b) an angular bracket, comprising:

(a) a vertical arm, the vertical arm having an upper portion and a lower portion, the lower portion attached to a second downwardly directed alligator connector;

(b) an angular support, the angular support having an upper surface, and an upper end and a lower end, the upper end connected to the upper portion of the vertical arm;

(c) interlocking cavity means for adjustable connection to the adjustment bracket, comprising:

(a) upper and side surfaces, slidable against the horizontal arm of the adjustment bracket; and

(b) an adjustment bolt hole in the angular bracket having countersunk hole means for preventing the rotation of a nut;

(d) a plurality of resiliently deformable forks, carried by the upper surface of the annular support, each fork comprising:

(a) a fork base;

(b) a club face prong, attached to the fork base, comprising an outwardly curved prong base, an inwardly curved middle portion, and an outwardly curved tip; and

(c) a club back prong, attached to the fork base, comprising an outwardly curved prong base, an middle corner portion, and an outwardly directed tip; and

(e) wherein the first and second alligator connectors comprise;

(a) a jaw back;

(b) an outer jaw, having an outer bolt hole, attached to the jaw back;

(c) an inner jaw, having an inner bolt hole, attached to the jaw back;

(d) teeth, carried by the outer jaw and the inner jaw; and

(e) biasing means, carried by the inner and outer bolt holes, for biasing the teeth of the inner and outer jaws against the golf bag.

5,617,952

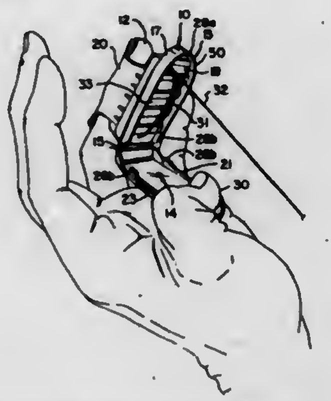
SUTURE NEEDLE PROTECTOR

Donald H. Kranendonk, 3812 Kingbird Ave., Wausau, Wis. 55401

Filed Dec. 7, 1993, Ser. No. 163,162

Int. Cl.⁶ B65D *85/28;* **A61B** *17/06*

U.S. Cl. 206—380 **13 Claims**



1. A suture needle protector for holding a suture needle during a surgical operation, comprising:

(a) a base having an inner base surface on which a suture needle can be placed;

(b) a cover sized to close over the base to hold a suture needle on the inner base surface surrounded by the base and the cover;

(c) a hinge hingedly attaching the cover to the base so that the cover can be moved from a closed position in which the cover and base enclose a suture needle to an opened position in which a suture needle can be placed in or removed from the area of the inner base surface;

(d) mounting means for mounting the base to a finger of a user; and

(e) means for releasably holdinq the cover closed onto the base, wherein the base includes a base wall extending from and at least partially around the inner base surface, and wherein the means for releasably holding the cover onto the base comprises at least one lip formed on the base wall and at least one hook extending from the cover which is positioned to snap over and engage the lip on the base wall when the cover is moved to its closed position, and wherein one of said at least one lip is formed on the forwardmost portion of the base wall and a corresponding one of said at least one hook is formed on a corresponding forwardmost portion of the cover to engage the forwardmost lip on the base wall, and further including lips extending from the base wall at positions near the hinge and hooks extending from the cover at positions near the hinge to engage the lips on the base wall near the hinge as the cover is moved to its closed position.

5,617,953

STACKABLE/NESTABLE CONTAINERS

Andrew C. Cope, Wednesbury, United Kingdom, assignor to McKechnie UK Limited, West Midlands, United Kingdom

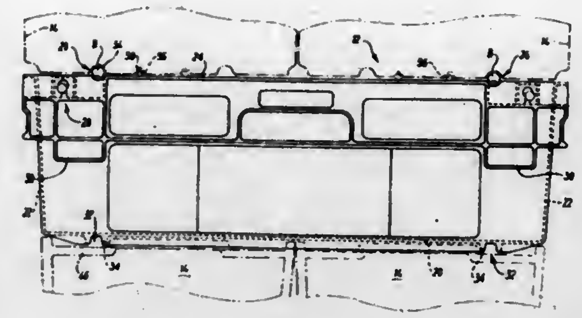
Filed Mar. 6, 1995, Ser. No. 399,129

Claims priority, application United Kingdom, Mar. 12, 1994, 9404833

Int. Cl.⁶ B65D *21/00*

U.S. Cl. 206—501 **11 Claims**

1. A container system comprising:



(a) a large container having an open top, attached side walls, and a base, said large container forming a first container layer of said container system;

(b) a plurality of small containers each having attached side walls and a base, said plurality of small containers being arranged side by side over the open top of said large container to bridge the distance between an opposing two of the side walls of said large container of the first container layer and to collectively form a second container layer carried by said first container layer;

(c) first and second support members located respectively adjacent to the opposing side walls of said large container for supporting opposite ends of the second container layer on the first container layer in a stacked condition; and

(d) said small containers of the second container layer having respective outwardly-projecting side exterior surface areas which engage each other, and which cooperate to brace an interior of the second container layer over the open top of said large container of the first container layer, thereby preventing the second container layer from collapsing downwardly through the open top of said large container of the first container layer.

5,617,954

CONTAINER OF SOLID PROCESSING AGENT USED FOR SILVER HALIDE PHOTOSENSITIVE MATERIAL

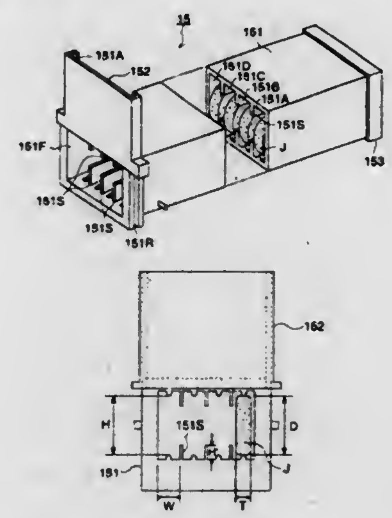
Masashi Kato, and Satoru Kuse, both of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Aug. 31, 1994, Ser. No. 298,272

Claims priority, application Japan, Nov. 19, 1993, 5-281425; Feb. 17, 1994, 6-020512

Int. Cl.⁶ B65D *83/04*

U.S. Cl. 206—539 **24 Claims**



1. A transportable package for use in a silver halide photosensitive material processing apparatus, comprising:

a plurality of processing agent tablets for processing said silver halide material;

a container including an elongated chamber containing the plurality of said tablets in succession while standing on circumferential tablet edges;

said chamber having a height (H) in a range from 1.03 to 1.50 times larger than a diameter (D) of said tablets; and

said chamber having a width (W) in a range from 1.03 to 1.50 times larger than a thickness (T) of said tablets.

5,617,955

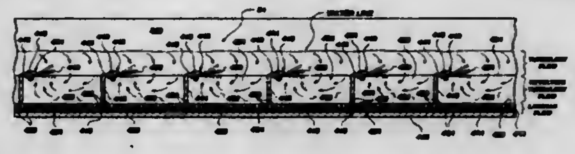
DYNAMIC-MINING SYSTEM COMPRISING HYDRATED MULTIPLE RECOVERY SITES AND RELATED METHODS

Noel Tanner, Lakeshore, Utah, assignor to Peter Abt, Calgary, Canada, and Rennat Trust, Lakeshore, Utah

Division of Ser. No. 212,745, Mar. 14, 1994, Pat. No. 5,544,756. This application Feb. 21, 1995, Ser. No. 392,460

Int. Cl.⁶ B03B *5/24*

U.S. Cl. 209—458 **48 Claims**



1. A method of recovering gold comprising the steps of:

displacing a stream of ore in carrier water turbulently along a confined predetermined course;

slowing the flow adjacent a bottom region of the confined predetermined course to laminar flow;

causing the laminar flow adjacent to the bottom region to intersect a plurality of yieldable blades to damp the laminar flow whereby gold particles precipitate between the blades.

5,617,956

APPARATUS FOR SORTING AND STACKING SHEET MATERIAL

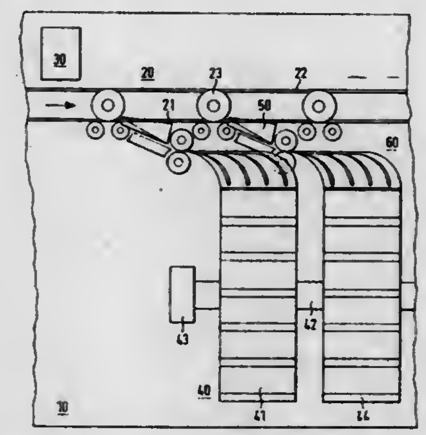
Frank Werner; Herbert Maul, both of München, and Gerhard Stenzel, Germering, all of Germany, assignors to Gieseck & Devrient GmbH, Munich, Germany

Filed Mar. 31, 1995, Ser. No. 414,791

Claims priority, application Germany, Mar. 31, 1994, 44 11 403.6

Int. Cl.⁶ B07C *5/00*

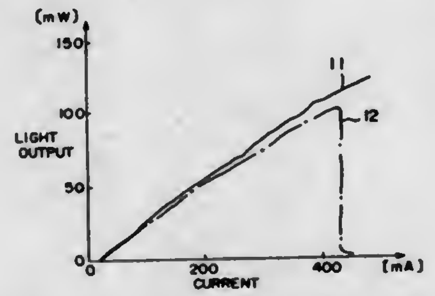
U.S. Cl. 209—534 **11 Claims**



1. An apparatus (10) for sorting and stacking loose sheet material, in particular papers of value, bank notes and the like, comprising: transport means (20) for moving the sheet material along a

transport path (21), test means (30) for testing and classifying the sheet material according to various criteria, stacking means (40) having at least one stacking unit (41) with stacking pockets (44) for receiving the sheet material, at least one switch (50) associated with the stacking unit (41) for diverting the sheet material from the transport path toward said stacking unit (41) of the stacking means (40), said sheet material being assigned to said stacking unit in accordance with the result of testing, said stacking unit being disposed at a certain angle to the transport path, and deflecting means (60) having an outer guide means (63) and inner guide means (62) that are disposed a certain distance apart disposed between said switch (50) and said stacking unit (41) for deflecting said sheet material diverted out of said transport path and rotating said sheet material toward said stacking pockets of said stacking unit (41).

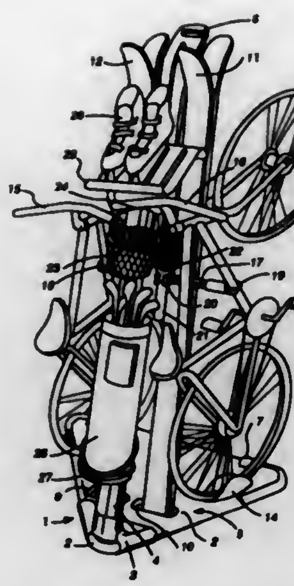
5,617,957
METHOD OF SORTING SEMICONDUCTOR LASERS
Ichiro Yoshida; Tsukuru Katsuyama, and Jun-ichi Hashimoto, all of Yokohama, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan
Continuation-in-part of Ser. No. 268,534, Jul. 6, 1994, Pat. No. 5,446,537. This application May 15, 1995, Ser. No. 441,692
Claims priority, application Japan, Jul. 13, 1993, 5-173249; Jul. 1, 1994, 6-151062
Int. Cl.⁶ B07C 5/344
U.S. Cl. 209—571 20 Claims



1. A method of sorting semiconductor lasers, comprising:
the first step of supplying a first predetermined current to said semiconductor lasers for a first predetermined time;
the second step of supplying a second predetermined current which is larger than said first predetermined current for a second predetermined time which is shorter than said first predetermined time of the first step; and
the third step of measuring light output characteristics after the second step and removing defective devices in accordance with a measurement result.

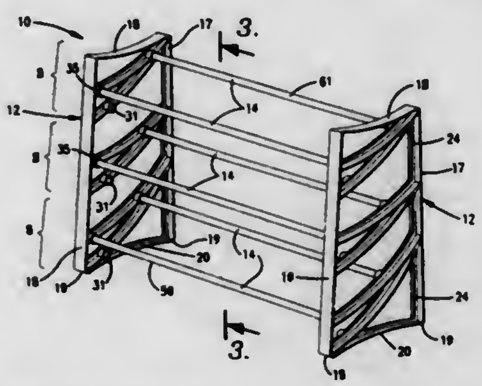
5,617,958
VERTICAL SPORTS RACK
Tamara Laug, 4606 Greenbriar, Boulder, Colo. 80303, and Robert L. Bromley, Broomfield, Colo., assignors to Tamara Laug, and Jake Thamm, both of Boulder, Colo.
Filed Dec. 8, 1994, Ser. No. 351,671
Int. Cl.⁶ A47F 7/00
U.S. Cl. 211—13 16 Claims

1. A vertical sports rack comprising:
a base having a flat surface for contact with a floor, and having a slanted support hub angled inward toward a central area of the base;
said slanted support hub having means for supporting a main strut;
a main strut angled inward toward said central area and defining a front face and a back face, and having a plurality of vertical grooves;



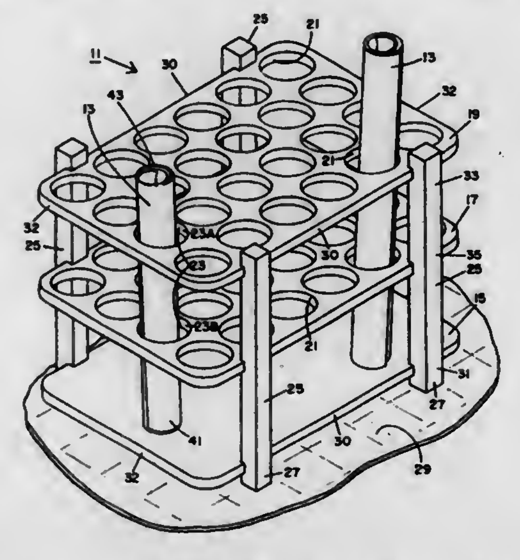
a brace means attached to said main strut on said back face having tongues slidingly engaged in said vertical grooves;
a horizontal bar having opposing ends extending laterally of said main strut and being affixed to said brace means, said horizontal bar also having a bicycle frame clamp at each of said ends.

5,617,959
SHOE RACK
Richard B. Klein, Overland Park, and Chris Sersley, Leawood, both of Kans., assignors to Lynk, Inc., Shawnee Mission, Kans.
Filed May 26, 1995, Ser. No. 452,314
Int. Cl.⁶ A47F 7/08
U.S. Cl. 211—37 19 Claims



1. A shoe rack comprising:
at least one base member for engaging and retaining shoes within a shoe retaining plane having a desired pitch with respect to horizontal; and
side frames formed along parallel longitudinal axes, each side frame including at least one side leg extending along a length of the frame; and
at least one support bracket mounted to said at least one side leg, each support bracket supporting a corresponding end of said base member, one of said base member and said support bracket including convertible means for affixing said base member in first and second positions with respect to said side frames when said side frames are converted between horizontal and vertical alignments, respectively, said convertible means maintaining said base member in one of said first and second positions to maintain said shoe retaining plane at said desired pitch with respect to horizontal when the shoe rack is converted between said horizontal and vertical alignment.

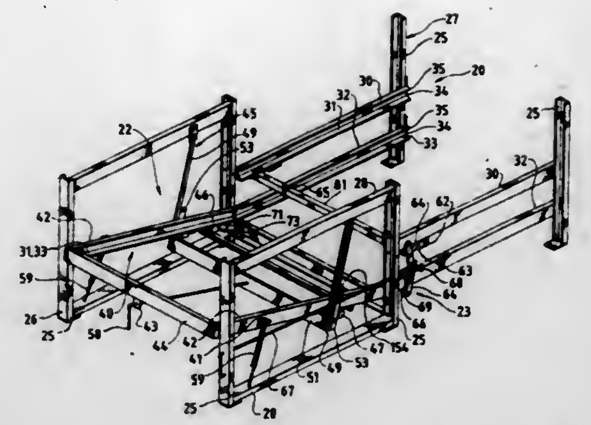
5,617,960
APPARATUS FOR HOLDING ROLLED-UP PLANS OR MAPS
George Bishop, 300 Morris Rd., Sadieville, Ky. 40370
Filed Jun. 2, 1995, Ser. No. 458,560
Int. Cl.⁶ A47F 7/00
U.S. Cl. 211—60.1 8 Claims



1. An apparatus for holding rolled print media, said print media being rolled into a cylindrical shape, comprising:
a) a bottom plate;
b) a middle plate;
c) a top plate;
d) said middle plate and said top plate each having plural openings therethrough, with each opening in said top plate being aligned with a respective opening in said middle plate, said bottom plate being solid in locations beneath said openings in said middle plate;
e) plural spacers fixedly coupling said bottom plate, said middle plate, and said top plate together in spaced apart relations, each of said spacers having a bottom end that extends below said bottom plate, wherein said apparatus bears on said spacer bottom ends, said spacers being separated from each other by a gap, each of said spacers coupling to said bottom, middle and top plates;
f) said rolled print media having two ends and being received by an aligned set of said openings in said middle and top plates, with one of said ends bearing on said bottom plate.

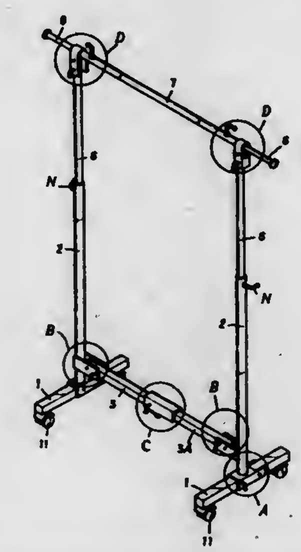
5,617,961
LOAD TRANSFER AND RETURN SYSTEM
Anthony N. Konstant, Winnetka, and John F. Pater, Northbrook, both of Ill., assignors to Konstant Products, Inc., Skokie, Ill.
Filed Jun. 7, 1995, Ser. No. 481,899
Int. Cl.⁶ A47F 5/08
U.S. Cl. 211—151 27 Claims

1. A load transfer and return system comprising:
at least one pair of spaced, parallel feed rails having rolling surfaces;
at least one pair of spaced, parallel return rails having rolling surfaces and positioned below said feed rails;
at least one cart having wheels for rolling engagement with said rolling surfaces of said feed rails and said return rails;



a pivotable switch rail assembly to selectively transfer said cart from said feed rails to said return rails;
a transfer activation mechanism to enable the selective operation of said switch rail assembly and effectuate transfer of said cart from said feeds rails to said return rails;
a cart advance mechanism to enable the selective release of said cart from said feed rails to an unloading or transfer position on said switch rail assembly; and,
a cart stop device on said switch rail assembly to prevent cart derailment during said transfer of said cart from said feed rails to said return rails, wherein said cart stop device automatically disengages said cart upon said switch rail assembly achieving a full transfer position and automatically returns to an operative position upon completion of transfer of said cart from said feed rails to said return rails.

5,617,962
FOLDING COLLAPSIBLE CLOTHES RACK
Hsien A. Chen, No. 63, Lane 2, Hsia Lin Road, Tainan City, Taiwan
Filed Jul. 20, 1995, Ser. No. 504,590
Int. Cl.⁶ A47F 5/00
U.S. Cl. 211—206 5 Claims



1. A folding, collapsible clothes rack, comprising: two parallel stands respectively equipped with rollers for movement; two bottom connecting rods longitudinally connected between said stands; two uprights respectively and vertically mounted on said stands; two pistons slidably inserted into a respective one of said uprights and locked at a desired elevation relative to its respective upright by a respective lock; a top tube horizontally supported on said pistons; and two extension rods respectively and slidably inserted

into two opposite ends of said top tube and fixed in place by a respective lock, wherein:

each upright comprises a transverse bottom channel pivotably connected to a respective stand by a first pivot pin and secured to said respective stand in the operative position by a respective first tightening up screw and a respective first U-shaped spring plate, and an upper channel mount perpendicularly spaced above said transverse bottom channel mount, said transverse bottom channel mount having one end turned about said first pivot pin and an opposite end made with a screw hole and a locating hole at two opposite sides, said upper channel mount having one end fixedly and perpendicularly connected to its upright and an opposite end made with a screw hole and a locating hole at two opposite sides, said first tightening up screw being threaded into the screw hole on the transverse bottom channel mount of its upright and stopped against the periphery of the respective stand, said first U-shaped spring being mounted inside one of said stands and having a rod at one end extended out of a hole on said respective stand and inserted into the locating hole on the transverse bottom channel mount of its upright;

each of said bottom connecting rods has a first end pivotably connected to the upper channel mount of its upright by a respective second pivot pin and secured in the operative position by a respective second tightening up screw and a respective second U-shaped spring, and a second end pivotably connected to each other by a third pivot pin and secured in the operative position by a third tightening up screw and a third U-shaped spring plate, said second tightening up screw being threaded into the screw hole on said respective upper channel mount and stopped against the periphery of one bottom connecting rod, said second U-shaped spring plate being mounted inside one bottom connecting rod at one end and having a rod at one end extended out of a hole on said respective bottom connecting rod and inserted into the locating hole on said respective bottom channel mount, said second bottom connecting rod having a channel mount at the second end, the channel mount of said second bottom connecting rod having a screw hole and a locating hole bilaterally disposed at one end and a pair of downward lugs bilaterally disposed in the middle, said second and third pivot pins being connected between the downward lugs of the channel mount of said second bottom connecting rod, said first bottom connecting rod having a coupling plate at the second end, said coupling plate having two downward lugs turned about said third pivot pin, said third tightening up screw being threaded into the screw hole on the channel mount of said second bottom connecting rod and stopped against the periphery of said first bottom connecting rod, said third U-shaped spring plate being mounted inside the second end of said first bottom connecting rod and having a rod extended out of a hole on the second end of said first bottom connecting rod and inserted into the locating hole on the channel mount of said second bottom connecting rod;

said top tube has two downward coupling plates at two opposite ends respectively and pivotably connected to said pistons by a respective fourth pivot pin, each downward coupling plate having a screw hole and a locating hole at two opposite sides;

each piston is turned about the fourth pivot pin on one downward coupling plate of said top tube and secured in the operative position by a respective fourth tightening up screw and a fourth U-shaped spring plate, said fourth tightening up screw being threaded into the screw hole on one downward coupling plate of said top tube and stopped against the periphery of its respective piston, said fourth U-shaped spring plate being mounted inside the top end of one piston and having a rod extended out of a hole on the top end of its respective piston and inserted into the locating hole on its respective downward coupling plate.

5,617,963

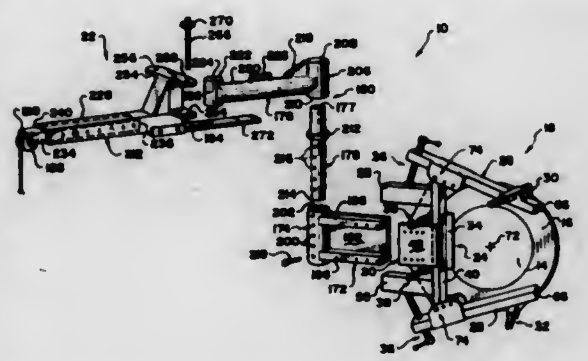
APPARATUS FOR MOUNTING AN APPLIANCE AT AN OPENING

Morris Bazluk, Winnipeg, and Jan Vetesnik, Lorette, both of Canada, assignors to Unique Concepts Inc., Winnipeg, Canada

Filed Jun. 14, 1995, Ser. No. 490,521

Int. Cl.^{6} B66C *23/18*

U.S. Cl. 212—179 **18 Claims**



1. A combination of a wall having an opening therein and an apparatus for mounting an appliance at said opening of said wall comprising:

the wall comprising:

a projection arranged around at least a portion of a periphery of the opening including a side wall extending outwards from a plane of the wall, said side wall having a first surface adjacent the opening and a second surface opposite the first surface, and a flange extending laterally from the side wall of the projection, said flange having an inner face adjacent the wall and an outer face opposite the inner face;

the apparatus comprising:

an appliance mounting member;

and grasping means fixed to said appliance mounting member for securing the apparatus to the projection including:

a main support member;

a first clamp positioning arm pivotally connected by pivot connection means adjacent a first end to an end of the main support member and extending forwards therefrom to a second end;

a second clamp positioning arm pivotally connected by pivot connection means adjacent a first end to the main support at an end of the main support member opposite the first clamp positioning arm and extending forwards therefrom to a second end;

a first clamping means fixed adjacent the second end of the first clamp positioning arm and engaging the inner and outer faces of the flange;

a second clamping means fixed adjacent the second end of second clamp positioning arm and engaging the inner and outer faces of the flange;

securing means mounted on the main support member and engaging a portion of the side wall of the projection;

a first angular adjustment means for independently adjusting a position of the second end of the first clamp positioning arm both towards and away from the periphery of the opening;

and a second angular adjustment means for independently adjusting a position of the second end of the second clamp positioning arm both towards and away from the periphery of the opening.

5,617,964

LIFTING MEANS FOR LOADS

Manfred Lücking, and Burkhard Mende, both of Essen, Germany, assignors to Krupp Fordertechnik GmbH, Duisburg, Germany

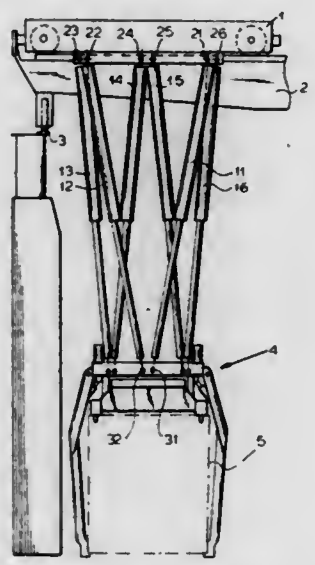
PCT No. PCT/EP93/01367, § 371 Date Oct. 28, 1994, § 102(e) Date Oct. 28, 1994, PCT Pub. No. WO93/25464, PCT Pub. Date Dec. 23, 1993

PCT Filed Jun. 1, 1993, Ser. No. 331,562

Claims priority, application Germany, Jun. 13, 1992, 42 19 370.2

Int. Cl.^{6} B66C *17/04*

U.S. Cl. 212—327 **9 Claims**



1. A lifting device comprising:

a horizontal support in the form of a horizontal bridge girder spaced above a load in the form of a container to be lifted and a crane trolley displaceable horizontally on said bridge girder;

means for displacing said support horizontally above said load;

at least six longitudinally adjustable extensible and retractable hydraulic control cylinders extending downwardly from said crane trolley and individually articulated to said crane trolley at spaced apart locations thereon by respective linkages each enabling swiveling of the respective control cylinders about two mutually perpendicular axes relative to said crane trolley; and

a container-engaging spreader connected by individual articulations to lower ends of all of said hydraulic control cylinders enabling swiveling of each of the respective lower ends about two mutually perpendicular axes relative to said container-engaging spreader,

at least four of said control cylinders being mutually oblique, and

said container-engaging spreader being provided with means for gripping said load.

5,617,965

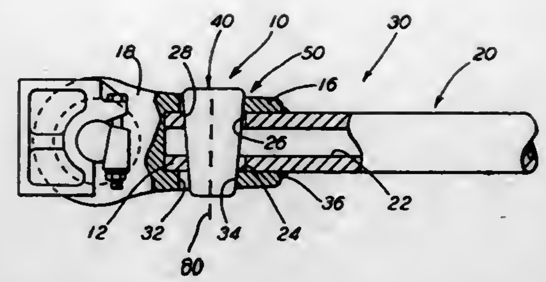
INTERLOCKING TYPE MECHANISM FOR A SLACKLESS DRAWBAR ASSEMBLY USED ON A RAILWAY FREIGHT CAR

Michael G. Hawryszkow, Munster, Ind., assignor to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Jun. 15, 1995, Ser. No. 490,873

Int. Cl.^{6} B61G *9/00*

U.S. Cl. 213—75 R **15 Claims**



1. An interlocking type mechanism positioned intermediate first and second end portions of a drawbar member portion of a slackless type drawbar assembly which is utilized in coupling adjacently disposed ends of a pair of railway freight cars together in a substantially semipermanent fashion, said interlocking type mechanism comprising:

(a) an elongated member portion engageable at a first end thereof to an end of a first male connection member and at an axially opposed second end thereof to an end of a second male connection member of such slackless drawbar assembly, at least one of said elongated member portion and such ends of such first and such second male connection members including a hollow portion so that one of said elongated member portion can be disposed in such hollow portion of such ends of such first and such second male connection members and such ends of such first and such second male connection members can be disposed in said hollow portion of said elongated member portion;

(b) a first aperture, having a first predetermined elongated slot-like shape, formed through said elongated member portion adjacent each of said first end and said axially opposed second end thereof, said first aperture including at least one end portion inclusive of a tapered wall-like portion;

(c) a second aperture, having a second predetermined elongated slot-like shape, formed through each of such ends of such first and such second male connection members so that each of said second apertures corresponds with one of said first apertures formed through said first and said second ends, respectively, of said elongated member portion, each of said second apertures including at least one end portion inclusive of a tapered wall-like portion disposed substantially opposite said tapered wall portion formed on said at least one end portion of said first aperture corresponding thereto; and

(d) a pair of plate like connection means, each having a third predetermined shape, a first one of said pair of plate like connection means being disposed in both said first aperture formed through said first end of said elongated member portion and a respective one of said second apertures formed through such first male connection member, and a second one of said pair of plate like connection means being disposed in both said first aperture formed through said axially opposed second end of said elongated member portion and a respective one of said second apertures formed through such second female connection member, for connecting said elongated member portion to such ends of such first and such second male connection members in a slackless manner.

5,617,966

AUTOMATICALLY RINSING BABY BOTTLE

Hooshang Bral, Beverly Hills, Calif., assignor to RXI Management, Corp., Los Angeles, Calif.

Continuation of Ser. No. 274,204, Jul. 12, 1994, abandoned. This application Dec. 15, 1994, Ser. No. 356,723

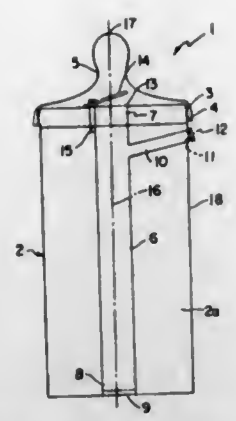
Int. Cl.^{6} A61J *9/00*

U.S. Cl. 215—11.4 **16 Claims**

1. A nursing bottle for automatically rinsing a baby's teeth, comprising:.

bottle means for storing a first liquid having an open end for receiving said first liquid;

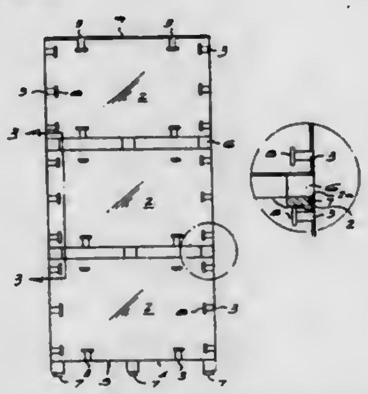
nipple means mounted on said open end of said bottle means for dispensing said first liquid through at least one discharge hole;



storage means for storing a second liquid having a dispensing end adjacent said nipple means for dispensing said second liquid; and

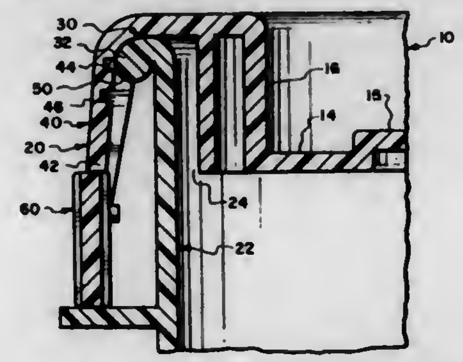
retaining means positioned on said dispensing end of said storage means which retains said second liquid within said storage means until said first liquid is substantially dispensed from said bottle means, whereby the force of gravity acts on said retaining means when said bottle means is at least substantially inverted, afterwhich said retaining means opens, thereby releasing said second liquid from said storage means into said nipple means to rinse the baby's teeth by dispensing said second liquid through said at least one discharge hole.

5,617,967
COLLAPSIBLE STACKABLE PALLET CONTAINER
Fritz Neidhart, Wellheim, Germany, assignor to Clip-Lok International Limited, British Virgin Islands, Cayman Islands
PCT No. PCT/GB94/00937, § 371 Date Jan. 3, 1996, § 102(e) Date Jan. 3, 1996, PCT Pub. No. WO94/25355, PCT Pub. Date Nov. 10, 1994
PCT Filed Apr. 29, 1994, Ser. No. 537,798
Claims priority, application Germany, Apr. 29, 1993, 43 14 150.1
Int. Cl.⁶ B65D *21/032*
U.S. Cl. 220—4.33 **17 Claims**



1. A stack of transport containers wherein each transport container in the stack comprises side walls connected to one another at their edges by clamps and a four-sided pallet, with blocks arranged at least at the corners of a base plate of the pallet and such that forks of a forklift truck can be inserted therebetween, the pallet fastened to the side walls by clamps, the outwardly directed side surfaces and of the blocks are flush with the corresponding outer surfaces of the adjoining side walls, skid planks being fastened to the undersides of the blocks, the outwardly directed side surfaces of the skid planks, over at least part of their height, maintaining a constant distance from the adjacent outwardly directed side surfaces of the adjacent blocks, the distance being determined by the thickness of this side walls plus a handling play which is not substantially greater than half a side wall thickness, and in that a plurality of slots are arranged towards upper edges of the side walls and the skid planks are provided with corresponding clamp locating means, whereby the clamps may be used to clamp the skid planks of an overlying container relative to the sides of a subjacent container in the stack.

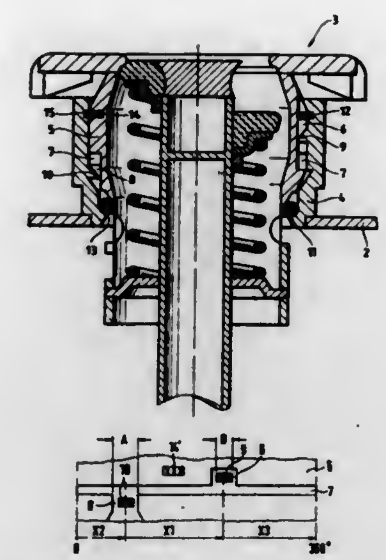
5,617,968
CONTAINER COVER HAVING PRIMARY AND SECONDARY DETENT MEANS
Frano Luburic, Fullerton, Calif., assignor to Ropak Corporation, Fullerton, Calif.
Continuation of Ser. No. 125,123, Sep. 22, 1993, abandoned. This application Oct. 4, 1995, Ser. No. 538,835
Int. Cl.⁶ B65D *17/40*
U.S. Cl. 220—276 **15 Claims**



1. A cover for a container having an opening and cover retaining means adjacent the opening, said cover including primary detent means engagable with the retaining means and secondary detent means engagable with the retaining means to maintain said cover in operative relationship with the container, said primary detent means being removable from said cover, the opening including one or more corners, said cover being configured in a shape corresponding to the opening including having one or more corresponding corners, said secondary detent means being peripherally spaced from said one or more corners of said cover.

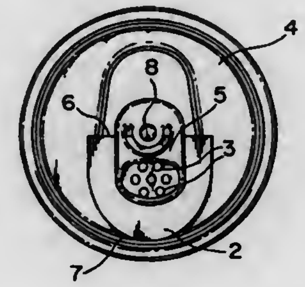
5,617,969
SAFETY LOCK FOR CONTAINER CONNECTIONS
Hans-Helmut Reichmann, Burbach-Wahlbach, Germany, assignor to Schäfer Werke GmbH, Neunkirchen-Pfannenberg, Germany
PCT No. PCT/EP93/01028, § 371 Date Jan. 3, 1994, § 102(e) Date Jan. 3, 1994, PCT Pub. No. WO93/22208, PCT Pub. Date Nov. 11, 1993
PCT Filed Apr. 29, 1993, Ser. No. 170,310
Claims priority, application Germany, May 2, 1992, 9205987 U
Int. Cl.⁶ B65D *41/06*
U.S. Cl. 220—295 **6 Claims**

1. A safety lock for a container connection in a container lid, the safety lock comprising an essentially tubular container connection part having an axis, and a lock part insertable in the container connection part, the container connection part having an inner circumferential surface and the lock part having an outer circumferential surface, wherein, when the lock part is inserted in the container connection part, the inner circumferential surface and the outer circumferential surface are in contact with each other, the lock part having a radially open circumferential groove and at least a first axial groove and a second axial groove extending parallel to the axis, the first and second axial grooves being in communication with the circumferential groove, wherein the first axial groove extends toward the container lid and the second axial groove



extends away from the container lid, the container connection part having at least a first cam and a second cam, the first and second cams projecting radially inwardly and being spaced axially from each other, the first and second cams having an axial width smaller than an axial width of the circumferential groove, the first and second cams having a circumferential width smaller than a circumferential width of the first and second axial grooves, wherein the first and second cams are circumferentially spaced from each other by a spacing and the first and second axial grooves are circumferentially spaced from each other by a spacing, and wherein the spacing between the first and second cams and the spacing between the first and second axial grooves are equal, whereby, for locking the safety lock, the lock part is moved axially with the first cam being in engagement in the second axial groove until the first cam is received in the circumferential groove, the lock part and the container connection part are turned relative to each other until the first cam is in alignment with the first axial groove and the lock part is moved axially until the first cam is in engagement with the first axial groove.

5,617,970
PROTECTOR FOR DRINK OPENING
Hae B. Lee, 5836 Jackson's Oak Ct., Burke, Va. 22015
Filed Jan. 5, 1996, Ser. No. 583,546
Int. Cl.⁶ B65D *1/40*
U.S. Cl. 220—730 **5 Claims**



1. A protective cover for the top of a liquid drink container in combination with a tab opening device including a tab actuator,

said drink container having a shearable closure which is displaced by the tab actuator to expose a container opening, and wherein said protective cover and said tab actuator comprises:

said protective cover is a substantially flat element having at least a concave central portion,

said protective cover being larger than said container opening,

a plurality of openings extending through said protective cover,

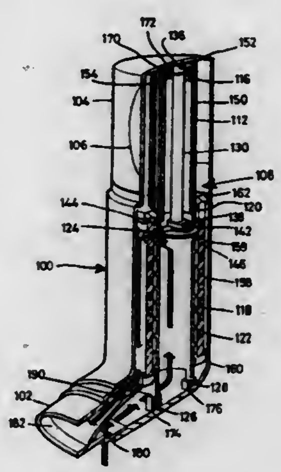
said tab actuator is a substantially flat element having a top and a bottom surface,

means for detachably securing said protective cover to said tab actuator,

said means comprising said concave central portion of said protective cover which receives the bottom surface of said tab actuator,

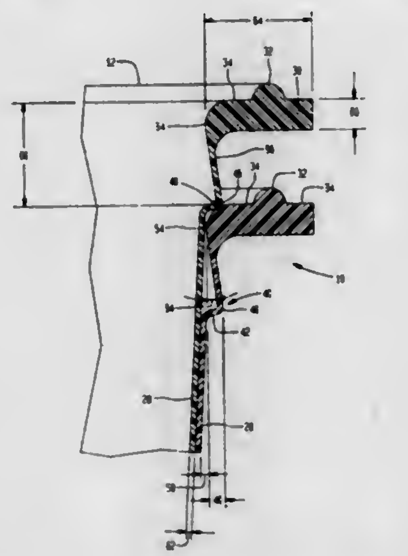
whereby said protective cover will be received and trapped between said tab actuator and said top of said liquid drink container.

5,617,971
DEVICE FOR ADMINISTERING SINGLE DOSES OF A MEDICAMENT
Stephen W. Eason, Redgrave; Clive P. A. Catterall, Wantage, and Roger W. Clarke, Histon, all of United Kingdom, assignors to Lipha SA, Lyons, Cedex, France
Filed May 17, 1995, Ser. No. 442,674
Claims priority, application United Kingdom, May 17, 1994, 9409852
Int. Cl.⁶ G07F *11/72*
U.S. Cl. 221—31 **15 Claims**



1. A device for dispensing single doses of a powdered medicament from a container having a plurality of apertures, each of which holds a respective one of said doses, and is sealed by two opposed seals, the device comprising a housing for holding the container, the housing having an outlet and an airway which communicates with the outlet, and being configured to allow the container, to move relative thereto to bring each aperture in succession into registry with the airway, wherein the device includes a piercing member moveable from a retracted position in which it is positioned clear of the container into an extended position in which it extends through the aperture, said movement causing the piercing member to rapture the seals, and wherein the piercing member has a relatively small cross-sectional area compared with that of each aperture so that said movement of the piercing member expels substantially no medicament from the aperture.

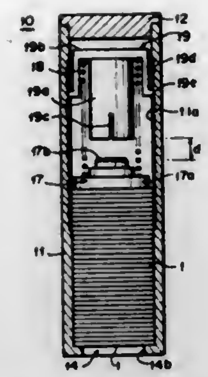
5,617,972
NURSER LINER
Emanuel P. Morano, Totowa, N.J., and Anthony E. Flecknoe-Brown, Richmond, Australia, assignors to Playtex Products Inc., Westport, Conn., and Tetra Laval Holdings & Finance S.A., Pully, Switzerland
Continuation-in-part of Ser. No. 218,314, Mar. 25, 1994, Pat. No. 5,501,365. This application Mar. 24, 1995, Ser. No. 409,872
Int. Cl.⁶ B65H *1/00*
U.S. Cl. 221—33 **46 Claims**



22. A stack of nurser liners for containment within a predetermined volume, said stack comprising:
a plurality of nurser liners, each liner having an elongated liner body with a central axis, each liner body having an open end and a closed end, wherein each liner body forms a taper from said open end to said closed end by an angle up to about 2.0 degrees;
a first liner of said plurality of nurser liners having a flexible rim located at said open end, said rim having a radial portion and an axial portion, said rim having a bead positioned on a top surface of said rim; and
means, positioned adjacent and below said rim, for spacing said first liner from an adjacent, second liner of said plurality of nurser liners;
said second liner having a rim located at said open end;
wherein when said first liner is positioned in said second liner, said means prevents said rim of said first liner from contacting said rim of said second liner to facilitate denesting of said first liner from said second liner.

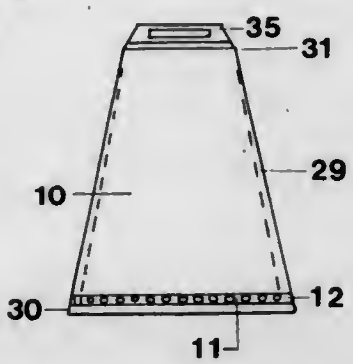
5,617,973
CARTRIDGE FOR DRY-TYPE CHEMICAL ANALYSIS FILMS
Yoshihiro Seto, and Fumio Sugaya, both of Kanagawa-ken, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Mar. 16, 1995, Ser. No. 405,808
Claims priority, application Japan, Apr. 15, 1994, 6-077221
Int. Cl.⁶ B65H *1/08*
U.S. Cl. 221—56 **4 Claims**

1. A cartridge for dry-type chemical analysis films, comprising:
i) a box housing, which accommodates therein a stack of a plurality of dry-type chemical analysis films and which has a take-out opening at one end such that the dry-type chemical analysis films may be taken out of the box housing through the take-out opening one after another, each of said dry-type chemical analysis films having a preset width,



ii) a push member, which is located in the box housing so as to be capable of sliding, and which comes into contact with the stack of the plurality of the dry-type chemical analysis films from the side opposite to the take-out opening and pushes the stack of the plurality of the dry-type chemical analysis films in the direction heading towards the take-out opening,
iii) an urging means, which is located in the box housing and which urges the push member in the direction heading towards the take-out opening, and
iv) a restriction means comprising a stopper having a stop portion which comes into contact with part of the push member, said stopper being located in the box housing and restricting the distance of movement of the push member in the direction heading away from the take-out opening to at most a value equal to the preset width of each dry-type chemical analysis film.

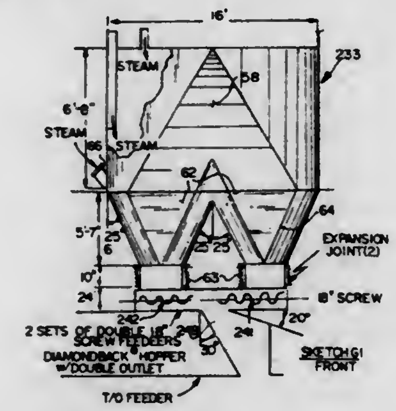
5,617,974
STORAGE DISPENSING CONTAINER
Thomas K. Sawyer, Jr., 308 Oyster La., Virginia Beach, Va. 23456
Filed Feb. 27, 1995, Ser. No. 394,481
Int. Cl.⁶ B65D *35/08*
U.S. Cl. 222—107 **3 Claims**



1. A packaging and dispensing container for dry, fluent granular materials comprising: a multi-ply flexible walled container having a bottom closed end portion and a top end, said top end having means for handling said container, a first plastic strip attached to and extending generally across said bottom end portion, said first plastic strip having a multiplicity of evenly spaced apertures communicating with the interior of the container, said strip having a grooved channel for slidably accepting a second plastic strip having a multiplicity of evenly spaced apertures, wherein movement of said second strip varies the alignment of the apertures in the first and second strips from a closed position where no apertures are aligned and no material is discharged to partially opened positions where the apertures in the first and second strips are partially aligned where material is discharged at a varied rate according to the amount the apertures are aligned to a fully open position where all the apertures are aligned and material is discharged; and said

bottom end portion of the container having a larger cross-sectional area than the top end of the container such that it has a bell-like shape for forcing the granular material to the bottom of the container and to prevent bridging of the granular material.

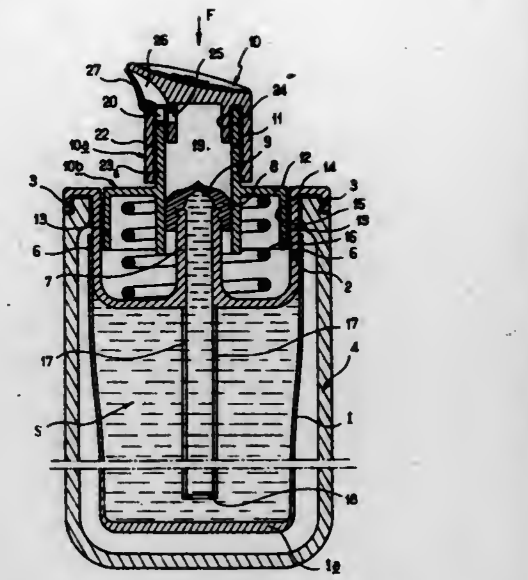
5,617,975
CHIP FEED SYSTEM
Jerry R. Johanson, San Luis Obispo, Calif.; Victor L. Bilodeau, Queensbury, N.Y.; Mark D. Barrett, Queensbury, N.Y., and John Pietrangelo, Queensbury, N.Y., assignors to Ahlstrom Machinery Inc., Glens Falls, N.Y.
Division of Ser. No. 189,546, Feb. 1, 1994, Pat. No. 5,500,083. This application Jul. 27, 1995, Ser. No. 507,980
Int. Cl.⁶ B67D *5/06*
U.S. Cl. 222—185.1 **20 Claims**



1. A bin comprising:
a hollow substantially right circular cylindrical main body portion having a substantially vertical central axis, a top and an open bottom;
a top wall closing off said top of said main body portion, and having means for introducing particulate material into said hollow main body portion mounted thereon;
a hollow transition portion connected to said bottom of said main body portion having a substantially circular cross-section open top and a substantially rectangular cross-section open bottom, and a larger cross-sectional area at said top thereof than at said bottom thereof, and opposite non-vertical gradually tapering side walls;
at least one feed screw mounted adjacent said open bottom of said transition portion, in a housing;
a discharge operatively connected to said feed screw housing; and
means for rotating said at least one feed screw to move particulate material from said bottom of said transition portion to said discharge.

5,617,976
DISPENSER OF LIQUID OR PASTY PRODUCT WHICH CAN BE USED ESPECIALLY IN COSMETICS
Jean-Louis Gueret, Paris, France, assignor to L'Oreal, Paris, France
Filed Mar. 21, 1996, Ser. No. 619,219
Claims priority, application France, Mar. 21, 1995, 95 03256
Int. Cl.⁶ B67D *5/40*
U.S. Cl. 222—380 **14 Claims**

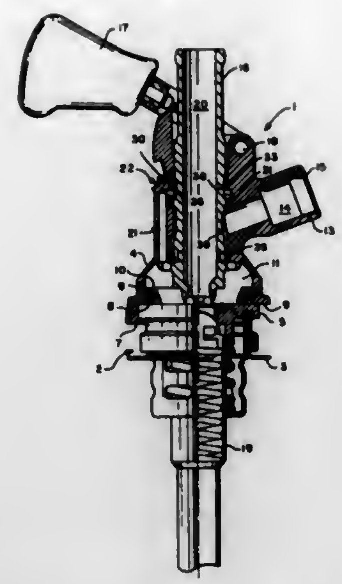
1. A dispenser of liquid or pasty product, comprising:
a contractable reservoir from which the product may be dispensed; and
a variable-volume chamber connected to said reservoir by a first valve and connected to an outlet of the dispenser by a second valve, said chamber having a volume that can vary under action of a push-button, said push-button and a stationary



piston integral with said reservoir forming said variable-volume chamber, wherein
said push-button comprises a body formed of a first part and a second part, said first part having a first orifice and said second part having a second orifice, said first part and said second part being capable of twisting relative to one another between an open position in which said first orifice and said second orifice face one another and are in fluid communication therewith to allow dispensing of the product and a closed position in which said first orifice and said second orifice do not face one another and product contained in said variable-volume chamber is prevented from reaching said second valve, thereby immobilizing said push-button.

5,617,977
DISPENSER HEAD FOR DISPENSING A LIQUID WHICH IS PRESSURIZED BY A GAS IN A CONTAINER
Per K. Augustinus, Odense, Denmark, assignor to Micro Matic A/S, Odense, Denmark
PCT No. PCT/DK94/00386, § 371 Date Jun. 27, 1995, § 102(e) Date Jun. 27, 1995, PCT Pub. No. WO95/11191, PCT Pub. Date Apr. 27, 1995
PCT Filed Oct. 17, 1994, Ser. No. 464,744
Claims priority, application Denmark, Oct. 22, 1993, 1192/93
Int. Cl.⁶ B65D *83/14*
U.S. Cl. 222—400.7 **10 Claims**

1. A dispenser head for dispensing a liquid which is pressurized by a gas in a container having a valve, said dispenser head comprising:
a housing which can be detachably mounted by being moved laterally over and into engagement with an upper flange of the valve;
a main seal to form a tight connection between the housing and the valve;
a gas chamber in said housing defined in part by the upper flange of the valve when said housing is mounted into engagement with the upper flange of the valve;
a gas connection having an opening terminating in a central hole in said housing, said central hole extending vertically upwards in said housing from the gas chamber, said hole being open at its upper end;
a tubular slide disposed in the central hole and movable upwardly and downwardly between upper and lower positions, respectively, by means of a hand grip carried by said housing, said slide opening the valve in the lower position such that the interior of the slide communicates with the liquid of the container and the gas chamber communicates with the gas of the container, a wall of said housing having a

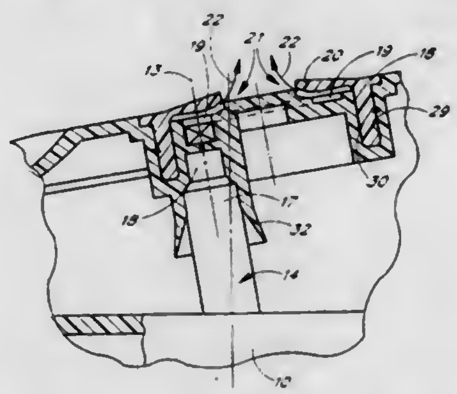


first gas channel extending upwardly from the gas chamber to a mouth in the central hole;

said slide having an annular groove which, in the upper position of said slide, lies in communication with said mouth and with the open upper end of said hole via a second gas channel;

said mouth being blocked by said slide in the lower position of said slide.

5,617,978
APPARATUS FOR DISPENSING A SEMIFLUID MEDIUM
Adalberto Geier, Lago, Italy, assignor to Coster Tecnologie Speciali S.p.A., Lago, Italy
Filed Sep. 28, 1994, Ser. No. 314,512
Int. Cl.⁶ B65D *83/20*
U.S. Cl. 222—402.13 **29 Claims**



1. Apparatus for dispensing a semifluid medium comprising

a container for said medium having an upper portion including a delivery tube for fluid communication between the interior of the container and the exterior of the container,

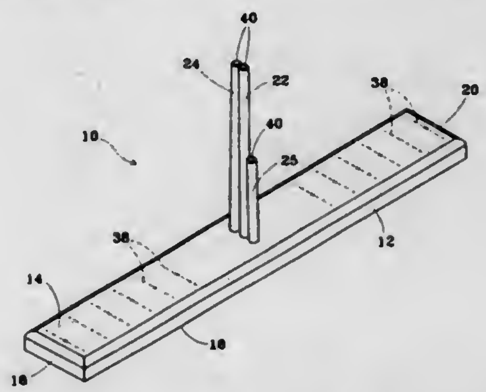
a dispensing valve to control the flow of the medium through the delivery tube,

an actuator for actuation of the valve, having an upper surface having a circular opening therein with a circular portion of said surface in the center of the opening to form an annular outlet in the surface for the medium, and

a flexible annular closure flap disposed in the outlet, the flap being movable between a closed position sealing the annular outlet and an open position, said flap being sufficiently flexible so that when the valve is actuated by the actuator and the delivery tube is thereby placed in fluid communication with the outlet, the flap can be opened by the pressure of the medium in the container,

the closure flap in the closed position and the upper surface of the actuator together defining a continuous flush, smooth surface, such that, in use, residual medium left on the flush surface can be wiped off, leaving substantially no residue thereon.

5,617,979
BOW MAKING APPARATUS
Deborah L. Cavender, 2825 Top Rd., Sevierville, Tenn. 37862
Continuation-in-part of Ser. No. 133,618, Oct. 7, 1993, abandoned. This application Jan. 11, 1995, Ser. No. 371,295
Int. Cl.⁶ A41H *43/00*
U.S. Cl. 223—46 **10 Claims**



1. A bow making apparatus for receiving and maintaining the disposition of bow fabricating material during the making of a decorative bow, such decorative bow defining looped portions of bow fabricating material and gathered sections of bow fabricating material at an approximate midpoint between successive of the looped portions, said apparatus comprising:

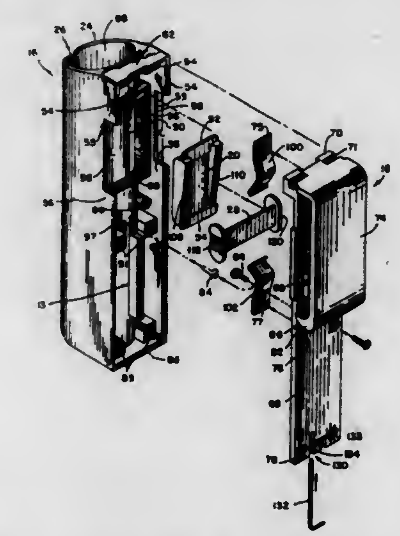
a base member defining an upper work surface for supporting the bow fabricating material during the making of a decorative bow;

a first and a second retainer member for contacting and releasably receiving therebetween the gathered sections of bow fabricating material, said first and second retainer members extending upwardly from said upper work surface of said base member from a proximal end of said first and second retainer members to a distal end of said first and second retainer members, whereby the gathered sections of bow fabricating material are releasably maintained in a gathered disposition, said first and second retainer members being selectively spaced so as to define a first retaining gap therebetween for releasably receiving the gathered sections of bow fabricating material whereby the gathered sections of bow fabricating material are releasably maintained in a gathered disposition, said first and second retainer members defining elongated rods having distal ends, said first and second retainer members being disposed at preselected angles such that said first retaining gap narrows toward said distal ends of said first and second retainer members whereby such angular disposition of said first and second retainer members compensates for outward bending of said first and second retainer members; and

a third retainer member for contacting and releasably receiving the gathered sections of bow fabricating material between said second retainer member and said third retainer member, said third retainer member extending upwardly from said upper work surface of said base member from a proximal end of said third retainer member to a distal end of said third retainer member, whereby the gathered sections of bow fabricating material are releasably maintained in a gathered disposition, said second and third retainer members being selectively spaced so as to define a second retaining gap therebetween for contacting and releasably receiving the gathered sections of

bow fabricating material whereby the gathered sections of bow fabricating material are contacted and releasably maintained in a gathered disposition, said third retainer member defining elongated rods having a distal end, said second and third retainer members being disposed at preselected angles such that said second retaining gap narrows toward said distal end of said third retainer member whereby such angular disposition of said second and third retainer members compensates for outward bending of said second and third retainer members.

5,617,980
BATON LOCKING MECHANISM FOR EXPANDABLE BATON CARRIERS
Kevin L. Parsons, and Jerome J. Weber, both of Appleton, Wis., assignors to Armament Systems and Procedures, Inc., Appleton, Wis.
Division of Ser. No. 216,745, Mar. 23, 1994, Pat. No. 5,449,104. This application Mar. 8, 1995, Ser. No. 401,101
Int. Cl.⁶ A45F *5/00*
U.S. Cl. 224—251 **7 Claims**



1. A baton carrier for holding an expandable baton, the baton carrier comprising:

a. a baton holder having a cylindrical wall defining a cylinder having an interior chamber for receiving an expandable baton substantially along a longitudinal axis of the interior chamber, the wall having a longitudinal opening therein;

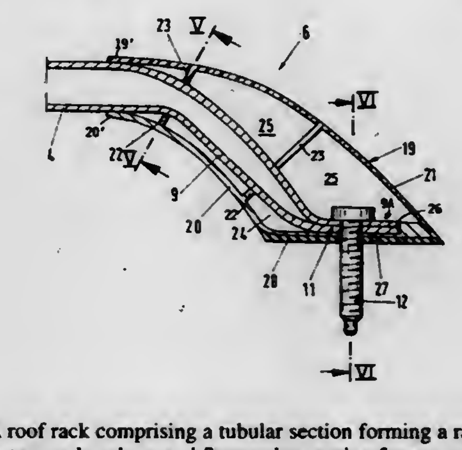
b. a rigid baton securing element having an interior face extending into the interior chamber of the holder and contoured to generally conform to the interior wall of the cylinder and an outer surface disposed opposite the interior face, wherein the outer surface is tapered to form a ramp facing away from the interior chamber, said rigid securing element positioned in the opening of the cylindrical wall and mounted for selective radial movement relative to the axis of the cylinder, whereby the rigid securing element can be displaced into and out of the interior chamber of the holder;

c. a compression biasing member for urging the rigid securing element into the interior chamber of the holder for pressing against a baton therein;

d. a movable cinch bar disposed in engagement with the ramp and adapted to force the rigid element into the interior chamber when the cinch bar is moved along the ramp; and

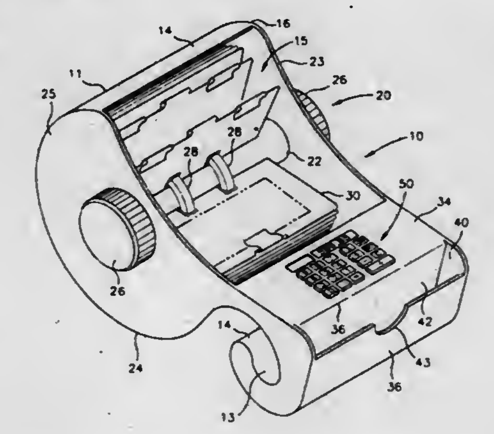
e. a guide slot on the holder for guiding the movement of the cinch bar in a direction substantially parallel with the longitudinal axis of the interior chamber of the holder, whereby the securing element is displaced into the interior chamber of the holder as the cinch bar moves in a direction defined by the guide.

5,617,981
RAILING ROOF RACK FOR A VEHICLE
Erhard Ricker, Rodgau; Bruno Kroll, Radevormwald; Wolfgang Isokeit; Volker Scheibe, both of Rodagan, and Gunther Heim, Obertshausen, all of Germany, assignors to YMOS Aktiengesellschaft Industrieprodukte, Obertshausen, Germany
Filed Feb. 17, 1995, Ser. No. 390,489
Claims priority, application Germany, Feb. 17, 1994, 44 05 072.0
Int. Cl.⁶ B60R *9/00;9/04*
U.S. Cl. 224—309 **19 Claims**



1. A roof rack comprising a tubular section forming a railing rod having two ends, a bent and flattened mounting foot at each end of said railing rod for securing said railing rod to a vehicle roof, each bent and flattened mounting foot forming an integral part of the respective tubular section, a foot enclosure for at least partly enclosing each bent and flattened mounting foot, so that said bent and flattened mounting foot forms a supporting core inside its respective foot enclosure, and further comprising a separate sealing washer (**28**, **41**) inserted between said foot enclosure and said vehicle roof to seal said foot enclosure.

5,617,982
COUPON HOLDER AND DISPENSING APPARATUS
Paul A. Wilson, 12234 Betsworth Rd., Valley Center, Calif. 92082
Continuation of Ser. No. 167,575, Dec. 14, 1993, Pat. No. 5,501,383. This application Jun. 7, 1995, Ser. No. 477,230
Int. Cl.⁶ B62B *5/00*
U.S. Cl. 224—411 **1 Claim**



1. A store coupon storage and dispensing apparatus comprising:

a frame comprised of opposing spaced side walls interconnected by sheet material, a downwardly opening notch formed in one end of said frame and being shaped and configured to engage

a handle of a shopping cart, said notch being adapted to serve as a carrying handle for said store coupon storage and dispensing apparatus;

a coupon holder having a rotary mechanism mounted to said frame, said mechanism comprising a drum journaled to said frame for rotation with respect thereto, said drum having arcuate rods circumferentially disposed around it, said rods being shaped and configured to slidably engage store coupon file cards, such that when said drum is rotated the store coupon file cards are sequentially presented for selection by a user; and

a store coupon storage bin disposed in said frame for storing store coupons selected by the user.

5,617,983

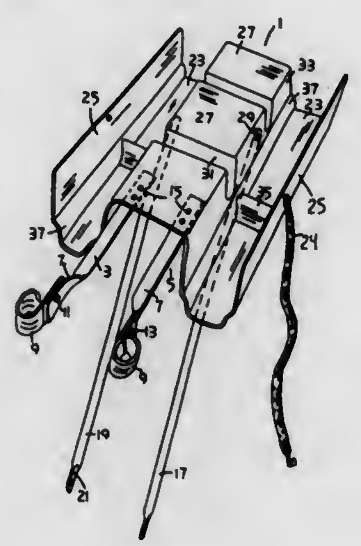
IN-LINE SKATE CARRIER

John G. Lindauer, 9215 S. Bellflower Way, Highlands Ranch, Colo. 80126, and Steven F. Lindauer, 303 16th St., Suite 16, Denver, Colo. 80202

Filed Apr. 12, 1995, Ser. No. 420,865

Int. Cl.⁶ B62J *7/00*

U.S. Cl. 224—433 **5 Claims**



1. A carrier for an in-line roller skate of the type that includes a boot and a plurality of wheel assemblies mounted in spaced single in-line relationship on the sole of said boot, wherein there is a downward-opening gap between adjacent ones of said wheel assemblies, said carrier including:

a) elongate trough means having an open top open opposite ends defining a length therebetween, and a bottom for engaging said skate wheel assemblies, and laterally spaced-apart opposing side walls extending outwardly from said bottom for receiving said wheel assemblies and retaining said assemblies against lateral movement and holding said skate generally upright in said trough means, said opposing side walls being resiliently deformable from each other and adapted to resiliently embrace said wheel assemblies received in said trough means; and

b) wheel chock means extending transversely of said length of said trough means and between said opposite ends for engaging one of said gap to hold said skate against relative longitudinal movement in said trough means.

5,617,984

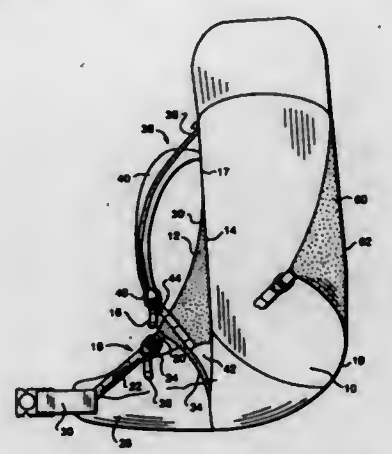
BACKPACK SUSPENSION SYSTEM

John A. Fabel, 120 Pulpit Hill Rd. #14, Amherst, Mass. 01002

Continuation-in-part of Ser. No. 307,277, Sep. 16, 1994. This application Feb. 17, 1995, Ser. No. 390,665

Int. Cl.⁶ A45F *3/14*

U.S. Cl. 224—641 **19 Claims**



1. A backpack suspension system adapted to firmly hold a packbag or frame of a backpack against the wearer's back and hips, the backpack including a waistbelt for encircling the wearer's torso, the suspension system comprising:

a pair of load transfer means each defining a generally polygonal shape with a plurality of edges, and each defining a longest edge, said load transfer means each attached along their longest edge along a substantial portion of the height of the packbag or frame and at symmetrical locations of the packbag or frame, respectively, leaving free edges not attached to the packbag or frame, in which said load transfer means are each spaced from the waistbelt; and

a pair of adjustable-length members, each attached to a said load transfer means and to the waistbelt, for allowing adjustment of the spacing between each said load transfer means and the waistbelt;

wherein at least one free edge of each said load transfer means describes a concave curve approximating a catenary, so that said load transfer means distribute tension from said waistbelt along a substantial portion of the height of the packbag or frame to hold the packbag or frame, along its height, more firmly against the wearer's back and hips.

5,617,985

APPARATUS AND METHOD FOR SUPPORTING AND GUIDING STRIP MATERIAL THAT IS TO BE PROCESSED IN THE LOOP REGION

Manfred Baer, Mainleus, Germany, assignor to Karl Eugen Fischer Gmbh Maschinenfabrik, Burgkunstadt, Germany

Filed Apr. 6, 1995, Ser. No. 417,637

Claims priority, application Germany, Apr. 7, 1994, 44 11 936.4

Int. Cl.⁶ B65H *20/24;23/192;* **G11B** *15/56*

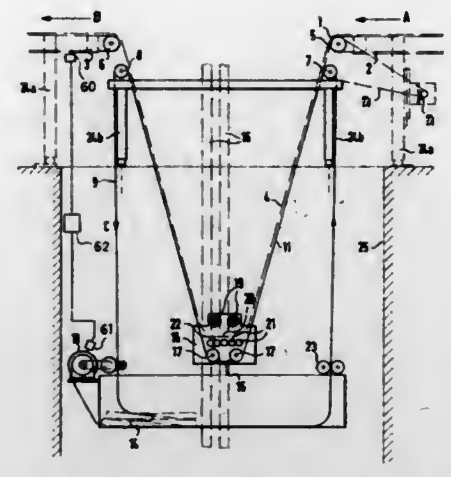
U.S. Cl. 226—4 **33 Claims**

1. Apparatus for supporting strip material comprising:

discontinuous conveyor means for discontinuously conveying said strip material;

continuous conveyor means for continuously conveying said strip material, said strip material passing in a loop between said discontinuous conveyor means and said continuous conveyor means with said strip material loop varying in size as said discontinuous conveyor means discontinuously conveys said strip material and said continuous conveyor means continuously conveys said strip material;

a supporting conveyor belt;



conveyor belt operable means operable to dispose said conveyor belt in a loop underlying said strip material loop;

said conveyor belt operable means being operable to drive said conveyor belt so as to variably change the size of said conveyor belt loop synchronously with the size of said strip material loop such that said looped strip material is continuously supported on said looped conveyor belt as the size of said strip material loop varies in accordance with the discontinuous conveying of said strip material by said discontinuous conveyor means and the continuous conveying of said strip material by said continuous conveying means.

5,617,986

APPARATUS FOR FEEDING SCANNED MEDIUM

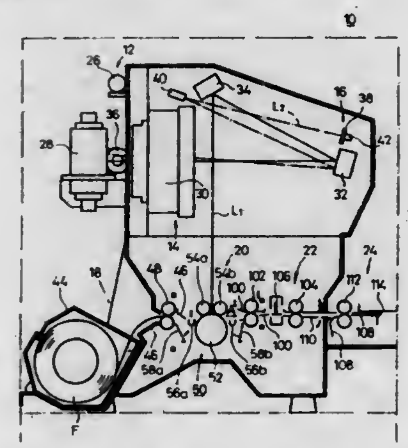
Yoshinori Kawamura, Kanagawa-ken, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 24, 1995, Ser. No. 410,284

Claims priority, application Japan, Mar. 31, 1994, 6-063274

Int. Cl.⁶ G03B *1/56;27/58;* **B65H** *20/00*

U.S. Cl. 226—91 **3 Claims**



1. In a recording apparatus where a light beam is deflected and applied to a scanned medium, a feed apparatus for feeding the scanned medium in an auxiliary scanning direction while the light beam is being deflected and applied to the scanned medium in a main scanning direction substantially perpendicular to the auxiliary scanning direction, comprising:

a feed drum rotatable for feeding the scanned medium in the auxiliary scanning direction;

a pair of nip rollers disposed upstream and downstream, respectively, of said feed drum in the auxiliary scanning direction for holding the scanned medium against an outer circumferential surface of said feed drum;

a pair of presser guide members disposed upstream and downstream, respectively, of said feed drum in the auxiliary scanning direction, each for pressing the scanned medium against said outer circumferential surface of said feed drum at a position spaced a greater distance from a position where the light beam is applied to the scanned medium than a position where each of said nip rollers is held against the feed drum;

a pair of guide plates disposed upstream and downstream, respectively, of said feed drum in the auxiliary scanning direction for guiding the scanned medium; and

a moving mechanism for moving said nip rollers toward and away from said feed drum;

said moving mechanism comprising:

first displacing means for moving said presser guide members toward and away from said feed drum in synchronism with movement of said nip rollers toward and away from said feed drum; and

second displacing means for moving said guide plates out of positions interfering with said presser guide members, respectively, in synchronism with movement of said nip rollers toward and away from said feed drum.

5,617,987

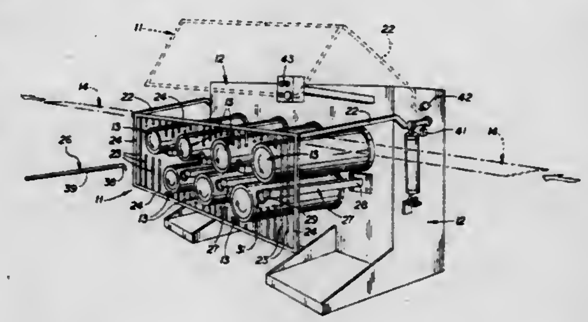
SAFETY GUARD FOR FIBER PROCESSING UNIT

James E. Howard, Leeds, Ala., and Enrico Merli, Piacenza, Italy, assignors to Fibres South, Inc., Birmingham, Ala.

Filed May 11, 1995, Ser. No. 439,153

Int. Cl.⁶ F16P *3/08;* **B65H** *20/00*

U.S. Cl. 226—189 **18 Claims**

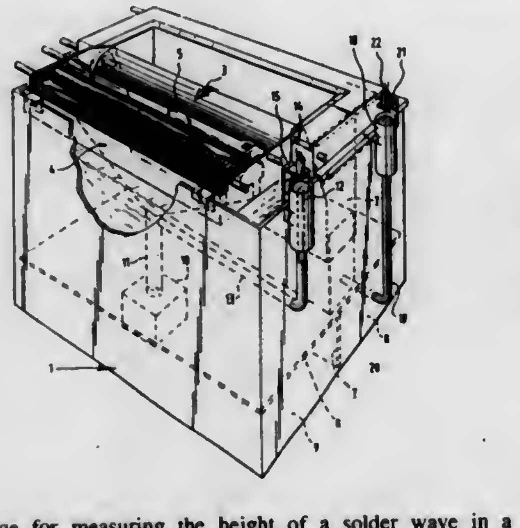


1. A safety apparatus in combination with a unit in a fiber processing line, said unit having a frame supporting a plurality of driven godet rollers, said godet rollers having substantially parallel axes of rotation, each of said godet rollers having a feed side and a downstream side, wherein fibers are entrained over said godet rollers such that each of said godet rollers is partially circumscribed by said fibers on a fiber side and is clear of said fibers on a free side, and such that a nip is defined between said fibers and each of said godet rollers on said feed side of said godet rollers, said safety apparatus comprising:

(a) a safety gate, pivotally mounted to said frame and movable between an obstructing position and a clear position, said gate having a plurality of openings through which an elongated cutting tool may be extended to access said free side of said godet rollers while said safety gate is in said obstructing position; and

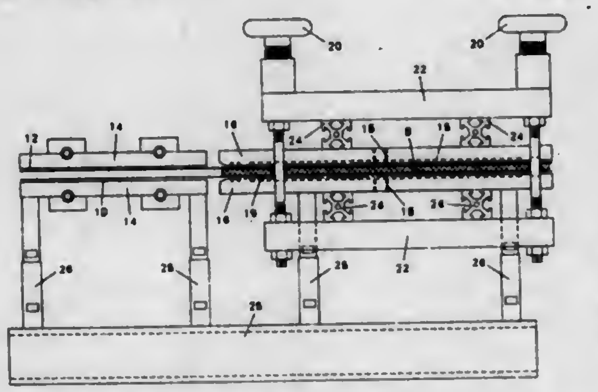
(b) guide means, mounted to said frame such that said guide means extends substantially parallel to the axis of rotation of one of said plurality of godet rollers proximal said free side of one of said plurality of godet rollers, for preventing an elongated cutting tool from being drawn into said nips.

5,617,988
DEVICE FOR MEASURING THE HEIGHT OF A SOLDER WAVE
Lambertus P. C. Willemen, Dorst, Netherlands, assignor to Soltec B.V., Oosterhout, Netherlands
Filed Feb. 28, 1996, Ser. No. 608,544
Claims priority, application Netherlands, Mar. 3, 1995, 9500425
Int. Cl.⁶ H05K *3/34;* **B23K** *3/06*
U.S. Cl. 228—37 **14 Claims**



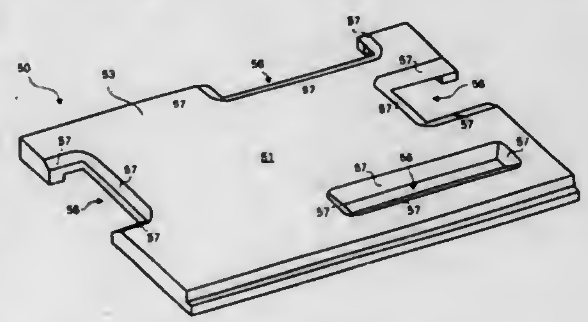
1. Device for measuring the height of a solder wave in a soldering apparatus which includes a solder bath and which is provided with at least one solder tower for generating a solder wave and a pump connected to the solder tower, characterized in that the measuring device comprises: means for measuring the liquid pressure in the connection between the pump and the solder tower.

5,617,989
SOLDER LEVELING APPARATUS AND METHOD
Robert A. Kelzer, 2283 E. Pinetree Blvd., Thomasville, Ga. 31792
Filed Jul. 25, 1995, Ser. No. 506,789
Int. Cl.⁶ H05K *3/34;* **B23K** *3/08; 1/00*
U.S. Cl. 228—125 **8 Claims**



1. A solder leveling apparatus comprising:
a means for heating solder deposits on a printed circuit board panel into a molten state;
a pair of spaced platens;
a pair of belts that are facingly positioned for engaging surfaces of a printed circuit board panel and carrying the circuit board panel between the platens;
a means associated with the platens for dispersing fluid under pressure in incremental widths against at least one of the belts thereby causing the belt to press against the panel and flatten the molten solder deposits into a level plane while permitting surplus fluid to escape into the atmosphere, said dispersing means including:
a. means for supplying a fluid under pressure;
b. an inlet means for receiving the fluid; and
c. a surface of the platens facing the belt which disperses the fluid under pressure in incremental widths;
whereby the pressure provided by the fluid against the belt automatically adjusts according to the size of the panel to seal the belt against the panel while the solder deposits are flattened.

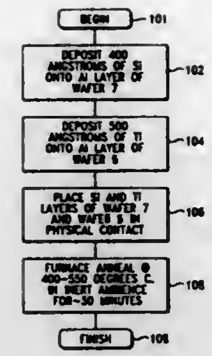
5,617,990
SHIELD AND METHOD FOR SELECTIVE WAVE SOLDERING
Curtis C. Thompson, Sr., Meridian, Id., assignor to Micron Electronics, Inc., Nampa, Id.
Filed Jul. 3, 1995, Ser. No. 498,670
Int. Cl.⁶ H05K *3/34*
U.S. Cl. 228—180.1 **15 Claims**



1. A shield for use in wave soldering processes to selectively affix solder to an area of a circuit board having an electronic component thereon which comprises:
a base member having low thermal conductivity;
a registration mechanism being attached to the base member for holding the circuit board against the base member in a fixed position relative to the base member, the registration mechanism having a plurality of marginally disposed ridges extending from the base member positioned to frictionally engage peripheral edges of the circuit board when the circuit board is registered against the base member; and
the base member having a solder flow opening therethrough being positioned to align with the area of the circuit board to which solder is to be affixed.

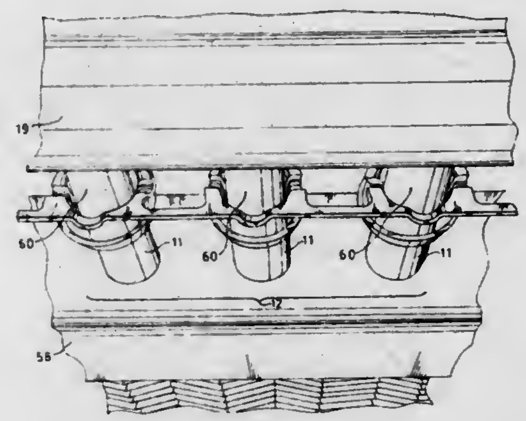
5,617,991
METHOD FOR ELECTRICALLY CONDUCTIVE METAL-TO-METAL BONDING
Shekhar Pramanick, Fremont, and Deepak Nayak, Santa Clara, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.
Filed Dec. 1, 1995, Ser. No. 566,070
Int. Cl.⁶ H01L *21/50*
U.S. Cl. 228—180.22 **22 Claims**

1. A method for bonding flat metal surfaces comprising the steps of:
depositing a thin layer of titanium on a first surface of a first metal surface;
placing the first surface of the first metal surface in contact with a first surface of a second metal surface in an inert ambiance;
heating the inert ambiance to a temperature substantially below the melting point of the metal surfaces; and



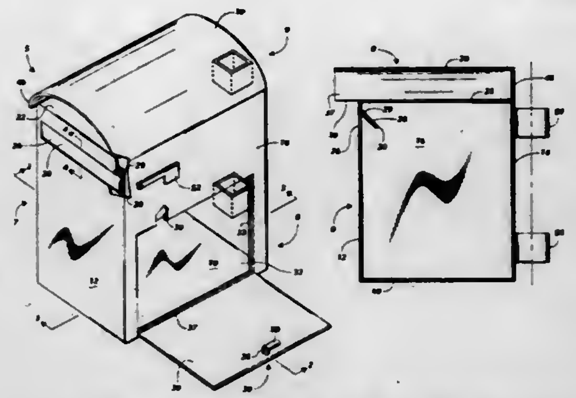
forming a titanium metal bond between the first metal surface and the second metal surface to provide a low resistive path between the first metal surface and the second metal surface.

5,617,992
SOLDERING STRIP AND METHOD OF USING
Howard M. Huddleston, Cambridge City, Ind.; Jeffrey L. Insalaco, Brandon, and Fletcher L. Odom, Hillsboro, both of Miss., assignors to Ford Motor Company, Dearborn, Mich., and Hydro Aluminum Puckett, Inc., Puckett, Miss.
Continuation-in-part of Ser. No. 255,154, Jun. 6, 1994, abandoned. This application Aug. 16, 1995, Ser. No. 515,632
Int. Cl.⁶ B23K *1/18*
U.S. Cl. 228—183 **20 Claims**



1. A shaped soldering strip for promoting improved multiple soldering joints to a tube array, the tubes of said tube array projecting from a frontal comprising:
(a) a thin coupon of solder having
(i) a plurality of margins defining openings aligned with the axes of the tubes in said tube array to be joined, each margin being sized to fit annularly snugly to its mating tube in at least micro-close proximity:
(ii) a plurality of collars each integral with an associated margin and surrounding each margin to define a cup shape extending upwardly therefrom, each said collar having at least one indentation to permit downward weepage past said margin of fluid flux deposited in said cup shape; and
(iii) bridges connecting said collars to integrate them into said coupon that extends over said frontal area and gangs the collars for positioning on the tubes of said array.

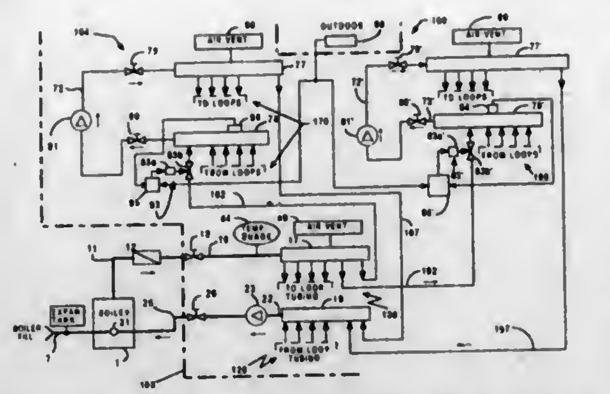
5,617,993
LOCKING MAILBOX
Glenn Morris, 8080 Banks Mill Rd., Douglasville, Ga. 30135
Filed Nov. 16, 1994, Ser. No. 341,412
Int. Cl.⁶ B65D *91/00*
U.S. Cl. 232—27 **10 Claims**



1. A locking mailbox for receiving mail and other deliveries, to include newspapers and magazines, in a weather and theft resistant housing, comprising:
a generally upright housing, the housing having a top compartment and an enclosed bottom compartment;
an elongated mail slot defined in the bottom compartment for passing mail and deliveries into the bottom compartment, said slot being located in the top of the bottom compartment in spaced relationship to the top compartment;
an elongated flap sized and shaped to cover the mail slot, the flap being pivotally supported on the inside of the housing in overlapping fashion over the mail slot for closing the mail slot;
a generally rectangular opening defined in the bottom compartment;
a lockable door sized and shaped to fit within said opening, the door being pivotally supported on the housing and including locking means for locking the door in a closed position on the housing;
therein the top compartment is formed as a tubular body having an open end on the side of the housing in which said mail slot is defined for holding outgoing mail,
a protective lip formed as a portion of the top compartment, said lip extending beyond the housing for sheltering the mail slot from the elements;
whereby outgoing mail can be placed under cover in the top compartment awaiting pick up by the postal service, while mail and other deliveries are passed through the mail slot into the bottom compartment and held therein until the locking door of the mailbox is unlocked and opened and the contents of the bottom compartment removed.

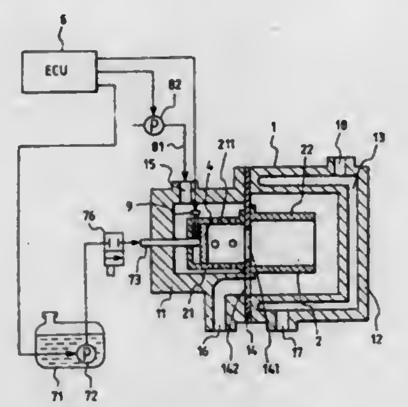
5,617,994
HYDRONIC HEATING WITH SATELLITE DISTRIBUTION STATIONS FOR MULTI-TEMPERATURE SUPPLY WATER TO HEATING LOOPS
Joachim Fiedrich, 20 Red Pine Dr., Carlisle, Mass. 01741
Filed Oct. 17, 1994, Ser. No. 324,232
Int. Cl.⁶ F24D *3/00*
U.S. Cl. 237—8 R **1 Claim**

1. A hydronic heating system having a source of hot supply water and a reservoir of cooler return water, a supply water line from said source, a return water line to said reservoir and a multitude of heating loops through which water flows from said supply line to said return line, comprising,
(a) a main distribution station including a main supply header fed supply water by said supply line and feeding supply water to main heating loops, a main return header fed return water from said main heating loops and feeding return water to said



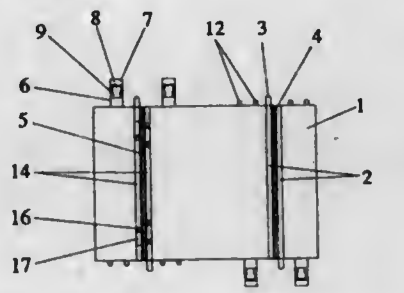
water return line and a main pump that compels water flow from said main supply header, through said main loops to said main return header,
(b) whereby said main distribution station heating loops are fed water at the temperature T,
(c) a satellite distribution station including a satellite supply header feeding satellite supply water to satellite heating loops, a satellite return header fed return water from said satellite loops and a satellite pump that compels water flow from said satellite supply header, through said satellite loops to said satellite return header,
(d) a satellite injection water line from said main supply header to said satellite return header,
(e) a satellite return water line from said satellite supply header to said main return header,
(f) whereby there is a water exchange between said main distribution station and said satellite distribution station that results in a net heat flow from said main distribution station to said satellite distribution station and said satellite station heating loops are fed water at a temperature lower than said temperature T and
(g) means responsive to outside ambient temperature is provided for controlling said water exchange.

5,617,995
COMBUSTION HEATER
Masanori Yasuda, Okazaki; Sadahisa Onimaru, Chiryu; Takashi Inoue, Okazaki; Hiroshi Okada, Kariya; Akikazu Kojima, Gamagori, and Niro Takaki, Kariya, all of Japan, assignors to Nippon Soken Inc, Japan
Filed Apr. 24, 1995, Ser. No. 427,032
Claims priority, application Japan, Apr. 22, 1994, 6-107494; Sep. 6, 1994, 6-239401; Nov. 11, 1994, 6-303108
Int. Cl.⁶ B60H *1/02*
U.S. Cl. 237—12.3 C **13 Claims**



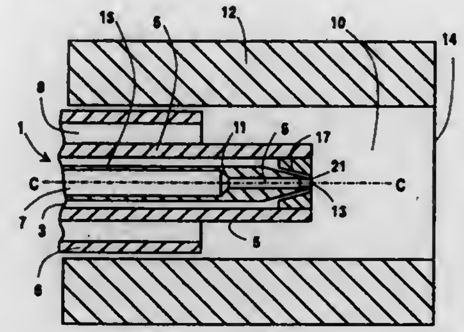
1. A combustion heater having a burner in a housing provided with a fluid passage for heating a fluid introduced in said fluid passage, said combustion heater comprising:
fuel feed means for supplying a fuel to said burner:
air feed means for supplying combustion air to said burner depending on a fuel supply amount from said fuel feed means;
ignition means for igniting said fuel supplied to said burner;
fuel supply amount setting means for increasing an amount of said fuel supplied from said fuel feed means in a stepwise fashion during a time period from ignition of said supplied fuel by said ignition means to generation of a given heat quantity by said burner; and
combustion control means which, at a time of extinction in said burner, reduces said fuel supply amount from said fuel feed means and an air supply amount from said air feed means to given values, respectively, and holds said fuel supply amount and an air supply amount at said given values for a given time period, said combustion control means, after lapse of said given time period, stopping said fuel supply from said fuel feed means while holding said air supply amount at said given value for a further given time period.

5,617,996
TRACK FOR ELECTRIC CARS
Eduardo N. Julve, Esplugues de Llobregat, Spain, assignor to Ninco Desarrollos, S.L., Esplugues de Llobregat, Spain
Filed Feb. 13, 1996, Ser. No. 600,372
Claims priority, application Spain, Aug. 1, 1995, 9502125; Sep. 29, 1995, 9502508
Int. Cl.⁶ E01B *23/00*
U.S. Cl. 238—10 R **5 Claims**



1. A track for electric cars comprising a plurality of track segments, each of said track segments comprising a straight or curved plastic plate with a rough surface, each of said track segments further comprising electrically conducting rails inserted therein, said rails forming a plurality of guideways on which said electric cars run, each of said track segments having a first and second end, each said end having a right-hand and left-hand side, each said end further having means of interconnecting said track segments, wherein said plastic plate has disposed upon said right-hand side of said first end and said left hand side of said second end and centered upon the corresponding guideway, rectangular projections ending in a small ramp, said rectangular projections each having disposed therein a rectangular recess between said small ramp and the end upon which said rectangular projection is disposed, said rectangular recess having two centering ribs on side walls thereof, said plastic plate further having disposed upon said left-hand side of said first end and said right-hand side of said second end and also centered on said corresponding guideway, slots behind which is disposed a rectangular lug emerging from a lower face of said plastic plate with a surface inclining downward toward said slots.

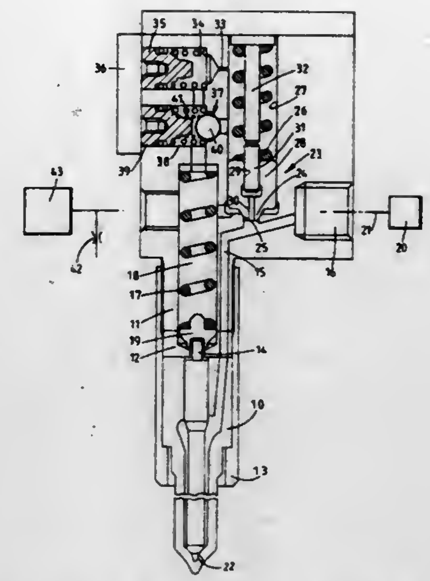
5,617,997
NARROW SPRAY ANGLE LIQUID FUEL ATOMIZERS FOR COMBUSTION
William T. Kobayashi, Sao Paulo, Brazil, and Arthur W. Francis, Jr., Monroe, N.Y., assignors to Praxair Technology, Inc., Danbury, Conn.
Continuation of Ser. No. 259,081, Jun. 13, 1994, abandoned. This application Jan. 22, 1996, Ser. No. 589,429
Int. Cl.⁶ B05B *7/06*
U.S. Cl. 239—8 **17 Claims**



12. A process for atomizing liquid fuel to provide a liquid fuel stream in the form of a spreading spray having an outer periphery angle of less than 15°, measured from the axis of said liquid fuel stream, thus promoting effective combustion with reduced nitrogen oxide generation, said process comprising:
(a) ejecting a liquid fuel stream from at least one first opening of a nozzle;
(b) ejecting atomizing fluid from at least one second opening annular to said at least one first opening at a velocity of about 0.5 Mach to about 1.2 Mach toward said liquid fuel stream at a converging angle in the range of about 5° to about 30°, measured from a longitudinal axis of said nozzle, and wherein said nozzle converges to an annular edge between said at least one first opening and said at least one second annular opening.

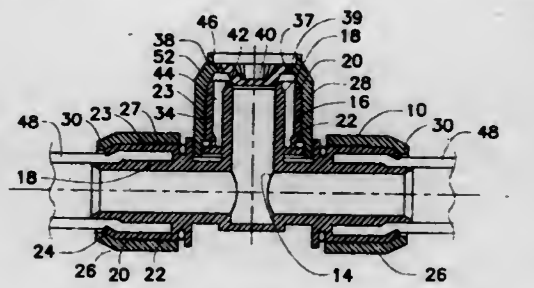
5,617,998
FUEL INJECTION NOZZLES
Paul Buckley, and Gordon M. Reid, both of Kent, England, assignors to Lucas Industries, Public Limited Company, England
Filed Mar. 3, 1995, Ser. No. 399,298
Claims priority, application United Kingdom, Mar. 5, 1994, 9404260
Int. Cl.⁶ F02M *45/10*
U.S. Cl. 239—95 **4 Claims**

1. A fuel injection nozzle for use in a fuel system for supplying fuel to an internal combustion engine, the system incorporating high pressure fuel supply means which is connected to a nozzle inlet by means of a high pressure pipeline, the fuel supply means being arranged to supply fuel to the nozzle inlet in timed relationship with the associated engine, the fuel injection nozzle being of the inwardly opening type employing a spring loaded fuel pressure actuated valve member which is movable by fuel pressure from a seating to allow fuel flow through an outlet, a spill valve mounted in close proximity to the fuel injection nozzle body, said spill valve when open allowing fuel to escape from the nozzle inlet so as to lower the fuel pressure applied to the valve member thereby to allow the valve member to close onto the seating, said spill valve including a piston slidable in a cylinder, a seating defined at one end of the cylinder, the seating communicating with the nozzle inlet, a valve member formed at one end of the piston, a spring urging the valve member into engagement with the seating, the piston and the cylinder when the valve member is in engagement with the seating, defining a space, and hydraulic means connected to said space and including means for generating a high pressure pulse which acts on the piston to lift the valve member from the



seating to open said spill valve, thereby allowing fuel from the nozzle inlet to flow into said space.

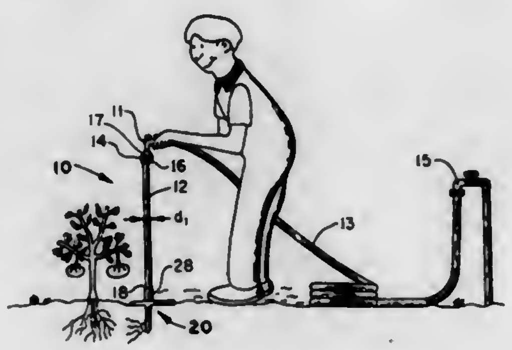
5,617,999
CONNECTOR MEMBER ASSEMBLY FOR USE WITH SPRINKLER SYSTEM
Jung-Li Chiang, 930 W. Maude Ave., Sunnyvale, Calif. 94086
Filed Jan. 13, 1995, Ser. No. 372,355
Int. Cl.⁶ B05B *1/14;1/32*
U.S. Cl. 239—268 **5 Claims**



1. A connector member assembly for use with a sprinkler system, comprising:
a hollow body including a passage extending therein, and a plurality of identical open end portions;
each of said plurality of open end portions including an inner tubular section in communication with said passage, and an outer tubular section concentrically surrounding said inner tubular section;
said outer tubular section including means for providing radial deformability thereof, said outer tubular section further including fastening means for adaptably attaching one of different counterparts thereto wherein a first counterpart is a clamping socket attached to a first of said plurality of open portions, through which a pipe can be firmly sandwiched in a space defined between the inner tubular section and the outer tubular section; and
wherein a second counterpart is attached to a second of said plurality of open end portions, and said second counterpart is a nozzle including a plurality of jetting holes vertically extending through a dispersal dish section so that water jet can be dispersed therefrom; and
wherein said nozzle is of a tubular type having internal threads thereon for engagement with the outer tubular section, and includes a bowl-like section positioned substantially at a center portion of the dispersal dish section, whereby a circum-

ferential wall of said bowl-like section defines a slope in compliance with a chamfer formed on an edge of the inner tubular section, and said space between the outer tubular section and the inner tubular section is generally aligned with a ring, region of the dish section where the jetting holes are position.

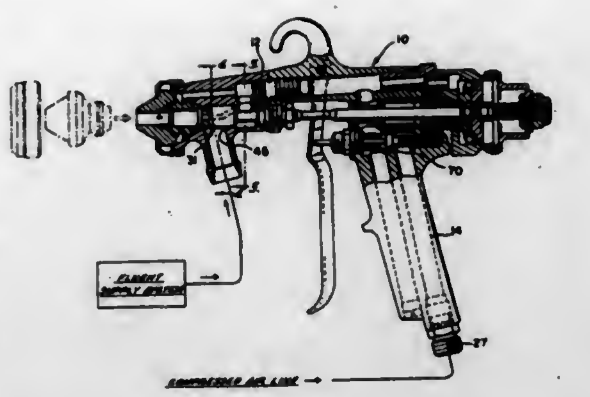
5,618,000
ROOT-WATERING SYSTEM
John P. Lantzy, North East; Calvin S. Cook, Erie, both of Pa., and William A. McNeice, Oakville, Canada, assignors to US Designs, Northeast, Pa.
Filed Oct. 12, 1994, Ser. No. 322,869
Int. Cl.[6] A01G *29/00;* **B05B** *15/00*
U.S. Cl. 239—276 **10 Claims**



1. A root watering system for sequentially watering each of a plurality of plants by attaching said system to a hand-operable valve mechanism having an inlet end which is connected to a water supply and an outlet end, said system comprising:
a) a substantially rigid tube having an inlet end and an outlet end attached at said inlet end to said outlet end of said valve mechanism;
b) a watering stake having an inlet end attached to said outlet end of said rigid tube, a foot-operable pedal extending laterally outwardly from said watering stake adjacent its inlet end, and an outlet end including a tapered end section and a longitudinal egress slot extending along at least a portion of said tapered section diametrically opposite said foot-operable pedal to enable said egress slot to be precisely positioned, a generally V-shaped deflector positioned adjacent said egress slot to deflect soil away therefrom;
whereby said foot-operable pedal can be operated to force said tapered end section into a portion of soil adjacent a plant and then removed to permit sequential watering of a plurality of plant root systems.

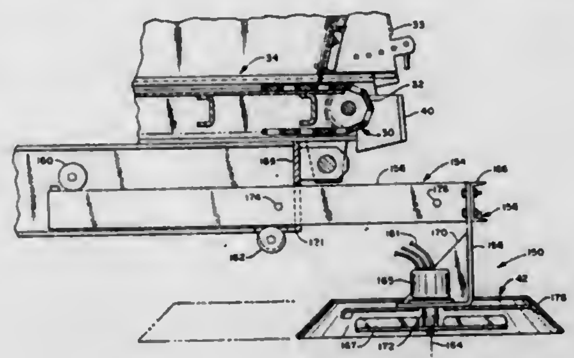
5,618,001
SPRAY GUN FOR AGGREGATES
Peter V. Del Gaone, Drexel Hill, Pa.; Ernest F. Watts, Riverside, Ill.; Walter Dany, Riverdale, N.J.; R. Paul Rossi, Jr., San Carlos, Calif., and Ronald R. Scotchmur, Schiller Park, Ill., assignors to Binks Manufacturing Company, Franklin Park, Ill.
Filed Mar. 20, 1995, Ser. No. 407,320
Int. Cl.[6] B05B *7/30*
U.S. Cl. 239—346 **27 Claims**

1. A spray gun for spraying fluent materials which have a high concentration of particulate content said gun comprising:
a valve chamber, a spray nozzle connected to said valve chamber at one end thereof, an air inlet in the valve chamber operable to be connected to a supply of air under pressure, and a spray material inlet in the valve chamber for receiving the spray materials;



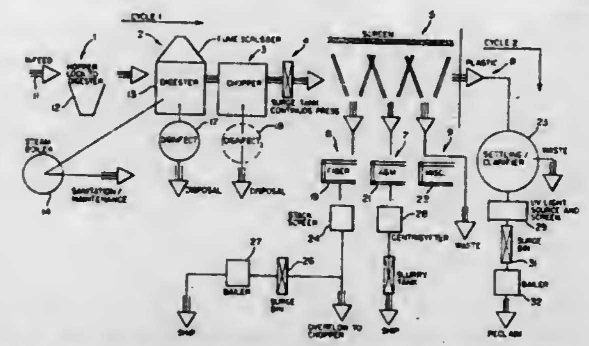
a valve element displaceable in said valve chamber between a closed position and an open position, said valve element having a front end confronting said nozzle and defining a movable rear wall of said valve chamber, and a conduit opening into said valve chamber adjacent said rear wall to comprise said air inlet so that when said valve element is in an open position air flows from said air inlet and said conduit into said valve chamber and toward said spray nozzle;
said valve element operable in the closed position to cover said spray material inlet, and operable in the open position to allow the spray materials to flow through said spray material inlet into the valve chamber to mix with the air flowing from said conduit, and to discharge through said nozzle.

5,618,002
TRUCK WITH RETRACTABLE SPREADER MECHANISM
Gary Cervelli, Coram, and Walter K. Titcomb, Ronkonkoma, both of N.Y., assignors to Air-Flo Mfg. Co. Inc., Prattsburg, N.Y.
Filed Feb. 15, 1996, Ser. No. 602,080
Int. Cl.[6] B60P *1/36;* **B65G** *31/04*
U.S. Cl. 239—657 **19 Claims**



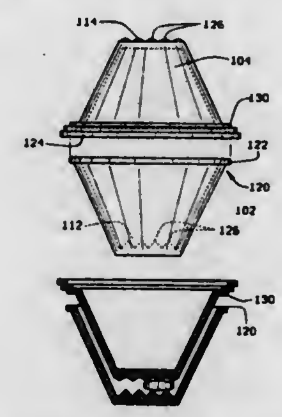
16. In a truck for hauling and dispensing material over paved roads, the truck having a truck frame, a truck body having a forward end and a rearward end, and mounted on the truck frame, the truck body forming a receptacle for said material, means for dispensing the material at the rearward end of the truck body, and a spreader mechanism mounted on the truck having a spreader and a spreader support for shifting the spreader between an operating position for spreading the material dispensed at the rearward end of the truck body and a retracted storage position; the improvement wherein the spreader support has at least one longitudinally extending leg support mounted on the truck frame for longitudinal movement of the spreader between a rearward operating position and a forward storage position forward of the rear end of the truck body.

5,618,003
PROCESS AND APPARATUS FOR RECLAIMING THE COMPONENTS OF USED DISPOSABLE SANITARY ARTICLES
Frank M. Akiyoshi, Bothell, Wash.; Lann E. Richardson, and Pat Deen, both of Albany, Oreg., assignors to Bot Chan, Inc., Bothell, Wash.
Filed Mar. 9, 1995, Ser. No. 401,169
Int. Cl.[6] B02C *19/00;19/12*
U.S. Cl. 241—19 **21 Claims**



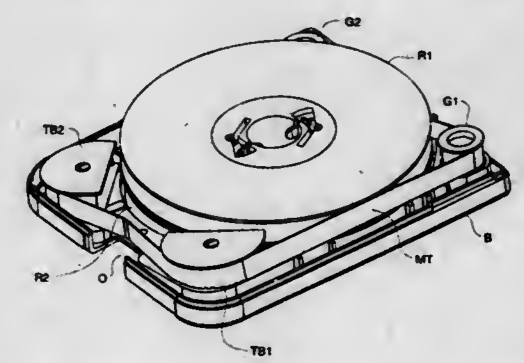
8. A process for reclaiming the components of single use disposable sanitary articles contaminated with bacteria-containing human waste, said components including cellulose fiber, absorbent materials and adhesively bonded sheet material carriers therefor, comprising the steps of:
infecting steam under pressure into direct contact with said articles in a pressure sealed vessel to initially dissolve said adhesive to cause separation and decomposition of the articles into said components to form a mass,
then mechanically breaking said mass into discrete particles of a maximum size, and
then separating said particles into said components and collecting particles of each said component for recycling.

5,618,004
TOP MOUNTED CUPS FOR STORING CRUSHING AND DISPENSING PILLS
Jeffrey Klearman, St. Louis; Jerry Roth, House Springs; Matt Roth, and Robert T. Bronson, both of St. Louis, all of Mo., assignors to Lake Medical Products, Inc., St. Louis, Mo.
Continuation-in-part of Ser. No. 288,599, Aug. 10, 1994, Pat. No. 5,553,793, which is a continuation-in-part of Ser. No. 168,019, Dec. 15, 1993, Pat. No. 5,376,072. This application Jun. 7, 1995, Ser. No. 485,358
Int. Cl.[6] B02C *19/08*
U.S. Cl. 241—21 **27 Claims**



21. A method of storing at least one pill within a cavity defined by two cups coupled top-to-top, crushing the pill, and dispensing the pill crushings suspended in a fluid, the method comprising the steps of:
decoupling the two cups such that said pill remains within a first of the cups;
crushing the pill by nesting the cups with the pill therebetween;
adding a fluid to the first cup thereby suspending the pill crushings therein; and
dispensing the suspension from the first cup.

5,618,005
COAXIAL REEL TAPE CARTRIDGE WITH REDUCED TAPE FORCES
Christian A. Todd, Thornton; Donovan M. Janssen, Boulder; Lynn C. Jacobs, Berthoud, and James W. Wolf, Loveland, all of Colo., assignors to Storage Technology Corporation, Louisville, Colo.
Filed Sep. 13, 1995, Ser. No. 527,651
Int. Cl.[6] G11B *23/087*
U.S. Cl. 242—345.1 **22 Claims**



1. A tape cartridge capable of housing a magnetic tape, said tape cartridge being capable of being inserted into a tape drive for reading/writing data on said magnetic tape, and said tape cartridge further comprising:
a first reel rotating about a first axis in a first plane;
a second reel mounted coaxially with said first reel and rotatable about said first axis, said second reel rotating in a second plane which is parallel to said first plane;
a substantially rectangular exterior housing, having a top side, a bottom side and a front side for enclosing said first and second coaxially mounted reels;
a first drive spindle affixed coaxially to said first reel and said first drive spindle being accessible through an opening in said bottom side of said exterior housing for providing mechanical coupling of said first reel to a tape drive in which said tape cartridge is inserted;
a second drive spindle affixed coaxially to said second reel, said second drive spindle capable of being inserted in said second reel through a coaxial opening in said first reel, and said second drive spindle being accessible through said opening formed in said bottom side of said exterior housing for providing mechanical coupling of said second reel to said tape drive;
access means located in said front side of said exterior housing to provide said tape drive access to said magnetic tape of said tape cartridge;
a length of said magnetic tape having a first and a second end, said first end being attached to said first reel and said second end being attached to said second reel;
a first and a second tape bearing located on the front corners, one on either side of said access means for guiding said length of tape adjacent to said access means in an orientation to enable said tape drive to read/write data on said length of said magnetic tape;

a first tape segment extending from said first reel to said first tape bearing, the surface of said magnetic tape in first segment being perpendicular to said first plane along substantially the entirety of its extent;

a second tape segment extending from said second reel to said second tape bearing, the surface of said magnetic tape of said second segment being perpendicular to said second plane along substantially the entirety of said length of said magnetic tape;

said first and said second tape bearings being mounted on a base plate;

said base plate being wedge shaped and having a first surface affixed to an interior surface of said bottom of said exterior housing and a second surface oriented at an angle with respect to said first surface on which said first and second tape bearings are mounted; and

said first and second bearings each comprising:

a bottom guide plate;

a top guide plate oriented parallel to said bottom guide plate; and

a guide surface located between said top guide plate and said bottom guide plate for providing a path, constrained by said top guide plate and said bottom guide plate.

5,618,006

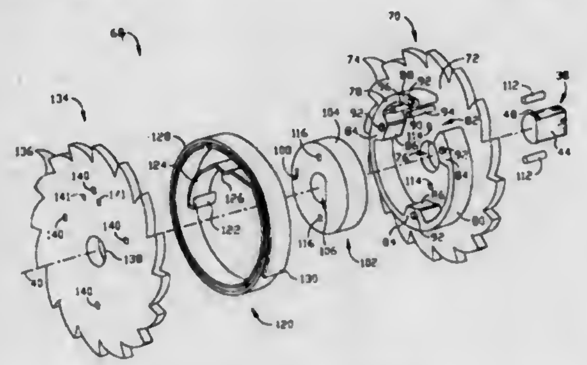
SEAT BELT RETRACTOR WITH ENERGY MANAGEMENT

Robert D. Sayles, Rochester, Mich., assignor to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Feb. 23, 1996, Ser. No. 606,200

Int. Cl.⁶ B60R *22/28*

U.S. Cl. 242—379.1 **39 Claims**



1. A seat belt webbing retractor comprising:

a spool around which seat belt webbing is wound, said spool being rotatable in webbing withdrawal and webbing retraction directions;

a member rotatable in the withdrawal and retraction directions with said spool;

means for blocking rotation of said rotatable member and said spool in the withdrawal direction, said spool being rotatable relative to said rotatable member upon the occurrence of tension in the webbing above a predetermined amount;

a deformable member for absorbing energy during a plurality of rotations of said spool relative to said rotatable member, said deformable member having a plurality of coils; and

means for effecting plastic deformation of said coils of said deformable member during the plurality of rotations of said spool relative to said rotatable member.

5,618,007

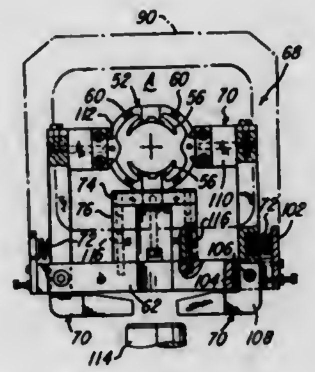
STATOR WINDING APPARATUS

John M. Beakes, Fairborn; Gary E. Clemenz, Bellbrook; Patrick A. Dolgas, Milford; Mark T. Heaton, Springfield, and Lawrence E. Newman, Tipp City, all of Ohio, assignors to Globe Products Inc., Huber Heights, Ohio

Division of Ser. No. 349,410, Dec. 5, 1994, Pat. No. 5,549,253, which is a division of Ser. No. 148,175, Nov. 5, 1993, Pat. No. 5,370,324, which is a continuation of Ser. No. 587,937, Sep. 25, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 474,061

Int. Cl.⁶ H02K *15/02*

U.S. Cl. 242—432.6 **9 Claims**



1. Stator winding apparatus for winding field coils onto pole pieces of a stator located at a winding station using wires supplied from sources of wire under tension, said apparatus comprising:

a winding head assembly located adjacent said winding station that winds coils of wire on the stator at said winding station;

two pairs of winding forms for guiding the wires wound into coils wound on the stator at the winding station;

a pair of winding form-loading mechanisms that move said winding forms toward and away from one another at said winding station; and

a pair of programmably adjustable form lock assemblies adjacent said winding station that lock said winding forms to the stator located at said winding station and, after the winding operation is completed, unlock said winding forms from the same stator while said stator is still located at said winding station.

5,618,008

APPARATUS FOR DISPENSING MULTIPLE PRODUCTIONS FROM A SINGLE TISSUE ROLL HOLDER

Donald D. Dearwester, Las Vegas, Nev., and John W. Toussant, West Chester, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

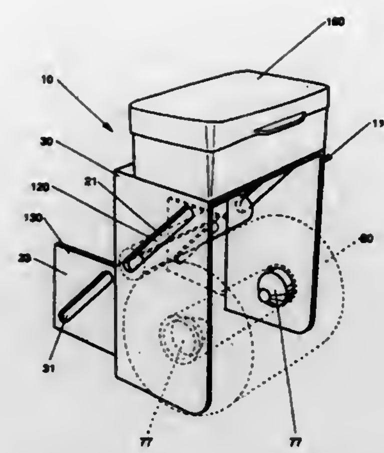
Filed Dec. 28, 1995, Ser. No. 579,801

Int. Cl.⁶ A47K *10/22*

U.S. Cl. 242—594.5 **17 Claims**

1. An apparatus for dispensing toilet tissue and at least one other product, said apparatus being attachable to a wall-mounted toilet tissue roll holder comprising a spindle of the roll holder and a member having a pair of opposing holes for receiving the spindle of the roll holder, said apparatus comprising:

a top wall and two opposing side walls spaced apart by said top wall, all of which are connected together to form a housing, said housing having two substantially rigid members joined thereto for attaching said housing to the roll holder, each of said rigid members being articulably hinged to said housing to be articulated from a position substantially parallel with a wall to which the roll holder is affixed to a position outwardly extended from said housing, each of said members having at least one slot therein for receiving the spindle of the roll holder such that when said apparatus is attached to the roll



holder said apparatus is secured in substantially fixed relation to the roll holder, said housing further including a structure for receiving at least one roll of toilet tissue, said top wall being adapted to receive an additional product.

5,618,009

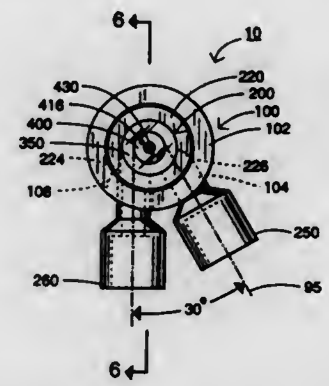
ADJUSTABLE YARN GUIDE ROLLER ELBOW

Don C. Foster; Joel D. Norris; Christopher D. Norris, all of Burlington, and Ross M. Stainback, Elon College, all of N.C., assignors to Eldon Specialties, Inc., Graham, N.C.

Filed Oct. 18, 1995, Ser. No. 544,879

Int. Cl.⁶ B65H *57/14;57/00;* **G03B** *1/56*

U.S. Cl. 242—615.2 **23 Claims**



1. A yarn guide elbow for directing a yarn or filament, said yarn guide elbow comprising:

a) a housing, said housing forming an enclosed cavity and having first and second members, said first member having a first opening formed therein and said second member having a second opening formed therein, each of said first and second openings communicating with said cavity;

b) a roller disposed within said cavity of said housing and defining a periphery adapted to receive the yarn, said roller mounted in said housing for rotation about an axis such that each of said first and second openings are disposed substantially adjacent said periphery;

c) said first and second members being relatively adjustable such that the distance between said first and second openings may be selectively adjusted; and

d) wherein said cavity fluidly connects said first and second openings.

5,618,010

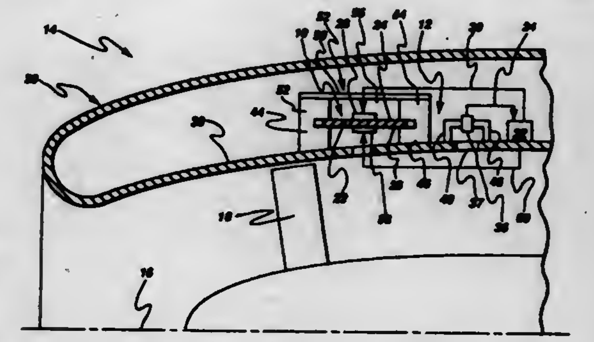
ACTIVE NOISE CONTROL USING A TUNABLE PLATE RADIATOR

Frederic G. Pla, Nashotah, Wis., and Harindra Rajiyah, Clifton Park, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 19, 1994, Ser. No. 359,161

Int. Cl.⁶ G10K *11/16*

U.S. Cl. 244—1 N **1 Claim**



1. An active noise control subassembly for reducing source noise caused by a source independent of said subassembly, said subassembly comprising:

a) a noise radiating panel bendably vibratable to generate a panel noise canceling at least a portion of said source noise, said panel having first and second generally opposing sides and a panel resonating frequency;

b) a first piezoceramic actuator plate connected to said first side of said panel such that vibrations in said first plate cause bending vibrations in said panel;

c) a back plate spaced apart from said first plate and said panel with said panel disposed generally between said source noise and said back plate;

d) a pair of spaced-apart side walls each generally abutting said panel and said back plate so as to generally enclose a back cavity which is not in fluid communication with said source noise; and

e) means for varying said panel resonating frequency by varying the state of said back cavity while said panel is undergoing said bending vibrations, wherein said back cavity has a volume, wherein said frequency varying means includes means for varying said volume while said panel is undergoing said bending vibrations, wherein said source is an aircraft engine having a fan, wherein said panel is in acoustic communication with a portion of an inner wall of a fan nacelle, and wherein said volume varying means includes powered cylinders for moving said back plate towards and away from said panel.

5,618,011

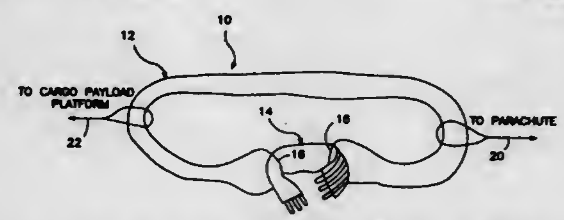
LOAD SECURING AND RELEASING SYSTEM

James E. Sadeck, East Freetown; Gary F. Vincens, Norton, both of Mass., and Donald Billoni, Waverly, Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 11, 1996, Ser. No. 585,066

Int. Cl.⁶ B64D *17/30*

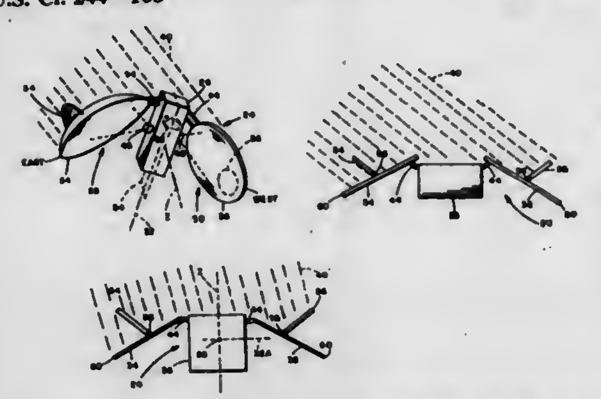
U.S. Cl. 244—151 B **12 Claims**



1. A secure and release system for releasably attaching two objects together, said secure and release system comprising:

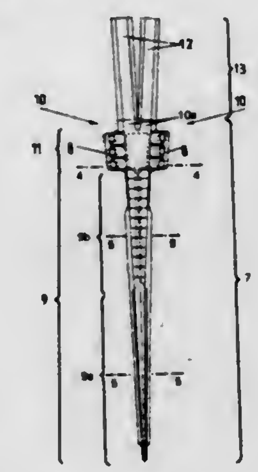
a main load carrying component having a first end portion and a second end portion;
a secure/release means for securing said end portions together and for releasing said end portions;
said secure/release means being capable of releasing said end portions at a preselected instance;
said secure/release means having a plurality of interlocking members which provide a substantial mechanical advantage to the system, closure means for securing said interlocking members together, and means operably connected to said closure means for detaching said closure means from said interlocking members;
said secure/release means comprising a high strength webbing material having a first end and a second end, and said plurality of interlocking members being affixed to said webbing material along the longitudinal axis thereof;
said plurality of interlocking members comprising a plurality of longitudinally extending loops of braided cord, each of said braided cord loops having a first end and a second end, wherein the ends of each of said braided cord loops extend beyond the ends of said webbing material, and wherein a line drawn through the ends of each of said braided cord loops forms a steep angle with respect to a line drawn perpendicular to the longitudinal axis of said webbing material;
whereby said secure and release system, upon activation of said detaching means, releases said objects from each other.

5,618,012
SATELLITE STABILIZATION SYSTEM
John A. Lehner, Sunnyvale, and Thomas Holmes, Portola Valley, both of Calif., assignors to Space Systems/Loral, Inc., Palo Alto, Calif.
Filed Jan. 12, 1995, Ser. No. 371,821
Int. Cl.⁶ B64G *1/24*
U.S. Cl. 244—168 14 Claims



1. A satellite stabilization system for a satellite having a body and two opposed antenna elements disposed symmetrically on opposite sides of a plane of symmetry extending through the body, wherein each of said antenna elements has a first surface for directing radiant signals on a path between the satellite and the earth, each of said antenna elements has a second surface directed away from said first surface and positioned to intercept incident solar radiation during passage of the satellite along a path of travel around the earth, said second surface in each of said antenna elements interacting with the solar radiation to produce a solar radiation pressure along said second surface with a consequential torque about said body, the torque of each of said antenna elements depending on an orientation of said second surface of the antenna element relative to a direction of the incident solar radiation, the stabilization system comprising:
a first plate for intercepting solar rays, said first plate being mounted to the second surface of a first of said antenna elements;
a second plate for intercepting solar rays, said second plate being mounted to the second surface of a second of said antenna elements; and
wherein said first plate and said second plate are oriented symmetrically about said plane of symmetry and angled relative to the second surfaces of the respective antenna elements to reduce a value of said torque.

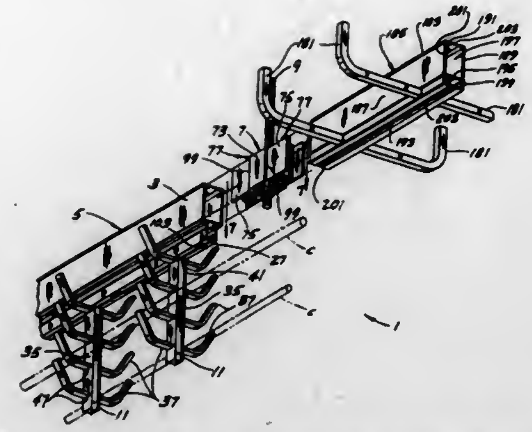
5,618,013
MOVABLE POINT FOR A CROSSING FROG FOR RAILWAY APPARATUS OF VERY GREAT LENGTH, INCORPORATED IN LONG WELDED RAILS
Philippe Mugg, Haguenau, France, assignor to Cogifer-Compagnie Generale d'Installations Ferroviaires (Societe Anonyme a Directoire), Croissy Sur Seine, France
Filed Mar. 13, 1996, Ser. No. 614,652
Claims priority, application France, Aug. 10, 1995, 95 09811
Int. Cl.⁶ E01B *7/00*
U.S. Cl. 246—385 8 Claims



1. A movable point for a crossing frog for a railway apparatus of great length, incorporated in long welded rails, said point (7) being comprised by a single steel member cast in one piece, comprising a front triangular portion (7) a central portion (11) and a rear portion (10) constituted of two rearwardly extending elements (10a) to which are welded two rails (12), said elements (10a) of the point (7) being shaped to the profile of the corresponding rail (12), only the front triangular portion (9) being flexible and the central portion (11) having integral laterally extending members (8) for securement of said central portion within a cradle (14).

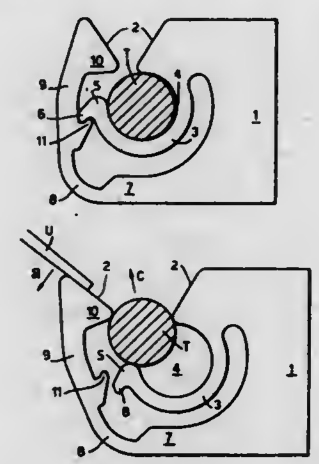
5,618,014
SUPPORT SYSTEM FOR DATA TRANSMISSION LINES
Eric R. Rinderer, Highland, Ill., assignor to B-Line Systems, Inc., Highland, Ill.
Division of Ser. No. 175,591, Dec. 29, 1993, Pat. No. 5,564,658. This application Jun. 2, 1995, Ser. No. 459,764
Int. Cl.⁶ F16M *13/00*
U.S. Cl. 248—58 15 Claims

1. A support system for data transmission lines and the like, comprising
a plurality of first rail sections, each first rail section comprising a first hollow box beam having a first cross sectional configuration taken transversely with respect to the beam,
a series of supports extending down from one or more of said first rail sections at intervals spaced along the one or more rail sections,
each support comprising a generally vertical column and a series of arms extending laterally outwardly from said column along the length of the column at different elevations,
the arms of each support cooperating with the arms of the other supports for supporting a series of horizontal runs of data transmission lines and the like at said different elevations, and



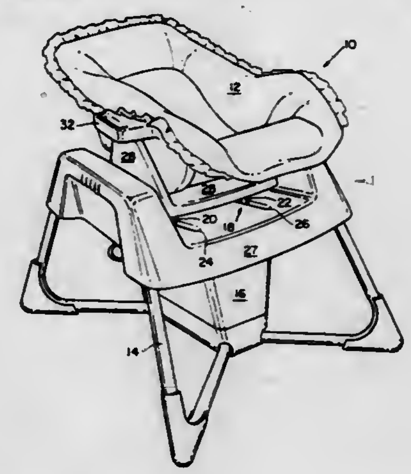
a plurality of second rail sections, each second rail section comprising a second hollow box beam having a second cross sectional configuration taken transversely with respect to the beam, said second cross sectional configuration being different from the first cross sectional configuration of the first rail sections,
a series of rungs projecting laterally from one or more of said second rail sections for supporting runs of data transmission lines and the like, and
splices for connecting said first and/or second rail sections end to end, each of said splices having a cross sectional configuration of such size and shape that the splice is receivable in open ends of both of said first and second hollow box beams whereby splices of identical construction can be used to connect first rail sections end to end, and to connect second rail sections end to end, and to connect first and second rail sections end to end.

5,618,015
CLIP FOR FASTENING PIPES AND SIMILAR ARTICLES
Marco Morini, Saint-Vincent, Italy, assignor to Lys Fusion, S.p.A., Hone, Italy
Filed Mar. 4, 1996, Ser. No. 606,458
Claims priority, application Italy, Mar. 3, 1995, TO95A0152
Int. Cl.⁶ F16L *3/08*
U.S. Cl. 248—74.2 18 Claims



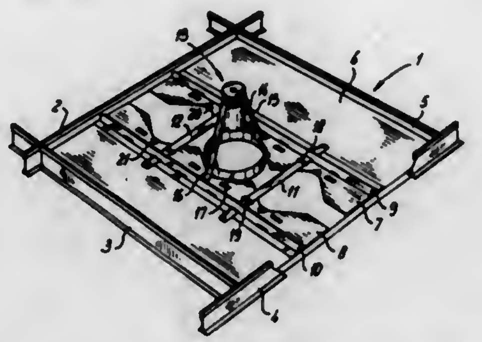
1. A clip for mounting an elongate member upon a support member, comprising:
a body member for attachment to a support member;
an inner wall member, defining a seat portion within which an elongate member can be seated so as to permit said elongate member to be mounted upon a support member, flexibly integral with said body member so as to permit said seat portion to be expanded and contracted in order to respectively permit said elongate member to be inserted into said seat portion and be retained within said seat portion;
an outer wall member substantially partially concentrically surrounding said flexible inner wall member and being flexibly integral at a first proximal end portion thereof with said body member so as to be movable between a first position at which said outer wall member cooperates with said inner wall member so as to retain said elongate member within said seat portion of said inner wall member, and a second position at which said outer wall member permits said elongate member to be inserted into and removed from said seat portion of said inner wall member, said outer wall member having a second distal end portion thereof cooperating with said body member so as to define a passageway for said elongate member into and out of said seat portion of said inner wall member and said clip;
first latching means provided upon said inner wall member; and
second latching means provided upon said outer wall member at a position intermediate said first proximal and second distal end portions thereof and being normally disengaged from said first latching means of said inner wall member, so as to permit said outer wall member to be moved from said first position to said second position in order to permit said elongate member to be subsequently inserted into and removed from said seat portion of said inner wall member, but being engageable with said first latching means of said inner wall member when said elongate member is attempted to be withdrawn from said seat portion of said inner wall member while said outer wall member is disposed at said first position so as to prevent withdrawal of said elongate member from said seat portion of said inner wall member.

5,618,016
SWING LINKAGE
Thomas A. Garland, 76 Reservoir Cir., Jamestown, R.I. 02835, and George A. Wood, Lincoln, Mass., assignors to Thomas A. Garland, Jamestown, R.I.
Filed Sep. 2, 1994, Ser. No. 300,740
Int. Cl.⁶ A47F *5/12*
U.S. Cl. 248—133 29 Claims



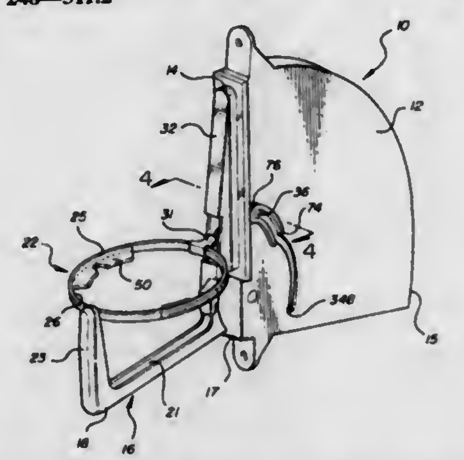
1. Apparatus comprising:
a support structure;
a linkage assembly including:
a first link connected at a first point to a translation mechanism attached to said support structure, said translation mechanism arranged to allow said first point of said first link to translate along a substantially straight axis;
a second link pivotally connected at a first point to said support structure and pivotally connected at a second point to said first link;
wherein a second point of said first link travels on or near an arc of substantially constant finite radius when said first link pivots with respect to said second link.

5,618,017
SUPPORTING PLATE UNIT FOR CEILING
Hermanus P. M. De Boer, Bongerd 90, NL-8212 Be Lelystad, Netherlands
Filed Jul. 9, 1993, Ser. No. 87,851
Int. Cl.⁶ F16M *11/00*
U.S. Cl. 248—201 **4 Claims**



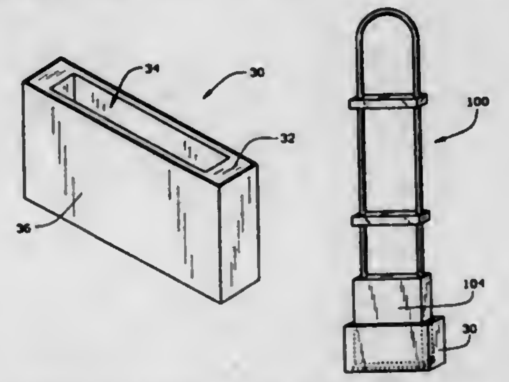
1. A supporting plate unit for contacting a ceiling panel and for supporting at least one object, the supporting plate unit being made of thin metal and comprising a set of two supporting plates each having one or more retaining lips bent out of the thin metal supporting plates, extending from said supporting plates about a predetermined angle and having a shape suitable to be pushed into material of a ceiling, said supporting plates comprising a triangular section in their longitudinal direction for reinforcing the structure thereof, wherein each of said supporting plates faces each other and is provided with an edge with a substantially toothed structure having projecting points and recessed parts, said recessed parts of each supporting plate facing each other and defining together a saw-toothed aperture, and a lamp holder disposed in said aperture.

5,618,018
CUP HOLDER FOR CONFINED SPACES
Grzegorz H. Baniak, Etobicoke, Canada, assignor to Manchester Plastics, Troy, Mich.
Filed Jun. 7, 1995, Ser. No. 479,652
Int. Cl.⁶ A47K *1/08*
U.S. Cl. 248—311.2 **18 Claims**



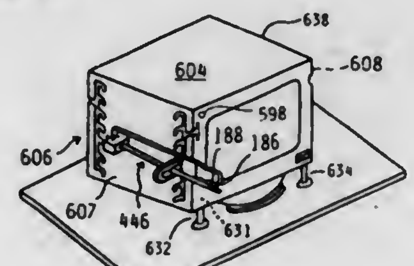
1. A container holding assembly for a vehicle comprising:
a housing defining an elongated vertical access opening;
a support member movable into and out of said access opening;
container holder providing a container opening therein to receive a container and supported by said support member rotating between an extended position and a retracted position; and
said support member including at least one leg extending from a base, said leg rotatably supporting said container holder with said container holder pivoting between said retracted position with said container holder co-planar with said leg and said base and said access opening with at least a portion of said container holder rotated to a position adjacent said leg and said base, and said extended position with said container holder transverse to said leg.

5,618,019
BUMPER INSTALLATION FOR SENSOR GATE
Clifford T. Wren, 2036 Honeysuckle La., Jefferson City, Mo. 65109
Filed Jun. 7, 1995, Ser. No. 476,612
Int. Cl.⁶ A47B *95/00*
U.S. Cl. 248—345.1 **19 Claims**



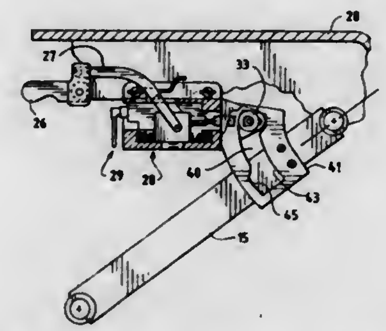
1. A bumper for a sensor gate having an external configuration, the bumper comprising:
a cushion having a cavity formed therein, the cavity having a configuration complementary to the external configuration of the sensor gate enabling the bumper to be easily mounted on the sensor gate without tools by sliding the bumper over the sensor gate with the sensor gate positioned within the cavity; and
a casing having an interior and a rigid exterior, the cushion being secured to the casing interior, wherein at least a portion of the casing extends below the cushion enabling the casing to contact a floor surface and the cushion to contact a base surface of the sensor gate when the bumper is mounted on the sensor gate.

5,618,020
UNIVERSAL DOCUMENT MONITOR SUPPORT STAND
David Hegarty, 36 Wyatt Rd., Garden City, N.Y. 11530, and Michael Terc, Wantagh, N.Y., assignors to David Hegarty, Garden City, N.Y.
Continuation of Ser. No. 380,819, Jan. 30, 1995, abandoned, which is a continuation of Ser. No. 243,658, May 16, 1994, Pat. No. 5,385,327, which is a continuation of Ser. No. 854,999, Apr. 22, 1992, abandoned. This application Feb. 2, 1996, Ser. No. 597,470
Int. Cl.⁶ B41J *11/02*
U.S. Cl. 248—442.2 **20 Claims**



1. In combination:
a removably mountable document holder, and a video display monitor for removably mounting the document holder thereon;
the monitor including a casing, a first mounting side, the mounting side residing in the monitor casing; and
first means for removably mounting and slidably engaging the document holder on the monitor, the document holder mounting means including means residing at the monitor casing at the first mounting side thereof; and
the document holder including means for supporting a document and having means for engageably cooperating with the document holder mounting means of the monitor casing, thereby allowing for the mounting of the removable document holder on the video display monitor.

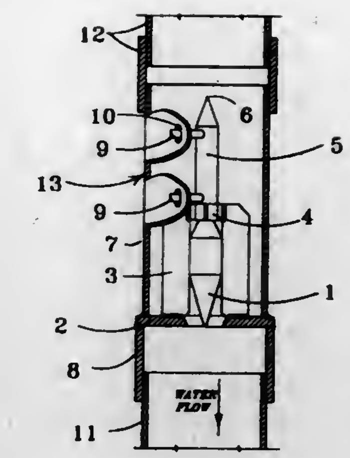
5,618,021
SEAT SUSPENSION WITH RIDE ZONE PROTECTION APPARATUS
Cole T. Brodersen, Davenport, Iowa, assignor to Sears Manufacturing Company, Davenport, Iowa
Filed Jun. 7, 1995, Ser. No. 483,116
Int. Cl.⁶ F16M *13/00*
U.S. Cl. 248—550 **8 Claims**



1. A seat suspension having a mechanical linkage including at least one linkage arm between a base and a seat, a pneumatic actuator including a valve connected to and moveable with the seat which allows air to be charged to or discharged from the actuator to raise or lower the seat relative to the base, and a ride zone protection apparatus, comprising:
a cam connected to and movable with the at least one linkage arm and having an aperture having surface contours;
a plunger having a first end operatively connected to the valve and a second free end disposed within the aperture and engageable with said surface contours; and
the surface contours of the aperture being configured to permit or prevent movement of the plunger relative to the valve depending on the vertical position of the seat, thus permitting or preventing operation of the valve to cause the seat to be raised or lowered.

5,618,022
VARIABLE ORIFICE VALVE
Glenn E. Wallace, 2063 S. Della La., Anaheim, Calif. 92802
Filed Sep. 16, 1996, Ser. No. 710,314
Int. Cl.⁶ F16K *31/122;47/00*
U.S. Cl. 251—62 **4 Claims**

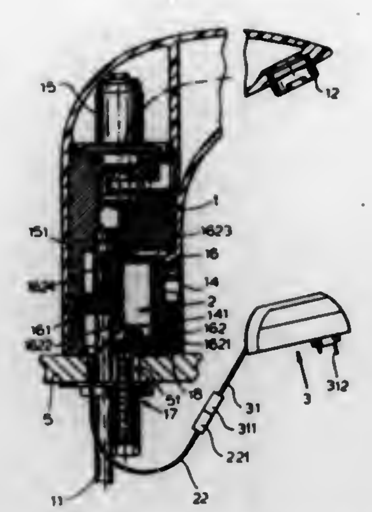
1. A hydraulic flow control device for controlling liquid flow, when precise linear adjustments of the flow is required and desired, comprising:
a hydraulic fluid passageway housing;
a plurality of working components including;
a) an orifice plate having a circular opening therein is disposed within said fluid passageway housing and being secured thereto;



b) a plurality of equally spaced guide mounting plates disposed within said passageway housing, said guide mounting plates having one end secured to the up stream surface face of said orifice plate;
c) a hydraulic piston control device disposed within said passageway housing and moveable within said guide mounting plates said control device having tapered portions disposed at each end of said control device and an intermediate circular portion there-between, one of said ends having a tapered shaped restrictive valving portion and the intermediate portion having a circular valving portion for variably controlling the fluid flow rate through said circular opening by changing the size of the said circular opening, as said tapered valving portion and said intermediate valving portion are moved through said opening;
d) an adjustable double acting hydraulic actuator is secured to the other of said tapered ends within the fluid passageway housing, said hydraulic actuator having a portion secured to the other end of said guide mounting plates, said double acting hydraulic actuator controls the movement of said control device valving portions relative to said circular opening to permit a desired flow rate to be set where by the movement of said control device through said guide mounting plates minimizes the flow turbulence through said circular opening and;
a remotely located hydraulic means of adjusting the hydraulic actuator for setting the desired flow rate to any increment within the range of the movement of said control device valving portion, wherein the plurality of working components positioned upstream from said circular opening of said orifice plate, thus isolating the working components from the area where cavitation and turbulent flow may occur, that may be formed down stream of said orifice plate under certain flow conditions, to mitigate physical damage to the working components and hydraulic housing.

5,618,023
PLUMBING FIXTURE WITH LINE-POWERED CONTROL UNIT
Heinz-Dieter Eichholz, Iserlohn; Werner Kleinhans, Unna, and Hans-Peter Rudrich, Windischeschenbach, all of Germany, assignors to Friedrich Grohe Aktiengesellschaft, Hemer, Germany
Filed Jun. 8, 1995, Ser. No. 488,489
Claims priority, application Germany, Jun. 10, 1994, 44 20 332.2
Int. Cl.⁶ F16K *31/02*
U.S. Cl. 251—129.04 **10 Claims**

1. A plumbing fixture comprising:
a housing adapted to be secured to a support surface, forming a compartment dimensioned to snugly receive a battery, and formed with a passage extending from the compartment to the surface;



contacts exposed in the compartment and positioned to engage terminals of the battery;

at least one feed conduit extending from the housing through the support surface, whereby liquid is fed to the housing through the conduit;

electrically controlled valve means in the housing connected to the contacts and to the conduit for altering characteristics of fluid flow through the housing; and

a battery simulator including

a battery-replacement unit dimensioned like the battery, received in the compartment, and having terminals engaging the contacts,

a flexible supply cable extending from the unit through the passage and surface and having an outer end outside the housing,

a fitting on the outer end adapted to be fitted to a standard line-voltage supply, and circuit means including power-conditioning circuitry for converting alternating line-voltage current to low-voltage direct current and for supplying the direct current to the terminals of the battery-replacement unit.

5,618,024
SLIDE VALVE

Martin Westenberg, Tramstrasse 29, CH-4132 Muttenz, Schweiz, Germany

Continuation of Ser. No. 298,573, Aug. 31, 1994, abandoned. This application Aug. 15, 1995, Ser. No. 515,220

Claims priority, application Germany, Sep. 3, 1993, 43 29 856.7

Int. Cl.⁶ F16K *3/20*

U.S. Cl. 251—159 **9 Claims**

1. A slide valve for pipelines transporting solid-laden gaseous or liquid fluids, comprising:

a slide-valve housing (12) having a fluid passage therethrough;

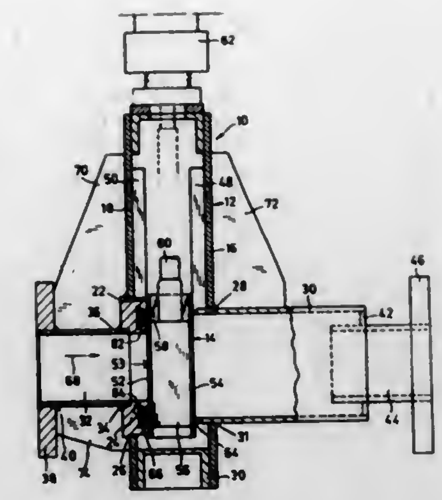
a closure member (14) displaceably mounted in the housing (12) for movement between a closed position where said closure member (14) closes the fluid passage and an open position where the closure member (14) opens the fluid passage;

an inflatable annular packing (66) mounted in the housing (12) and surrounding said fluid passage, said annular packing having a circumferential hollow space (82) therein to receive fluid under pressure for selectively inflating and deflating said inflatable annular packing (66), said annular packing (66) being dimensioned to engage said closure member (14) in an inflated condition and to be spaced from said closure member (14) in an uninflated condition;

a source of fluid pressure (78) in communication with the circumferential hollow space (82) of the annular packing (66);

valve means (106) in communication with the source of fluid pressure (78) for directing fluid under pressure to said circumferential hollow space (82) when said closure member (14) is in the closed position for inflating the annular packing (66) against the closure member (14), and for releasing the fluid under pressure from said circumferential hollow space (82) prior to opening the closure member; and

a wound spiral spring (84) formed into an annular shape and disposed in the circumferential hollow space (82) of the annular packing (66), said wound spiral spring (84) being pervious between its spiral turns to the fluid from the source of fluid pressure, said wound spiral spring (84) being dimensioned for supporting the annular packing (66) when the pressure is released from the circumferential hollow space (82) and for being in non-supporting relationship to inflated portions of said annular packing (66) when the pressure directed to the circumferential hollow space (82) inflates said annular packing (66).



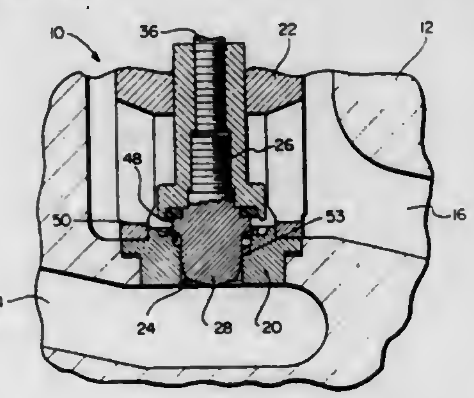
5,618,025
PROTECTED SOFT SEAT WITH SECONDARY HARD SEAT

Kimball R. Barron, and Edward J. Merwald, both of Marshalltown, Iowa, assignors to Fisher Controls International, Inc., Clayton, Mo.

Filed May 23, 1996, Ser. No. 652,827

Int. Cl.⁶ F16K *25/00*

U.S. Cl. 251—210 **11 Claims**



7. In a fluid valve for use in a flow stream containing particulate matter, including a valve body having an inlet and an outlet, the improvement comprising:

a seat ring mounted in said valve body between said inlet and said outlet and having an aperture defining a flow passageway for communicating said flow stream containing particulate matter;

said seat ring including an annular seal rim around the perimeter of said aperture and an annular rigid seating surface extending around said annular seal rim;

a seat ring retainer maintaining said seat ring mounted within said valve body;

a valve plug member slidably mounted within said seat ring retainer, including (1) a soft seat of resilient seating material for fluid sealing engagement with said annular seal rim and thereby defining a primary seat for said flow stream, and (2) an annular ridge protruding from said valve plug member for fluid sealing engagement with said annular rigid seating surface and thereby defining a secondary seat for said flow stream;

said valve plug member having a plug tip for insertion into said seat ring aperture and forming at least one dead band area defined by the slidable engagement of said plug tip and said seat ring for controlling said flow stream during opening and closing of said primary and secondary seats.

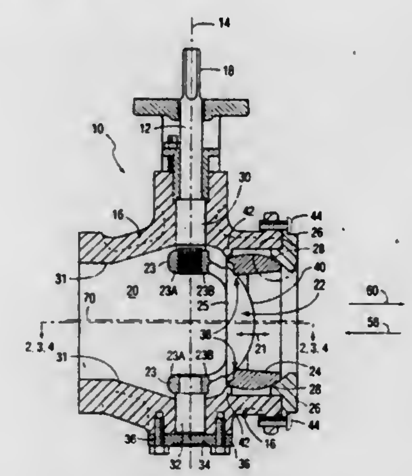
5,618,026
HYBRID ROTARY CONTROL VALVE ASSEMBLY

Craig Geyer, St. Cloud, Minn., assignor to General Signal Corporation, Stamford, Conn.

Filed Feb. 13, 1995, Ser. No. 387,275

Int. Cl.⁶ F16K *1/16;5/00*

U.S. Cl. 251—298 **18 Claims**



1. A hybrid rotary control valve assembly which comprises:

a concentric valve body having a concentric valve chamber, a shaft disposed within said concentric valve chamber, and a flow channel disposed within a side wall of said concentric valve body;

an adjustable valve seat disposed about said flow channel wherein said adjustable valve seat has an orifice disposed therein; and

an eccentric control valve plug assembly having a plug body and a plug head, said plug body having first and second end portions, wherein said first end portion of said plug body is disposed about said shaft, whose axis of rotation intersects with a centerline of said flow channel, and wherein said plug head is disposed about said second end portion of said plug body which is opposite to said shaft and in such a way that it is offset with respect to said centerline of said flow channel, wherein said plug head engages said adjustable valve seat in a liquid or gas tight relationship when in a closed position;

said plug head of said eccentric control valve including a symmetrical sealing surface that is offset with respect to said centerline of said flow channel.

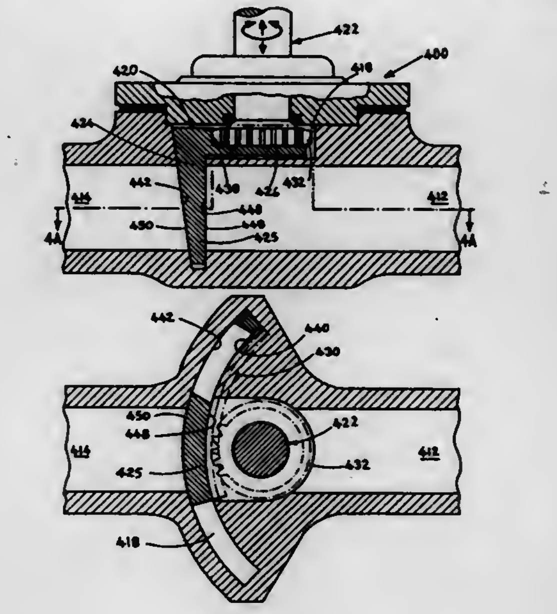
5,618,027
GATE VALVE

Venkatesh R. Nevrekar, 6 Castle Creek Pl., Shawnee, Okla. 74801

Continuation-in-part of Ser. No. 276,986, Jul. 20, 1994. This application Jun. 2, 1995, Ser. No. 459,321

Int. Cl.⁶ F16K *3/00*

U.S. Cl. 251—302 **8 Claims**



1. A valve comprising:

a valve body having a fluid flow passageway defining a fluid flow path through the valve body and having a body cavity in the fluid flow path, the valve body having a pair of seating surfaces surrounding the fluid flow passageway and facing each other across the body cavity;

a flow control means disposed in the body cavity for selectively closing or opening the fluid flow passageway, the flow control means comprising:

a gate having a convex surface facing one seating surface and a concave surface facing the second seating surface, the surfaces being disposed concentric with each other and at least one of the surfaces disposed inclined to the fluid flow path, the valve body cavity correspondingly shaped to closely surround the flow control means and to permit the flow control means to rotate about and to move axially along an axis transverse to the fluid flow path; and

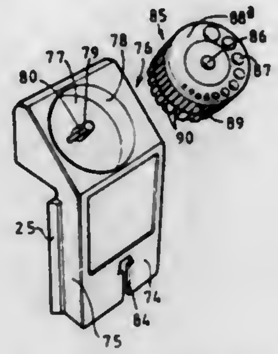
a valve operator means connected to the flow control means for selectively moving the flow control means, the valve operator means comprising:

a valve operator;

a stem having a stem axis and a stem diameter, the stem connected to the flow control means by a connecting means that permits substantially no rotary movement between the stem and the flow control means; and

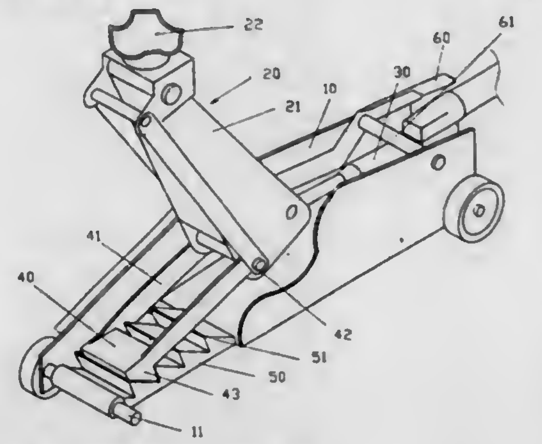
a stem moving means operatively connected with the valve operator for selectively moving the stem, said stem moving means causing a rotary movement of the flow control means for selectively closing or opening the fluid flow passageway and further causing the stem to move axially to force the flow control means to wedge against the seating surface facing the inclined surface of the gate for sealing about the fluid flow passageway.

5,618,028
POWER TOOL ADAPTER
Paul S. Hepworth, Guildford, United Kingdom, assignor to Turner Intellectual Property Limited, United Kingdom
Filed Jul. 20, 1994, Ser. No. 278,061
Claims priority, application United Kingdom, Jan. 24, 1992, 9201600
Int. Cl.[6] B24B *41/00*
U.S. Cl. 451—375 **7 Claims**



1. An adapter for releasable engagement with a powered grinding tool having a casing, a motor adapted to be driven by power supply means, a rotatable shaft drivable by the motor, and a rotatable grinding wheel to which drive is transmitted from said shaft, the adapter being characterized by engagement means for it to be secured to said casing at a work station of the tool and to be removed therefrom subsequently, and defining a location which, when the adapter is fitted to said tool at said work station thereof provides for correct positioning between part of an implement at said location and said grinding wheel for said part to be worked by the wheel when angled rearwardly relative to a lower portion, said head having an opening at which said grinding wheel is disposed when the adapter is secured to said casing at said work station and said head mounting a drill bit positioning member for providing said location, wherein said positioning member is in the form of a rotatable dial mounted for angular movement partly within a cylindrical chamber in the head, the dial having a multiplicity of differently sized drill bit receiving openings therethrough, each of which, by angular movement of the dial into one of a plurality of indexed positions, can provide said location so that with the adapter fitted to said tool at said work station a drill bit at said location can be worked by the wheel.

5,618,029
JACK SAFETY DEVICE
Loan Chung, 4F, No. 6, Lane 48, Yen Chi Street, Taipei, Taiwan
Filed May 19, 1995, Ser. No. 444,693
Int. Cl.[6] B66F *5/04*
U.S. Cl. 254—8 B **2 Claims**



1. A jack safety device comprising:

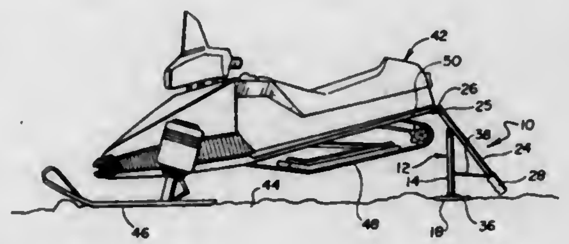
a safety hook pivotally attached to a lifting arm affixed to a main body of said jack, an axis of rotation of said safety hook is removed from an axis of rotation of said lifting arm, said safety hook having at least one reverse-bevelled hook tooth,

a hook-up portion pivotally mounted on said main body so as to contact said safety hook, said hook-up portion including a plurality of teeth that engage said hook tooth; wherein

raising a lifting arm of said jack causes said tooth hook to engage one of said teeth of said hook-up portion, said hook tooth advancing along said hook-up portion as said lifting arm is raised further,

a meshing of said hook tooth with said teeth of said hook-up portion positively restricting downward movement of said lifting arm when a lifting force is removed from said lifting arm.

5,618,030
SNOWMOBILE JACK
Richard L. Eggert, 3625 409th Ave. NW., Braham, Minn. 55006
Filed Mar. 28, 1996, Ser. No. 620,792
Int. Cl.[6] B66F *3/00*
U.S. Cl. 254—131 **15 Claims**

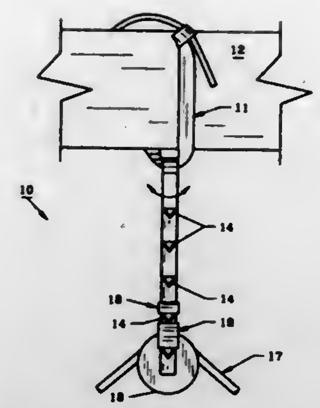


1. A jack for raising an object to an inclined position, the jack comprising:

a) a rectangular shaped base;
b) a triangular shaped frame, having two upright legs and a lower leg, said frame hingedly attached at said lower leg to said base;
c) a handle pivotably attached to said frame, said handle having a proximal hook end and a distal grip end;
d) a crosspiece interconnecting said two upright legs of said triangular shaped frame at a midpoint of each said upright leg;
e) means for pivoting said handle to engage the object and position said object in an inclined position; and
f) a cable, having engagement means at a first end, said cable affixed at a second end to said distal end of said handle, said cable for engaging said handle to said crosspiece, securing the object in an inclined position relative to the base.

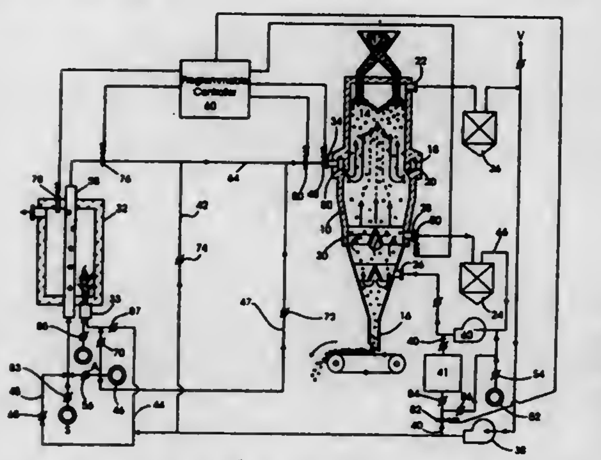
5,618,031
CABLE PULLEY DEVICE AND METHOD
Newton C. Walton, North Wilkesboro, N.C., assignor to Data Connections, Inc., Greensboro, N.C.
Filed Apr. 3, 1995, Ser. No. 415,856
Int. Cl.[6] B65H *59/00*
U.S. Cl. 254—134.3 PA **11 Claims**

1. A pulley device for a data transmission cable, comprising: a flexible strap, said strap including a plurality of latches, a wheel, said strap attached to said wheel and a cable guide, said cable guide attached to said strap, a first strap catch, said first strap catch attached to said cable guide, said first strap catch for engaging said



latches, a second strap catch, said second strap catch spaced from said first strap catch and attached to said wheel, said second strap catch for engaging said latches.

5,618,032
SHAFT FURNACE FOR PRODUCTION OF IRON CARBIDE
David C. Meissner, and Winston L. Tennies, both of Charlotte, N.C., assignors to Midrex International B.V. Rotterdam, Zurich Branch, Zurich, Switzerland
Continuation-in-part of Ser. No. 237,786, May 4, 1994, Pat. No. 5,437,708. This application May 5, 1995, Ser. No. 435,883
Claims priority, application Indonesia, Mar. 15, 1995, 297CAL95
Int. Cl.[6] C21B *13/02*
U.S. Cl. 266—80 **18 Claims**



1. Apparatus for producing an iron carbide (Fe_3C) product from particulate iron oxide material, comprising:

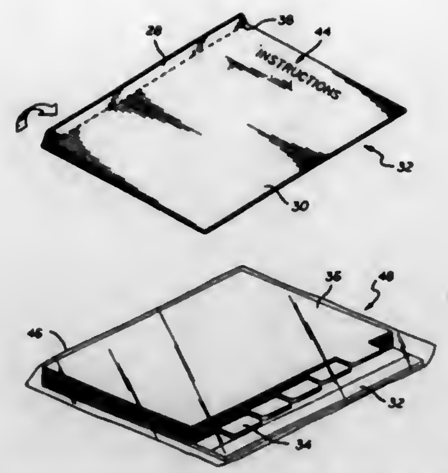
(a) a generally vertical shaft furnace having an upper reducing zone and a lower cooling zone;
(b) means for charging particulate iron oxide material into said vertical shaft furnace and establishing a particulate burden therein;
(c) means for establishing a gravitational flow of particulate iron oxide material through said shaft furnace;
(d) means for generating a carbon-containing reducing gas, comprising;
 a scrubber/cooler in communication with said upper reducing zone of said vertical shaft furnace;
 a compressor in communication with said scrubber/cooler;
 a reformer furnace having at least one reformer tube in communication with said compressor, and at least one burner for heating said reformer furnace;
 a source of hydrocarbons in communication with said reformer furnace and said bustle;
 a first gas conveying means for conveying gas from said reformer to said vertical shaft furnace; and
 a second means for conveying gas from said compressor to said first gas conveying means;
(e) means for introducing said carbon-containing reducing gas into said furnace intermediate the upper and lower zones, comprising a bustle having an inlet and at least one tuyere in communication with said bustle and said vertical shaft furnace;
(f) gas outlet means for removing spent cooling gas from the upper part of said lower cooling zone;
(g) means for causing said reducing gas to move upwardly and countercurrently through the gravitational flow of iron oxide material and to react with and reduce a portion of the iron oxide and form a top gas at the upper portion of the furnace;
(h) means for removing said top gas from the upper portion of the furnace;
(i) means for controlling the contact time of said iron oxide material with said carbon-containing reducing gas;
(j) means for maintaining the temperature of the iron oxide material in the reducing zone from about 649° to about 760° C. (1200° to about 1400° F.);
(k) gas inlet means for introducing a cooling gas into said cooling zone of the furnace;
(l) means for removing metallized product from the bottom of the furnace;
(m) a gas sensor in communication with said bustle inlet;
(n) a programmable controller operably associated with said gas sensor;
(o) a first valve between said compressor and said reformer furnace operably associated with said programmable controller;
(p) a second valve between said source of hydrocarbons and said reformer furnace operably associated with said programmable controller;
(q) a third valve between said source of hydrocarbons and said vertical shaft furnace operably associated with said programmable controller; and
(r) a fourth valve between said compressor and said second means for conveying gas, operably associated with said programmable controller;

wherein said programmable controller adjusts the opening on said first, said second, said third and said fourth valves according to an output from said sensor.

5,618,033
PACKAGE ASSEMBLY INCLUDING AN INSERT GUIDE TRAY FOR PRINTERS
Sonia Owen, Covina, and David Robertson, Upland, both of Calif., assignors to Avery Dennison Corporation, Pasadena, Calif.
Filed Aug. 4, 1995, Ser. No. 511,879
Int. Cl.[6] B65H *5/00; 1/00*
U.S. Cl. 271—1 **27 Claims**

19. A packaged sheet assembly, comprising:

a guide sheet, said guide sheet having an edge and a fold line parallel to said edge and spaced inwardly therefrom and extending the length of said guide sheet;
said fold line being spaced inwardly generally about ¾ inch from a long edge of said sheet;
a set of sheets, each having an irregularly shaped edge, said sheets being stacked on top of and thereby partially protected by said guide sheet; and
packaging enclosing said guide sheet and said set of sheets in a storage arrangement;
said guide sheet including an elongate fold portion between said fold line and said edge and a body portion on an opposite side of said fold line;
said fold portion and said body portion lying flat together when said guide sheet is in the storage arrangement in a fold-line unfolded position;



said guide sheet being removable from said packaging, and foldable along said fold line such that said fold portion is generally perpendicular to said body portion and said guide sheet is thereby in a fold-line folded position; and

when in the folded position, said guide sheet is positionable in a printer tray operatively associated with a printer with said body portion supporting said set of sheets removed from said packaging and said irregularly shaped edges engaging and being guided by said fold portion into the printer.

5,618,034

SUPPLY/CONVEYANCE MECHANISM FOR SHEETS OF PAPER

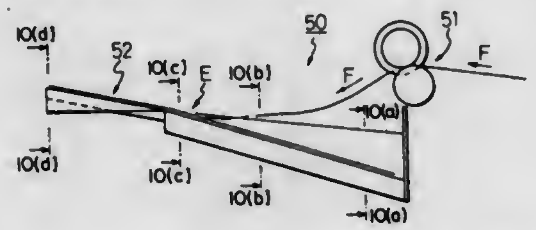
Yoshihiro Takashimizu, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 293,592, Aug. 22, 1994, Pat. No. 5,533,721. This application Mar. 13, 1996, Ser. No. 614,647

Claims priority, application Japan, Nov. 5, 1993, 5-277045

Int. Cl.⁶ B65H *31/00*

U.S. Cl. 271—209 **6 Claims**



1. A mechanism for conveying and stacking sheets, comprising:

conveyance means for conveying sheets along a conveying path, form an upstream end to a downstream, discharge end of the conveying path thereby to discharge the conveyed sheets in a discharging direction at the downstream, discharge end; and

a stacking station having a stacking surface with an upstream end disposed below the discharge end of the conveying pat and a downstream end displaced from the upstream end in the discharging direction, the discharged sheets moving in the discharging direction from the discharge end and onto and along the stacking surface of the stacking station and being stacked thereon, the stacking surface being inclined in such a manner that the upstream end of the stacking surface relative to the discharging direction is lower than the discharge end of said conveying path and the stacking surface is inclined upwardly, progressing from the upstream end to the downstream end thereof, the stacking surface having a variable cross-section in successive planes, perpendicular to and spaced along the discharging direction, smoothly changing from approximately concave at the upstream end thereof to convex at the downstream end thereof.

5,618,035

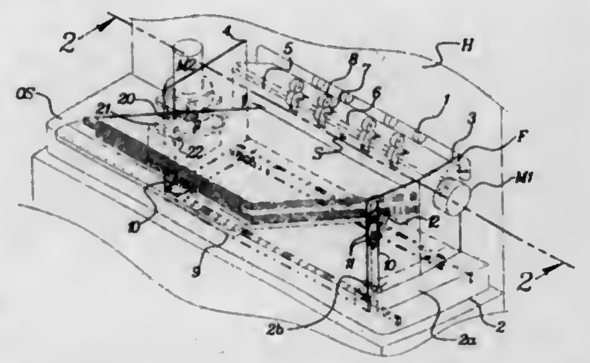
OFFSET STACKER

Peter M. Coombs, Tustin, and Bradford Billings, Lake Forest, both of Calif., assignors to Gradco (Japan) Ltd., Tokyo, Japan

Filed Nov. 25, 1994, Ser. No. 344,910

Int. Cl.⁶ B65H *31/00*

U.S. Cl. 271—213 **6 Claims**



1. An offset stacker tray assembly for receiving sheets from a sheet output of a printer or copier comprising: a base support adapted to be positioned adjacent to the sheet output, a frame structure including vertical side walls and mounted on said base support for reciprocation transversely of the direction of delivery of sheets from said sheet output, a receiver tray supported by said frame structure between said side walls for vertical movement and adapted to receive sheets supplied from said sheet output, means for counter balancing the weight of sheets of paper on said receiver tray normally maintaining said receiver tray in an upper position between said side walls of said frame structure and permitting downward movement of the receiver tray responsive to the weight of sheets of paper thereon, and means coacting between said base support and said frame structure for shifting said frame structure transversely as aforesaid, sheet feeding means carried by said frame structure and extended between said side walls for transverse movement therewith for feeding sheets received from said sheet output to said receiver tray, whereby reciprocation of said frame structure causes sheets fed to said tray by said sheet feeding means to be disposed on said receiver tray in offset relation.

5,618,036

PRINTER WITH DISTRIBUTION STATIONS HAVING U-SHAPED SHEET GUIDE

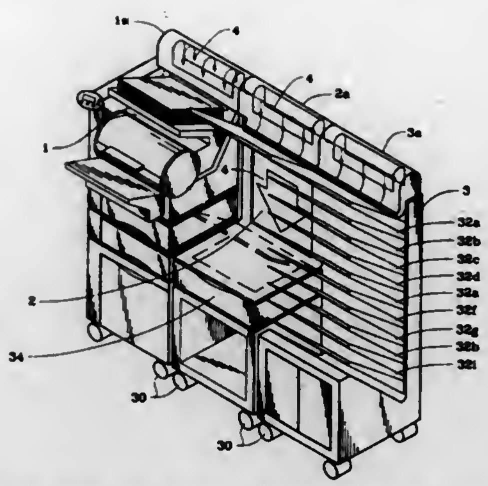
Earl G. Edwards, Longmont, Colo.; Armando V. Flores, Lexington, Ky.; John W. Gassett, Lexington, Ky.; James P. Harden, Lexington, Ky.; Daniel L. Huber, Lexington, Ky.; Michael C. Leemhuis, Nicholasville, Ky.; Stephen T. Olson, Lexington, Ky., and Bernard L. Wilzbach, Lexington, Ky., assignors to Lexmark International, Inc., Lexington, Ky.

Filed Nov. 16, 1995, Ser. No. 559,219

Int. Cl.⁶ B65H *5/00;29/00*

U.S. Cl. 271—225 **9 Claims**

1. An assembly comprising a printer, a station comprising a large receptacle for receiving sheets from said printer, a station comprising at least two trays for receiving sheets from said printer, and a sheet guide having a U-shaped outer surface and a U-shaped inner surface which bends said sheets between said outer surface and said inner surface about an axis parallel to the direction of movement of the sheets; into a U-shape for transfer within said guide in said U-shape, said guide being located above said printer and said stations and connecting said printer and said stations for receiving printed sheets transported in a vertical direction from said printer



to bend said sheets and thereafter laterally direct said bent sheets along said guide to a selected one of said stations.

5,618,037

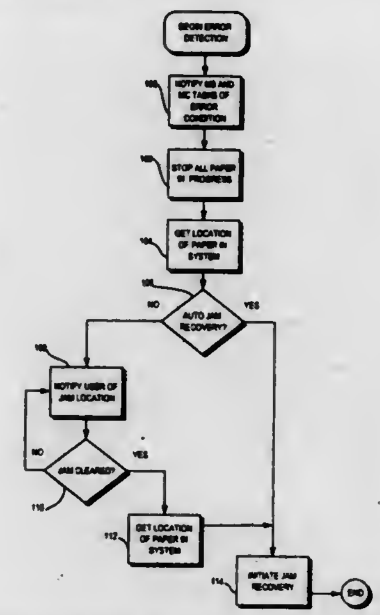
METHOD FOR MAINTAINING MAILPIECE INTEGRITY

Sung S. Chang, Stamford; James L. Harman, Southport; Gary S. Jacobson, East Norwalk; Wesley A. Kirschner; Michael J. Ramadei, both of Trumbull, and Eric L. Zuidema, Norwalk, all of Conn., assignors to Pitney Bowes Inc.World Headquarters, Stamford, Conn.

Filed May 22, 1995, Ser. No. 446,162

Int. Cl.⁶ B65H *7/02*

U.S. Cl. 271—258.02 **13 Claims**



1. In a mailing machine having a plurality of mechanical modules for producing a plurality of mailpieces, without printing codes on the mailpieces, a method for automatically recovering from an error, without operator intervention, in a mechanical module comprising the steps of:

a) receiving a fault code from an error producing module;

b) stopping movement of at least one mailpiece in the error producing module;

c) reporting the fault code to a mailpiece builder to control a plurality of mechanical modules having no error condition;

d) purging an error producing mailpiece from the error producing module without operator intervention;

e) suspending further processing of a plurality of mailpieces upstream from the error producing mailpieces; and,

f) selecting a state machine to perform a jam recovery in the plurality of mechanical modules.

5,618,038

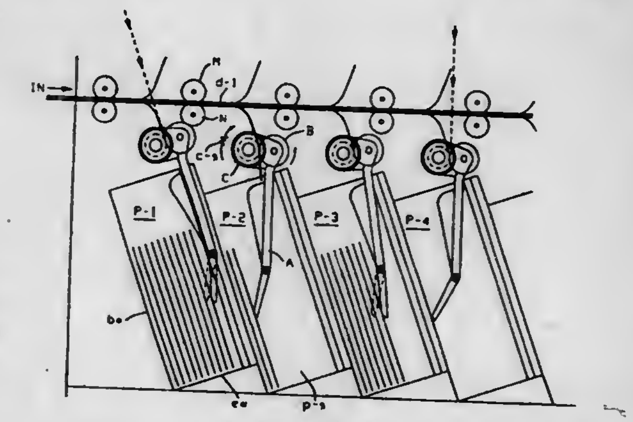
DOCUMENT STACKING ARRANGEMENT

Sammy C. Hutson, West Bloomfield, Mich., assignor to UNISYS Corporation, Blue Bell, Pa.

Division of Ser. No. 451,801, May 26, 1995, Pat. No. 5,522,589, which is a division of Ser. No. 212,093, Mar. 10, 1994, Pat. No. 5,419,545. This application May 28, 1996, Ser. No. 653,783

Int. Cl.⁶ B65H *39/10*

U.S. Cl. 271—297 **28 Claims**



1. A method of adapting a sheet processing arrangement for transporting sheets serially at a prescribed nominal speed along a given track, toward one or several destination pockets, each with associated diverter means disposed thereat, this method comprising:

disposing guide means at the pocket entry of each pocket so as to guides a so-diverted sheet into its pocket; providing inject means to accelerate and drive the sheet faster than said nominal speed; plus associated guide means adapted to guide a so-injected sheet toward its position in the stack in said pocket.

5,618,039

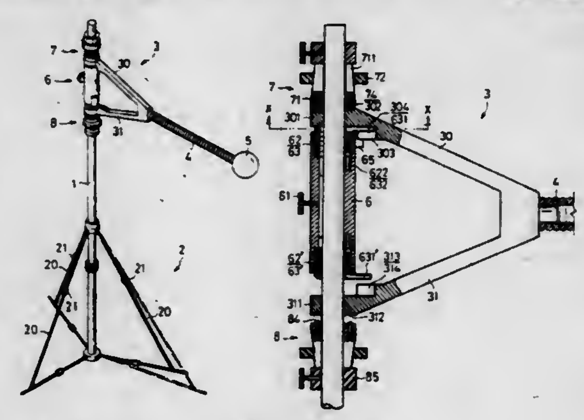
BATTING EXERCISING DEVICE FOR BASEBALL

Peter Tsai, 1F, No. 16, Shi-Jei St., Hsin-Chu City, and Ching-Wen Chien, No. 11, Lane 6, Alley 379, Sec. 1, Fon-Shi Rd., FOn-Yuan City, Tai-Chung Hsien, both of Taiwan

Filed Jul. 18, 1995, Ser. No. 503,865

Int. Cl.⁶ A63B *69/40*

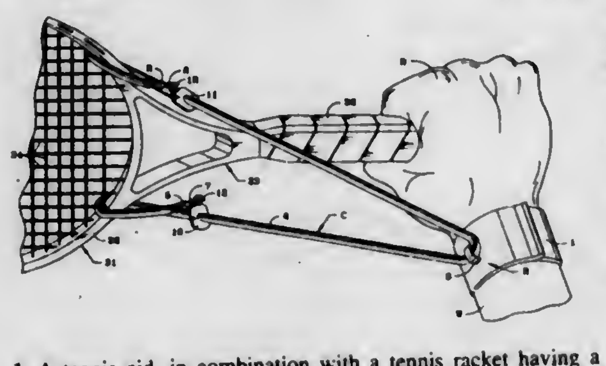
U.S. Cl. 473—423 **18 Claims**



1. A batting exercising device including

a longitudinal support having a vertical axis and an upper and lower portions;
a rack installed on the upper portion of said longitudinal support and capable of rotating around said longitudinal axis in either direction, said rack having two arms connected together at one ends thereof and each arm including means for mounting said rack to said support at the other end thereof, said mounting means being spaced apart from each other;
a ball component installed on the end of said rack;
a switch mounted on said longitudinal support for movement between an upper position and a lower position to alternatively engage said rack;
means for alternately locking said switch on said support in said upper and lower position; and
a first spring and a second spring in said switch which provide elastic resistance to rotation of said rack said first spring resisting rotation of said rack against rotation in one direction when said switch is locked in said upper position, and said second spring resisting rotation of said rack against rotation in an opposite direction when said switch is locked in said lower position.

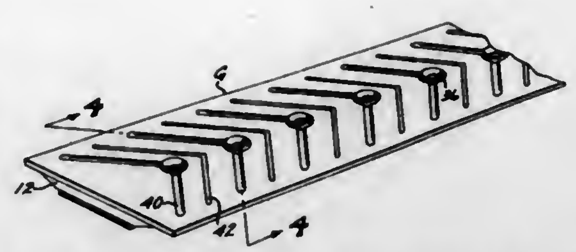
5,618,040
TENNIS AID
Clay G. Parten, 4723 Oakshire, #4, Houston, Tex. 77027
Filed Feb. 5, 1996, Ser. No. 596,633
Int. Cl.⁶ A63B *69/38*
U.S. Cl. 473—461 **10 Claims**



1. A tennis aid, in combination with a tennis racket having a head attached to a handle by a throat, for improving the stroke of a tennis player, said aid comprising:
wrist means attachable to the wrist of the arm of a tennis player by which said tennis racket is held; and
an elastic cord attached, near the midpoint thereof, to said wrist means, one end of said cord being attached to one side of said head of said tennis racket near said throat thereof, the opposite end of said elastic cord being attached to the opposite side of said racket head near said throat thereof, said elastic cord being of a length which, when the handle of said tennis racket is properly gripped by said tennis player, will place said cord in predetermined tension.

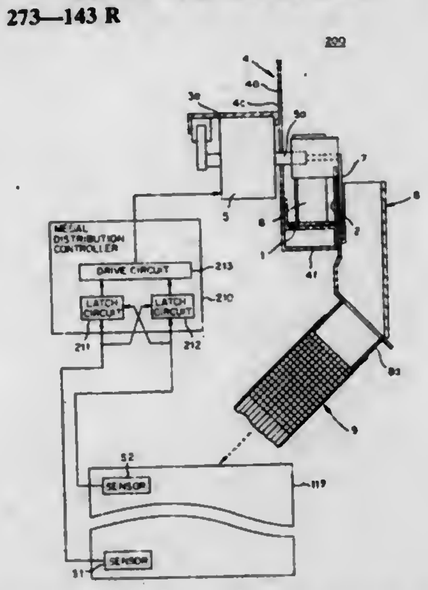
5,618,041
SLIP RESISTANT SPORT GRIP
Ben Huang, 19472 Woodlands La., Huntington Beach, Calif. 92648
Continuation-in-part of Ser. No. 196,010, Feb. 10, 1994, Pat. No. 5,374,059, and Ser. No. 278,186, Jul. 21, 1994, Pat. No. 5,397,123. This application Mar. 7, 1996, Ser. No. 400,050
Int. Cl.⁶ A63B *49/08*
U.S. Cl. 473—549 **9 Claims**

1. The combination of a racquet and a grip for the handle of such racquet, wherein the grip comprises,
an open-pored textile layer having an inner surface adhered to and abutting said handle, and a smooth closed pore polyure-



thane layer having its inner surface bonded to the outer surface of the textile layer remote from said handle, with the pores of such polyurethane layer extending generally normal to the longitudinal axis of said handle, said polyurethane layer being formed with a plurality of inwardly extending dimples, the lower end of each of which merge into a perforation that extends inwardly through said felt layer, said polyurethane layer also being formed on its outer surface with a plurality of treads, at least some of which are in communication with said dimples to channel perspiration into said dimples and perforations; and
the racquet handle is formed with air passages that are in communication with the atmosphere, the grip perforations being in alignment with the air passages whereby air and perspiration are forced through said treads, dimples, perforations, and racquet passages when the grip is grasped by a user with his palm and fingers covering some of the dimples.

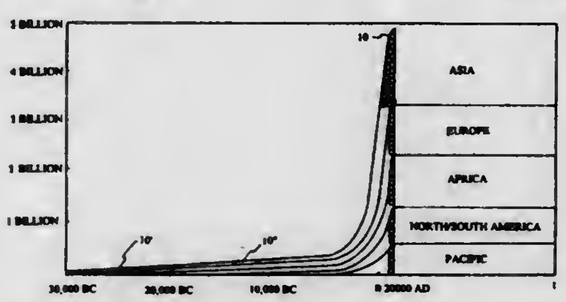
5,618,042
MEDAL DISTRIBUTION SYSTEM IN A SLOT MACHINE ISLAND
Takatoshi Takemoto; Yoichi Yoneda, both of Tokyo, and Meiji Muramatsu, Yokohama, all of Japan, assignors to Kabushiki Kaisha Ace Denken, Tokyo, Japan
PCT No. PCT/JP93/00346, § 371 Date Sep. 26, 1994, § 102(e) Date Sep. 26, 1994, PCT Pub. No. WO93/18828, PCT Pub. Date Sep. 30, 1993
PCT Filed Mar. 24, 1993, Ser. No. 313,061
Claims priority, application Japan, Mar. 26, 1992, 4-068736; Mar. 26, 1992, 4-068738
Int. Cl.⁶ A63F *5/04;* **C07D** *9/00*
U.S. Cl. 273—143 R **8 Claims**



1. A medal distribution system placed in a slot machine island where a plurality of slot machines are arranged in a row, for distributing medals to a plurality of sections in the island, said medal distribution system comprising:
a conveyance line being disposed along the row of slot machines for transporting medals in a row direction of the slot machines; and

a distribution mechanism for extracting medals transported on said conveyance line from said conveyance line,
said distribution mechanism having:
a frame having a plurality of discharge openings being formed on a side face of said conveyance line for extracting medals transported on said conveyance line from said line to the side;
plurality of guide mechanisms being attached to said frame for leading medals on said line out of said frame through said discharge openings; and
a plurality of passages for guiding medals discharged through said discharge openings to target sections,
wherein said frame has a greater number of said discharge openings than the number of said sections in the island, for distributing medals, along a transport direction of said conveyance line;
wherein each of said guide mechanisms is detachably mounted to said discharge opening, and
wherein each of said guide mechanisms comprises:
a rotating shaft being mounted sideways at a position above said conveyance line and inside said discharge opening;
a guide plate being mounted on said rotating shaft for rotation, when a lower edge of said guide plate approaches a top face of said conveyance line, said guide plate abutting against a medal transported on said conveyance line for leading the medal into the discharge opening where said rotating shaft is disposed; and
an actuator for driving said rotating shaft.

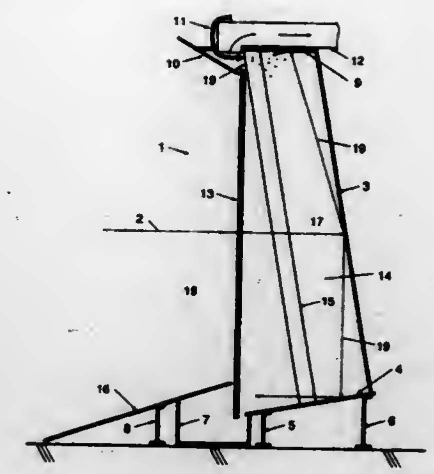
5,618,043
GAME BASED ON DATA BASE OF CHARACTERS OF DIFFERENT GEOGRAPHIC REGIONS
John J. McGlew, 653 Scarborough Rd., Briarcliff Manor, N.Y. 10510
Filed Jun. 7, 1995, Ser. No. 478,613
Int. Cl.⁶ A63F *1/00;9/00*
U.S. Cl. 273—308 **16 Claims**



1. A game, comprising:
a time period data pool of characters, each character being defined by character identity information including character geographic location information, the distribution of geographic locations of the characters, as defined by the character identity information for each character in the data pool of characters is proportional to the human populations of the geographic locations for the time period; and
a medium for reviewing character identity information by the player.

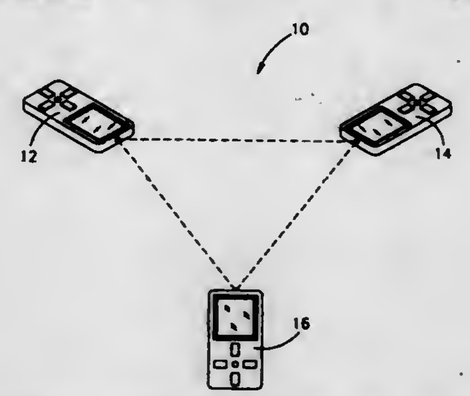
5,618,044
BULLET TRAP AND CONTAINMENT CAVITY
Kyle E. Bateman, P.O. Box 636, Provo, Utah 84603-0636
Filed Sep. 30, 1994, Ser. No. 315,552
Int. Cl.⁶ F41J *1/12*
U.S. Cl. 273—410 **21 Claims**

1. A bullet trap and containment cavity for stopping the forward momentum of projectiles traveling in a primary zone of projectile travel, said bullet trap and containment cavity comprising:



primary planar impact means to obstruct the primary zone of projectile travel and fragment projectiles impacting thereon, said fragments reflecting outward in a generally conical zone from the primary point of impact;
secondary planar impact means to obstruct the primary, generally conical zone of projectile travel and further fragment projectiles impacting thereon, said fragments reflecting outward in a secondary generally conical zone from the secondary point of impact;
tertiary planar impact means to obstruct components of said secondary generally conical zone of projectile travel whose trajectories are of a direction as to carry them generally toward the point of origin of the original, integral projectile; and
wherein the primary planar impact means, secondary planar impact means, and tertiary planar impact means define the perimeter of cavity means to arrest and contain projectiles, said cavity means having an ingress oriented such that projectiles passing through said ingress in a generally horizontal zone will impact upon said primary planar impact means.

5,618,045
INTERACTIVE MULTIPLE PLAYER GAME SYSTEM AND METHOD OF PLAYING A GAME BETWEEN AT LEAST TWO PLAYERS
Michael Kagan, 22 Bruria St., Jerusalem 93184, Israel, and Ian Solomon, 10 Shlomo Zemach, Yafe Nof, Jerusalem 96190, Israel
Filed Feb. 8, 1995, Ser. No. 385,485
Int. Cl.⁶ A63F *9/24*
U.S. Cl. 463—40 **10 Claims**

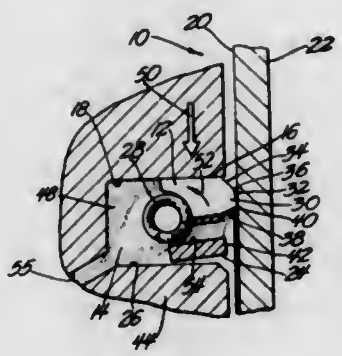


1. An interactive multiple player game system comprising at least two playing devices communicating over an ad-hoc, wireless, all-to-all broadcast network, a playing device including:
(a) a processor for running a game scenario common to all of said at least two playing devices;

(b) a player controlled interface for enabling a player action within said game scenario;
(c) a transmitter connected to said player controlled interface, said transmitter transmitting said player action over said network;
(d) a receiver connected to said processor, said receiver receiving player actions from said at least one other playing device transmitting over said network;
(e) a display for displaying at least a portion of said game scenario; and
(f) a clock, said clock of a second playing device being synchronized with said clock of a first playing device.

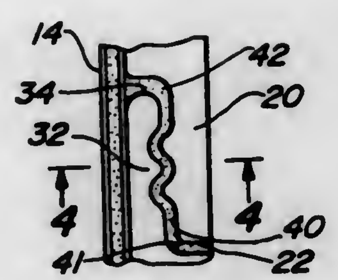
8. A method for playing an interactive multiple player game between at least two players, comprising the steps of:
(a) establishing an ad-hoc, wireless, all-to-all broadcast network between at least two playing devices;
(b) providing a game scenario common to all of the at least two playing devices;
(c) enabling a player action by each player within the game scenario;
(d) transmitting player actions over the network;
(e) receiving player actions transmitted over the network;
(f) displaying at least a portion of the game scenario; and
(g) synchronizing a clock of a second playing device to a clock of a first playing device.

5,618,046
PISTON RING ASSEMBLY
John D. Binford, Richmond, Ind., assignor to Dana Corporation, Toledo, Ohio
Continuation of Ser. No. 799,425, Nov. 25, 1991, abandoned. This application Mar. 15, 1993, Ser. No. 39,684
Int. Cl.⁶ F16J *9/06*
U.S. Cl. 277—163 **10 Claims**



1. A piston assembly comprising:
a piston ring for positioning in a piston groove in a piston, said piston ring having a top surface for positioning closest to a top side of said piston groove, said top surface extending downwardly along said top side of said piston groove and toward a cylinder wall at a first angle of between one and ten degrees with respect to a horizontal definable when the ring is not cocked, and further having a bottom surface extending inwardly along a bottom side of said piston groove, said ring cocking about its cross sectional axis during each up and down stroke of said piston;
a spring positioned to radially force said piston ring against said cylinder wall and to provide a consistent amount of oil control;
a rail extending radially outwardly from said piston ring to form a ring face for contacting said cylinder wall; and
means for causing cocking movement of said piston ring about a scraping corner of the ring face to urge said rail into scraping abutment with said cylinder wall during downward movement of said piston.

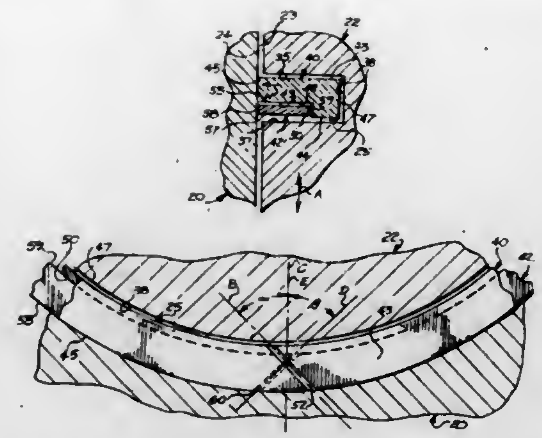
5,618,047
MOLDED GASKET WITH A MULTIPLE COMPONENT REINFORCING ELEMENT
Jerome G. Belter, Mt. Prospect, Ill., assignor to Dana Corporation, Toledo, Ohio
Filed Mar. 14, 1995, Ser. No. 404,212
Int. Cl.⁶ F16J *15/10*
U.S. Cl. 277—192 **6 Claims**



1. A molded gasket for sealing between two opposed surfaces, comprising:
a rigid carrier formed of at least two carrier members cooperatively defining a substantially closed annulus having an inner periphery and an outer periphery, said carrier members meeting at a joint;
said joint interconnecting a first and a second member, said joint characterized by a first longitudinal extension of said first member only along said inner periphery, said first longitudinal extension and the unextended outer periphery of said first member defining a first notch in said first member and a first edge between said inner and outer peripheries of said first member, said second member having a corresponding mating end meeting said first member, said mating end having a second longitudinal extension only along said outer periphery of said second member, said second longitudinal extension and the unextended outer periphery of said second member defining a second notch in said second member and a second edge between said inner and outer peripheries of said second member, said first extension received within said second notch and said second extension received within said first notch such that said first and second edges oppose; and
a flexible sealing element bonded to the assembled rigid carrier.

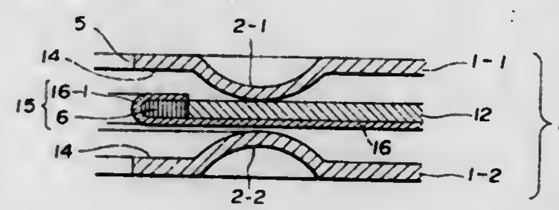
5,618,048
PISTON RING SEAL HAVING ANGLED ENDS
Maurice J. Moriarty, 70 Clark Rd., Rye, N.H. 03870, and Joseph E. Whitesell, 9 E. Calavar, Moon Valley, Ariz. 85022
Continuation-in-part of Ser. No. 774,054, Oct. 8, 1991, abandoned, which is a continuation-in-part of Ser. No. 538,886, Jun. 18, 1990, abandoned, which is a continuation-in-part of Ser. No. 267,542, Nov. 4, 1988, abandoned, which is a continuation-in-part of Ser. No. 172,657, Mar. 24, 1988, abandoned. This application Aug. 23, 1993, Ser. No. 111,371
Int. Cl.⁶ F16J *9/02; 9/12*
U.S. Cl. 277—193 **11 Claims**

1. A seal assembly to be received within an annular groove having opposed radial surfaces and carried by one of a pair of relatively reciprocally movable members for sealing engagement with a sidewall of the other said pair of relatively reciprocally movable members and for minimizing fluid leakage between said members, said seal assembly comprising:
a) a first annular member including a first radial surface for residing adjacent one of the radial surfaces of said groove, a second radial surface and a contact surface engageable with said sidewall;
b) a second annular member including a first radial surface for residing in juxtaposition with said first annular member, a second radial surface for residing adjacent the other of the



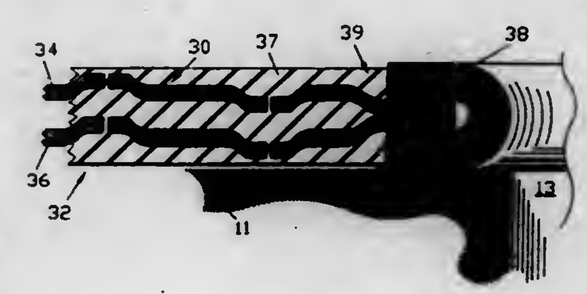
radial surfaces of said groove, and a contact surface engageable with said sidewall;
c) a first end gap severing said first annular member along a slanted line which is angularly disposed to intercept a radial lie of said first annular member, said slanted line parallel to a plane defined by said first radial surface of said first annular member; and
d) a second gap severing said second annular member along a slanted line which is angularly disposed to intercept a radial line of said second annular member, said slanted line arm said radial line are parallel to plane defined by said first radial surface of said second annular member, the slanted line of said first end gap and the slanted line of said second end gap being divergent from a point of overlap when the respective radial lines are aligned.

5,618,049
METALLIC GASKET
Kosaku Ueta, Kumagaya, Japan, assignor to Japan Metal Gasket Co., Ltd., Japan
Continuation of Ser. No. 72,134, Jun. 4, 1993, abandoned. This application Apr. 5, 1995, Ser. No. 417,451
Int. Cl.⁶ F16J *15/08*
U.S. Cl. 277—235 B **2 Claims**



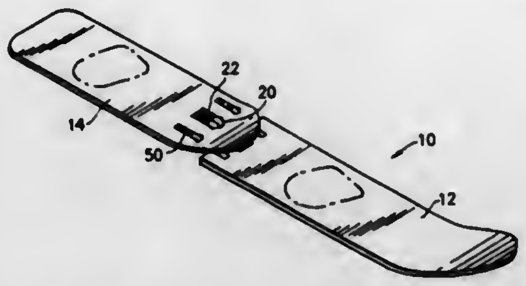
2. A metallic gasket for sealing between two opposing surfaces of two structural members of an internal combustion engine wherein said opposing surfaces form a predetermined gap therebetween, the metallic gasket comprising:
a first base plate formed of an elastic metal plate having an aperture formed therethrough, a flat portion formed at a peripheral portion of the aperture with a predetermined width, and a bead formed surrounding the flat portion concentrically with the aperture;
a second base plate formed of an elastic metal plate having an aperture formed therethrough at a corresponding portion of the aperture of the first base plate, a flat portion formed at a peripheral portion of the aperture with a predetermined width, and a bead formed surrounding the flat portion concentrically with the aperture;
a subplate formed of a substantially flat metal plate having an aperture formed coaxially with the apertures of the first and second base plates, the aperture of the subplate formed by an inner circumferential end and having a diameter larger than that of the aperture of the first and second base plates;
a stopper formed of an annular metal plate having a preformed thickness corresponding to the predetermined gap between the two opposing surfaces, wherein the stopper has a first end abutting to and secured to the inner circumferential end of the subplate and a second end proximate to the peripheral portion of the aperture, said stopper disposed between the flat portions of the first and second base plates; and
a compensation plate formed of a metal plate having a thickness smaller than that of the first and second base plates, the compensation plate positioned parallel to and directly below the subplate and having an extended portion extending inwardly towards a center of the aperture of the subplate, the extended portion having a folded back portion extending on an upper surface of the stopper wherein the compensation plate covers the second end of the stopper to hold the stopper in position and the first and second base plates being disposed vertically and symmetrically with respect to the subplate and the compensation plate so that the subplate and the compensation plate are sandwiched between protruding portions of the beads of the first and second plates.

5,618,050
CYLINDER HEAD GASKET, IN PARTICULAR FOR AN INTERNAL COMBUSTION ENGINE AND RELATED MANUFACTURING METHOD
Olivier Jeanne, Chamboret; Georges Ulmer, Limoges, and Daniel Montresor, Nantiat, all of France, assignors to Meillor S.A., Nantiat, France
Continuation of Ser. No. 204,407, May 5, 1994, abandoned. This application Nov. 30, 1995, Ser. No. 564,929
Claims priority, application France, Sep. 13, 1991, 91 11319; Feb. 25, 1992, 92 02171
The portion of the term of this patent subsequent to May 5, 2014, has been disclaimed.
Int. Cl.⁶ F16J *15/12*
U.S. Cl. 277—235 B **17 Claims**



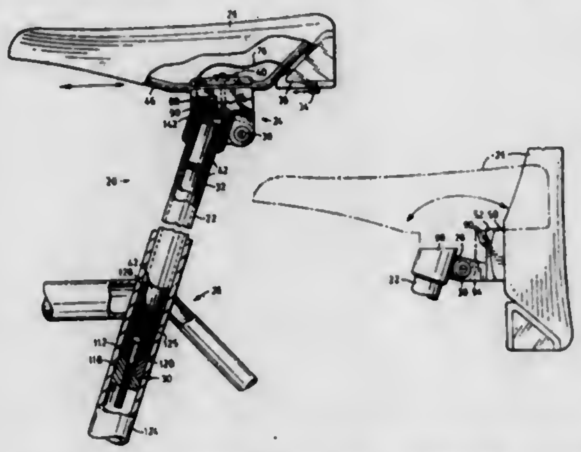
1. In an assembly comprising a first planar part and a second planar part, and comprising clamping means applying clamping loads for tightening one of said planar parts against the other, a gasket intercalated between said planar parts, said gasket comprising a reinforcement including at least two metallic sheets combined with a packing constituted by elastomer, said gasket having passage openings to be sealed, wherein at least one face of one of said at least two metallic sheets is provided with distributed resilient load bearing elements extending from said at least one face towards one of said planar parts and terminating in a free branch which is substantially parallel to said one of said planar parts, and wherein said resilient load bearing elements are adapted to take said clamping loads and, upon variation of said clamping loads, to bias said packing toward said one of said planar parts.

5,618,051
ARTICULATED TWO-SECTION SNOWBOARD
Mark J. Kobylenski, 62 Eli Bunker Rd., Goshen, Conn. 06756, and David M. Dupill, 58 Parker Hill Rd., Norfolk, Conn. 06058
Filed Jun. 5, 1996, Ser. No. 658,505
Int. Cl.^{6} B62B *13/04*
U.S. Cl. 280—14.2 **2 Claims**



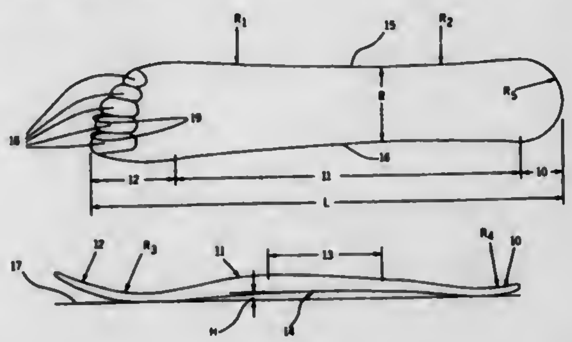
1. A snowboard comprising a front section, a rear section, a bi-ended flexible connector for flexibly connecting the front and rear sections together, and a binding for one foot mounted on each section, wherein the rear section has an upwardly curved tip, wherein the upwardly curved tip of the rear section is formed with an opening dimensioned to pass the connector therethrough, wherein one end of the flexible connector is secured to the rear section, and wherein the other end of the flexible connector passes through the opening formed in the rear section and is secured to the front section.

5,618,052
BICYCLE ATTACHMENT
Barry A. Rendall, 26 John Martin Crescent, Millgrove, Ontario, Canada
Filed Jun. 15, 1995, Ser. No. 491,023
Int. Cl.^{6} B62J *39/00;* **B62K** *19/36*
U.S. Cl. 280—288.4 **15 Claims**



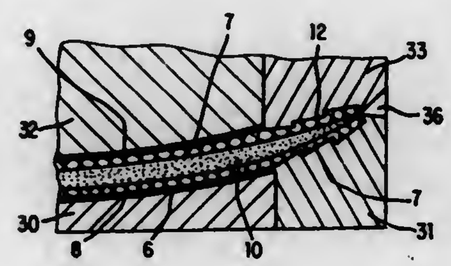
1. A saddle support for use on a bicycle frame having a tubular upright with an exposed open upper end to receive the support, the support comprising:
a tubular post proportioned to slidably engage in said tubular upright, the post having first and second ends;
a clamp coupled to said first end of the post for engagement inside the upright, the clamp including an actuator inside the post for operation to releasably clamp the post in the upright;
a saddle coupling attached to the second end of the post and including a base attached to the post and a top pivotally attached to the base and adapted to be attached to a saddle, the top being pivotally moveable between a closed position where the top bars access into the post, and an open position where the top permits access into an opening at a top of the post for a tool to operate the clamp; and
a lock coupled to both the base and the top of the saddle coupling to retain the top in the closed position to prevent unauthorized access into the post to release the clamp, the lock being operable to release the top for pivotal movement into the open position.

5,618,053
SHORT SKI-LIKE SPORTS DEVICE
Harald Moelg, Kundl, Austria, and Wolfgang Wagner, Traunstein, Germany, assignors to Kneissl Dachstein Sportartikel AG, Austria
Continuation of Ser. No. 952,541, Jan. 29, 1993, abandoned. This application Feb. 8, 1995, Ser. No. 385,732
Claims priority, application Germany, Jun. 11, 1990, 9006585 U; Jul. 10, 1990, 9010388 U
Int. Cl.^{6} A63C *5/03;5/048;5/052*
U.S. Cl. 280—609 **14 Claims**



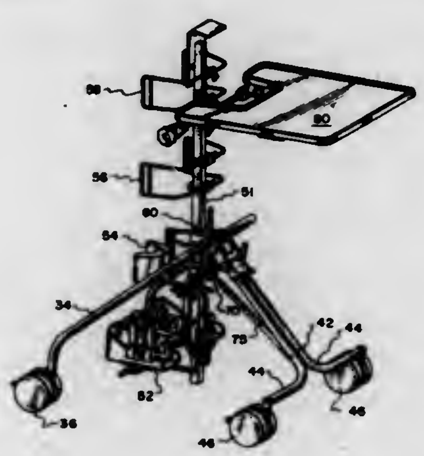
1. A short ski forming one of a pair of like short skies for alpine downhill skiing, comprising a board member having a rear section (20), middle section (11) and front section (12) and having an inner side edge and an outer side edge throughout all of said sections and defining a lateral delimitation of said sections, said front section having a forward portion curving upwardly, the middle section (11) adapted to having a single boot binding attached thereto for securing the boot of a user to the ski, and wherein the maximum length (L) of the ski is between 63 cm and 80 cm and the ratio of the minimum width and lateral delimitation (15,16) of the middle section to the length (L) of the ski is between 0.12 and 0.23, said middle section lateral delimitation (15, 16) being less than the lateral delimitations of said front section and less than the lateral delimitation of said rear section, said middle section has said outer side edge with a first radius (R1) and second radius (R2), said second radius (R2) on said outer side edge extending from the rear section (10) forwardly toward said first radius (R1) and said second radius (R2) being in the range of about 480 to 500 cm, and said first radius (R1) extending from said second radius (R2) to the front section (12) and said first radius being in the range of about 250 to 270 cm, said forward portion of said front section (12) as viewed from the top of the board member has an unsymmetrical front edge formed as a continuous extension of said inner and said outer side edges of said front section and defining a forward-extending tip displaced laterally inwardly relative to the side edges of the front section adjacent said middle section, said inner side edge of said tip being displaced inwardly substantially less than said outer side edge of said tip and thereby forming an elongated inner side edge on said front section for cutting engagement with the snow.

5,618,054
SKI COMPRISING A BODY AND AT LEAST ONE CAP, A TIP AND/OR A TAIL MANUFACTURED INDEPENDENTLY, AND PROCESS FOR MANUFACTURING SUCH A SKI
Jacques Fagot, La Manche, France, assignor to Skis Rossignol S.A., Voiron, France
Continuation of Ser. No. 105,933, Aug. 13, 1993, abandoned. This application Dec. 21, 1995, Ser. No. 576,046
Claims priority, application France, Aug. 24, 1992, 9210339
Int. Cl.^{6} A63C *5/12*
U.S. Cl. 280—610 **20 Claims**



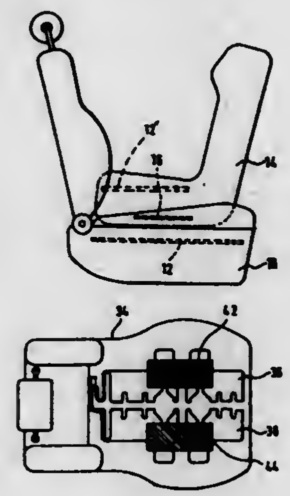
1. A ski, comprising:
a body comprising front, middle and rear portions; and
at least one reinforcing frame that is implanted in the body, wherein at least a portion of the at least one reinforcing frame protrudes from at least one of the front and rear portions; and
at least one cap that is attached to the protruding portion of the at least one reinforcing frame, wherein the at least one cap is molded around the protruding portion of the at least one reinforcing frame after the body has been formed.

5,618,055
STANDER
Lawrence K. Mulholland, Santa Paula, Calif., assignor to Mulholland Designs, Inc., Santa Paula, Calif.
Filed Apr. 21, 1995, Ser. No. 426,154
Int. Cl.^{6} B62B *3/02*
U.S. Cl. 280—641 **10 Claims**



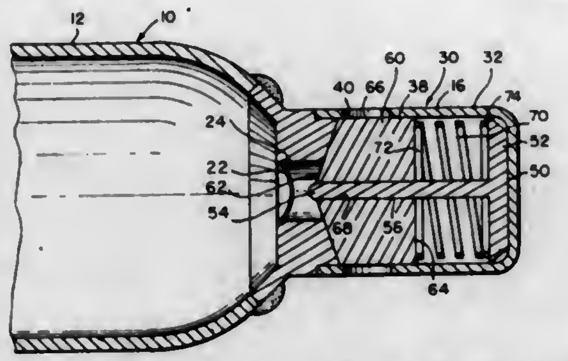
1. A stander comprising:
an elongated center post assembly having means to support the body of a person upon it in essentially parallel relation, and having a foot support end;
a supporting base including a generally U-shaped bar that supports a horizontal bar elevated above the floor by at least about half the length of the center post assembly; and
said center post assembly at a mid-point thereof being pivotally secured to said horizontal bar so that said center post assembly may be rotated by more than ninety degrees between an essentially vertical orientation in which its foot support end is lowermost, and an inclined position in which the elevation of its foot support end is higher than the elevation of its other end.

5,618,056
METHOD AND INSTALLATION FOR DETECTING CERTAIN PARAMETERS CONCERNING AN AUXILIARY CHILD SEAT WITH A VIEW TO CONTROLLING THE OPERATION OF THE AIRBAGS OF A VEHICLE
Aloyse Schoos, and Michel Witte, both of Bertrange, Luxembourg; assignors to I.E.E. International Electronics & Engineering, S.a.r.L, Luxembourg, Germany
Filed Oct. 16, 1995, Ser. No. 543,631
Claims priority, application Luxembourg, Oct. 17, 1994, 88547; Feb. 15, 1995, 88588
Int. Cl.^{6} B60R *21/22;21/32*
U.S. Cl. 280—735 **16 Claims**



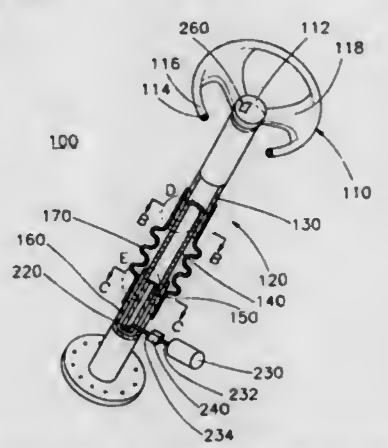
1. A system for detecting certain parameters concerning an auxiliary child seat placed on a passenger seat of a motor vehicle equipped with an airbag protection system so that the parameters are used to adapt the deployment of the airbag protection system associated with the seat supporting said auxiliary seat according to the parameters detected, comprising:
at least one electromagnetic induction emitter circuit and at least one electromagnetic induction receiver circuit, each electromagnetic induction emitter and receiver circuit being incorporated into the passenger seat of the vehicle which is protected by the airbag protection system;
at least two resonant circuits incorporated into the base of the child seat and positioned, when the child seat is placed on the passenger seat, to influence an electromagnetic coupling between each electromagnetic induction emitter and receiver circuit so as to cause each electromagnetic induction receiver circuit to deliver a signal representing at least one of the parameters;
wherein each resonant circuit is associated with electronic modulation circuit means for modulating the electromagnetic coupling with a distinct modulation, the distinct modulation of each resonant circuit providing means for distinguishing between the respective resonant circuits.

5,618,057
CONTINUOUSLY VARIABLE CONTROLLED ORIFICE INFLATOR
Kelly B. Johnson, Layton, and Brett Hussey, Bountiful, both of Utah, assignors to Morton International, Inc., Chicago, Ill.
Filed Sep. 15, 1995, Ser. No. 529,181
Int. Cl.^{6} B60R *21/26*
U.S. Cl. 280—736 **5 Claims**



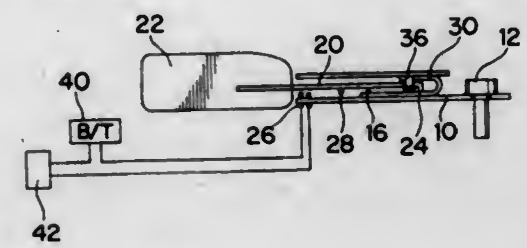
1. An inflator for providing gas to inflate an air bag comprising:
a gas source stored under pressure in a container, said container having a gas outlet end,
said container including a diffuser shaped in the form of a cylinder affixed to said gas outlet end of said container,
means for defining a gas outlet opening in said diffuser to allow flow of gas from said gas source into said air bag to cause said air bag to inflate, and
valve means for controlling flow of said gas through said diffuser gas outlet opening,
said valve means comprising a spring loaded piston slidably contained within said cylinder,
said piston having a first radially extending surface against which said flow of gas moves said piston in a first direction to allow increased flow of gas through said gas outlet opening,
said valve means including a coil spring disposed in the path of movement of said piston for controlling the movement of said piston in said cylinder.

5,618,058
COLLAPSIBLE STEERING COLUMN APPARATUS OF A MOTOR VEHICLE
Sung-Kwang Byon, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea
Filed Dec. 18, 1995, Ser. No. 574,163
Claims priority, application Rep. of Korea, Mar. 22, 1995, 95-6059
Int. Cl.^{6} B62D *1/11*
U.S. Cl. 280—777 **9 Claims**



1. A collapsible steering column apparatus of a motor vehicle, comprising:
a steering wheel having a hollow portion therein;
a steering column part including at least one steering column which is slidably moved lengthwise and having a gas filled therein, said steering wheel being fixed to said steering column part; and
controlling means for supplying the gas to inside of said steering column part and said steering wheel, for maintaining an internal pressure of said steering column part and said steering wheel at a predetermined level, for alarming when the internal pressure is lowered below the predetermined level and exhausting the gas from the insides by detecting a collision of vehicle.

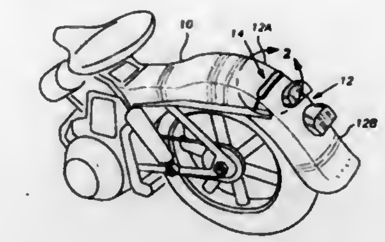
5,618,059
SEAT BELT BUCKLE DEVICE FOR A VEHICLE
Ji-Ho Kim, Kyunnam-Do, Rep. of Korea, assignor to Hyundai Motor Company, Ltd., Seoul, Rep. of Korea
Filed Aug. 16, 1995, Ser. No. 515,895
Claims priority, application Rep. of Korea, Aug. 16, 1994, 94-20055
Int. Cl.^{6} B60R *22/12*
U.S. Cl. 280—805 **7 Claims**

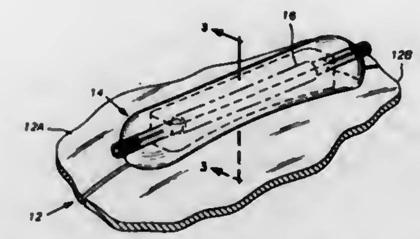


1. A seat belt buckle device for a vehicle comprising:
an outer stay having a guide slot formed therethrough and a first aperture at one end portion thereof, said outer stay further having a first stopper disposed on an inner surface of a lower wall thereof and extending into said guide slot;
a C-shaped impact-absorbing plate having an upper wall and a lower wall, said impact-absorbing plate being adapted to be slidably inserted into the guide slot of the outer stay, said C-shaped impact-absorbing plate having second apertures disposed in said upper wall and a slot formed in said lower wall thereof; and
an inner stay connected to a seat belt buckle, said inner stay having a second stopper downwardly extending from one end portion thereof, and a switch connector disposed on a bottom surface thereof adjacent an opposite end portion thereof, whereby when a traffic accident occurs causing a vehicle impact, the inner stay and the impact-absorbing plate are pulled, the impact-absorbing plate is transformed whereby the upper wall is extended toward the length of the lower wall for absorbing an overload to the seat belt and a warning lamp is illuminated for indicating a need to change an exhausted impact-absorbing plate.

5,618,060
HINGE COVER
Gary Warren, 118 Tudor Rd., Centereach, N.Y. 11720, and Ralph Matera, 43 9th St., Lake Ronkonkoma, N.Y. 11779
Filed Apr. 25, 1995, Ser. No. 429,425
Int. Cl.^{6} B62D *25/16*
U.S. Cl. 280—848 **7 Claims**

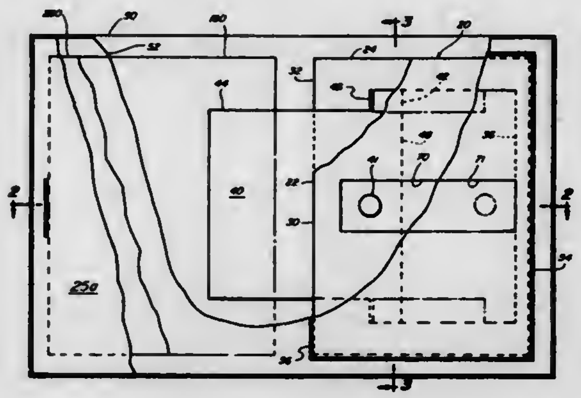
1. A fender hinge cover, for concealing a hinge located on a fender of a motorcycle and the damaged area of the fender which typically surrounds the hinge, comprising:
a) a rigid shell, the shell having substantially the shape of an elongated oval, said shell having a top, a bottom, and a length; and





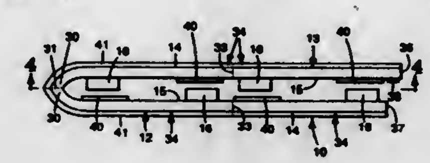
b) a notched recess located at the bottom of said shell, the notched recess extending in the direction of the length of the shell, such that said shell may be placed over the hinge, with the hinge enclosed within the notched recess so that the hinge and area surrounding it are concealed by the fender hinge cover.

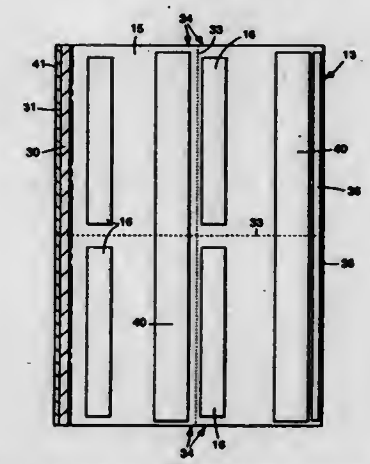
5,618,061
FOLDER WITH SLIDE-STIFFENER ASSEMBLY
Douglas Ritterling, Washington, Mo., assignor to American Trading and Production Corporation, Baltimore, Md.
Filed Sep. 21, 1995, Ser. No. 531,791
Int. Cl.^{6} B42D *1/00*
U.S. Cl. 281—15.1 **15 Claims**



1. A folder with stiffening assembly for holding the folder in an open position, the folder comprising:
(a) a first pocket portion, a second pocket portion, a spine means connecting said first pocket portion to said second pocket portion, and
(b) a stiffening assembly including a base member disposed in said first pocket portion, and an extension member disposed in sliding relation to said base member for sliding movement of said extension member from said first pocket portion into said second pocket portion in bridging relation to said spine means to hold said first and second pocket portions in an open position.

5,618,062
NOTE OR NOTE PAD PREPARATION METHOD
Timothy A. Mertens, Cottage Grove, and Mark S. Vogel, Maplewood, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation-in-part of Ser. No. 973,039, Nov. 9, 1992, Pat. No. 5,382,055. This application Jan. 17, 1995, Ser. No. 373,585
Int. Cl.^{6} B42D *15/00*
U.S. Cl. 283—67 **17 Claims**

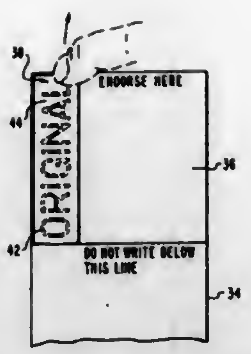




1. A method for making custom printed notes, said method comprising the steps of:
providing a sheet assembly comprising first and second sheets each having major front and rear surfaces, and layers of pressure-sensitive adhesive in a predetermined pattern on the rear surface of each of the sheets, the layers of pressure-sensitive adhesive on the rear surface of each of the sheets contacting and being releasably adhered to the rear surface of the other sheet only in nonadhesive bearing areas that are recessed with respect to the layers of pressure-sensitive adhesive, the pressure-sensitive adhesive along at least some of said pattern of pressure sensitive adhesive requiring a separation force from the rear major surface of the other sheet of over 5 grams per inch;
printing indicia on the front surfaces of both of the sheets in the sheet assembly using a printer that can print sheet on opposite surfaces;
separating the sheets along predetermined planes normal to and extending across the major surfaces of the sheets to form the custom printed notes.

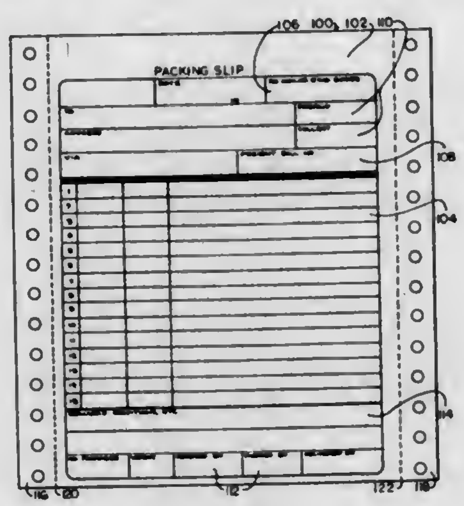
5,618,063
MULTICOLOR HEAT-SENSITIVE VERIFICATION AND HIGHLIGHTING SYSTEM
John C. H. Chang, Naperville; Eric B. Wendler, Aurora, and Vance P. Gregory, Jr., Wheaton, all of Ill., assignors to Wallace Computer Services, Inc., Hillside, Ill.
Continuation-in-part of Ser. No. 987,710, Dec. 9, 1992, Pat. No. 5,427,415. This application Apr. 4, 1995, Ser. No. 416,283
Int. Cl.^{6} B42D *15/10;* **B41M** *5/28;* **B23B** *3/16*
U.S. Cl. 283—67 **28 Claims**

1. A document capable of providing multiple colors under the application of heat, which comprises:
a support having at least one surface bearing a first coating comprising a substantially colorless, heat activatable chromogenic composition capable of producing a first color under the application of heat, and a second coating comprising a localized coating of a substantially colorless, heat activatable



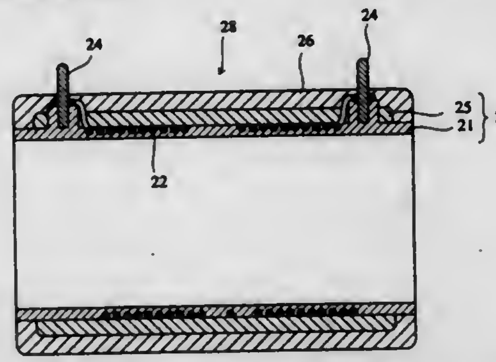
chromogenic composition capable of producing a second color under the application of heat, said first and second coatings being non-coextensive, each of said first and second coatings being at least partially exposed,
each said chromogenic composition comprising a chromogenic compound and a color developer,
said chromogenic compound and said color developer being substantially colorless solids in physical contact prior to reaction, but which can chemically react to produce a visible colored image by application of heat at temperatures above room temperature.

5,618,064
PACKING SLIP AND SHIPPING LABEL COMBINATION
George W. Main, Essex Junction, Vt., assignor to KoBel International, Milton, Vt.
Filed Jan. 2, 1996, Ser. No. 582,100
Int. Cl.^{6} B42D *15/00*
U.S. Cl. 283—80 **19 Claims**



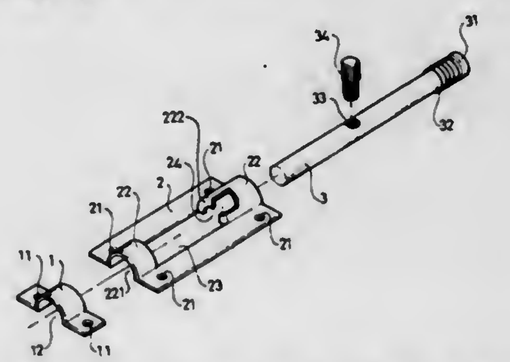
1. A packing slip and shipping label combination attachable to a package, said structure comprising:
a packing slip having a first side and a second side, the first side having a first and second printable area for providing a destination of the package and a description of the items to be contained in the package, respectively;
a layer of material adhered to a portion of the second side of the packing slip;
a substantially transparent shipping label having a first side and a second side, the first side of the shipping label having an adhesive coating adhered thereto, the first side of said shipping label being removably attachable to the second side of the packing slip on said layer of material;
wherein said shipping label is removable from said second side of said packing slip, said packing slip is foldable and locatable between said first side of said shipping label and said package, and said first side of said shipping label is attachable to said package via said adhesive coating.

5,618,065
ELECTRIC WELDING PIPE JOINT HAVING A TWO LAYER OUTER MEMBER
Saburo Akiyama, Kuwana, Japan, assignor to Hitachi Metals, Ltd., Tokyo, Japan
Filed Jul. 20, 1995, Ser. No. 504,866
Claims priority, application Japan, Jul. 21, 1994, 6-169253; Mar. 23, 1995, 7-063783
Int. Cl.^{6} F16L *47/02*
U.S. Cl. 285—21.2 **21 Claims**



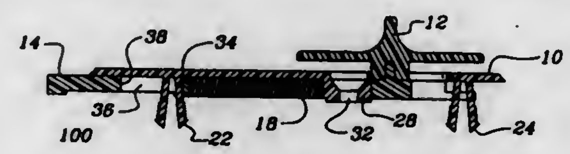
14. An electric welding pipe joint comprising (a) a joint body composed of an inner cylindrical member made of a thermoplastic resin, and an outer cylindrical member constituted by at least two thermoplastic resin layers, said thermoplastic resin layers of said outer cylindrical member being injection-molded around said inner cylindrical member successively, and (b) a heating resistance wire wound around an outer surface of said inner cylindrical member and embedded in said joint body.

5,618,066
AUTOMATIC LATCH DEVICE
Chen Fu-Hsiang, 47-14, Fan-po Street, Fan-po Village, Fu-Hsin Hsiang, Chang Hwa Hsien, Taiwan
Filed Nov. 13, 1995, Ser. No. 555,864
Int. Cl.^{6} E05C *5/02*
U.S. Cl. 292—62 **4 Claims**



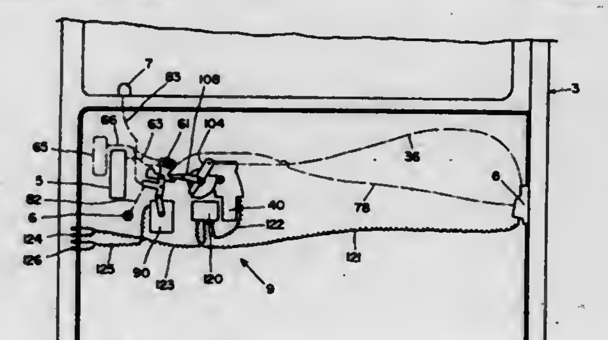
1. A latch device for locking a door panel, said latch device comprising:
a housing including a bulge formed therein so as to define a channel therein,
a pin slidably engaged in said channel and including a first end and a second end,
a retainer for engaging with said first end of said pin so as to lock the door panel, and
a spring member engaged between said pin and said housing, said spring member being made of shape memory alloy and being deformed to a deformed length different from an original length, said spring member being recovered to said original length so as to disengage said first end of said pin from said retainer when said spring member is heated.

5,618,067
TILT LATCH DEVICE
Dennis Carlson, McPherson, Kans.; Jeffrey B. Hersh, Wayne, Pa., and Dennis Westphal, Parma, Mich., assignors to CertainTeed Corporation, Valley Forge, Pa.
Filed Jun. 7, 1995, Ser. No. 478,607
Int. Cl.^{6} E05C *1/10*
U.S. Cl. 292—175 **22 Claims**



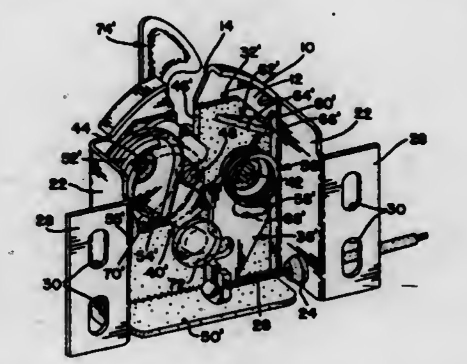
1. In a window having a support structure including a sill and a pair of vertical jambs, said window including a framed glass panel hinged to said support structure so as to permit said panel to swing out from said support structure in a first direction, the improvement comprising:
a tilt latch device mounted to a framed portion of said panel for selectively latching said panel within said support structure, said tilt latch device comprising an integral snap fastener portion disposed to secure said device to said flamed portion and at least one ridge.

5,618,068
DOOR LOCK APPARATUS WITH AUTOMATIC DOOR CLOSING MECHANISM
Jiro Mitsui; Hirofumi Watanabe, and Yoshihiko Fujihara, all of Yamanashi-ken, Japan, assignors to Mitsui Kinzoku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 6, 1994, Ser. No. 223,510
Claims priority, application Japan, Apr. 7, 1993, 5-105124; Apr. 26, 1993, 5-121893; Jul. 20, 1993, 5-200398
Int. Cl.^{6} E05C *3/26*
U.S. Cl. 292—201 **12 Claims**



1. A door lock apparatus with automatic door closing mechanism comprising:
a latch engaging with a striker secured to a vehicle body;
an automatic door closing motor for over-rotating said latch at a half-latched position beyond a full-latched position while the motor rightly rotates;
a switch which is continuously in an ON condition when the latch is between the half-latched position and the full-latched position and is turned to an Off condition when the latch is at a position other than between the half-latched position and the full-latched position; and
a controller for rightly rotating said motor when a door is closed and turns said switch from the OFF condition to the On condition and reverses rotation of the motor when the switch turns from the ON condition to the OFF condition.

5,618,069
HOOD AND DECKLID LATCH ASSEMBLIES
Jeffrey L. Konchan, Shelby Township; David Kowalczyk, Macomb, both of Mich.; John F. Reelhorn, Pickerington, and Dennis F. Saxton, Orient, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.
Filed Jul. 21, 1995, Ser. No. 505,433
Int. Cl.^{6} E05B *15/02*
U.S. Cl. 292—216 **13 Claims**



1. A latch assembly for a vehicle comprising:
a frame for right-hand and left-hand drive side latch assemblies, the frame including a panel having a throat formed therein for receiving a striker, first and second pairs of lever mounting holes symmetrically formed on each side of the throat, a mounting hole underneath the throat, a pair of opposed side walls extending upwardly from a front side of the panel, each side wall having a hole formed near the lower end thereof for receiving a cable, and a mounting flange extending outwardly from each side wall and having holes formed therein for mounting the frame to a vehicle;
a polymeric isolation plate having a notch defined therein and constructed and arranged when overlapping the frame to provide an integral flange which is interposed between a striker to be received in the notch, and the throat of the panel to avoid rubbing between the striker and the panel and for quieter operation, said polymeric isolation plate includes holes formed therein corresponding to one hole of each pair of lever mounting holes formed on the sides of the throat of the panel and wherein the polymeric isolation plate blocks the other hole of each pair of holes to selectively provide only one of a right-hand or left-hand drive latch assemblies, said isolation plate including integral bushings associated with the lever mounting holes in the isolation plate;
a detent lever and a fork-bolt lever respectively received on one of said bushings and held in place by a rivet and constructed and arranged so that each lever rotates on a low friction polymeric isolation plate cylindrical bushing;
a spring operatively connected to the fork-bolt lever for biasing the fork-bolt lever away from the throat;
a spring operatively connected to the detent lever for biasing the detent lever towards to the central axis of the frame and wherein said polymeric isolation plate further comprises an outwardly extending ledge near the lower end constructed and arranged to prevent the detent lever from being hooked from underneath the vehicle when the latch assembly is installed in a vehicle.

5,618,070

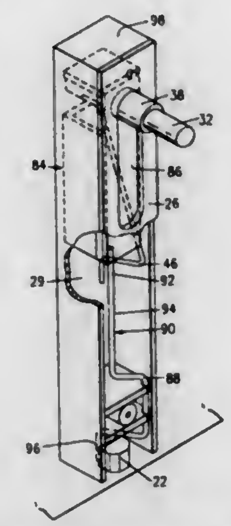
PUSH BUTTON QUAKE LATCH

Robert H. Tuois, 366 Alosta Way, Camarillo, Calif. 93010, and Randal R. Schanley, 6845 ½ Hazeltine Ave., Van Nuys, Calif. 91405

Filed Feb. 9, 1995, Ser. No. 385,789

Int. Cl.⁶ E05C *3/14*

U.S. Cl. 292—228 **13 Claims**



7. A latch assembly for mounting within a cabinet, a first portion of the assembly being attachable to a surface of a door in the cabinet and a second portion of the assembly being mountable to the cabinet in an area adjacent to the surface of the door, said first portion and second portion cooperating to hold the door in a closed position in relationship to the cabinet, comprising:

a. an elongated hollow enclosure having a long dimension which is greater in extent than a width which is perpendicular thereto, an axis through the center of the enclosure extending along the long dimension and a first surface adapted to lie against an inner surface of a door, said first surface having an elongated opening extending therethrough, the elongated opening having a long dimension greater in extent than a width which is perpendicular thereto, the long dimension of the enclosure and the long dimension of the opening being cooriented,

b. a carriage located within the hollow in the enclosure,

c. a plunger assembly mounted to said carriage and within said opening, the plunger assembly comprising:

i. a tubular piston having a axis extending along its length, a first end transverse to said axis and a second end spaced from the first end, the first end adapted to be manipulated by an operator and the piston adapted to receive a first end of a control rod,

ii. a tubular collar surrounding at least a portion of the length of the piston said collar being attached to the carriage and held within the opening in the enclosure, the collar being adapted to allow the piston to move within the collar in a direction parallel to the axis of the piston, a hole in the collar adapted to allow passage of a control rod through the hole,

iii. a compressible spring positioned within the collar in contact with the piston such that pressure applied to the piston by an operator will cause the spring to become compressed and the piston to be displaced from a resting position and upon removal of the pressure the spring will expand, returning the piston to its resting position,

d. a striker for mounting to a cabinet, and

e. the control rod comprising a shaft of variable length, the shaft having a first end connected to the piston, a second end adapted to engage with the striker when the door and piston are in a latching position, the second end of the shaft being removed from contact with the striker when the piston is depressed, and means along the length of the shaft to adjust the length thereof, the shaft extending from the carriage and being disposed within the hollow of the enclosure such that when the enclosure is mounted to a cabinet door only the second end extends out of the enclosure.

5,618,071

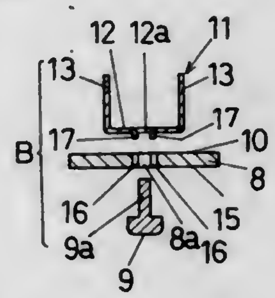
CONSTRUCTION FOR SECURING AN ATTACHMENT DEVICE OF A MAGNETIC LOCK DEVICE IN A PREDETERMINED ORIENTATION

Yoshihiro Aoki, Tokyo, Japan, assignor to Application Art Laboratories Co., Ltd., Tokyo, Japan

Filed Dec. 27, 1994, Ser. No. 364,124

Int. Cl.⁶ E05C *17/56*

U.S. Cl. 292—251.5 **11 Claims**



1. A magnetic fastener device comprising:

a ferromagnetic plate having a central hole therethrough and first and second opposing faces;

an attachment device including a base plate having a central hole therethrough and first and second opposing faces, and a pair of legs fixed to said base plate and extending therefrom, said base plate being mounted parallel to said ferromagnetic plate with said first face of said base plate facing toward said second face of said ferromagnetic plate and such that said legs extend in a direction away from said ferromagnetic plate;

wherein said ferromagnetic plate further includes at least one recess formed in said second face thereof, said at least one recess being continuous with said central hole of said ferromagnetic plate and extending radially outwardly therefrom; and

wherein said base plate of said attachment device includes at least one projection extending from said first face of said base plate in a direction toward said ferromagnetic plate, said at least one projection respectively engaging in said at least one recess of said ferromagnetic plate to prevent rotation of said ferromagnetic plate relative to said base plate of said attachment device.

5,618,072

REMOTE CONTROLLED DOOR BRACE

Paul P. Pitchford, 117 55th St. SE., Washington, D.C. 20019

Filed Jun. 5, 1995, Ser. No. 463,934

Int. Cl.⁶ E05C *17/54*

U.S. Cl. 292—339 **18 Claims**

1. A remote controlled door brace for an entrance door with a doorknob in a building, said brace comprising:

a) a floor anchor for mounting into the floor of the building, which is to be spaced away from the entrance door;

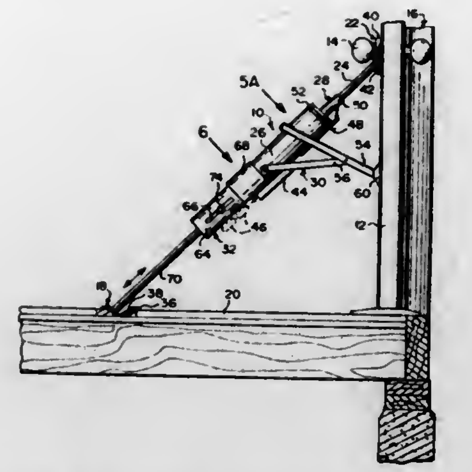
b) a hanger to engage with the doorknob on the interior side of the entrance door;

c) a bar projecting downwardly from said hanger;

d) a motor;

e) means for securing said motor to a bottom end of said bar, said means comprising a collar to fit about the bottom end of said bar and a strap affixed to said collar and extending about a top end of said motor;

f) an adjustable support for extending between said motor and the interior side of the entrance door, so as to keep said motor at the proper angle away from the entrance door;



g) a movable rod assembly extending from said motor to said floor anchor; and

h) means for activating said motor on the exterior side of the entrance door, so as to operate said movable rod assembly to bear against said floor anchor and buttress the entrance door, to prevent an unauthorized person from jimmying open the entrance door and entering the building.

5,618,073

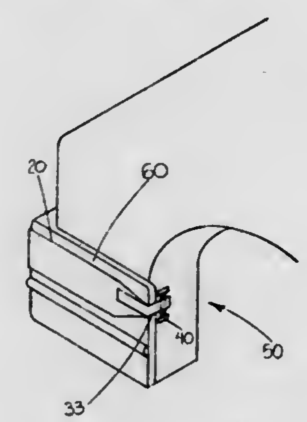
AUTOMOBILE REAR BUMPER PROTECTOR

Steven Criscione, 7520 Ridge Blvd., Apt. 1-B, Brooklyn, N.Y. 11209

Filed Jan. 6, 1995, Ser. No. 369,771

Int. Cl.⁶ B60R *19/44*

U.S. Cl. 293—142 **5 Claims**



1. A protective cover arrangement for covering the outer surface of a rear bumper of a motor vehicle which has two rear wheel wells and the length of said rear bumper extending from about one rear wheel well to about the other rear wheel well, said protective cover comprising:

a covering panel having an outer surface and an inner surface, formed from a flexible material of a size and shape conformable to said outer surface of said rear bumper, said covering panel extending the entire length of said rear bumper; and

a securing means for securing said protective cover to said motor vehicle at each of said rear wheel wells so that said covering panel covers said outer surface of said rear bumper.

5,618,074

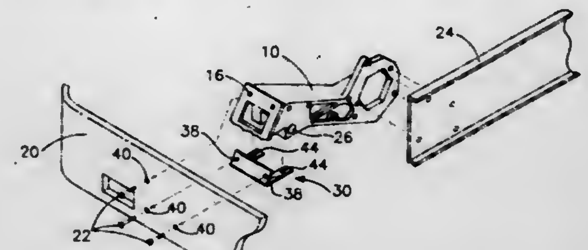
BRACKET SUPPORT

John B. Weast, 43 Summercress La., Coram, N.Y. 11727

Filed Apr. 10, 1996, Ser. No. 630,460

Int. Cl.⁶ B60R *19/24*

U.S. Cl. 293—155 **15 Claims**



1. A bumper mount attached to the underbody of a vehicle having a front bumper said bumper mount having a front flange partially broken off and a bottom front mounting means comprising

a triangular bracket having an upstanding front flange side and a longitudinal lower flange side, said upstanding front flange side extending as a substantially linear extension of said front flange and mounted onto the bumper and said longitudinal lower flange side mounted onto the bumper mount bottom mounting means.

5,618,075

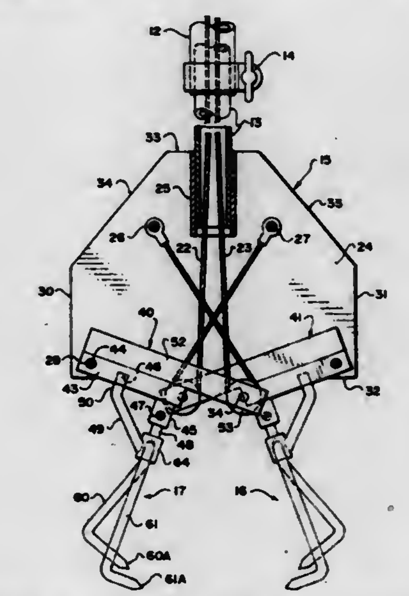
MANUAL GRASPING AND LIFTING DEVICE FOR STONES AND THE LIKE

Morris Baziuk, Winnipeg, Canada, assignor to Flush Quip Inc., Winnipeg, Canada

Filed Feb. 17, 1995, Ser. No. 355,049

Int. Cl.⁶ B25J *1/04*

U.S. Cl. 294—19.1 **19 Claims**



1. Apparatus for grasping and lifting objects comprising:

an elongate handle having a manually graspable upper end and a remote end;

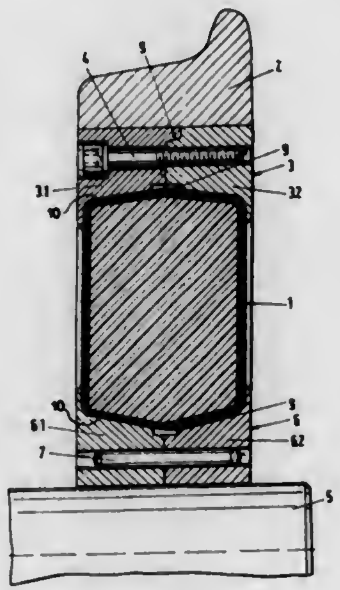
a lifthead attached to the remote end such that manual movement of the handle moves the lifthead to an object at a position remote from the upper end for lifting;

a pair of grasping members of the lifthead for grasping the object;

two pivot levers each mounted on the lifthead for pivotal movement about a respective one of two parallel pivot axes of the

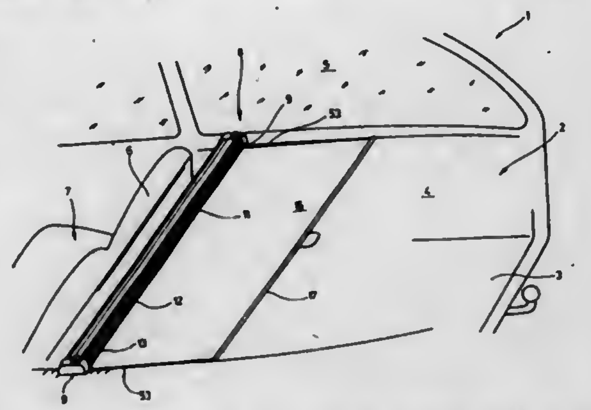
lifthead, each pivot lever having a respective one of the grasping member mounted thereon;
and flexible elongate lifting cable means for pivoting the pivot levers and therefore the grasping members from a first position in which the grasping members are spaced and opposed to a second position in which the grasping members are moved together to grasp the object therebetween for lifting;
the cable means having one end at the upper end of the handle and an opposed end at the pivot levers for simultaneously pulling the pivot levers from the first position to the second position;
wherein the pivot axes are arranged at opposed sides of the lifthead and wherein each pivot lever extends from its respective pivot axis towards the opposite side of the lifthead;
and wherein the grasping member extends from the pivot lever downwardly and outwardly from a position spaced inwardly of the pivot axis such that, when the handle is arranged vertically upwardly from the lifthead, the grasping member is suspended downwardly from the respective pivot axis and moves to the first position under gravity.

5,618,076
RAIL WHEEL
Horst Bansemir, Munich; Bernd Bongers, Kirchheim, and Hermann Eschbaumer, Grosskarolinenfeld, all of Germany, assignors to Eurocopter Deutschland GmbH, Munich, Germany
Filed Apr. 17, 1995, Ser. No. 423,509
Claims priority, application Germany, Apr. 16, 1994, 44 13 308.1
Int. Cl.⁶ B60B *19/00*
U.S. Cl. 295—21 **12 Claims**



1. A rail wheel, comprising:
a wheel disk made of a plastic material;
a tire made of metal;
a metallic intermediate ring, said tire being shrunk onto said metallic intermediate ring which connects said wheel disk and said tire;
wherein said wheel disk has an outer conical surface in cross-section, said metallic intermediate ring form-locking with said outer conical surface of said wheel disk;
wherein said metallic intermediate ring is axially divided into two partial rings having corresponding partially conical interior surfaces which are in a mutual force-locking connection with, and glued to, said wheel disk.

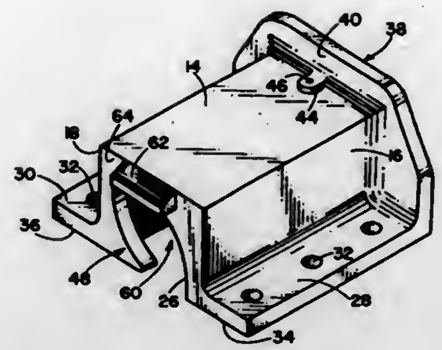
5,618,077
ROLLER COVER FOR STATION WAGONS
Eduard Ament, Aichawald, and Holger Seel, Aidlingen, both of Germany, assignors to Baumeister & Ostler GmbH & Co., Germany
Filed Jan. 24, 1995, Ser. No. 377,197
Claims priority, application Germany, Feb. 19, 1994, 44 05 280.4
Int. Cl.⁶ B60R *5/04*
U.S. Cl. 296—37.16 **16 Claims**



1. A roller cover (1) for covering the loading space (2) of passenger cars, said cover comprising.
an elongated housing (11) adapted to be inserted into and removed from the loading space (2), said housing including an intermediate piece (18) having a slot (13) and including two end pieces (19) seated on the intermediate piece (18),
a winding shaft (14) rotatably supported in the housing (11),
a web (16) fastened to the winding shaft (14) and adapted to be drawn out of the housing (11) through the slot (13),
a drive device located in the housing (11) and coupled to the winding shaft (14) to rotate the shaft in a direction retracting the web into the housing,
locking members (36) movably supported in said end pieces (19) and biased toward locking positions by first spring means (37, 89), each locking member having at least one locking extension (38) which protrudes outwardly when the locking member is in said locking position, the two end pieces (19) being longitudinally slidable with respect to the intermediate piece (18) of the housing (11) in a direction parallel to the longitudinal axis of the winding shaft (14), and second spring means (27, 33) biasing said end pieces to outer positions away from said intermediate piece (18), said end pieces being movable to inner positions against the action of said second spring means (27, 33).

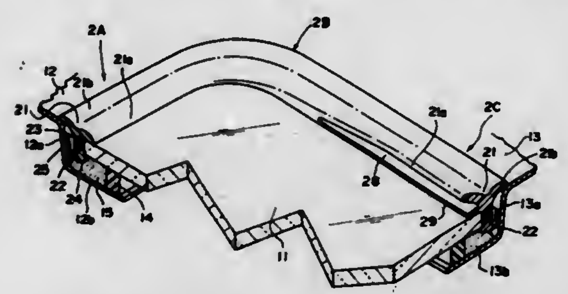
5,618,078
STAKE POCKET HOLDER
Steven C. Aberle, 6635 Braun Ct., Arvada, Colo. 80004
Filed Oct. 6, 1994, Ser. No. 319,317
Int. Cl.⁶ B60P *7/06*
U.S. Cl. 296—43 **22 Claims**

22. A stake holder having a pocket adapted for mounting an elongated stake of substantially square or circular cross-section to a frame, said stake holder comprising:
a housing having a front member and a pair of side members having front and back edges, said front member being interconnected along said side member front edges to define a U-channel of substantially square cross-section to form said pocket and having an open back side, an upper channel opening and a lower channel opening;
a pair of flanges disposed along the back edges of said side members and including means to enable removable mounting of said flanges and said housing against a surface to close said open back side; and



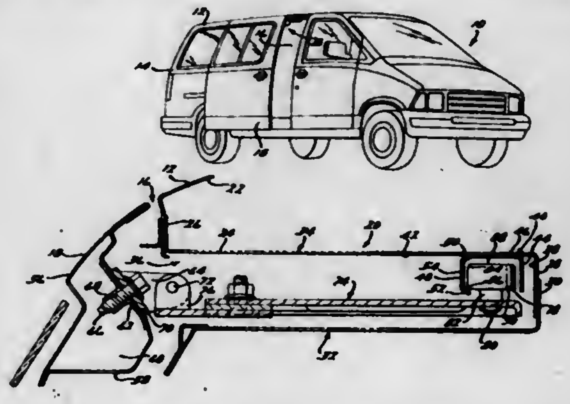
a pair of ledge members disposed at diagonally opposite corners of said lower channel opening to prevent the passage of said stake therethrough by providing a seat for said stake when positioned in said pocket and restricting the size dimension of said lower channel opening while permitting fluid flow through said channel.

5,618,079
WINDSHIELD MOLDING FOR VEHICLES AND THE PRODUCTION METHOD THEREOF
Yada Yukihiko, Nagoya, and Hirai Yoichi, Ohbu, both of Japan, assignors to Tokai Kogyo Kabushiki Kaisha, Ohbu, Japan
Continuation of Ser. No. 66,009, May 28, 1993, abandoned, which is a continuation-in-part of Ser. No. 800,831, Nov. 29, 1991, Pat. No. 5,229,054. This application Apr. 7, 1995, Ser. No. 418,894
Claims priority, application Japan, Sep. 30, 1991, 3-278583
Int. Cl.⁶ B60R *13/06*
U.S. Cl. 296—93 **14 Claims**



1. A windshield molding for vehicles which is installed along the periphery of a windshield glass mounted in a windshield frame opening of the body panels of the vehicles, comprising a first molding section, a second molding section and a third molding section extruded continuously in one piece throughout the entire length;
said molding having a decorative portion being provided to cover said space from the outside;
said decorative portion having an outer contour surface exposed to the outside and an inner surface contacted with the windshield, said both surfaces being continuous in the longitudinal direction through the entire length;
said outer contour surface of the decorative portion being twisted along a length thereof;
wherein said decorative portion from the first molding section to the second molding section varies in width in the direction perpendicular to the longitudinal direction and in thickness in the direction from the inside to the outside,
the width of said decorative portion is constant from the second molding portion to the third molding section and the thickness of said decorative portion varies in a sectorial shape from the second molding portion to the third molding section,
a groove is provided in a triangular shape on the thickened inner periphery wall of the decorative portion of the third molding section.

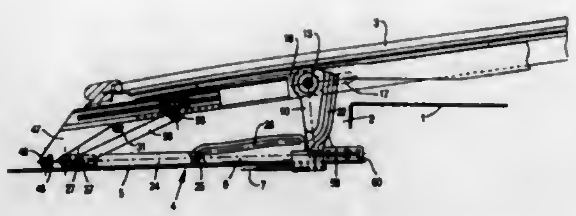
5,618,080
UPPER TRACK ROLLER MECHANISM FOR SLIDING DOOR
Brian K. Sullivan, Livonia; Graham J. Britain, Canton, and Donald F. Nelson, Dearborn, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Continuation of Ser. No. 173,024, Dec. 27, 1993, abandoned. This application Oct. 10, 1995, Ser. No. 541,862
Int. Cl.⁶ B60J *5/06*
U.S. Cl. 296—155 **7 Claims**



1. An upper track roller mechanism for an automotive vehicle having a door slidingly movable between open and closed positions with respect to a door aperture in the vehicle body, the mechanism comprising:
a generally U-shaped track member mounted on an upper edge of the door aperture and having a pair of laterally spaced inner and outer vertical side walls joined by an upper base wall;
an elongated guide link having one end mounted to the door for pivotal movement with respect thereto about a longitudinal horizontal axis;
a generally cylindrical roller assembly mounted at the other end of the guide link for rotation about a generally vertical axis perpendicular to the guide link, the roller having an upper corner that terminates at the uppermost end of the roller and a lower corner that terminates at the lowermost end of the roller wherein the roller is received within the track member; and
means formed on the track member outer wall and engageable with at least one of the roller upper and lower corners for vertically centering the roller assembly within the track member.

5,618,081
MECHANISM FOR MOVING A PANEL WITH RESPECT TO A ROOF OF A VEHICLE
Martinus W. M. Nabuurs, Overloon, Netherlands, assignor to Inalfa B.V., Venray, Netherlands
Filed Dec. 13, 1994, Ser. No. 357,682
Claims priority, application Netherlands, Dec. 13, 1993, 9302166
Int. Cl.⁶ B60J *7/047*
U.S. Cl. 296—216 **5 Claims**

5. A mechanism for moving a panel with respect to a roof of a vehicle between a first position, in which said panel closes an opening in the roof of the vehicle, and a second position, in which said panel opens the opening provided in the roof of the vehicle at least for the greater part, comprising:
a panel, said panel having sides extending in a direction of movement of the panel;



a setting mechanism for moving the panel from said first position to said second position during which the panel is pivoted into an upwardly sloping position;

a first rack extending in the in the direction of movement of the panel and being movable coupled to the panel permitting a relative movement between the panel and the first rack;

a second rack secured to the panel and extending and being movable parallel to the first rack;

a gear in engagement with the first and second racks and being drivably coupled to the setting mechanism;

means for stopping said first rack for at least part of the movement of the setting mechanism so that the panel is driven by the setting mechanism and additionally by the gear which rotates as a result of a movement between the setting mechanism and the first rack.

5,618,082

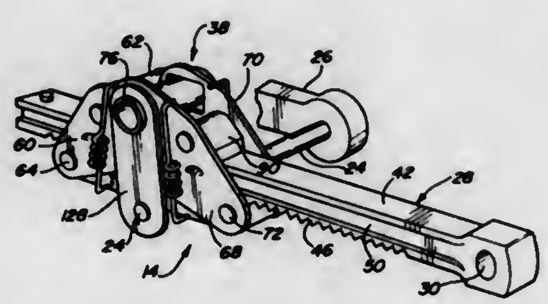
QUICK INSTALL COVER FOR A SEAT

Manfred F. Jachmich, 5100 San Felipe East Four Leaf Tower, Apt. 111-E, Houston, Tex. 77056

Filed Sep. 16, 1996, Ser. No. 714,242

Int. Cl.[6] A47C *31/00*

U.S. Cl. 297—229 **20 Claims**



1. Apparatus adapted for use with a seat having a headrest, the seat including a seat back having a front portion and a rear portion, and a seat cushion having a top and a front face, the apparatus comprising:

a one-piece cloth member having an edge and adapted to cover the top of the seat cushion and the front portion of the seat back;

a top section having an edge, a portion of said top section edge being fixedly attached to a portion of the cloth member edge to provide a first opening and a second opening formed between said top section edge and said cloth member edge for allowing the top section and the cloth member to pass over the headrest and the top section to extend over the rear portion of the seat back to limit downward movement of the cloth member when adapted to cover the front portion of the seat back; and

a bottom section having an edge, a portion of said bottom section edge being fixedly attached to a portion of the cloth member edge to limit rearward movement of the cloth member when adapted to be placed on the seat cushion top while allowing a portion of the bottom section to be adapted to cover a portion of the front face of the seat cushion.

5,618,083

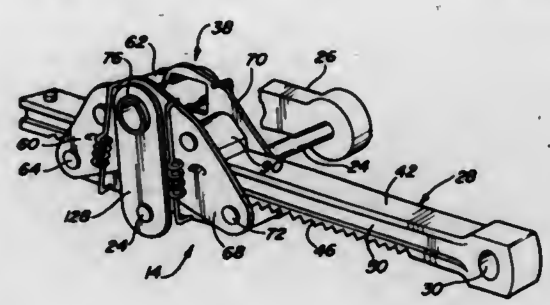
LINEAR SEAT BACK RECLINER MECHANISM

Michael A. Martone, and Tyrone R. Secord, both of Troy, Mich., assignors to Maple Automotive Innovations, Inc., Troy, Mich.

Filed Mar. 1, 1996, Ser. No. 609,342

Int. Cl.[6] B60N *2/20*

U.S. Cl. 297—375 **8 Claims**



1. A linear actuator for use in a seat back recliner mechanism to permit manual adjustment of the inclination of a seat back relative to a seat member, comprising:

a longitudinally extending actuator rod having an upper planar surface and a lower planar friction surface joined by opposed sides and a pivotal connection at one end for connection to said recliner mechanism;

an elongate lower clamp member having an upper friction surface for engaging the lower planar friction surface of said rod, and a central aperture for receiving a lock release shaft;

two pairs of opposed, generally triangular shaped, lock plates, each pair being pivotally connected to said lower clamp member at opposed ends of said member, and the opposed plates of each pair being on opposite sides of said actuating rod;

a mounting spacer received in an upper aperture of each of said lock plates for mounting said actuator to a seat member;

a pair of upper clamp members, each pivotally connected to an opposed pair of lock plates and presenting a planar surface in contact with the upper planar surface of said actuating rod;

a spring connected between each lock plate and said lower clamp member to bias the upper and lower clamp members in contact with the upper and lower planar surfaces of said actuating rod to maintain said actuator rod locked to said lower clamp member, maintaining said seat back in a fixed position;

said lock release shaft extending through the central aperture of said lower clamp member, said shaft having a cam for contacting a lower edge of said lock plates located on one side of said actuating rod and moving said lock plates upward to release said actuating rod for movement relative to said clamp members permitting adjustment of the inclination of said seat back through said recliner mechanism; and

wherein when a load is applied to said actuator rod in its locked position, the load will be delivered to the seat frame through said mounting spacer by the lock plates on a side of the mounting spacer in the direction of the load causing these load delivering lock plates to pivot downwardly to supply a greater force through the upper clamp members associated with these load delivering lock plates to maintain the actuating rod locked to said lower clamp member.

5,618,084

MOTOR VEHICLE RETARDER BRAKE CONTROL METHOD

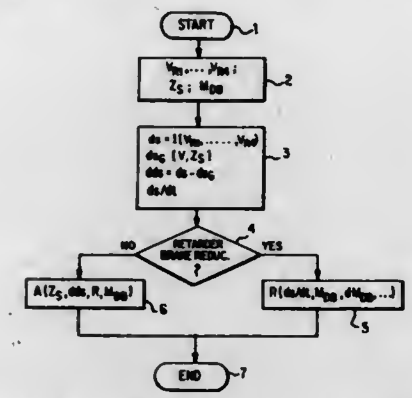
Michael Reiner, Fellbach, Germany, assignor to Mercedes-Benz AG, Germany

Filed Dec. 11, 1995, Ser. No. 570,162

Claims priority, application Germany, Dec. 9, 1994, 44 43 814.1

Int. Cl.[6] B60T *11/00;8/32*

U.S. Cl. 303—3 **6 Claims**



1. A method for controlling a motor vehicle retarder brake, comprising the steps of setting a braking effect of the retarder brake as a function of an absolute value of a difference between a wheel speed value derived from wheel speeds of at least one wheel influenceable by the retarder brake and a wheel speed value derived from wheel speeds of at least one wheel independent from influence of the retarder brake, and reducing the braking effect when the absolute value of the difference between the wheel speeds of the at least one wheel exceeds a prescribed limit value which is lower than the absolute value of the difference between the wheel speeds of the at least one wheel when one wheel has a tendency toward locking.

5,618,085

HYDRAULIC HOUSING BLOCK FOR HYDRAULIC BRAKE CONTROL OF VEHICLE BRAKES

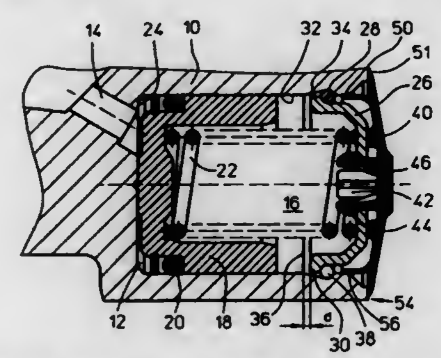
Heinz Siegel, Stuttgart, and Harald Ott, Ditzingen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Nov. 9, 1995, Ser. No. 555,632

Claims priority, application Germany, Nov. 10, 1994, 44 40 147.7

Int. Cl.[6] B60T *8/42;8/48;* **B60K** *28/16*

U.S. Cl. 303—113.1 **24 Claims**



1. A hydraulic housing block which forms an accumulator for an ABS and/or ASR brake system which comprises an outward-opening cavity including a mouth which is situated in an approximately vertical outer surface (51) of said hydraulic housing block, a piston (18) in said cavity covers said mouth, a flexible protective cap, said flexible protective cap including encircling sealing lips, said encircling sealing lips including a ventilation means, the flexible protective cap (40) closes the cavity (16) in a leaktight fashion and each of said encircling sealing lips includes at least one passage (54, 56) therein which forms said ventilation means.

5,618,086

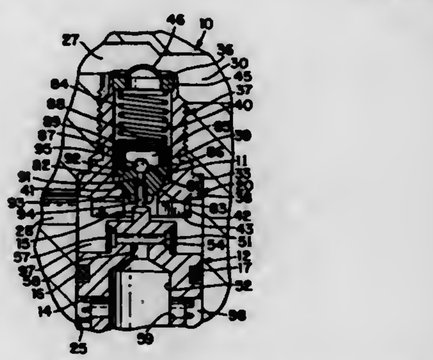
BRAKE SYSTEM MODULATOR WITH TWO-STAGE VALVE

David F. Reuter, Beavercreek, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 29, 1995, Ser. No. 537,190

Int. Cl.[6] B60T *8/36*

U.S. Cl. 303—119.2 **11 Claims**



1. A brake system for controlling fluid flow between a master cylinder and a wheel brake comprising:

a module having a primary bore with a master cylinder port and a wheel brake port, each communicating with the primary bore;

a two-stage valve carried in the primary bore between the master cylinder port and the wheel brake port such that fluid flow between the master cylinder port and the wheel brake port is directed through the two-stage valve, the two-stage valve including a first stage with an outer valve seat and an outer popper biased toward the outer valve seat by an outer poppet spring, and a second stage wherein the outer poppet has a poppet bore and an inner valve seat wherein the poppet bore carries an inner poppet that coacts with the inner valve seat, both the first stage and the second stage being operable to carry the fluid flow wherein the module includes a pump inlet port communicating with the primary bore and further comprising a release piston having a passage, sealingly and slidably carried in the primary bore between the wheel brake port and the pump inlet port such that fluid flow from the wheel brake port to the pump inlet port is directed through the passage.

5,618,087

2-POSITION 3-WAY SOLENOID VALVE, MODULATOR AND ANTI-LOCK BRAKE SYSTEM WITH THE VALVE

Jang-Yeol You, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Nov. 7, 1995, Ser. No. 553,179

Claims priority, application Rep. of Korea, Aug. 18, 1995, 95-25383

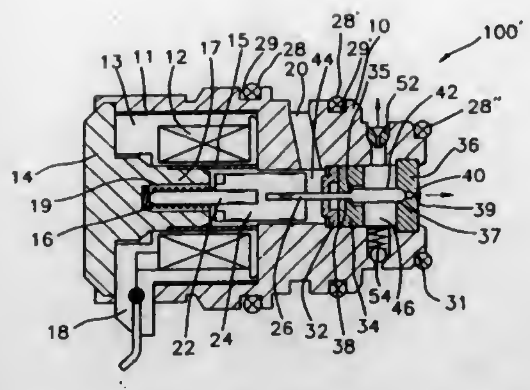
Int. Cl.[6] B60T *8/34*

U.S. Cl. 303—119.2 **13 Claims**

1. A solenoid valve comprising:

a valve body having a housing with a first port for receiving fluid from a fluid generating source, a second port for flowing in/flowing out said fluid and a third port for exhausting said fluid, and a cover hermetically coupled to one end of said housing for closing said one end of said housing;

a barrier wall for partitioning a chamber surrounded by said housing and cover within said valve body into first and second



chambers and having a first opening for communicating said first chamber with said second chamber, said first chamber being communicated with said first port and said second chamber being communicated with said second and third ports;

opening/closing means movable along lengthwise direction of said valve body for alternatively opening and closing said first opening and said third port in response to an electric signal, and being positioned at a first position of closing said third port and opening said first opening in a normal state that said electric signal is not applied or at a second position of closing said first opening and opening said third port in an active state that said electric signal is applied, whereby said first port is communicated with said second port or said second port is communicated with said third port; and

a solenoid assembly having an annular solenoid coil, a bobbin wound by said annular solenoid coil and a pair of electrodes electrically connected to said annular solenoid coil and exposed to the outside of said valve body for moving said opening/closing means to said second position from said first position in response to said electric signal,

wherein said second port is composed of two holes which are formed through said housing to be mutually opposite each other and an orifice for reducing the fluctuation of hydraulic pressure through said second port and a check valve for promptly reducing the hydraulic pressure within said second chamber are each further installed in said holes,

wherein said opening/closing means comprises:

an armature moving along said lengthwise direction in response to a magnetic force generated by said solenoid assembly;

a cover spring, one end thereof supported on a closed end of a hole formed in the center of a protrusion of said cover and the other end thereof supported on said armature;

a spring supporting rod fixed to one end of said armature and inserted in said cover spring to support said cover spring;

a push rod fixed to the other end of said armature; and

a spool integrally formed with said push rod,

wherein said cover, said spring supporting rod, said armature and said push rod are included within said first chamber, said spool is included within said second chamber, and said push rod extends through said first opening to be connected to said spool included within said second chamber,

wherein said barrier wall is formed by an inlet nozzle, said third port is a second opening formed at an outlet nozzle which is installed opposingly to said inlet nozzle, and the diameter of said first opening formed at said inlet nozzle is larger than that of said push rod passing through said first opening to provide a gap between said first opening and said push rod, said gap communicating said first chamber with said second chamber,

wherein said first chamber is formed within said housing to be surrounded by said inlet nozzle, a protrusion formed in the center of said cover and a cylindrical sealing member and said second chamber is formed within said housing to be surrounded by said inlet nozzle and said outlet nozzle, and

wherein said bobbin is fitted along the circumference of said cylindrical sealing member, said protrusion is hermetically fitted in one end of said cylindrical sealing member, and the other end thereof is hermetically coupled with an inner surface of said housing,

wherein an inlet valve seating surface and an outlet valve seating surface are formed on said inlet nozzle and said outlet nozzle respectively to seat said spool, and said inlet valve seating surface and said outlet valve seating surface are shaped to match with said spool, whereby said first opening or said second opening is closed, when said spool is seated on said inlet valve seating surface or said outlet valve seating surface,

further comprising a bushing provided between said armature and said barrier wall for supporting said push rod.

5,618,088

ANTI-LOCK CONTROL SYSTEM

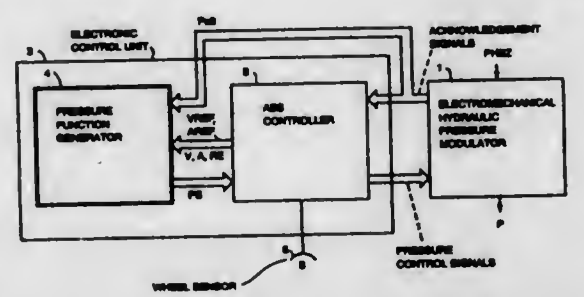
Georg Roll, Heusenstamm, and Heinz-F. Ohm, Weiterstadt, both of Germany, assignors to FAG Kugelfischer Georg Schafer KGaA, Germany

Continuation of Ser. No. 279,277, Jul. 22, 1994, abandoned, which is a continuation of Ser. No. 59,913, May 10, 1993, abandoned. This application Jun. 1, 1995, Ser. No. 457,032

Claims priority, application Germany, May 9, 1992, 42 15 350.6

Int. Cl.[6] B60T *8/58*

U.S. Cl. 303—158 **19 Claims**



1. An anti-lock control system for improving comfort and shortening braking distances in automotive vehicles having wheel sensors, a monitoring circuit which recognizes overbraking conditions of the wheels based on signals from the sensors and produces corresponding control signals, and a pressure modulator which, by means of the control signals, sets the brake pressures on the vehicle wheels; the anti-lock control system further comprising:

a pressure function generator which is responsive to the monitoring circuit and which, for each wheel, determines the brake pressure whenever wheel overbraking has been detected as an upper reference pressure (Pein); determines a brake pressure at which the wheel again accelerates, after pressure reduction by the pressure modulator in a pressure reduction phase, as a lower reference point (Pbeschl); and thereupon, in a pressure build-up phase, controls the pressure modulator so as to increase the wheel brake pressure from a start point (PsAnf) between the upper and lower reference pressure points over the entire pressure build-up phase initially in accordance with an exponential function approaching an asymptote and thereafter as a quasi-exponential function crossing said asymptote.

5,618,089

DEVICE FOR THE SWIVELING MOVEMENT OF A SHEET, IN PARTICULAR IN REFRIGERATION COUNTERS OR MERCHANDISE COUNTERS

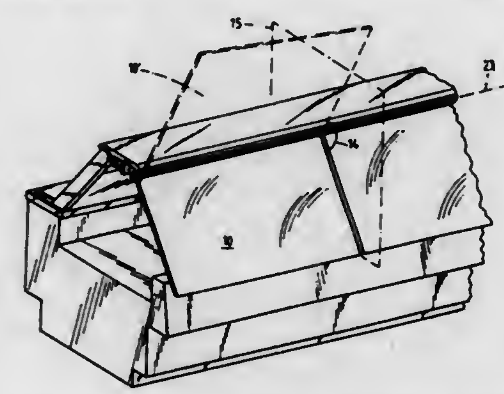
Bruno Stenemann, Beckum, Germany, assignor to Gerd und Bernd Vieler KG, Germany

Filed Jan. 24, 1995, Ser. No. 377,441

Claims priority, application Germany, Jan. 29, 1994, 44 02 727.3

Int. Cl.[6] A47F *3/04*; **F25D** *11/00*

U.S. Cl. 312—116 **21 Claims**



1. In a device for swiveling a sheet, in particular in refrigeration counters and/or merchandise counters, having a stationary bearing part for supporting an articulated part which supports the sheet and allows the sheet to swivel about a substantially horizontal axis between a lowered position and a raised position in a substantially vertical swiveling plane, and having an energy accumulator serving as auxiliary lifting means for lifting the sheet, wherein the energy accumulator has two connection ends which are loaded so as to move away from one another and which determine an effective direction of force of the energy accumulator, one connection end being articulated at the articulated part so as to participate in its movement, while the other connection end is articulated in a stationary manner, wherein

the energy accumulator is arranged with its effective direction of force substantially transverse to the swiveling plane of the sheet; and

the two connection ends of the energy accumulator are constructed as three-dimensionally acting joints each with three rotational degrees of freedom.

5,618,090

MOVABLE HOSPITAL ROOM EQUIPMENT COLUMN

Edgar G. Montague; Christopher F. Yonge, both of Charlotte, and Robin E. Smith, Moorseville, all of N.C., assignors to Medaes, Inc., Norcross, Ga.

Filed May 12, 1995, Ser. No. 440,340

Int. Cl.[6] A47B *81/00*; **A47C** *31/00*

U.S. Cl. 312—209 **12 Claims**

1. A movable medical equipment support column providing internally mounted gas rails and electrical raceways connected to service supply sources through ceiling mounted conduits, the support column comprising;

two pair of oppositely positioned vertically extending front and rear frame members,

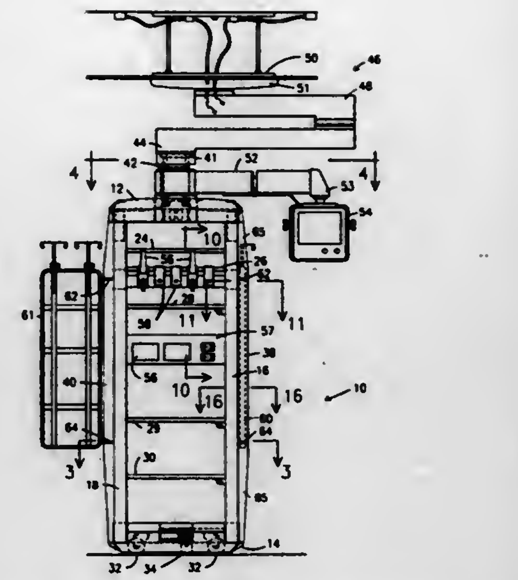
a cap supported by a top portion of the frame members,

a base supporting a bottom portion of the frame members,

multiple wheel means for providing contact between the support column base and a floor surface, the wheel means mounted in the base,

multiple horizontally extending cross members interconnecting the front two frames members and the rear two frame members,

a pipe connecting a first arm of a double articulating arm containing gas hoses and electrical conduits interconnecting



the ceiling mounted conduits to gas rails and electrical raceways in the cap, a second arm of the double articulating arm mounted to a ceiling,

bumper handles covering a portion of each front frame member containing a switch for electrically releasing a brake mounted in the base,

an equipment support frame pivotally attached to at least one front frame member,

at least one gas flow meter mounted on a cross member,

the front and rear frame members containing raceways interconnected to raceways in the cap receiving electrical conduits and gas lines from the double articulating arm,

a patient monitor pivotally attached by a support arm to a shaft connecting the first arm of the double articulating arm to a top portion of the frame members,

the support column providing open space for communication between persons on opposite sides of the column to allow visual contact with a patient when on opposite sides, and

the support column movable in a range of up to 340° around a center of rotation to provide patient services at any position for multiple care providers rendering patient assistance.

5,618,091

DRAWER ASSEMBLY

Edgar Huber, Hard; Helmut Hollenstein, Lustenau, and Reinhard Mäser, Bregenz, all of Austria, assignors to Julius Blum Gesellschaft m.b.H., Höchst, Austria

Filed Mar. 1, 1995, Ser. No. 396,772

Claims priority, application Austria, Oct. 5, 1994, 333/94 U

Int. Cl.[6] A47B *88/00*

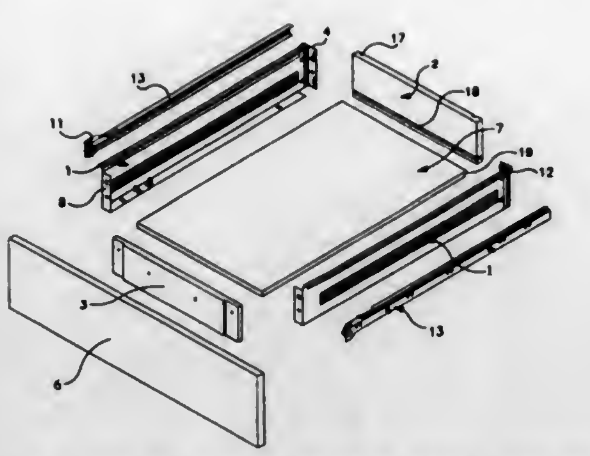
U.S. Cl. 312—348.1 **40 Claims**

31. A metal drawer side wall to be assembled with other drawer components to form an assembled drawer, said metal drawer side wall comprising:

a rear end to be attached to a drawer rear wall, said rear end having an inwardly extending vertical flange having at least one forwardly extending projection;

a horizontal support flange to support a drawer bottom plate; and

a front end to support a drawer fastening plate and a drawer



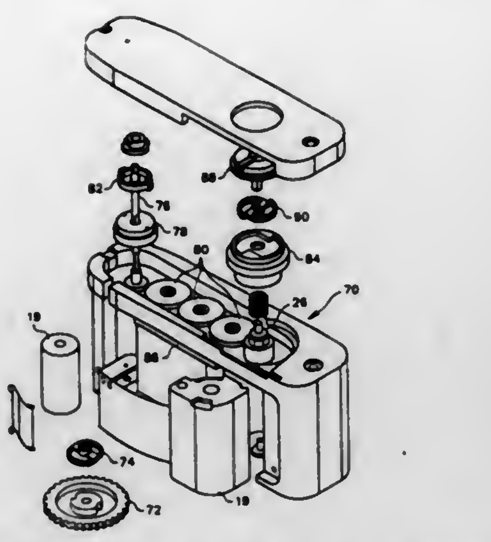
front plate, said front end having an inwardly extending vertical flange, with a lug extending rearwardly from a rear side of said vertical flange.

5,618,092
FURNITURE DRAWER CONSTRUCTION
Galen C. Doud, Everett, and Linn A. Steinbeck, Auburn, both of Wash., assignors to Hon Industries Inc., Muscatine, Iowa
Filed Jun. 23, 1995, Ser. No. 493,919
Int. Cl.⁶ A47B *88/04*
U.S. Cl. 312—348.1 **3 Claims**

1. A furniture drawer comprising:
a unitary body member formed from a flat, elongate blank of metal to define a single thickness rear wall and a pair of single thickness side walls with a ninety-degree corner defined between each side wall and said rear wall, said body member having two forwardly projecting ends;
a drawer front secured to said ends of said body member;
an indentation in said body member running transversely thereof at each corner defining lines of weakness wherein said rear wall and side walls are formed by manually bending said body member from said flat, elongate form;
a first channel formed by a portion of said single thickness side walls and rear wall longitudinally of said body member said channel projecting inwardly of said drawer and opening outwardly of said drawer such that each side wall is configured to receive a drawer slide, said channel being interrupted at said corners with 45 degree mitered notches such that when bent to form said ninety-degree corners said channel makes a smooth continuous transition interior to said drawer between the side walls and rear wall at said corners; and
a second channel formed longitudinally of said body member and opening inwardly of said drawer to receive and support a bottom panel.

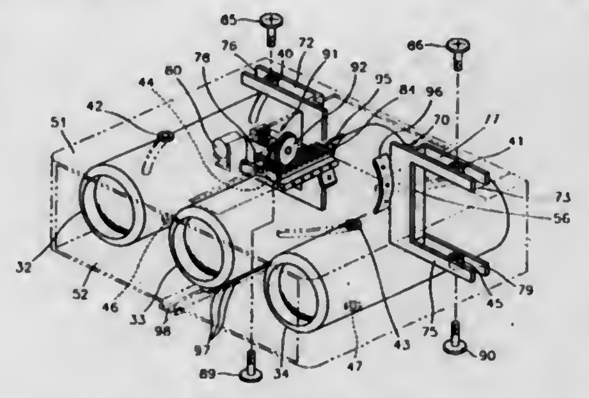
5,618,093
THRUST CARTRIDGE FILMSTRIP VIEWER
Thomas C. Merle, Rochester, and Dennis F. Tianello, Spencerport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Jun. 6, 1995, Ser. No. 469,035
Int. Cl.⁶ G03B *21/11*
U.S. Cl. 353—26 R **14 Claims**

1. A viewer for filmstrips carried in a thrust cartridge, said viewer characterized by:



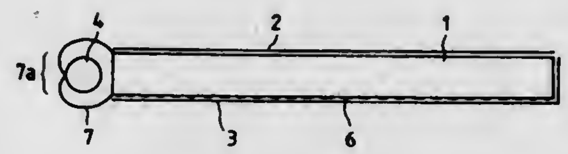
a body adapted to receive such thrust film cartridge, said body includes a load opening for transfer of thrust cartridges into and out of said body, and a light door for closing said loading opening after loading of the cartridge;
a thrust spindle for engagedly receiving a thrust cartridge spool;
a film take-up spool;
a drive for driving said thrust spindle and said take-up spool in an advance direction and for selectively driving said thrust spindle in a rewind direction;
a frame viewing station between said thrust spindle and said take-up spool for selectively receiving individual frames of a film strip for viewing;
a light path for passing light through a frame at said viewing station for viewing an image by a user; and
an interlock operative to prevent opening of said light door unless the filmstrip has been fully rewound into said cartridge.

5,618,094
PROJECTION SYSTEM
Dong-Hee Lee, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea
Filed Feb. 15, 1996, Ser. No. 601,976
Claims priority, application Rep. of Korea, Feb. 15, 1995, 95-2725
Int. Cl.⁶ G03B *21/00;* **G02B** *15/14*
U.S. Cl. 353—101 **17 Claims**



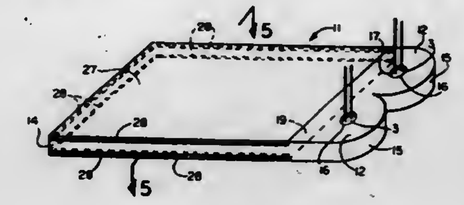
15. A projection system comprising:
a holder housing having an upper plate and a lower plate, the upper and lower plates each having a plurality of substantially longitudinally slanted guiding holes at left and right portions thereof, wherein the guiding holes form angles with respect to central lines of said upper plate and said lower plate, the upper plate having a first opening portion at a rear center and extending to a front side thereof and the lower plate having a second opening portion at a rear center thereof;
first, second, and third projecting lens holders, each provided with a projecting lens at a front side thereof, and placed in said holder housing;
movable pins at upper and lower portions of said first and third projecting lens holders and situated in corresponding longitudinally slanted guiding holes, said pins having screw holes at a center thereof and receiving screws therein;
a holder supporting plate having first and second holder brackets formed at a center portion of said holder supporting plate for supporting said second projecting lens holder, first, second, third, and fourth leg portions extending to upper portions of said upper plate and lower portions of said lower plate through said first and second opening portions and formed at left and right sides of said holder supporting plate, and guiding grooves formed at said leg portions and receiving said movable pins;
a sliding groove formed at a center of said lower plate along a longitudinal direction of said second projecting lens holder and corresponding rollers formed at a lower portion of said second projecting lens holder;
a driving motor for imparting driving power to said projecting lens holders, said driving motor being fixedly installed on a side of said upper plate of said holder housing;
a worm velocity-reducing gear and a pinion for transporting said driving power from said driving motor to said projecting lens holders; and
a rack gear formed on said second projecting lens holder and meshed with said pinion, grooves formed at sides of said rack gear and springs and ball bearings provided into said grooves,
wherein a diameter of said movable pins, a width of said longitudinally slanted guiding hole and a width of said guiding groove are the same.

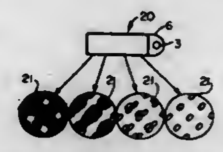
5,618,095
BACKLIGHTING DEVICE
Keiji Kashima, Saitama; Mitsuru Fukamachi, and Naoki Yoshida, both of Kanagawa, all of Japan, assignors to Tosoh Corporation, Yamaguchi, Japan
Filed Apr. 4, 1995, Ser. No. 416,001
Int. Cl.⁶ F21V *7/09*
U.S. Cl. 362—31 **12 Claims**



1. A backlighting device comprising:
a light conducting plate made of a transparent material and having at least one of a light diffusing and a light scattering function;
a rod-shaped light source disposed in proximity to at least one side face of the light conducting plate; and
a reflector surface covering the rod-shaped light source, at least part of the reflector surface being a continuous body having a shape which reflects a ray that is emitted from a light emitting point on a surface of the rod-shaped light source in a tangential direction going away from the light conducting plate back to a vicinity of the light emitting point in a plane perpendicular to a central axis of the rod-shaped light source, the continuous body of the reflector surface being formed in such a region that after being reflected back to the vicinity of the light emitting point on the surface of the rod-shaped light source, the ray does not directly reach a light entrance surface of the light conducting plate.

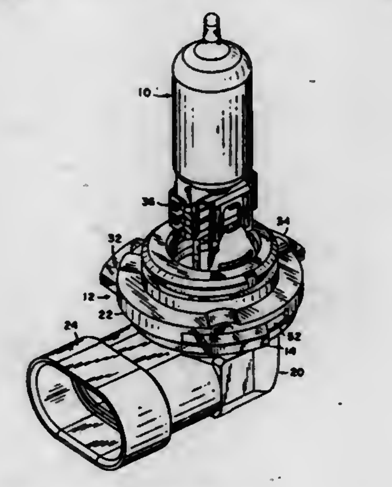
5,618,096
LIGHT EMITTING PANEL ASSEMBLIES
Jeffery R. Parker, Strongsville; Mark D. Miller, Parma, and Daniel N. Kelsch, Lakewood, all of Ohio, assignors to Lumitex, Inc., Strongsville, Ohio
Continuation of Ser. No. 495,176, Jun. 27, 1995. This application Nov. 20, 1995, Ser. No. 560,582
Int. Cl.⁶ F21V *7/04*
U.S. Cl. 362—31 **26 Claims**





1. A method of planar illumination comprising the steps of:
generating light via a light source;
directing generated light, defined by a directional component in each of first and second relatively unique axes of a cross-sectional area of an optical conductor, generally perpendicularly to the cross-sectional area such that a component of generated light along the first axis is distributed to a greater extent therealong than a component of generated light along the second axis;
receiving generated light into a generally planar optical conductor having at least one pair of generally parallel, opposed walls, the light being received at an angle relative to the opposed walls such that a significant portion thereof is reflected between the opposed walls via internal reflection; and
communicating received light through the optical conductor to a preselected pattern of irregularities associated with the optical conductor to cause light to be emitted outward therefrom.

5,618,097
ELECTRIC LAMP WITH A VARIABLY KEYED BASED
Charles M. Coushaine, Rindge, N.H., assignor to Osram Sylvania Inc., Danvers, Mass.
Filed Aug. 30, 1995, Ser. No. 520,850
Int. Cl.⁶ H01R *13/74*
U.S. Cl. 362—61 **17 Claims**

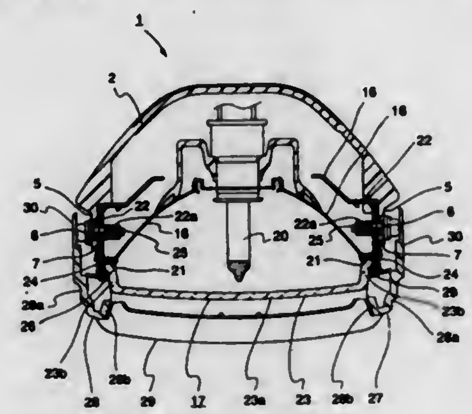


1. A keyed lamp assembly comprising:
an electric lamp;

a lamp base secured to said electric lamp for electrical connection to said lamp and for mounting said lamp in a keyed lamp fixture, said lamp base including a lamp base body and a fixed key on said lamp base body; and

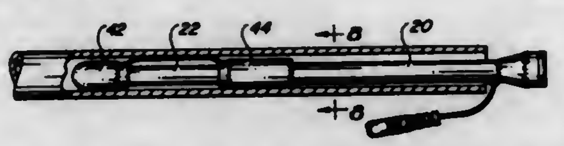
a movable key on a key carrier that is movable to at least two different positions on said lamp base body during manufacturing and is attached to said lamp base body in one of said different positions, such that said fixed and movable keys provide variable keying of said lamp assembly.

5,618,098
HEADLAMP FOR VEHICLE
Masahito Naganawa, and Shinji Karasawa, both of Shizuoka, Japan, assignors to Koito Manufacturing Co., Ltd., Tokyo, Japan
Filed Sep. 15, 1995, Ser. No. 529,056
Claims priority, application Japan, Sep. 28, 1994, 6-257260
Int. Cl.⁶ B60Q *1/02*
U.S. Cl. 362—61 **8 Claims**



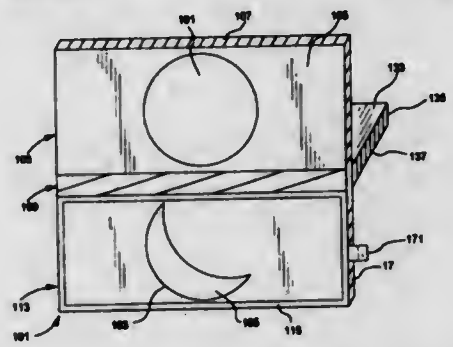
1. A headlamp for a vehicle comprising:
a lamp unit including,
a reflector having a front opening,
a lens covering said front opening of said reflector, and
a light source bulb disposed within a shell formed with said reflector and said lens; and
a lamp body supporting said lamp unit therein, said lamp body including an inward projecting portion between said lamp body and said lamp unit, wherein said inward projecting portion is formed by inwardly recessing said lamp body and said lamp unit abuts on said inward projecting portion to allow said inward projecting portion to receive a force applied to a front side of said lamp unit.

5,618,099
SIGHTING DEVICE
Michael Brubacher, 6222 Janice Wy., Scottsdale, Ariz. 85254
Filed Jul. 29, 1994, Ser. No. 283,383
Int. Cl.⁶ F41G *1/35*
U.S. Cl. 362—111 **15 Claims**



1. A light-emitting sighting device positionable in a shotgun having a bore of predetermined diameter, said device comprising:
(a) a generally elongate body having a longitudinal axis and having a front end with an aperture therein, at least two spaced apart seating means on said body substantially the diameter of the shotgun bore;
(b) biasing means on said body intermediate said seating means engageable with the shotgun bore to removably position said device in the bore with the longitudinal axis of said body parallel to and spaced from the axis of the bore;
(c) light-emitting means in said body adapted to direct light through said aperture; and
(d) switch means for selectively activating said light-emitting means.

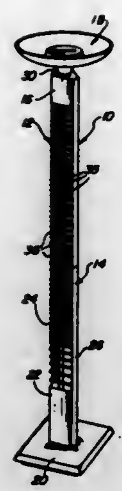
5,618,100
SOLAR POWERED FLAT LAMP NIGHT LIGHT
Kenneth P. Glynn, Raritan Township, Hunterdon County, N.J., assignor to Ideal Ideas, Inc., Flemington, N.J.
Filed Mar. 4, 1996, Ser. No. 607,998
Int. Cl.⁶ F21L *11/00*
U.S. Cl. 362—183 **20 Claims**



1. A solar cell powered flat night light which comprises:
a) a main body having a vertical upper portion connected to, a middle horizontal section and a vertical lower portion;
b) said vertical upper portion having a light receiving side, said light receiving side having a means for housing and retaining a solar cell such that solar energy may be received and an electrical current generated thereby;
c) said horizontal middle section having an upper surface, an edge and a lower surface and having a means for maintaining a placement of the solar cell powered flat night light on a support;
d) said vertical lower portion having a light illuminating side, said light illuminating side having a means for housing and retaining a flat, electroluminescent sheet light source illuminating an area when said electrical current is supplied to the electroluminescent sheet light source;
e) means for placing said vertical upper portion on said upper surface such that said solar energy can be received and said vertical lower portion beneath said lower surface such that said area may be illuminated;
f) said main body having an energy retaining device receiving and storing said electrical current; and
g) means for electrically connecting said solar cell to said energy retaining device and to said flat, electroluminescent sheet light source to supply said electrical current.

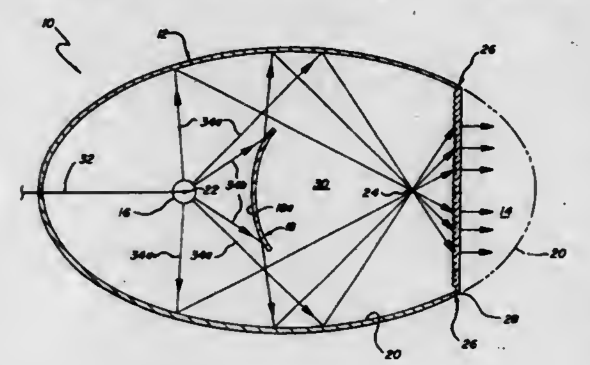
5,618,101
COMBINATION FLOOR LAMP AND COMPACT-DISC STORAGE RACK
John Yeh, 660 S. Aberdeen, Anaheim Hills, Calif. 92807
Continuation-in-part of Ser. No. 82,489, Jun. 28, 1993, which is a continuation-in-part of Ser. No. 1,257, Nov. 9, 1992, Pat. No. Des. 344,360. This application Sep. 26, 1994, Ser. No. 312,033
Int. Cl.⁶ F21S *1/02*
U.S. Cl. 362—253 **9 Claims**

1. In combination, a floor lamp having storage racks wherein the improvements comprise:



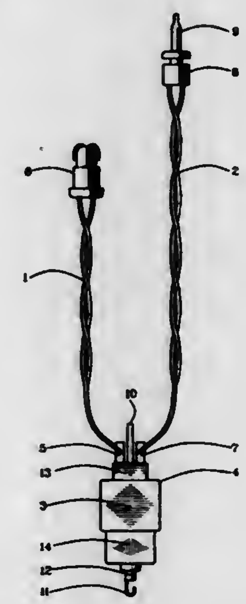
a lamp having a lamppost vertically mounted to a support base, said lamppost being defined by an upper frame section having a top, a bottom and a lower frame section having a top and a bottom, wherein said bottom of said lower frame section is secured to said support base;
a light fixture mounted at said top of said upper frame section secured to said lower frame;
a compact-disc storage means formed in said upper frame section and in said lower frame section, whereby said compact-disc storage means extends along a vertical length of said lamppost,
said compact-disc storage means defining storage racks having a multiplicity of spaced slots, each arranged to removably receive and store an individual compact disc therein, said slots being defined by a multiplicity of rib members which are spaced apart from each other; and
wherein said lamppost is formed with a front wall defined by a substantially triangular cross-sectional configuration.

5,618,102
PLASMA DISCHARGE LAMP
Richard M. Ferrell, Livonia, Mich., assignor to ADAC Plastics, Inc., Grand Rapids, Mich.
Filed Jun. 7, 1995, Ser. No. 475,225
Int. Cl.⁶ B60Q *1/04*
U.S. Cl. 362—303 **14 Claims**



1. A lamp comprising:
a reflector defining a reflective surface having a focal point and a central axis passing through the focal point;
a cover coacting with the reflector to define a lamp chamber;
a plasma discharge light source positioned in the chamber at the focal point and including an elongated tube positioned transversely of the central axis and passing through the focal point; and
a deflector device having a reflective surface located in the chamber between the light source and the cover in a position to intersect and redirect light rays emanating from the tube prior to passage of the light rays through the cover, the deflector operating to ensure that all light rays emanating from the tube are reflected off at least one reflective surface before passing through the cover to thereby reduce the RF characteristics of the light rays.

5,618,103
MOTORIZED AND LIGHTED DECORATIVE ORNAMENTS
David A. Fussell, 9115 June La., Summer Island, St. Agustine, Fla. 32086
Filed Oct. 5, 1994, Ser. No. 318,129
Int. Cl.⁶ F21S *13/00*
U.S. Cl. 362—386 **9 Claims**



1. A rotative and lightable ornament apparatus comprising:
at least one electrical outlet and at least one electrical motor attached to an ornament base,
an electrical input in electrical communication with a current distributing means that is in electrical communication from the electrical input to the electrical motor and to the electrical outlet selectively.
the current distributing means being a first and a second circuit bifurcation in electrical communication from the electrical input to the electrical motor and to at least one electrical outlet connection, and
the electrical outlet connected to the at least one electrical outlet connection being sized and shaped to convey electrical current from the current distributing means to at least one miniature electrical light.

5,618,104

METHOD FOR COOLING WHITE CEMENT CLINKER

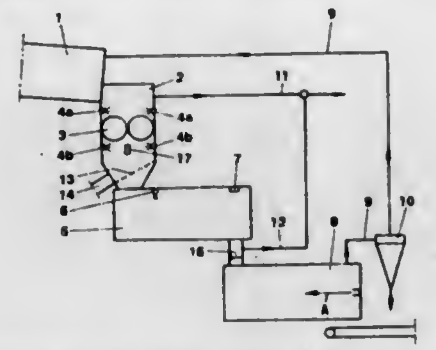
Günther Koeberer; Egbert Steffen, both of Hamburg; Gerhard Bomba, Braunschweig; Franz-Josef Grothaus, Ennigerloh, and Gerhard Zakel, Warendorf, all of Germany, assignors to Krupp Fördertechnik GmbH, Duisburg, Germany

Filed Apr. 24, 1995, Ser. No. 427,483

Claims priority, application Germany, Apr. 23, 1994, 44 14 292.7

Int. Cl.[6] **B28C** *5/46;* **C04B** *2/10*

U.S. Cl. 366—7 **11 Claims**



1. A method of cooling white cement clinker sintered in a rotary kiln, comprising the following steps:

(a) providing first, second and third cooling stages;

(b) providing a comminuting device in said first cooling stage and a mixing and conveying device in said second cooling stage;

(c) introducing the white cement clinker from the rotary kiln into a first cooling stage;

(d) comminuting the white cement clinker in the first cooling stage;

(e) quenching the white cement clinker with a coolant in the first cooling stage in an oxygen-poor environment to a mean temperature of approximately between 650° C. and 750° C.;

(f) introducing the white cement clinker from the first cooling stage into a second cooling stage;

(g) mixing and simultaneously conveying the white cement clinker in said second cooling stage in an oxygen-poor environment for a period of at least 15 seconds for obtaining a homogeneous mixture of particles of the white cement clinker and for further cooling the white cement clinker in said second cooling stage to a temperature of approximately between 550° C. and 650° C.;

(h) after step (g), introducing the white cement clinker into a third cooling stage; and

(i) cooling the white cement clinker in the third cooling stage by an air stream.

5,618,105

METHODS OF MIXING INGREDIENTS IN A BAG

Denny D. Baker, 1331 Piper Dr., New Brighton, Minn. 55112, assignor to Denny D. Baker, New Brighton; Richard Mrocek, and Sharon Mrocek, both of White Bear Lake, all of Minn.

Division of Ser. No. 167,780, Dec. 15, 1993, Pat. No. 5,497,913. This application Dec. 1, 1995, Ser. No. 565,971

Int. Cl.[6] **B01F** *13/00*

U.S. Cl. 366—130 **5 Claims**

1. A method of mixing ingredients comprising the steps of:

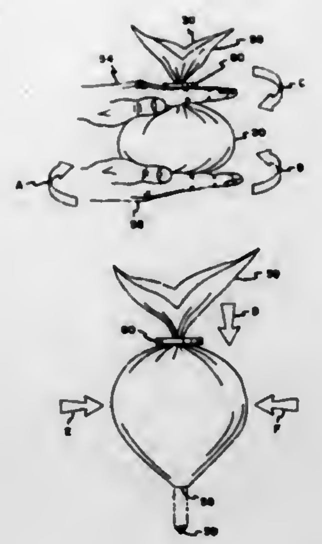
providing a bag;

filling the bag with ingredients to be mixed through an open end of a bag;

closing the open end of the bag to define an enclosed chamber including the ingredients to be mixed;

expelling air from the bag through perforations in the bag disposed between the open end of the bag and the end opposite the open end;

mixing the ingredients by squeezing the bag;



forming an opening in the bag at an end disposed away form the open end; and

squeezing the bag to dispense the mixed ingredients through the opening.

5,618,106

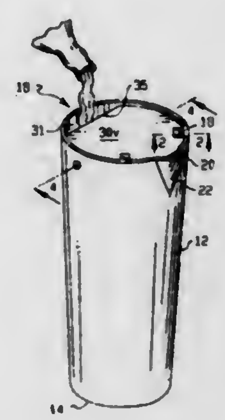
BEVERAGE MIXING AND DISPENSING CONTAINER

John T. Madera, 278 Helmsdale Dr., Henderson, Nev. 89014

Filed Jan. 22, 1996, Ser. No. 599,452

Int. Cl.[6] **B01F** *15/02*

U.S. Cl. 366—130 **5 Claims**



1. A drink making receptacle for dispensing and mixing beverages comprising:

a) a container having a bottom end, a container wall attached to said bottom end, and an open top end having a front portion and a back portion;

b) a lid including a back portion covering part of the open top end back portion and forming an aperture and a front portion covering substantially all of the front portion of said open top end;

c) first rotation means mounted on said lid;

d) second rotation means mounted on the container for cooperation with the first rotation means to permit the lid to rotate from a closed to open position;

e) stop means on the container to stop the lid when rotated to its closed position; and

f) spring means biasing said lid toward its closed position against such stop means.

5,618,107

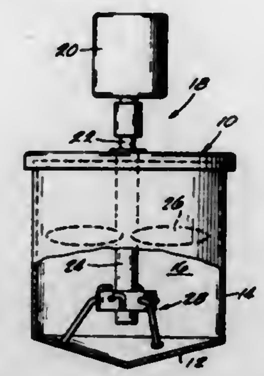
BEARING ASSEMBLY FOR AGITATOR SHAFT

Steve A. Bartsch, Marshfield, Wis., assignor to A&B Process Systems Corporation, Stratford, Wis.

Filed Jun. 7, 1996, Ser. No. 659,869

Int. Cl.[6] **B01F** *7/16*

U.S. Cl. 366—279 **14 Claims**



1. A bearing assembly for supporting one end of a rotatable shaft having an end portion extending toward and spaced from a support surface, said bearing assembly comprising

a mounting sleeve surrounding and spaced radially outwardly from the end portion of the shaft, said mounting sleeve having an inner periphery and opposed first and second edges with said first edge facing the support surface;

support means connected between said mounting sleeve and the support surface for supporting said mounting sleeve at a location where said first edge is spaced away from the support surface a sufficient distance to afford access to the end portion of the shaft through the space between said first edge and the support surface;

an annular bearing slidably mounted on the end of the shaft;

a bearing housing having an outer periphery smaller than the inner periphery of said mounting sleeve, said bearing housing being disposed inside said mounting sleeve and including a bore receiving said bearing to provide a bearing/bearing housing subassembly; and

locking means on said bearing housing and said mounting sleeve which cooperate to afford longitudinal movement of said subassembly relative to the shaft and to said mounting sleeve between an unlocked position where said subassembly can be moved longitudinally relative to the shaft into and out of said mounting sleeve and a locked position inside said mounting sleeve where said bearing housing is restrained against longitudinal movement relative to the shaft, the end of the shaft being sufficiently spaced from the support surface so that, when in the unlocked position, said subassembly can be withdrawn from said mounting sleeve and completely off the end of the shaft and moved away from the shaft through the space between said mounting sleeve and the support surface.

5,618,108

TEMPERATURE DISTRIBUTION MEASURING APPARATUS USING AN OPTICAL FIBER

Yukio Sai, Tokorozawa; Hiroyuki Kaneko, and Yuji Miyane, both of Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

Division of Ser. No. 78,751, Jun. 16, 1993, Pat. No. 5,449,233. This application May 4, 1995, Ser. No. 434,948

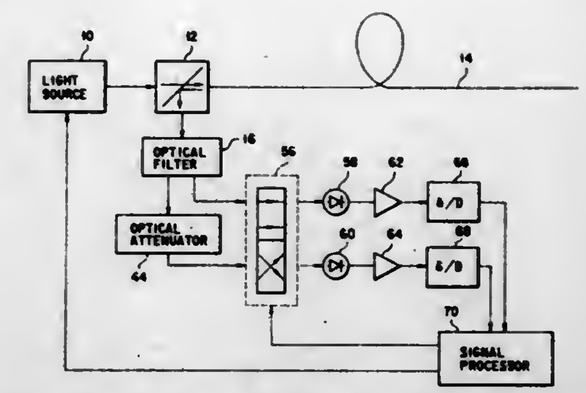
Claims priority, application Japan, Jun. 16, 1992, 4-156772; Jul. 22, 1992, 4-195161

Int. Cl.[6] **G01K** *11/32*

U.S. Cl. 374—161 **5 Claims**

1. An apparatus for measuring a temperature distribution along an optical fiber, comprising:

light source means for inputting pulsed-light into said optical fiber;



optical filter means for receiving backward Raman-scattered light of the pulsed-light generated in said optical fiber, and extracting anti-Stokes' light and Stokes' light from the backward Raman-scattered light;

attenuation means for attenuating the intensity of the Stokes' light extracted by said optical filter means;

optical switching means, having a first input port for receiving the anti-Stokes' light extracted by said optical filter means, a second input port for receiving the intensity-attenuated Stokes' light output from said attenuation means, a first output port, and a second output port, the optical switching means transmitting the anti-Stokes' light and the intensity-attenuated Stokes' light to the first output port and the second output port in a first switching position and transmitting the intensity-attenuated Stokes' light and the anti-Stokes' light to the first output port and the second output port in a second switching position;

first light-receiving means for detecting the light output from the first output port of said optical switching means to output a first analog signal representing the intensity of the light output from said first output port;

second light-receiving means for detecting the light output from the second output port of said optical switching means to output a second analog signal representing the intensity of the light output from said second output port;

first analog-to-digital conversion means for converting the first analog signal output from said first light-receiving means into a first digital signal;

second analog-to-digital conversion means for converting the second analog signal output from said second light-receiving means into a second digital signal; and

calculation means for calculating a temperature distribution along said optical fiber on the basis of the first and the second digital signals from said first analog-to-digital conversion means and said second analog-to-digital conversion means.

5,618,109

SURFACE TEMPERATURE PROBE WITH UNIFORM THERMOCOUPLE JUNCTION AND OVERTRAVEL PROTECTION

David P. Culbertson, Bristol, Wis., assignor to Claud S. Gordon Company, Richmond, Ill.

Continuation-in-part of Ser. No. 73,850, Jun. 8, 1993, Pat. No. 5,370,459. This application Dec. 2, 1994, Ser. No. 349,483

Int. Cl.[6] **G01K** *1/14;7/04*

U.S. Cl. 374—179 **18 Claims**

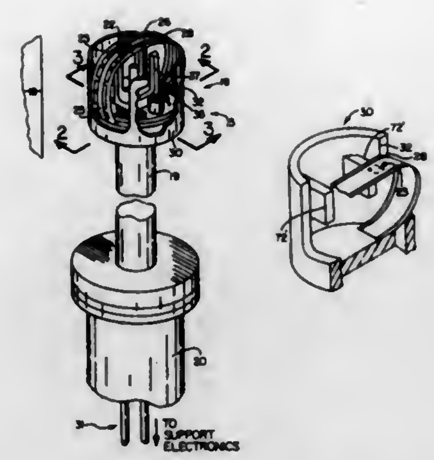
1. A temperature probe comprising:

a spring flexure for providing a spring force in relation to a surface to be measured, said spring flexure undergoing deflection upon being pressed against said surface;

a temperature sensing element relative to said spring flexure; and

at least one stop towards which said spring flexure is deflected;

wherein under normal operating conditions a space exists between said stop and said spring flexure, said stop limits an amount of travel of said spring flexure to prevent damage to



said temperature probe, and a surface area of said stop adjacent said spring flexure is substantially reduced so as to help minimize thermal radiation effects on the temperature sensing element.

5,618,110

COMBINATION BEACH TOWEL AND TOTE BAG WITH BACKPACK

William Sullivan, San Tecla, El Salvador, assignor to Fashion Towel Imports Corp., Miami, Fla.

Continuation-in-part of Ser. No. 375,532, Jan. 19, 1995, Pat. No. 5,454,643. This application Oct. 2, 1995, Ser. No. 538,253

Int. Cl.^{6} B65D *30/10*

U.S. Cl. 383—4 **4 Claims**

1. A beach towel and integrated tote bag combination having a first mode of use as a towel and a second mode of use as a tote bag, wherein said towel is stored in said tote bag in said second mode comprising:

a substantially rectangular fabric sheet, said sheet sized substantially for use as a beach towel and having a length of approximately 60 inches and a width of approximately 30 inches, said sheet having one side with velour texture thereon;

a first substantially rectangular panel having a length approximately one-third the length of said fabric sheet and a width approximately one-half the width of said sheet, said first panel fastened along three sides of said first panel to a corner section of said fabric sheet and occupying one-sixth the surface area of said fabric sheet;

a second fabric panel attached to a predetermined corner of said fabric sheet flush and adjacent said first panel and occupying one-sixth the surface area of said sheet, said second panel having length and width dimensions substantially equivalent to the length and width of said first panel, said second panel being fastened along three sides to said fabric sheet;

said first and second panels having an opening and forming a bag container;

said first panel and said second panel having edges that are folded over, forming a rope receiving channel along the top edge of said first and second panels; and

a rope means disposed within said first and second panel channel, said rope means having first and second ends that can be fastened together.

5,618,111

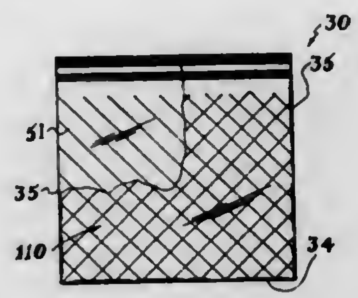
FLEXIBLE THERMOPLASTIC CONTAINERS HAVING VISUAL PATTERN THEREON

Jose Porchia, Midland, Mich.; Karen E. McBride, Indianapolis, Ind.; Brian C. Dais, Sanford, Mich.; D. Lyn Farrelly, and Robert R. Steele, both of Indianapolis, Ind., assignors to DowBrands L.P., Indianapolis, Ind.

Continuation of Ser. No. 355,744, Dec. 14, 1994, abandoned, which is a continuation of Ser. No. 84,654, Jun. 28, 1993, abandoned. This application May 15, 1996, Ser. No. 648,458

Int. Cl.^{6} B65D *33/16;30/10*

U.S. Cl. 383—63 **15 Claims**



1. A container comprising a single clear film web sheet having a fold therein, said folded sheet having a bottom at said fold, a first sidewall and second sidewall, side seams and an open top defining a container, wherein the sheet has a first visual pattern scored or impressed into said film sheet such that the same said first visual pattern is on the first sidewall and the second sidewall, said first sidewall and second sidewall being adjacent to each other, thereby bringing the first visual pattern on the first sidewall in juxtaposition with the first visual pattern on the second sidewall in a non-mirror image configuration, whereby the container has a distinct second visual pattern different from the first visual pattern visible through each of the sidewalls of the containers.

5,618,112

BREAK-OPEN CARD WITH TAMPER PROOF SEAL

John G. Lovell, Knoxville, Tenn., assignor to Stuart Enterprises, Inc., Council Bluff, Iowa

Filed Jul. 5, 1995, Ser. No. 498,092

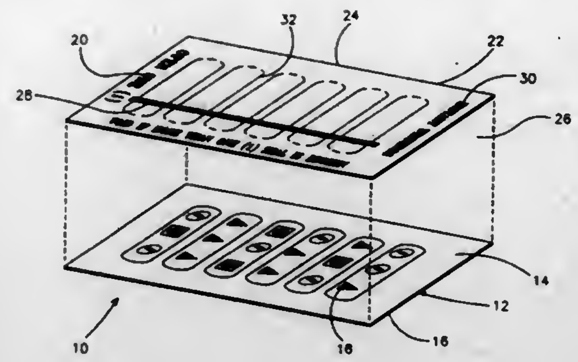
Int. Cl.^{6} B42D *15/00*

U.S. Cl. 283—103 **12 Claims**

1. A break-open card with tamper proof seal to readily detect surreptitious tampering by surgical or related instruments, said break-open card with tamper proof seal comprising:

a first substrate having a first surface and a second surface;

a second substrate having a top surface and a bottom surface, said second substrate defining at least one perforation, and



said bottom surface of said second substrate securably affixed to said first surface of said first substrate; and

at least one tamper proof seal disposed on the top surface of the second substrate such that said at least one tamper proof seal crosses said at least one perforation to secure the break-open from surreptitious tampering and fragment upon manipulation.

5,618,113

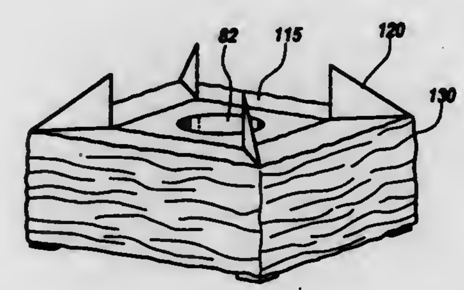
BULK CONTAINER WITH GLUED BOTTOM

Norwin C. Derby, Sherman, Tex., assignor to Super Sack Mfg. Corp., Dallas, Tex.

Division of Ser. No. 160,229, Dec. 2, 1993, Pat. No. 5,490,828. This application Sep. 29, 1995, Ser. No. 536,217

Int. Cl.^{6} B65D *30/10*

U.S. Cl. 383—121 **3 Claims**



1. A flexible intermediate bulk container having a sidewall and bottom wall, said container manufactured by the process comprising the steps of:

(a) supplying a sidewall blank having a substantially hollow tubular configuration, said sidewall blank having an upper portion and a lower portion and an inside and an outside;

(b) supplying a bottom wall of predetermined horizontal cross-sectional size and shape;

(c) placing the bottom wall on a raised work area

(d) applying adhesive to the bottom wall

(e) positioning the sidewall blank over the raised work area and lowering the sidewall blank such that the lower portion of the sidewall blank is located below the work area and the upper portion is located above the work area;

(f) forming fins from the upper portion of the sidewall blank;

(g) pre-sewing the fins prior to securing the sidewall blank to the bottom wall;

(h) securing the sidewall blank to the bottom wall by folding the upper portion of the sidewall blank over the bottom wall, such that the inside of the blank contacts the adhesive located on the bottom wall; and

(i) securing the fins to the outside of the folded over upper portion of the sidewall blank.

5,618,114

HARDENED GUIDE RAIL FOR LINEAR GUIDE APPARATUS

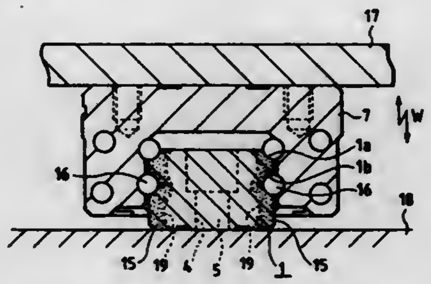
Masayuki Katahira, Saitama, Japan, assignor to NSK. Ltd., Tokyo, Japan

Filed Sep. 15, 1995, Ser. No. 528,705

Claims priority, application Japan, Sep. 16, 1994, 6-221880

Int. Cl.^{6} F16C *29/06*

U.S. Cl. 384—45 **2 Claims**



1. A guide rail for a linear guide apparatus including a plurality of rolling elements and a slider, the guide rail comprising:

a pair of rolling grooves formed in side surfaces of the guide rail for supporting the slider through the rolling elements, the rolling-element rolling grooves axially extending in parallel with each other;

a pair of hardened surface layers formed continuously over a length of the side surfaces measured perpendicular to the rolling grooves by subjecting the side surfaces to induction hardening; and

a soft portion existing between the hardened surface layers and having the same length as the hardened surface layers, a hole being formed in the soft portion for mounting the guide rail.

5,618,115

METHOD OF OPERATING A ROTATING ASSEMBLY

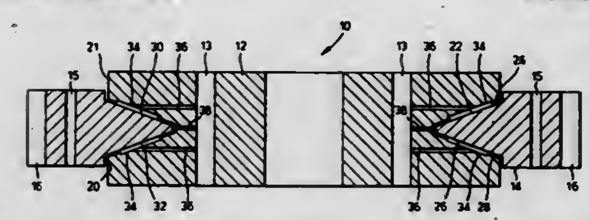
David E. Yates, Evesham, England, assignor to Rolls-Royce Power Engineering plc, Newcastle, England

Filed Nov. 24, 1995, Ser. No. 562,622

Claims priority, application United Kingdom, Dec. 22, 1994, 9425900; Jul. 19, 1995, 9514767

Int. Cl.^{6} F16C *32/06*

U.S. Cl. 384—110 **6 Claims**



1. A method of operating a rotating assembly comprising concentric inner and outer annular members having an at least one hydrostatic bearing therebetween, each bearing incorporating axially spaced apart passageways between confronting bearing surfaces on the inner and outer members, the bearing surfaces being capable of reacting axial loads, the method comprising the steps of supplying a flow of pressurised fluid to the passageways to separate the confronting surfaces of the inner and outer members to permit relative rotation of the annular members and then locking the bearing by removal of the flow of pressurised fluid from one of the passageways whilst maintaining the flow of pressurised fluid to the other passageway so as to hold at least one of the confronting surfaces on the inner annular member in contact with at least one of the confronting surfaces on the outer annular member, friction between the confronting surfaces held in contact preventing rotational movement of the members, the flow of pressurised fluid preventing separation of the surfaces in contact under the application of a moment.

5,618,116

SEALED THRUST BEARING

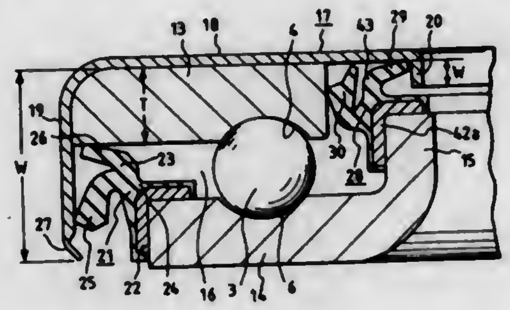
Shuichi Ishikawa, Kanagawa, Japan, assignor to NSK Ltd., Tokyo, Japan

Filed Jun. 1, 1995, Ser. No. 457,460

Claims priority, application Japan, Jun. 3, 1994, 6-122323

Int. Cl.⁶ F16C *33/76*

U.S. Cl. 384—607 **12 Claims**



1. A sealed thrust bearing, comprising:

an annular-shaped outer race including an outer raceway on a surface thereof;

an annular-shaped inner race including an inner raceway on a surface thereof and a cylindrical inner flange formed in an inner peripheral edge of the inner race and projecting from a side of the inner raceway;

a plurality of rolling elements interposed rollably between the outer and inner raceways, and bearing a load between the outer race and the inner race in a thrust direction of the sealed thrust bearing;

an annular-shaped outer seal ring fixedly fitted to an outer peripheral edge of the inner race;

an annular-shaped inner seal ring fixedly fitted to an end edge portion of the inner flange of the inner race; and

a case formed in an annular shape and fixedly fitted to the outer race, the case including:

an annular-shaped flat portion;

an outer cylindrical portion formed in an outer peripheral edge of the flat portion; and

an inner cylindrical portion formed in an inner peripheral edge of the flat portion and having an outside diameter that is smaller than an inside diameter of the outer race;

wherein the outer cylindrical portion and the inner cylindrical portion are bent in the same direction, and fitted over the outer race so as to cover the outer seal ring and the inner seal ring, respectively, wherein the outer seal ring comprises an elastic member including a first outer seal lip in sliding contact with an inner peripheral surface of the outer cylindrical portion of the case and a second outer seal lip in sliding contacting with a surface of the outer race that is close to an outer periphery of the outer race, each of the first and the second outer seal lips extending radially in a diametrical cross sectional direction of the sealed thrust bearing from the outer peripheral edge of the inner race inside the outer cylindrical portion, wherein the inner seal ring comprises an elastic member including a first inner seal lip in sliding contacting with an inner peripheral surface of the flat portion of the case and a second inner seal lip in sliding contact with an inner peripheral edge of the outer race, each of the first and the second inner seal lips extending radially in the diametrical cross sectional direction from the end edge portion of the inner flange inside the inner cylindrical portion.

5,618,117

ROLL PAPER TYPE RECORDING UNIT

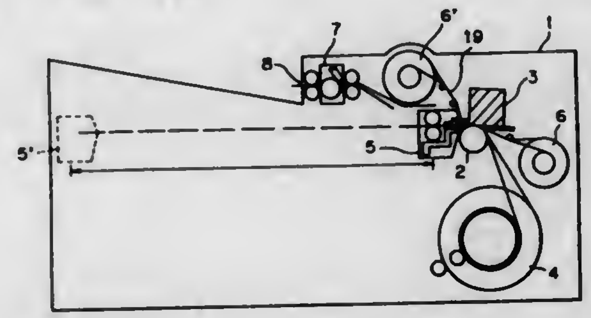
Naoki Yoshida, and Toshiharu Tamura, both of Tokyo, Japan, assignors to Altech Company Limited, Tokyo, Japan

Filed Aug. 28, 1995, Ser. No. 520,262

Claims priority, application Japan, Aug. 31, 1994, 6-206826

Int. Cl.⁶ B41J *2/325*

U.S. Cl. 400—120.04 **8 Claims**



8. A printer/recording system comprising:

a recording unit;

a paper supply drum rotatably mounted on said recording unit;

roll-type recording paper wound around said paper supply drum;

a platen roller rotatably mounted on said recording unit and receiving said roll-type recording paper from said paper supply drum;

a recording head means mounted on said recording unit and for printing/recording on said roll-type paper as said roll-type paper passes between said recording head means and said platen roller;

roll feed means reciprocatingly mounted on said recording unit and for receiving said roll-type paper from said recording head means and said platen roller, said roll feed means reciprocatingly moving said roll-type paper along a reciprocation path between a first position adjacent said recording head means and a second position spaced from said recording head means, a location of said reciprocation path, and said first and second positions being inside said recording unit;

clamp means movable with said roll feed means and for catching and releasing an end of said roll-type recording paper, said clamp means moving with said end of said roll-type recording paper along said reciprocation path;

cutter means stationarily mounted on said recording unit and for cutting said roll-type paper, said cutter means being positioned adjacent said first position of said roll feed means;

discharge feed means positioned on said roll feed means and for feeding said roll-type paper from said clamp means to said cutter means when said roll feed means is in said first position;

discharge port means on said recording unit and for discharging said roll-type paper from said cutter means to outside said recording unit, said discharge port means discharging the roll-type paper from a position adjacent said cutter means and said first position, said discharge port means discharging said roll-type paper in a direction substantially parallel to, and adjacent with, said reciprocation path.

5,618,118

IMPACT PRINTER AND RIBBON CASSETTE

Yoshikane Matsumoto; Toshio Hiki; Shingo Nakahara; Kohichi Yageta; Hiroyuki Kurosawa, and Kohki Kushima, all of Hitachinaka, Japan, assignors to Hitachi Koki Co., Ltd., Tokyo, Japan

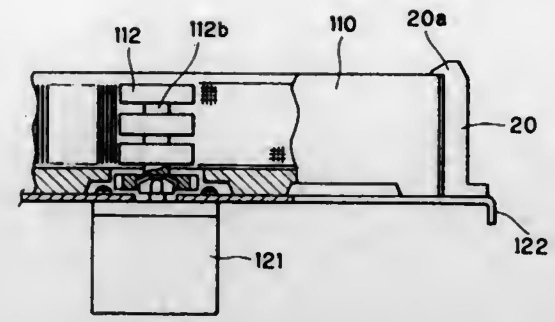
Filed Jun. 14, 1995, Ser. No. 490,150

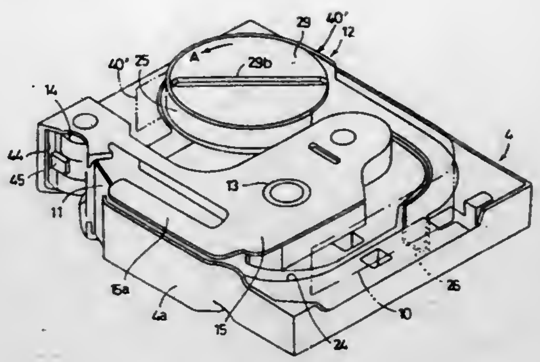
Claims priority, application Japan, Jun. 30, 1994, 6-149349

Int. Cl.⁶ B41J *32/02*

U.S. Cl. 400—208 **4 Claims**

1. A printer and a ribbon cassette, the printer comprising:





a mourning base for detachably mourning the ribbon cassette; and

a motor located in the mounting base having a motor shaft and a motor gear attached to said motor shaft protruding from the mounting base;

the ribbon cassette comprising:

a ribbon cassette housing;

an ink ribbon housed in the ribbon cassette housing;

a roller shaft located within said ribbon cassette housing;

a drive roller for transporting the ink ribbon rotatably disposed about said roller shaft; and

a roller gear attached to an end of the roller shaft for engaging the motor gear when the ribbon cassette is mounted on the mounting base,

the printer further comprising first position-determining means adjacent to the motor gear for determining a position of said ribbon cassette, and

the ribbon cassette further comprising second position-determining means for engaging the first position-determining means when the ribbon cassette is mounted on the mounting base,

the printer further comprising a cassette guide for guiding attachment and detachment of the ribbon cassette located on the mounting base; and

the ribbon cassette further comprising a guide member, working in association with the cassette guide, for guiding the ribbon cassette in a direction perpendicular to the motor shaft for mounting the ribbon cassette on the mounting base,

wherein the printer further comprises a ribbon sensor for detecting movement of the ink ribbon and positioned so that the ink ribbon is brought into contact with said ribbon sensor when the ribbon cassette is guided in said direction perpendicular to the motor shaft.

5,618,119

CASSETTE FOR PRINTED TAPE AND METHOD OF PRINTING

Susumu Misu, Kuwana, and Takashi Higashi, Nagoya, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Aug. 17, 1995, Ser. No. 516,106

Claims priority, application Japan, Sep. 28, 1994, 6-233673

Int. Cl.⁶ B41J *35/28*

U.S. Cl. 400—208 **17 Claims**

1. A cassette case housing an ink ribbon and being removably attached into a main body of a printed tape producing apparatus, the apparatus including a print section and a platen, said cassette case comprising:

a tape case container section to which a tape case housing a print tape is removably attached;

a guide groove through which the print tape is guided when the tape case is attached therein, the tape case including a guide groove section linking with the guide groove of the cassette case, the guide groove and the guide groove section defining a tape path for the print tape, wherein at least a part of the tape path for the print tape is open so that the print tape can be accessed from outside.

5,618,120

RECORDING APPARATUS HAVING MEANS FOR DETECTING THE POSITIONS OF A RECORDING MEDIUM

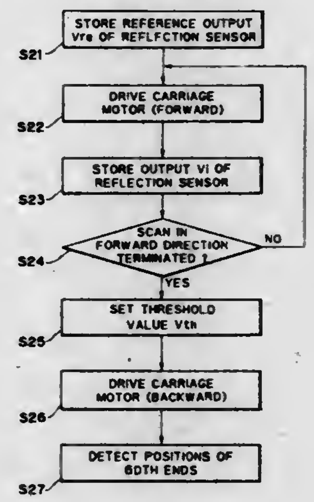
Eiji Ishikawa, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 918,046, Jul. 24, 1992, abandoned. This application Aug. 22, 1994, Ser. No. 293,419

Claims priority, application Japan, Jul. 29, 1991, 3-210484

Int. Cl.⁶ B41J *29/42*

U.S. Cl. 400—708 **7 Claims**



1. A recording apparatus having detecting means for detecting the presence of a recording medium, the detecting means comprising:

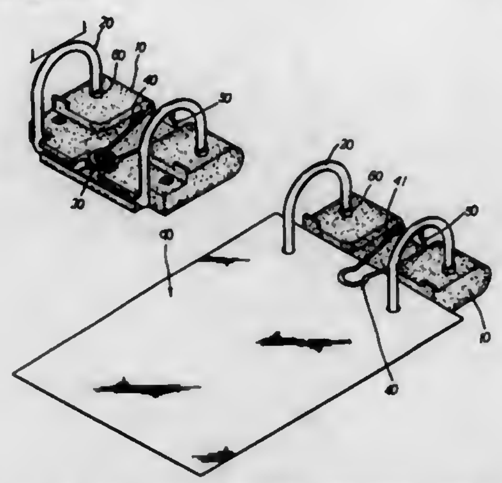
measuring means for measuring the reflective luminous energy of a recording medium and of means for holding the recording medium;

means for holding data indicative of the measured reflective luminous energy of the holding means and data indicative of the measured reflective luminous energy of the recording medium;

determining means for determining whether or not said recording apparatus is capable of receiving data from a data output device; and

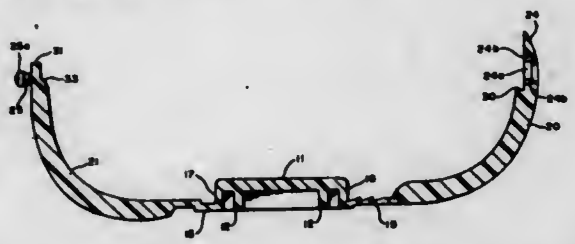
setting means for setting a threshold value utilized to discriminate said recording medium and said holding means on the basis of both of said data, the setting means performing setting in a condition that said determining means determines that said recording apparatus is capable of receiving data from said data output device.

5,618,121
FILE CLIP WITH PUNCHING FUNCTION
Walter W. Hsu, Yinlin Hsien, Taiwan, assignor to Welter's Co., Ltd., Yinlin Hsien, Taiwan
Filed Sep. 28, 1995, Ser. No. 535,959
Int. Cl.[6] B42F *3/04*
U.S. Cl. 402—1 **2 Claims**



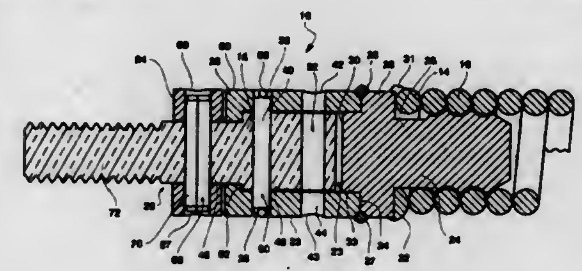
1. A file clip with punching function, comprising a base board, a paper hanging member, a leaf spring for fixing the paper hanging member, a paper clip member, two locating springs for locating the paper clip member, a wave spring, two punching rods, two extension springs and two transparent plastic caps, wherein:
the base board is formed with a pivot channel at rear end for pivotally receiving the paper hanging member, at an upper middle section of the rear end of the base board being formed a fixing recess for fixing the paper hanging member, a fixing dent being formed in front of the fixing recess, two fixing holes being formed on two sides of the rear end of the base board for fixing the file clip, two stopper blocks being disposed on two sides of the upper face of the base board and a notch being formed at a middle section of the front end of the base board, a slit being formed at a middle section of inner side of the notch, two locating channels being respectively formed on two sides of the notch for pivotally connecting with the paper clip member, two punching holes being formed on two sides of the upper face of the front end of the base board, two punching seats extending downward from the punching holes, a cavity being formed at a top edge of each punching seat and a through hole being formed on a bottom face thereof, two engaging tenons being disposed on the bottom face of the base board on outer sides of the punching seats;
two punching sections are formed at two ends of the paper hanging member and a lug section is formed at a middle section thereof;
the leaf spring is formed with a rivet hole at one end;
the wave spring is formed with two fixing circles at two ends and a depression hanging hook at a middle section;
the punching rod is hollow, having an upper large diameter section and a lower small diameter section, an annular groove being formed on a lower portion of the large diameter section and an annular rib being formed on a lower portion of the small diameter section;
the plastic cap is formed with a circular sink, an annular groove being formed on upper inner wall of the circular sink; and
when assembled, the punching rods are first fitted into the punching holes of the base board with the small diameter sections passing through the through holes of the punching seats, an extension spring being fitted around the small diameter section of each punching rod and a plastic cap being fitted around the bottom end of the small diameter section with the annular rib engaged in the annular groove of the circular sink of the plastic cap, the fixing circles of the wave spring being fitted on the engaging tenons of the base board with the depression hanging hook extending out of the slit of the notch of the base board, two ends of the wave spring being engaged in the cavities of the punching seats, the lug section of the paper hanging member being positioned in the fixing recess of the base board, the leaf spring being riveted in the fixing dent of the base board by means of the rivet hole to press against and fix the lug section of the paper hanging member, two ends of the paper clip member being fitted with two locating springs and then fitted into the locating channels on two sides of the notch, the plastic caps being depressed to drivingly shift the punching rods upward, making the extension springs contracted by the plastic caps, the two ends of the wave spring being engaged in the annular grooves of the large diameter section of the punching rods so that the punching rods are fixed and the extension springs are fixed in a contracted state, the punching sections of the two ends of the paper hanging member being inserted into the upper openings of the punching rods by a certain depth.

5,618,122
MOLDED PLASTIC ONE-PIECE LOOSE-LEAF BINDER RING STRUCTURE
Arthur T. Constantine, Niantic, Conn., assignor to C-Lock, Inc., Stamford, Conn.
Continuation-in-part of Ser. No. 4,421, Feb. 4, 1993, Pat. No. Des. 356,112. This application Mar. 3, 1995, Ser. No. 397,906
Int. Cl.[6] B42F *3/02*
U.S. Cl. 402—22 **10 Claims**



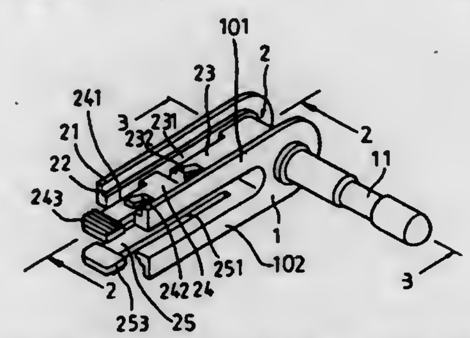
1. A molded plastic one-piece loose-leaf binder ring structure for binding loose perforated sheets and book pages and for use in binders and notebooks comprising:
an elongated base plastic strip made of a flexible molded plastic;
said base strip having integral longitudinal ribs rigidifying the strip;
said base strip having two opposite longitudinal side edges each having integral therewith plastic flexible lugs spaced longitudinally on the base strip and extending outwardly laterally therefrom;
said flexible lugs being paired on opposite side edges of the base strip;
a plurality of ring-forming paired curved arms each integral with a respective lug;
each curved arm having curvature along the length of the curved arm extending away from the corresponding lug and the base strip;
each curved arm having a cross section greater than a thickness of a corresponding flexible hinge lug;
each flexible lug defining a flexible hinge for a corresponding integral curved arm thereon for allowing the curved arms of each respective pair of the paired lugs to be manually biased toward each other after insertion thereof into holes of perforated sheets and positioning of free-end portions of the respective pair of arms of the paired arms in an overlying relationship and in position for manually pressing together the overlying free-end portions for engaging mutually cooperatively associated fastening means formed on said curved arms of a respective pair to be joined as extensions of each other defining a corresponding binder ring; and
one curved arm of each pair of curved arms having a projection on a free-end portion thereof, and being depressable away from one part of said fastening means for opening the fastening means to allow manually biasing the curved arms away from each other for inserting and/or removing perforated sheets from said binder ring structure.

5,618,123
COUPLING DEVICE FOR SEWER AND DRAIN CLEANING CABLE
Robert Pulse, Davenport, Iowa, assignor to Pettibone Corporation, Lisle, Ill.
Filed Aug. 11, 1995, Ser. No. 514,042
Int. Cl.[6] F16D *9/00*
U.S. Cl. 403—2 **15 Claims**



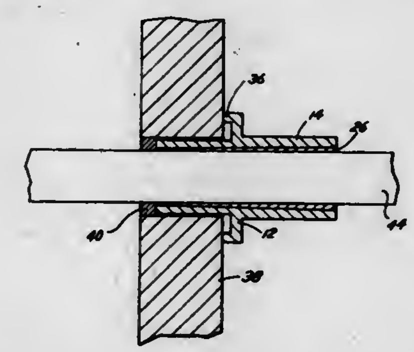
1. A coupling device for coupling a cable of a sewer and drain cleaning machine to a cutting tool, said device comprising:
a housing;
cable connecting means for connecting the cable to said housing;
cutting tool connecting means for rotatably connecting the cutting tool to said housing; and
breakable drive means for driving the cutting tool when the cable and said housing are rotated and breaking when a predetermined amount of torque is applied between said housing and said cutting tool, said predetermined amount of torque being less than the amount of torque needed to break the cable.

5,618,124
UNIVERSAL WIPER ARM CONNECTOR
Liang-Yuan Chen, P.O. Box 82-144, Taipei, Taiwan
Filed May 7, 1996, Ser. No. 646,095
Int. Cl.[6] B60S *1/40*
U.S. Cl. 403—3 **3 Claims**



1. A universal wiper arm connector for connecting a windshield wiper with a wiper arm, said connector comprising:
an elongated, U-shaped body defining transversely spaced sides, said U-shaped body having an upper arm and a lower arm, said upper and lower arms each formed with a pair of flanges, one on each side of said body, said flanges being each formed with a shoulder at an inner side thereof, said upper arm is provided with a first tongue and a second tongue cantilevered thereto, said first and second tongues lying between the shoulders of said upper arm, said first and second tongues lying in a common plane and defining an upper side which is located lower than the shoulders of said upper arm, said first tongue having a free end separated by a first groove from a cantilevered end of said second tongue and a pair of second grooves along both sides of a front portion thereof which has a first wedge-shaped protuberance thereon, said second tongue having a pair of third grooves along both sides of a front portion thereof which has a second wedge-shaped protuberance thereon, said lower arm being provided with a third tongue cantilevered thereto, said third tongue having a bottom side higher than the shoulders of said lower arm, said third tongue having a front portion which has a pair of fourth grooves along both sides thereof and a third wedge-shaped protuberance thereon;
an axle extending from said U-shaped body, perpendicular thereto.

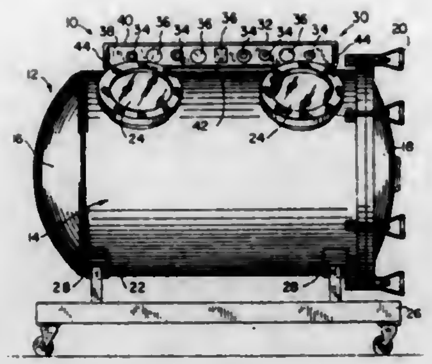
5,618,125
DOWELL ALIGNMENT APPARATUS
Mike McPhee, and Russell Boxall, both of Charlotte, N.C., assignors to Permaban North America, Inc., Matthews, N.C.
Continuation of Ser. No. 183,193, Jan. 18, 1994, abandoned. This application Oct. 13, 1995, Ser. No. 542,545
Int. Cl.[6] E04B *1/682*
U.S. Cl. 403—12 **7 Claims**



1. An apparatus for positioning a dowel within a concrete slab, formed by pouring concrete into a form, said apparatus comprising
a) a substantially planar mounting flange having an inner surface and an outer surface; and
b) a dowel guide that extends from the mounting flange at a desired angle, the dowel guide having an inner surface and an outer surface, the inner surface of the dowel guide defining a straight dowel passage having an opening at each end, whereby the apparatus can be secured to the form and a dowel can be introduced into the dowel passage with opposite ends of the dowel extending from opposite ends of the apparatus so that the one end of the dowel may be embedded into the concrete poured into the form and the apparatus can be removed from the other end of the dowel for reuse.

5,618,126
CONTROL MOUNTING FOR A HYPERBARIC CHAMBER
Richard W. Watt, 6064 Marylane Ct., Oconomowoc, Wis. 53066
Filed Feb. 16, 1996, Ser. No. 602,340
Int. Cl.[6] A61H *33/14*
U.S. Cl. 403—24 **15 Claims**

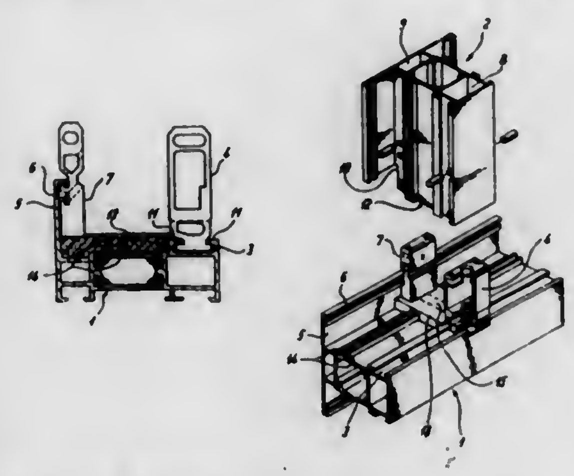
1. A lifting and control mounting apparatus for a cylindrical pressure chamber adapted in use to be positioned with its cylindrical axis horizontally disposed, said apparatus comprising:
a pair of spaced lifting lugs fixed to the top of the cylindrical surface of the chamber near the opposite axial ends thereof;
a control panel including a control housing sized to span and enclose the lugs when said control housing is in its operative position;



said lugs including first attachment means for attachment of a chamber lifting device and second attachment means for attachment of said control panel; and

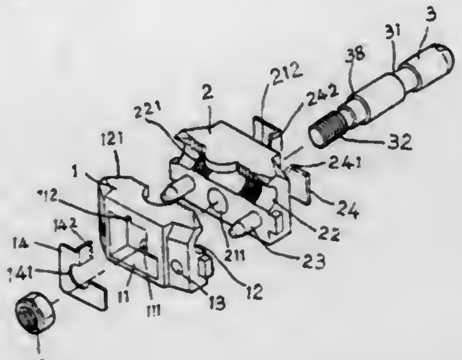
demountable connectors operatively connected to said second attachment means to secure the control housing in its operative position and to permit removal of said housing for access to said first attachment means.

5,618,127
T-CONNECTOR BETWEEN TWO PROFILES
Armin Tönsmann, and Siegfried Hablcht, both of Leopoldshöhe, Germany, assignors to Schüco International KG, Bielefeld, Germany
Filed Mar. 2, 1994, Ser. No. 205,044
Claims priority, application Germany, Mar. 2, 1993, 43 06 420.5
Int. Cl.^{6} F16B *9/00*
U.S. Cl. 403—230 **8 Claims**



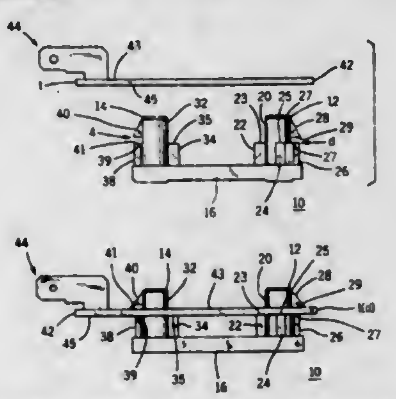
1. A T-joint comprising:
a rung having a longitudinal axis, at least one cavity, and a lower face extending transverse to said longitudinal axis:
a frame having a first side facing said rung, said frame having a longitudinal groove disposed in said first side and said groove having a floor and a plurality of upper edges protruding from said floor such that there is a gap disposed between said plurality of upper edges and said floor, said frame having at least one separate T-joint part extending into said at least one cavity, said at least one T-joint part being fixedly connected to said groove, said lower face of said rung faces said floor and is disposed adjacent to said upper edges of said groove such that said gap is further disposed between said lower face and said floor; and:
at least one pre-formed sealing cushion being disposed in said gap; said at least one sealing cushion being made from an elastic material and being fixedly connected to said frame such that said gap is sealed by said sealing cushion.

5,618,128
WIPER ARM CONNECTOR
Liang-Yuan Chen, P.O. Box 82-144, Taipei, Taiwan
Filed Apr. 15, 1996, Ser. No. 632,564
Int. Cl.^{6} B60S *1/40*
U.S. Cl. 403—344 **1 Claim**



1. A wiper arm connector comprising:
a first jaw having a cavity at a first side formed with a plurality of teeth, a recess at a second side having a hole at a central portion thereof and a slot at an upper side thereof, two holes one at a side of said recess;
a second jaw having a cavity at a first side formed with a plurality of teeth, a recess at a second side having a hole at a central portion thereof and a slot at an upper side thereof, two studs at the first side of said second jaw adapted to engage with the two holes of said first jaw;
a first packing having an opening at a central portion thereof and a toothed portion at an upper portion thereof, said first packing being fitted in the recess of said first jaw with said toothed portion fitted in said slot of said first jaw;
a second packing having an opening at a central portion thereof and a toothed portion at an upper portion thereof, said second packing being fitted in the recess of said second jaw with said toothed portion ol said second packing fitted in said slot of said second jaw;
a locking pin having a threaded end and a shoulder at an intermediate portion thereof, said shoulder being larger than the opening of said first and second packings, said locking pin being inserted through said jaws to engage with a nut with said shoulder bearing against a respective packing.

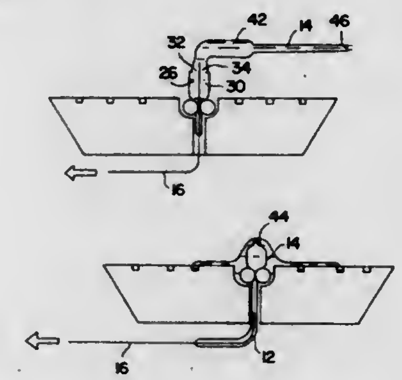
5,618,129
SNAP-ENGAGING MOUNTING PLATE
Edwin L. Skarivoda, Manitowoc, Wis., assignor to Paragon Electric Company, Inc., Two Rivers, Wis.
Filed Mar. 13, 1995, Ser. No. 402,910
Int. Cl.^{6} H05K *5/02*
U.S. Cl. 403—389 **12 Claims**



1. An apparatus configured to facilitate mounting a first device to a second device; said first device having a plurality of first

apertures traversing said first device at a plurality of first loci; said second device having a plurality of second apertures at a plurality of second loci; each respective second aperture of said plurality of second apertures being proportioned to engage a fastener; the apparatus comprising:
a base member; and
a plurality of post members affixed to said base member at a plurality of attachment loci, said plurality of post members and said base member being made from a unitary, one-piece construction; each respective post member of said plurality of post members configured to be substantially in register with one respective first aperture of said plurality of first apertures and substantially in register with one respective second aperture of said plurality of second apertures when said first device, said second device, and the apparatus are in a mounting orientation;
each said respective post member including a respective tab member and a respective mounting aperture, said respective mounting aperture traversing said respective post member; for each said respective post member and for each said respective first aperture, said respective tab member being configured to flex appropriately from an initial position to pass through said respective first aperture when said respective post member is urged into said respective first aperture; said respective tab member configured to return to said initial position when said respective post member passes a predetermined distance into said respective first aperture to captively retain said first device intermediate said respective tab member and said base member.

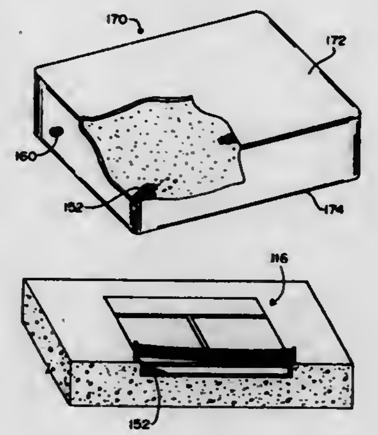
5,618,130
ROADWAY MARKER AND METHOD OF APPLYING A QUANTUM OF ADHESIVE TO THE BOTTOM SURFACE OF THE MARKER
Theodore R. Flint, P.O. Box 50, Elverson, Pa. 19520
Filed Jul. 10, 1995, Ser. No. 500,198
Int. Cl.^{6} E01F *9/06*
U.S. Cl. 404—12 **12 Claims**



1. A system for marking a roadway, comprising:
a roadway marker that includes:
a bottom surface for fixing to a roadway surface;
an upper surface; and
a through structure defining a passageway having a first opening at the bottom surface; and
a package containing at least two components of an adhesive composition, the package including:
a collapsible container, including a storage portion having walls defining at least two compartments each containing one of the components and each compartment including a compartment outlet;
a pull tab extending from the container adapted for pulling the container though the passageway, the passageway being structured for forcing the components to flow out of the compartments through the compartment outlets upon pulling the container by the pull tab though the passageway.

7. A method marking a roadway, comprising the steps of:
providing a package, including providing a collapsible container that comprises a storage portion having walls defining at least two compartments, each containing a component of an adhesive composition and each including a compartment outlet, and providing a pull tab extending from the container;
providing a roadway marker that comprises a bottom surface and structure defining a passageway extending from an opening in the bottom surface, the passageway having a cross sectional area that is smaller than a cross sectional area of the container;
inserting the pull tab through the opening into the passageway;
drawing the container through the passageway by the pull tab, including forcing the components to flow out of the compartments through the compartment outlets and thereafter onto the bottom surface; and
applying the bottom surface to the roadway.

5,618,131
MODIFIED ARTIFICIAL SURFACE AND METHOD AND APPARATUS OF MAKING THE SAME
Edward A. Weber, 2613 Sequoia Rd., McHenry, Ill. 60050
Filed Jun. 7, 1995, Ser. No. 486,911
Int. Cl.^{6} E01C *5/18*
U.S. Cl. 404—32 **17 Claims**

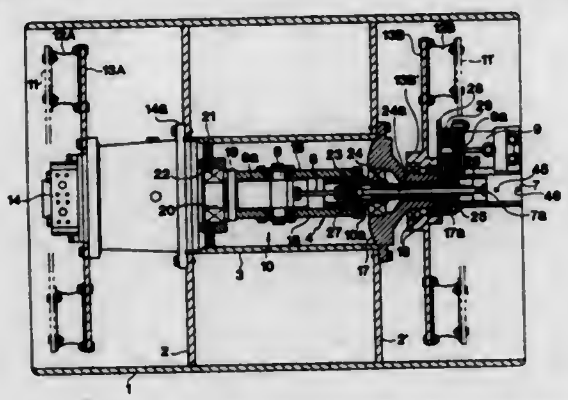


12. An artificial surface with improved resiliency and reduced injury characteristics comprising:
a) a first outer sheet of material secured to a second outer sheet of material;
b) at least a first inner sheet of material and a second inner sheet of material secured between the first outer sheet of material and the second outer sheet of material to form at least a first compartment and a second compartment;
c) the first compartment and the second compartment being within the artificial surface;
d) a filler being contained within the first compartment and within the second compartment;
e) a valve means communicating with the first compartment and the second compartment;
f) a means for positioning the filler within the first compartment and the second compartment in order to form the artificial surface; and
g) the valve means further including means to receive a vacuum pump.

5,618,132
PROCESS FOR RESURFACING ROADS
Roland Fogg, 1311 Kennebec Rd., Hampden, Me. 04444, and Jeffrey MacDonald, 178 Mt. Hope Ave., Bangor, Me. 04401
Filed Jul. 17, 1995, Ser. No. 503,371
Int. Cl.⁶ E01C *7/26; 7/35;* **C08L** *95/00*
U.S. Cl. 404—79 **17 Claims**

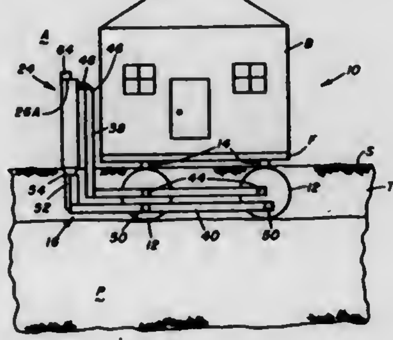
14. A process for resurfacing roads comprising:
(a) mixing from about sixty (60) to about ninety-five (95) parts asphalt, from about forty (40) to about five (5) parts waste oil, from about one-half (½) to one and one-half (1½) parts rubber latex, and about one-half (½) part anti-stripping agent, to form a flowable mixture;
(b) heating said flowable mixture to a temperature between from about two hundred twenty (220) degrees Fahrenheit to about two hundred fifty (250) degrees Fahrenheit;
(c) spraying said heated flowable mixture onto a road surface to form a tacky heated film on the road surface;
(d) depositing a layer of aggregates onto said tacky heated film; and
(e) pressing the aggregates into said tacky heated film to form a new road surface.

5,618,133
VIBRATING MECHANISM AND APPARATUS FOR GENERATING VIBRATIONS FOR A VIBRATION COMPACTING ROLLER WITH VARIABLE AMPLITUDE
Akira Mitsui; Kristian J. Guard, and Hideki Iwakuma, all of Kitakatsushika-gun, Japan, assignors to Sakai Heavy Industries, Ltd., Tokyo, Japan
Filed Nov. 25, 1994, Ser. No. 348,102
Claims priority, application Japan, Nov. 30, 1993, 5-300087; Nov. 30, 1993, 5-300088; Dec. 17, 1993, 5-317845; Dec. 28, 1993, 5-337665
Int. Cl.⁶ E01C *19/23*
U.S. Cl. 404—117 **11 Claims**



1. A vibrating mechanism which rotates a vibration generating shaft including a moveable eccentric weight to generate a centrifugal force, wherein said vibrating mechanism comprises:
a vibration generating shaft including a pair of supporting members disposed in a parallel spaced relationship while facing each other,
a moveable eccentric weight turnably supported on a pivotal shaft, said pivotal shaft being supported by the pair of supporting members in a direction orienting said pivotal shaft at a right angle relative to a center axis of said vibration generating shaft; said pivotal shaft extending between the pair of supporting members, and
an eccentric weight driving means for turning said moveable eccentric weight about said pivotal shaft, and said eccentric weight driving means serving to deviate the gravity center of said eccentric weight away from the center axis of said vibration generating shaft, wherein said eccentric weight driving means is composed of an actuator, an actuating rod projecting outside of said actuator, a joint rotatably fitted to said actuating rod, and a connecting rod, one end of said connecting rod being operatively connected to said joint and another end of said connecting rod being operatively connected to said moveable eccentric weight, said connecting rod serving to transform a linear movement of the joint away from said actuator into a turning movement of said eccentric weight about said pivotal shaft.

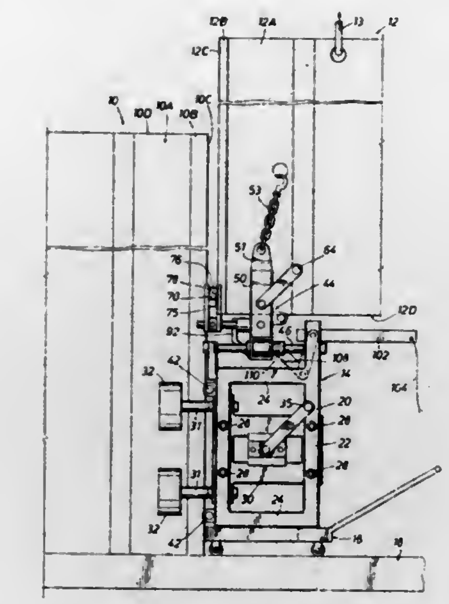
5,618,134
SELF-REFRIGERATION KEEL-TYPE FOUNDATION SYSTEM
Joseph C. Balch, 7665 Balch Way, Salcha, Ak. 99714
Filed Aug. 22, 1995, Ser. No. 517,982
Int. Cl.⁶ E02D *19/14;* **F25D** *23/12*
U.S. Cl. 405—130 **22 Claims**



1. A self-refrigeration keel-type foundation system for supporting a structure above a permafrost earth strata located below the ground, said system comprising:
(a) at least one elongated hollow container underlying a structure and disposed substantially below ground and supported substantially on a permafrost earth strata;
(b) a load bearing assembly mounted on an upper side of said at least one container for supporting the structure in a spaced relation above said at least one containers; and
(c) a heat transferring arrangement for absorbing heat from a region of the permafrost earth strata adjacent to said at least one container, transferring heat by a natural thermal-siphon effect from below to above the ground, and releasing heat to the atmosphere above the ground to thereby maintain the permafrost earth strata in a substantially frozen condition.

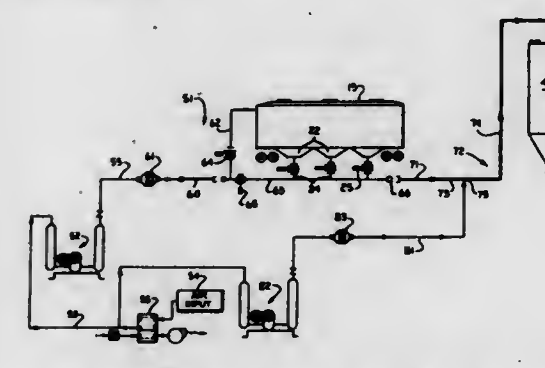
5,618,135
PILE THREADING DEVICE FOR CONNECTING SHEET PILES
James O. Glass, and Sam M. Glass, both of Anahuac, Tex., assignors to Stab Cat, Inc., Ananuca, Tex.
Filed Dec. 15, 1995, Ser. No. 573,243
Int. Cl.⁶ E02D *13/04*
U.S. Cl. 405—279 **12 Claims**

1. A pile threading device adapted to support an undriven pile thereon and to guide the undriven pile vertically along a driven pile as the undriven pile is lifted along the driven pile, the driven and undriven piles having male and female side edges adapted to be interlocked; said threading device comprising:
a body;
a pile supporting slide mounted on said body for relative sliding movement in a generally horizontal direction;
a plurality of rollers mounted on said body for movement toward and away from each other on opposed sides of said driven pile;
means on said slide to clamp said undriven pile including a pair of opposed jaws movable toward and away from each other



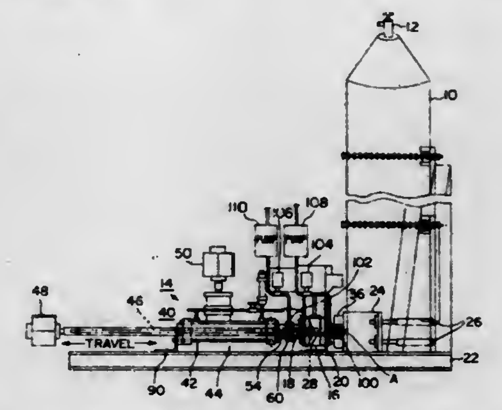
for clamping said undriven pile therebetween adjacent a side edge of said undriven pile;
a stop on said slide engaging said side edge when said undriven pile is positioned between said jaws for positioning said undriven pile at a predetermined horizontal position on said slide;
and means mounting said stop for movement to a position out of contact with said side edge of said undriven pile.

5,618,136
DUAL BLOWER RAILCAR DISCHARGE AND CONVEYOR SYSTEM AND METHOD
David K. Smoot, Overland Park, Kans., assignor to Smoot Co., Kansas City, Kans.
Filed Aug. 4, 1995, Ser. No. 511,562
Int. Cl.⁶ B65G *53/06*
U.S. Cl. 406—93 **16 Claims**



1. In a pneumatic railcar discharge and conveying system in which a railcar is pressurized and dry material from the pressurized railcar is off-loaded to a pneumatic discharge convey line and then transferred to a transport convey line, the improvement comprising:
(a) a first blower providing compressed air to pressurize the railcar and to provide convey air to the discharge convey line; and
(b) a second blower providing compressed air to the transport convey line.

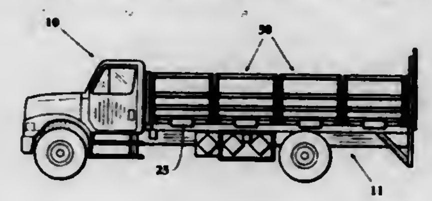
5,618,137
TAPPING ASSEMBLY
Alan M. Hawley, Ocklawaha, and Charles C. Mattern, Winter Garden, both of Fla., assignors to Earth Resources Corporation, Ocoee, Fla.
Continuation of Ser. No. 227,734, Apr. 14, 1994, Pat. No. 5,507,604, which is a division of Ser. No. 953,931, Sep. 30, 1992, Pat. No. 5,340,244. This application Jan. 23, 1996, Ser. No. 590,142
Int. Cl.⁶ B23B *41/08*
U.S. Cl. 408—87 **6 Claims**

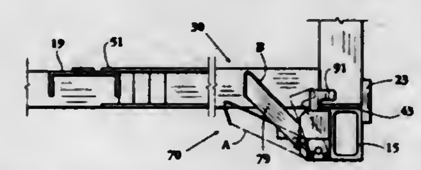


1. A tapping assembly for gaining access to the contents of a container comprising:
a saddle having a surface contoured to conform to the surface of the container;
a main valve having open and closed positions, the main valve being connected to the saddle and being configured to permit a portion of an access mechanism to pass through the valve with the main valve in the open position to enable access to the contents of the container;
a housing for housing the access mechanism;
a coupler, connected between the housing and the main valve, the coupler including a passageway to permit at least a portion of the access mechanism extending from the housing to pass through the main valve and engage said container to permit access to the contents of the container; and
a vent to permit controlled removal of contents of the container from said coupler with said main valve in the closed position.

5,618,138
TRUCK PALLET LOCKING DEVICE
Donald S. Lockhart, Tulsa, Okla., assignor to Mathey/Leland International, Ltd., Broken Arrow, Okla.
Filed Apr. 8, 1994, Ser. No. 225,136
Int. Cl.⁶ B60P *7/08*
U.S. Cl. 410—69 **10 Claims**

6. For securing a pallet having a tread plate mounted on a frame

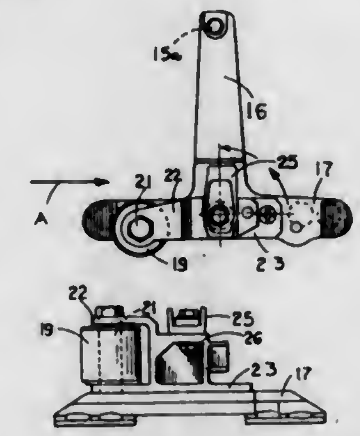




with horizontal slots therein against vertical motion relative to a truck chassis on which the pallet is loaded, a latching device comprising:

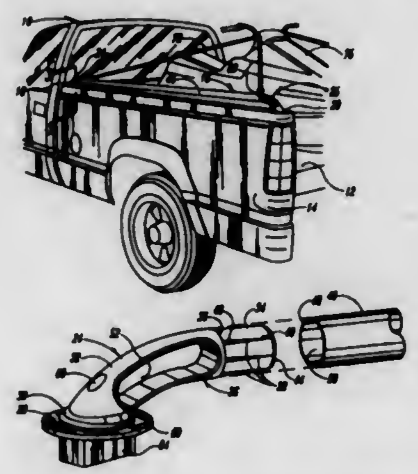
a bracket mountable on the truck chassis;
a rotatable assembly comprising:
a shaft journalled for axial rotation on said bracket;
a radial arm fixed to an extension of said shaft beyond said bracket for rotation therewith and having a latch protruding therefrom for reciprocal angular movement into and out of overlying abutment with a segment of a pallet loaded onto the truck chassis; and
a radial paddle fixed to said shaft for rotation through a horizontal slot in the tread plate frame in response to the physical presence and absence of a fork lift tine under the tread plate of the pallet being loaded onto the truck chassis; and
means connected between said bracket and said rotatable assembly for biasing said assembly toward a latched condition in which said latch is in overlying abutment with the pallet segment when removal of the tine permits penetration of said paddle into the slot in the tread plate of the pallet and for permitting said assembly to rotate against said bias to an unlatched condition in which said latch is out of overlying abutment with the pallet segment when the tine prevents penetration of said paddle into the slot in the tread plate of the pallet.

5,618,139
OUTBOARD ROLLER RESTRAINER FOR HANDLING CARGO IN VEHICLE
Michael C. Graf, Lomita, and Edward Moradians, Canoga Park, both of Calif., assignors to Ancra International Corporation, Hawthorne, Calif.
Filed Oct. 23, 1995, Ser. No. 546,686
Int. Cl.[6] B60P *7/08*
U.S. Cl. 410—69 **3 Claims**



1. A roller restraint assembly for mounting on the floor of a vehicle for restraining cargo movement in the vehicle in a first outboard direction but permitting cargo movement in a direction normal to said first direction comprising:
first and second arm portions extending in mutually perpendicular directions and forming a T-shaped configuration with said second arm portion forming the cross arm of said "T" shape,
a vertical restraint arm for restraining vertical movement of the cargo, said vertical restraint arm being supported on said second arm portion for pivotal motion about an axis normal to the longitudinal axes of both said first and second arm portions, said vertical restraint arm being spaced from said first arm portion thereabove, and
a roller mounted on said second arm portion for rotation about a vertical axis normal to the longitudinal axes of said first and second arm portions, said roller including a tube rotatably supported on said second arm portion, an outer cylindrical member, and a dampener interposed between the outer surface of said tube and the inner surface of said outer cylindrical member, said roller facilitating cargo movement parallel to the longitudinal axis of said second arm portion and restraining cargo movement in an outboard direction normal to the longitudinal axis of said second arm portion.

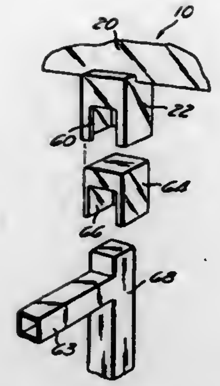
5,618,140
TIE DOWN DEVICE
Merlyn C. Okland, Story City, Iowa, assignor to Putco, Inc., Story City, Iowa
Division of Ser. No. 187,613, Jan. 27, 1994, Pat. No. 5,476,349. This application Nov. 15, 1995, Ser. No. 559,501
Int. Cl.[6] B60P *7/08*
U.S. Cl. 410—106 **9 Claims**



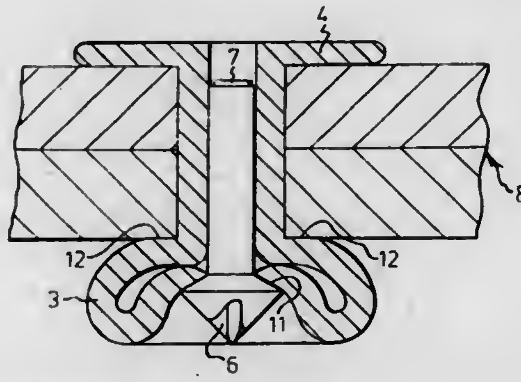
1. A tie down device adapted to be secured within a stake hole having a vertical stake hole axis in a side wall of a vehicle carrier; said tie down device comprising:
an elongated body having opposite first and second ends and a curved body portion extending therebetween, said body having a longitudinal axis which commences with a vertical axis portion adjacent said first end, then extends to a curved axis portion extending through said curved body portion, and then terminates in a horizontal axis portion adjacent said second end;
an anchor connected to said first end of said body and adapted to be detachably secured within said stake hole for securing said first end to said side wall of said vehicle carrier;
a tie down hole having a hole axis extending through said body and intersecting with said longitudinal axis of said body between said first and second ends for receiving a tie down line.

5,618,141
MODULAR MERCHANDISE SIGNAGE SYSTEM
Steven V. Field, 3031 Danalda Dr., Los Angeles, Calif. 90064
Filed Apr. 26, 1995, Ser. No. 430,201
Int. Cl.[6] G09F *3/18;15/00*
U.S. Cl. 40—606 **3 Claims**

1. A modular merchandise signage system comprising:
a) a sign holder;
b) a female sign holder attachment member formed to said sign holder, said female sign holder attachment member having a square opening, the square opening being specifically sized to receive a one-inch square garment rack vertical member;
c) a slot formed in said female sign holder attachment member, said slot being specifically sized to receive a garment rack horizontal member; and
d) an adapter configured to be received within said female sign holder attachment member and having a square opening formed therein, the square opening in said adapter being specifically sized to receive a three-quarter inch square garment rack vertical member.

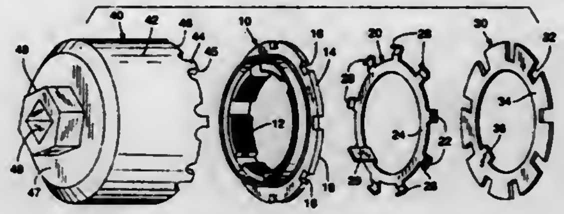


5,618,142
SELF-DRILLING BLIND RIVET AND METHOD FOR MAKING A PRESSURE TIGHT RIVETED JOINT BY MEANS OF THE SAME
Carl-Gustaf Sondén, Ängelholm, and Kenneth Lennartsson, Torekov, both of Sweden, assignors to Lindab AB, Bastad, Sweden
PCT No. PCT/SE94/00587, § 371 Date Dec. 14, 1995, § 102(e) Date Dec. 14, 1995, PCT Pub. No. WO94/29602, PCT Pub. Date Dec. 22, 1994
PCT Filed Jun. 15, 1994, Ser. No. 564,168
Claims priority, application Sweden, Jun. 16, 1993, 9302100; Jul. 8, 1993, 9302373
Int. Cl.[6] F16B *13/04;* **B23P** *11/02*
U.S. Cl. 411—29 **12 Claims**



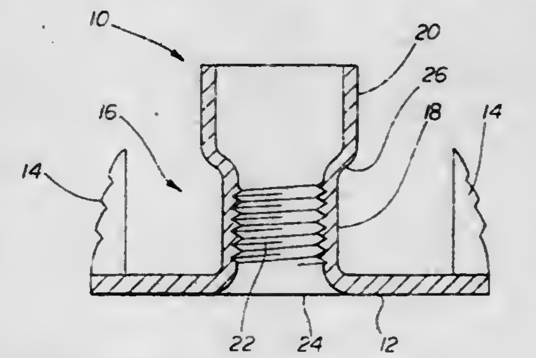
1. A self-drilling blind rivet, comprising:
(a) a deformable sleeve having a first end and a second end, said first end having a flange;
(b) a shaft having a first end and a second end, said first end extending beyond said flange, said second end having a drill bit extending from said second end of said sleeve, and a region of weakened tensile strength between said first end of said shaft and said second end of said shaft, said region of weakened tensile strength dividing said shaft into a first portion and a second portion;
(c) said shaft extending through said sleeve with such a fit that said sleeve, said shaft and its drill bit constitute a unit which is rotatable; and
(d) said drill bit being permanently connected to said second end of said sleeve.

5,618,143
SPINDLE NUT AND LOCKING DEVICE
Philip J. Cronin, II, Gladstone; Lonnie G. Williams, Jr., Portland; Thomas F. Dunlap, West Linn, all of Oreg., and David C. Wood, Vancouver, Wash., assignors to Warn Industries, Inc., Milwaukie, Oreg.
Filed Nov. 2, 1994, Ser. No. 333,500
Int. Cl.[6] F16B *39/06*
U.S. Cl. 411—220 **4 Claims**



1. A spindle nut and locking device system for securing a nut in a rotative position on a spindle having a lonqitudinal slot in a threaded end, the system comprising:
a disk-shaped spring, tabs on the periphery of the spring, and a leg extending radially inward from the spring, wherein the spring is mountable on the spindle with the leg fitting in the longitudinal slot of the spindle;
a nut having internal threads, wherein the nut is threadably mountable on the threaded end of the spindle and engageable with the spring, slots formed in the periphery of the nut, the slots configured and arranged to receive the tabs of the spring;
a tool having ears, the slots of the nut engageable by the ears of the tool to rotatably threadably install the nut on the spindle and to prevent entry of the tabs of the spring into the slots of the nut until removal of the tool; and
a back up plate, the plate having a projection extending radially inward, notches formed on the periphery of the plate, the notches arranged to receive the tabs of the spring, and wherein the plate is mountable on the spindle with the projection fitting in the longitudinal slot of the spindle and with the plate adjacent the spring with the spring being positioned between the plate and the nut.

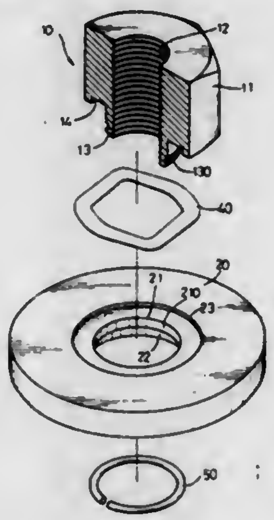
5,618,144
TEE-NUT WITH ENLARGED BARREL END
Volkmar W. Leistner, Toronto, Canada, assignor to Sigma Tool & Machine, Scarborough, Canada
Filed Sep. 11, 1995, Ser. No. 526,324
Int. Cl.[6] F16B *39/28;37/00*
U.S. Cl. 411—427 **4 Claims**



1. A tee-nut comprising:
a flange head member;
a plurality of prongs extending from said flange head member; and
a sleeve member extending from said flange head member;
said sleeve member, being in the form of a hollow cylindrical barrel, comprising:

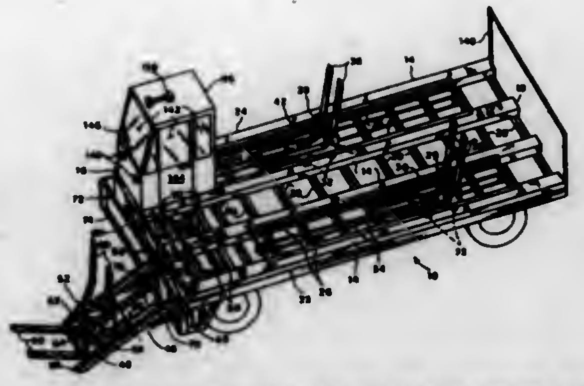
an internally threaded cylindrical portion provided at one end of said sleeve member, said threaded portion connecting to said flange head member and defining predetermined first inner and first outer diameters; and
an enlarged cylindrical portion extending from said internally threaded cylindrical portion and provided at a free end of said sleeve member and defining predetermined second inner and second outer diameters, wherein said second outer diameter of said enlarged cylindrical portion is larger than said first outer diameter of said internally threaded portion, and wherein said second inner diameter of said enlarged cylindrical portion is larger than said first inner diameter of said internally threaded portion such that a threading tool can be passed through said enlarged cylindrical portion, and can be operated to internally thread said internally threaded portion.

5,618,145
FASTENER MODULE
Jung-feng Kuo, No. 2, Lane 343, Chengkung Rd., Fengyuan City, Taichung Hsien, Taiwan
Filed Feb. 16, 1996, Ser. No. 602,348
Int. Cl.⁶ F16B *33/00;37/08*
U.S. Cl. 411—432 **4 Claims**



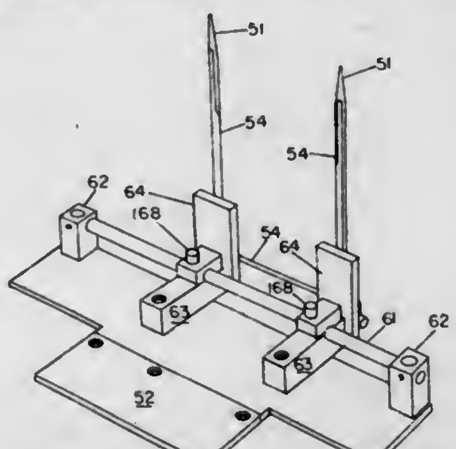
1. A fastener module comprising:
a washer including an upper portion having a first passage defined therein and a lower portion having a second passage defined therein and communicating with said first passage, thereby forming a through passage, said second passage having a diameter greater than that of said first passage;
a head mounted on the upper portion of said washer and having a shank extending downwardly from a lower portion thereof and mounted in said first passage, an annular grove defined along a periphery of said shank and communicating with said second passage;
a plate gasket mounted around said shank of said head and urged between the lower portion of said head and the upper portion of said washer; and
a snapping ring mounted in said annular groove and received in said second passage and abutted against the upper portion of said washer.

5,618,146
HAY ROLL TRANSPORTER
Edmund E. Cooper, Rte. 1, Box 275, Copan, Okla. 74022
Filed Apr. 19, 1996, Ser. No. 634,981
Int. Cl.⁶ A01D *90/00*
U.S. Cl. 414—24.5 **19 Claims**
1. A hay roll transporter comprising:



a self propelled truck having a generally flat bed thereon, with said bed having a front end and an opposite rear end defining a length therebetween, and opposite first and second sides;
said truck further including a laterally translatable front ramp having a forward distal end and an opposite bed attachment end and extending from said front end of said bed, with said front ramp including front forks thereon adapted to provide for the pickup of a hay roll thereon;
said truck further including a laterally translatable cab disposed atop said front end of said bed, with said cab being movable to one of said sides of said bed when said front ramp is moved to an opposite one of said sides of said bed to provide for the direct loading and unloading of hay rolls to and from said bed by means of said front ramp and front forks, whereby;
said transporter picks up at least one hay roll and transfers the hay roll from said front ramp to said front end of said bed by means of said front forks, with said laterally translatable front ramp and cab being translated to opposite sides of said bed to provide for the pickup and placement of at least one ether hay roll alongside the first hay roll on said bed, and said transporter is driven to a destination for unloading any hay rolls thereon by reversal of the loading procedure.

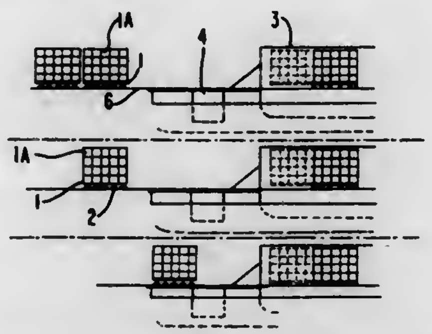
5,618,147
WICKET WIRE HOLDER
Vitaly Bandura, Danvers, and Daniel W. Woodman, Jr., Beverly, both of Mass., assignors to Battenfeld Gloucester Engineering Co., Inc., Gloucester, Mass.
Filed Nov. 10, 1994, Ser. No. 337,071
Int. Cl.⁶ B65G *57/00*
U.S. Cl. 414—27 **12 Claims**



1. An improved wicket stacking assembly comprising:
a) a wicket stacking plate,
b) two upstanding transfer wicket pins having sections adapted to receive a permanent wicket wire,
c) means for mounting said transfer wicket pins to said wicket stacking plate,

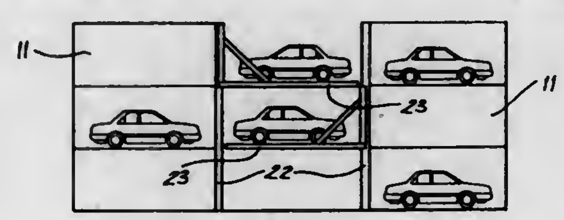
d) clamp means mounted on said means for mounting adapted to hold said permanent wicket wire in said sections adapted to receive a permanent wicket wire.

5,618,148
METHOD AND ARRANGEMENT FOR TRANSPORTING LARGER UNITS
Øyvind T. Iversen, and Jan-Erik Keim, both of Drøbak, Norway, assignors to TTS Drøbak A/S, Drøbak, Norway
Filed Feb. 10, 1995, Ser. No. 386,643
Claims priority, application Norway, Feb. 11, 1994, 940469
Int. Cl.⁶ B63B *27/00*
U.S. Cl. 414—139.9 **26 Claims**



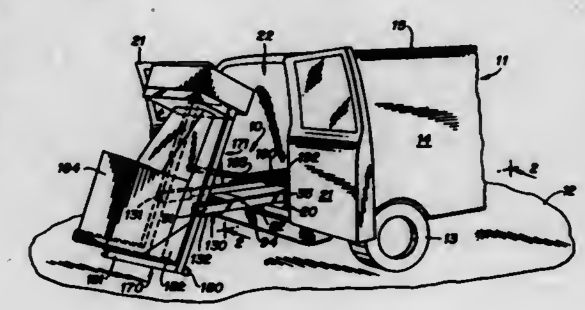
1. A method for transporting larger units, especially for loading and unloading containers using a pallet comprising the steps of:
a) positioning a plurality of containers on said pallet, said pallet being a large pallet for carrying up to about 25 of said containers, and locking said containers to said pallet and to each other,
b) lifting said pallet with containers and transporting same by at least one land-based transfer trolley to a larger transport vessel, said lifting step further comprising driving said at least one transfer trolley underneath said pallet,
c) anchoring said pallet with containers to said transport vessel and removing said at least one transfer trolley from said pallet for transferring a subsequent pallet with another set of containers until said transport vessel is loaded,
d) unloading at a port of destination in substantial opposite sequence.

5,618,149
VEHICLE ELEVATOR
Steven A. Beaumont, 20 River Road, Lane Cove West, NSW, 2066; Daniel Brosnan, 21 Jamieson Avenue, Fairlight, NSW, 2094, and Rodney Josey, 855 Punchbowl Road, Punchbowl, NSW, 2196, all of Australia
PCT No. PCT/AU93/00597, § 371 Date Jun. 7, 1995, § 102(e) Date Jun. 7, 1995, PCT Pub. No. WO94/12410, PCT Pub. Date Jun. 9, 1994
PCT Filed Nov. 24, 1993, Ser. No. 448,601
Claims priority, application Australia, Nov. 25, 1992, PL6031
Int. Cl.⁶ B65G *1/04*
U.S. Cl. 414—253 **16 Claims**



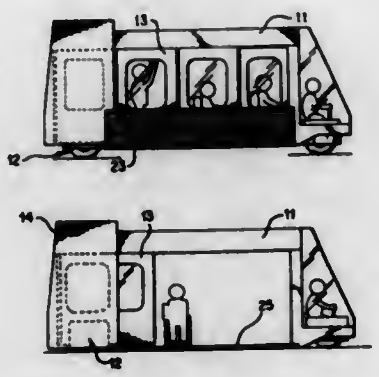
1. A storage system, comprising:
a plurality of first storage bays having at least two levels, each first storage bay having an access opening through which an object may be inserted or removed, and the access openings of the first storage bays are arranged in a first common surface;
a plurality of second storage bays having at least two levels, each second storage bay having an access opening through which an object may be inserted into or removed from the storage bay, and the access openings of the second storage bays are arranged in a second common surface parallel to the first;
the first and second common surfaces are spaced apart from each other;
a first lifting transfer device movable vertically and horizontally and located adjacent the first common surface and extending to a location proximate to the second common surface including means for inserting an object into or removing an object from any of the first and second storage bays;
a second lifting transfer device, identical to the first lifting transfer device, movable vertically and horizontally and located adjacent to the second common surface and extending to a location proximate to the first common surface including means for inserting an object into or removing an object from any of the first and second storage bays;
the arrangement being such that the first and second lifting transfer devices are able to travel horizontally along their respective common surfaces and are able to pass either above or below each other without colliding.

5,618,150
CARGO HANDLING ASSEMBLY
David A. Poindexter, 708 Patterson St., Stoughton, Wis. 53589
Continuation of Ser. No. 203,897, Mar. 1, 1994, abandoned. This application Jan. 31, 1996, Ser. No. 594,829
Int. Cl.⁶ B65G *67/02*
U.S. Cl. 414—477 **15 Claims**



1. A cargo handling assembly for an overland vehicle, the cargo handling assembly comprising:
a base frame having a pair of support members for being mounted on the overland vehicle;
a pair of extension members, each extension member telescoped within and slidably borne by a respective one of the support members and moveable along a path of travel between a first, stowed position and a second, deployed position, each extension member having a proximal end and an opposite, distal end;
a second frame for holding cargo, the second frame connected to each of the extension members at a single pivot point on each respective extension member, the second frame rotatable on a single axis which is substantially perpendicular to each distal end of each extension member and between a first position, where the second frame is disposed in a substantially horizontal position and lies in nested relation relative to the base frame, and a second position, where the second frame is disposed in a substantially vertical position,
wherein the cargo handling assembly is capable of loading relatively tall, non-collapsable objects into a cargo area of limited height.

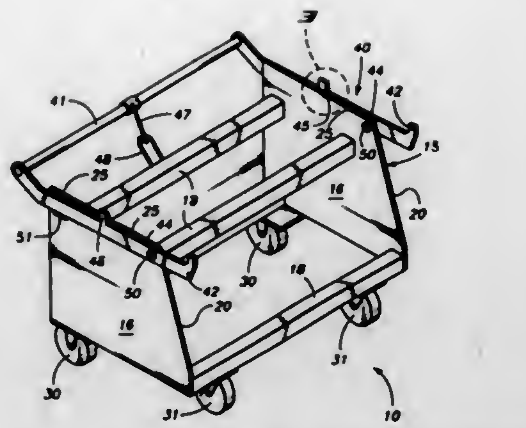
5,618,151
STREET VEHICLE FOR PASSENGER AND CARGO TRANSPORT FACILITATING LOADING AND DISCHARGE
Volker H. Rosenkranz, 21 King St., Hampton Falls, N.H. 03844
Filed Nov. 29, 1994, Ser. No. 346,140
Int. Cl.⁶ B65G *67/00*
U.S. Cl. 414—495 **9 Claims**



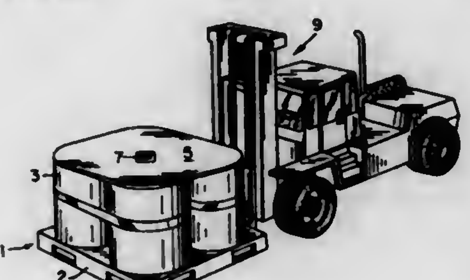
1. A motor vehicle for carrying a load over a street, the vehicle comprising:
(a) a bottom platform for carrying the load;
(b) a frame of portal construction disposed over the bottom platform and mounted to it for bearing the load, the frame having left and right sides, a top, a front, and a rear, and a plurality of wheel set housings, each wheel set housing having a force-transmitting portion disposed immediately in front, behind, and on each side of a recess; the frame and the bottom platform defining an interior region, the interior region having at least one access opening;
(c) a plurality of wheel sets, of which at least one pair of such wheel sets are laterally disposed from one another, each wheel set
(i) having at least one wheel,
(ii) being independently powered and turnable at least ninety degrees around a vertical axis,
(iii) being mounted directly to, and within the recess of, a unique one of the, plurality of wheel set housings, and
(iv) including means for permitting actively controlled retraction of the wheel set, the retraction of all wheel sets causing the bottom platform to approach street level to facilitate loading and unloading; and
(d) a door arrangement disposed at the access opening.

5,618,152
PRINTING MACHINE SPINDLE LIFTING AND TRANSPORTING CART
Jeffrey F. Andrews, 2500 Nettleton Rd., Coeur d'Alene, Id. 83814
Filed Apr. 13, 1995, Ser. No. 421,383
Int. Cl.⁶ B60P *1/34*
U.S. Cl. 414—546 **14 Claims**

1. A printing machine spindle lifting and transporting cart, for lifting and transporting a printing machine spindle having a substantially cylindrical central spindle shaft, comprising:
a cart frame including upright sides extending between front and back side edges;
wherein the upright sides further include a top spindle support surfaces thereon;
four wheels including two front wheels and two rear wheels positioned under the cart frame and mounted to the cart frame for movably supporting the cart frame on the support surfaces;
wherein the two rear wheels are situated adjacent the back side edges and the two front wheels are situated adjacent the front side edges and are spaced apart by a distance less than the distance between the rear wheels;
a lift frame including a lift handle adjacent the back side edges and an upstanding spindle engaging hooks at a end of the lift frame, with spindle ramp surfaces extending from the hooks toward the handle;
wherein said hooks project forwardly of the cart frame;
wherein the front wheels are positioned along the cart frame between the hooks; and
a pivot mounting the lift frame to the cart frame for selective pivotal movement thereon about a lift frame axis situated between the front and back wheels and adjacent the top spindle support surfaces such that the handle may be manually operated to pivot the lift frame between a first position wherein the hook is positioned below the lift frame axis and the spindle ramp surfaces are inclined forwardly to roll a spindle carried on the lift frame toward the hooks, and a second position wherein the hooks are positioned above the lift frame axis and the spindle ramp surfaces are inclined rearwardly to roll a spindle carried thereon toward the top spindle support surfaces and to a point on the frame where the spindle is substantially centered between the front and rear wheels.



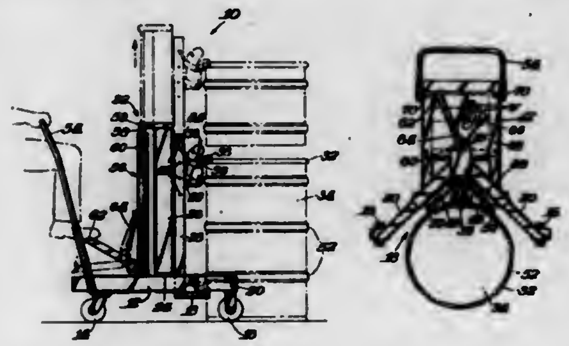
5,618,153
ARRANGEMENT PERTAINING TO THE TRANSPORTATION OF GOODS
Leif S. E. Lindgren, Billdal, Sweden, assignor to Floatline AB, Halmstad, Sweden
PCT No. PCT/SE92/00268, § 371 Date Oct. 21, 1994, § 102(e) Date Oct. 21, 1994, PCT Pub. No. WO93/22205, PCT Pub. Date Nov. 11, 1993
PCT Filed Apr. 23, 1992, Ser. No. 325,211
Int. Cl.⁶ A47F *5/10*
U.S. Cl. 414—608 **11 Claims**



1. An arrangement for transportation of goods, comprising a load carrier which includes a carrying bottom plate, and a lifting post which is upstanding centrally from the bottom plate and is mounted thereto, wherein the lifting post includes a hoist fitting for lifting the load carrier and a lashing band for securing goods to the

bottom plate, wherein the load carrier includes a cover plate having an aperture through which the post can extend such that the cover plate is slidable axially along and removable from said post, whereby the cover plate protects upper surfaces of goods placed on the bottom plate.

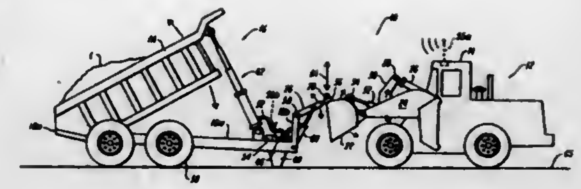
5,618,154
DRUM TRANSPORTER
A. Joseph Irons, Jr., Newark, and Murphy Owens, Sr., Wilmington, both of Del., assignors to Easy Lift Equipment Co., Inc., Newark, Del.
Filed Sep. 29, 1994, Ser. No. 315,300
Int. Cl.⁶ B60P *3/00*
U.S. Cl. 414—622 **16 Claims**



16. A self-contained drum transporter comprising a main frame, a set of wheels mounted to and below said main frame for facilitating the movement of said main frame from one location to another, an outer mast assembly extending generally horizontally from said main frame, said outer mast assembly including a pair of legs said legs being disposed at an angle of at least about 90° with respect to each other to permit said legs to straddle a pallet and dispose said main frame near a drum to be transported, an upstanding post assembly extending upwardly from said main frame at said outer mast assembly, said post assembly including a fixed guide post, an upper clamping mechanism for releasably engaging the chime of a drum, said upper clamping mechanism being movably mounted to said fixed guide post for selective vertical movement up and down with respect to said fixed guide post, a stabilizing mechanism for contacting the drum at a location below and remote from said upper clamping mechanism, said stabilizing mechanism being movably mounted to said fixed guide post for selective vertical movement up and down with respect to said fixed guide post, a lifting mechanism selectively controlling the vertical movement of said upper clamping mechanism and of said stabilizing mechanism to thereby permit a drum to be engaged by said transporter and then be conveyed from one location to another, said main frame comprising counterbalance means to minimize any tendency of said transporter to tip during the handling of a drum, said legs being adjustable in length, said post assembly including an outer sleeve assembly movably mounted to said fixed guide post, said clamping mechanism and said stabilizing mechanism being attached to said sleeve assembly, and said sleeve assembly comprising two C-shaped sleeves.

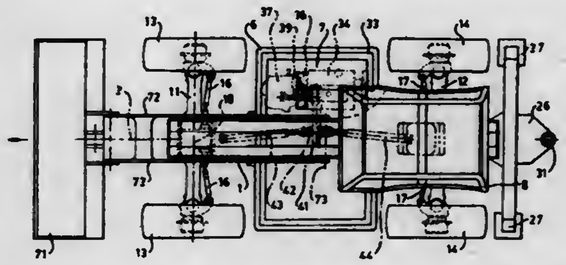
5,618,155
CONSTRUCTION SITE HAULING SYSTEM
Peter Tighe, 22 Timmins Rd., Bow, N.H. 03304
Continuation-in-part of Ser. No. 986,851, Dec. 4, 1992, Pat. No. 5,335,930. This application Aug. 8, 1994, Ser. No. 287,131
Int. Cl.⁶ E02F *3/00*
U.S. Cl. 414—680 **4 Claims**

1. A hauling system comprising in combination:
a self-propelled construction vehicle having a cab for an operator who operates said vehicle, an articulated arm, and a tool



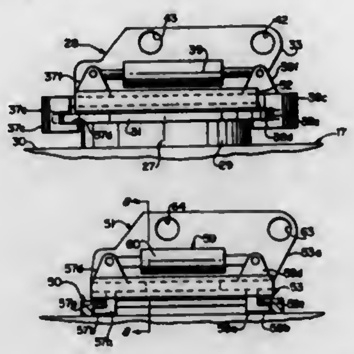
rotatably mounted at the end of said arm for movement between first and second angular positions;
a dump trailer that is not self-propelled having a front end adjacent said tool, a frame, a dump body mounted on said frame, and hoist means for raising the front end of said dump body from said frame; and
connecting means for releasably securing said vehicle to said trailer, said connecting means comprising a first connecting member secured to said tool at a location which does not interfere with the normal use of said tool and a second connecting member secured to the front of said trailer, said first and second members being sized to couple to one another when said vehicle positions them in a mutually aligned engagement position;
said first and second connecting members being structured and mutually positioned such that they are unlocked when said tool is in said first angular position and locked in said engagement when said tool is in said second angular position;
and said hoist means comprising a hydraulic jack operably connected to an articulated member of said trailer that mounts said second connecting member so that when said first and second connecting members are coupled, reciprocation of said articulated arm pumps said jack.

5,618,156
MATERIAL HANDLING MACHINE
David J. B. Brown, North Yorkshire, United Kingdom, assignor to Caterpillar Inc., Peoria, Ill.
Continuation of Ser. No. 85,012, Jun. 29, 1993, abandoned. This application Sep. 29, 1995, Ser. No. 537,070
Claims priority, application United Kingdom, Jun. 30, 1992, 9213894
Int. Cl.⁶ E02F *3/28*
U.S. Cl. 414—694 **1 Claim**



1. A material handling machine, comprising a chassis having a rigid longitudinal frame; an operator's cab mounted on said chassis; material handling means pivotally mounted on said chassis; a front axle and a rear axle mounted on said chassis; wheels mounted on said axles; a drive arrangement mounted on said chassis at one side of said longitudinal frame between said front and rear axles, said drive arrangement including an engine and a mechanically driven transmission kinematically connected to said engine and having a power output substantially mid-way along said drive arrangement; final drive units provided on said front and rear axles respectively for driving said wheels; and shafts kinematically connecting said power output of said transmission to said final drive units, said chassis having a rear portion and said cab being located substantially centrally with respect to a width of the machine and mounted adjacent said rear portion of said chassis.

5,618,157
DETACHABLE COUPLER ASSEMBLY
Samuel S. Pratt, Bedford; Dan Shaffer, Duncansville; Tim A. Davis, Berlin, and Ashley Heiple, Alum Bank, all of Pa., assignors to Rockland, Inc., Bedford, Pa.
Filed May 4, 1995, Ser. No. 433,648
Int. Cl.⁶ E02F *3/32*
U.S. Cl. 414—723 **7 Claims**



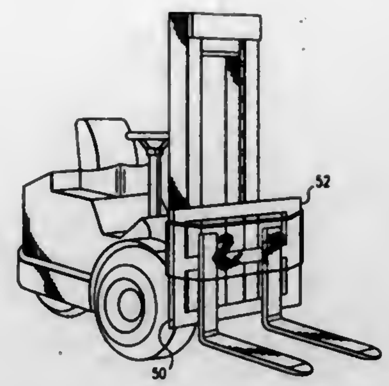
1. An assembly for coupling an implement to an operating arm of a machine comprising:
a first component including a base section fixedly mountable on a wall portion of said implement, having an annular flange section disposed on an upper end of said base section; and
a second component connectable to said operating arm, including a base section disposable in coupling relation with said first component, a pair of gripping members disposed on said base section and displaceable into and out of gripping engagement with said annular flange section of said first component when said components are disposed in coupling relation, and means for selectively displacing said gripping members into and out of gripping engagement with said annular flange section of said first component,
each of said gripping members having a recess for receiving a segment of said annular flange section therein, having an end wall surface engageable with a segment of an annular end wall surface of said annular flange section, in gripping engagement, and upper and lower opposed wall surfaces for receiving said segment of said annular flange section therebetween; and
wherein said annular flange section projects inwardly and said gripping members are extendable outwardly into gripping relation with said annular flange section; and
wherein said displacing means comprises a fluid actuated means.

5,618,158

Patent Not Issued For This Number

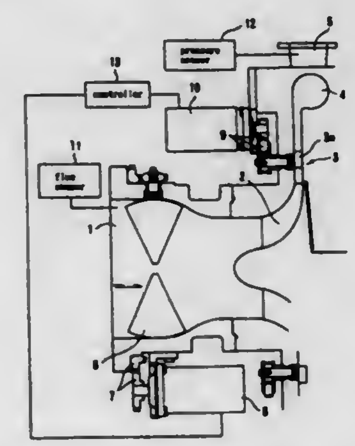
5,618,159
LIFT TRUCK FORK GUARD
Robert E. Wilson, 2308 Ridgestone Dr., Dallas, Tex. 75287
Continuation of Ser. No. 360,275, Dec. 21, 1994, abandoned. This application May 24, 1996, Ser. No. 658,900
Int. Cl.⁶ B66F *9/12*
U.S. Cl. 414—785 **15 Claims**

1. A protective guard for a lift truck having a pair of laterally spaced apart L-shaped forks extending therefrom, each fork having an upper, vertically extending portion secured to a carriage assembly which is vertically moveable on said truck and a lower, horizontally projecting portion for engaging a load thereover, said vertically extending portion and said horizontally extending portion of each of said L-shaped forks collectively securing said load thereagainst from movement and lifting and lowering said load over said horizontally projecting portion, said protective guard comprising:



(a) a first flexible sheet having a height defined between a top edge and a bottom edge and a width defined between a first end and a second end, said width of said first flexible sheet being sufficient in length to span said vertical extending portions of said lift forks;
(b) said first flexible sheet being made of a material which has cushioning characteristics to reduce or prevent damage to materials being transported on said lift truck caused by contact with said lift forks, said first flexible sheet further being transparent so as to allow a lift truck operator to see through said first flexible sheet;
(c) said first flexible sheet disposed against said vertically extending portion; and
(d) releasable fastening means disposed on said first flexible sheet and said carriage assembly for releasably attaching said first flexible sheet to said carriage assembly such that said first sheet spans at least a portion of each of said vertically extending portions of said lift forks.

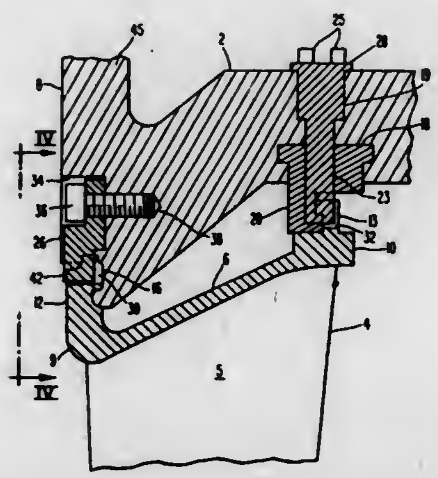
5,618,160
TURBOMACHINERY WITH VARIABLE ANGLE FLUID GUIDING DEVICES
Hideomi Harada, and Kazuo Takei, both of Kanagawa-ken, Japan, assignors to Ebara Corporation, Tokyo, Japan
Filed May 17, 1995, Ser. No. 442,585
Claims priority, application Japan, May 23, 1994, 6-132559; May 27, 1994, 6-138082
Int. Cl.⁶ F04D *27/02*
U.S. Cl. 415—17 **13 Claims**



1. A turbomachinery having variable angle flow guiding means comprising:
an impeller for providing energy to a fluid medium;

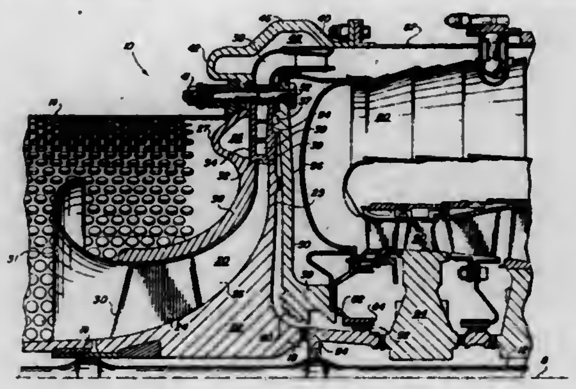
a diffuser vane assembly having variable angle vanes provided on a diffuser for increasing a fluid pressure of said fluid medium, said diffuser vane assembly receiving said fluid medium output from said impeller;
a rotation device for driving said diffuser vanes;
a flow rate detection device for detecting inlet flow rates;
a rotation device controller for operating said rotation device;
a storage medium accessed by said rotation device controller, said storage medium containing data representing a predetermined relationship between inlet flow rates and diffuser vane angles which is determined so as to minimize instability of flow within said turbomachinery; and
wherein said rotation device controller is operated to drive said rotation device to position said diffuser vanes at an operating angle.

5,618,161
APPARATUS FOR RESTRAINING MOTION OF A TURBO-MACHINE STATIONARY VANE
Theodore Papageorgiou; Kent G. Hultgren, both of Winter Park, and Rocco J. Covelli, Winter Springs, all of Fla., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Oct. 17, 1995, Ser. No. 544,350
Int. Cl.⁶ F01D *9/04*
U.S. Cl. 415—190 **16 Claims**



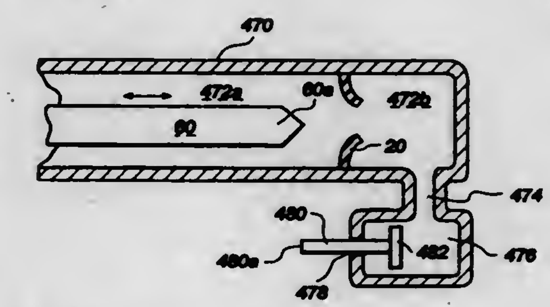
1. A stationary vane assembly for a turbo-machine, comprising:
a) a vane airfoil having a shroud attached thereto, said shroud having first and second ends, one of said ends being disposed upstream of the other one of said ends;
b) a cylinder having means for enclosing a flow of working fluid for said turbo-machine;
c) first locking means for preventing relative motion between said stationary vane airfoil and said cylinder, said first locking means having first means for engaging said cylinder and means for engaging said first end of said shroud; and
d) second locking means for preventing relative motion between said stationary vane airfoil and said cylinder, said second locking means having second means for engaging said cylinder and means for engaging said second end of said shroud, said second means for engaging said cylinder having means for adjusting the circumferential location at which said second locking means engages said cylinder.

5,618,162
CENTRIFUGAL COMPRESSOR HUB CONTAINMENT ASSEMBLY
Chi F. Chan, Mesa, and Steven J. Pringnitz, Gilbert, both of Ariz., assignors to AlliedSignal Inc., Morris Township, N.J.
Division of Ser. No. 595,889, Feb. 6, 1996, which is a division of Ser. No. 362,069, Dec. 21, 1994. This application Aug. 19, 1996, Ser. No. 699,293
Int. Cl.⁶ F04D *29/44*
U.S. Cl. 415—206 **6 Claims**



1. A gas turbine engine comprising:
a turbine mounted to a shaft;
a combustor in fluid communication with said turbine;
an impeller mounted to said shaft and having an axial inlet and a radial outlet, said impeller being disposed between an annular front shroud and an annular back shroud;
a first and second annular wall circumscribing said radial outlet, said walls spaced apart axially to define therebetween a diffuser,
a housing circumscribing said annular walls and said shrouds; and
said second annular wall having an annular slot for receiving an annular rim extending from said back shroud.

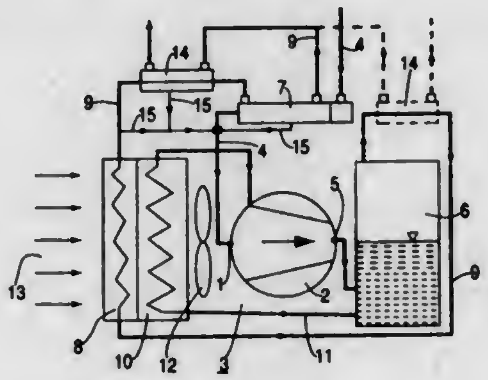
5,618,163
VOLUMETRIC PUMP SHIFT BOTTOMING DETECTOR
Stephen C. Jacobsen, and Clark C. Davis, both of Salt Lake City, Utah, assignors to Sarcos Group, Salt Lake City, Utah
Division of Ser. No. 157,693, Nov. 23, 1993. This application Jun. 6, 1995, Ser. No. 467,032
Int. Cl.⁶ F04B *49/00*
U.S. Cl. 417—63 **1 Claim**



1. A pump bottoming detector comprising:
a housing defining an elongate cavity therein, said cavity being adapted to be filled with fluid;
a resilient sheet of material disposed in the cavity, said sheet including an aperture positioned in alignment with the cavity, said sheet dividing the cavity into first and second compartments;
a moveable elongate shaft disposed within the first compartment of the cavity such that it may be moved into and out of the aperture in the resilient sheet, to thereby alternately cause

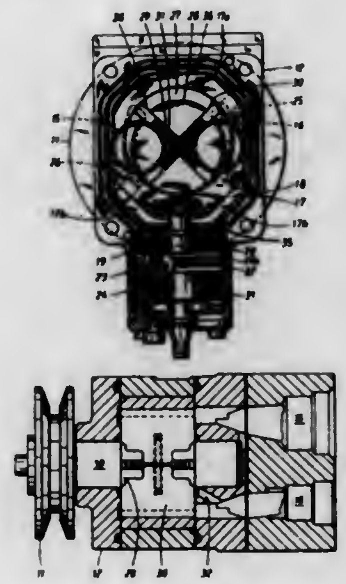
greater and lesser fluid pressure in the second compartment to move the fluid in a pumping action;
a fluid chamber disposed in fluid communication with the second compartment;
actuating means responsive to fluid pressure in the fluid chamber exceeding a certain level for actuating a switch adjacent the fluid chamber, to thereby indicate that the shaft has been moved a certain distance through the aperture in the sheet into the second compartment.

5,618,164
LIQUID RING COMPRESSOR WITH PLURAL AFTER-COOLER ELEMENTS
Guenter Holzheimer, Baiersdorf; Bernd Schaeperklaus, Neuenkirchen, and Hans Weigl, Velburg, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany
Filed Dec. 5, 1995, Ser. No. 567,662
Claims priority, application Germany, Dec. 6, 1994, 44 43 429.4; Mar. 31, 1995, 295 05 608.8
Int. Cl.⁶ F04C *19/00*
U.S. Cl. 417—68 **5 Claims**



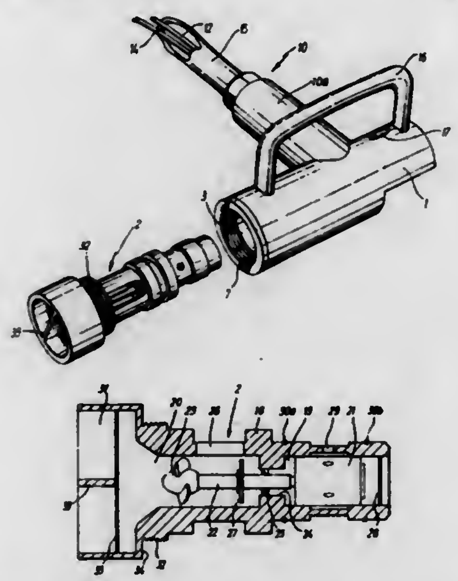
1. A compressor assembly, comprising:
a suction line;
a storage tank;
a liquid-piston rotary compressor having an inlet port and an outlet port, the inlet port of said rotary compressor being coupled to said suction line and the outlet port of said rotary compressor being coupled to said storage tank;
an air-discharge line coupled to said storage tank;
a return line coupled to said storage tank, said return line recirculating operating liquid from said storage tank to said liquid-piston rotary compressor;
a first after-cooler device having a primary and a secondary zone, where said suction line is coupled to the primary zone of said first after-cooler device and said air-discharge line is coupled to the secondary zone of said first after-cooler device, such that condensate produced in said first after-cooler device is recirculated as operating liquid in said compressor assembly;
a second after-cooler device coupled to said first after-cooler device and having primary zone and a secondary zone, such that condensate being produced in the second after-cooler device is recirculated as operating liquid in said compressor assembly, said second after-cooler device being arranged upstream, in terms of air discharge flow, from said first after-cooler device; and
a third after-cooler device having a primary zone and a secondary zone, where the secondary zone of said third after-cooler device is coupled to the secondary zone of said first and second after-cooler device, and the primary zone of third after-cooler device is connected to the air-discharge line of the secondary zone of said first after-cooler device.

5,618,165
VARIABLE DISPLACEMENT AND CONSTANT PRESSURE PUMP
Erik Larsson, Olofstorp, and Gert Albertsson, Gothenburg, both of Sweden, assignors to AB Volvo, Sweden
PCT No. PCT/SE93/00323, § 371 Date Dec. 27, 1994, § 102(e) Date Dec. 27, 1994, PCT Pub. No. WO93/21424, PCT Pub. Date Oct. 28, 1993
PCT Filed Apr. 14, 1993, Ser. No. 318,764
Claims priority, application Sweden, Apr. 14, 1992, 9201206
Int. Cl.⁶ F04B *49/00*
U.S. Cl. 417—220 **4 Claims**



1. Pump comprising a pump housing having at least two end walls and a shaft driven rotor having at least two outwardly spring-biased vane elements, which lie in contact with a wall of a chamber surrounding said rotor and which, during rotation of said rotor, transport a gas and fluid medium from a suction port to a pressure port in said housing, said chamber being arranged in a sliding block which is displaceable inside said housing in such a way that said chamber is moveable between two end positions, of which one of said two end positions presents a comparatively small eccentricity with respect to said shaft of said rotor and of which a second of said two end positions presents a comparatively larger eccentricity with respect to said shaft, said sliding block being connected with a control rod for positioning said sliding block in said housing, wherein said control rod extends out through a first of said at least two end walls of said housing, said control rod being spring-biased in a direction towards a second of said at least two end walls of said housing, a space being arranged between said second of said at least two end walls and a side of said sliding block lying closest thereto, said space communicating with said pressure port, a space being arranged between said first of said at least two end walls of said housing and the opposite side of said sliding block communicating with said suction port, said vane elements of said rotor being supported, in pairs, in tracks which extend through said rotor wherein said tracks are common for each pair of vane elements, wherein a channel extends between said pressure port and a central portion of said rotor radially behind said vane elements in order to lead fluid pressure from said pressure port to said tracks behind said vane elements in order to press said vanes into contact with said wall of said chamber.

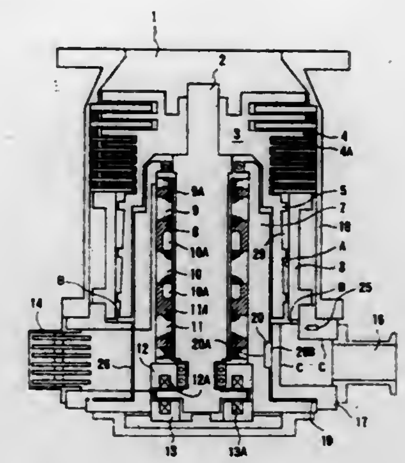
5,618,166
SUBMERSIBLE PUMP FOR PUMPING RADIOACTIVE LIQUIDS
Clive Legett; Leonard S. D. Taylor; Colin Walton, and Simon J. White, all of Cumbria, United Kingdom, assignors to British Nuclear Fuels plc, Warrington, United Kingdom
PCT No. PCT/GB94/00208, § 371 Date Nov. 16, 1994, § 102(e) Date Nov. 16, 1994, PCT Pub. No. WO94/18457, PCT Pub. Date Aug. 18, 1994
PCT Filed Feb. 4, 1994, Ser. No. 313,242
Claims priority, application United Kingdom, Feb. 4, 1993, 9302173
Int. Cl.⁶ F04B *17/00*
U.S. Cl. 417—313 **8 Claims**



1. A submersible apparatus for pumping radioactive liquids in which the apparatus is submersed, said apparatus comprising a pump cartridge, said pump cartridge having a casing provided with a liquid inlet and a liquid outlet and adapted for housing an impeller and a pneumatically operated motor to which the impeller is drivingly connected, the apparatus further comprising a pump body having a cavity formed therein in which said pump cartridge is removably mounted, and a liquid outlet duct communicating with the liquid outlet in the cartridge casing and extending from the pump body for conveying pumped liquid to a remote location, wherein compressed air is supplied to the motor through an air inlet tube extending through the interior of the liquid outlet duct and air is exhausted from the motor through an air outlet tube extending through the interior of the liquid outlet duct.

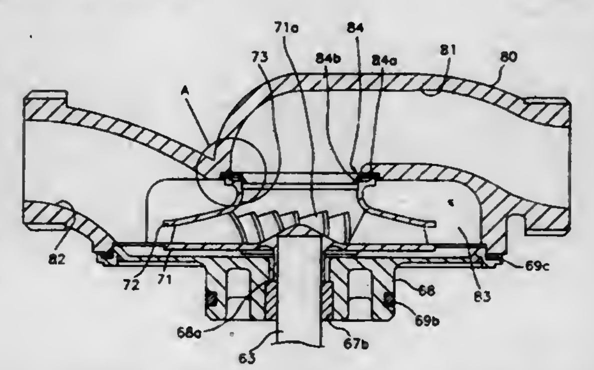
5,618,167
VACUUM PUMP APPARATUS HAVING PELTIER ELEMENTS FOR COOLING THE MOTOR & BEARING HOUSING AND HEATING THE OUTER HOUSING
Yutaka Hirakawa, Kanagawa-ken; Shun-ichi Aiyoshizawa, Tokyo, and Toshiharu Nakazawa, Kanagawa-ken, all of Japan, assignors to Ebara Corporation, Tokyo, Japan
Filed Jun. 6, 1995, Ser. No. 468,740
Claims priority, application Japan, Jul. 28, 1994, 6-195874
Int. Cl.⁶ F04B *17/00*
U.S. Cl. 417—372 **8 Claims**

1. A vacuum pump apparatus comprising: an outer housing containing a fluid inlet opening and a fluid outlet opening spaced from said fluid inlet opening; an inner housing disposed within said outer housing and containing a rotor, bearing sections journalling said rotor for rotation, a motor section containing a motor for operating said rotor, and an impeller secured to said rotor for rotation therewith, said inner housing and said outer housing being mutually spaced between said fluid inlet opening and said fluid



outlet opening to define a fluid flow path therebetween; and means forming a Peltier element containing a heat absorbing surface and a heat releasing surface operably positioned between said inner housing and said outer housing to transfer heat generated within said inner housing to said outer housing adjacent said fluid outlet opening.

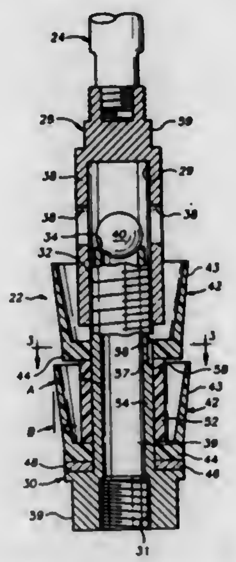
5,618,168
CIRCULATING PUMP
Sung-Dai Moon, Kyeongsangbook-Do, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea
Filed Jan. 2, 1996, Ser. No. 582,172
Claims priority, application Rep. of Korea, Jun. 29, 1995, 95-18229
Int. Cl.⁶ F04D *29/08*
U.S. Cl. 417—423.11 **4 Claims**



1. A circulating pump comprising a motor, an impeller and a pump housing wherein:
the motor includes a motor housing, a stator fixed inside the motor housing, a stator can, a motor end shield and a plurality of sealing members for separating the stator from fluid, a rotor rotating by means of an electromagnetic interaction with the stator when an electric current is applied to the stator, and a motor shaft integrally combined with the rotor, one end of the motor shaft being supported rotatably and slidably in an axial direction by a lower bush bearing at the inner bottom of the motor housing, the other end of the motor shaft passing through a through hole formed in the motor end shield, and the motor shaft being supported rotatably and slidably in the axial direction by an upper bush bearing at the through hole of the motor end shield;
the impeller includes an impeller body having a plurality of blades for pressurizing fluid and fixedly assembled with the other end of the motor shaft and a shroud integrally fixed onto the impeller body, at the center of the shroud a through hole being formed for allowing fluid to flow, at the upper side of

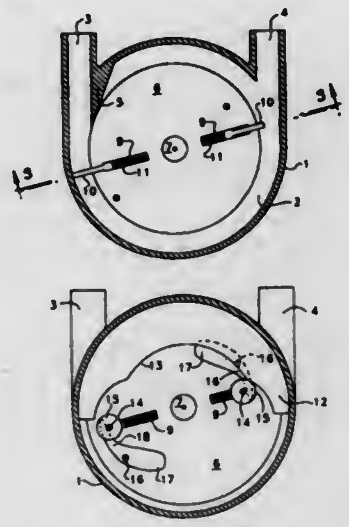
the shroud an annular flange being formed, and on the annular flange of the shroud a plurality of grooves being formed; and
the pump housing includes a housing body disposed onto the motor and comprising an inlet passage and an outlet passage provided at both sides thereof respectively, at the center of the housing body the impeller being disposed and an impeller chamber communicated with the inlet passage and the outlet passage and a suction ring combined at an inner end of the inlet passage of the housing body and guiding fluid through the inlet passage into the impeller.

5,618,169
WATER WELL PUMP CYLINDER COMPONENTS
Loren E. Smith, Box 277, Higgins, Tex. 79046
Filed Mar. 11, 1996, Ser. No. 615,550
Int. Cl.⁶ F04B *47/12;53/14*
U.S. Cl. 417—554 **8 Claims**



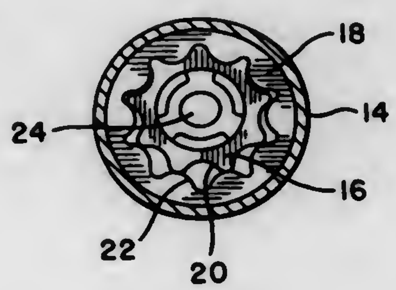
1. In a water well having a working cylinder at the depending end of a tubular pump string extending from the earth's surface into a wellbore containing water and having a reciprocable sucker rod string in and substantially coextensive with the tubing string, the improvement comprising:
pump plunger means including a tubular plunger body having a wall connected with a travelling valve cage within the cylinder and depending from said sucker rod string for reciprocation therewith;
a planar surface on the body wall subtending an arc of the periphery of said body intermediate its ends;
a pair of plunger cups, each cup of said pair of cups having an apertured base, surrounding an intermediate portion of said body in superposed relation; and,
sleeve means within the lowermost cup of said pair of cups for supporting the base of the uppermost cup above the upper limit of the lowermost cup and in intersecting relation with respect to said planar surface for forming a vertical fluid passageway across the base of the upper cup of said pair of cups,
whereby upward movement of said plunger body closes said travelling valve and fills both cups of said pair of cups with water and lifts the water above the cups and plunger means toward the surface of the earth.

5,618,170
ROTARY MOTOR
Erland Högdahl, Svensbyn, Sweden, assignor to Hogdahl Innovation Aktiebolag, Svensbyn, Sweden
PCT No. PCT/SE94/00206, § 371 Date Dec. 18, 1995, § 102(e) Date Dec. 18, 1995, PCT Pub. No. WO94/21894, PCT Pub. Date Sep. 29, 1994
PCT Filed Mar. 11, 1994, Ser. No. 522,370
Claims priority, application Sweden, Mar. 18, 1993, 9300894
Int. Cl.⁶ F01C *19/00;1/00*
U.S. Cl. 418—106 **8 Claims**



1. A rotary machine for use with a fluid, said machine comprising:
a housing having an inlet, an outlet and an annular passageway associated with said inlet and said outlet, said passageway having a constriction; at least one rotor mounted in said passageway; at least two arms pivotally mounted on said rotor; a counterweight mounted on each of said arms; and a blade pivotally abutting each of said counterweights, said blades being movable radially in said rotor; wherein movement of said blades is guided forcibly past said constriction.

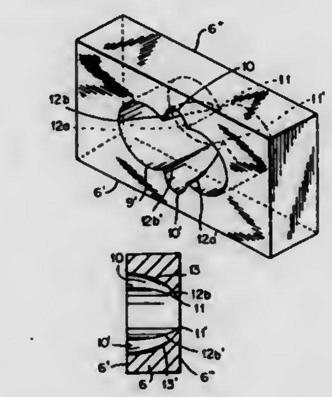
5,618,171
SUPPLY UNIT WITH A CERAMIC INTERNAL GEAR PUMP
Diedrich von Behr, Hochdorf, and Gerald Kalbe, Plochingen, both of Germany, assignors to Cerasiv GmbH Innovatives-Keramik-Engineering, Plochingen, Germany
Filed Jan. 20, 1995, Ser. No. 375,880
Claims priority, application Germany, Jan. 21, 1994, 44 01 783.9
Int. Cl.⁶ F04C *2/10;15/00*
U.S. Cl. 418—152 **4 Claims**



1. A fluid delivery supply unit comprising:

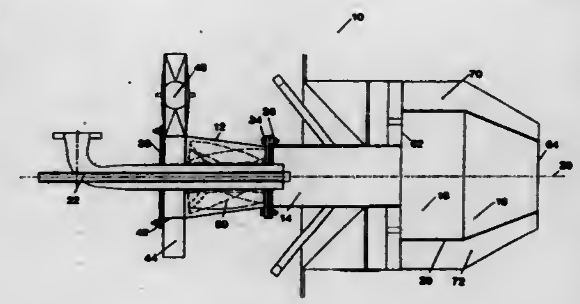
an internal gear pump as a pump unit having a bearing race in which an inner gear is arranged on a bearing journal and is driven by a motor;
an outer gear arranged between the inner gear and the bearing race and adapted to rotate with the inner gear by way of toothing, the inner gear having one tooth fewer than the outer gear to provide a pumping action in operation, each tooth of the inner gear and outer gear having a contoured surface treated by a close-to-contour shaping method and having a natural sinter skin, wherein each of said bearing race, inner gear and outer gear of the internal gear pump is comprised of a ceramic material and the close-to-contour shaping method is at least one selected from finish pressing or injection molding.

5,618,172
SPINNING PUMP FOR POLYAMIDES
Luzius Berger, Kriens, Switzerland, assignor to Hone Poulenc Viscosuisse SA, Emmenbruecke, Switzerland
PCT No. PCT/CH95/00029, § 371 Date Sep. 15, 1995, § 102(e) Date Sep. 15, 1995, PCT Pub. No. WO95/22002, PCT Pub. Date Aug. 17, 1995
PCT Filed Feb. 7, 1995, Ser. No. 532,556
Claims priority, application Switzerland, Feb. 14, 1994, 427/94
Int. Cl.⁶ F04C *2/18*
U.S. Cl. 418—206.4 **6 Claims**



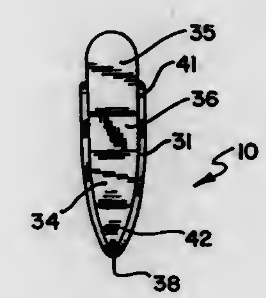
1. A spinning pump for melt spinning of polyamides, said spinning pump comprising a back plate (5), a front plate (7), a central plate (6) having a front side (6') and a back side (6"), said central plate extending between the front plate (7) and the back plate (5) and containing a pair of cylindrical bores (9,9'), and a pair of intermeshing gear wheels (8,8') disposed in said pair of cylindrical bores; wherein said central plate (6) is provided with a bore (10) for feeding a melt into the central plate and another bore (10') for feeding the melt out of the central plate, and the bore (10) and the other bore (10') each have transverse partially circular cross sections with cross-sectional areas decreasing from the front side (6') of the central plate (6) to the back side (6") of the central plate (6) and said transverse partially circular cross sections of said bores (10,10') have center points located on a parabolic arc (13*b*) from the front side (6') to the back side (6") of the central plate (6).

5,618,173
APPARATUS FOR BURNING OXYGENIC CONSTITUENTS IN PROCESS GAS
Andreas Rühl, De Pere, Wis.; Gert Rentzel, Gelnhausen, Germany; Patrick McGehee, Green Bay, Wis.; Serguei Charamko, Potts Point, Australia, and Kim Anderson, Green Bay, Wis., assignors to W.R. Grace & Co.-Conn., New York, N.Y.
Filed Dec. 15, 1994, Ser. No. 356,600
Int. Cl.⁶ F23M *9/00*
U.S. Cl. 431—183 **12 Claims**



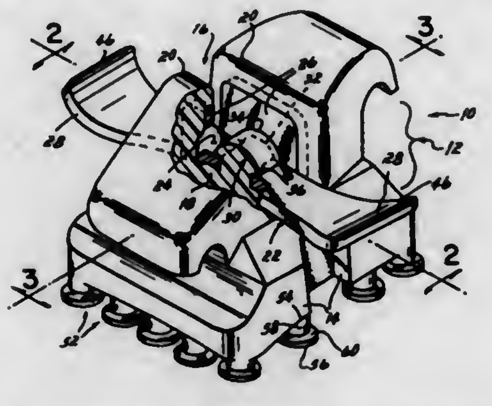
1. A burner comprising a swirl chamber having a longitudinal axis; a cylindrical combustion chamber; a cylindrical mixing chamber of a diameter substantially less than said combustion chamber in communication with said swirl chamber and said combustion chamber, said swirl chamber including swirl means comprising a plurality of vanes arranged axially to said combustion chamber; means for introducing oxygenic gas into said swirl chamber in a direction approximately tangential to said swirl chamber longitudinal axis; said swirl means in said swirl chamber generating a swirl of the whole amount of said oxygenic gas; means for introducing supplementary gaseous fuel into said mixing chamber; whereby said swirling oxygenic gas mixes flamelessly with said supplementary gaseous fuel in said mixing chamber and proceeds to said combustion chamber where said mixture is burned.

5,618,174
ORTHODONTIC BRACKET AND SYSTEM
Wayne A. Mors, 715 W. Judd St., Woodstock, Ill. 60098
Filed May 11, 1994, Ser. No. 242,729
Int. Cl.⁶ A61C *3/00*
U.S. Cl. 433—8 **60 Claims**



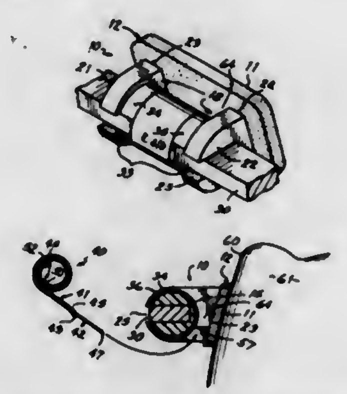
1. An orthodontic archwire bracket comprising:
a base having an occlusal end and a gingival end on the apical axis, said base having a facial surface and a mounting surface;
means for cooperating with an archwire, said means attached to said facial surface of said base;
said bracket having an apical length which is equal to or greater than substantially 2 times the average mesiodistal width of said bracket.

5,618,175
PLASTIC ORTHODONTIC BRACKET HAVING ROTATION WINGS
James F. Reber, Pomona; Craig A. Andreiko, Alta Loma, and David L. Ludwig, San Juan Capistrano, all of Calif., assignors to Ormco Corporation, Glendora, Calif.
Continuation of Ser. No. 488,059, Jun. 7, 1995, which is a continuation-in-part of Ser. No. 391,663, Feb. 21, 1995. This application Aug. 21, 1995, Ser. No. 517,432
Int. Cl.⁶ A61C *7/28*
U.S. Cl. 433—8 **23 Claims**



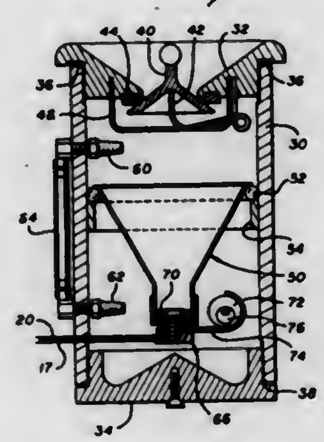
1. An orthodontic bracket, comprising:
a plastic body including an integrally connected tooth-mountable base, said body including an archwire slot for receiving an orthodontic archwire, said slot having a bottom wall and two opposing sidewalls extending therefrom;
a metal insert located in at least a portion of said archwire slot and having at least one rotation wing, said rotation wing adapted to cooperate with an orthodontic archwire located in said archwire slot in exerting a rotating force on a tooth via said base; and
a protrusion extending into said archwire slot, said protrusion having an upper end elevated above said bottom wall of said archwire slot, said upper end adapted to contact the underside of an orthodontic archwire located in said archwire slot and support at least a portion of the orthodontic archwire above said bottom wall of said archwire slot.

5,618,176
ORTHODONTIC BRACKET AND LIGATURE AND METHOD OF LIGATING ARCHWIRE TO BRACKET
Craig A. Andreiko, Alta Loma, and Mark A. Payne, Whittier, both of Calif., assignors to Ormco Corporation, Glendora, Calif.
Filed Jun. 12, 1995, Ser. No. 489,501
Int. Cl.⁶ A61C *7/00*
U.S. Cl. 433—11 **16 Claims**



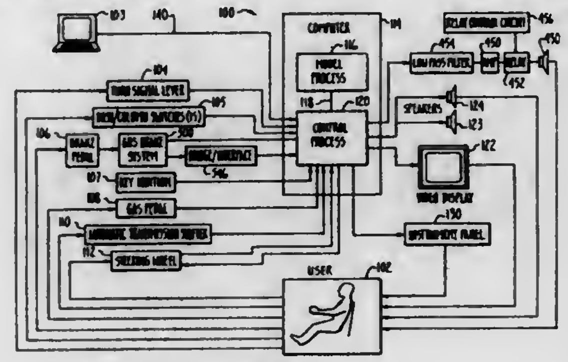
1. An orthodontic device and ligature combination comprising:
an orthodontic device having a back side thereon adapted to be secured to a tooth of a patient, and a front side including a post having a transverse width and an archwire slot formed longitudinally therein; and
a ligature, separate from the bracket, including a band of flat spring-like material configured, when in an unstressed state, to form a coil of a diameter smaller than the transverse width of the post, the band having a forward end, a terminal end and a length, the band being circumferentially moveable, forward end first, around the post, such that, when wrapped around the post, the band will confine an archwire in the slot.

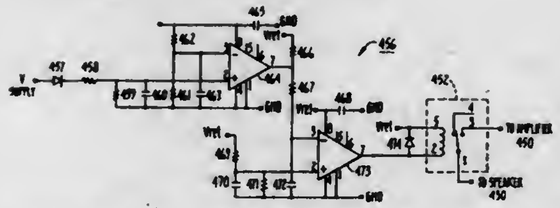
5,618,177
ARRANGEMENT FOR FEEDING PRESSURIZED PARTICULATE MATERIAL
John D. Abbott, San Jose, Calif., assignor to Dove Systems, Inc., Menlo Park, Calif.
Filed May 8, 1995, Ser. No. 436,960
Int. Cl.⁶ A61C *3/02*
U.S. Cl. 433—88 **7 Claims**



1. An arrangement for delivering powdered material under pressure comprising:
A. a source of pressurized propellant gas;
B. a pressure vessel that is connected to the source of pressurized propellant gas via a pressure inlet and that has a pressurized outlet;
C. a mainly funnel-shaped hopper that is mounted within the pressure vessel, that holds the powdered material, and that has a top portion and a bottom portion;
D. an inlet orifice through which the powdered material exits the hopper and enters the pressurized outlet line;
E. a suspension resiliently supporting the hopper within the pressure vessel; and
F. a vibration means for applying oscillatory forces and torques to the bottom portion of the hopper and thereby for causing the powdered material in the hopper to fluidize and circulate within the hopper and across the inlet orifice;
in which the suspension is an annular elastic member that contacts the hopper around the top portion of the hopper and is fastened to an inner surface of the pressure vessel.

5,618,178
VEHICLE SIMULATOR WITH LOW FREQUENCY SOUND FEEDBACK
Norman S. Copperman, Palo Alto, and Wade O. Winblad, Hayward, both of Calif., assignors to Atari Games Corporation, Milpitas, Calif.
Division of Ser. No. 18,950, Feb. 17, 1993, Pat. No. 5,368,484, which is a continuation-in-part of Ser. No. 888,375, May 22, 1992, Pat. No. 5,366,376. This application Nov. 4, 1994, Ser. No. 334,874
Int. Cl.⁶ G09B *19/04;19/16*
U.S. Cl. 434—62 **26 Claims**

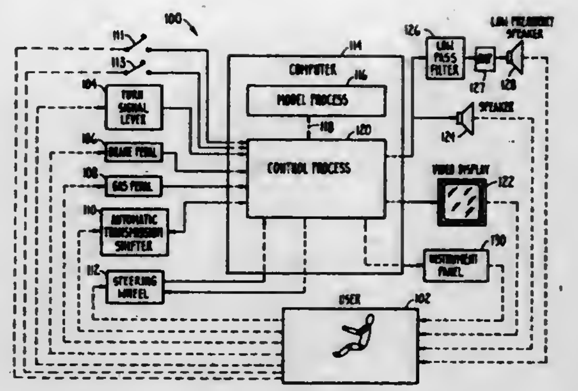




1. A low frequency sound system of a vehicle simulation system for simulating the physical sensation representative of the sensations produced during the operation of the simulated vehicle, comprising:
a seat, wherein a user of the simulated vehicle sits during operation of the simulated vehicle;
a plurality of input device corresponding to input devices of the vehicle simulated by the vehicle simulation system;
a computer for receiving input signals from the input devices;
a control process executed by the computer for selectively converting the input signals into a plurality of control output signals, wherein the plurality of control output signals correspond to a plurality of events occurring during operation of the simulated vehicle in simulated universe; and
a transducer responsive to the control output signals for communicating a plurality of low frequency output signals to the seat, wherein each of the plurality of low frequency output signals produce a corresponding physical motion of the seat so as to provide the user with a physical sensation that corresponds to one of the plurality of events occurring during the operation of the simulated vehicle in the simulated universe.

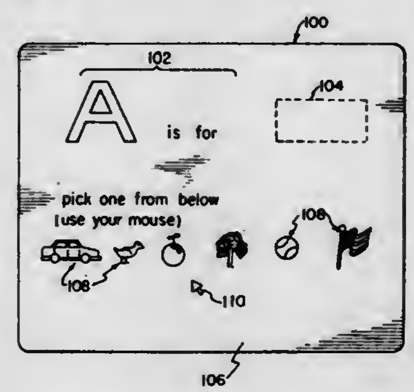
5,618,179
DRIVER TRAINING SYSTEM AND METHOD WITH PERFORMANCE DATA FEEDBACK
Norman S. Copperman, Palo Alto; Alan S. Gray, Sunnyvale, and Wade O. Winblad, Hayward, all of Calif., assignors to Atari Games Corpooration, Milpitas, Calif.
Continuation of Ser. No. 888,375, May 22, 1992, Pat. No. 5,366,376. This application Nov. 14, 1994, Ser. No. 339,478
Int. Cl.⁶ G09B *9/04*
U.S. Cl. 434—69 **35 Claims**

1. A system for simulating operation of a vehicle comprising:
a plurality of input devices configured to control the simulated vehicle, at least one input device generating a set of input device states indicative of input device position;



a visual display configured to present a view of a simulated environment;
a computer including a model process associated with said simulated input devices capable of processing said input device states and determining position information of said simulated vehicle therefrom, wherein said computer further includes a control process, responsive to said position information, capable of displaying on the visual display a present route of the simulated vehicle through the simulated environment;
a memory having a plurality of buffers including a present route buffer;
a clock associated with said computer capable of providing timing information to said computer, wherein said computer stores input device states in the present route buffer at a first subset of selected times during traversal of the route; and
a display panel responsive to the stored input device states, said display panel providing a graphical representation of the input device states.

5,618,180
METHOD OF TEACHING USING A COMPUTER
Tedd Nathanson, 352 Central Ave., Scarsdale, N.Y. 10583
Continuation-in-part of Ser. No. 89,663, Jul. 9, 1993, Pat. No. 5,447,439. This application Jun. 2, 1995, Ser. No. 461,590
Int. Cl.⁶ G09B *3/00*
U.S. Cl. 434—156 **1 Claim**



1. A method of teaching using a computer comprising the steps of:
scanning a first informative element located on a computer screen;
locating an empty space adjacent to said first informative element on the computer screen, said empty space intended to receive a second related computer generated informative element;
comparing with possible others and selecting from a remote source on said computer screen said second informative element,

inputting said second informative element using computer activation from said remote source to said empty space so that said second informative element may be viewed with said first informative element;

computer activating said computer screen to display a third informative element which relates to said second informative element, said displaying of said third informative element being responsive to a predetermined "correct" response located within said empty space wherein said second informative element relates correctly to said first informative element,

observing any relationship between said first informative element and said second informative element and any relationship between said second informative element and said third informative element.

5,618,181

Patent Not Issued For This Number

5,618,182

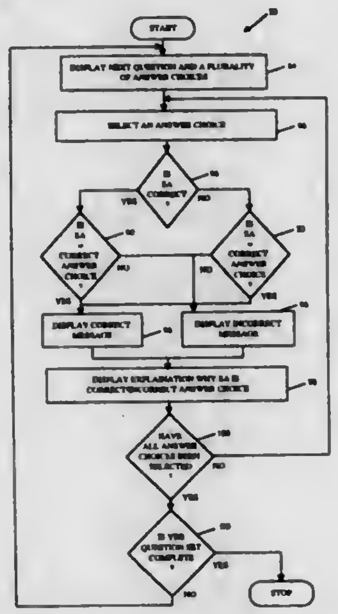
METHOD AND APPARATUS FOR IMPROVING PERFORMANCE ON MULTIPLE-CHOICE EXAMS

C. Douglass Thomas, 1193 Capri Dr., Campbell, Calif. 95008

Filed Sep. 30, 1994, Ser. No. 315,976

Int. Cl.⁶ G09B *7/00*

U.S. Cl. 434—323 **21 Claims**



1. A computerized learning method useful for improving a user's performance on multiple-choice tests through use of a computer, said method comprising:

displaying a question and a plurality of answer choices on a display screen associated with a computer;

monitoring a time duration for the user to answer the question;

detecting selection of one of the answer choices by the user;

displaying an indication of the time duration;

determining whether the selected answer choice is the correct answer choice for the question; and

displaying on the display screen an appropriate portion of a substantive outline that pertains to the subject matter of the question without regard to whether the selected answer choice is determined to be the correct answer choice, the substantive outline containing detailed information on a plurality of different subject matter area, and the appropriate portion of the substantive outline being displayed is associated with at least one of the subject matter areas and pertains to the subject matter of the question.

17. A computerized method for improving a user's performance on a multiple choice test having various subject areas through use of a computer, said method comprising:

providing a plurality practice questions and corresponding answer choices in an electronic format, the practice questions and answers being representative of actual test questions and answers;

providing a substantive outline in an electronic format, the substantive outline covering the various subject areas of the multiple choice test;

displaying one of the practice questions and the corresponding answer choices for the user;

monitoring the user's selection of one of the answer choices;

determining whether the selected answer choice is the correct answer choice for the question; and

displaying an appropriate portion of the substantive outline at the user's request, wherein portion of the substantive outline being displayed pertains to the subject area of the practice question displayed independent of whether the selected answer choice is correct or incorrect.

5,618,183

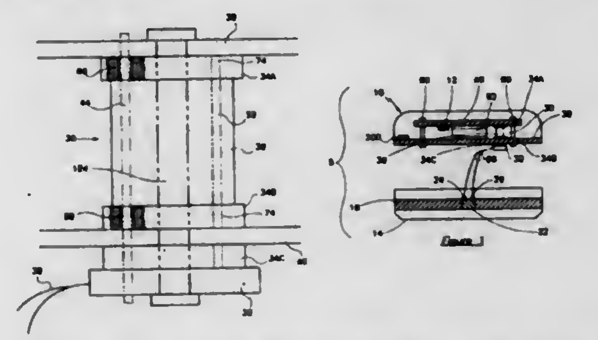
DITHER MOTOR CONNECTOR FOR A SELF CONTAINED LASER GYRO

Thomas A. Gilmore, Plymouth, and Balu K. Iyer, Eden Prairie, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 24, 1994, Ser. No. 328,752

Int. Cl.⁶ G01C *19/70*

U.S. Cl. 439—66 **3 Claims**



1. In a laser gyro system having a laser gyro, a case, a power supply and first and second printed wiring boards having first and second surfaces, the first printed wiring board having a contact pad having a first pattern of conductors on its first side the second printed wiring board having a contact pad having conductors in said first pattern, at least some of which extend there through from its first side to its second side to form a second pattern of conductors which may be substantially similar to the first pattern of conductors, the laser gyro having a dither motor, a connector unit for connecting the power supply to the dither motor, comprising:

first and second connector substrates each having conductors in said first pattern;

a slug having conductors in said first pattern interposed between said first and second connector substrates;

a third connector substrate having conductors in said second pattern;

a paddle board having conductors in said second pattern, a plurality of which are connected to wires;

wherein said substrates and slug are physically joined to form the connector unit which is interposed between the contact pads of the first and second printed wiring boards such that the pattern of conductors on the connector unit contacts the contact pads; and

wherein said third connector substrate is connected to the contact pad on the second side of the second printed wiring board and to the paddle board, the paddle board wires being adapted to connect to the dither motor.

5,618,184

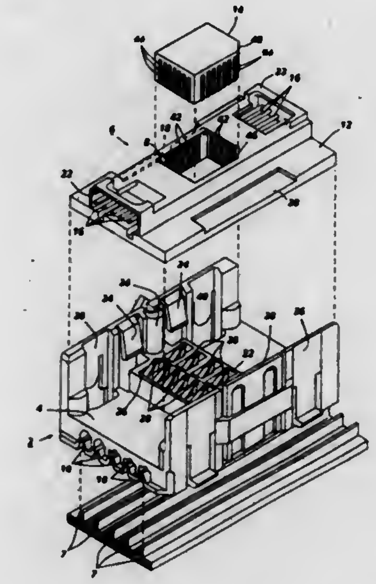
I/O INTERFACE DEVICE AND CONNECTOR MODULE WITH DUAL LOCATORS

David W. Rall, Webster, and Timothy M. Minerd, Pittsford, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 16, 1995, Ser. No. 515,630

Int. Cl.⁶ H01R *9/09*

U.S. Cl. 439—71 **14 Claims**



1. An input/output connector module for connecting at least one of an input device and an output device to a multi-wire bus, the bus carrying signals for controlling input and output devices, the module comprising:

a first stage having means for electrically connecting the first stage directly to the multi-wire bus, and

a second stage supported on the first stage and having an IC chip mounted thereon, the second stage including

first electrical connections for connecting the input and output devices to the IC chip, and

second electrical connections for connecting the multi-wire bus to the IC chip for conveying the signals between the multi-wire bus and the input and output devices wherein the second stage includes;

a substrate having a positioning feature for locating the second stage with respect to the first stage in a horizontal direction, and the surface of the substrate includes depressed portions for locating the second stage with respect to the first stage in a vertical direction, the depressed portions located along opposite sides of the substrate,

the first stage including snap fasteners disposed for engaging said depressed portions.

5,618,185

CROSSTALK NOISE REDUCTION CONNECTOR FOR TELECOMMUNICATION SYSTEM

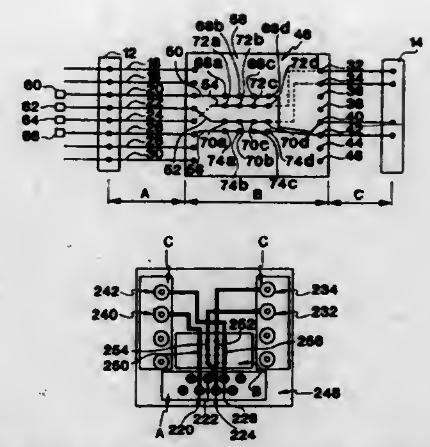
Robert A. Aekins, Stratford, Conn., assignor to Hubbell Incorporated, Orange, Conn.

Filed Mar. 15, 1995, Ser. No. 404,547

Int. Cl.⁶ H01R *9/09*

U.S. Cl. 439—76.1 **23 Claims**

1. A connector for communications systems comprising:



first, second, third and fourth input terminals arranged in a first ordered array;

first, second, third and fourth output terminals arranged in a second ordered array; and

circuit means for electrically coupling said first, second, third and fourth input terminals to said first, second, third and fourth output terminals, respectively, and for canceling crosstalk induced across adjacent ones of said terminals, said circuit means including first, second, third and fourth conductive paths between said first, second, third and fourth terminals, respectively, sections of a first pair of two of said paths being adjacent each other in relatively close proximity and crossing over each other between said first array of said input terminals and said second array of said output terminals, at least one of said paths of said first pair having a first set of vias connected in series between said first array of said input terminals and said second array of said output terminals, at least one of said paths of a second pair of the other paths having a second set of vias connected in series between said first array of said input terminals and said second array of said output terminals, said first and second sets of vias being adjacent.

5,618,186

ELECTRICAL CONNECTION BOX

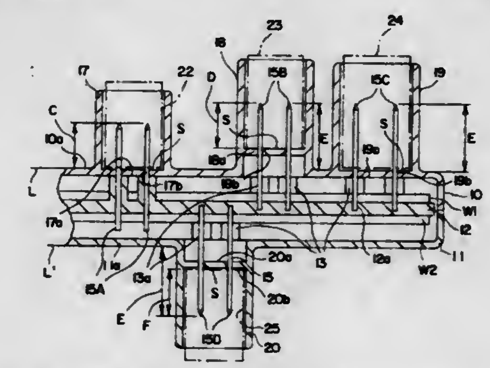
Yuuji Saka; Takahiro Onizuka; Yoshito Oka; Makoto Kobayashi, and Nori Inoue, all of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Japan

Filed Aug. 30, 1995, Ser. No. 521,353

Claims priority, application Japan, Aug. 31, 1994, 6-207061; Sep. 8, 1994, 6-215014

Int. Cl.⁶ H01R *9/09*

U.S. Cl. 439—76.2 **12 Claims**



1. An electrical connection box comprising

a casing (10,11;111,112) having receiving portions (17–20;30;18';116,117) for making a mechanical connection with connecting portions (22–25;31;3';23) of external circuits, wherein an engaging surface (S;116a–118a) is formed in

association with each of the receiving portions for the connecting portion of the respective external circuit, and

internal circuits (W1,W2,15A–15D;W1,W2,15E;W1,W2,120) comprising

wires (W1,W2) arranged in at least one stage and

connection terminals (15A–15D;15E;120) which are connected with any of the wires (W1,W2) and which extend to respective receiving portions (17–20;30;18';116,117) of the casing (10,11;111,112) so as to form input/output terminal portions (15c) for the electrical connection with the external circuits,

where the electrical connection box is formed such that, using one type of connection terminal (15A–15D;15E;120), the distance between the connection point of a connection terminal with a wire (W1,W2) and the corresponding engaging surface (S;116*a*–118*a*) is adjusted in accordance with the type of connecting portions(22–25;31;3';23) of the external circuit.

5,618,187

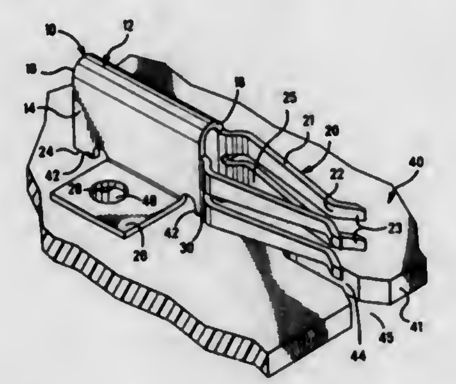
BOARD MOUNT BUS BAR CONTACT

Kazuhiro Goto, Markham, Canada, assignor to The Whitaker Corporation, Wilmington, Del.

Continuation-in-part of Ser. No. 340,934, Nov. 17, 1994. This application Feb. 21, 1995, Ser. No. 391,941

Int. Cl.⁶ H01R *9/09*

U.S. Cl. 439—79 **17 Claims**



1. A bus bar contact for mounting on a circuit board, comprising:

a U-shaped center section having ends and a front and a back, the U-shaped center section being defined by parallel legs and a curved section, the top of the contact being defined by the curved section;

contact fingers extending from the front of the U-shaped section, said fingers having contact sections for electrical connection with a matable contact, the ends of the U-shaped center section being disposed below the contact fingers;

termination posts extending from the ends of said U-shaped section to be received in holes in the circuit board to be soldered thereto and provide electrical connection therewith;

stabilization tabs extending from the ends of said U-shaped section, the tabs being disposed below the contact fingers to provide stability and support for the contact against the circuit board;

securing means for securing said contact on the circuit board;

guide means for guiding the matable contact into electrical contact with said contact fingers and to prevent damage to the contact fingers.

5,618,188

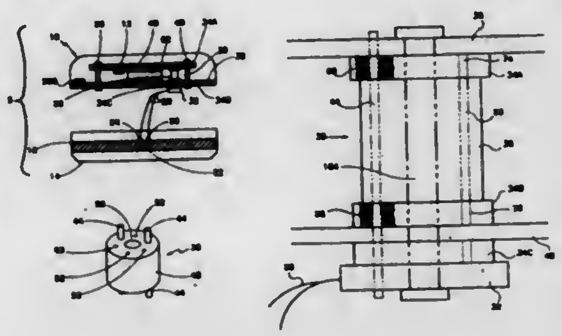
CONNECTOR FOR A SELF CONTAINED LASER GYRO

Thomas A. Gilmore, Plymouth, and Balu K. Iyer, Eden Prairie, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 24, 1994, Ser. No. 328,754

Int. Cl.⁶ G01C *19/70*

U.S. Cl. 439—91 **4 Claims**



1. A laser gyro unit, comprising:

a laser block;

an electronics printed wiring board having support electronics and a contact pad thereon and a via connecting them;

a power supply printed wiring board having a power supply and a contact pad mounted thereon and a via connecting them, the power supply adapted to provide power to the laser gyro and the support electronics; and

a wiring connector, having first and second substrates and a slug, the substrates each having first and second surfaces, the substrates having a plurality of holes laid out in a predefined pattern, connecting the first and second surfaces and a conductive plug located in one of the holes, the first and second subtrates having said conductive plug located in the same hole in the predefined pattern, the conductive plug comprising a hard, electrically conductive material, the slug having first and second surfaces and a plurality of holes laid out in the predefined pattern, the slug being located between the first and second substrates, the conductors comprising a maleable material and being located in the slug and connecting the first and second surfaces, the holes being laid out in the same predefined pattern as for the first and second substrates, said slug located between said substrates, a connector unit in operation being placed between and connecting the contact pads of the electronics printed wiring board and the power supply printed wiring board.

5,618,189

SOLDER MEDIUM FOR CIRCUIT INTERCONNECTION

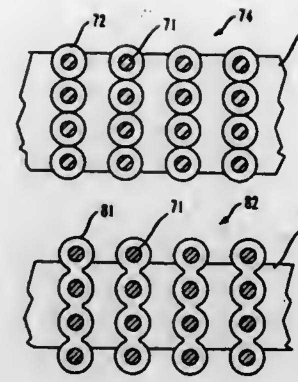
Sungho Jin, Millington, and Mark T. McCormack, Summit, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 255,687, Jun. 8, 1994, Pat. No. 5,509,815. This application Jan. 18, 1996, Ser. No. 588,193

Int. Cl.⁶ H01R *9/09*

U.S. Cl. 439—91 **17 Claims**

1. An electronic device comprising a pair of components with mating contact pads, said contact pads being in juxtaposed alignment each to another, and mating solder joints electrically and mechanically interconnecting said mating contact pads, wherein each of said solder joints is a high-aspect-ratio subdivided solder joint structure comprising a plurality of subdivided solder paths between said mating contact pads, said solder joints being formed by dispersing a plurality of solder particles in an insulating matrix, deforming said insulating matrix so as to elongate said insulating matrix to transform the plurality of solder particles into elongated solder wires, and cutting said elongated insulating matrix transverse to its longitudinal axis into slices, the length of said slices



being determined by a spacing between said mating pads, said ratio between the length of each wire and its diameter being at least 2:1.

5,618,190

INSULATING STRUCTURE FOR A SHIELDED CONNECTOR

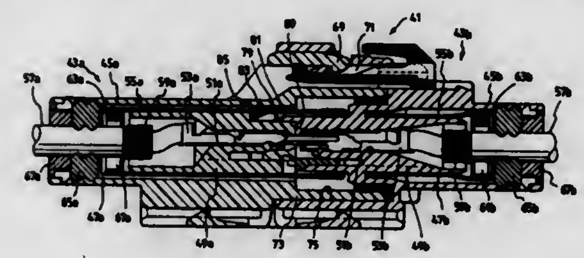
Satoki Masuda; Mitsuhiro Matsumoto, and Hidehiko Kuboshima, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Sep. 14, 1995, Ser. No. 528,221

Claims priority, application Japan, Sep. 16, 1994, 6-221849; Jan. 18, 1995, 7-005940

Int. Cl.⁶ H01R *13/629*

U.S. Cl. 439—98 **6 Claims**



1. An insulating structure in a shielded connector assembly constituted by a first connector half and a second connector half wherein, in each of said first and second connector halves, an inner housing is provided in an outer housing and a gap is defined between the inner housing and the outer housing, a terminal reception chamber for receiving a terminal is formed in said inner housing, and a metal shell covering said inner housing is disposed in said gap, said insulating structure further comprising:

a rib disposed between said metal shell and said terminal of said first connector half, said rib projecting over an end surface of said inner housing of said first connector half and extending in parallel with said metal shell of said first connector half, said rib being disposed on a contact surface of said inner housing of said first connector half which contacts said inner housing of said second connector half when said first and second connector halves fitted to each other, and projecting over an end surface of said second connector half when said first and second connector halves are fitted to each other, and

a groove formed in the top end surface of said second connector half to receive said rib when said first and second connector halves are fitted to each other.

5,618,191

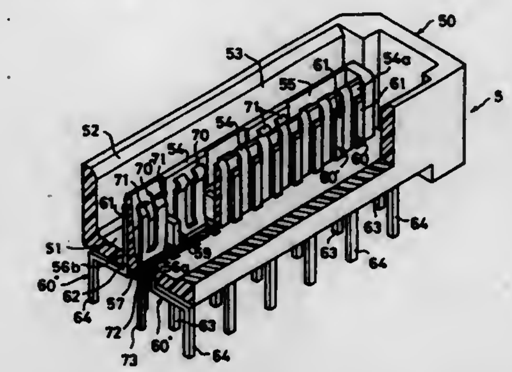
ELECTRICAL CONNECTOR

Koji Chikano, Uji, and Youichiro Azuma, Hino, both of Japan, assignors to Kel Corporation, Tokyo, Japan

Filed Nov. 3, 1995, Ser. No. 553,061

Int. Cl.⁶ H01R *4/66*

U.S. Cl. 439—108 **14 Claims**



1. An electrical connector comprising:

a first connector half having a plurality of first contacts retained in two longitudinally extending rows in an insulative housing,

a second connector half having a plurality of second contacts retained in two longitudinally extending rows in an insulative housing, the first connector half being matable with the second connector half to connect the first contacts with respective, corresponding, second contacts,

a plurality of third contacts retained in the first connector half, between the two rows of first contacts and aligned longitudinally with each other and at a predetermined pitch, and

a plurality of fourth contacts retained in the second connector half between the two rows of second contacts, aligned longitudinally with each other and at a pitch which is the same as the pitch of the third contacts;

so that, in a mated position of the connector halves, the fourth contacts are offset, longitudinally, by a distance of half the pitch with respect to the third contacts, and respective, successive single third contacts engage longitudinally spaced apart, adjacent portions of respective different successive fourth contacts, thereby electrically connecting respective, third contacts and respective fourth contacts consecutively.

5,618,192

FLEXIBLE CONDUCTIVE TRACK

Lee Drury, Woollahra, Australia, assignor to Mass International Pty. Ltd., Sydney, Australia

Continuation-in-part of Ser. No. 193,074, Feb. 4, 1994, abandoned. This application Mar. 29, 1995, Ser. No. 412,941

Claims priority, application Australia, Aug. 5, 1991, PK7592; Dec. 20, 1991, PL0139; Feb. 11, 1992, PL0816; Jul. 2, 1992, PL3311

Int. Cl.⁶ H01R *25/00*

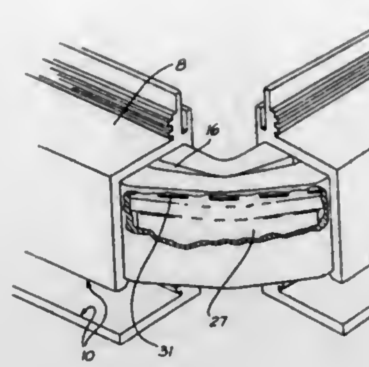
U.S. Cl. 439—110 **20 Claims**

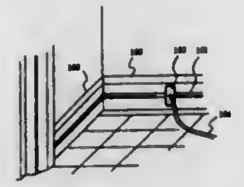
1. An electrical distribution system including:

a support housing having at least one longitudinally extending chamber for receiving and supporting an electrical conductor assembly;

an electrical conductor assembly located in said chamber and spaced from a wall of said chamber to define a substantially continuous longitudinally extending access channel therewith, said conductor assembly including:

an elongage flexible insulated housing having a plurality of longitudinally extending substantially parallel slots extending inwardly from one face thereof and forming insulation means therebetween, and at least one longitudinally extending slot extending inwardly from a substantially opposite





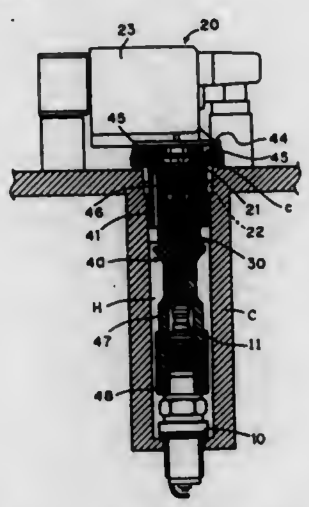
face thereof, said slot being substantially parallel to said plurality of slots, and

elongate flexible conductor means located in at least one of the slots in said one face;

the arrangement being such that the width of said slots decrease when the conductor assembly is bent in a plane substantially perpendicular to the plane of said parallel slots; and

at least one plug assembly having a plurality of plug conductors for establishing electrical contact with said conductor means, the arrangement being such that said plug conductors are receivable within said access channel to prevent said electrical contact being established and are rotatable within said access channel to establish said electrical contact.

5,618,193
STRUCTURE FOR CONNECTING SPARK PLUG AND IGNITION COIL FOR INTERNAL COMBUSTION
Keiichi Nakajima; Tadashi Fujita, both of Yokkaichi, and Tetsuya Miwa, Kariya, all of Japan, assignors to Sumitomo Wiring Systems, Ltd., and Nippondenso Company, Ltd., both of Japan
Filed Nov. 13, 1995, Ser. No. 555,010
Claims priority, application Japan, Nov. 22, 1994, 6-288234
Int. Cl.⁶ F02P *17/00*
U.S. Cl. 439—125 **6 Claims**



1. A structure for connecting a spark plug and an ignition coil for an internal combustion engine, comprising:

a spark plug mounted in the bottom of a plug bole formed in a cylinder head;

an ignition coil including a bar-shaped coil body portion received in said plug bole, a plug connecting portion at the lower end of said coil body portion and connected to said spark plug, and a lid portion at the upper end of said coil body portion and located exteriorly of said plug hole; and

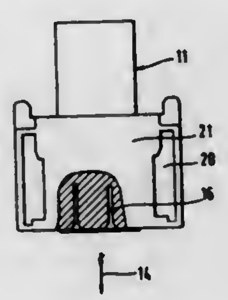
an annular rubber member provided between said lid portion of said ignition coil and said cylinder head and in intimate contact with a bottom surface of said lid portion and a periphery of an upper opening of said plug hole,

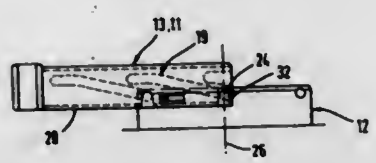
there being a first air vent passage between said annular rubber member and said lid portion and in communication with the exterior,

said annular rubber member having a second air vent passage for communication between said first air vent passage and the interior of said plug hole,

there being a large-volume reservoir space between said annular rubber member and said lid portion at a position along said first air vent passage and having a cross-sectional area enlarged from said first air vent passage.

5,618,194
ELECTRICAL PLUG DEVICE
Hans-Heinrich Maue, Bietigheim-Bissingen; Werner Hofmeister, Muehlacker; Dieter Egert, Korb, and Dirk Langenhan, Schwieberdingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed Nov. 21, 1995, Ser. No. 560,261
Claims priority, application Germany, Mar. 27, 1995, 195 11 225.3
Int. Cl.⁶ H01R *13/62*
U.S. Cl. 439—157 **10 Claims**





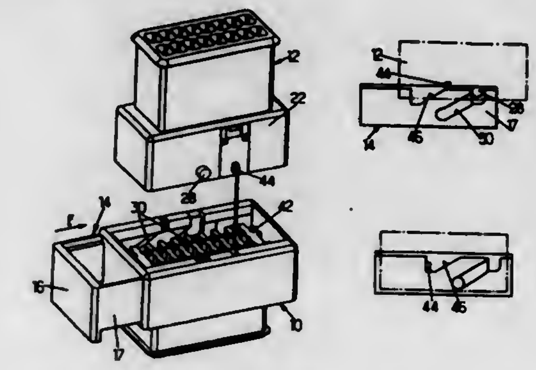
1. An electrical plug device comprising:

a first plug connector part having at least one first plug contact element and first and second guide openings, the first guide opening extending through a first side of the first plug connector part, the second guide opening extending through a second side of the first plug connector part;

a second plug connector part having at least one second plug contact element and first and second control elements, the first and second control elements being disposed symmetrically with respect to a longitudinal axis of the second plug connector part; and

a slide for bringing together and separating the first and second plug contact elements and, thus, the first and second plug connector parts by moving transversely with respect to a separation direction of the first and second plug contact elements, the slide being adapted to be inserted into the first plug connector part, the slide having a U-shaped configuration, the slide including a web and two parallel legs, each of the two legs having a first end coupled to the web and a control portion for cooperating with at least one of the first and second control elements of the second plug connector part.

5,618,195
ELECTRICAL CONNECTOR INCORPORATING CONTACT-LOCKING GRID AND DRAWER
Patrice Cappe, Faverolles, France, assignor to Framatome Connectors International, Courbevoie, France
Filed Feb. 12, 1996, Ser. No. 600,209
Claims priority, application France, Feb. 10, 1995, 95 01576
Int. Cl.⁶ H01R *13/62*
U.S. Cl. 439—157 **5 Claims**



1. Electrical connector comprising:

(a) a plug (12) having a housing (22) incorporating slots parallel to one direction of insertion and designed to receive first electrical contacts, and a contact-locking grid (32) designed to be inserted in the plug housing in a direction opposite to the direction of insertion until a contact-locking position is reached;

(b) a mounting base (10) having a housing comprising slots for receiving second electrical contacts which are parallel to the direction of insertion, said mounting base delimiting a plug-reception cavity; and

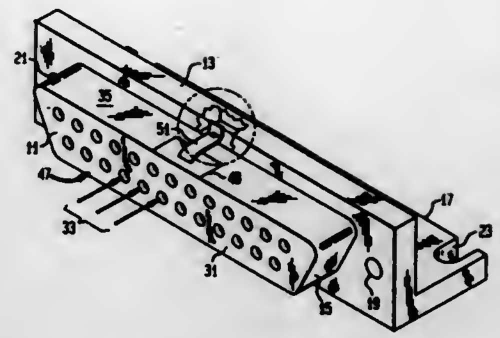
(c) a drawer movable in the base transversely to the direction of insertion and comprising sides incorporating slots having an oblique portion for the forced travel of pegs belonging to the plug housing, so that the movement of the drawer in one direction causes insertion of the plug in the cavity, and, in the other direction, removal of the plug;

(d) wherein the grid comprises at least one lug designed to form a stop for the drawer and to block insertion of the plug (12) prior to the engagement of the pegs (28) in the slots (30) when the grid is not completely inserted.

5,618,196
SOCKET CONNECTOR HAVING IMPROVED PROTECTION AGAINST ELECTROSTATIC DISCHARGES
Ranjit Biswas, Westford, Mass., assignor to Lucent Technologies, Inc., Murray Hill, N.J.
Filed Aug. 18, 1995, Ser. No. 516,851
Int. Cl.⁶ H01R *13/53*
U.S. Cl. 439—18.1 **15 Claims**

1. A socket connector comprising in combination:

(a) a body of electrically insulative material and having a face and a sidewall disposed at an angle with said face, said body having formed therein a plurality of housing channels to accommodate female connector contacts, said plurality of housing channels being arranged substantially parallel to one another and substantially perpendicular to said face of said body so as to form in said face a plurality of passageways, one at an end of each housing channel, for receiving pins of a corresponding pin connector;



(b) a plurality of female connector contacts, each positioned in one of said housing channels for making conductive connection with a pin of said corresponding pin connector, said pin to be inserted into said socket connector through the passageway of one of said housing channels, each such female connector contact having a proximate end which is set back into said body from said face thereof;

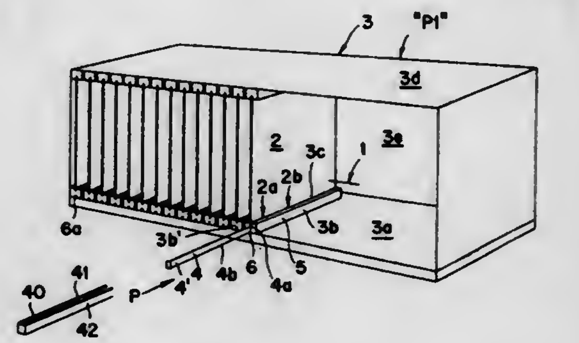
(c) a conductive shell embracing said body and having an edge which surrounds and grips said face of said body;

(d) a conductive coating on at least a portion of said face not occupied by said passageways;

(e) a conductive stripe covering at least a portion of said sidewall of said body and in conductive contact with said conductive coating on said face thereof; and

(f) resilient conductive means interposed between said conductive shell and said conductive stripe and in electrical contact with both of them.

5,618,197
ARRANGEMENT FOR ESTABLISHING ELECTRICAL CONNECTION
Helge Bodahl-Johnsen, Huddinge, Sweden, assignor to Telafonaktiebolaget LM Ericsson, Stockholm, Sweden
Filed Oct. 11, 1994, Ser. No. 320,659
Claims priority, application Sweden, Oct. 12, 1993, 93 033439
Int. Cl.⁶ H01R *13/00*
U.S. Cl. 439—260 **11 Claims**



1. An arrangement for making electrical contact between at least one circuit board and magazine for receiving circuit boards comprising:

a row of contacts having surfaces disposed along at least one side of one edge of the at least one circuit board;

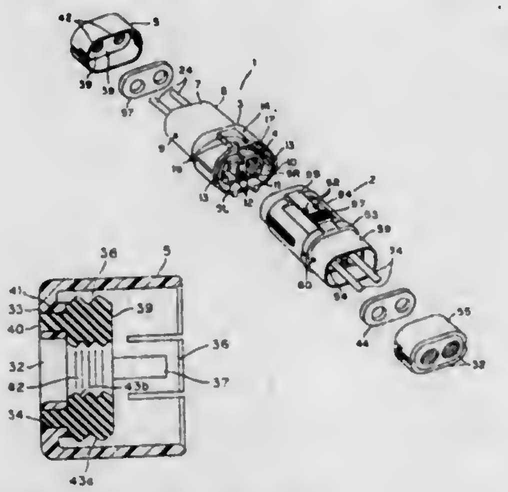
a block means connected to the magazine for receiving the at least one circuit board when the at least one circuit board is inserted into the magazine;

a row of contact fingers disposed in the block means for making electrical contact with the row of contact surfaces;

elongated means for sequentially engaging each of said contact fingers in electrical contact with a corresponding contact surface; and

a hole opening into a channel in the block means for receiving the elongated engaging means,
wherein when the at least one circuit board is inserted into the magazine each contact surface is adjacent to a corresponding contact finger and wherein the elongated engaging means is inserted into the block means via the hole opening into the channel causing each contact finger to sequentially deform to press against each corresponding contact surface, as the elongated engaging means is fully inserted, causing electrical connection between the contact surfaces and contact fingers.

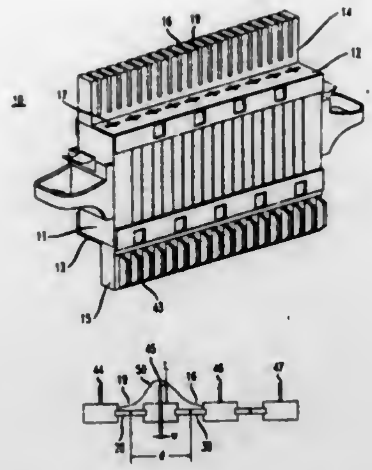
5,618,198
WATERPROOF CONNECTOR
Kensaku Sato, and Naohisa Nakata, both of Tokyo, Japan, assignors to Hirose Electric Co., Ltd., Tokyo, Japan
Filed Sep. 14, 1995, Ser. No. 527,981
Claims priority, application Japan, Sep. 27, 1994, 6-256136
Int. Cl.⁶ H01R *13/52*
U.S. Cl. 439—274 **4 Claims**



1. A waterproof connector comprising:
a housing having front and rear openings;
a terminal unit provided in said housing and connected to a cable; and
watertight means for tightly closing said rear opening of said housing through which said cable is taken out in a watertight fashion;
said watertight means comprising:
a bowl-like retainer attachable to said rear opening of said housing, said retainer having a bottom with a through hole for taking out said cable and a molding section on said bottom and a plurality of linkage apertures through said molding section, and
an elastic seal integrally molded on said molding section through said linkage apertures and having a second through hole concentric with said first through hole so that said elastic seal and said retainer are joined as a unit.

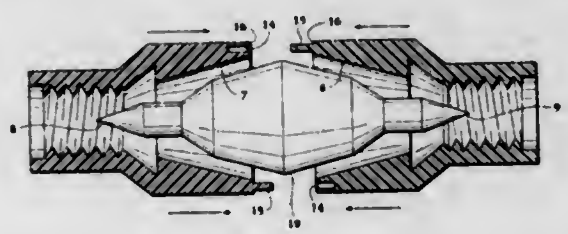
5,618,199
CONNECTOR MODULE INCLUDING CONDENSATION PROTECTION
Theodore A. Conorich, Parsippany-Troy Hills Twp., Morris County, and Lawrence M. Paul, Randolph Twp., Morris County, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.
Filed May 17, 1995, Ser. No. 442,862
Int. Cl.⁶ H01R *4/24*
U.S. Cl. 439—404 **5 Claims**

1. A connector module comprising:
an insulating housing including



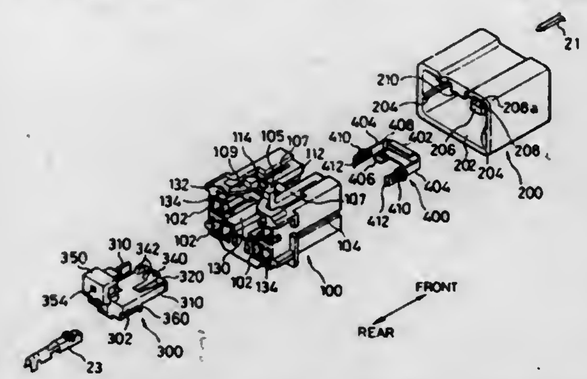
a body portion and a cap formed on a surface of the body portion, the cap including a plurality of spaced slits;
at least one row of contacts mounted within the housing, each contact including an end portion which is capable of providing electrical connection to a corresponding wire, said end portions being aligned with the slits in the housing; and
a plurality of ridges formed in portions of the cap between the slits and extending outward from the housing a sufficient distance to prevent formation of droplets extending between adjacent slits.

5,618,200
ELECTRICAL CONNECTOR
Thomas W. Norgaard, c/Cumana Ota. #51 Clns del Tamanaco, Caracas, Venezuela
Filed Jun. 6, 1995, Ser. No. 467,850
Claims priority, application Venezuela, Mar. 16, 1995, 040595
Int. Cl.⁶ H01R *4/24*
U.S. Cl. 439—427 **8 Claims**



1. A connector for wires that eliminates the need for cutting, trimming, twisting or using insulating tape, comprising:
(a) a tubular external element having two oppositely disposed non-tapered orifices and having a central section between said orifices, each of said orifices being adapted to receive an end of an insulated wire, an inside wall of said external element corresponding to said central section defining a hollow internal region; and
(b) a separable internal contact having oppositely disposed contact surfaces, said internal contact seated within said internal region, said internal contact being adapted to electrically communicate with said insulated wire via said contact surfaces;
said external element being internally and oppositely threaded with a non-conductive thread about said orifices such that by rotating said external element said wire is drawn toward said internal contact without cutting said insulated wire and is retained in electrical communication therewith or expelled from said external element, depending on the direction of rotation.

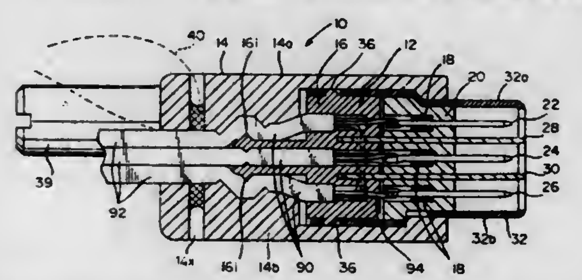
5,618,201
CONNECTOR HAVING ENGAGEMENT DETECTING DEVICE
Sakai Yagi; Masanori Tsuji; Keishi Jinno, all of Shizuoka-ken, and Takahiro Yoneda, Isehara, all of Japan, assignors to Yazaki Corporation, Tokyo, and Nissan Motor Co., Ltd., Yokohama, both of Japan
Filed Apr. 27, 1995, Ser. No. 429,881
Claims priority, application Japan, Jun. 14, 1994, 6-131765
Int. Cl.⁶ H01R *3/00*
U.S. Cl. 439—489 **8 Claims**



1. An electrical connector having an engagement detecting device, comprising:
a first connector housing for housing a plurality of first connector terminals, wherein said first connector housing has a front opening and a rear opening;
a second connector housing for housing a plurality of second connector terminals mated with the first connector terminals, and engaged with said first connector housing;
a slider being inserted into said front opening and being positioned inside of said first connector housing in two stages of a half engagement position and a full engagement position; and
a U-shaped short-circuit spring being inserted into said rear opening and being positioned inside of said first connector housing, for electrically shorting two corresponding connector terminals of said plurality of first connector terminals and second connector terminals when said slider is inserted into said first connector housing to the half engagement position, but electrically disconnecting said corresponding connector terminals when said second connector housing is engaged with said first connector housing and thereafter said slider is further inserted into said first connector housing from the half engagement position to the full engagement position.

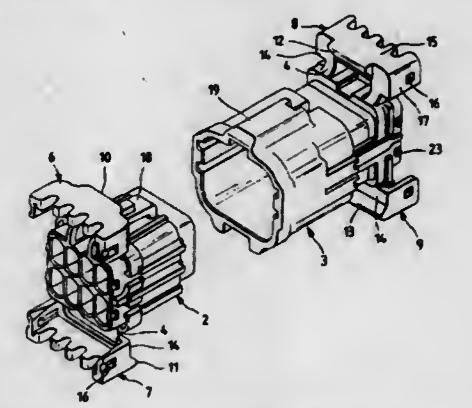
5,618,202
CONNECTOR HAVING STRIP LINE STRUCTURE
Takeshi Okuyama; Kouji Watanabe; Nobuo Yatsu; Masahiko Sakuraoka, and Junichi Akama, all of Kawasaki, Japan, assignors to Fujitsu Ltd., Kawasaki, Japan
Filed Dec. 7, 1994, Ser. No. 351,515
Claims priority, application Japan, Jan. 31, 1994, 6-009606
Int. Cl.⁶ H01R *23/66*
U.S. Cl. 439—497 **31 Claims**

1. A connector for a plurality of coaxial cables having corre-



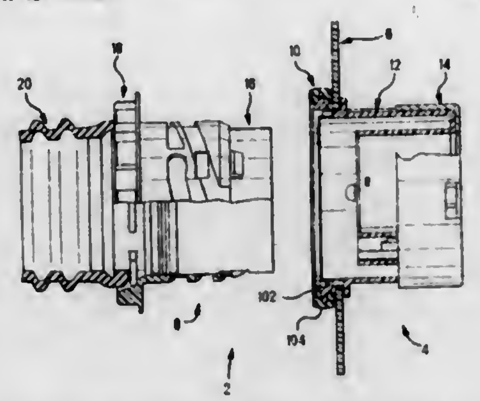
sponding signal conductors and ground conductors, said connector comprising:
an insulating body;
signal contacts respectively soldered to the corresponding signal conductors of the coaxial cables and arranged in first and second sets, each set comprising respective, plural signal contacts;
first and second contact supports arranged in the insulating body in parallel relationship and supporting the first and second sets of signal contacts, respectively, in corresponding, first and second parallel rows;
at least one ground contact adapted to be electrically connected to ground conductors of the coaxial cables;
said insulating body comprising an insulating cable holder for holding end portions of respective cables, and an insulating unit coaxially arranged with said insulating cable holder for holding said first and second contact supports together;
said insulating unit comprising at least two support portions for supporting respective contact supports, and at least one through hole arranged between said at least two support portions for the passage of said at least one ground contact therethrough;
one end of each signal contact being soldered to a respective signal conductor of each coaxial cable, said at least one ground contact positioned through said at least one through hole of said insulating unit and having one end forcibly engaged with corresponding ground conductors of said coaxial cables or with additional conductors connected to said corresponding ground conductors.

5,618,203
CONNECTOR WITH REAR HOLDER
Seiji Koumatsu, and Kimihiro Abe, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan
Continuation of Ser. No. 265,031, Jun. 24, 1994. This application Aug. 9, 1996, Ser. No. 700,683
Claims priority, application Japan, Jun. 30, 1993, 5-161556
Int. Cl.⁶ H01R *13/73*
U.S. Cl. 439—546 **6 Claims**



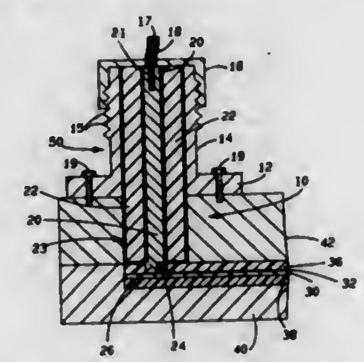
1. A connector with a rear holder, comprising:
a connector housing having an unobstructed outer surface and a rear end generally perpendicular to the outer housing surface;
a rear holder having an outer wall pivotally connected to said connector housing by a hinge, the outer wall of the rear holder having a length from the hinge less than that of the unobstructed outer surface from the hinge, said rear holder having a terminal holding wall extending perpendicularly from said outer wall to close on the rear end of the housing upon pivotal movement of the rear holder from an open position to a closed position; and
a projected abutment portion formed on the outer wall of the rear holder, the abutment portion extending from the outer wall in a generally perpendicular direction opposite from the terminal holding wall to engage the unobstructed outer housing surface and restrict movement of the rear holder from the closed position to a limited open position.

5,618,204
CIRCULAR BULKHEAD CONNECTOR ASSEMBLY
Lothar H. W. Nix, Mörfelden-Walldorf, and Lothar A. Post, Offenbach, both of Germany, assignors to The Whitaker Corporation, Wilmington, Del.
Filed Jun. 13, 1994, Ser. No. 258,648
Claims priority, application United Kingdom, Aug. 13, 1993, 9316838
Int. Cl.^{6} H01R *13/54*
U.S. Cl. 439—559 **8 Claims**



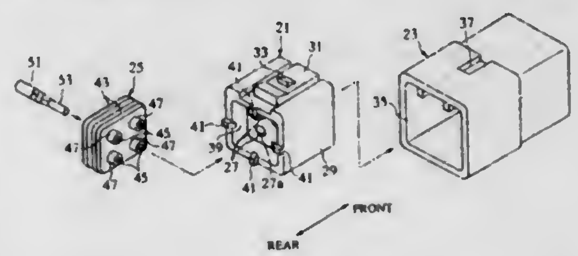
1. A panel mount connector assembly comprising a first connector part mountable to a panel and a second connector part matable to the first part for connection therebetween, characterized in that the assembly comprises a sealing ring rotatably mountable to the first connector part from one side of the panel when the first connector part is inserted through a hole in the panel from the other side thereof, whereby the sealing ring is rotatably mountable to the connector part from either side of the sealing ring, provisionally holds the first connector part to the panel prior to mating with the second connector part, and acts as a seal between the one side and the other side of the panel when the first and second connector parts are mated together.

5,618,205
WIDEBAND SOLDERLESS RIGHT-ANGLE RF INTERCONNECT
Robert G. Riddle, Escondido; Jeffrey A. Douglass, Poway, both of Calif.; John D. Voss, Cumming, Ga., and Stephen C. Ellis, Murrieta, Calif., assignors to TRW Inc., Redondo Beach, Calif.
Continuation-in-part of Ser. No. 42,565, Apr. 1, 1993, Pat. No. 5,356,298. This application Oct. 17, 1994, Ser. No. 324,043
Int. Cl.^{6} H01R *9/07*
U.S. Cl. 439—581 **18 Claims**



1. A right-angle electrical interconnect comprising:
a conductive pin assembly having one end adapted to be electrically coupled to a circuit trace, said one end having an outermost portion shaped with a first flat tapered edge formed on one side of said one end of the conductive pin assembly for reducing impedance discontinuities;
a circuit trace having a contact surface located substantially at a right-angle with said one end of said conductive pin assembly; and
means for providing flexible pressurized electrical contact between said one end of said conductive pin assembly and the contact surface of the circuit trace.

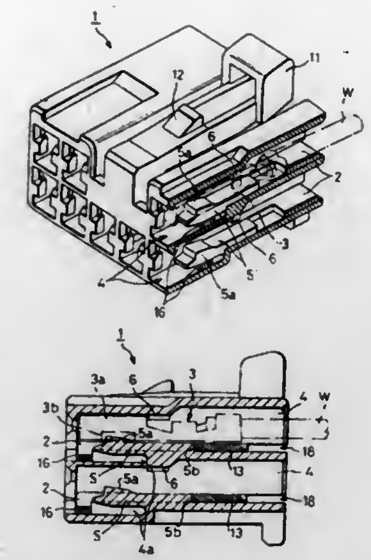
5,618,206
WATERPROOF CONNECTOR HAVING A CONNECTOR HOUSING WITH A PLURALITY OF TERMINAL ACCOMMODATION CHAMBERS AND A SEAL HOOD
Yoshitsugu Sawada, and Toshihiko Masuda, both of Shizuoka-ken, Japan, assignors to Yazaki Corporation, Tokyo, Japan
Filed Oct. 24, 1995, Ser. No. 547,559
Claims priority, application Japan, Oct. 24, 1994, 6-258230; Mar. 20, 1995, 7-061093
Int. Cl.^{6} H01R *13/40*
U.S. Cl. 439—587 **5 Claims**



1. A waterproof connector, comprising:
a connector housing formed with a plurality of terminal accommodation chambers for accommodating a plurality of terminal parts, respectively and with a seal hood portion; and
a sealing member fitted to the seal hood portion of said housing and formed with a plurality of seal locating projections each having an insertion hole at a center thereof;
the plurality of terminal parts connected to wires, respectively being inserted into the terminal accommodation chambers of said housing through the wire insertion holes of said housing, respectively under watertight conditions,
wherein each of the terminal accommodation chambers of said housing is formed into a cylindrical shape, and each of the seal locating projections of said sealing member is formed into an annular shape fitted into the terminal accommodation chamber together with the terminal part, respectively.

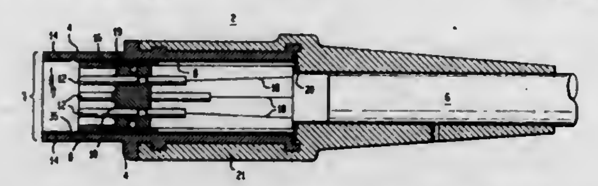
5,618,207
RETAINING METHOD AND DOUBLE-RETAINING CONNECTOR THEREFOR
Toshiro Maejima, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan
Filed Jan. 19, 1995, Ser. No. 374,874
Claims priority, application Japan, Jan. 19, 1994, 6-017754
Int. Cl.^{6} H01R *13/40*
U.S. Cl. 439—595 **6 Claims**

1. A double-retaining connector for retaining connection terminals, comprising:
a connector housing;
terminal receiving chambers, for receiving the connection terminals, provided n said connector housing;
retaining protuberances, respectively provided in said terminal receiving chambers on respective first sides of said terminal receiving chambers, for retaining the connection terminals;
elastic retaining lances, respectively provided in said terminal receiving chambers on respective second sides of said terminal receiving chambers opposite said first sides, for retaining the connection terminals; and



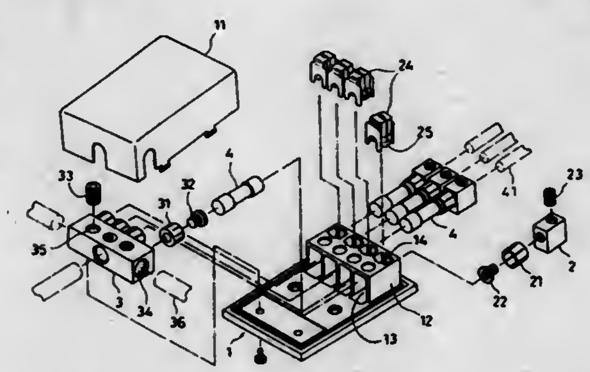
a spacer insertable into a rear end of said connector housing in an inserting direction, for retaining the connection terminals in said terminal receiving chambers and for receiving the retaining lances,
wherein said spacer is selectively fixable in said connector housing in a first fully inserted provisional position in which said elastic retaining lances are not locked by said spacer and a second partially inserted final position in which said elastic retaining lances are locked by said spacer, said spacer being moved from said first position to said second position in a direction opposite to said inserting direction.

5,618,208
FULLY INSULATED, FULLY SHIELDED ELECTRICAL CONNECTOR ARRANGEMENT
Helen C. Crouse, Waltham, Mass.; Edwin Muz, Reutlingen, Germany; Bernd Rosenfeldt, Hamilton, and Thomas K. Naylor, Belmont, both of Mass., assignors to Siemens Medical Systems, Inc., Iselin, N.J.
Filed Jun. 3, 1994, Ser. No. 253,653
Int. Cl.^{6} H01R *13/648*
U.S. Cl. 439—609 **13 Claims**



1. A shielded electrical connector arrangement for defining a first connector, comprising:
an elongated annular housing portion composed of an electrically insulative material for forming an elongated structure for said first connector and at least a portion of a grasp for a user of said first connector, said housing having outside and inside surfaces and front and rear ends for defining said first connector;
a contact holding portion composed of an electrically insulative material positioned inside said annular housing portion, said contact holding portion including a plurality of electrically conductive signal contacts of a given length positioned therein in a longitudinal direction of said housing portion so as to be completely surrounded by, yet spaced a distance away from, the inside surface of said housing portion, with a rear end of each of said electrically conductive signal contacts adapted for being coupled to a respective one of a plurality of signal conductors having a common shield associated therewith, and a front end of each of said electrically conductive signal contacts extending in the direction of, but stopping a given distance short of, the front end of said housing portion; and
an elongated annular electrically conductive shield having inner and outer sides, disposed between the outside surface of said housing portion and said electrically conductive signal contacts so as to surround, yet be spaced away from, said electrically conductive signal contacts, said elongated shield having a rear end connected to said common shield associated with the plurality of signal conductors and a front end portion extending in the direction of the front end of said housing portion a predetermined distance past the front end of said electrically conductive signal contacts but stopping short of the front end of said housing portion, with the front end of said housing portion being in direct annular contact with the outer side of the front end portion of said elongated shield, wherein said housing portion provides direct support for the front end portion of said elongated shield, as well as a continuous insulation for covering said elongated shield, wherein the front end portion of said shield includes on an inside surface thereof an annular depression portion that is adapted to make electrical contact and latch with at least one tab-like protrusion of a shield of a mating multi-conductor connector so as to provide an effectively continuous conductive shield which completely surrounds said electrically conductive signal contacts over their given length and wherein the front end of said housing portion extends past a front-most tip portion of said front end portion of said elongated shield, thereby preventing a user from touching the front end portion of said elongated shield.

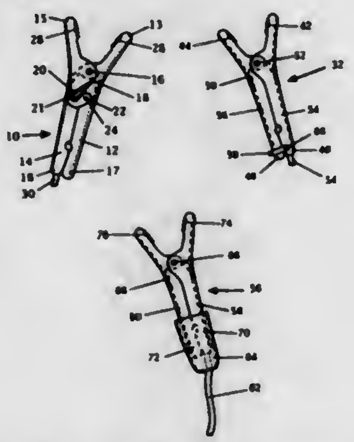
5,618,209
FUSE BOX
Kuang T. Lin, and Shih-Tsung Liang, both of No. 10, Lane 31, Ta-Feng St., Lu-Chu Hsiang, Taoyuan County, Taiwan
Filed Oct. 10, 1995, Ser. No. 540,482
Int. Cl.^{6} H01R *13/68*
U.S. Cl. 439—621 **1 Claim**



1. A fuse box comprising:
a horizontal bottom shell covered with a cover shell and having a holder frame for holding a plurality of cartridge fuses, said holder frame comprising a plurality of horizontal holes disposed in a parallel relation, and a plurality of vertical top holes respectively communicating said horizontal holes;
a plurality of terminal blocks respectively mounted in the horizontal holes to hold a respective conductor by a respective tightening-up screw, each terminal block having a metal socket at one end fixedly secured in place by a screw to hold one end of a respective cartridge fuse and preventing said end from being removed in a vertical direction;
a plurality of clamps respectively mounted in the vertical top holes of said holder frame to hold down the conductor of each terminal block; and
a fuse connector fixed to said bottom shell remote from said holder frame to hold the opposite end of each cartridge fuse, said fuse connector comprising a plurality of metal sockets fixedly secured in place by a respective screw to hold the

other ends of said cartridge fuses and prevent said other ends from being removed in a vertical direction.

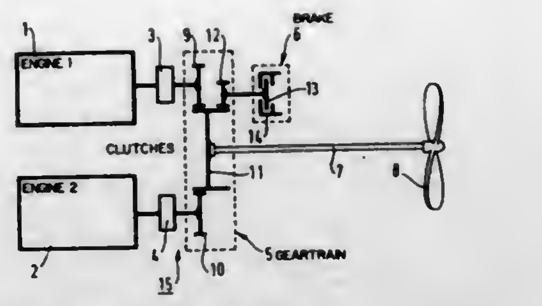
5,618,210
HANGLESS JUMPER CABLE HANDLES
George E. Grant, 11739 NE. 128th Ave., Okeechobee, Fla. 34972
Filed Jun. 14, 1995, Ser. No. 490,458
Int. Cl.⁶ H01R *4/48*
U.S. Cl. 439—822 **3 Claims**



1. A jumper cable handle comprising
(a) a first leg, having an end with a serrated surface and an opposite end having an unserrated surface;
(b) a second leg having an end with a serrated surface and an opposite end having an unserrated surface;
(c) a pivot pin; said first leg pivotally attached to said second leg by said pivot pin;
(d) mechanical means for rotating the legs on the pin, forcing the serrated ends into a closed position and simultaneously forcing the opposite ends into an open position, wherein the mechanical means comprises a spring coiled around the pivot pin having opposite ends of a predetermined length forced against an inside surface of each of the unserrated ends of the legs;
(e) manual means for counteracting the mechanical means of part (d) and reversing the rotation of the legs on the pin, and
(f) restraining means for maintaining the serrated ends in an open position while simultaneously containing the opposite ends in a closed position, wherein the restraining means comprises: a latch rotatably attached to the first leg by a rivet; and a notch formed on the second leg whereby the latch is securely attached to the second leg.

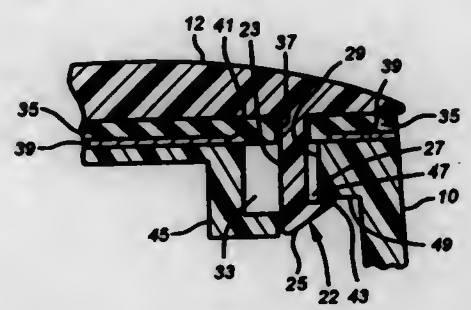
5,618,211
APPARATUS FOR AND A METHOD OF CONTROLLING THE SPEED OF A SHIP
Jean-Pierre Bourgoin, St Nazaire, France, assignor to S.E.M.I. Pielstick, Saint-Denis, France
Filed Jan. 17, 1996, Ser. No. 587,930
Claims priority, application France, Jan. 19, 1995, 95 00589
Int. Cl.⁶ B63H *23/10*
U.S. Cl. 440—4 **4 Claims**

1. A method of controlling the speed of a ship, said ship being fitted with drive means and means for optimizing the configuration of said drive means, said drive means comprising at least one reversible internal combustion engine, a speed step-down geartrain driven by said engine, a friction-type clutch allowing the engine to be decoupled from said associated step-down geartrain, a shaft line driving a screw propeller with fixed blades and a brake allowing the shaft line to be decelerated and held stationary, said method comprising the steps of:



choosing a desired speed for the ship,
measuring the present speed of the ship and the parameters representing the operation of the engine, geartrain, brake, clutch and screw,
and comprising the additional steps consisting of:
comparing the measured values of said present ship speed and said parameters representing the operation of the engine with the values of the same parameters which would result from compliance with the desired ship speed; and
sending commands for changing the states of the engine, the brake and the clutch as required to obtain said values of said parameters resulting from said desired ship speed, said commands for changing the states of the engine, the brake and the clutch being determined so that the performance required of the engine, the brake, or the clutch as a result does not exceed the maximum performance permitted for any of those components.

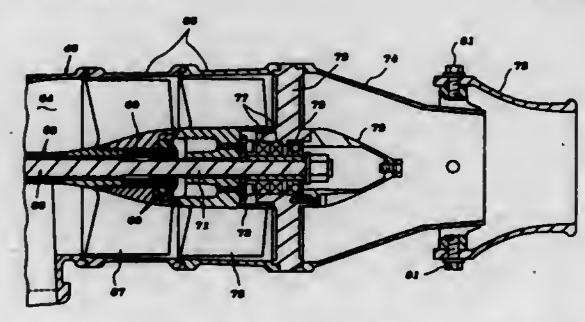
5,618,212
TROLLING MOTOR FOOT PEDAL ASSEMBLY
Prentice Moore, Starkville, Miss., assignor to Brunswick Corporation, Lake Forest, Ill.
Filed Apr. 21, 1995, Ser. No. 426,161
Int. Cl.⁶ B63H *21/17*
U.S. Cl. 440—7 **21 Claims**



1. In combination, a trolling motor having a motorhead therewith and a snap for securing a cover to a base for a trolling motor control assembly, said control assembly comprising:
a base having at least one catch thereon, said base including electronics used to operate said trolling motor through said motorhead;
a cover having at least one flexible extending member to selectively engage said catch in a gripping manner;
a sealing member between said base and said cover, said extending member passing through said sealing member to engage said catch;
a snap support acting on said extending member when engaged to said catch to assist in maintaining said engagement.
11. A control unit for remote control of a trolling motor, comprising;
a base;
a cover;
a switch member;
a sealing member;

said base and said cover selectively engageable to create a stack which sealingly secures said switch member between said cover and said base by virtue of said sealing member;
said base comprises at lust one opening therethrough;
said switch member having at least one larger opening than the opening in said base;
whereupon when said switch member is aligned with said base for assembly, said scaling member, when interposed adjacent said base, has at least one opening thereon to allow it to circumscribe the opening in said base to effectively isolate said switch member from exposure to the opening in said base.

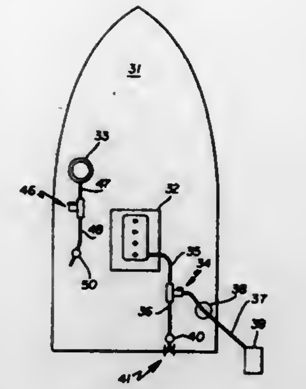
5,618,213
TWIN IMPELLER DRIVE FOR JET PUMP
Masayoshi Nanami, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan
Filed Aug. 1, 1995, Ser. No. 509,994
Claims priority, application Japan, Aug. 1, 1994, 6-180073
Int. Cl.⁶ B63H *11/00*
U.S. Cl. 440—38 **16 Claims**



1. A jet propulsion unit for a watercraft comprised of an outer housing comprising a water inlet portion through which water may be drawn from a body of water in which the watercraft is operating and a discharge nozzle portion through which the water is discharged for generating a propulsion force to the watercraft, a pair of impellers positioned between said water inlet portion and said discharge nozzle, and transmission means disposed forwardly of said impellers and out of the path of water flow through said water inlet for driving said impellers in opposite directions for pumping water from said water inlet to said discharge nozzle, said transmission means including a pair of telescoped shafts, each affixed to a respective one of said impellers within said jet propulsion unit, the inner of said telescoped shafts being journalled at its rear end within said outer housing, the outer of said telescoped shafts being journalled within said outer housing upon said inner telescoped shaft.

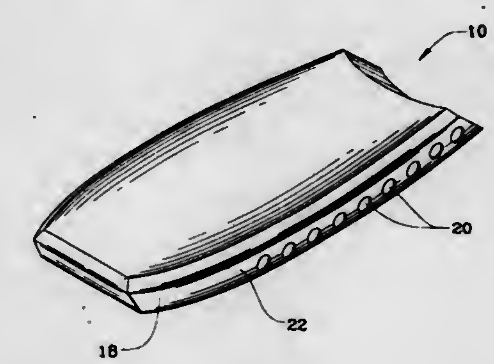
5,618,214
APPARATUS AND METHOD FOR ERADICATING ZEBRA MUSSELS IN VESSEL RAW WATER MARINE PLUMBING SYSTEMS
Frederick B. Wyss, 1709 Birch St., and Joseph Harings, 1500 Galloway St., both of Eau Claire, Wis. 54703
Division of Ser. No. 187,587, Jan. 28, 1994, abandoned. This application Jun. 15, 1995, Ser. No. 490,972
Int. Cl.⁶ B63H *21/38*
U.S. Cl. 440—88 **2 Claims**

1. An apparatus for eradicating zebra mussels in a raw water marine plumbing system of a vessel by permitting the periodic introduction of hot water of a temperature of at least 110 degrees F. into the marine plumbing system, comprising:
(a) a tee assembly for connection at a predetermined point on a conduit member of the marine plumbing system, comprising:
i) a "T" shaped member having first, second and third external apertures and a continuous interior passage which is com-



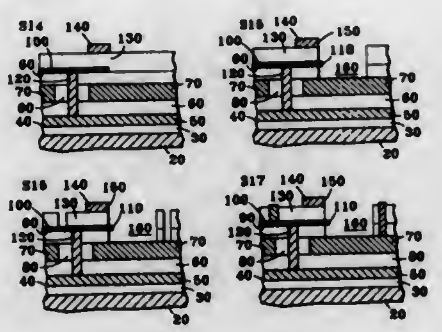
municatively connected to each aperture, said first and a second said aperture further being permanently communicatively coextensive with flexible conduit members of the marine plumbing system, said first and second apertures having a barbed configuration for mating with the conduit members of the marine plumbing system;
ii) a closure valve, connected to said third aperture, for permitting the ingress of hot water, through said third aperture, into the marine plumbing system, said valve having a first end connected to said third aperture of said branched member and a second end which is connectable to an external fluid source, said second end having an exteriorly threaded, male-type configuration, said valve further having a closure member and a control arm connected to said closure member;
iii) a cap having an interiorly threaded, female-type configuration for connection to said valve second end; and
iv) means for clamping conduit members of the marine plumbing system to said first and second apertures of said "T" shaped member
(b) a source of hot water of at least 110 degrees F.; and
(c) a connection conduit connecting said hot water source to said tee assembly, said connection conduit having an interiorly threaded, female-type connection for mating with said valve second end.

5,618,215
AQUATIC SPORTS BOARD
Jon A. Glydon, Barnstable, Mass., assignor to Earth & Ocean Sports, Inc., Hyannis, Mass.
Filed Jan. 10, 1995, Ser. No. 370,964
Int. Cl.⁶ B63B *1/00*
U.S. Cl. 441—65 **24 Claims**



1. An aquatic sports board comprising:
a buoyant core;
a rail disposed on a side of said core; and
a plurality of apertures spaced along said rail.

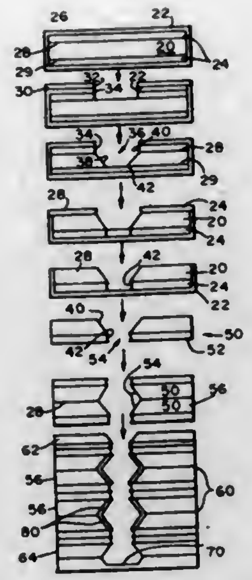
5,618,216
FABRICATION PROCESS FOR LATERAL-EMITTER FIELD-EMISSION DEVICE WITH SIMPLIFIED ANODE
Michael D. Potter, Grand Isle, Vt., assignor to Advanced Vision Technologies, Inc., Rochester, N.Y.
Filed Jun. 2, 1995, Ser. No. 459,033
Int. Cl.^{6} H01J *9/02*
U.S. Cl. 445—24 **12 Claims**



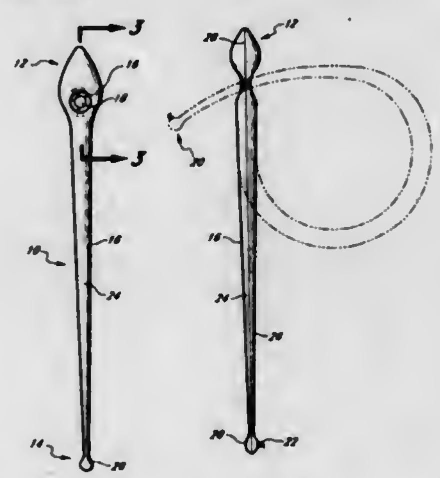
1. A method of fabricating a field emission device, comprising the steps of:
(a) providing a substrate;
(b) disposing a first insulating layer upon said substrate;
(c) disposing a first conductive layer upon said first insulating layer thus providing an anode layer, said anode layer having a first predetermined thickness and having a top major surface comprising a phosphor;
(d) disposing a second insulating layer upon said anode layer, said second insulating layer having a second predetermined thickness;
(e) disposing and patterning a second conductive layer having only a few hundred ångstroms thickness upon said second insulating layer so as to be substantially parallel to said substrate, thus providing a lateral emitter layer;
(f) providing an opening through said lateral emitter layer and through said second insulating layer, thus forming an emitting edge of said lateral emitter layer, said opening extending to said top major surface of said anode layer; and
(g) providing means for applying an electrical bias voltage to said lateral emitter layer and to said anode layer, said bias voltage to be applied being sufficient to cause cold-cathode emission current of electrons to flow from said emitting edge of said lateral emitter layer to said anode layer.

5,618,217
METHOD FOR FABRICATION OF DISCRETE DYNODE ELECTRON MULTIPLIERS
Alan M. Then, Auburn, and Scott T. Bentley, Norfolk, both of Mass., assignors to Center for Advanced Fiberoptic Applications, Southbridge, Mass.
Filed Jul. 25, 1995, Ser. No. 506,611
Int. Cl.^{6} H01J *43/18;9/12*
U.S. Cl. 445—35 **6 Claims**

1. A method for manufacturing a discrete dynode electron multiplier comprising the steps of:
forming an etchable planar substrate having first and second sides and capable of carrying a current sufficient to replenish electrons;
forming an electrical isolation layer on the sides of the substrate;
forming a first mask layer overlying the isolation layer on the substrate;
forming a photoresist pattern mask layer having apertures therein on the first mask layer on the first side of the substrate;
transferring the pattern from the photoresist mask layer through the first mask layer and electrical isolation layer by anisotropically etching the first mask layer and the isolation layer through the apertures in the photoresist pattern mask layer to the first side of the substrate proximate said pattern mask layer to produce corresponding apertures in the first mask layer and isolation layer;
anisotropically or isotropically etching the substrate through the corresponding apertures to produce an aperture structure having surfaces transverse to the axis of the aperture through the substrate to the second side thereof and isotropically etching an aperture through the isolation layer to the first mask layer on the second side of the substrate;
removing the pattern mask, the first mask layer and the isolation layer adjacent to the pattern mask layer;
aligning and bonding a pair of substrates in confronting relationship on the side thereof remote from the apertured isolation layer to produce a discrete dynode element;
activating the anisotropically or isotropically etched surfaces of the dynode elements formed in the substrate; and
aligning and stacking a plurality of discrete dynode elements.

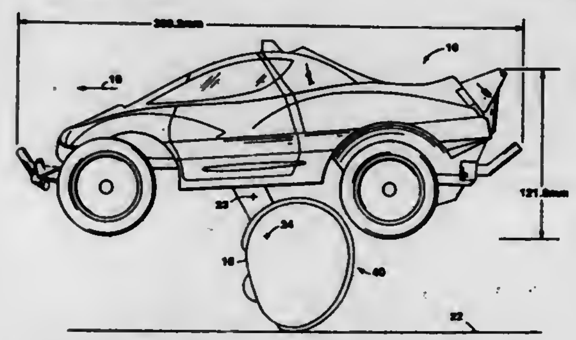


5,618,218
INFLATABLE WATER TOY
Konstantin Klimenko, Santa Monica, Calif., assignor to Sevylor U.S.A., Inc., Los Angeles, Calif.
Filed Jul. 21, 1995, Ser. No. 505,156
Int. Cl.^{6} A63H *27/10;* **B63C** *9/08*
U.S. Cl. 446—220 **4 Claims**



1. An inflatable water toy, comprising:
an elongate tubular body which tapers from a larger diameter near a first end thereof to a smaller diameter near a second end thereof;
a head portion on the first end of the body;
a tail portion on the second end of the body; and
an aperture through the head portion of the body, said aperture dimensioned to slidably receive the tail portion therethrough, and wherein the tubular body is configured to be formed into a loop when the second end is inserted through the aperture, and wherein the diameter of the loop is continuously adjustable throughout a range of diameters.

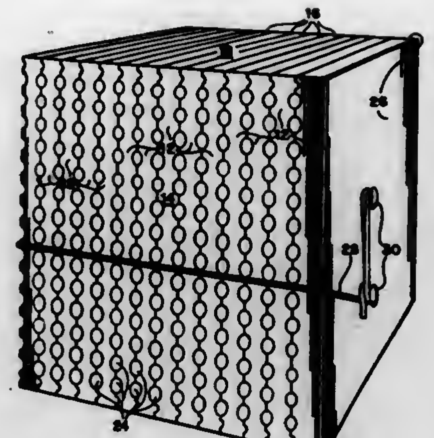
5,618,219
REMOTE CONTROL TOY VEHICLE WITH DRIVEN JUMPER
Dean C. Simone, Portola Valley; Rand W. Siegfried, Los Altos, both of Calif., and Gerald M. Rodmaker, Cincinatti, Ohio, assignors to Hasbro, Inc., Pawtucket, R.I.
Filed Dec. 22, 1995, Ser. No. 577,299
Int. Cl.^{6} A63H *30/04;17/00;17/26*
U.S. Cl. 446—456 **22 Claims**



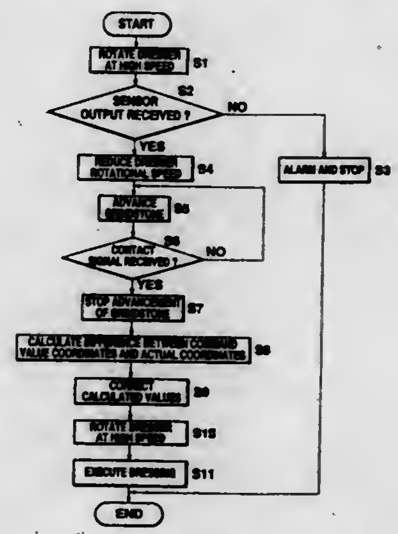
1. A remote controlled toy vehicle system comprising:
a remote transmitter controller for providing control signals,
a vehicle having front and rear wheels for normally rollably supporting said vehicle on a travel surface coextensive with a bottom plane tangential to the bottommost portions of said wheels, said vehicle including a receiver and decoder responsive to said control signals for providing decoded control signals,
cam structure mounted on said vehicle intermediate said front and rear wheels having at least one cam mounted on a cam axle constructed and arranged to have a first at-rest position with said cam entirely above said bottom plane and a second lift-initiating position with a significant portion of said cam below said bottom plane and said cam in contact with the travel surface with said front and rear wheels above and spaced from the travel surface and applying sufficient force to the travel surface to temporarily lift said front and rear wheels off the travel surface that causes said vehicle when moving to jump,
said vehicle having a source of electrical power, and,
at least one electrical motor mounted on said vehicle responsive to selected ones of said decoded control signals for receiving electrical power from said source of electrical power and actuating said cam structure from said first at-rest position to said second lift-initiating position.

5,618,220
LEAFCUTTER BEE MANAGEMENT SYSTEM INCLUDING A LAMINATE BEE BOARD
Jerry Mills, 144 S. Slope, Emmett, Id. 83617
Continuation-in-part of Ser. No. 188,026, Jan. 28, 1994, Pat. No. 5,372,535. This application Dec. 9, 1994, Ser. No. 352,912
Int. Cl.^{6} A01K *47/00*
U.S. Cl. 449—4 **4 Claims**

1. A permanently backed nest for bees comprising:
a plurality of bee board laminates, each laminate being generally rectangular and having two planar surfaces bounded by a front edge, a back edge, and two side edges, the planar surfaces having a plurality of spaced, parallel grooves formed therein and extending from the front edge toward the back edge, but stopping short thereof, the grooves being positioned to form a series of closely spaced, closed end tunnels by any two contiguous laminates; and
a lightproof flexible binding permanently attached to the back edges of the laminates, the laminates being juxtaposed one to another with the binding extending across the plurality of laminates.



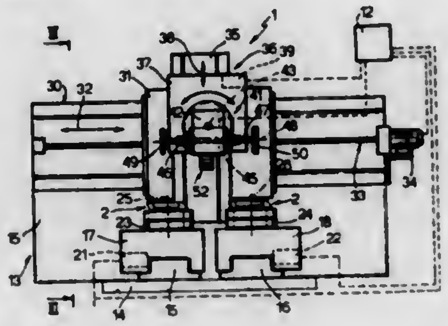
5,618,221
METHOD OF DRESSING GRINDSTONE FOR NC GRINDER
Masahiro Furukawa; Masaaki Nagaya, and Tatsuhiro Yoshimura, all of Aichi, Japan, assignors to Okuma Corporation, Aichi, Japan
Filed Jan. 23, 1995, Ser. No. 376,242
Claims priority, application Japan, Jan. 25, 1994, 6-023762
Int. Cl.^{6} B24B *49/00*
U.S. Cl. 451—8 **6 Claims**



1. A method of dressing a grindstone in an NC grinding machine, said method comprising the steps of:
providing a rotary dresser for dressing a surface of said grindstone;
providing a vibration sensor;
rotating said rotary dresser at a high speed;
while rotating said rotary dresser at said high speed, using said vibration sensor to detect rotational vibration generated by said rotary dresser; and

subsequently, causing said rotary dresser to come into contact with said surface of said grindstone.

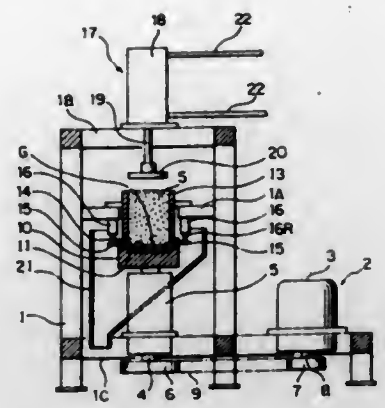
5,618,222
METHOD AND A MACHINE FOR WORKING A BLADE SECTOR
Antonio Baima, Nole; Giuseppe Borio, Turin; Mario Bo, Asti; Leonardo De Carlo, Moncalieri; Aurelio Berruto, Pino Torinese; Roberto Tolomei, Turin, and Gianluigi Boscolo, Carmagnola, all of Italy, assignors to Fiatavio S.p.A., Via Nizza, Italy
Filed Dec. 8, 1994, Ser. No. 351,781
Claims priority, application Italy, Dec. 17, 1993, 93A000963
Int. Cl.⁶ B24B *19/14*
U.S. Cl. 451—14 **20 Claims**



1. A method for working a blade sector forming part of a blade disc and including a plurality of blades and at least one circular, peripheral body connecting together corresponding ends of the blades, the circular body defining its own axis substantially perpendicular to the blades and arranged to coincide with an axis of the blade disc, the body having a lateral surface to be worked, coaxial with the said axes, the method including the steps of:
arranging a disc tool which is rotatable about its own axis in contact with the lateral surface;
rotating the blade section about a first axis distinct from the axis of the circular body but parallel to the axis of the circular body; and
at the same time as the blade section is rotated, displacing the blade section and the disc tool relative to each other along two lines of action perpendicular to the first axis in such a way that a distance between the axis of the circular body and the instantaneous point of contact of the lateral surface with the disc tool is kept constant during the entire working of the lateral surface itself; and
arranging the axis of rotation of the disc tool, the axis of the circular body and the first axis in mutually coplanar positions during a preliminary registration step.

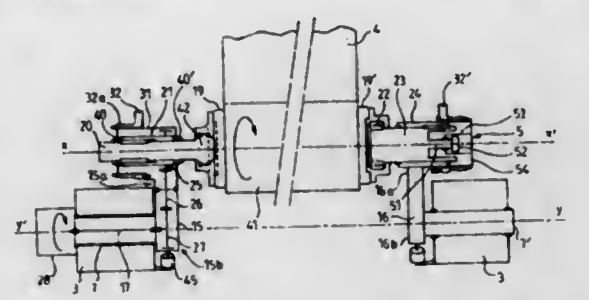
5,618,223
METHOD AND APPARATUS FOR RECYCLING SAND
Osamu Masuno, Kuwana: Kazuharu Matsui, Toyokawa, and Takehiko Matsumoto, Sinshiro, all of Japan, assignors to Sintokogio, Ltd., Nagoya, Japan
Filed Jan. 5, 1995, Ser. No. 369,076
Claims priority, application Japan, Jan. 7, 1994, 6-012157; Jan. 7, 1994, 6-012158; May 27, 1994, 6-138010; May 27, 1994, 6-138011
Int. Cl.⁶ B24B *31/00*
U.S. Cl. 451—103 **12 Claims**

1. An apparatus to remove adhering material from the surfaces of used sand to recycle the used sand, comprising:
a container for holding used sand, the container having a bottom opening;
pressing means for pressing the used sand in the container downwards;



a rotor disposed under the bottom opening of the container, the rotor having a surface which contacts the used sand in the container, wherein the rotor has an open cavity for containing used sand, and the rotor surface, which contacts the used sand in the container, is itself a surface of used sand in the rotor;
means for driving the rotor; and
a gap disposed adjacent to the rotor surface so as to discharge processed sand.

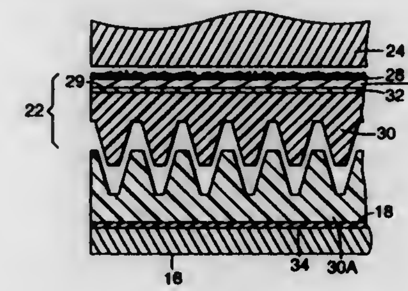
5,618,224
ROLL CLEANING DEVICE
Bernard Dumas, Montbrison, France, assignor to Clecim, Cergy-Pontoise, France
Continuation of Ser. No. 281,212, Jul. 27, 1994, abandoned. This application Mar. 6, 1996, Ser. No. 611,521
Claims priority, application France, Jul. 28, 1993, 93 09306
Int. Cl.⁶ B24B *5/00*
U.S. Cl. 451—142 **24 Claims**



24. Device for cleaning or polishing a roll which is mounted so as to rotate about an axis, said device comprising:
(a) a cylindrical cleaning roller having two ends;
(b) two parallel support arms extending respectively between an inner end directed towards the roll and carrying said cleaning roller, and an outer end directed towards the exterior;
(c) said outer ends of the two support arms each being articulated about a same pivoting axis (y'y) parallel to the axis of the roll to be cleaned, respectively, on two aligned bearings each carried by a fixed support;
(d) said support arms being associated with means for controlling simultaneous pivoting of said arms between a first retracted position of the cleaning roller and a second application position in which the said cleaning roller is applied against said roll to be cleaned;
(e) the two ends of said cleaning roller being rotatably mounted respectively on two bearings which are carried respectively by said inner ends of said two arms, said bearings defining a rotational axis (x'x) of said cleaning roller which is substantially parallel to the axis of the roll to be cleaned;
(f) driving means for controlling the rotation of the cleaning roller about its axis (x'x), said driving means being mounted on at least a first support arm and comprising:

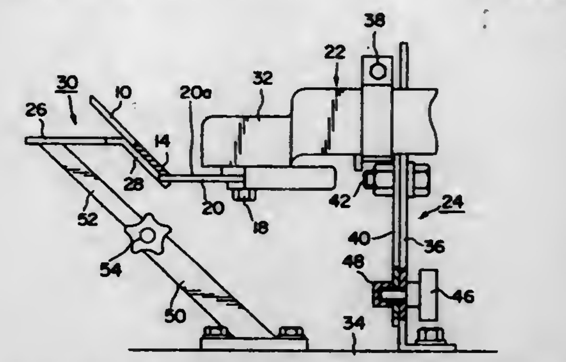
(g) a rotation control device to which a rotational motor torque is applied and which is centered on said pivoting axis (y'y) of said first arm;
(h) a rotary driving device for applying said rotational motor torque to a driven end of said cleaning roller corresponding to said first arm;
(i) a kinematic transmission assembly for transmitting said rotational motor torque between said rotation control device and said driving device, said transmission assembly being mounted on said first support arm in such a way as to pivot with it said pivoting axis (y'y);
(j) said rotary driving device being fixed on to the said driven end of the cleaning roller by means of an axially sliding link which is able to transmit the rotational torque to said cleaning roller by means of a sliding transmission permitting a relative axial displacement of said cleaning roller with respect to said first support arm carrying the rotary driving device.

5,618,225
ABRASIVE ATTACHMENT SYSTEM FOR ROTATIVE ABRADING APPLICATIONS
Robert J. Jantschek, Stillwater, Minn.; Forrest J. Rouser, San Rafael, Calif.; Mark L. Sterner, Mahtomedi, and Theodore J. Testen, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Division of Ser. No. 380,239, Jan. 30, 1995, Pat. No. 5,490,808, which is a continuation of Ser. No. 10,680, Jan. 28, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 467,180
Int. Cl.⁶ B24B *5/22*
U.S. Cl. 451—173 **5 Claims**



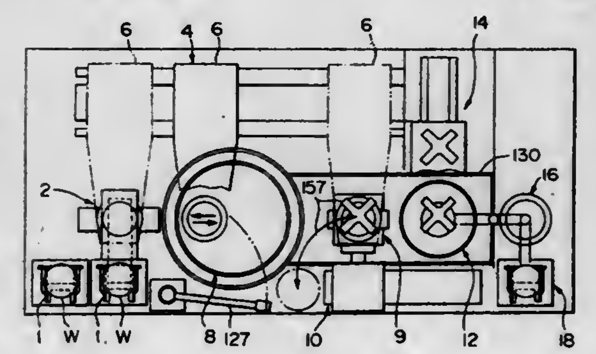
1. A support shoe for use in supporting an abrasive tape against a workpiece as one of the support shoe and the workpiece is rotated relative to the other, the support shoe comprising:
a curved, rigid pressure face for supporting an abrasive tape thereon; and
a resilient layer mounted on said pressure face, said resilient layer including a microstructured surface;
wherein said microstructured surface comprises a plurality of tapered elements, said tapered elements including sides inclined relative to the plane of said microstructured surface; and
wherein said microstructured surface is adapted for intermeshing engagement with a cooperative microstructured surface on a back surface of an abrasive tape so as to prevent relative movement between the abrasive tape and said pressure face in response to shear forces induced during abrading.

5,618,226
APPARATUS FOR GRINDING A RECIPROCAL TRIMMING BLADE
Hisashi Ueyama, Okayama, Japan, assignor to Nikkari Co., Ltd., Okayama, Japan
Filed Feb. 27, 1996, Ser. No. 607,378
Claims priority, application Japan, Mar. 6, 1995, 7-074441
Int. Cl.⁶ B24B *7/00*
U.S. Cl. 451—234 **13 Claims**



1. An apparatus for grinding a reciprocal trimming blade characterized in that said apparatus comprises:
a grinder support for supporting a grinder which includes a grindstone shaft and a grindstone in the shape of a circular plate mounted perpendicularly to said grindstone shaft, said grinder support supporting said grinder in a manner that said grinder, while a grinding surface of said grindstone is maintained at right angles with respect to a vertical plane that includes said grindstone shaft, is rotated by and then fixed at a specified angle; and
a blade mount provided adjacent to said grindstone and having a horizontal surface and a sloped surface for alternately mounting said reciprocal trimming blade thereon.

5,618,227
APPARATUS FOR POLISHING WAFER
Yukio Tsutsumi; Shigeo Kumabe, and Keisuke Takahashi, all of Tokyo, Japan, assignors to Mitsubishi Materials Corporation, and Mitsubishi Materials Silicon Corporations, both of Tokyo, Japan
Continuation of Ser. No. 104,336, Aug. 9, 1993, abandoned. This application Sep. 5, 1995, Ser. No. 522,527
Claims priority, application Japan, Sep. 18, 1992, 4-250125
Int. Cl.⁶ B24B *7/04;7/22*
U.S. Cl. 451—288 **4 Claims**



1. Apparatus for polishing a wafer comprising:
a. a lower polishing plate assembly having an axis of rotation and dimensioned to have an outer diameter at least twice that of a wafer being polished, said lower polishing plate assembly including a lower polishing plate defining a polishing position for a single wafer on an upper surface thereof and having a spirally extending cooling water passageway formed therein, a polishing pad secured to said upper surface of said lower

polishing plate, a porous sheet of a thickness of 0.5 to 3 millimeters formed of a forming resin and interposed between said lower polishing plate and said polishing pad, and a circulating means coupled to said lower polishing plate for supplying cooling water to said cooling-water passageway;

b. a first rotating mechanism attached to said lower polishing plate assembly for rotating said lower polishing plate assembly about said axis of rotation;

c. an upper polishing plate assembly for holding said single wafer, including,
   an upper polishing plate having an axis of rotation and disposed generally parallel to said lower polishing plate so as to be opposed to said polishing position on said lower polishing plate, said upper polishing plate having a vacuum passageway formed therein to open to a lower surface thereof,
   a plate-like chuck secured to said lower surface of said upper polishing plate, and a backing pad secured to said chuck, each of said chuck and said backing pad having a plurality of apertures communicating with said vacuum passageway,
   a pressure reducing means attached to said lower polishing plate for reducing pressure in said vacuum passageway, and
   a cleaning means attached to said upper polishing plate for blasting cleaning water containing gas into said vacuum passageway to clean said chuck and said backing pad;

d. a second rotating mechanism attached to said upper polishing plate assembly for rotating said upper polishing plate assembly about said axis of rotation, said second rotating mechanism including a supporting mechanism for permitting rotation of said upper polishing plate for tilting movements;

e. a pressing mechanism for pressing said upper polishing plate assembly against said lower polishing plate assembly;

f. a conveying mechanism for bringing a wafer into said polishing position;

g. wherein said porous sheet is constructed such that when the wafer is held between said lower polishing plate and said upper polishing plate, a portion of the porous sheet opposing the wafer sinks while a portion of the porous sheet of a predetermined width extending outwardly from the outer periphery around the opposing portion is recessed smoothly to facilitate half-polishing of the wafer;

h. a wafer pick-up mechanism arranged adjacent to said lower polishing plate assembly for picking up a single wafer from a wafer cassette receiving a plurality of wafers and moving the wafer into a chucking position including,
   a cassette pedestal for receiving the wafer cassette, said wafer cassette having a side opening for inserting the wafer thereinto and removing the wafer therefrom, said cassette pedestal having a cut-out formed at a position corresponding to said side opening,
   a conveyer belt means extending to run under said cut-out of said cassette pedestal,
   a moving means for moving said cassette pedestal to permit the single wafer from the wafer cassette to be placed on the conveyer belt means being activated,
   a push-up member disposed adjacent to said conveyer belt for pushing up the wafer being conveyed by said conveyer belt means, and
   a holding claw means for releasably holding the wafer pushed up by said push-up member to effect centering of the wafer;

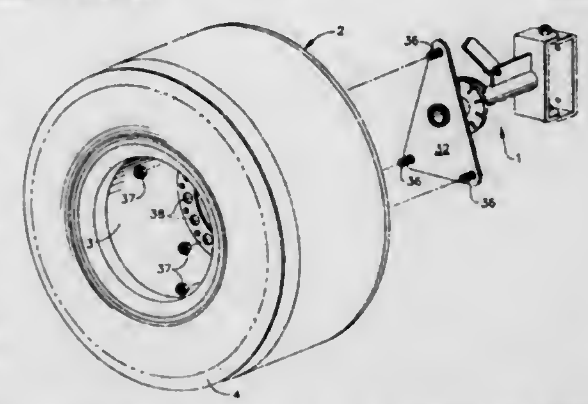
i. a preliminary cleaning mechanism for preliminarily cleaning the polished wafer with cleaning water;

j. a spinning mechanism having a brushing mechanism to brush the preliminarily cleaned wafer and rotate the preliminarily cleaned wafer to dry the wafer by removing water;

k. a discharging device for discharging the dried wafer; and

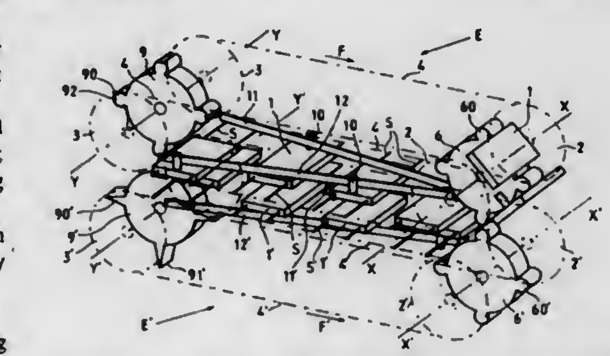
wherein said conveying mechanism moves said upper polishing plate assembly to a position wherein said chuck can chuck the wafer at said chucking position and to a position above said preliminary cleaning mechanism.

5,618,228
HOLDING FIXTURE FOR A WHEEL AND TIRE ASSEMBLY
Richard L. Anderson, 5183 Limaburg Rd., Burlington, Ky. 41005-9508
Continuation of Ser. No. 209,232, Mar. 14, 1994, abandoned. This application Jun. 19, 1995, Ser. No. 491,799
Int. Cl.⁶ B60B *29/00*
U.S. Cl. 451—403 **7 Claims**



1. A holding fixture for a wheel and tire assembly, said holding fixture comprising a bracket assembly comprising first and second parts pivoted together about a vertical axis, said first bracket assembly part being mountable on a vertical surface, said second bracket assembly part being pivotable through an arc about said vertical axis and fixable with respect to said first bracket part anywhere along said arc, a horizontally oriented support tube having a first end attached directly to said second bracket assembly part and a free end, a mounting plate assembly for said wheel and tire assembly, said mounting plate assembly including a rotatable tube segment for holding said wheel and tire assembly at one end thereof, and having a positioning means at another end of said tube segment, said tube segment being directly mounted on and about said free end of said support tube and being rotatable thereabout, and a locking assembly associated with said positioning means to releasably lock said mounting plate assembly at any one of a number of predetermined rotative positions about said support tube.

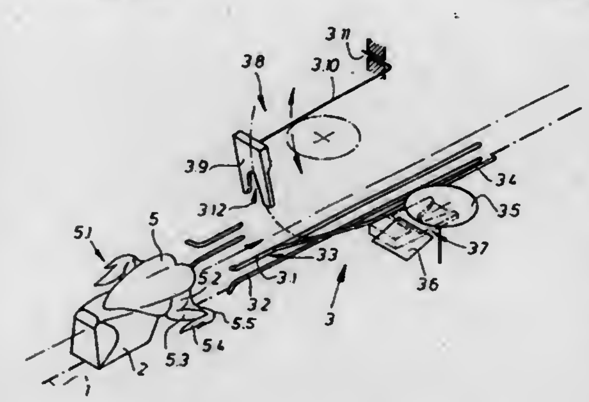
5,618,229
MACHINE TO TRANSFORM A FILLED SAUSAGE CASING INTO A TWISTED SAUSAGE CASING, IN PARTICULAR FOR PRODUCING SAUSAGE PORTIONS
Jacques Le Paih, Plumeliau, France, assignor to Nijal (SA), Baud, France
Filed Oct. 12, 1995, Ser. No. 542,387.
Claims priority, application France, Oct. 20, 1994, 94 12766
Int. Cl.⁶ A22C *11/10*
U.S. Cl. 452—47 **14 Claims**



1. Machine to transform a filled-up sausage casing into a twisted sausage casing and in particular for producing sausage portions,

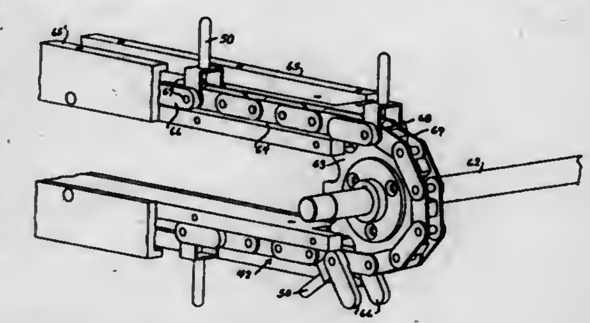
wherein downstream of an intake inlet (13) for said filled sausage casing (B), said machine includes:
   a device for squeezing the continuous filled-up casing (B) for defining portions (P); and
   successive pairs of first and second parallel plates between which said portions are engaged according to a tightened contact relation and defined by said squeezing device, the first and second plates (1, 1') of each pair advancing longitudinally into the machine from said squeezing device whilst retaining their tightened contact relation on said portions, and remaining in coincidence longitudinally whilst moving transversely at the same speed but in opposing directions so as to have the portion (P) each pair contains rotate, whereas the transverse movement directions are alternate between the first successive plates (1) and between the second successive plates (1') so that the continuous filled-up casing (B) driven by said pairs (1, 1') advances into the machine in the form of successive portions (P) between which a twist is formed owing to their resulting alternate directions of rotation.

5,618,230
DEVICE FOR CUTTING UP WINGS OF POULTRY BODIES
Norbert Bargelé , Stockelsdorf; Manfred Brandt; Andreas Landt, both of Lübeck, and Marek Szymanski, Kleinmelnsdorf, all of Germany, assignors to Nordischer Maschinenbau Rud. Baader GmbH & Co. KG, Lubeck, Germany
Filed Jan. 2, 1996, Ser. No. 581,963
Claims priority, application Germany, Jan. 3, 1995, 19 50 014.5
Int. Cl.⁶ A22C *21/00*
U.S. Cl. 452—169 **12 Claims**



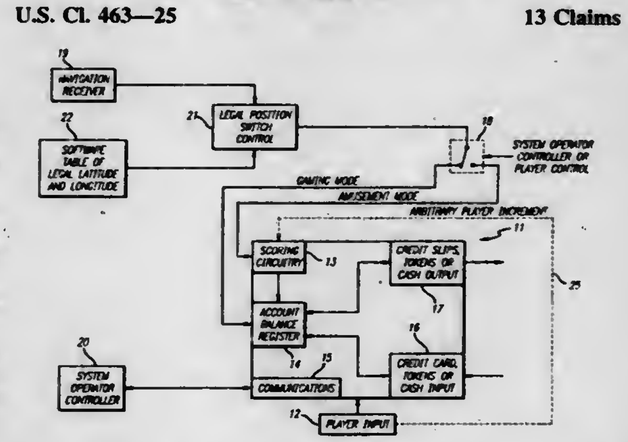
1. An apparatus for cutting up the wings of poultry bodies into their component parts of a wing tip member, a lower wing member and an upper wing member, comprising
   conveying means for advancing the poultry bodies in their plane of symmetry with the wings located on either side along a path,
   guiding means arranged on each side of the conveying means for guiding the wings,
   auxiliary conveying means arranged on either side of the conveying means for supporting the wings during the cutting, and
   severing means for carrying out severing cuts in region of joints located in the wings,
   wherein said auxiliary conveying means, comprise a forked entrainer which is adapted to follow the movement of the advanced poultry body, engage a wing in the region, of a wing tip joint and guide the wing against said severing means in a predetermined orientation.

5,618,231
CONVEYOR SYSTEM FOR FISH MACHINE PROCESSING
Timothy S. Hicks, Seattle, Wash., assignor to Flohr Metal Fabricators, Inc., Seattle, Wash.
Division of Ser. No. 324,880, Oct. 17, 1994, Pat. No. 5,480,347. This application Oct. 10, 1995, Ser. No. 541,527
Int. Cl.⁶ A22C *25/08*
U.S. Cl. 452—177 **9 Claims**



1. A conveyor system comprising:
head and tail rotors,
an endless conveyor passing over said rotors and having a forwardly moving upper run and a lower return run between said rotors,
a pin providing unit on said conveyor having a positioning pin arranged to project upwardly above said conveyor during said upper run to interfit with an object being conveyed, said pin providing unit being swing-mounted on said conveyor such that said pin can remain in upwardly projecting position while passing over the upper forward facing quadrant of said head rotor and lowering from engagement with the conveyed object, and
pin positioning means arranged to be operate with said pin providing unit while it is traveling along said upper run for keeping the pin in said upwardly projecting position while the pin is traveling the path of said upper run and to be disengaged by said pin providing unit when said pin reaches said heat rotor quadrant.

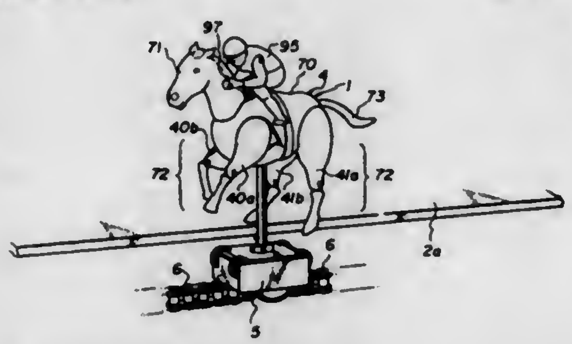
5,618,232
DUAL MODE GAMING DEVICE METHODS AND SYSTEMS
John R. Martin, 5635 Nebeshonee La., Rockford, Ill. 61103
Filed Mar. 23, 1995, Ser. No. 409,273
Int. Cl.⁶ A63F *9/24*
U.S. Cl. 463—25 **13 Claims**



1. An electronic game machine system comprising a plurality of electronic game machines, switching means provided for each electronic game machine for selectively switching the electronic game machine between a first mode and a second mode, said electronic game machine having player input controls for player

input or selection during the course of a game, said electronic game machine also including scoring circuitry for automatically keeping a game score when operated in the first mode, said electronic game machine system also including a separate register positioned at a central location or at a game machine for maintaining an account balance for a player when operating in said second mode, and circuitry for incrementing or decrementing the player account balance in said register in accordance with the outcome of play on an electronic game machine operated in said second mode, and a remote system controller connected to said plurality of game machines which is operable to remotely disable said second mode when desired.

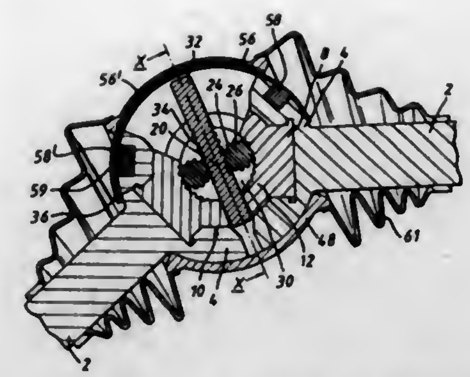
5,618,233
RUNNING BODY AND RACING GAME APPARATUS USING THE SAME
Kouichi Iimura, and Yu Haijima, both of Setagaya-ku, Japan, assignors to Sigma, Incorporated, Setagayu-ku, Japan
Filed Feb. 3, 1995, Ser. No. 383,101
Claims priority, application Japan, Sep. 16, 1994, 6-012635 U; Sep. 16, 1994, 6-248385
Int. Cl.[6] A63F *9/14*; A63H *13/02*
U.S. Cl. 463—67 **28 Claims**



1. A running body comprising:
a movable body which can be transferred along a track formed on a table; and
an animal model having four legs, of which the fore and hind legs can be swung back and forth accompanying the movement of the movable body and which can move on or above the track, the animal model comprising:
a pair of upper limbs of fore legs, each of which conducts a predetermined swinging back and forth on a shaft attached to a barrel of the animal model,
a pair of lower limbs of fore legs, each of which conducts a predetermined swinging back and forth on a shaft attached to a lower portion of the upper limb, by the swinging of the pair of upper limbs, and
a swinging mechanism for swinging the pair of upper limbs by changing the transfer movement of the movable body to a swinging movement, the swinging mechanism including at least one cam.

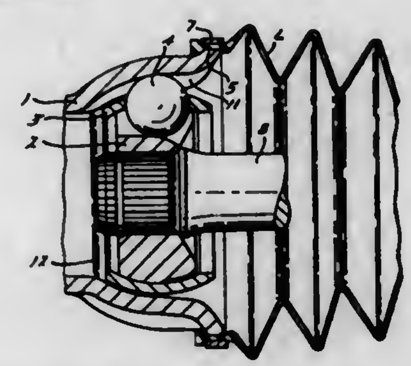
5,618,234
CONSTANT VELOCITY UNIVERSAL JOINT
John C. Carden, Nassau, Bahamas, assignor to Lica Carden (IPR) Limited, London, England
Filed Feb. 15, 1995, Ser. No. 388,841
Claims priority, application United Kingdom, Feb. 16, 1994, 9402978
Int. Cl.[6] F16D *3/16;3/30*
U.S. Cl. 464—109 **19 Claims**

1. A constant velocity universal joint comprising two shafts, said shafts having respective opposed ends and respective part-cylindrical recesses formed in said opposed ends of said shafts, said part-cylindrical recesses having respective axes which inter-



sect at a geometrical centre of said joint, two spiders, each said spider including an outer portion of part-cylindrical shape, said outer portion having an axis and being slidably received in a respective one of said part-cylindrical recesses, and an inner portion affording a part-cylindrical surface having an axis, said axis of said part-cylindrical surface of said inner portion extending perpendicular to said axis of said outer portion, a central member having a cylindrical surface having an axis, the cylindrical surface of said central member facing said part-cylindrical surfaces of said inner portions of said two spiders, said axes of said part-cylindrical surfaces of said inner portions of said two spiders being coincident and constituting an axis of said central member passing through said geometrical centre, and coupling means connecting said two spiders and arranged to transmit rotational movement of each of said two spiders about said axis of said central member to the other of said two spiders such that said two spiders are constrained to rotate through equal distances but in opposite directions about said axis of said central member.

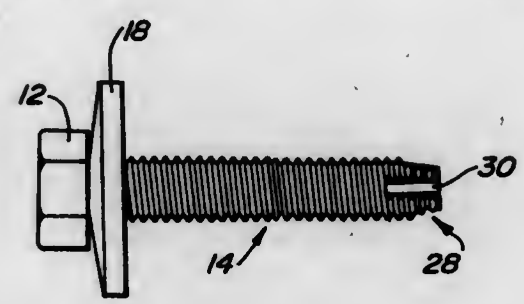
5,618,235
CONSTANT VELOCITY UNIVERSAL JOINT
Werner Krude, Neunkirchen, and Peter Harz, Hennef, both of Germany, assignors to GKN Automotive AG, Germany
Continuation of Ser. No. 32,268, Mar. 17, 1993, abandoned. This application Feb. 1, 1995, Ser. No. 384,363
Claims priority, application Germany, Apr. 7, 1992, 42 11 596.5; Jan. 29, 1993, 43 02 432.7
Int. Cl.[6] F16D *3/224*
U.S. Cl. 464—145 **9 Claims**



1. A constant velocity universal joint comprising:
an outer joint part having a wall which includes first portions defining a plurality of circumferentially spaced outer running grooves and second portions defining a plurality of segments with each segment being disposed between each pair of adjacent outer running grooves, said first and second portions of said wall having generally uniform wall thickness, said wall thickness of said first portions being equal to said wall thickness of said second portions said wall of said outer joint part further defining a cavity having an open end and a radially outwardly pointing collar-shaped flange disposed at

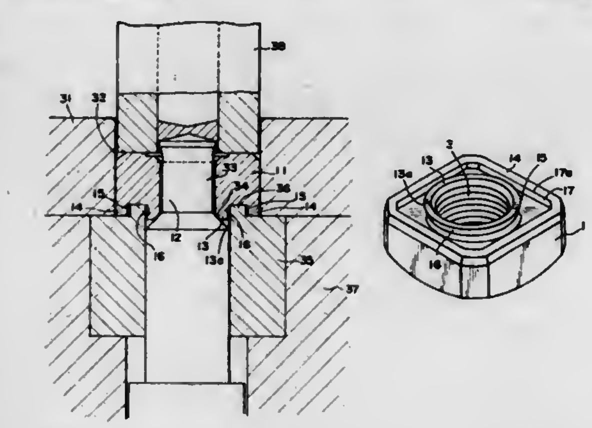
said open end, said flange having a wall thickness generally equal to said wall thickness of said first and second portions and having a groove-free outer edge, said outer edge of said flange serving as a seat for a convoluted boot to seal said joint;
an inner joint part disposed in said cavity; and
a plurality of balls disposed in said cavity and mating with said inner joint part and said outer running grooves of said outer joint part for establishing a torque connection between said outer joint part and said inner joint part.

5,618,236
ANTI-CROSS THREAD FASTENER WITH CLEANING TIP
Gus G. Avgoustis, Westland, Mich., assignor to Ring Screw Works, Madison Heights, Mich.
Division of Ser. No. 109,610, Aug. 19, 1993, Pat. No. 5,419,667. This application Apr. 12, 1995, Ser. No. 420,426
Int. Cl.[6] B21K *1/56*
U.S. Cl. 470—12 **4 Claims**



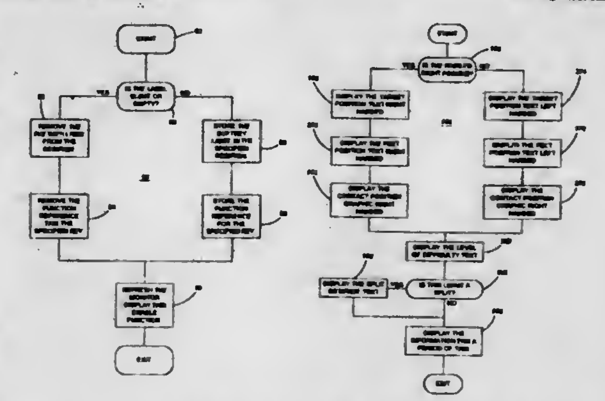
1. A method of manufacturing a fastener comprising:
forming a blank having a head and an unthreaded shank;
forming said blank into a header die means;
forming a tip having a smooth peripheral surface with its edge defining a curve with respect to a longitudinal axis and a recess in said tip opposing said smooth peripheral surface;
forming threads on said shank and on said tip opposite said smooth peripheral surface such that said recess extends from said tip through at least a first full thread.

5,618,237
APPARATUS FOR MAKING SELF-PIERCING NUTS
Hiroshi Shinjo, Osaka, Japan, assignor to Yugenkaisha Shinjo Seisakusho, Osaka, Japan
Filed Dec. 9, 1994, Ser. No. 352,615
Claims priority, application Japan, Dec. 17, 1993, 5-343958
Int. Cl.[6] B21D *37/08*
U.S. Cl. 470—91 **4 Claims**



1. An apparatus for making self-piercing nuts from blanks therefor which each have a cylindrical pilot portion having blind bores coaxial with and separated by a blind bottom from each other and having an end surface serving as a punch, with the pilot portion as one of peripheral walls formed centrally of a nut body being thereby surrounded by a rim as another peripheral wall extending along a periphery of the nut body and protruding therefrom in the same direction as the pilot portion so as to provide an annular groove between the pilot portion and the rim, the apparatus comprising:
a punching die which has a boring punch and a first cylindrical insert fitted thereon;
the boring punch serving to remove the bottom so as to cause the blind bores to communicate with each other;
the boring punch further having at its basal portion a first tapered annular wall;
the first cylindrical insert having at its end surface an annular lug capable of fitting in the annular groove, so that when the tapered annular wall of the boring punch radially expands an end of the pilot portion, a peripheral wall thereof defining the annular groove is forcibly slanted centrifugally and an outer circular edge of said peripheral wall is stopped by an inner periphery of the annular lug protruding from the cylindrical insert.

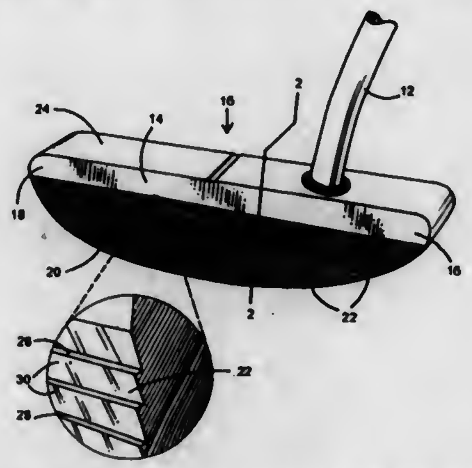
5,618,238
USER INPUT SELECTION DEVICE AND AUTOMATED BOWLING COACHING SYSTEM IN AN AUTOMATIC BOWLING SCORING SYSTEM
Richard A. Kruse, Dillard, Ga.; Roger L. Grossenbacher, Spring Lake, and James S. Chan, Muskegon, both of Mich., assignors to Brunswick Bowling & Billards Corp., Muskegon, Mich.
Filed Jan. 9, 1995, Ser. No. 370,032
Int. Cl.[6] A63D *5/04*
U.S. Cl. 473—70 **37 Claims**



1. A bowling scoring system user input selection device for receiving user input selections, said bowling scoring system being responsive to a pin-fall sensor for computing bowler's scores and including a display device for displaying said scores, comprising:
a controller including a program having various program states, said controller responsive to the state of said program for performing a particular one of a plurality of functions;
a plurality of input selection keys juxtaposed with said display device for providing inputs to said controller;
a plurality of softkey indicia areas on said display device, each of said softkey indicia areas associated with one of said input selection keys; and
said controller responsive to the state of said program for displaying a particular label in at least one of said softkey indicia areas and for performing a function associated with the displayed label in response to actuation of the one of said input selection keys associated with the labeled softkey indicia area, said controller displays on said display device a plurality of available choices for selection by the user in particular states of said program, wherein said one of said input selection keys

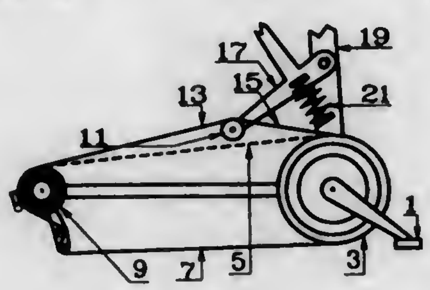
associated with the labeled softkey indicia area provides a selection means for selecting one of said choices, wherein said controller includes scrolling means scrolling the available choices displayed on said display device and wherein said selection means controls said scrolling means, and wherein said selection means includes first and second input selection keys, each associated with one of said labeled softkey indicia areas, said first input selection key for causing scrolling in one direction and said second input selection key for causing scrolling in an opposite direction.

5,618,239
GROOVE CONFIGURATION FOR A GOLF CLUB
Guerin D. Rife, 1230 Via Salerno, Winter Park, Fla. 32789
Filed Feb. 15, 1996, Ser. No. 601,861
Int. Cl.⁶ A63B *53/04*
U.S. Cl. 473—330 **15 Claims**



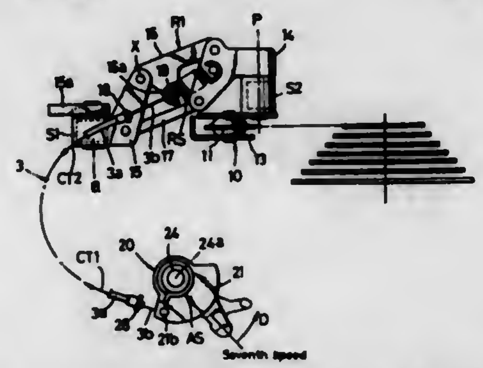
1. A putter type golf club head including a club head body with a heel, toe, upper surface, a bottom, ball striking face, said face being further defined by a flat plane coincident therewith, and a leading edge at the intersection of said ball striking face and said bottom wherein the improvement comprising:
a series of grooves formed in said ball striking face; each one of said grooves having a first surface at a first angle no greater than 90 degrees to said flat plane of said ball striking face and a second surface extending from an outermost portion of said first surface coincident with said flat plane; said second surface extending downwardly and inwardly from said ball striking face into said club head body, at an angle less than said first angle.

5,618,240
SPROCKET RATIO CHANGER
Raymond D. Gilbert, 6501 Inwood Dr., Springfield, Va. 22150
Filed Jun. 7, 1995, Ser. No. 483,895
Int. Cl.⁶ F16H *59/00*
U.S. Cl. 474—50 **18 Claims**



1. A sprocket ratio changer comprising:
a pedalled sprocket
a wheel-driving sprocket
a draw-chain
a frame, and
a draw-chain biasing means further comprising
a third wheel means,
a beam means,
an elastic bias means, and
a measuring communication means;
wherein the pedalled sprockets and the wheel-driving sprockets are rotationally connected to the frame; and
wherein the draw-chain is a tensioned portion of a continuous chain connecting the wheel-driving sprocket and the pedalled sprocket; and
wherein the draw-chain biasing means presses a third wheel against the draw-chain:
wherein the beam means is connected to the frame, to the third wheel means and to the mechanical communication means; and
wherein the third wheel means, is a wheel, such as a sprocket, and is mounted to turn freely on a first end of the beam; and
wherein the draw chain biasing means communicates third wheel displacement for use in measuring pedal force;
whereby the biased third wheel displaces the draw chain from a first path between sprocket sets to measure pedal force as a function of draw-chain displacement.

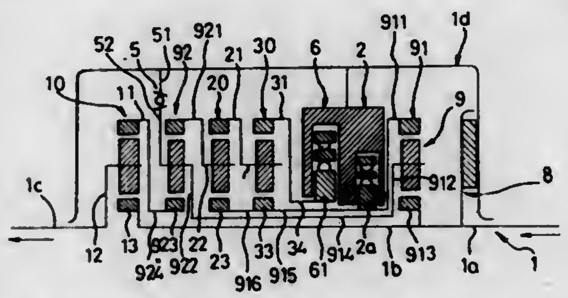
5,618,241
BICYCLE SHIFTING DEVICE
Kenji Ose, Sakai, Japan, assignor to Shimano, Inc., Osaka, Japan
Filed Dec. 20, 1995, Ser. No. 580,066
Claims priority, application Japan, Dec. 20, 1994, 6-316232; Dec. 20, 1994, 6-316233
Int. Cl.⁶ F16H *59/00*
U.S. Cl. 474—80 **20 Claims**



1. A bicycle shifting device for actuating, through a control cable (3) having an inner cable (3*b*) which slides within an outer casing (3*a*), a derailleur (10) having a return spring (RS), the device comprising:
a base member (22, 41);
a movable member (21, 44) coupled to the base member (22, 41) for pivoting about an axis (24*a*, Y) and having a cable support (21*b*, 44*b*) to which the inner cable (3*b*) is attached, wherein the movable member (21, 44) moves the cable support (21*b*, 44*b*) as the movable member (21, 44) rotates to actuate the derailleur (10);
an outer casing holder (28) spaced apart from the cable support (21*b*, 44*b*) so that the inner cable (3*b*) extends in a straight line from the outer casing holder (28) to the cable support (21*b*, 44*b*);
an assist spring (AS) having one portion fixed relative to the base member (22, 41) and another portion coupled for movement with the movable member (21, 44) for biasing the movable member (21, 44) in a direction opposite a direction of biasing of the movable member (21, 44) by the return spring (RS);

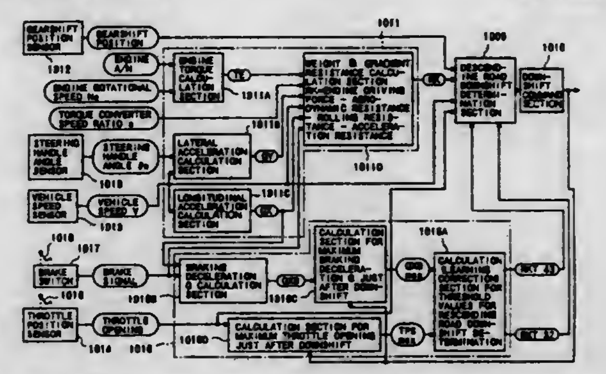
wherein the cable support (21*b*, 44*b*) supports the control cable (3) such that the inner cable (3*b*) maintains a straight line between the outer casing holder (28) and the cable support (21*b*, 44*b*) as the cable support (21*b*, 44*b*) moves the inner cable (3*b*) to actuate the derailleur (10) and does not wind around the cable support (21*b*, 44*b*) as the cable support (21*b*, 44*b*) moves the inner cable (3*b*) to actuate the derailleur (10); and
wherein an inclination angle (A) defined by the image cable (3*b*) and a line (L) extending from the cable support (21*b*, 44*b*) to the axis (24*a*, Y) varies as the cable support (21*b*, 44*b*) moves the inner cable (3*b*) so that tension exerted by the assist spring (AS) on the inner cable (3*b*) remains substantially constant regardless of a position of the movable member (21, 44) as the shifting device actuates the derailleur (10).

5,618,242
APPARATUS FOR TORQUE-CONVERTER CLUTCH TRANSMISSION
Cheng-hsiung Wu, 2nd Fl., No. 24, Lane 430, Fuhsing N. Rd., Taipei, Taiwan
Filed Sep. 6, 1995, Ser. No. 524,172
Int. Cl.⁶ F16H *47/04*
U.S. Cl. 475—72 **3 Claims**



1. An apparatus for torque-converter clutch transmission comprising:
an oil path system;
a braking pump (2) mounted in the oil path system and comprising an outer casing fixedly mounted to an inner wall of a gear box (1*d*) and a rotor shaft (2*a*);
a transitional braking pump (6) mounted in the oil path system and comprising an outer casing fixedly mounted to the inner wall of the gear box (1*d*) and a rotor shaft (61);
a disengagement valve (250) for idling mounted in the oil path system;
a one-way clutch (5) having a first end (51) fixedly mounted to the inner wall of the gear box (1*d*) and a second end (52) which is rotatable in one direction;
a final output planetary gear (10) comprising a sun gear (13) connected to an engine power output shaft (1) and functioning as a driving member, a planetary carrier (12) connected to an output shaft (1*c*) and functioning as a driven member, and a ring gear (11) functioning as a braking member;
a compound planetary gear train (9) comprising first and second planetary gears (91 and 92) each of which has a sun gear, a planet carrier and a ring gear which are respectively accommodated to function as either a driving member, a driven member, or a braking member therewithin, a driven gear in the second planetary gear relating to a corresponding driving gear in the first planetary gear, a driving gear in the second planetary gear relating to a corresponding driven gear in the first planetary gear, and a braking gear in the second planetary gear relating to a corresponding braking gear in the first planetary gear;
the sun gear (913) of the first planetary gear (91) being mounted on the engine power input shaft (1), the ring gear (911) of the first planetary gear (91) being connected to the hollow rotor shaft (2*a*) of the braking pump (2), and the planetary carrier (912) of the first planetary gear (91) being connected to the planetary carrier (922) of the second planetary gear (92);
the planetary carrier (922) of the second planetary gear (92) being connected to the second end (52) of the one way clutch (5), the sun gear (923) of the second planetary gear (92) being connected to the ring gear (11) of the final output planetary gear (10), the first and second planetary gears (91 and 92) of the compound planetary gear train (9) having a gear reduction ratio of 1:1;
a first transition planetary gear (20) comprising a sun gear (23), a planetary carrier (22) connected to the ring gear (921) of the second planetary gear (92), and a ring gear (21);
a second transition planetary gear (30) comprising a sun gear (33) connected to the sun gear (23) of the first transition planetary gear (20) and the rotor shaft (2*a*) of the braking pump (2), a planetary carrier (32) connected to the ring gear (21) of the first transition planetary gear (20), and a ring gear (31) mounted to the rotor shaft (61) of the transition braking pump (6); and
a sensing means (8) mounted on the engine power output shaft (1) for sensing rotation speed of the engine power output shaft (1) and outputting predetermined amounts of pressurized working fluid responsive to the rotation speed of the engine power output shaft (1) to control the disengagement valve (250) for braking the braking pumps (2 and 6) which, in turn, brake the braking members of the planetary gears (10, 20, 30, 91, and 92), thereby obtaining a transmission.

5,618,243
SPEED CHANGE CONTROL METHOD FOR AN AUTOMOTIVE AUTOMATIC TRANSMISSION
Kaoru Kondo, Kyoto; Kenjiro Fujita, Kusatsu, and Shinji Watanabe, Himeji, all of Japan, assignors to Mitsubisi Jidosha Kogyo Kabushiki Kaisha, and Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 19, 1994, Ser. No. 277,029
Claims priority, application Japan, Jul. 20, 1993, 5-179026; Sep. 9, 1993, 5-224695; Dec. 16, 1993, 5-316613; Apr. 5, 1994, 6-067361
Int. Cl.⁶ F16H *61/02*
U.S. Cl. 477—118 **19 Claims**



1. A speed change control method for controlling changeover between gearshift positions of an automotive automatic transmission provided with a plurality of gearshift positions, comprising the steps of:
(a) detecting a value of at least one parameter indicative of a running condition of a vehicle;
(b) comparing the detected at least one parameter value with a predetermined determination reference value, to thereby determine one of an excess and deficiency in engine braking;
(c) effecting a learning correction of the predetermined determination reference value based on the at least one detected parameter value; and
(d) outputting a speed change command based on the vehicle running condition,
wherein said step (a) includes detecting a braking manipulation state and an engine load after completion of a downshift conducted

in the automatic transmission in response to the speed change command, and wherein said step (c) includes effecting the learning correction of the predetermined determination reference value based on at least one of the detected braking manipulation state and the detected engine load.

5,618,244

SYSTEM FOR ADJUSTING THE WORKING RANGE OF A DAMPER CLUTCH IN AN AUTOMATIC TRANSMISSION

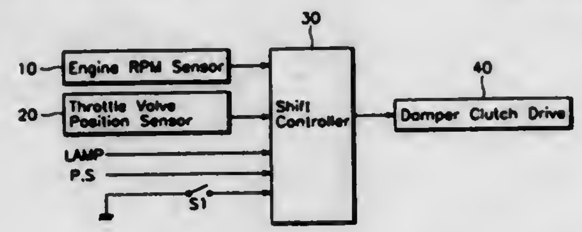
Woo-Won Chung, Kyungki-do, Rep. of Korea, assignor to Hyundai Motor Company, Rep. of Korea

Filed Sep. 26, 1995, Ser. No. 533,747

Claims priority, application Rep. of Korea, Sep. 27, 1994, 94-24310

Int. Cl.⁶ B60K *41/02*

U.S. Cl. 477—169 **10 Claims**



1. A system for adjusting working range of a damper clutch for an automatic transmission of a vehicle according to a linear function representing a relationship between position of a throttle valve and revolutions per minute (rpm) of an engine, comprising:
- a throttle valve position sensor for sensing opening amount of the throttle valve;
- an engine rpm sensor for sensing the engine rpm; and
- a controller for changing slope of the linear function according to the opening amount of the throttle valve, the engine rpm, and operation of supplementary systems mounted in the vehicle for a driver's convenience.

5,618,245

FITNESS APPARATUS WITH HEART RATE CONTROL SYSTEM AND METHOD OF OPERATION

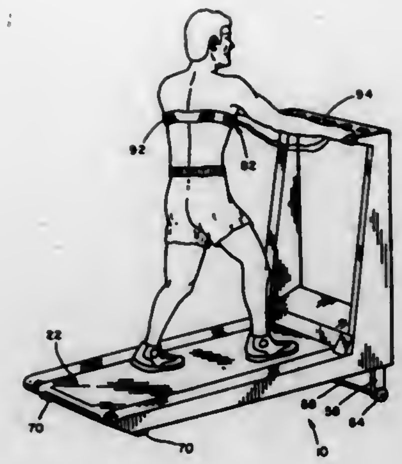
Frank R. Trulaske, St. Louis, Mo., and Phillip M. Singer, Clarendon Hills, Ill., assignors to True Fitness Technology, Inc., St. Louis, Mo.

Continuation-in-part of Ser. No. 549,604, Oct. 27, 1995, abandoned, which is a continuation of Ser. No. 192,407, Feb. 4, 1994, Pat. No. 5,462,504. This application Jan. 11, 1996, Ser. No. 585,191

Int. Cl.⁶ A63B *21/005*

U.S. Cl. 482—7 **11 Claims**

1. A method of setting maximum resistance levels in a fitness apparatus comprising the steps of, providing a fitness apparatus including first and second resistance mechanisms, a heart rate sensor, a first resistance sensor, a second resistance sensor, comparison circuitry, and a processor coupled to the comparison circuitry, the heart rate sensor, and the first and second resistance sensors; and setting maximum resistance levels of the first and second resistance mechanisms in accordance with a predetermined heart rate by (a) sensing the heart rate of the user while sensing resistance levels of the first and second resistance mechanisms; (b) comparing the sensed heart rate with the predetermined target rate; and (c) determining maximum resistance levels for the first and second resistance mechanisms based upon the resistance levels when the sensed heart rate equals or exceeds the predetermined target heart rate.



5,618,246

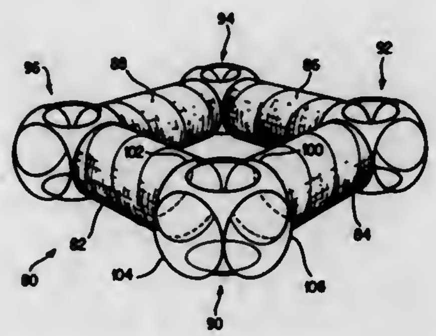
COLLAPSIBLE PLAY TUNNEL STRUCTURES

Yu Zheng, 1065 Howard Ave., Covina, Calif. 91722

Filed Jul. 10, 1995, Ser. No. 500,488

Int. Cl.⁶ A63B *71/02*

U.S. Cl. 482—35 **11 Claims**



1. A collapsible tunnel structure comprising:
- a connector comprising at least two loop members coupled to each other, each loop member defining an opening having a particular size and configuration; and
- at least one tunnel, each of said at least one tunnels comprising a coiled wire supporting a covering which is attached to the wire to define a tunnel passageway, each coiled loop and its covering having a first end and a second end, the first and second ends defining openings having a size and configuration which correspond to the size and configuration of the opening defined by at least one of the loop members of the connector;
- wherein the second end of each of said at least one tunnels includes at least one connection member and is connected to one of said loops of said connector by said connection member and at least one connection member provided at the first end of each of said at least one tunnels and wherein the first end of each of said at least one tunnels is adapted to be compressed against the second end of the same tunnel, with the at least one connection member at the first end used to secure the particular tunnel in a compressed state against the connector.

5,618,247

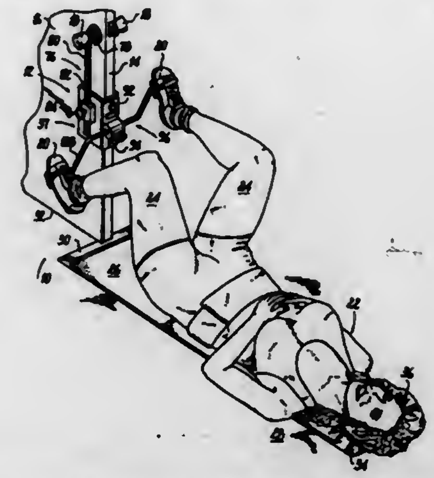
EXERCISE LEG DEVICE

Jose L. Perez, 35-30 91st St., Jackson Heights, N.Y. 11372

Filed Aug. 29, 1996, Ser. No. 705,172

Int. Cl.⁶ A63B *23/04*

U.S. Cl. 482—60 **30 Claims**



1. A leg exercise device replaceably attachable to an open door having a thickness, a free vertical edge, a free lower horizontal edge, a first side with a doorknob extending outwardly therefrom and a contour, and a second opposing side being opposite to the first side of the open door and having a doorknob extending outwardly therefrom and a contour, said device exercising the legs of an exerciser having feet, a height, and a head, comprising:
- a) a first generally L-shaped assembly having a generally L-shaped plate with a flat, rectangular-shaped, and wide portion abuttable against the first side of the open door below the doorknob on the first side of the open door, and a flat, rectangular-shaped, and narrow portion being narrower than, and extending perpendicularly inwardly from, said flat, rectangular shaped, and wide portion of said generally L-shaped plate of said first generally L-shaped assembly and being abuttable against the free vertical edge of the open door;
- b) a second generally L-shaped assembly having a generally L-shaped plate with a flat, rectangular-shaped, and wide portion abuttable against the second opposing side of the open door below the doorknob on the second opposing side of the open door, and a flat, rectangular-shaped, and narrow portion being narrower than, and extending perpendicularly inwardly from said flat, rectangular-shaped, and wide portion of said generally L-shaped plate of said second generally L-shaped assembly and overlapping said flat, rectangular-shaped, and narrow portion of said generally L-shaped plate of said first generally L-shaped assembly and being horizontally adjustable therewith, so that said leg exercise device can be used on open doors of different thicknesses;
- c) width maintaining means for maintaining said overlap of said flat, rectangular-shaped, and narrow portion of said generally L-shaped plate of said second generally L-shaped assembly on said flat, rectangular-shaped, and narrow portion of said generally L-shaped plate of said first generally L-shaped assembly with said flat, rectangular-shaped, and wide portion of said generally L-shaped plate of said second generally L-shaped assembly being displaced a distance from said flat, rectangular-shaped, and wide portion of said generally L-shaped plate of said first generally L-shaped assembly equal to the thickness of the open door, so that the open door is replaceably engaged therebetween;
- d) a first flat, vertically-oriented, forwardly-facing, and inverted J-shaped height adjusting arm having a forward facing hook portion being replaceably hookable on the doorknob of the first side of the open door, and a flat and slender body portion being vertically movably adjustably mounted to said flat, rectangular-shaped, and wide portion of said generally L-shaped plate of said first generally L-shaped assembly, so that said first generally L-shaped assembly is replaceably suspended from, and vertically adjustable below, the doorknob on the first side of the open door so as to allow for exercisers of different heights;
- e) first height maintaining means for maintaining said first generally L-shaped assembly a preselected vertical distance below the doorknob on the first side of the open door;
- f) a second flat, vertically-oriented, forwardly-facing, and inverted J-shaped height adjusting arm having a forward facing hook portion being replaceably hookable on the doorknob of the second opposing side of the open door, and a flat and slender body portion being vertically movably adjustably mounted to said flat, rectangular-shape, and wide portion of the generally L-shaped plate of the second generally L-shaped assembly, so that said second generally L-shaped assembly is replaceably suspended from, and vertically adjustable below, the doorknob on the second opposing side of the open door so as to allow for exercisers of different heights;
- g) second height maintaining means for maintaining said second generally L-shaped assembly a preselected vertical distance below the doorknob on the second opposing side of the open door; and
- h) a pedal assembly attached to said flat, rectangular-shaped, and narrow portion of said generally L-shaped plate of said second generally L-shaped assembly and replaceably receiving the feet of the exerciser, so that the legs of the exerciser are exercised when said pedal assembly is rotated by action of the legs of the exerciser.

5,618,248

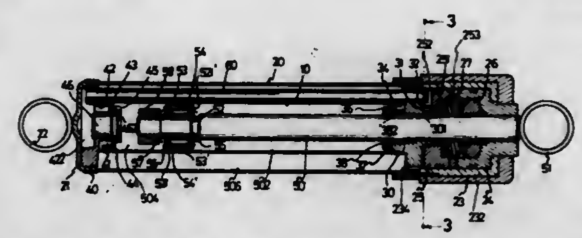
DOUBLE-ACTING HYDRAULIC CYLINDER FOR USE IN AN EXERCISING APPARATUS

Chen-tan Huang, 3F, No. 7-2, Alley 10, Kungyuan Rd., Hsinchuang City, Taipei Hsien, Taiwan

Filed Aug. 20, 1996, Ser. No. 697,189

Int. Cl.⁶ A63B *21/008*

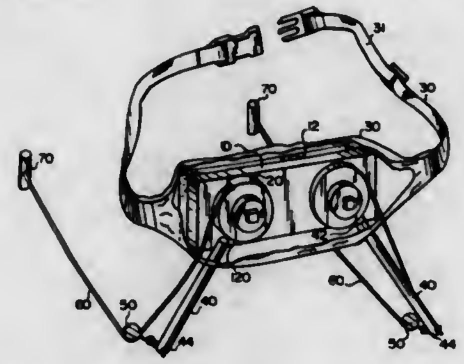
U.S. Cl. 482—112 **10 Claims**



1. A double-acting hydraulic cylinder for use in an exercising apparatus to provide a resistance to a user thereof, comprising:
- a cylindrical body comprising an outer wall and an inner wall and defining a front end and a rear end;
- a piston rod extending into an inner space of the inner wall and attached with a piston to divide the inner space into a front chamber and a rear chamber;
- a communicating tube extending between the outer and inner walls;
- a rear seat mounted on the rear end of the cylindrical body and adapted to be fixedly attached to an exercising apparatus, comprising a first passage communicating the communicating tube with the rear chamber and a first bypass communicating a space defined between the outer and inner walls with the rear chamber;
- a first blocking member provided in-the rear chamber for normally closing the first bypass, said first blocking member opening the first bypass when the piston is forced to move toward the front end;
- a front seat mounted on the front end of the cylindrical body and defining a second passage in communication with the front chamber and a second bypass for communicating the space between the inner and outer walls with the front chamber and a first control channel and a second control channel, said first and second control channels respectively having a variable depth along their lengths and communicating with each other

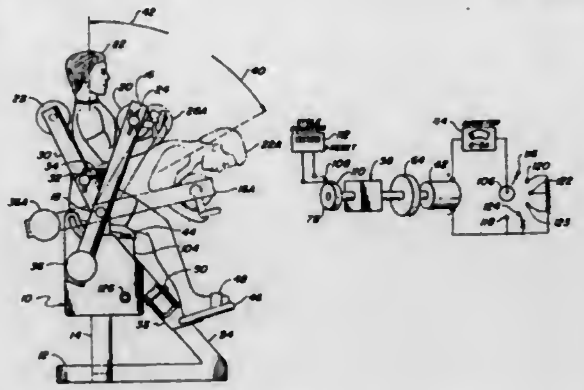
at a common end by a communicating channel, said communicating channel communicating with the space defined between the inner and outer walls;
a second blocking member provided in the front chamber for normally closing the second bypass, said second blocking member opening the second bypass when the piston is forced to moved toward the rear end;
a sleeve rotatably mounted around the piston rod and located at a front of the front seat, said sleeve defining a third passage in communication with the second passage and the first control channel and a fourth passage in communication with the second control channel and the communicating tube;
a control ring fixedly mounted on the sleeve so that when the control ring is rotated, the sleeve rotates accordingly; and
a mounting ring mounted between the sleeve and the control ring, said mounting ring having a rear end hermetically and fixedly connected with a front end of the outer wall and an inner periphery hermetically engaging with the sleeve.

5,618,249
UNIDIRECTIONALLY ADJUSTABLY RESISTANT RECOILERS AND PORTABLE EXERCISE DEVICES
David R. Marshall, 42206 County Rd. 1, Rice, Minn. 56367
Filed Jun. 7, 1995, Ser. No. 486,840
Int. Cl.⁶ A63B *69/10*
U.S. Cl. 482—127 **2 Claims**



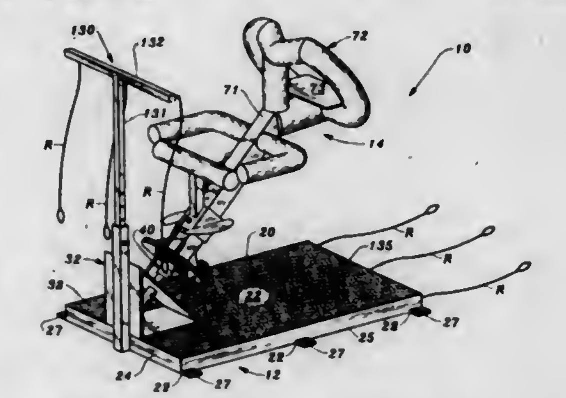
1. A process, comprising:
using a unidirectionally adjustably resistant recoiler to provide resistance for exercise, wherein said using step is carried out with a device comprising:
unwindingly projecting recoiler means for projecting an engageable member when rotated in an unwinding direction by an unwinding force, and for providing a restoring force when said unwinding force is released; and
unwindingly engaging adjustable friction means for engaging said engageable member only when said recoiler means rotates in an unwinding direction, and for providing adjustable friction against said unwinding force when so engaged, unwindingly engageably coupled to said recoiler means;
wherein said unwindingly projecting recoiler means comprises:
a housing;
a recoil axle mounted in said housing;
a recoil spring having a housing portion and a wheel portion anchored at said housing portion to said housing;
a recoil wheel having an axially projecting hub portion with a tongue aperture, mounted on said recoil axle and attached to said wheel portion of said spring, whereby said recoil spring provides a restoring force when said recoil wheel is rotated;
an extendable tongue extendably mounted in said hub portion adjacent to said tongue aperture;
tongue extension means for extending said tongue through said tongue aperture radially outwards from said hub when said recoil wheel is rotated in an unwinding direction, and for retracting said tongue through said tongue aperture when said recoil wheel is rotated in a winding direction.

5,618,250
AEROBIC EXERCISE MACHINE TARGETING TRUNK MUSCLES
Todd M. Butz, 1984 Marietta- Mt. Joy Pike, Marietta, Pa. 17547
Filed Sep. 2, 1994, Ser. No. 300,294
Int. Cl.⁶ A63B *21/005;22/00;23/02*
U.S. Cl. 482—137 **24 Claims**



1. An exercise machine, comprising:
a seat;
means for contacting an anterior surface of a trunk of a person:
means for contacting a posterior surface of the trunk of the person; and
means for allowing the person to flex and extend the person's body about the person's hip joint, said last mentioned means including an arm pivotally mounted in the region of said seat with said means for contacting an anterior surface and said means for contacting a posterior surface mounted to said arm;
means for providing a substantially uniform resistance to movement of said trunk anterior and posterior contact means in both an anterior and posterior direction to enable aerobic type exercise primarily of trunk and hip flexor and extensor muscles, said means for providing a substantially uniform resistance to movement including a cyclical resistance device and an energy storage device for storing and releasing energy, said pivotally mounted arm being mechanically coupled to said cyclical resistive device and said energy storage device, said energy storage device storing energy when said pivotally mounted arm is moved in one direction and releasing energy as the pivotally mounted arm changes direction to move in an opposite direction.

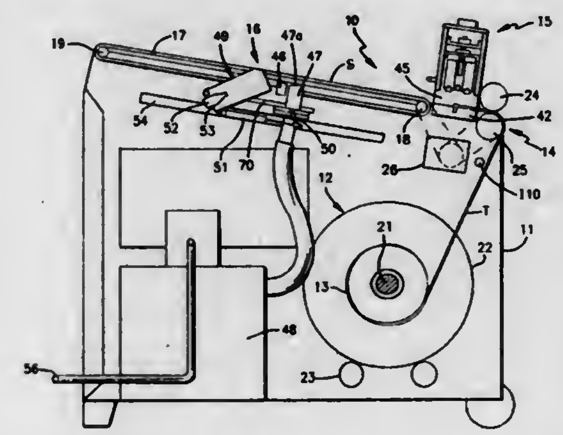
5,618,251
HIGH INTENSITY EXERCISE SYSTEM
Phillip A. Sullivan, 284 W. Gall Ave., Tulare, Calif. 93274
Filed Jun. 4, 1996, Ser. No. 658,150
Int. Cl.⁶ A63B *22/14;* **A63G** *1/12*
U.S. Cl. 482—146 **20 Claims**



1. A high intensity exercise device comprising, in combination:

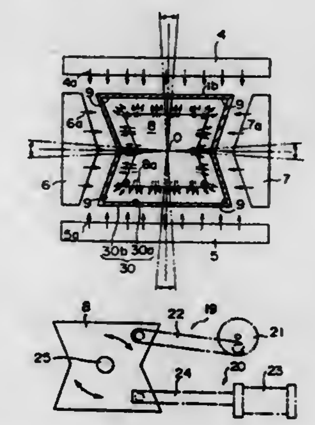
a chair; a base member; a post assembly, said post assembly having one end thereof mounted to said base member for relative rotation thereto;
said chair being rigidly secured to said post; said chair including a saddle, means defining a ring about the saddle, and rigidly secured thereto, said ring be positioned to encircle the waist area of a user of the exercise device;
means defining a clevis, said clevis being secured to said post at a position beneath said saddle, said clevis adapted to partially encircle the knee and thigh area of a user of the exercise device; and a foot support, said foot support being mounted to said post, and selectively movable relative thereto along a path which is parallel with the axis of said post, whereby a user disposed on said saddle may apply pressure to said chair with selected parts of his body to perform high intensity exercises.

5,618,252
PACKAGING APPARATUS
Richard A. Melville, Auckland, New Zealand, assignor to Machinery Developments Limited, Auckland, New Zealand
Continuation-in-part of Ser. No. 920,418, Jul. 27, 1992, abandoned. This application Feb. 17, 1994, Ser. No. 198,092
Claims priority, application New Zealand, Jul. 26, 1991, 239153; Mar. 26, 1993, 247267
Int. Cl.⁶ B31B *1/00*
U.S. Cl. 493—22 **8 Claims**



1. Apparatus for producing discrete bags on demand from a stock of flexible laminar packaging material in the form of a flat elongate tube, said bags being intended for packaging articles which may be of different length, the apparatus being operable in a mode of operation in which the apparatus retains each produced bag at a predetermined location from which the bag is removed by an operator and in which the operation of the apparatus is interrupted after each bag is produced so that the timing of production of each bag can be controlled by the operator, the apparatus comprising:
bag forming means including tube feed means comprising a motor coupled to at least one drive roller for feeding successive leading portions from said tube, and sealing means for sealing each said leading portion adjacent an edge of such leading portion along which edge said tube is cut to separate such leading portion from said tube;
electronic control means for immobilizing the bag forming means after each said leading portion is fed to the predetermined location, a switch means for restarting the bag forming means, and length determining means interconnected with the motor to cause the motor and drive roller to determine the length of each said leading portion fed from said tube, the length determining means being adjustable so that the length of each bag formed can be selected to suit the length of an article to be packaged therein; and
means for suspending each produced bag in the predetermined location where said bag is retained without being opened until said bag is removed by the operator.

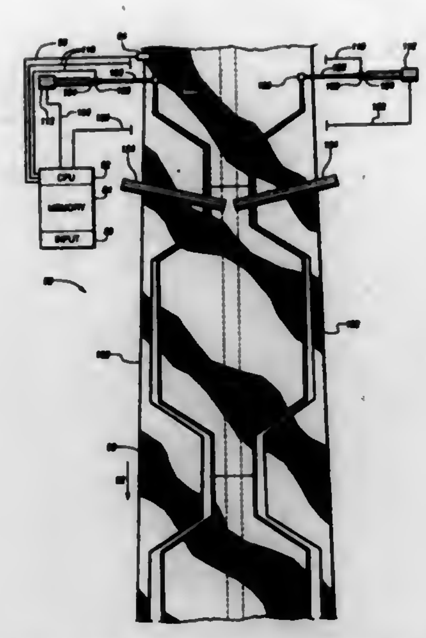
5,618,253
HEAT-SEALING METHOD FOR A PAPER CONTAINER AND APPARATUS OF THE SAME
Masataka Okushita, Tokyo-To, Japan, assignor to Dai Nippon Printing Co., Ltd., Japan
PCT No. PCT/JP94/01144, § 371 Date May 1, 1995, § 102(e) Date May 1, 1995, PCT Pub. No. WO95/02540, PCT Pub. Date Jan. 26, 1995
PCT Filed Jul. 13, 1994, Ser. No. 397,191
Claims priority, application Japan, Jul. 13, 1993, 5-172873
Int. Cl.⁶ B31B *1/64*
U.S. Cl. 493—134 **10 Claims**



1. A heat-sealing method for sealing a cylindrically shaped paper container comprising the steps of:
providing a heat-sealing apparatus having an inner peripheral heating portion and outer peripheral heating portions, said inner peripheral heating portion being rotatable about an axial axes of rotation without contacting said outer peripheral heating portions;
aligning an inner seal portion of a seal portion formed at an open edge portion of said cylindrically shaped paper container which has not been assembled, to said inner peripheral heating portion of the seal-heating apparatus, and aligning said outer peripheral heating portion of the seal-heating apparatus; and
blowing hot air through small hot air blowing holes formed in said inner peripheral heating portion to the inner seal portion while oscillating said inner peripheral heating portion about said axial axes of rotation over a predetermined oscillating angle, and while blowing hot air through small hot air blowing holes formed in said outer peripheral heating portions to the outer seal portion such that the outer seal portion is uniformly heat-sealed.

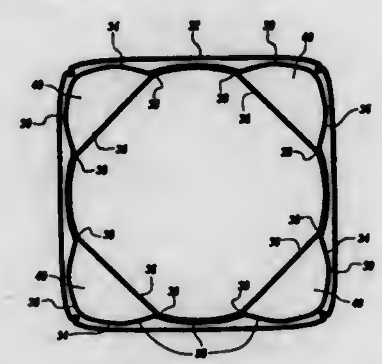
5,618,254
GUSSETED BULK BAG LINER AND METHOD OF MANUFACTURE
Norman C. Derby, Bonham, Tex., assignor to Super Sack Mfg. Corp., Dallas, Tex.
Filed Apr. 27, 1995, Ser. No. 429,776
Int. Cl.⁶ B31B *33/60*
U.S. Cl. 493—197 **10 Claims**

1. A method of manufacturing gusseted bulk bag liners including the steps of:
providing a continuous web of gusseted bulk bag liner material comprising a pair of opposed substantially planar panels and a



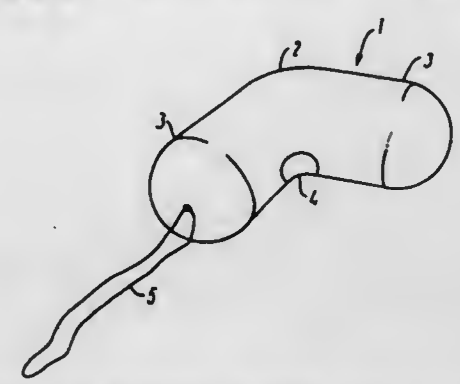
pair of opposed gusseted panels connected to said pair of planar panels by four longitudinally extending fold lines;
advancing the web of gusseted bulk bag liner material along a predetermined path of travel;
providing four cutting and sealing apparatuses;
positioning each respective cutting and sealing apparatus in engagement with each associated corner fold line of said four longitudinally extending corner fold lines; and
simultaneously moving each of said four cutting and sealing apparatuses transversely with respect to the predetermined path of travel of the web of gusseted bulk bag liner material as it is advanced along the predetermined path, thereby cutting and resealing the web of gusseted bulk bag liner material into a gusseted bulk bag liner having a fill chute located at an upper end of the liner, a first transition zone extending from the fill chute to a main body zone, the main body zone, a second transition zone extending from the body zone to a discharge spout, and the discharge spout located at the lower end of the liner.

5,618,255
METHOD FOR MANUFACTURING A BAFFLE LINER
Craig A. Nickell; Vincent E. Durden, both of Sherman, and Norman C. Derby, Bonham, all of Tex., assignors to Super Sack Mfg. Corp., Dallas, Tex.
Division of Ser. No. 37,072, Mar. 26, 1993, abandoned. This application Mar. 31, 1995, Ser. No. 417,898
Int. Cl.⁶ B31B *39/60;41/60*
U.S. Cl. 493—210 **6 Claims**



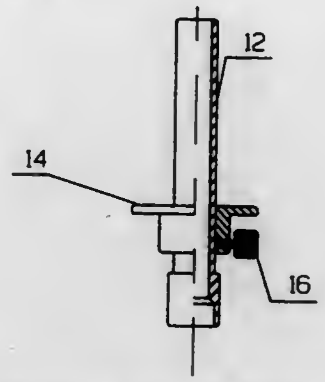
1. A method for manufacturing a liner having baffles therein for use in flexible bulk containers, comprising the steps of:
positioning a length of thermoplastic ribbon material adjacent to a length of thermoplastic film sheet;
heat sealing the ribbon material to the film sheet at spaced apart intervals;
alternately varying the length of the film sheet adjacent to the length of ribbon material between adjacent heat seals to form pockets of excess film sheet between alternating pairs of the heat seals;
cutting the film sheet to a length having first and second ends and being substantially equal in length to the circumference of the flexible bulk container and;
folding the film sheet in half with the attached ribbon on the inside of a first fold and with the first fold extending perpendicular to the length of the ribbon; and
heat sealing the first and second ends opposite the first fold to form a tubular shaped liner with the pockets of excess film sheet forming corners therein.

5,618,256
DEVICE FOR ARRANGEMENT IN VAGINA FOR PREVENTION OF INVOLUNTARY URINATION WITH FEMALES AND AN APPLICATOR FOR USE IN INSERTION OF THE DEVICE
Lotte Reimer, Kokkedal, Denmark, assignor to Coloplast A/S, Germany
PCT No. PCT/DK94/00311, § 371 Date Nov. 7, 1994, § 102(e) Date Nov. 7, 1994, PCT Pub. No. WO95/05790, PCT Pub. Date Mar. 2, 1995
PCT Filed Aug. 19, 1994, Ser. No. 331,632
Claims priority, application Denmark, Aug. 20, 1993, 0951/93
Int. Cl.⁶ A61F *2/00*
U.S. Cl. 600—29 **21 Claims**



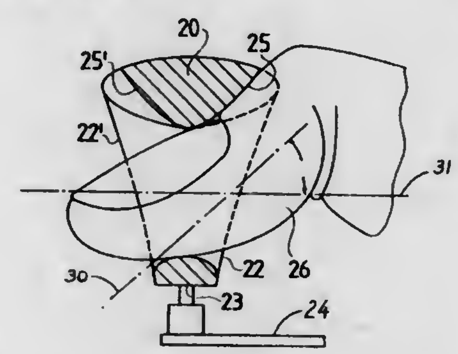
1. A device for prevention of involuntary urination in a female, comprising:
an elastic body designed for arrangement in a human vagina for compressive action on and support of the neck of the bladder, the body being made of a compressible material;
said body including at least two projecting legs joined in a flexible base and dimensioned in such a way that in the non-deformed state of the body, the longest distance between free ends of the at least two legs exceeds the distance between the anterior wall and the posterior wall of the vagina, so that after insertion of the body into the vagina in an elastically deformed state with the legs bent in a direction towards each other, an active pressure is exerted on the neck of the bladder; and
the compressible body is made of a porous material having such a compressibility that at a compression of each leg to 50 percent of its total thickness measured before compression, the compressive strength of the body is in the interval of 5–40 N, so that, by deformation of the legs in the elastically deformed insertion state to come into contact with each other on the mutually facing sides, the compressible material is compressed to provide an increased elastic force of restitution in the interval of 1–10N.

5,618,257
BLADDER CONTROL INSERTION APPARATUS AND METHOD
Andre A. Kulisz, and Valery Migachyov, both of San Antonio, Tex., assignors to HK Medical Technologies Incorporated, San Antonio, Tex.
Filed Aug. 16, 1995, Ser. No. 515,564
Int. Cl.⁶ A61F *2/00*
U.S. Cl. 600—29 **10 Claims**



1. Insertion apparatus for urethral placement of bladder control apparatus having a proximal end and a distal end, the insertion apparatus comprising:
a. a first tube having a first interior lumen and including distal and proximal ends;
b. calibration means connected to the exterior of said first tube for setting the depth of insertion of the distal end of said first tube, said calibration means including stop means for contacting the body of a patient adjacent to the urethral entrance;
c. probe means for slidable mounting within said first lumen, said probe means having a tapered distal end and including further stop means mounted to the exterior thereof for limiting extension of said probe means distal end beyond said first tube distal end;
d. applicator means for slidable insertion into said first lumen, including means for removably carrying a bladder control apparatus for slidable positioning within said first lumen; and
e. retention means for mounting on the bladder control apparatus for retaining the apparatus within the urethra after removal of the first tube.

5,618,258
THUMB RING FOR AN ENDOSCOPIC APPARATUS
Manfred Held, Hamburg, Germany, assignor to Olympus Winter & Ibe GmbH, Hamburg, Germany
Filed Feb. 27, 1996, Ser. No. 607,836
Claims priority, application Germany, Mar. 25, 1995, 195 11 092.7
Int. Cl.⁶ A61B *1/31*
U.S. Cl. 600—104 **2 Claims**

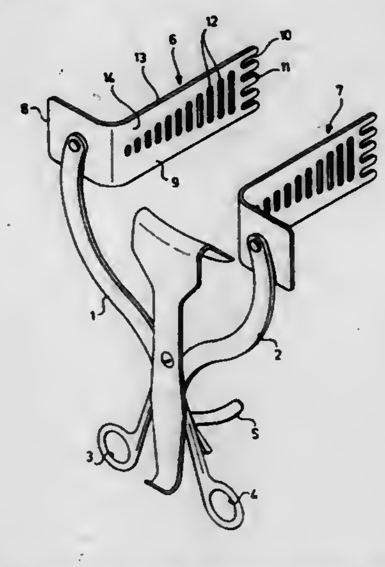


1. A thumb ring for an endoscopic instrument comprising
a generally annular body having a passage therethrough with a first central axis, said passage having two ends, at least one of said ends comprising an insertion aperture for receiving a thumb of an operator into said passage, the insertion aperture having a second central axis;
means attached to a fixation site at an attachment side of said body for mounting said body on an endoscopic instrument so that said body is rotatable about an axis parallel with a longitudinal axis of the instrument; and
a concave rest surface formed on said insertion aperture at an edge distal to said attachment side of said body such that said second central axis forms an acute angle with said first central axis, said concave rest surface having a central convex bulge portion shaped and configured to fit the contours of the top surface of the operator's thumb in an area between the cuticle and the distal most joint of the thumb thereby providing a large surface area of contact with the thumb.

5,618,259

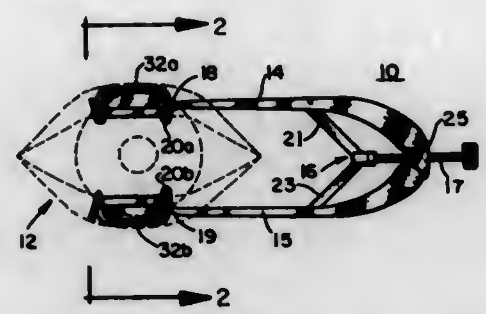
Patent Not Issued For This Number

5,618,260
SURGICAL INSTRUMENT
Wolfhard Caspar, Contwig; Gebhard Herrmann, Irndorf; Theodor Lutze, Balgheim, and Dieter Weisshaupt, Immendingen, all of Germany, assignors to Aesculap AG, Tuttlingen, Germany
Filed Apr. 28, 1995, Ser. No. 430,720
Claims priority, application Germany, Apr. 29, 1994, 44 15 074.1
Int. Cl.⁶ A61B *17/02*
U.S. Cl. 600—210 **20 Claims**



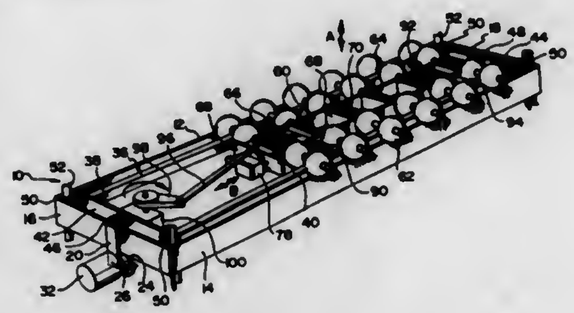
1. Surgical instrument for the retention of tissue, having at least one valve held on one side, characterized in that the contact surface of the valve has openings in a distribution leaving a non-perforated, cross-sectional area which increases in a substantially continuous manner from the free end of the contact surface up to its holder.

5,618,261
EYE PROPTOSING SPECULUM AND METHOD
Herbert J. Nevyas, 1120 Tower La. East, Narberth, Pa. 19072
Filed Oct. 27, 1994, Ser. No. 330,513
Int. Cl.⁶ A61B *19/00*
U.S. Cl. 600—236 **10 Claims**



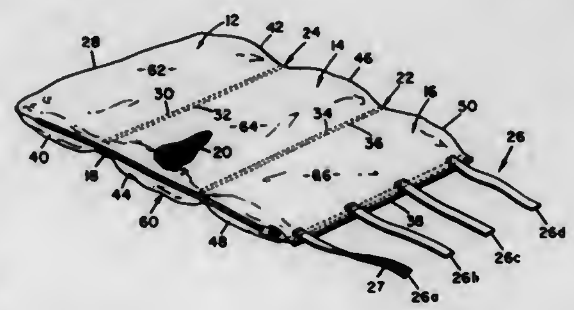
1. An eye speculum for proptosing an eyeball of a patient, the eyeball having a pair of eyelids associated therewith, the eyeball being positioned in an eye orbit and substantially surrounded by retrobulbar orbital contents within the eye orbit and posterior to the eyelids, the speculum comprising:
an adjustable mechanism having a pair of arms, each arm including a free end spaced an adjustable distance from the free end of the other arm; and
a pair of generally posteriorly extending pressors, each pressor being attached to a respective free end of the adjustable mechanism, the pressors being opposingly situated with respect to each other, each pressor being shaped to be inserted behind a respective eyelid and to exert pressure on a peripheral portion of the orbital contents posterior to the respective eyelid, wherein the pressure is transferred by the peripheral portion to a posterior portion of the orbital contents and then to a posterior region of the eyeball to proptose the eyeball outwardly.

5,618,262
UNDULATING MASSAGER UNIT
Pierre Rene, Nicolet, Canada, assignor to Ultrassage Inc., Mont-Royal, Canada
Filed Jun. 9, 1995, Ser. No. 488,833
Claims priority, application Canada, Jun. 10, 1994, 2125609
Int. Cl.⁶ A61H *15/00*
U.S. Cl. 601—116 **17 Claims**



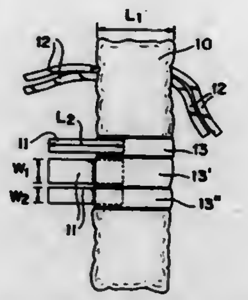
1. A massaging apparatus comprising:
frame means;
carriage means for movably mounting a plurality of movable massage members;
first actuation means for effecting movement of said massage members in a wave-like motion;
second actuation means for effecting elevational movement of said carriage means relative to said frame means
selectively operable drive means for driving said first actuation means; and
selectively operable drive means for driving said second actuation means.

5,618,263
SOFT SPLINT
Margaret A. Alivizatos, Dallas, Tex., assignor to Maurice Adam, Dallas, Tex.
Filed Aug. 18, 1992, Ser. No. 931,831
Int. Cl.⁶ A61F *5/00*
U.S. Cl. 602—6 **22 Claims**



1. A soft splint structure for limiting flexion of a patient's jointed limbs, comprising:
a plurality of interconnected elongated soft fabric sleeves forming a wrappable soft splint structure, the sleeves having juxtaposed panels having spaced apart side edges and spaced apart ends which define a pocket in each sleeve adapted to receive sufficient filler material to form sleeve members in the shape of flattened tubes rounded between the side edges and closed at the sides and ends which allow the circulation of air and moisture;
the sleeve pockets being loosely filled with sufficient lightweight plastic foam bead filler material comprising a multiplicity of discrete lightweight non-absorbent plastic foam beads contained within each sleeve, substantially filling said sleeves to a degree that allows free movement of the beads within the uncompressed sleeve members, to form the sleeves into sleeve members formed as flattened tubes rounded between the side edges and closed at the sides and ends, so that the sleeve members can be molded to fit the contour of the patient's limbs;
said sleeve members resisting bending in response to being wrapped and secured around a patient's limb, said sleeve members and a sufficient amount of said plastic foam bead filler material contained therein to have the characteristic that when the sleeve members and beads are compressed when the wrappable structure is wrapped around and compressed against a patient's jointed limb and held by a means for removably attaching, they interact to lock together in a previously molded shape to significantly resist bending and allow circulation of air and moisture therethrough to help keep the patient dry;
the wrappable soft splint structure having bendable connections of the sleeve members to each other along the interconnected side edges of the sleeve members and having at least one inner and a pair of opposite outer sleeve members, and
means for removably attaching the outer side edges of the opposite outer said sleeve members around a patient's limb to removably secure and compress the wrappable structure around a patient's limb to form a comfortable hollow semi-rigid soft splint structure around a patient's limb which limits flexing of a jointed limb.

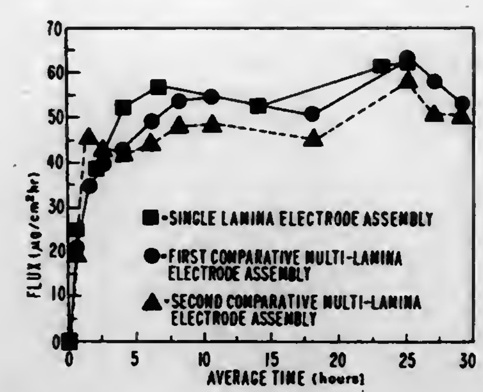
5,618,264
ABDUCTION MECHANICAL DEVICE FOR TREATMENT OF DISPLASIA OR CONGENITAL LUXATION OF THE HIP
Nectar D. Vásquez, Carrera 36 No. 3 Bis-08 Edifico, Elizabeth, Cali, (Valle), Colombia
Filed Aug. 30, 1994, Ser. No. 297,749
Int. Cl.⁶ A61F *5/00*
U.S. Cl. 602—24 **12 Claims**



1. An abduction device for treatment of dysplasia or congenital luxation of a femur hip in a newborn, comprising:
a main body formed of a flexible material that has a front edge portion and a ear edge portion spaced longitudinally, and a first side edge portion and a second side edge portion spaced laterally, said main body further including a plurality of sheaths which extend laterally between said side edge portions and are positioned in an intermediate area between said front and rear edge portions, each of said sheaths'having closed side boundaries, a closed boundary at a first lateral end thereof, and an open end at a second lateral end thereof;
slab members which are dimensioned for containment within said sheaths, and said sheaths being sized for receiving a respective one of said slab members by insertion of said slab members through said open ends,
said main body having a lateral width designed for receipt between the legs of the newborn, said slabs being formed of a material that is sufficiently rigid to maintain the legs of the newborn separated and said slabs being of a length which causes a femur head of the newborn to lodge within a hip acetabulum of the newborn, and said open ends being arranged such that sad slabs are accessible through said open ends formed in sad main body for facilitating subsequent removal following initial application of said device to the newborn; and
a fastener assembly for releasably attaching the main body in the position between the legs of the newborn.

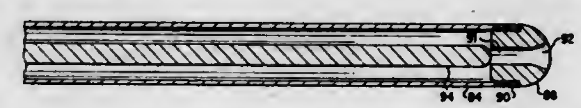
5,618,265
IONTOPHORETIC DELIVERY DEVICE WITH SINGLE LAMINA ELECTRODE
Robert M. Myers, Stanford, and Felix A. Landrau, San Jose, both of Calif., assignors to ALZA Corporation, Palo Alto, Calif.
Continuation of Ser. No. 197,665, Feb. 17, 1994, Pat. No. 5,543,098, which is a continuation of Ser. No. 667,714, Mar. 11, 1991, abandoned. This application Jan. 26, 1996, Ser. No. 592,083
Int. Cl.⁶ A61N *1/30*
U.S. Cl. 604—20 **19 Claims**

1. An electrically powered iontophoretic delivery device including a donor electrode assembly adapted to be placed in agent transmitting relation with a body surface, a counter electrode assembly adapted to be placed in agent transmitting relation with a body surface and a source of electrical power adapted to be electrically connected to the donor electrode assembly and the counter electrode assembly, wherein the donor electrode assembly comprises
a polymeric matrix having a predetermined thickness, said matrix having homogeneously blended therein:



about 5 to 50 vol % of a conductive filler forming a conductive network through the entire thickness of the matrix; and
about 1 to 50 vol % of a therapeutic agent to be iontophoretically delivered through the body surface in order to obtain a therapeutic effect.

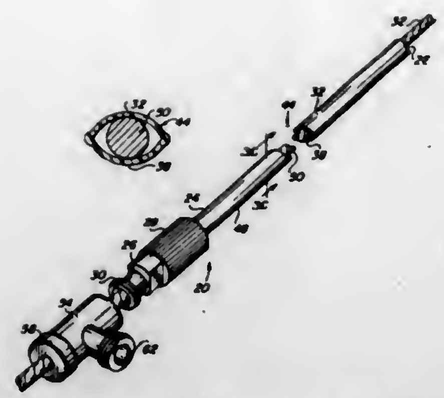
5,618,266
CATHETER FOR MANEUVERING RADIOACTIVE SOURCE WIRE TO SITE OF TREATMENT
Samuel F. Liprie, 424 W. McNeese St., Lake Charles, La. 70605
Continuation-in-part of Ser. No. 220,681, Mar. 31, 1994, Pat. No. 5,556,389. This application Sep. 30, 1994, Ser. No. 316,500
Int. Cl.⁶ A61N *1/30*
U.S. Cl. 604—21 **22 Claims**



1. A system for treating diseases in or around a narrow tortuous passageway in the body, comprising:
a flexible, elongated, catheter provided with a single hollow lumen having a distal end and a proximal end, said catheter provided with a first aperture;
a flexible, elongated guide wire having a first diameter through the narrow tortuous passageway, said guide wire inserted into at least a portion of said single hollow lumen of said catheter;
a radioactive elongated source wire having a second diameter, said radioactive elongated source wire inserted through said single hollow lumen of said catheter; and
a constriction plug affixed to the termination of said distal end of said single hollow lumen of said catheter, said constriction plug including an interior passageway having a diameter which is greater than said first diameter, but less than said second diameter.

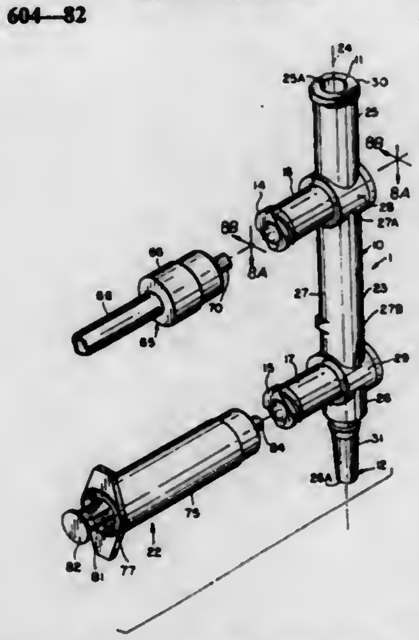
5,618,267
METHOD FOR ESTABLISHING COLLAPSIBLE INFUSION CONDUIT
Aubrey M. Palestrant, 6800 N. 47th St., Paradise Valley, Ariz. 85253
Division of Ser. No. 282,036, Jul. 28, 1994, Pat. No. 5,472,418. This application Oct. 6, 1995, Ser. No. 539,991
Int. Cl.⁶ A61M *31/00*
U.S. Cl. 604—53 **7 Claims**

1. A method for establishing an infusion conduit into a blood vessel and for allowing said conduit to collapse against the walls of the blood vessel when the conduit is not being used for infusion, said method comprising the steps of:
a. providing a normally-flattened tube of flexible material, the tube having a trailing end to receive fluid to be infused into a blood vessel of a patient, and having a leading end forming an



exit port through which fluid received at the trailing end of said tube can be introduced into a blood vessel of a patient;
b. loading the normally-flattened tube over a guide wire to rigidify the tube and to temporarily form the tube into a more oval shape;
c. establishing an entry path through a patient's skin into a blood vessel;
d. inserting the guide wire and leading end of the tube as a unit through the entry path and into the blood vessel;
e. removing the guide wire from the tube while leaving the leading end of the tube within the blood vessel for allowing an inserted portion of the tube to collapse against the wall of the blood vessel; and
f. selectively applying an infusion fluid to the trailing end of the tube, the applied infusion fluid expanding the tube to a generally oval shape within the blood vessel during infusion, the tube collapsing to a generally flattened configuration against the wall of the blood vessel when the infusion fluid is not being applied to the trailing end of the tube.

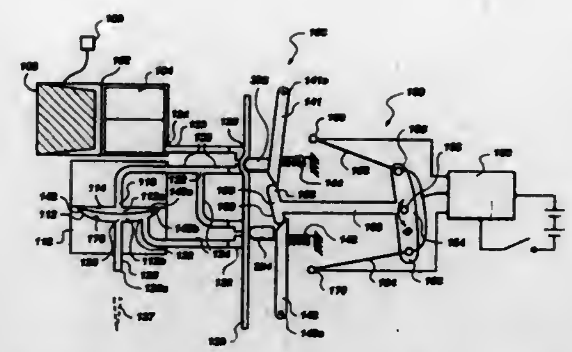
5,618,268
MEDICAL INFUSION DEVICES AND MEDICINE DELIVERY SYSTEMS EMPLOYING THE SAME
Kenneth C. Raines, and Gary Fenicle, both of Bethlehem, Pa., assignors to B. Braun Medical Inc., Allentown, Pa.
Filed Jun. 6, 1995, Ser. No. 470,253
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—82 **86 Claims**



1. A medical infusion device for infusing a medical fluid into a primary fluid stream, comprising:
(1) a check valve chamber having an interior volume, surrounded by a chamber wall surface of three dimensional extent, a check valve opening formed through said chamber wall surface, and first and second primary fluid flow openings;
(2) a flexible check valve element disposed immediately adjacent said check valve opening and having a normally closed configuration and an open configuration;
(3) a check valve support structure for supporting said flexible check valve element against said check valve opening in said normally closed configuration so as to prevent the flow of fluid through said check valve opening in said normally closed configuration, and permitting said check valve element to reconfigure into an open configuration so as permit the flow of fluid through said check valve opening in said open configuration;
(4) a primary fluid inlet port for connecting said medical infusion device to a first connector capable of providing a primary fluid stream, said primary fluid inlet port further including a primary fluid inlet opening and a primary fluid inlet flow passageway extending from said primary fluid inlet opening through said first primary fluid flow passageway and into the interior volume of said check valve chamber;
(5) a primary fluid outlet port for connecting said medical infusion device to a second connector capable of receiving said primary fluid stream, said primary fluid outlet port further including a primary fluid outlet opening and a primary fluid outlet flow passageway extending from said primary fluid outlet flow opening through said second primary fluid flow passageway and into the interior volume of said check valve chamber;
(6) a primary fluid flow passageway continuously extending from said primary fluid inlet port to said primary fluid outlet port by way of passage through said primary fluid inlet opening, said primary fluid inlet flow passageway, said first primary fluid flow opening, said interior volume of said check valve chamber, said second primary fluid flow opening, said primary fluid outlet flow passageway, and said primary fluid outlet opening;
(7) an infusion port for connecting said medical infusion device to a third connector operably connected to a medical fluid supply means for supplying fluid through said third connector for infusion into said primary fluid stream, said infusion port further including an infusion fluid inlet opening, and an infusion fluid inlet flow passageway extending from said infusion fluid inlet opening through said check valve opening into the interior volume of said check valve chamber; and
wherein, when said flexible check valve element is in said open configuration, said third connector is connected to said infusion port, and said medical fluid supply means supplies medical fluid through said third connector into said infusion fluid inlet flow passageway, then said medical fluid is permitted to flow from said medical fluid supply means through said infusion fluid inlet opening, along said infusion fluid inlet flow passageway, through said check valve opening, and therefrom directly into said primary fluid stream passing along said primary fluid flow passageway.

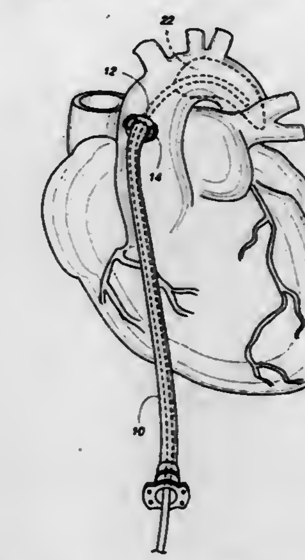
5,618,269
PRESSURE-DRIVEN ATTACHABLE TOPICAL FLUID DELIVERY SYSTEM
Stephen C. Jacobsen; Clark C. Davis, and Kent Backman, all of Salt Lake City, Utah, assignors to Sarcos, Inc., Salt Lake City, Utah
Filed May 4, 1995, Ser. No. 435,092
Int. Cl.[6] A61M *7/00*
U.S. Cl. 604—118 **16 Claims**

1. A fluid delivery device for delivering fluid to a patient comprising:
a reservoir for containing a supply of the fluid;
an inlet channel disposed in fluid communication with the reservoir;



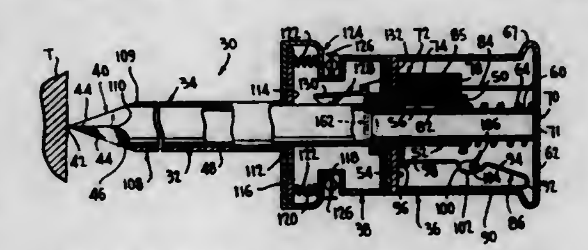
an outlet channel disposed in series and in fluid communication with the inlet channel such that said inlet channel resides between the reservoir and the outlet channel;
pressure means disposed on the reservoir for exerting a continuous positive pressure within said reservoir;
a housing having interior walls including first and second interior side walls defining an intermediate dosing chamber, said first side wall having an inlet port formed therein and said second side wall having an outlet port and an intermediate port formed therein, the inlet and outlet channels being disposed in communication with the dosing chamber via the inlet port and the outlet port, respectively;
a resilient membrane sealably attached in an expanded configuration along a circumferential portion thereof to the interior walls of the housing to divide the dosing chamber into first and second sections, said membrane having a first side facing the inlet port to define the first section and an opposing second side facing the outlet port and the intermediate port to define the second section, such that elastic memory of the molecular structure of the membrane acts to contract the membrane toward the inlet port, said membrane being alternately expandable toward the outlet port to a diastolic position and contractible toward the inlet port to a systolic position;
guide channel means disposed in communication with the inlet channel, inlet port and intermediate port for channeling fluid between the inlet channel and the inlet port, and between the inlet port and the intermediate port;
dosing actuation means disposed on the guide channel means including a reciprocating portion being movable in a reciprocating motion between second and first positions for respectively (i) releasing fluid flow between the inlet channel and the inlet port while blocking fluid flow between the inlet port and the intermediate port to permit pressure exerted by the pressure means to force a dose of fluid from the reservoir into the first section of the dosing chamber and against the membrane to forcibly expand the membrane into a diastolic position, and (ii) releasing fluid flow between the inlet port and the intermediate port while blocking fluid flow between the inlet channel and the inlet port to thereby shield the membrane from pressure exerted by the pressure means and permit the elastic memory of the membrane to contractably move the membrane toward the inlet port to a systolic position to force the dose of fluid out of the first section of the dosing chamber back through the inlet port toward the intermediate port to thereby force a dose of fluid through the intermediate port into the second section of the dosing chamber, such that when said reciprocating portion of the actuation means is moved into the second position the dose of fluid which is forced into the first section of the dosing chamber and which forcibly expands the membrane toward the outlet port into a diastolic position thereby causes the membrane to eject a previous dose of fluid residing in the second section of the dosing chamber out of the outlet channel to the patient.

5,618,270
TRANSTHORACIC AORTIC SLEEVE
Wilmo C. Orejola, 144 Mountain Ave., Pompton Plains, N.J. 07444
Filed May 26, 1995, Ser. No. 452,302
Int. Cl.[6] A61M *5/178*
U.S. Cl. 604—164 **7 Claims**



1. A thoracic aortic sleeve for providing an insertion path for a catheter or an intra-aortic balloon directly into an aorta, said sleeve comprising;
a sterile tubular member having a length of from 30 to 40 cm. and an inside diameter of from 4 to 8 mm. said member having an aortic end and an exterior end;
a brim consisting of a flat disc perpendicular to the axis of said member, said brim formed in said aortic end of said member, said brim supporting two reinforcing pledgets oppositely located on one surface thereof;
a skin piercing closed end cone formed in said exterior end of said member; and
a removable introducer within said member, said introducer having a conical shaped end to conform to said end cone in said member.

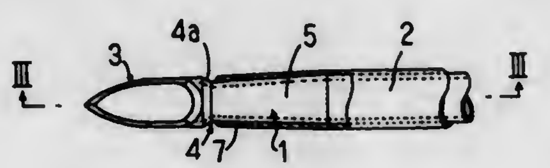
5,618,271
RETRACTABLE SAFETY PENETRATING INSTRUMENT FOR PORTAL SLEEVE INTRODUCTION
InBae Yoon, 2101 Highland Ridge Dr., Phoenix, Md. 21131
Division of Ser. No. 254,007, Jun. 3, 1994, Pat. No. 5,478,317, which is a continuation of Ser. No. 800,507, Nov. 27, 1991, abandoned. This application May 10, 1995, Ser. No. 438,580
Int. Cl.[6] A61M *5/178*
U.S. Cl. 604—165 **2 Claims**



1. A retractable safety penetrating instrument for forming a portal communicating with a cavity in the body to allow passage of instruments for performing least invasive medical procedures comprising
a hollow portal sleeve for providing a passage through a cavity wall and having a distal end for positioning in the body cavity,

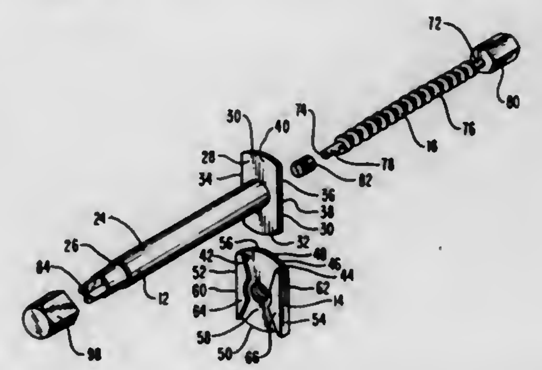
a proximal end for positioning externally of the body cavity and a lumen extending between said distal and proximal ends;
a penetrating member disposed in said lumen of said sleeve and having a distal end for penetrating the cavity wall;
means for biasing said penetrating member distally within said lumen of said sleeve to an extended position where said penetrating member distal end protrudes beyond said sleeve distal end;
retracting means for moving said penetrating member proximally relative to said sleeve from said extended position to a retracted position to prevent contact of said penetrating member distal end with tissue;
trigger means for automatically actuating said retracting means to move said penetrating member to said retracted position in response to movement of said penetrating member distally within said lumen of said sleeve;
means for selectively moving said penetrating member from said retracted position to said extended position, said means for selectively moving including a knob on said penetrating member, a hub mounting said penetrating member and a slot in said hub for receiving said knob, said knob being movable along said slot to move said penetrating member from said retracted position to said extended position; and
means for selectively locking said penetrating member in said extended position for preventing proximal movement of said penetrating member.

5,618,272
INTRAVENOUS CATHETER SET
Shoemon Nomura, Chiba, Japan, assignor to Kabushiki-Kaisha Median, Tokyo, Japan
Continuation-in-part of Ser. No. 385,867, Feb. 9, 1995, abandoned. This application May 6, 1996, Ser. No. 642,995
Claims priority, application Japan, Nov. 30, 1994, 6-321599
Int. Cl.⁶ A61M *5/00*
U.S. Cl. 604—166 **1 Claim**



1. An intravenous catheter set comprising:
an inner needle member constructed of a hollow metallic tube having an axial lumen, a proximal end and a distal end, said distal end being obliquely cut to form a sharpened-end portion which has its base portion gradually reduced in diameter rearward to form a reduced-diameter portion provided with a tapered surface, said reduced-diameter portion being followed by said proximal end formed into a tapered portion which is gradually increased in diameter rearward; and
a catheter tube constructed of a plastic tube having its front-end portion tapered so as to correspond to said tapered portion of said inner needle member, which member is detachably mounted in said catheter tube in an insertion manner and in a manner such that said sharpened-end portion of said inner needle member extends from a front end of said catheter tube, said catheter tube having its front-end portion substantially equal in outer diameter to said distal end of said needle member,
said catheter tube being constructed of polyether-block amide in which polyamide-blocks and polyether-blocks are alternately arranged and linearly combined with each other.

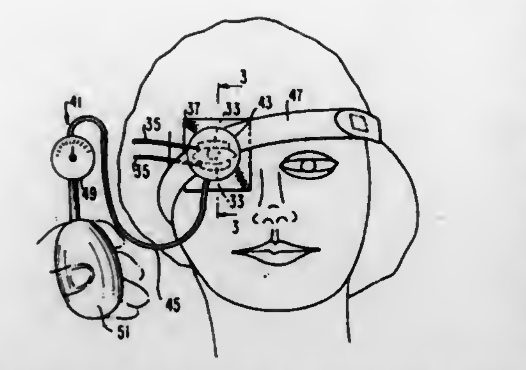
5,618,273
SYRINGE APPARATUS WITH THREADED PLUNGER FOR DELIVERING TOOTH COMPOSITES AND OTHER SOLID YET PLIABLE MATERIALS
David V. Fischer, West Jordan, Utah, assignor to Ultradent Product, Inc., South Jordan, Utah
Continuation of Ser. No. 413,198, Mar. 27, 1995, abandoned. This application May 15, 1996, Ser. No. 648,481
Int. Cl.⁶ A61M *5/00*
U.S. Cl. 604—211 **18 Claims**



1. A syringe apparatus that is convertible from a standard push-type syringe into a type of syringe apparatus adapted for using a threaded plunger for delivery of a material of a type that is essentially solid, yet pliable, comprising:
unthreaded barrel means for containing the material, the barrel means comprising an inlet end, an outlet end, and an enlarged finger grip at the inlet end;
separate plug means for insertion into the barrel means at the inlet end thereof;
engaging means for slidable attachment over the separate plug means inserted into the barrel means and for slidable attachment to the finger grip of the barrel means so as to non-rotatably engage the finger grip and so as to enclose and hold the separate plug means within the barrel means, the engaging means having a threaded throughbore;
separate plunger means for contacting the separate plug means through the engaging means, and for movement of the plug means through the barrel means, the plunger means having a threaded portion that is complementary to the threaded throughbore of the engaging means such that the plunger means may be advanced into the barrel means at the inlet end by rotating the plunger means through the threaded throughbore of the engaging means, thereby effecting delivery of the material at the outlet end; and
wherein the threaded throughbore of the engaging means and the threaded portion of the plunger means are configured such that the plunger means will automatically withdraw slightly from the barrel means when the external rotational force is removed from the plunger means, reducing the amount of pressure exerted by the plunger means on the material within the barrel means.

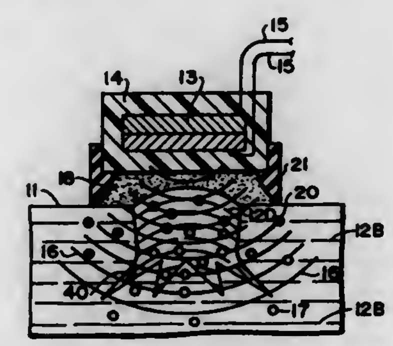
5,618,274
METHOD AND DEVICE FOR DEEP PRESSURIZED TOPICAL, FORNIX APPLIED "NERVE BLOCK" ANESTHESIA
Kenneth J. Rosenthal, 4 White Pine La., Kings Point, N.Y. 11023-1704
Filed Apr. 8, 1994, Ser. No. 224,832
Int. Cl.⁶ A61M *35/00*
U.S. Cl. 604—290 **19 Claims**

1. A system for applying an anesthetic or other medication to an eye organ comprising:
a moisture absorbent member that is substantially soaked in said anesthetic or other medication and is placed posteriorly under



a patient's eyelid in at least one of the superior and inferior fornices of said eye organ; and
means for applying pressure to the absorbent member when placed in one of the superior and inferior fornices of said eye organ in order to promote transport of anesthetic or other medication from the moisture absorbent member into the tissues of said eye organ, said pressure-applying means comprising a selectively inflatable balloon eye patch configured for selective placement over a closed eyelid of the eye organ.

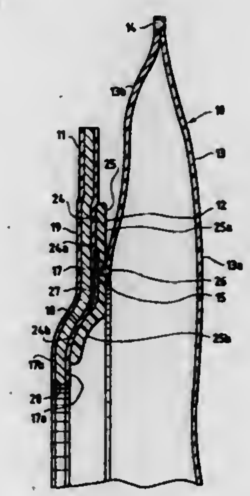
5,618,275
ULTRASONIC METHOD AND APPARATUS FOR COSMETIC AND DERMATOLOGICAL APPLICATIONS
Robert T. Bock, Brewster, N.Y., assignor to Sonex International Corporation, Brewster, N.Y.
Filed Oct. 27, 1995, Ser. No. 549,488
Int. Cl.⁶ A61M *35/00;* **A61B** *17/20*
U.S. Cl. 604—290 **11 Claims**



1. The method of facilitating the penetration of a therapeutic agent through a person's skin comprising, applying relatively low frequency ultrasonic pressure waves in a range of about 15000 to about 25000 Hz to the skin of sufficiently high intensity to cause cavitation in the skin thereby opening up passageways through the stratum corneum by disordering the lipid bilayers and increasing the permeability of the skin to allow the penetration of a therapeutic agent for a limited time period, terminating the application of low frequency ultrasonic pressure waves to the skin, then promptly applying a therapeutic agent to the skin before the natural function of the person's body decreases the permeability of the skin and restores the normal environmental protection of the body; and subsequently applying gentle high frequency noncavitating ultrasonic vibrations to the keratin fibers and the surrounding lipid bilayers of the stratum corneum to augment the body's natural function to reestablish the order of the lipid bilayers and to effectively seal the body against further penetration of invading molecules.

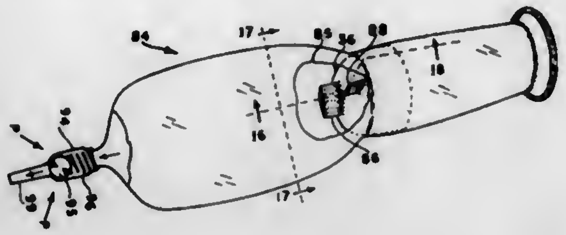
11. Apparatus for facilitating the penetration of a therapeutic agent through a person's skin and driving said agent into the skin comprising, a housing, said housing supporting a piezoelectric transducer including at least one active element for contracting and expanding volumetrically when energized in response to a changing electrical field and generating vibrations of ultrasonic energy, an ultrasonic power supply to generate ultrasonic frequency electric signals, means coupling said power supply to said piezoelectric transducer, and a sleeve coupled to the housing having an open end and defining a measuring chamber of a predetermined control volume for supporting a predetermined controlled amount of therapeutic agent therein in contact with the skin to couple the ultrasonic vibrations through said therapeutic agent to the skin whereby an accurately controlled amount of said therapeutic agent is driven into the skin wherein said open end of said sleeve has a flexible marginal edge for forming a seal for the chamber with the skin and wherein said ultrasonic vibrations pass through the open end during operation.

5,618,276
OSTOMY APPLIANCE WITH CONVEX PRESSURE RING
Walter F. Leise, Jr., Lindenhurst, and Michael A. Metz, Chicago, both of Ill., assignors to Hollister Incorporated, Libertyville, Ill.
Filed Feb. 14, 1996, Ser. No. 601,451
Int. Cl.⁶ A61F *5/44*
U.S. Cl. 604—336 **11 Claims**



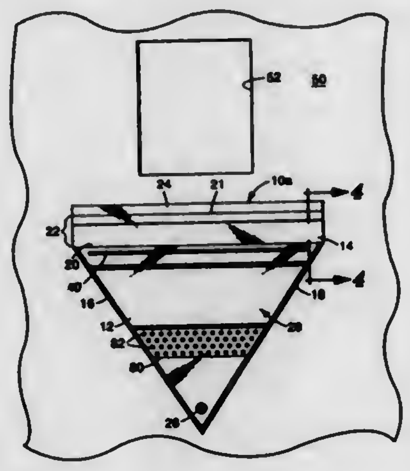
1. A one-piece ostomy appliance comprising a collection pouch having side walls of thermoplastic film; one of said walls having a stoma-receiving opening therein; a soft, flexible adhesive faceplate for adhesive attachment to a patient; said faceplate having a stoma-receiving opening aligned with the opening of said pouch and having an adhesive bodyside layer and a flexible backing layer; a relatively stiff thermoplastic pressure ring having an opening aligned with the stoma-receiving openings of said pouch and faceplate and having a first surface facing said faceplate and an opposite second surface facing said pouch; said first surface having a convex annular portion immediately surrounding said opening of said ring and engaging said faceplate to maintain an annular portion of said faceplate in convex conformity with said ring; said first surface of said pressure ring being sealingly secured along a single first annular attachment zone directly to said backing layer of said faceplate and said second surface of said pressure ring being sealingly secured directly to said pouch along a second annular attachment zone located along a portion of said second surface directly opposite from said first attachment zone.

5,618,277
CONDOM CATHETER WITH IMPROVED VALVE AND RETAINING MEANS
Victor H. Goulter, 485 Molimo Dr., San Francisco, Calif. 94127
Filed Oct. 19, 1995, Ser. No. 545,403
Int. Cl.⁶ A61F *5/44*
U.S. Cl. 604—349 **26 Claims**



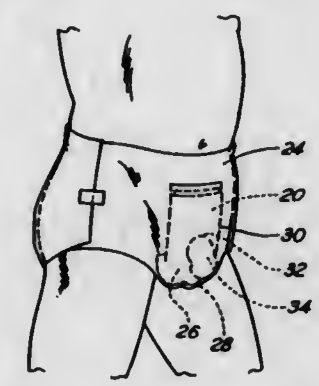
1. A male incontinence device, comprising:
a first compartment sized to fit over the penis of a wearer,
a second, urine-collecting compartment,
a soft, non-invertable, non-return valve means connecting said first compartment to said second compartment for allowing fluid to flow from said first compartment to said second compartment and for preventing fluid from flowing from said second compartment to said first compartment, and wherein said soft, non-invertable, non-return valve means is prevented from inverting due to a pressure gradient from said second compartment to said first compartment, and
a second valve means connecting said first compartment to said second compartment for allowing air to flow from said second compartment to said first compartment.

5,618,278
SURGICAL FLUID COLLECTION POUCH
Robert J. Rothrum, Coon Rapids, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Jul. 11, 1994, Ser. No. 273,598
Int. Cl.⁶ A61B *19/00;19/08*
U.S. Cl. 604—356 **20 Claims**



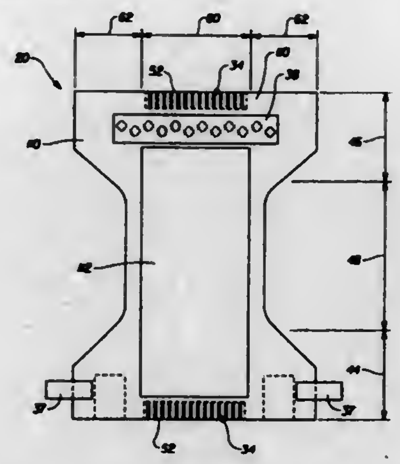
1. A fluid collection pouch, comprising:
a front panel and a rear panel joined along common side edges to form a fluid receiving chamber with a normally open top end, the front and rear panels having inside surfaces forming walls of the chamber;
a rigid opening member attached to the pouch that maintains the front panel and the rear panel in a separated state thereby defining the open top end;
a tape attachment strip having a backing and an adhesive layer covering one side of said backing, wherein a first portion of said tape attachment strip is adhesively attached to the inside surface of said rear panel along said open top end and wherein a second portion of the tape attachment strip overhangs the rear panel and is not adhesively attached to the rear panel; and
a liner covering the adhesive layer of the second portion of said tape attachment strip,
wherein the tape attachment strip provides a ramp over which fluids may easily flow into the pouch.

5,618,279
MEDICAL PROTECTION DEVICE FOR MALES
Edward S. Pudlo, 3956 Ruppel Rd., Port Hope, Mich. 48468, assignor to Edward S. Pudlo, Port Hope, Mich.
Continuation of Ser. No. 63,939, May 19, 1993, abandoned. This application Nov. 23, 1994, Ser. No. 345,019
Int. Cl.⁶ A61F *5/44;13/15*
U.S. Cl. 604—385.1 **8 Claims**



1. A male protection kit comprising:
an incontinence garment adapted to be drawn between a pair of legs of a male, said incontinence garment including an anterior portion and an a posterior portion, said incontinence garment being adapted for the absorption of bodily fluids; and
a shield member formed of a moisture impervious material, said shield member being directly unattached to said incontinence garment but otherwise adapted to be worn by the male with said incontinence garment, said shield member adapted to be positioned between the male and said incontinence garment, said shield member adapted to be coextensive only with said anterior portion of said incontinence garment, said shield member including a clearance aperture adapted for protrusion of a penis shaft of the male through said shield member, said shield member having a first portion and a second portion, said first portion being generally planar and extending substantially above said clearance aperture, said second portion extending below said clearance aperture and including a bottom and a side wall defining a sack structure, said sack structure being adapted for insertion of a scrotum of the male to partially enclose the scrotum within said sack structure, said first portion having an attachment means adapted for directly attaching said shield member only to the male to position said shield member on the male such that said shield member is adapted to be self-supporting on the male, said incontinence garment adapted to overlay said shield member when worn by the male, said shield member adapted to deflect urine towards said incontinence garment.

5,618,280
DIAPER
George B. Glackin, Wyoming; Cynthia J. Panning, Cincinnati, both of Ohio, and Laura G. Van Rijswijck, Burlington, Ky., assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Jun. 16, 1995, Ser. No. 491,559
Int. Cl.⁶ A61F *13/15;13/20*
U.S. Cl. 604—385.1 **6 Claims**

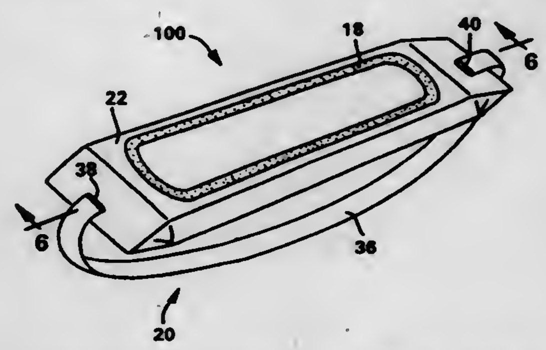


1. A disposable absorbent article having a rear waist region, a front waist region, a crotch region, a central region, a pair of side regions, a pair of longitudinal edges, and a pair of end edges, said absorbent article comprising:
a liquid pervious topsheet;
a backsheet joined to said topsheet, said backsheet comprising an inner layer of liquid impervious plastic material and an outer layer of nonwoven fibrous material, said outer layer being positioned between said side regions such as not to form any portion of the longitudinal edges and extending from said rear waist region to said front waist region;
an absorbent core positioned between said topsheet and said backsheet; and a fastening system comprising a pair of securement members and a landing member, said securement members comprising a tape tab having a fixed portion and a tab portion, said fixed portion being joined to said inner layer of liquid impervious plastic material and not to said outer layer of nonwoven fibrous material.

5,618,281
ADHESIVE COMPOSITION COMPRISING A POLYSILOXANE
Chinmay S. Betrabet; Yung H. Huang, both of Appleton; Ruth A. Lachapell, Menasha, and Lisha Yu, Appleton, all of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.
Filed Jan. 20, 1995, Ser. No. 375,752
Int. Cl.⁶ A61F *13/15*
U.S. Cl. 604—387 **11 Claims**

1. A disposable absorbent product comprising:
i) a liquid permeable topsheet, a backsheet attached to the topsheet, an absorbent structure positioned between the topsheet and the backsheet, and at least one major surface adapted to be positioned adjacent a wearers body; and
ii) a polysiloxane adhesive composition attached to said major surface, wherein said polysiloxane adhesive composition comprises the following properties:
a) a shear storage modulus value, as measured at about 20° C. and at about 10 radians per second, of less than about 1×10^5 dynes per square centimeter;
b) a hardness value of less than about 5 durometer units (Shore 00);
c) a tan delta value, as measured at about 20° C. and at a frequency of about 10 radians per second, of between about 0.4 to about 2.0; and
d) a maximum peel strength value of between about 35 to about 900 grams of force per 13 millimeters of width, as measured at a peel rate in the range of 0 to about 5000 millimeters per minute.

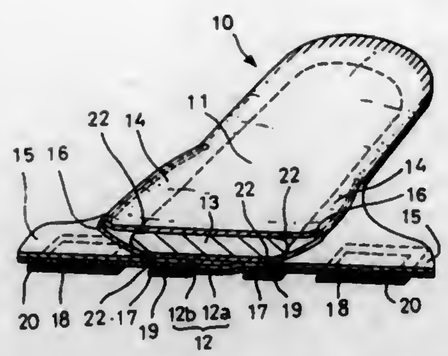
5,618,282
REMOVAL AIDS FOR ADHESIVELY SECURED ABSORBENT ARTICLES
Karen S. Schlangen, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Oct. 16, 1995, Ser. No. 539,519
Int. Cl.⁶ A61F *13/15*
U.S. Cl. 604—387 **15 Claims**



1. An absorbent article adapted to be adhesively secured to a wearer's body, said absorbent article comprising:
a. a liquid-permeable cover having a bodyfacing surface;
b. a liquid-impermeable baffle having a garment-facing surface;
c. an absorbent positioned between said bodyfacing surface and said garment-facing surface, said absorbent having an edge and said cover and said baffle extending beyond said edge to form a peripheral seal;
d. adhesive means for securing said absorbent article to the wearer's body, said adhesive means being affixed to said bodyfacing surface; and
e. detaching means for disengaging said absorbent article from the wearer's body when removal of the absorbent article is desired, said detaching means including a longitudinal elongate strip with a first end and a spaced apart second end, said spaced apart ends being secured to said bodyfacing surface of said cover, said elongate strip further including an unsecured medial grasping portion positioned between said spaced apart ends for grasping and removing said absorbent article.

5,618,283
SANITARY NAPKIN
Masamitsu Yamamoto, Kawanoe, Japan, assignor to Uni-Charm Corporation, Ehime-ken, Japan
Continuation of Ser. No. 151,426, Nov. 15, 1993, Pat. No. 5,413,569. This application Dec. 20, 1994, Ser. No. 359,380
Claims priority, application Japan, Nov. 17, 1992, 4-079168
Int. Cl.⁶ A61F *13/15*
U.S. Cl. 604—390 **5 Claims**

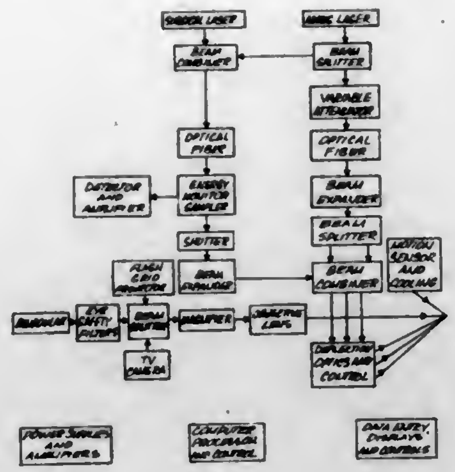
1. A sanitary napkin comprising



(a) an absorbent core having a top surface, a bottom surface and two laterally spaced apart sides,
(b) a topsheet comprising a liquid-permeable sheet
(1) that substantially entirely surrounds said absorbent core,
(2) that is in direct face-to-face contact with both said top and bottom surfaces of said absorbent core, and
(3) that extends laterally outwardly a spaced distance away from said absorbent core sides so as to form two laterally spaced apart sleeve portions,
(c) an elastic member in a stretched condition extending along the interior of each of said sleeve portions so that each sleeve portion stands up and forms a side barrier,
(d) a liquid-impermeable backsheet
(1) that is bonded to the portion of said topsheet that is in direct face-to-face contact with said bottom surface of said absorbent core,
(2) that has two spaced apart wing portions that are separate from said sleeve portions, each wing portion extending laterally outwardly with respect to each said absorbent core side, each wing portion having a top face and a back face, and
(e) a fastener on said back face of each said wing portion which permits attachment of said wing portion to the outer surface of the crotch portion of an undergarment.

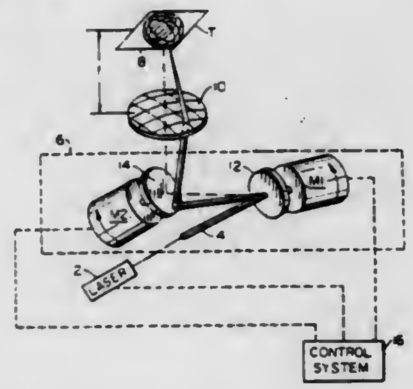
5,618,284
COLLAGEN TREATMENT APPARATUS
Bruce J. Sand, Hidden Hills, Calif., assignor to Sunrise Technologies, Fremont, Calif.
Continuation of Ser. No. 227,781, Apr. 14, 1994, Pat. No. 5,484,432, which is a continuation-in-part of Ser. No. 926,331, Aug. 6, 1992, Pat. No. 5,374,265, and a continuation-in-part of Ser. No. 930,973, Aug. 17, 1992, Pat. No. 5,304,169, which is a continuation-in-part of Ser. No. 771,547, Oct. 4, 1991, abandoned, which is a continuation-in-part of Ser. No. 546,252, Jun. 29, 1990, Pat. No. 5,137,530, which is a continuation-in-part of Ser. No. 374,958, Jun. 30, 1989, Pat. No. 4,976,709, which is a continuation-in-part of Ser. No. 285,379, Dec. 15, 1988, abandoned, which is a continuation of Ser. No. 170,070, Mar. 14, 1988, abandoned, and a continuation of Ser. No. 67,381, Jun. 23, 1987, and a continuation of Ser. No. 914,169, Oct. 1, 1986, abandoned, which is a continuation-in-part of Ser. No. 781,225, Sep. 27, 1985, abandoned, said Ser. No. 926,331is a continuation-in-part of Ser. No. 546,252, Jun. 29, 1990, Pat. No. 5,137,530. This application Jun. 7, 1995, Ser. No. 484,669
Int. Cl.^{6} A61N *5/06*
U.S. Cl. 606—5 **23 Claims**

1. A method of modifying human tissue, comprising:
generating radiation of a wavelength corresponding to an absorption coefficient in a range of from about 15 cm^{-1} to about 120 cm^{-1}; and



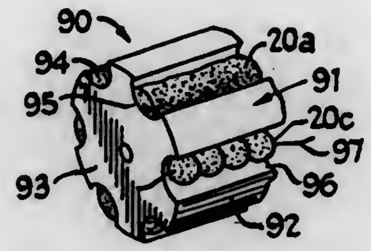
directing the radiation at tissue selected to absorb the radiation for a time and with an intensity to cause the selected tissue to shrink.

5,618,285
SYSTEM FOR CAUSING ABLATION OF IRRADIATED MATERIAL OF LIVING TISSUE WHILE NOT CAUSING DAMAGE BELOW A PREDETERMINED DEPTH
Eliezer Zair, Bnei-Brak, Israel, assignor to Laser Industries, Limited, Tel Aviv, Israel
Continuation of Ser. No. 175,980, Dec. 30, 1993, Pat. No. 5,411,502. This application Feb. 2, 1995, Ser. No. 382,800
Claims priority, application Israel, Jan. 15, 1992, 100664
Int. Cl.^{6} A61B *17/36*
U.S. Cl. 606—10 **8 Claims**



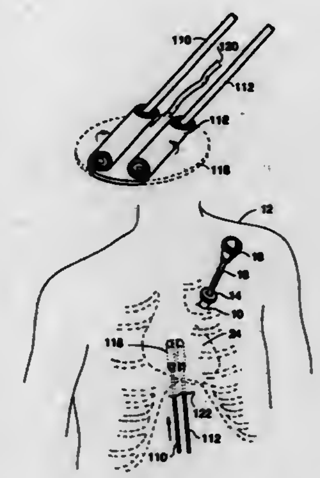
1. A system for causing ablation of an irradiated material of living tissue while not causing necrosis below a predetermined depth, said irradiated material consisting of a plurality of elements; said system including:
a laser which generates a beam of light;
a mirror system to move said beam of light in a predetermined pattern on said irradiated material so that said elements of said irradiated material are sequentially and continuously irradiated; and
a motor to move said beam of light in said predetermined pattern so that ablation of said irradiated material of living tissue is caused uniformly but only to a predetermined depth.

5,618,286
ANTIBIOTIC ELUDING INTRAMEDULLARY NAIL APPARATUS
Mark Brinker, 1701 Hermann Dr., #2806-28G, Houston, Tex. 77104
Continuation of Ser. No. 934,114, Aug. 20, 1992, Pat. No. 5,433,718. This application Apr. 20, 1995, Ser. No. 425,609
Int. Cl.^{6} A61B *17/56*
U.S. Cl. 606—60 **13 Claims**



1. An antibiotic eluding intramedullary nail apparatus for use in association with the intramedullary fixation of fractured long bones, such as fractured femurs, tibias, fibulas, humeri, ulnas and radii having a medullary canal, wherein the fracture may be associated with an open wound, which in turn, may expose the medullary canal within the fractured bone, as well as the area surrounding the open wound, to bacteria and/or other infectious micro-organisms which could result in morbidity as well as mortality, said antibiotic eluding intramedullary nail apparatus comprising:
means for stabilizing the fractured bone in an aligned position;
said bone stabilizing means having a first end, a second end, a longitudinal axis extending therebetween, and an exterior surface, wherein said bone stabilizing means is positionable within the medullary canal of the fractured bone;
said bone stabilizing means having one or more "C" shaped grooves integrally formed in the exterior surface of said bone stabilizing means extending longitudinally from said first end to said second end of said bone stabilizing means and displaced from said longitudinal axis of said bone stabilizing means,
each such "C" shaped groove having an opening upon the exterior surface of the bone stabilizing means which has a width which is less than a greatest diameter of the respective groove,
each such "C" shaped groove further having a depth which is less than the distance from the opening to the center of the bone stabilizing means;
antibiotic compound means, said antibiotic compound means including bactericidal means for inhibiting the growth of and destroying bacteria which may result in an infection in the medullary canal of the fractured bone as well as proximate the open wound associated with the fracture, and carrier means for sustainably releasing said bactericidal means;
said antibiotic compound means dimensioned so as to be effectively retained within said one or more grooves to in turn be capable of being operably and releaseably positionable within at least a portion of the one or more grooves to facilitate removal and/or replacement of said antibiotic compound, so as to permit said bactericidal means to be eluded directly into the medullary canal upon insertion and alignment of said apparatus within said canal.

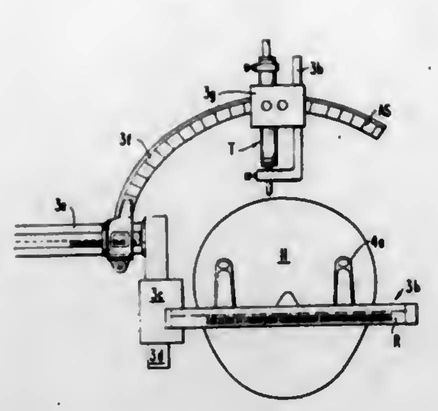
5,618,287
METHODS OF SURGICALLY IMPLANTING A DEFIBRILLATOR ELECTRODE WITHIN A PATIENT
Thomas J. Fogarty, 5660 Alpine Rd., Portola Valley, Calif. 94028, and Thomas A. Howell, Palo Alto, Calif., assignors to Thomas J. Fogarty, Portola Valley, Calif.
Division of Ser. No. 188,573, Jan. 28, 1994. This application Mar. 17, 1995, Ser. No. 406,125
Int. Cl.^{6} A61N *1/05*
U.S. Cl. 606—129 **4 Claims**



1. A method of surgically implanting a defibrillator electrode within a patient, comprising the steps of:
deflating the left lung of a patient;
making an opening in the chest of the patient between a 2nd rib and a 6th rib of the patient;
inserting a trocar into the opening between the 2nd rib and the 6th rib;
inserting an optical device into the trocar to permit observation within the patient;
making a subxiphoid opening;
releasably securing one end of a defibrillator electrode to a first handle;
releasably securing an opposite end of the defibrillator electrode to a second handle;
rotating of the first and second handles toward each other to roll the defibrillator electrode;
passing the first and second handles and the rolled defibrillator electrode through the subxiphoid opening to position the defibrillator electrode on a surface of the pericardium;
rotating the first and second handles away from each other to unroll the defibrillator electrode; and
securing the defibrillator electrode to the pericardium.

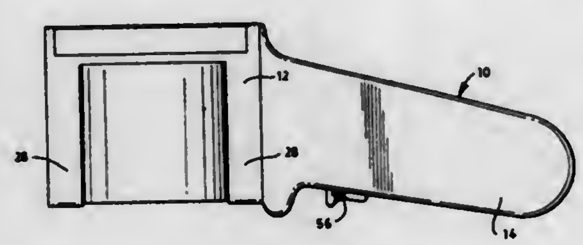
5,618,288
STEREOTACTIC SYSTEM FOR SURGICAL PROCEDURES
Antonio M. Calvo, Rua Orense, 396, Diadema, Sao Paulo, SP, Brazil
Filed Jan. 22, 1996, Ser. No. 589,284
Int. Cl.^{6} A61B *19/00*
U.S. Cl. 606—130 **5 Claims**

1. A stereotactic system for surgical procedures, said stereotactic system comprising:
a frame (*3a*) securable around and to a head of a patient with a plurality of fixing screws (*3s*), said fixing screws (*3s*) circumferentially distributed around and passing through said frame (*3a*);
a vertical bar bracket (*3c*) releasably attachable to said frame (*3a*) according to at least one predetermined X- or Y-position in the head of the patient established by the surgical procedure;



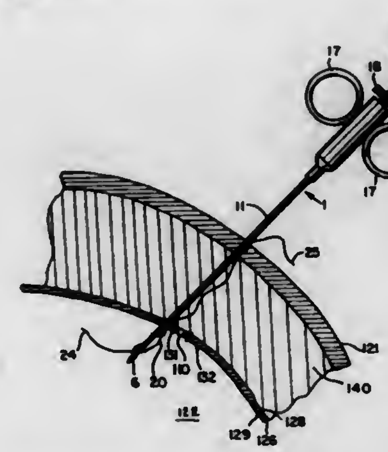
a vertical graduated bar (3d) movably engaged with, and securable to the vertical bar bracket (3c), according to at least one predetermined Z-position in the head of the patient established according to the surgical procedure;
a graduated tube (3e) fixed to and extending perpendicularly from the graduate bar (3d);
a circular arc-shaped member (3f) provided with an angular positioning scale (AS) graduated in degrees, said circular arc-shaped member (3f) being releasably secured to and pivotably mounted on said graduated tube (3e) extending perpendicularly from the graduate bar (3d); and
means for releasably securing a surgical tool at a predetermined angular position on said circular arc-shaped member (3f) on said angular positioning scale.

5,618,289
INSECT LOCATOR BRUSH
James Aragona, North Caldwell, and Mark C. Buechel, Livingston, both of N.J., assignors to Aragona Buechel Partnership, South Orange, N.J.
Filed Nov. 8, 1994, Ser. No. 345,561
Int. Cl.⁶ A61B *19/00;* A46B *15/00*
U.S. Cl. 606—131 **15 Claims**



1. An insect locating device, comprising:
a support;
non abrasive human and animal hair parting and separating means for engaging hair of a human or animal for separating groups of hair and/or parting the hair of the human or animal to expose a region of skin of the human or animal without abrading the region of skin, said parting and unfolding means being connected to said support;
a magnification element connected to said support, said magnification element being positioned adjacent to said parting and unfolding means for viewing said region; and
brush connection means for connecting said hair parting and separating means to said support and disconnecting said hair parting and separating means from said support, said brush connection means including a brush connection rail connected to said hair parting and separating means and a brush connection rail receiving slot associated with said support, said support including a brush receiving space.

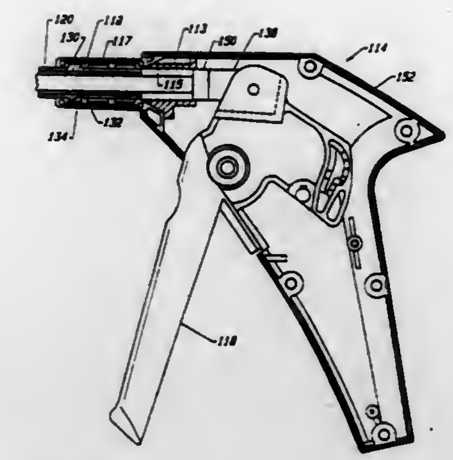
5,618,290
ENDOSCOPIC SUTURE PASSER AND METHOD
Frederick K. Toy; Roy T. Smoot, Jr., and Robert H. LaPrad, all of Seaford, Del., assignors to W.L. Gore & Associates, Inc., Newark, Del.
Continuation-in-part of Ser. No. 14,349, Oct. 19, 1993, Pat. No. Des. 368,776. This application Jan. 24, 1995, Ser. No. 377,762
Int. Cl.⁶ A61B *17/04*
U.S. Cl. 606—139 **25 Claims**



25. A suturing device comprising:
a needle having a shaft with a proximal and a distal end;
a pointed head at the distal end of said needle shaft;
a suture-receiving hook formed proximally to said pointed head;
a latch displaceable between open and closed positions for opening and closing said hook, said latch being spring-biased to the open position;
a tubular sheath concentric with said needle shaft and extending between said proximal end and said latch, said needle shaft being frictionally slidable within said tubular sheath, said latch being displaced by said spring bias to open said hook when said needle shaft is extended relative to said tubular sheath and said latch being displaced by said sheath to close said hook when said needle shaft is retracted relative to said tubular sheath; and
a rotator attached to said shaft at its proximal end for rotating the shaft of said suturing device within said sheath, and rotating said hook at the distal end of the device.

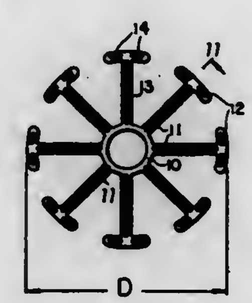
5,618,291
GAS-SEALED INSTRUMENTS FOR USE IN LAPAROSCOPIC SURGERY
Todd A. Thompson, San Jose, and Tim Kovac, Los Gatos, both of Calif., assignors to Origin Medsystems, Inc., Menlo Park, Calif.
Division of Ser. No. 26,445, Mar. 4, 1993, Pat. No. 5,431,667, which is a continuation-in-part of Ser. No. 908,709, Jul. 2, 1992, abandoned, which is a continuation-in-part of Ser. No. 888,723, May 26, 1992, Pat. No. 5,192,288. This application Jun. 2, 1995, Ser. No. 459,790
Int. Cl.⁶ A61B *17/04*
U.S. Cl. 606—142 **4 Claims**

1. An instrument for use in laparoscopic procedures in a body cavity insufflated with a gas, the instrument comprising:
a handle;
an elongate outer tube having a bore, a distal portion adapted for inserting into the body cavity, and a proximal portion attached to the handle;
an operating lever pivotally mounted in the handle;
an elongate operating rod mounted in the bore of the elongate outer tube, and sliding axially in response to the operating lever; and



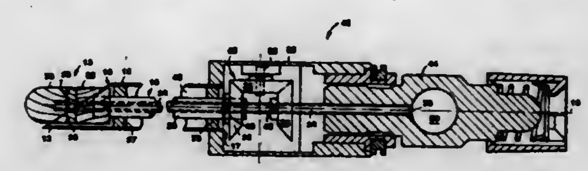
a sealing means for preventing the gas from escaping from the body cavity through the outer tube, the sealing means including:
a cylinder in the handle, the cylinder being in gas-tight communication with the bore of the outer tube;
a piston slidably mounted in the cylinder, interconnecting the operating lever and the operating rod.

5,618,292
CORNEAL DRAPE OR TEMPLATE FOR PERFORMING A RADIAL-KERATOTOMY PROCEDURE
Stanley Poler, 78 E. Second St., New York, N.Y. 10003
Continuation of Ser. No. 205,894, Mar. 2, 1994, abandoned. This application Mar. 2, 1995, Ser. No. 397,573
Int. Cl.⁶ A61B *17/00*
U.S. Cl. 606—166 **31 Claims**



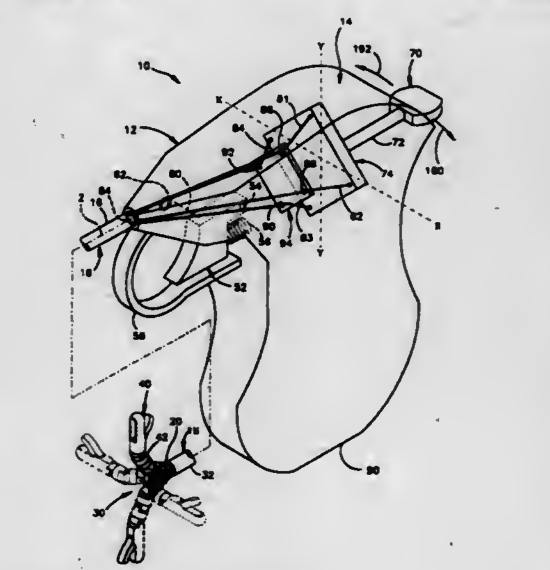
1. As an article of manufacture adapted for in-vivo self-adherent removable mounting to a cornea, an initially flat template for precision guidance of a predetermined radial keratotomy procedure, said template comprising an annular body of flexible sheet material having a central opening, said body being (1) substantially fenestrated throughout the annular area thereof and (2) of such compliant action as to deform in continuous smooth conformance to the surface curvature of a cornea and to adhere thereto solely through contact with natural moisture of the surface of a cornea, the fenestration of the annular area being characterized by plural radial slot formations of uniform knife-guiding width and at predetermined angular spacing with respect to each other.

5,618,293
SURGICAL INSTRUMENT
Philip B. Sample, Melrose, Mass., and Graham Smith, Plaistow, N.H., assignors to Smith & Nephews Dyonics, Inc., Andover, Mass.
Filed Jun. 6, 1995, Ser. No. 471,226
Int. Cl.⁶ A61B *17/32*
U.S. Cl. 606—170 **39 Claims**



1. A surgical instrument comprising:
a base;
a driver extending distally from said base; and
a cutting implement disposed along an axis and carried at a distal region of said driver, said cutting implement including first and second cutting elements;
said driver being configured to transmit force applied at said base to said cutting implement to rotate said first cutting element about said axis in a first direction and to rotate said second cutting element about said axis in a second direction opposite to said first direction, said first and second cutting elements being arranged so that (1) at least a portion of said first cutting element is exposed for cutting whenever said first element rotates in said first direction and (2) at least a portion of said second cutting element is exposed for cutting whenever said second element rotates in said second direction.

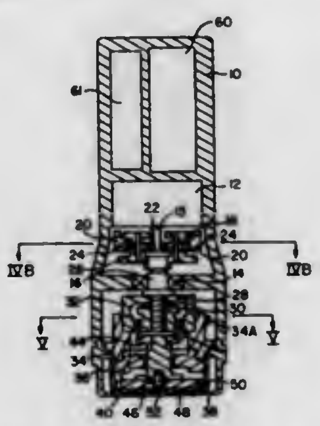
5,618,294
SURGICAL INSTRUMENT
Gilbert M. Aust, Huntsville, and Timothy E. Taylor, Hampton Cove, both of Ala., assignors to Aust & Taylor Medical Corporation, Huntsville, Ala.
Continuation-in-part of Ser. No. 248,507, May 24, 1994, Pat. No. 5,454,827. This application Jul. 21, 1995, Ser. No. 505,476
Int. Cl.⁶ A61B *17/00*
U.S. Cl. 606—170 **47 Claims**



1. A surgical instrument comprising:
a manually engageable handle;
a first stem section having a longitudinal axis and extending from said handle;
tissue engaging means for engaging tissue, said tissue engaging means including at least a first tissue engaging member;

a second stem section connected between said first stem section and said tissue engaging means, said second stem section having at least a portion which is bendable, said second stem section supporting said tissue engaging means for movement between a plurality of orientations relative to said axis and to said first stem section;
means for supporting said first tissue engaging member on said bendable portion of said second stem section; and
means for bending said bendable portion of said second stem section to change the orientation of said tissue engaging means relative to said axis and to said first stem section from a first orientation to a second orientation;
said bendable portion of said second stem section comprising means for enabling bending movement of said bendable portion to locate said tissue engaging means at the same angle relative to said longitudinal axis of said first stem section at more than one location along the length of said bendable portion.

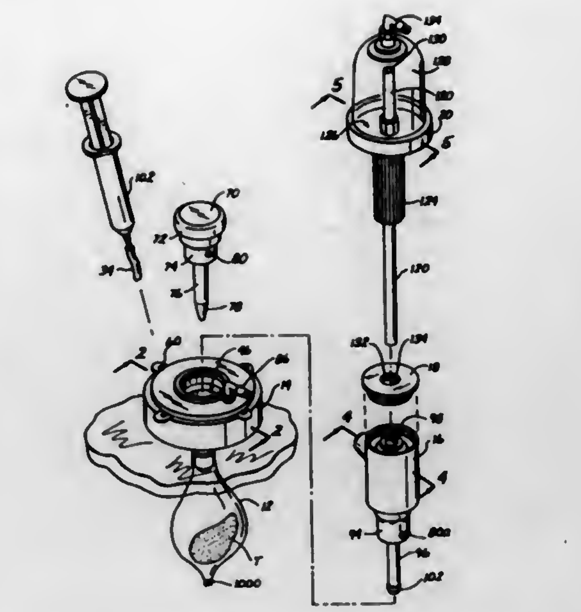
5,618,295
APPARATUS FOR PREPARING SKIN IN ADVANCE
Jin K. Min, Kyungki-do, Rep. of Korea, assignor to Samsung Electro-Mechanics Co., Ltd., Kyungki-do, Rep. of Korea
Filed Oct. 14, 1994, Ser. No. 322,494
Claims priority, application Rep. of Korea, Oct. 16, 1993, 93-21511; Oct. 16, 1993, 93-21512; Oct. 16, 1993, 93-21513
Int. Cl.⁶ A61B *17/00*
U.S. Cl. 606—171 **10 Claims**



1. An apparatus for preparing skin in advance by forming a plurality of cicatrices thereon to administer insulin to a patient, said apparatus comprising:
a housing;
a rotatable skin needle assembly having a plurality of skin needles thereon, said assembly being located at one end of said housing and being moved upward and downward;
a power supply;
means powered by said power supply for vibrating said assembly upwardly and downwardly relative to said housing; and
means powered by said power supply for rotating said assembly by predetermined rotations.

5,618,296
TISSUE MORCELLATOR SYSTEM AND METHOD
John T. Sorensen, Costa Mesa; Frans Limonta, Laguna Hills, and Larry A. Dial, Chino Hills, all of Calif., assignors to Endomedix Corporation/Box 330, Huntington Beach, Calif.
Filed Jul. 24, 1995, Ser. No. 507,054
Int. Cl.⁶ A61B *17/39*
U.S. Cl. 606—180 **36 Claims**

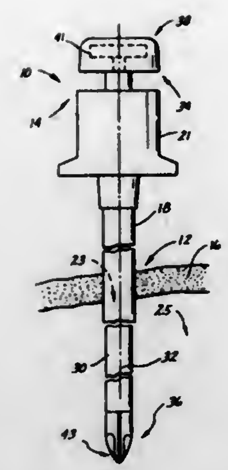
1. A tissue morcellation system comprising:
a portal apparatus having an opening extending therethrough, said portal apparatus being insertable through an incision



formed in a mammalian body such that the opening of the portal apparatus provides a passageway into the mammalian body;
a morcellator device insertable through the opening of said portal apparatus, said morcellator device comprising;
i) a drive motor;
ii) a shaft extending downwardly from said drive motor and being rotatable thereby, said shaft having a distal end;
iii) a cutting element positioned on the distal end of said shaft; and
iv) a hollow passageway which extends longitudinally through said drive motor, through said shaft, and through said cutting element; and
an elongate, non-rotatable suction probe having a proximal end, a distal end, a suction lumen extending longitudinally therethrough and an outer surface, said suction probe being operatively coupled to a vacuum source for selectively creating suction pressure within the suction lumen, and insertable through the hollow passageway and moveable back and forth within said passageway such that the distal end of the probe will engage, by suction pressure, a mass of matter located within said mammalian body and will lift said mass of matter into contact with the cutting element of said morcellator device such that a portion of said mass of matter may be severed by said cutting element and drawn out of the body through the lumen of said suction probe.

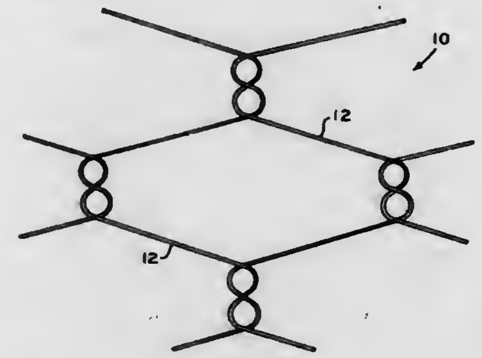
5,618,297
OBTURATOR WITH INTERNAL TIP PROTECTOR
Charles C. Hart, Huntington Beach; Vincent C. Tangherlini, Rancho Santa Margarita, and Nabil Hilal, Mission Viejo, all of Calif., assignors to Applied Medical Resources, Laguna Hills, Calif.
Filed Oct. 13, 1994, Ser. No. 322,698
Int. Cl.⁶ A61M *5/00*
U.S. Cl. 606—185 **13 Claims**

1. An obturator adapted for use in penetrating a body wall of a patient, including:
an elongate tube having a wall with an outer surface, an inner surface, and an axis extending between a proximal end and a distal end;
a handle disposed at the proximal end of the elongate tube;
a cutting section included in the cutting tip;
a mounting section included in the cutting tip, the mounting section being disposed proximally of the cutting section; and
at least two mounting members included in the mounting section of the tip each extending outwardly of the axis of the tube to



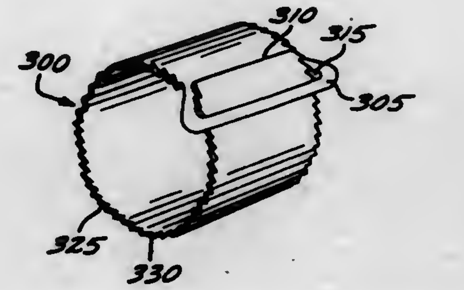
frictionally engage the inner surface of the tube at least one of the mounting members extending outwardly of the axis of the tube to an outer edge; and
means disposed at the outer edge of the at least one mounting member for enhancing the frictional relationship between the at least one mounting member and the inner surface of the elongate tube, said means including a multiplicity of serrations each forming a point extending distally of the tube for engaging the wall of the tube and facilitating insertion of the tip into the tube while inhibiting removal of the tip from the tube.

5,618,298
VASCULAR PROSTHESIS MADE OF RESORBABLE MATERIAL
Michael Simon, Am Hang 7A, 69226 Nussloch, Germany
Filed Sep. 12, 1995, Ser. No. 526,485
Int. Cl.⁶ A61M *29/00*
U.S. Cl. 606—194 **17 Claims**



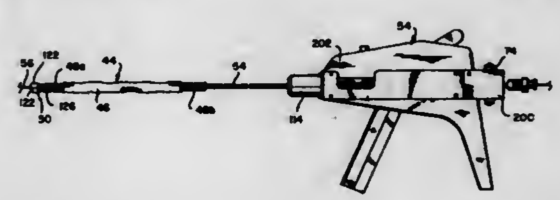
1. Method for the fabrication of a stent coated with antithrombotic reagents, of filiform material resorbable by the body, comprising the steps of:
winding the filiform material on a form cylinder that is stable to pressure and stable thermally, subsequently sintering the wound filiform material at pressures between 100 to 2000 bars at elevated temperature to form a stent,
removing the sintered stent from the form cylinder, and then coating the stent with heparin as an antithrombotic reagent.

5,618,299
RATCHETING STENT
Farhad Khosravi, Belmont, Calif., and Michael S. Williams, Chapel Hill, N.C., assignors to Advanced Cardiovascular Systems, Inc., Santa Clara, Calif.
Division of Ser. No. 52,410, Apr. 23, 1993, Pat. No. 5,441,515. This application Aug. 8, 1995, Ser. No. 512,300
Int. Cl.⁶ A61M *29/00*
U.S. Cl. 606—198 **1 Claim**



1. An intraluminal stent implantable in a body lumen, comprising:
a substantially cylindrical body portion having a length extending along a longitudinal direction, the body portion having a first edge containing a slot extending along the longitudinal direction, and the body portion having a second edge extending along the longitudinal direction;
the second edge passing through the slot;
a third edge and a fourth edge each having a plurality of teeth for engaging the slot in interlocking relationship;
wherein when the cylindrical body portion is expanded from a first reduced diameter to a second, enlarged diameter, the plurality of teeth engage the slot in an interlocking relationship to thereby hold the stent in the second, enlarged diameter configuration.

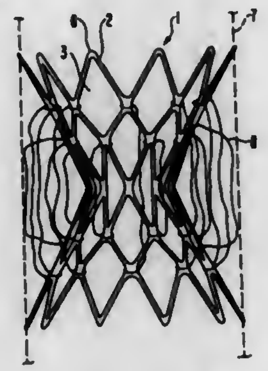
5,618,300
APPARATUS AND METHOD FOR DEPLOYMENT OF RADIALLY EXPANDABLE STENTS BY A MECHANICAL LINKAGE
Michael L. Marin, and Ralph Marin, both of New York, N.Y., assignors to Endovascular Systems, Inc., Cross River, N.Y.
Continuation of Ser. No. 196,278, Feb. 10, 1994, Pat. No. 5,493,477. This application Aug. 10, 1995, Ser. No. 513,412
Int. Cl.⁶ A61M *29/00*
U.S. Cl. 606—198 **14 Claims**



1. An apparatus at a predetermined location on a catheter for expanding a graft, stent, or stenosed body lumen or the like, comprising:
a member, said member being movably mounted with respect to the catheter;
a deployment wire having a distal end coupled to said member for axially moving said member with respect to the catheter;
a plurality of wings surrounding said member;
a linkage for linking said wings to said member and the catheter and for providing a force sufficient to expand the graft, stent, stenosed body lumen or the like;
initiating means axially movably mounted with respect to the catheter for initiating displacement of said wings; and

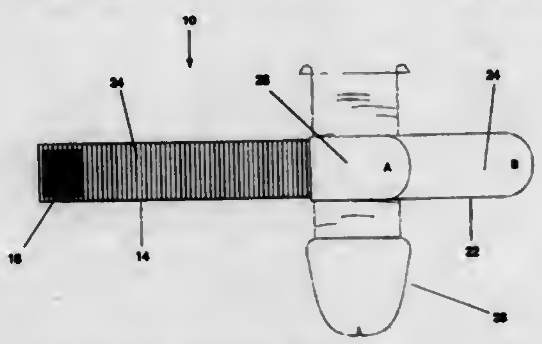
an initiating wire fixedly coupled to said initiating means for axially moving said initiating means with respect to the catheter.

5,618,301
REDUCING STENT, DEVICE WITH REDUCING STENT AND USE OF A REDUCING STENT
Hans K. Hauenstein, Gottenheim, and Josef Lindenberg, Karlsruhe, both of Germany, assignors to Angiomed AG, Karlsruhe, Germany
Continuation of Ser. No. 182,697, Jan. 13, 1994, abandoned. This application Jan. 19, 1996, Ser. No. 588,688
Claims priority, application Germany, Oct. 7, 1993, 43 34 140.3
Int. Cl.^{6} A61B *17/00*; A61M *29/00*
U.S. Cl. 606—198 **4 Claims**



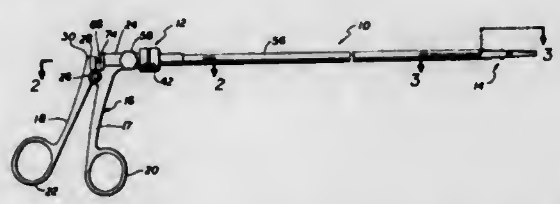
1. A reducing stent for reducing a diameter of a transjugular intrahepatic portosystemic shunt, the reducing stent comprising a sleevelike part extending along a longitudinal axis of said reducing stent and having a wall provided with perforations, first and second free ends at opposite ends of the sleevelike part along said longitudinal axis, an intermediate portion connecting said first and second free ends, and thrombogenic threads extending substantially parallel to said longitudinal axis of the reducing stent on the exterior of the sleevelike part along said intermediate portion, wherein at body temperature, the operating position of said reducing stent said first and second free ends of said sleevelike part each have a larger diameter than all areas of said intermediate portion, whereby said intermediate portion forms a constriction in said sleevelike part between said first and second free ends.

5,618,302
MALE URETHRAL CLOSURE PAD
Wallace K. Martin, 1221 Sarasota Dr., Tallahassee, Fla. 32301
Filed Apr. 7, 1995, Ser. No. 418,674
Int. Cl.^{6} A61B *17/00*
U.S. Cl. 606—201 **16 Claims**



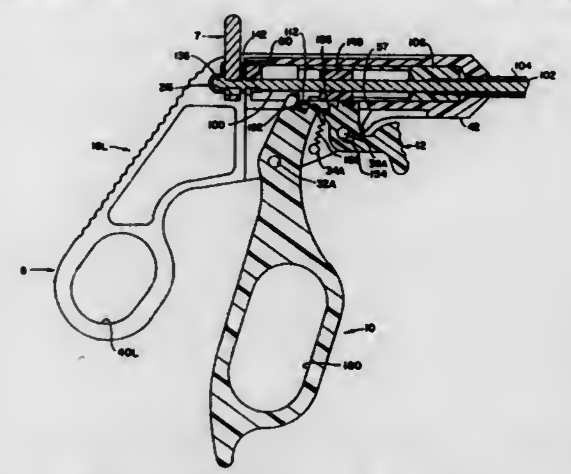
1. A male urethral closure pad comprising:
a first strap having a first end, a center, a second end, an outside surface and an inside surface;
an inclusion pad is centrally affixed at said center to said inside surface of said first strap;
a first securing means is centrally affixed to said outside surface of said first strap to provide for said first securing means to be located on said center of said first strap;
a second strap made from an elastic material includes a first end, a second end, a lower surface and a top surface;
said first end of said second strap is attached at an securment point to said outside surface of said first strap and said securment point is located between said center and said first end of said first strap and said securment point is located in proximity to said center;
said securment point enables said lower surface and said top surface of said second strap to be exposed;
said second strap is linearly moveable about the securment point to enable said second strap to freely wrap around said first end and said second end of said first strap and said second end of said first strap when secured to a penis; and
a second securing means is located at said second end on said lower surface of said second strap to provide for said second strap to maintain elasticity and for enabling said second securing means to engage said first securing means for rendering said male urethral closure pad to be removably secured to a user.

5,618,303
ENDOSCOPIC INSTRUMENT SYSTEM AND METHOD
Scott C. Marlow, Chesterland; Haans K. Petruschke, Kirtland; Donald B. Coon, Chesterland, and John T. Nelson, Kirtland, all of Ohio, assignors to Marlow Surgical Technologies, Inc., Willoughby, Ohio
Continuation-in-part of Ser. No. 907,853, Jul. 2, 1992, Pat. No. 5,368,606. This application Sep. 23, 1993, Ser. No. 125,926
Int. Cl.^{6} A61B *17/00*
U.S. Cl. 606—205 **32 Claims**



1. An endoscopic instrument system comprising:
an instrument including a handle portion having means for gripping said instrument, means forming a shaft extending from gripping means and means for actuating said instrument, said actuating means including a clevis; and
an instrument end tool, said end tool having means for mounting said end tool on an end of said shaft and including an enlarged end which is shaped to be seated in said clevis, whereby an attached one of said end tools is operable by said actuating means, said mounting means and said enlarged end being shaped such that said end tool is attachable to said shaft end and removable therefrom by hand without tools.

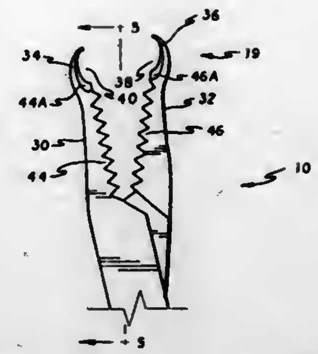
5,618,304
SURGICAL INSTRUMENT
Rickey D. Hart, North Attleboro, Mass.; Richard M. Winters, Cary, N.C.; John T. Rice, and James E. Nicholson, both of Lincoln, Mass., assignors to Innovasive Devices, Inc., Marlborough, Mass.
Division of Ser. No. 959,121, Oct. 9, 1992, Pat. No. 5,334,198. This application Jan. 18, 1994, Ser. No. 182,853
The portion of the term of this patent subsequent to Aug. 2, 2011, has been disclaimed.
Int. Cl.^{6} A61B *17/36*
U.S. Cl. 606—205 **30 Claims**



1. A surgical instrument comprising a handle and trigger assembly and an operating tool assembly separably connected to said handle and trigger assembly, said handle and trigger assembly comprising a handle housing having a chamber therein and a trigger member pivotally mounted to said handle housing, said operating tool assembly comprising at one end thereof a tool head with tissue-engaging members and at the opposite end thereof a tubular housing that extends into said chamber, said handle and trigger assembly having spring biased locking means engaged with said operating tool assembly for releasably locking said tubular housing to said handle housing, said operating tool assembly further including a mechanism for moving said tissue-engaging members toward and away from one another, said mechanism including movable means in said tubular housing engaged and movable by said trigger member for causing said mechanism to move said tissue-engaging members toward and away from one another in response to pivotal movement of said trigger member.

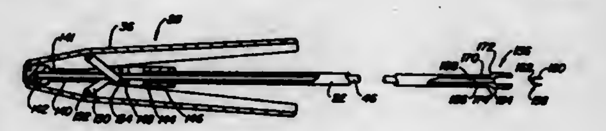
5,618,305
FORCEPS WITH V-SHAPED GRASPING TIPS
Fritz Lolagne, 292 Ave. John Brown Bourdon, Port-au-Prince, Haiti
Continuation-in-part of Ser. No. 252,209, Jun. 1, 1994, abandoned, which is a continuation-in-part of Ser. No. 94,627, Jul. 21, 1993, abandoned. This application Jan. 18, 1995, Ser. No. 375,423
Int. Cl.^{6} A61B *17/00*
U.S. Cl. 606—205 **5 Claims**

1. A forceps comprising:
a pair of elongated forceps arms, each elongated arm having an aperture therethrough, a first end at least 10.5 centimeters from the aperture, and a second end approximately 3 centimeters from the aperture;
a stud disposed wholly within the apertures of each elongated arm, said stud pivotally connecting said pair of elongated arms;
a handle formed at the first end of each elongated arm; and
a grasping section formed at the second end of each elongated arm, each said grasping section terminating in a v-shaped grasping tip, each said tip together defining an oval opening



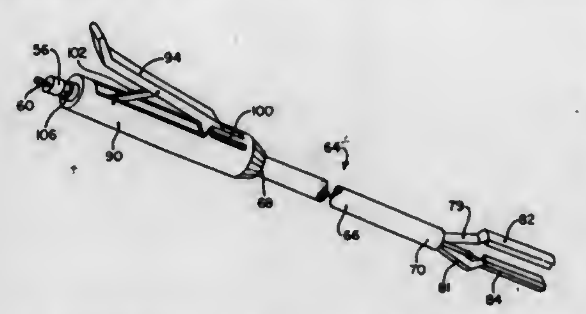
when said forceps are closed, said opening being not more than 0.40 centimeters in diameter in a direction parallel with said elongated arms and not more than 0.25 centimeters in diameter in a direction perpendicular to said elongated arms, said opening disposed within one millimeter of the second end of said elongated arms, and said grasping section also including a serrated portion adjacent to said grasping tip.

5,618,306
ENDOSCOPIC MICROSURGICAL INSTRUMENTS AND METHODS
Alex T. Roth, Redwood City, and Scott H. Miller, Sunnyvale, both of Calif., assignors to Heartport, Inc.
Division of Ser. No. 194,946, Feb. 14, 1994, Pat. No. 5,501,698. This application Nov. 17, 1995, Ser. No. 560,441
Int. Cl.^{6} A61B *17/28*
U.S. Cl. 606—205 **4 Claims**



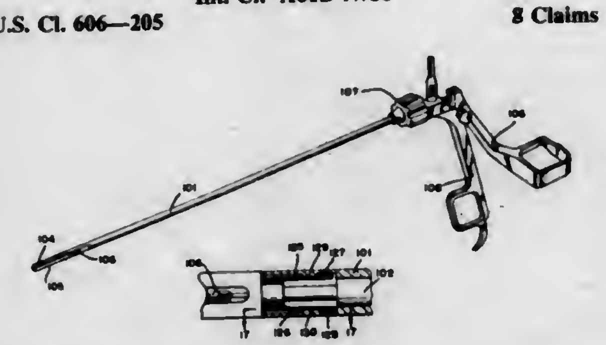
1. A microsurgical clip applier comprising:
an outer shaft having a proximal end, a distal end, and an axial lumen therebetween;
an inner shaft slidably disposed in the axial lumen and having a proximal end and a distal end;
a pair of jaws fixed to the distal end of a first shaft selected from the outer shaft and the inner shaft, the jaws being configured to hold a surgical clip therebetween; and
an actuator at the proximal end of the outer shaft for closing the jaws, the actuator comprising:
at least a first arm having a proximal end and a distal end, the proximal end being pivotally coupled to the first shaft, and the distal end being disposed on a first lateral side of the outer shaft and biased outwardly to from an acute angle therewith; and
a first link having an outer end and an inner end, the outer end being coupled to the first arm at a first pivot point, and the inner end being coupled to a second shaft selected from the outer shaft and the inner shaft, whereby the second shaft is translated relative to the first shaft when the first arm is pivoted toward the outer shaft; and
means coupled to the second shaft for closing the jaws in response to translation of the second shaft relative to the first shaft.

5,618,307
CLAMP ASSEMBLY AND METHOD OF USE
Brian S. Donlon, Los Altos Hills; Richard L. Mueller, Jr., Byron; S. Christopher Daniel, San Francisco; Hanson S. Gifford, III, Woodside, all of Calif., and John H. Stevens, London, England, assignors to Heartport, Inc., Redwood City, Calif.
Continuation-in-part of Ser. No. 415,273, Apr. 3, 1995, Pat. No. 5,536,251. This application Dec. 4, 1995, Ser. No. 567,996
Int. Cl.⁶ A61B *17/28*
U.S. Cl. 606—205 **51 Claims**



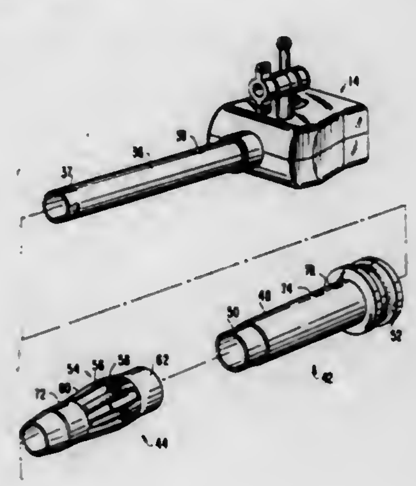
28. A clamping assembly for constricting an ascending aorta in a thoracic cavity of a patient, the assembly comprising:
a clamp having first and second jaws configured to clamp a patient's ascending aorta, the first and second jaws having jaw surfaces being movable between open and closed positions, the clamp having a locking mechanism configured to the first and second jaws in the closed position; and
a clamp positioner having a distal end releasably coupled to the clamp, the clamp positioner having a clamp actuator configured to move the clamp from the open position to the closed position;
the distal end of the clamp positioner and the clamp coupled thereto being configured for introduction into a thoracic cavity of the patient through a percutaneous intercostal penetration in the patient's chest.

5,618,308
SURGICAL INSTRUMENT CAPABLE OF DISASSEMBLY
J. Stephen Holmes, Atlanta, Ga., and Charles E. Beuchat, Irvine, Calif., assignors to Wright Medical Technology, Inc., Arlington, Tenn.
Continuation of Ser. No. 134,087, Oct. 8, 1993, Pat. No. 5,507,774, which is a continuation-in-part of Ser. No. 93,477, Jul. 19, 1993, Pat. No. 5,336,238. This application Dec. 15, 1995, Ser. No. 573,283
Int. Cl.⁶ A61B *17/28*
U.S. Cl. 606—205 **8 Claims**



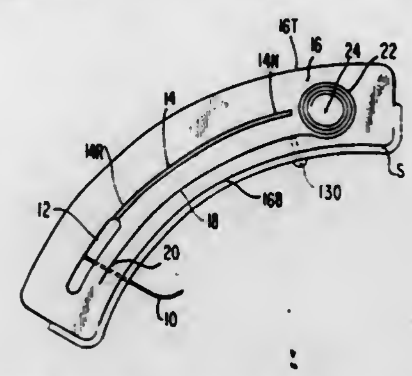
1. A surgical instrument comprising a hollow tube having a longitudinal axis, an inner rod having proximal and distal ends and extending through said hollow tube, handle means for imparting reciprocal movement to said inner rod relative to said hollow tube, a working tip attached to said distal end, and means to detachably interconnect said hollow tube and said inner rod including a locking pin connected to said inner rod and a locking tab formed on the inner surface of said hollow tube such that said locking pin and said locking tab are capable of being interlocked and so that pressure applied to said instrument radially inward by grasping said instrument generally in an imaginary plane intersecting said locking pin and said locking tab will cause said locking pin to rotate inward and allow said inner rod to be pulled through said hollow tube to disconnect said distal end of said inner rod from said outer tube.

5,618,309
CANNULA ASSEMBLY HAVING CONDUCTIVE CANNULA
David T. Green, 28 Bermuda Rd., Westport, Conn. 06880; Henry Bolanos, 9 Tonetta Cir., East Norwalk, Conn. 06855; H. Jonathan Tovey, 56 Rogers Ave., Milford, Conn. 06460, and Robert C. Smith, 45 Pepper Ridge Tree Rd., Watertown, Conn. 06795
Continuation of Ser. No. 885,467, May 19, 1992, Pat. No. 5,387,196. This application Nov. 10, 1994, Ser. No. 337,679
The portion of the term of this patent subsequent to May 19, 2012, has been disclaimed.
Int. Cl.⁶ A61B *17/28; 17/32*
U.S. Cl. 606—207 **9 Claims**



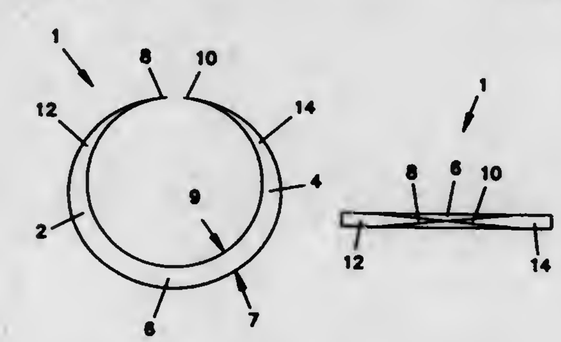
1. A cannula assembly, which comprises:
a) a cannula housing having a first opening formed at a distal end thereof and a second opening formed at a proximal end thereof, said first and second openings being in aligned communication to permit endoscopic instruments to pass therethrough;
b) a cannula sleeve connected to said cannula housing, said cannula sleeve having proximal and distal end portions and a longitudinal bore therebetween configured to receive the endoscopic instruments;
c) a tubular sleeve having proximal and distal end portions and a longitudinal bore configured to receive said cannula sleeve to coaxially align said cannula sleeve with said tubular sleeve, at least a portion of said tubular sleeve being formed of a material having a conductivity value which is at least fifty percent the conductivity value of silver to define an electrically conductive medium between said proximal and distal end portions, such that when said tubular sleeve contacts body tissue, said electrically conductive medium permits electrical energy to dissipate through the body tissue;
d) at least one tissue gripping member attached to said tubular sleeve and extending outwardly beyond an exterior wall of said tubular sleeve to maintain said tubular sleeve in a fixed position relative to the body tissue; and
e) at least one cannula engaging member configured to maintain said cannula in a fixed position relative to said tubular sleeve.

5,618,310
TISSUE, EXPANSION AND APPROXIMATION DEVICE
Ralph Ger, Lake Success, and Robert Oddsen, Centerport, both of N.Y., assignors to Progressive Surgical Products, Inc.
Continuation-in-part of Ser. No. 181,762, Jan. 21, 1994, Pat. No. 5,507,775. This application Jul. 27, 1994, Ser. No. 281,406
Int. Cl.⁶ A61B *17/00*
U.S. Cl. 606—216 **10 Claims**



1. A constant tension tissue expansion and approximation device for helping to restore skin to an open wound area of a patient who has relative healthier skin outward of and surrounding the open wound area, the device comprising:
a) a frame including means thereon forming boundaries which define a path that extends in an axial direction, the path having remote and near ends, the frame having an exposed bottom surface positionable to overlie the patient's skin,
b) a slider coupled to said frame and movable along said path, where said boundaries of the path define and control any non-axial displacement of the slider when it is moved axially along said path,
c) engaging means carded by said slider for releasably engaging the healthier skin, and
d) force application means for urging said slider to move in the direction of the path from said remote end of the path toward said near end of the path, said force application means providing a generally continuous force of generally constant magnitude on said slider regardless of the location of the slider along said path, and
e) a layer of pressure absorbing material secured to said exposed surface of said frame.

5,618,311
SURGICAL SUBCUTICULAR FASTENER SYSTEM
Joseph M. Gryskiewicz, 10405 Fawns Way, Eden Prairie, Minn. 55437
Filed Sep. 28, 1994, Ser. No. 313,761
Int. Cl.⁶ A61B *17/04*
U.S. Cl. 606—216 **10 Claims**



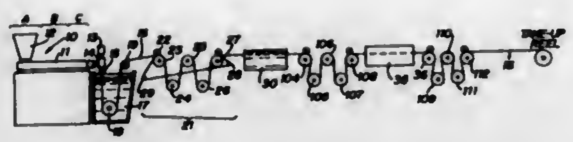
1. A surgical fastener comprising:
a body of a biodegradable plastic material having uninterrupted smooth inner and outer surfaces, said body including a first arm and a second arm, each of said arms including a proximal portion and a distal prong, said arms integrally connected to each other at said proximal portions, each of said distal prongs terminating at a tip, said tips of the distal prong of the first arm and the distal prong of the second arm face each other in a noninterlocking manner;
said plastic material being a resilient material to permit movement of said first arm and said second arm between a first relaxed position where said body is substantially closed and a second stressed position where said body is open;
said first and second arms each having a cross-sectional area of a first thickness and tapering inward along each of said respective arms from said proximal portions toward said respective tips, said tips having a cross sectional area of a second thickness, said second thickness being less than said first thickness;
a longitudinal axis extending through the geometric center with respect to said body, and a transverse plane bisecting said longitudinal axis substantially perpendicularly; and
said tips aligning along said transverse plane when in both said first relaxed position and said second stressed position.

5,618,312
MEDICAL MATERIALS AND MANUFACTURING METHODS THEREOF
Tooru Yui, Fujisawa; Tokuzo Nakagawa, Kanagawa, and Kazuo Kondoh, Tokorozawa, all of Japan, assignors to Bio-Engineering Laboratories, Ltd., Tokyo, Japan
Filed Apr. 12, 1996, Ser. No. 630,683
Claims priority, application Japan, Oct. 31, 1995, 7-305259
Int. Cl.⁶ A61L *17/00*
U.S. Cl. 606—229 **10 Claims**

8. A method for manufacturing a medical material having a membrane configuration, a thread or string configuration or a tube or hose configuration, which comprises,
providing a membranous material which consists essentially of a compact layer that is only an acellular layer of a biogenic connective tissue;
impregnating the membranous material with collagen or gelatin;
forming physical or chemical cross-linkings between protein molecules of the compact layer to such an extent that the resulting material has sufficient physical strength to be useful for manual or mechanical suture in surgery;
where required, forming a thread or string from the resulting material; and
where further required, forming a tube or hose from the thread or string.

5,618,313
ABSORBABLE POLYMER AND SURGICAL ARTICLES FABRICATED THEREFROM
Mark S. Roby, Killingworth; Donald S. Kaplan, Weston; Cheng-Kung Liu, Norwalk, and Steven L. Bennett, Southington, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.
Filed Oct. 11, 1994, Ser. No. 320,814
Int. Cl.⁶ A61B *17/04*
U.S. Cl. 606—230 **11 Claims**

1. A needle-suture combination, the suture comprising fibers spun from composition containing a copolymer, the copolymer



consisting essentially of at least about 95 percent by weight dioxanone randomly combined with up to about 5 weight percent lactide.

5,618,314

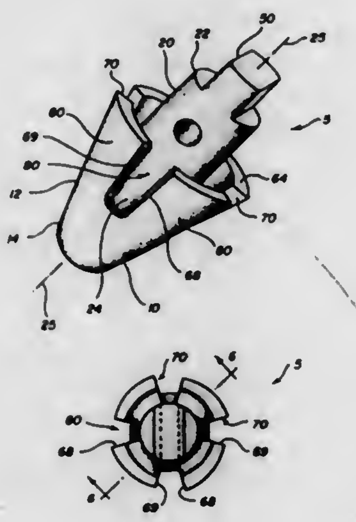
SUTURE ANCHOR DEVICE

Steven F. Harwin, 1050 Park Ave., New York, N.Y. 10021; Anh Le, 118 Wainwright Dr., Matawan, N.J. 07747; Izi Bruker, 18 Pleasant View Way, Flemington, N.J. 08822; Brian Luscombe, 43 Eton Way, Somerset, N.J. 08873; Dennis D. Jamiolkowski, 20 Fawnridge Dr., Long Valley, N.J. 07853; Mark Cofone, 24 Pebble Ct., Holland, Pa. 18966, and John DiGiovanni, 5 Winston Dr., Woodbridge, N.J. 07095

Filed Dec. 13, 1993, Ser. No. 166,493

Int. Cl.^{6} **A61B** *17/04*

U.S. Cl. 606—232 **17 Claims**



1. A suture anchor device, comprising:

an elongated anchor member having a distal end and a proximal end;

a shaft extending proximally from the proximal end of the anchor member, said shaft having a distal end and a proximal end;

a plurality of wing members extending proximally and radially outward from the proximal end of the anchor member, said members having a distal fixed end and a proximal free end and opposed longitudinally extending sides;

cutting means along at least one side of at least one wing member; and,

suture retaining means in said shaft; and

wherein the distal end of the anchor member terminates in a blunted nose.

5,618,315

SPINAL AND OTHER OSSEOUS JOINT ADJUSTING INSTRUMENT

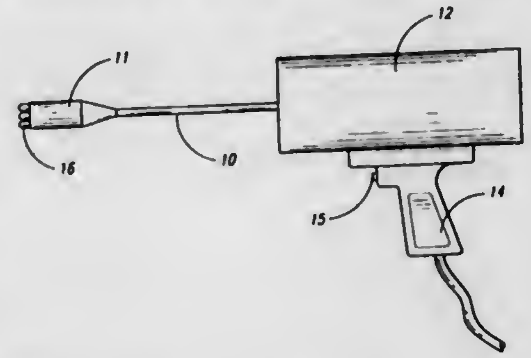
Thomas Elliott, Tulsa, Okla., assignor to Elliott Family Trust, Tulsa, Okla.

Filed Jan. 11, 1995, Ser. No. 371,130

Int. Cl.^{6} **A61F** *5/00*

U.S. Cl. 606—237 **8 Claims**

1. An instrument for adjusting osseous joint subluxation comprising:



a portable portion, comprising a moveable stylus to be held adjacent to the patient in the proximity of the osseous joint to be adjusted, which stylus may move either laterally along the axis of the stylus or radially about the axis of the stylus, a central portion containing the driving means for imparting motion to the stylus, a means for holding said portable portion, and a display means to indicate when the said portable portion is properly aligned with the patient,

said driving means comprising a means to actuate said moveable stylus in both linear and rotational direction, said stylus being activated by a series of specific square wave pulses, said pulse means generated in said driving means, and

a fixed portion, comprising display and adjustment means, to set and display the lateral and radial components of the energy to be transmitted to the patient; the proper alignment of the portable portion of the instrument with the patient; generating means for said complex energy waveform to provide the desired signals to the stylus driving means and the power supply and switches to actuate and operate the instrument.

5,618,316

POLYETHYLENE OXIDE COATED INTRAOCULAR LENS

Allan S. Hoffman, 4528 W. Laurel Dr., N.E.,, Seattle, Wash. 98105; Anilbhai S. Patel, 4202 Brownwood La., Arlington, Tex. 76017, and Gerard Llanos, 2625 Cockrell Ave., Fort Worth, Tex. 76109

Filed Dec. 14, 1993, Ser. No. 166,033

Int. Cl.^{6} **A61F** *2/14*

U.S. Cl. 623—6 **16 Claims**

1. An intraocular lens having improved biocompatibility, said lens being a soft acrylate lens coated with an aldehyde terminated polyethylene oxide through amine covalent bonding, wherein an amine coating is formed from plasma deposition of a normal alkyl amine or allyl amine having about 3–12 carbon atoms, and the polyethylene oxide coating attaches to the lens surface by reaction of terminal aldehyde groups with active primary amine groups in the plasma deposited coating.

CHEMICAL

5,618,317

BISULFITE-BLOCKED POLYISOCYANATES AS TANNING AGENTS

Harro Träubel, and Helmut Reiff, both of Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jun. 1, 1995, Ser. No. 456,972

Claims priority, application Germany, Jun. 28, 1994, 44 22 569.5

Int. Cl.^{6} **C14C** *3/22;* **A61K** *7/42;* **C08G** *18/52*

U.S. Cl. 8—94.19 C **9 Claims**

1. A tanning agent comprising a reaction product containing carbamoyl sulfonate groups of

(A) an organic polyisocyanate,

(B) 0.01 to 0.4 equivalents, relative to the isocyanate groups of polyisocyanate (A), of a polyether alcohol having incorporated polyalkylene oxide units, wherein 40 to 100 mole-% of the polyalkylene oxide units consist of polyethylene oxide units having a sequence length of 5 to 70,

(C) optionally, NCO-reactive components other than polyether alcohol (B) in an amount such that the reaction product incorporates 0 to 20 weight percent of said NCO-reactive component (C), and

(D) an ammonium or alkali bisulfite or disulfite in an amount such that the reaction product of components (A), (B), (C), and (D) contains no free isocyanate groups.

5,618,318

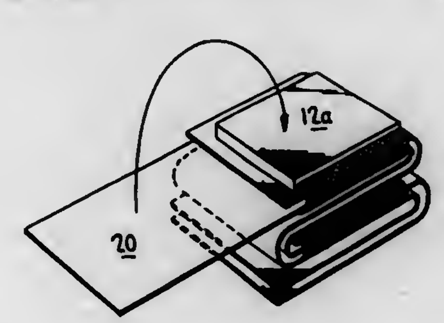
METHOD FOR FORMING A FOLDED ELECTRODE CONFIGURATION FOR GALVANIC CELLS

Thomas B. Reddy, Bronxville, and Pedro Rodriquez, Ossining, both of N.Y., assignors to Power Conversion, Inc., Elmwood Park, N.J.

Division of Ser. No. 305,439, Sep. 13, 1994, Pat. No. 5,525,441. This application Mar. 12, 1996, Ser. No. 614,199

Int. Cl.^{6} **H01M** *6/18;10/38*

U.S. Cl. 29—623.1 **8 Claims**



1. The method of fabricating a electrochemical cell stack comprising:

A) providing a strip of cathode material having flexibility sufficient to permit folding over of said strip onto itself;

B) providing a strip of flexible anode material having flexibility sufficient to permit folding over of said onto itself and comprising a lithium foil constructed and arranged with a metal current collector extending along the length of said foil;

C) providing a flexible, non-conductive separator material between said anode and cathode strips of A and B to prevent electrical contact between said strip and being in contact with an electrolyte; and

D) folding said anode and cathode strips at right angles to provide a cell stack having at least 3 layers of said anodes and cathodes folded over onto each other at right angles.

5,618,319

ALKYLAMINE POLYLACTONE AMINOCARBAMATES AND FUEL COMPOSITIONS CONTAINING THE SAME

Richard E. Cherpeck, Cotati, Calif., assignor to Chevron Chemical Company, San Ramon, Calif.

Filed Jun. 20, 1996, Ser. No. 667,203

Int. Cl.^{6} **C10L** *1/22;* **C07C** *125/04*

U.S. Cl. 44—387 **39 Claims**

1. A fuel-soluble compound of the formula:

$$R_1-NH-(\overset{O}{\overset{\|}{C}}-R_2-O)_x-\overset{O}{\overset{\|}{C}}-A$$

wherein R_1 is a hydrocarbyl group having a sufficient number of carbon atoms to render the compound soluble in hydrocarbons boiling in the gasoline or diesel fuel range;

R_2 is an alkylene group of about 2 to about 5 carbon atoms;

A is a polyamine moiety having at least one basic nitrogen atom; and x is an integer from about 1 to about 25.

13. A fuel composition comprising a major amount of hydrocarbons boiling in the gasoline or diesel fuel range and an effective deposit-controlling amount of a fuel-soluble compound of the formula:

$$R_1-NH-(\overset{O}{\overset{\|}{C}}-R_2-O)_x-\overset{O}{\overset{\|}{C}}-A$$

wherein R_1 is a hydrocarbyl group having a sufficient number of carbon atoms to render the compound soluble in hydrocarbons boiling in the gasoline or diesel fuel range;

R_2 is an alkylene group of about 2 to about 5 carbon atoms;

A is a polyamine moiety having at least one basic nitrogen atom; and x is an integer from about 1 to about 25.

5,618,320

AROMATIC ESTERS OF POLYALKYLPHENOXYALKANOLS AND FUEL COMPOSITIONS CONTAINING THE SAME

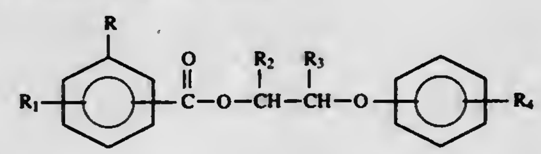
Richard E. Cherpeck, Cotati, Calif., assignor to Chevron Chemical Company, San Ramon, Calif.

Filed May 14, 1996, Ser. No. 647,486

Int. Cl.^{6} **C10L** *1/18;1/22*

U.S. Cl. 44—399 **54 Claims**

1. A compound of the formula:



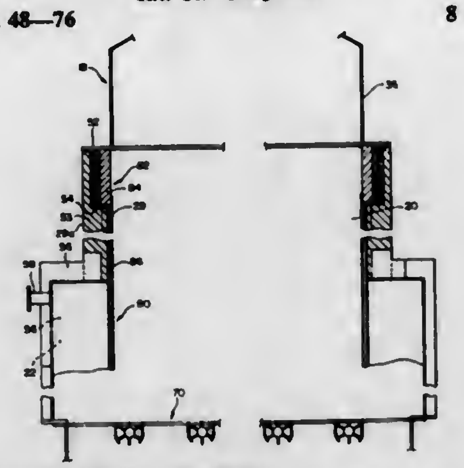
or a fuel soluble salt thereof, wherein R is hydroxy, nitro or $-(CH_2)_x-NR_5R_6$, wherein R_5 and R_6 are independently hydrogen or lower alkyl having 1 to 6 carbon atoms and x is 0 or 1;

R_1 is hydrogen, hydroxy, nitro or $-NR_7R_8$, wherein R_7 and R_8 are independently hydrogen or lower alkyl having 1 to 6 carbon atoms;

R_2 and R_3 are independently hydrogen or lower alkyl having 1 to 6 carbon atoms; and

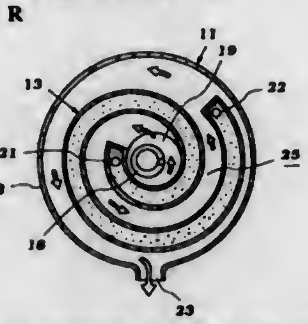
R_4 is a polyalkyl group having an average molecular weight in the range of about 450 to 5,000.

5,618,321
PYROLYSIS GASIFIER WITH INNER SLEEVE MEMBER
Leonard G. Belerle, Prosser; Leroy Graff, Mabton, both of Wash., and John J. Fitzgerald, Omaha, Nebr., assignors to Thermal Technologies, Inc., Omaha, Nebr.
Filed Sep. 15, 1994, Ser. No. 306,816
Int. Cl.⁶ C10J *3/68*
U.S. Cl. 48—76 **8 Claims**



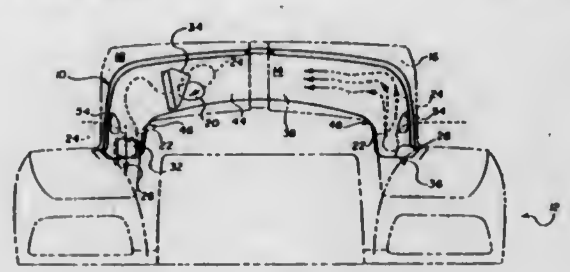
1. A pyrolysis gasifier, comprising:
gasifier means for reducing biomass input material to produce fuel gas, the gasifier means including means for receiving biomass input, a main body portion which includes means for supporting a pyrolysis gasification bed, and means for removing biomass residue from the gasifier;
A sleeve member positioned interiorly of the gasifier means, the sleeve member having a free lower end and being dimensioned such that it is spaced a distance inwardly from an inner wall of the gasifier, wherein an insulating effect occurs between the sleeve member and said inner wall;
Exit means for the fuel gas located in the gasifier means such that the fuel gas exits the gasifier without moving between the sleeve member and said inner wall; and
Means for supporting the sleeve member in the gasifier without a fixed connection between the gasifier and the sleeve member, such that the sleeve member is free to expand and contract due to thermal stress without affecting other portions of the gasifier.

5,618,322
REFORMER FOR FUEL CELL SYSTEM
Yutaka Mizuno; Toshiharu Hanajima, and Hisayoshi Matsubara, all of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan
Continuation of Ser. No. 826,644, Jan. 22, 1992, abandoned, which is a continuation of Ser. No. 542,305, Jun. 22, 1990, abandoned. This application Feb. 14, 1994, Ser. No. 195,991
Claims priority, application Japan, Jun. 23, 1989, 1-159419
Int. Cl.⁶ C10G *9/04*
U.S. Cl. 48—197 R **10 Claims**



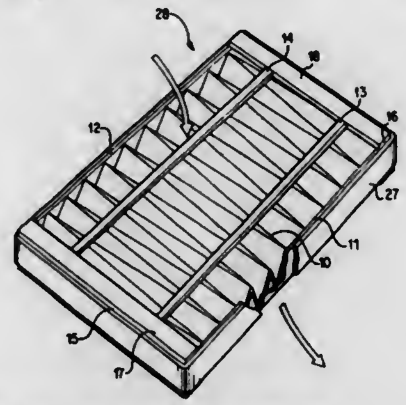
1. A reformer for reforming fuel for a fuel cell comprising a reformer housing defining an internal cavity, an elongated catalyst bed contained within said reformer housing cavity and extending from a first position therein to a second position therein spaced from said first position, a fuel inlet in said reformer housing at one end of said catalyst bed and at said first position for admitting fuel to be reformed thereto into contact with said catalyst bed and the fuel then passing along the length of said catalyst bed to a reformed fuel outlet in said reformer housing at the other end of said catalyst bed and at said second position for discharging reformed fuel therefrom, said fuel inlet, said reformed fuel outlet, said catalyst bed and said reformer housing being configured and arranged so that fuel to be reformed must flow completely along said catalyst bed from said fuel inlet before discharge from said reformed fuel outlet, and means for heating said catalyst bed to a higher level adjacent said fuel inlet than adjacent said reformed fuel outlet so that said one end of said catalyst bed will be at a higher temperature than said other end of said catalyst bed to limit the reaction temperature within said bed wherein the catalyst bed has a spiral configuration and the reformer housing cavity is cylindrical, the fuel inlet being at the end of the catalyst bed closest to the center of the cavity and the reformed fuel outlet being at the end of the catalyst bed closest to the periphery of said cavity.

5,618,323
INTEGRAL CAB AND ENGINE AIR INTAKE SYSTEM FOR A VEHICLE
Kenneth M. Shearn, Maple Valley, and Gerald J. Angelo, Redmond, both of Wash., assignors to PACCAR Inc, Bellevue, Wash.
Continuation of Ser. No. 188,541, Jan. 28, 1994, abandoned. This application Aug. 28, 1995, Ser. No. 520,046
Int. Cl.⁶ B01D *45/04*
U.S. Cl. 55—385.3 **17 Claims**



1. An air intake system for a vehicle comprising:
an air duct depending from an inner surface of a vehicle hood, the air duct being provided with a first opening to allow fluid communication between the air duct and an engine air intake of the vehicle, and being provided with an air chamber depending from the inner surface of the vehicle hood that is in fluid communication with ambient air which contains moisture, the air chamber being adjacent an ambient air intake provided in the vehicle hood, the air chamber being provided with a bottom surface and with a second opening to allow fluid communication between the air chamber and a cab of the vehicle, the air chamber having a sufficiently large volume so that a velocity of the ambient air as it enters the air chamber drops sufficiently to cause a substantial amount of the moisture to separate from the air and drop to the bottom surface of the air chamber, whereby substantially dry ambient air is provided to the engine and the cab.

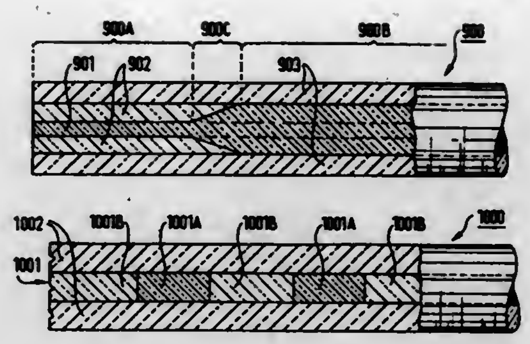
5,618,324
FILTER INSERT
Bruno Sommer, Ludwigsburg; Helmut Luka, Kornwestheim; Thomas Schürg, Ludwigsburg; Siegfried Rapp, Murr, and Nikolaus Moser, Ditzingen, all of Germany, assignors to Filterwerk Mann & Hummel GmbH, Germany
Continuation of Ser. No. 624,937, Mar. 27, 1996, abandoned, and Ser. No. 237,886, May 4, 1994, abandoned. This application Aug. 21, 1996, Ser. No. 701,189
Claims priority, application Germany, May 4, 1993, 43 14 563.9
Int. Cl.⁶ B01D *46/00*
U.S. Cl. 55—497 **20 Claims**



1. A filter insert for filtering air, comprising:
a self-supporting accordion-folded filter element that has top and bottom sides, left and right side faces, and end faces which extend parallel to the folds of the filter element;
planar lateral strips which are adhesively bonded to the left and the right side faces of the filter element;
angle strips having first and second legs, with the first legs arranged on the end faces which extend parallel to the folds of the filter element, and the second legs each extending along the top side over at least one fold edge of the filter element and being adhesively bonded to said at least one fold edge;
at least one planar reinforcing strip arranged on the top side of the filter insert extending transversely of and adhesively bonded to fold edges of the filter element; and
a foam sealing material extending along the end faces which extend parallel to the folds of the filter element, and the left and right side faces of the filter element,
wherein a full extent of the filter element between said left side face and said right side face is exposed to air flow.

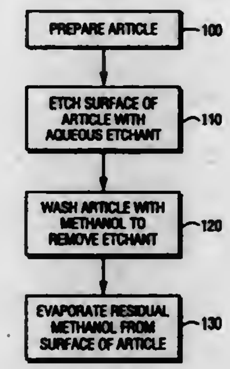
5,618,325
METHOD OF MANUFACTURING A MULTI-COMPONENT GLASS CYLINDRICAL PART IN THE FORM OF A TUBE AND/OR ROD
Pascal Baniel, Dravell, France, assignor to Alcatel Fibres Optiques, Bezons Cedex, France
Filed Jun. 28, 1994, Ser. No. 266,584
Claims priority, application France, Jul. 6, 1993, 93 08283
Int. Cl.⁶ C03B *19/00*
U.S. Cl. 65—380 **15 Claims**

1. A method of manufacturing a multi-component glass cylindrical part, comprising the following operations:
providing a cylindrical member having at least one cylindrical wall defining a vertical cylindrical cavity where a surface, facing an interior of said cavity, of said wall is lined with a porous layer, where an inside dimension of said porous layer is a few tens of microns larger than said glass cylindrical part and in which a cylindrical pedestal constituting a support for said glass cylindrical part can slide,
providing a solid seed mass of said glass on said pedestal,
heating said seed mass until said seed mass melts, thereby forming a molten seed mass, and injecting gas continuously into said porous layer thereby forming and maintaining a



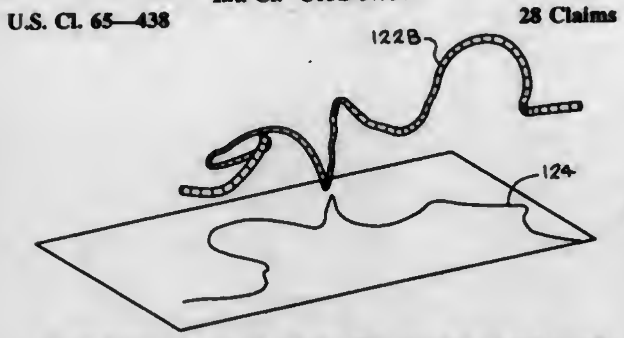
layer of said gas between said porous layer and said molten seed mass, said layer of said gas being a few tens of microns thick preventing any contact between said inner walls of said cylinder and said molten seed mass,
feeding said molten seed mass from a top end of said cavity by continuously dispensing a powder made up of components thereby forming said glass cylindrical part, and varying the composition of the powder as said glass cylindrical part is formed, thereby varying the composition of said glass cylindrical part in a longitudinal direction,
lowering said pedestal as said glass cylindrical part is formed from said seed mass.

5,618,326
SURFACE TREATMENT OF HALIDE GLASS ARTICLES
Daryl Szebesta; John R. Williams, and Steven T. Davey, all of Suffolk, England, assignors to British Telecommunications public limited company, London, England
Continuation of Ser. No. 157,015, Nov. 30, 1993, abandoned. This application Mar. 22, 1995, Ser. No. 408,193
Claims priority, application United Kingdom, Sep. 30, 1991, 9120701
Int. Cl.⁶ C03B *23/20;37/012*
U.S. Cl. 65—388 **28 Claims**



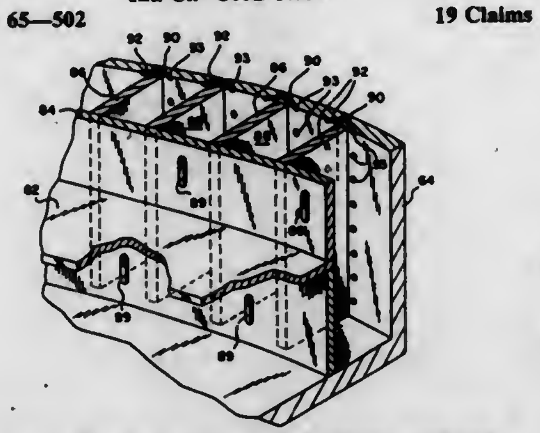
15. A method of making a fibre waveguide which method comprises preparing a fibre preform and thereafter drawing said preform into a fibre, wherein said preparation of said preform comprises:
(I) casting a tube of halide cladding glass,
(II) casting a halide core glass in the bore of said tube to produce a preform having an outer surface, and
(III) cleaning said outer surface of said preform,
wherein said cleaning comprises:
(a) immersing said preform in an aqueous etchant thereby etching said outer surface,
(b) washing said aqueous etchant from said outer surface using methanol for removal of the etchant from the outer surface, thereby terminating said etching, said removing being achieved without any water wash, and
(c) evaporating any of the methanol remaining on said outer surface from said outer surface.

5,618,327
METHOD OF MAKING AN INSULATION PRODUCT FROM IRREGULARLY-SHAPED CONJUGATE GLASS FIBERS
David P. Aschenbeck, Newark, and Clarke Berdan, II, Granville, both of Ohio, assignors to Owens-Corning Fiberglas Technology, Inc., Summit, Ill.
Continuation of Ser. No. 275,184, Jul. 14, 1994, abandoned, which is a continuation of Ser. No. 148,771, Nov. 5, 1993, abandoned. This application Apr. 17, 1996, Ser. No. 633,606
Int. Cl.[6] C03B *37/04*
U.S. Cl. 65—438 **28 Claims**



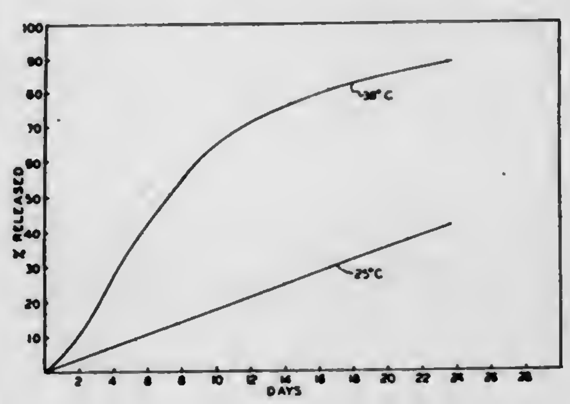
1. The method of making a glass fiber insulation product comprising feeding two distinct glass compositions in the form of two streams into a spinner, the two glass compositions having different coefficients of thermal expansion, combining glass from each of the two glass streams to form a dual glass stream, centrifuging the dual glass stream into irregularly-shaped dual-glass fibers by attenuating the fibers under substantially continuously changing conditions in which said fibers are rotated irregularly in both direction and magnitude, and collecting the glass fibers as a wool pack to form an insulation product.

5,618,328
SPINNER FOR MANUFACTURING DUAL-COMPONENT FIBERS
David C. K. Lin, Worthington; Ronald A. Houpt, Newark; Patrick M. Gavin, Newark; Richard D. Lawson, Newark, and Jay W. Hinze, Newark, all of Ohio, assignors to Owens Corning Fiberglas Technology, Inc., Summit, Ill.
Continuation of Ser. No. 236,063, May 2, 1994, abandoned, which is a continuation-in-part of Ser. No. 147,762, Nov. 5, 1993, abandoned. This application Jan. 11, 1996, Ser. No. 591,193
Int. Cl.[6] C03B *37/04*
U.S. Cl. 65—502 **19 Claims**



1. Apparatus for making dual component fibers comprising:
a) a spinner having a peripheral wall with an interior surface and an exterior surface, and further including orifices located in said peripheral wall for centrifuging dual component fibers, said spinner being divided into a series of compartments by baffles positioned interiorly of said peripheral wall;
b) equipment for supplying first and second molten thermoplastic materials to said spinner;
c) a divider for directing said first molten thermoplastic material into alternate ones of said compartments and for directing said second molten thermoplastic material into the remaining ones of said compartments; and
d) bores extending from said compartments through said peripheral wall and communicating with said orifices such that said molten thermoplastic materials flow through said bores to said orifices in said peripheral wall of said spinner, wherein pairs of adjacent ones of said bores extend from adjacent ones of said compartments such that adjacent bores of each pair are angled relative to one another to communicate with one another and with one of said orifices.

5,618,329
BIOREMEDIATION OF HYDROCARBON CONTAMINATED SOILS AND WATER
Evelyn N. Drake, Bernardsville, N.J., assignor to Exxon Research and Engineering Company, Florham Park, N.J.
Continuation of Ser. No. 125,059, Sep. 21, 1993, abandoned. This application Aug. 16, 1995, Ser. No. 515,552
Int. Cl.[6] C05G *3/00;* **C05F** *11/08*
U.S. Cl. 71—6 **3 Claims**

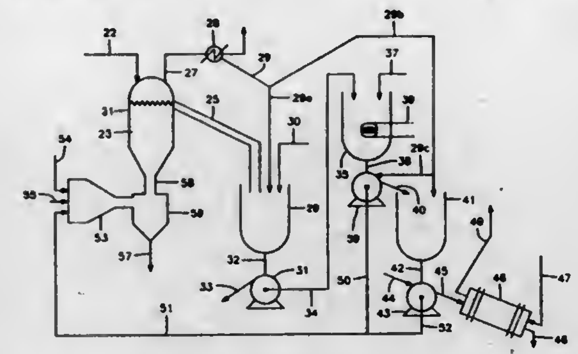


1. An improved process for enhancing bioremediation of petroleum contaminated soil and water comprising:
applying to the contaminated soil or water microbial nutrients coated with a sulfonated ionomer so as to be in a form capable of releasing the nutrients over time at a rate at 25° C. which is substantially linear, which at 38° C. is greater than at 25° C. by a factor of from about 2.5 to about 6.0, and in which less than 5% of the nutrients are released upon incubation in water at 25° C. for one day.

5,618,330
PLANT TREATMENT COMPOSITIONS AND PROCESS
Rosa I. Artozon Sylvester, 7 Oriente, Talca, Chile
Filed Dec. 20, 1995, Ser. No. 575,906
Int. Cl.[6] C05D *9/02*
U.S. Cl. 71—32 **13 Claims**

1. A composition useful for plant treatment comprising
(a) a major quantity of macronutrient comprising nitrogen, phosphorus and potassium wherein each of the nitrogen, phosphorus, calculated as P_2O_5, and potassium, calculated as K_2O, is present in a quantity of at least about 10% by weight of the macronutrients;
(b) at least about 0.1 ppm of at least one micronutrient selected from the group consisting of boron, cobalt, copper, iron, magnesium, manganese, molybdenum, sulphur, and zinc
(c) at least about 0.1 ppm of aluminum; and
(d) an effective amount of at least one chelating agent.

5,618,331
VAPOR PHASE FLUIDIZED BED SULFATION OF TITANIFEROUS MATERIALS
Jorge Miller, and Miguel Kling, both of Bogota, Colombia, assignors to Kemicraft Overseas Limited, Douglas, Isle of Man
Filed Dec. 4, 1995, Ser. No. 566,830
Int. Cl.[6] C22B *3/08;* **C01G** *23/047*
U.S. Cl. 75—743 **22 Claims**



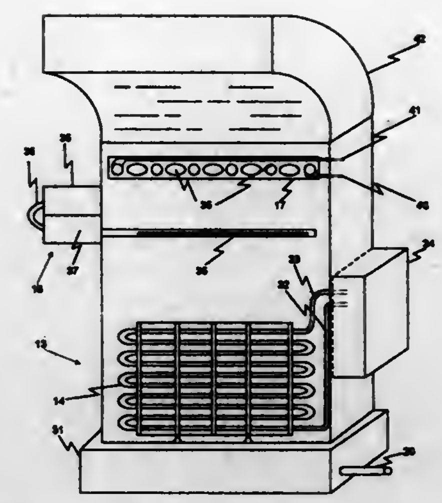
9. A non-polluting vapor-phase method for treating titanium-containing material and which comprises the following steps:
a) reacting titanium values in the titanium-containing material in vapor phase with oxygen and sulfuric acid to produce titanyl sulfate,
b) dissolving the titanyl sulfate in water to obtain an aqueous solution,
c) hydrolyzing the titanyl sulfate in the aqueous solution to produce titanium oxide hydrate and dilute sulfuric acid, and
d) recycling the dilute sulfuric acid for further reacting titanium values with oxygen and sulfuric acid to produce titanyl sulfate.

5,618,332
PROCESS FOR ENHANCING THE SELECTIVITY OF MIXED GAS SEPARATIONS
Okan M. Ekiner, and Gregory K. Fleming, both of Wilmington, Del., assignors to L'Air Liquide, S.A., Paris, France
Division of Ser. No. 246,201, May 19, 1994, Pat. No. 5,468,430. This application Jun. 5, 1995, Ser. No. 465,304
Int. Cl.[6] B01D *53/22*
U.S. Cl. 95—51 **5 Claims**

1. A process for separating a mixture of gases comprising the steps of:
(a) contacting one side of a gas separation membrane with a mixture of gases; said membrane having a single gas selectivity for each gas component of said gas mixture and a mixed gas selectivity for each gas pair in said gas mixture;
(b) one or more of the gases in said mixture selectively permeate through the membrane; and
(c) the mixed gas selectivity for a gas pair in the mixture of gases is at least 65% of the relative single gas selectivity of single gases corresponding to said gas pair in said mixture.

5,618,333
METHOD FOR VOLATILE ORGANIC COMPOUND RECYCLING
LeRoy H. Buchholz, Jr., and Loretta P. Buchholz, both of 3941 NW. 67th Pl., Gainesville, Fla. 32653
Filed Mar. 28, 1995, Ser. No. 412,478
Int. Cl.[6] B01D *47/05*
U.S. Cl. 95—237 **4 Claims**

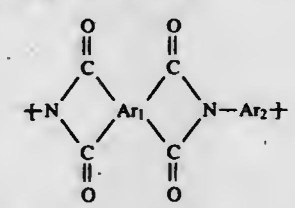
1. A method for reducing the emission of volatile organic compounds released in the course of spray-painting a workpiece in a sealed chamber, which comprises:



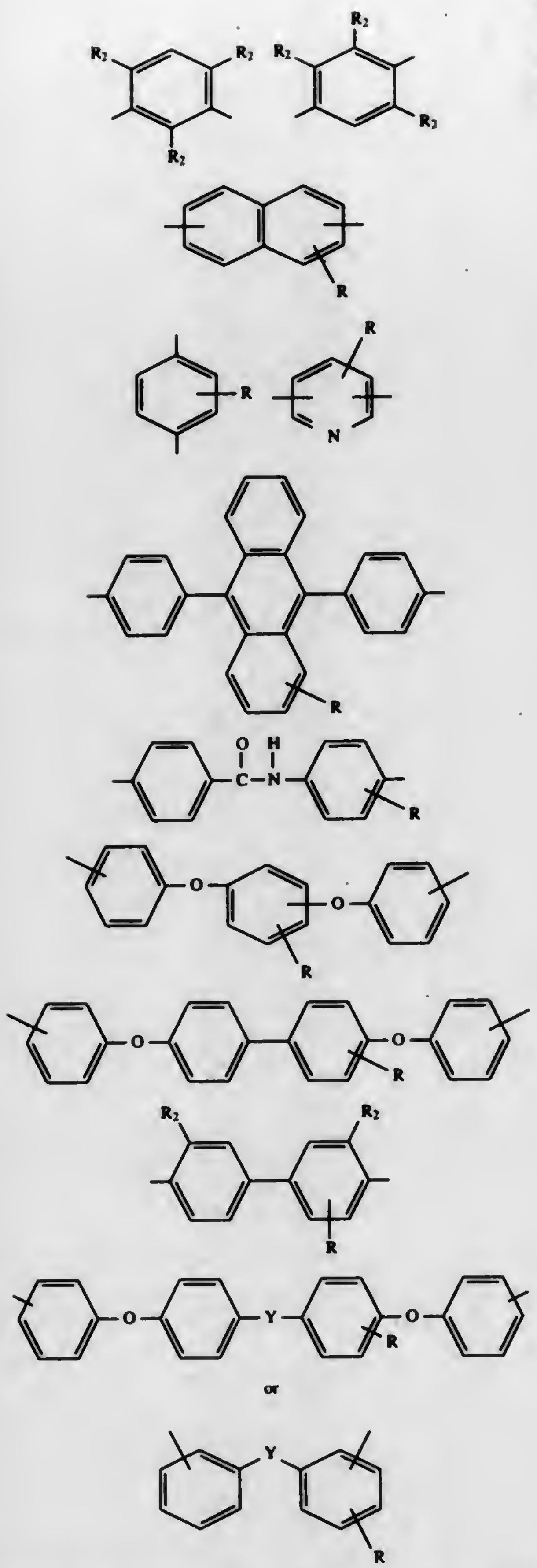
a) humidifying the air in the sealed chamber such that a constant, regulated amount of humidity is maintained within a range sufficient to provide an adequate moisture reservoir for volatile organic compounds released into the air during spray-painting of a workpiece to become dissolved or entrained with moisture in the air within the sealed chamber;
b) circulating the humidified air from the sealed chamber through a means for filtering the air by removing particulates released into the air during spray-painting of the workpiece in the sealed chamber;
c) directing the filtered air to pass over a condensing means for stripping the air of its humidity and dissolved or entrained volatile organic compounds;
d) conducting the dehumidified air back into the sealed chamber where it is rehumidified according to step (a), either by exposing the conducted air to a source of humidity en-route back to the sealed chamber, or by providing a source of humidity directly in the sealed chamber.

5,618,334
SULFONATED POLYIMIDE GAS SEPARATION MEMBRANES
Yurdagul F. Ozcayir, Nashua, N.H.; Gertrud Goetz, and Benjamin Bikson, both of Brookline, Mass., assignors to Praxair Technology, Inc., Danbury, Conn.
Filed Jun. 30, 1995, Ser. No. 497,655
Int. Cl.[6] B01D *53/22;71/64*
U.S. Cl. 96—14 **11 Claims**

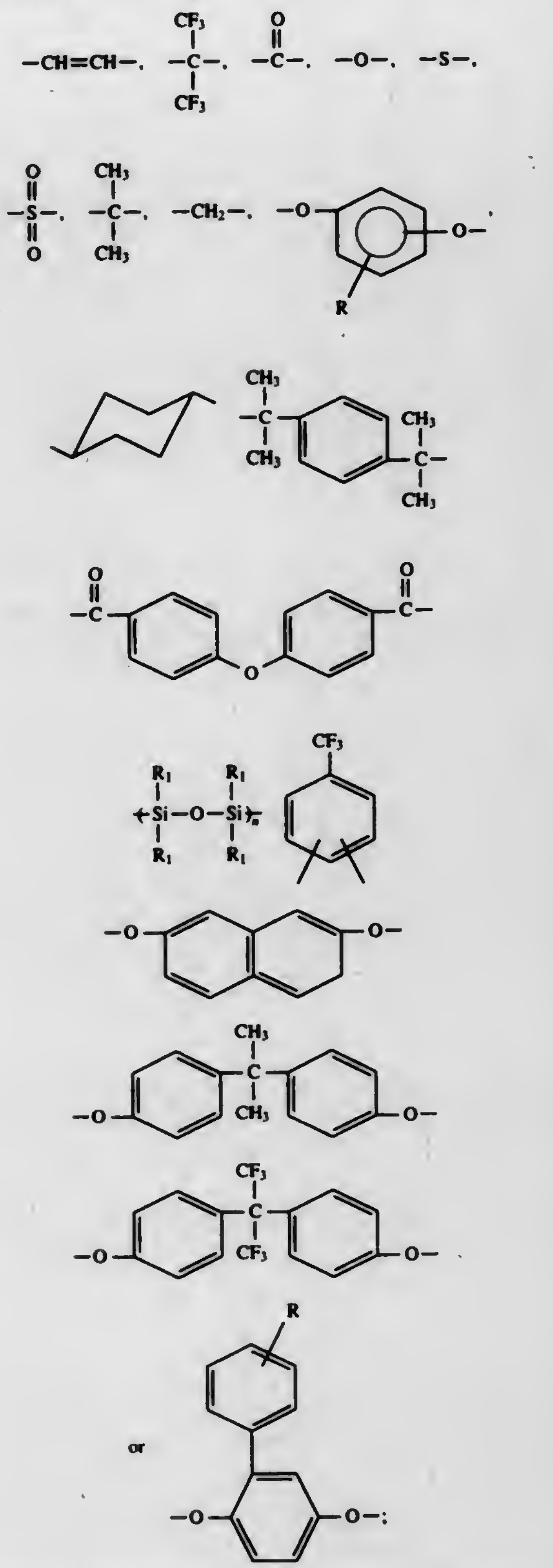
1. A gas separation membrane formed from an aromatic polyimide of the following general formula:



wherein Ar_1 and Ar_2 are organic radicals with at least 80% of the Ar_1 and Ar_2 radicals comprising aromatic radicals, and with a portion of said Ar_2 radicals in said polyimide containing sulfonic acid radicals selected from the group consisting of:



wherein R is an SO_3H, SO_3M or SO_2OR' group; R_2 is selected from the group consisting of H, CH_3, SO_3H, SO_3M, SO_2OR', CF_3, halogen or a mixture thereof; wherein at least one R_2 is a sulfonic acid radical; R' is either an alkyl radical with less than 6 carbon atoms or an aryl radical; M is at least one material selected from the group consisting of an organic base, an ammonium ion, an alkali ion, and alkaline earth element ion or a transition metal ion; Y is nothing, or

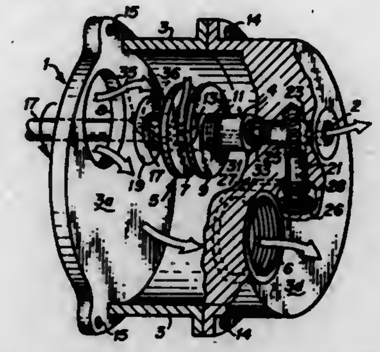


wherein R is as specified above, R_1 is an aliphatic radical; and n is 1 to 6.

5,618,335
AIR OIL SEPARATOR

Edward N. Pink, and Michael F. Johnson, both of Los Angeles County, Calif., assignors to Edelbrock Corporation, Torrance, Calif.

Filed Jul. 13, 1994, Ser. No. 274,901
Int. Cl.[6] B04B *11/06*
U.S. Cl. 96—208 **22 Claims**



1. Air oil separator apparatus, comprising in a housing defining a cavity:
oil inlet means for admitting aerated oil to said cavity;
centrifuge means for centrifugally separating air from oil in said cavity;
said centrifuge means comprising:
a rotatable shaft having an axis of rotation for cyclical rotation about said axis, a hollow interior and an end that opens into said hollow interior; and
a pair of disks, said disks being mounted to and coaxial with said rotatable shaft for cyclical rotation by said shaft about said shaft axis;
said rotatable shaft further including air passage means for communicating air external of said rotatable shaft to within said shaft interior;
air exit means for exhausting air from said shaft interior external of said housing; and
oil outlet means, said oil outlet means being positioned within said cavity to receive oil separated by said centrifuge means.

5,618,336
EXTERNAL RELEASE AGENT

Herbert Wagner, Bad Schönborn, Germany, assignor to Rhein Chemie Rheinau GmbH, Mannheim, Germany

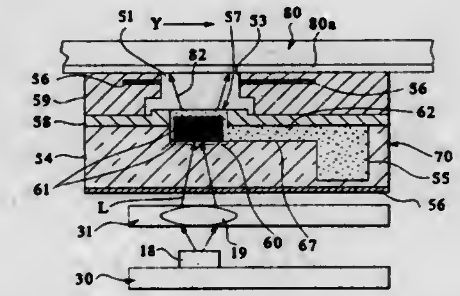
Continuation-in-part of Ser. No. 353,624, Dec. 12, 1994, abandoned. This application Sep. 13, 1995, Ser. No. 527,486
Claims priority, application Germany, Dec. 22, 1993, 43 43 818.0
Int. Cl.[6] C09K *3/00;* **B28B** *7/36*
U.S. Cl. 106—2 **1 Claim**

1. An external release agent comprising:
I. Light Pigments:
10 to 60 parts by weight of amorphous silica gel powder, optionally containing up to approximately 65% by weight of water of crystallization and having an average particle diameter of around 3 to 50 μm;
optionally, from 0.1 to 1.5 parts by weight of pyrogenic silica with an average particle diameter of around 12 nm;
optionally, from 0.2 to 2.0 parts by weight of polypropylene wax
II. Colored Pigments:
0.5 to 5.0 parts by weight of pigment-quality carbon black
III. Binders
0.3 to 3 parts by weight of fatty acid methyl tauride, Na salt; or
0.5 to 6.0 parts by weight of an aqueous polyethylene dispersion
IV. Carrier Liquid:
45 to 66 parts by weight of water;
0 to 5 parts by weight of isopropanol;
0 to 5 parts by weight of foam inhibitor;
0.05 to 0.1 parts by weight of thickener;
0.01 to 0.1 parts by weight of biocide.

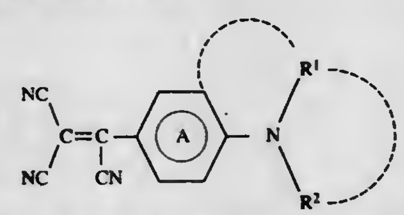
5,618,337
THERMAL TRANSFER RECORDING MATERIAL AND THERMAL TRANSFER RECORDING METHOD USING SAME

Kenji Shinozaki; Hideki Hirano; Yukichi Murata, and Mio Ishida, all of Kanagawa, Japan, assignors to Sony Corporation, and Mitsubishi Chemical Corporation, both of Tokyo, Japan

Filed Mar. 11, 1996, Ser. No. 614,136
Claims priority, application Japan, Mar. 10, 1995, 7-079908
Int. Cl.[6] C09D *11/02*
U.S. Cl. 106—22 H **14 Claims**



1. A thermal transfer recording material for use in a recording apparatus in which said thermal transfer recording material is introduced into a transfer section having a porous structure by an effect of capillarity, subjected to a state transformation such as vaporization or droplet formation by heating, and then transferred to a recording medium disposed opposed to said transfer section, comprising:
a dye having a melting point of 115° C. or lower and represented by the general formula (I):



(I)

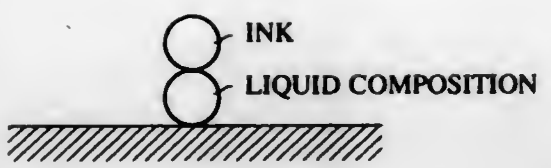
where A is a substituted or unsubstituted p-phenylene group, R^1 and R^2 are individually a hydrogen atom, a substituted or unsubstituted alkyl or alkenyl group, a cycloalkyl group or a substituted or unsubstituted phenyl group; and R^1 may constitute a heterocyclic group composed of a five- or six-member ring in combination with the p-phenylne group A and a nitrogen atom adjacent to said p-phenylene group A, or another heterocyclic group composed of a five- or six-member ring in combination with R^2 and the nitrogen atom adjacent to the p-phenylene group A.

5,618,338
LIQUID COMPOSITION, INK SET AND IMAGE-FORMING METHOD AND APPARATUS WHICH EMPLOY THE SAME

Yutaka Kurabayashi, Tokorozawa, and Katsuhiko Takahashi, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

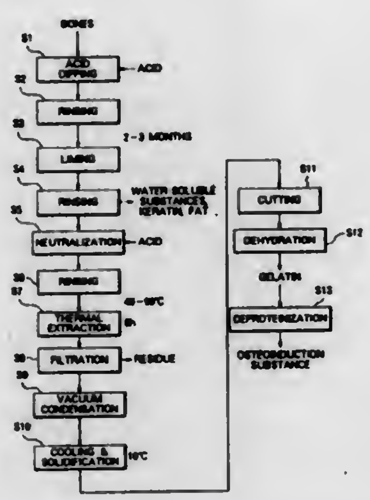
Filed Jun. 26, 1995, Ser. No. 494,982
Claims priority, application Japan, Jul. 8, 1994, 6-179765
Int. Cl.[6] C09D *11/14*
U.S. Cl. 106—26 R **25 Claims**

1. A liquid composition comprising a cationic substance and



finely ground cellulose.

5,618,339
OSTEOINDUCTION SUBSTANCE, METHOD OF MANUFACTURING THE SAME, AND BONE FILLING MATERIAL INCLUDING THE SAME
Michio Ito, Nagano, Japan, assignor to Matsumoto Dental College, Nagano, Japan
Filed Jul. 22, 1996, Ser. No. 684,712
Claims priority, application Japan, Jul. 20, 1995, 7-183999
Int. Cl.^{6} A61K *35/32;9/70*
U.S. Cl. 106—124.3 **19 Claims**



1. An osteoinduction substance which contains Mg, Si, Ca, and Na and which is prepared by the steps of subjecting animal bones to liming, neutralization, thermal extraction, condensation, and dehydration to obtain gelatin; and subjecting said gelatin to deproteinization which is carried out through a nonheat process or a low-temperature process.

5,618,340
ASPHALT-BASED COATING COMPOSITION WITH ETHER AMINE-ACID-COMPLEX SURFACTANT
James A. Krogh, Janesville, and Michael R. Sipe, Milton, both of Wis., assignors to Tomah Products, Inc., Milton, Wis.
Filed Jul. 19, 1996, Ser. No. 684,129
Int. Cl.^{6} C09D *195/00*
U.S. Cl. 106—284.06 **17 Claims**

1. In an asphalt roof-coating composition including clay and a surfactant, the improvement comprising:

about 80–95 parts by weight of a roof-coating asphalt cutback;
about 5–20 parts by weight of clay; and
an ether amine-acid-complex surfactant comprising an alkyloxypropylamine with an alkyl chain having form 8 to 20 carbon atoms and an acid present in excess of the amount required to neutralize the amine.

5,618,341
METHODS FOR UNIFORMLY DISPERSING FIBERS WITHIN STARCH-BASED COMPOSITIONS
Per J. Andersen, and Simon K. Hodson, both of Santa Barbara, Calif., assignors to E. Khashoggi Industries, Santa Barbara, Calif.
Continuation-in-part of Ser. No. 929,898, Aug. 11, 1992, abandoned, Ser. No. 353,544, Dec. 9, 1994, Ser. No. 327,524, Oct. 21, 1994, Ser. No. 288,667, Aug. 9, 1994, Ser. No. 218,971, Mar. 25, 1994, Pat. No. 5,545,450, Ser. No. 95,662, Jul. 21, 1993, Pat. No. 5,385,764, and Ser. No. 982,383, Nov. 25, 1992, abandoned, said Ser. No. 353,544, said Ser. No. 327,524, said Ser. No. 288,667, said Ser. No. 218,971, said Ser. No. 95,662, said Ser. No. 982,383, each is a continuation-in-part of Ser. No. 929,898. This application May 12, 1995, Ser. No. 439,877
Int. Cl.^{6} C09D *7/12;103/02;105/00*
U.S. Cl. 106—287.35 **54 Claims**

1. A method for dispersing fibers within a fibrous composition comprising the steps of:

(a) combining together water, fibers, and a thickening agent such that the thickening agent and water interact together to form a fluid fraction that is characterized by a yield stress and viscosity that enables the fibers to be substantially uniformly dispersed throughout the fibrous composition as the fibers and fluid fraction are mixed together, the fibers having an average length greater than about 2 mm and an average aspect ratio greater than about 25:1; and
(b) mixing together the combined thickening agent, water, and fibers in order to substantially uniformly disperse the fibers throughout the fibrous composition.

5,618,342
PIGMENT PREPARATION
Gerhard Herget, Ober Ramstadt; Otto Stahlecker, and Manfred Kieser, both of Darmstadt, Germany, assignors to Merck Patent Gesellschaft MIT Beschrankter Haftung, Darmstadt, Germany
PCT No. PCT/EP92/02683, § 371 Date Jun. 2, 1994, § 102(e) Date Jun. 2, 1994, PCT Pub. No. WO93/11199, PCT Pub. Date Jun. 10, 1993
PCT Filed Nov. 21, 1992, Ser. No. 244,461
Claims priority, application Germany, Dec. 4, 1991, 41 39 993.5
Int. Cl.^{6} C04B *14/20*
U.S. Cl. 106—416 **10 Claims**

1. A non-dusting, homogeneous pigment preparation consisting of

at least 70% by weight of one or more pearlescent pigments,
2 to 25% by weight of water,
5 to 15% by weight of a humectant, and optionally
less than 1.00% by weight of one or more preservatives.

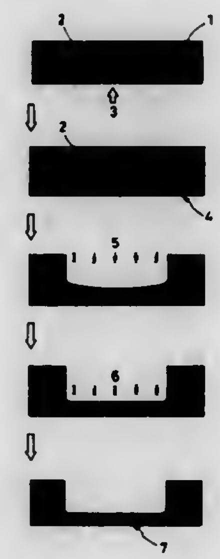
5,618,343
PIGMENT COMPOSITIONS FOR COATINGS
Shivakumar B. Hendi, Newark, and Edward E. Jaffe, Wilmington, both of Del., assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.
Filed Dec. 27, 1994, Ser. No. 364,345
Int. Cl.^{6} C08K *5/00*
U.S. Cl. 106—498 **22 Claims**

1. A coating composition comprising a flop-producing amount of an effect pigment a tinctorally-effective amount of a small-particle-size pigment and an effective flop-enhancing amount of a flop-enhancing agent which is a copper phthalocyanine, indanthrone or carbazole dioxazine compound that is substituted in a phenyl ring by one or more substituents selected from the group consisting of halogen, —SO_3M, —SO_2—NR_1R_2, C_1–C_6alkyl and —X—NR_1R_2, wherein M is hydrogen, ammonium or a metal, R_1 and R_2 are independently hydrogen, C_1–C_6alkyl or —X—NR_1R_2, and X is a C_1–C_6 alkylene, which C_1–C_6alkyl and C_1–C_6 alkylene groups are unsubstituted or further substituted by C_1–C_4alkyl.

5,618,344
CEMENT COMPOSITION
Awdhoot V. Kerkar, Columbia, Md.; Neal S. Berke, Chelmsford, Mass., and Michael P. Dallaire, Dover, N.H., assignors to W. R. Grace & Co.-Conn., New York, N.Y.
Continuation-in-part of Ser. No. 398,719, Mar. 6, 1995, abandoned. This application Nov. 6, 1995, Ser. No. 554,579
Int. Cl.^{6} C04B *24/02*
U.S. Cl. 106—823 **10 Claims**

1. An improved cement admixture which inhibits drying shrinkage while substantially maintaining air void content of a treated cement composition comprising a mixture of (a) at least one alkyl ether oxyalkylene adduct represented by the formula $RO(AO)_nH$ wherein A is a C_2–C_4 alkylene radical, O is oxygen, R is a C_1–C_7 alkyl or C_5–C_6 cycloalkyl group, and n is an integer of 1 to 5; in combination with (b) an alkylene diol represented by the formula HOBOH wherein B is selected from a C_5–C_{10} alkylene group and wherein the weight ratio component (a) to component (b) of the mixture is 1:1 to 5:1.

5,618,345
METHOD OF PRODUCING SELF-SUPPORTING THIN FILM OF SILICON SINGLE CRYSTAL
Kazuo Saitoh, Nagoya; Hiroaki Niwa, Ichinomiya; Setsuo Nakao, and Soji Miyagawa, both of Nagoya, all of Japan, assignors to Agency of Industrial Science & Technology, Ministry of International Trade & Industry, Tokyo, Japan
Filed Mar. 14, 1995, Ser. No. 403,956
Claims priority, application Japan, Mar. 18, 1994, 6-074487
Int. Cl.^{6} C30B *33/06*
U.S. Cl. 216—2 **10 Claims**

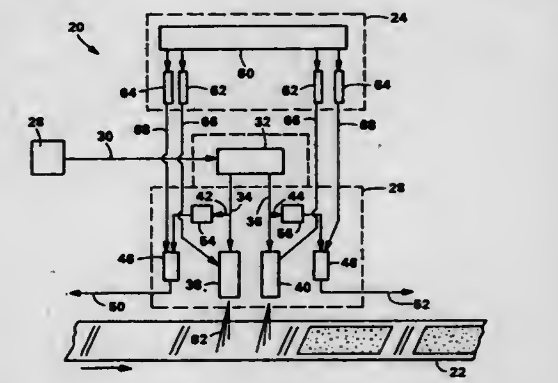


1. A method of producing a self-supporting thin film of silicon single crystal, comprising:

a) implanting boron ions in a silicon single crystal substrate from one major surface thereof to form a high impurity concentration layer having a high boron concentration in the substrate;
b) heating the silicon single crystal substrate formed with a high impurity concentration layer in an atmosphere containing oxygen at a temperature between about 950° C. to about 1,000° C. for a period of between about 30 minutes and about 2 hours, thereby avoiding diffusion of said implanted boron ions, to form an oxide film on the surface of the single crystal substrate, thereby making the high impurity concentration layer resistant to etching;
c) masking all of the oxide film surface of other than that of the center region surface opposite from that implanted with boron ions and then exposing the high impurity concentration layer by high-speed mask etching followed by selective etching; and
d) removing the oxide film.

5,618,346
Patent Not Issued For This Number

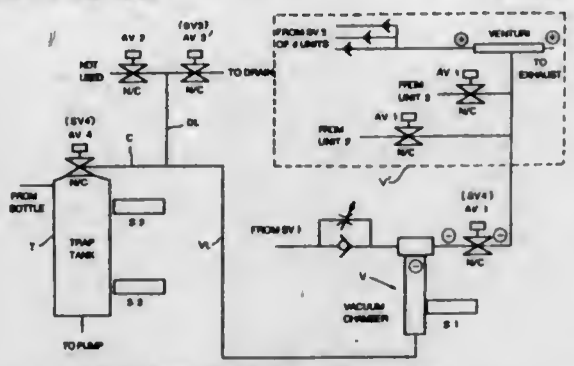
5,618,347
APPARATUS FOR SPRAYING ADHESIVE
Timothy P. Clare, Appleton; William R. Kollitz, Oshkosh, and Matthew J. Mikula, Appleton, all of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.
Filed Apr. 14, 1995, Ser. No. 422,114
Int. Cl.^{6} B05B *7/06*
U.S. Cl. 118—314 **17 Claims**



1. An apparatus for spraying an adhesive in a selected pattern on a continuously moving web, said apparatus comprising:

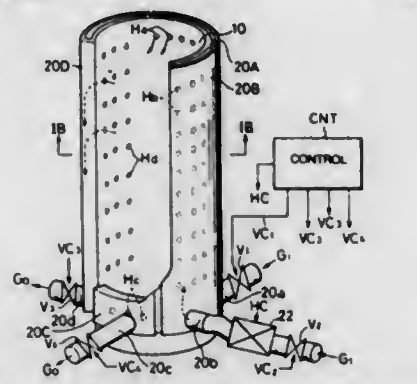
(a) a nozzle which is connected to an adhesive supply line and configured to be operated between an on position and an off position;
(b) a metering means for continuously supplying a predetermined volumetric flow of said adhesive through said adhesive supply line to said nozzle;
(c) an adhesive divert line which is connected to said adhesive supply line between said metering means and said nozzle;
(d) a valve means which is operatively connected to said adhesive divert line and which is configured to be operated in a closed position when said nozzle is operated in said on position and in an open position when said nozzle is operated in said off position for selectively diverting said volumetric flow of said adhesive from said nozzle when said nozzle is operated in said off position; and
(e) a pressure regulating means which is operatively connected to said adhesive divert line between said nozzle and said valve means for maintaining a back pressure at said nozzle when said nozzle is operated in said off position to provide a substantially instantaneous spray of said adhesive from said nozzle when said nozzle is operated from said off position to said on position to provide said selected pattern of said adhesive on said moving web.

5,618,348
AIR ELIMINATION SYSTEM
Chuong R. Tran, San Jose, Calif., assignor to Dainippon Screen Mfg. Co., Ltd., Japan
Filed Jan. 27, 1995, Ser. No. 379,886
Int. Cl.^{6} B05C 11/10
U.S. Cl. 118—693 **13 Claims**



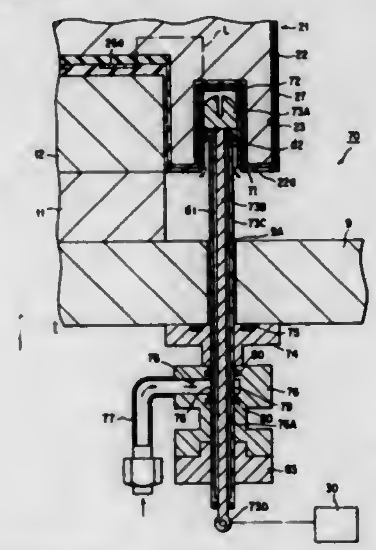
1. A photoresist dispensing system comprising:
a trap tank for receiving resist from a resist supply, and for dispensing said resist;
a sensor associated with said trap tank which is operative to detect an excess of gas in said trap tank and to issue a sensor signal in response thereto;
a vacuum generator connected to said trap tank by a vacuum line, said vacuum generator being responsive to said sensor signal; and in response thereto, generating a vacuum on said vacuum line to draw resist from said resist supply so as to fill said trap tank and said vacuum line and thereby eliminate said excess gas from said trap tank;
said vacuum generator comprising:
a Venturi arranged for generating a vacuum on said vacuum line in response to an air flow through said Venturi;
an exhaust valve connected to an outlet on a downstream side of said Venturi for controlling said air flow; and
a second vacuum generator downstream from said exhaust valve for drawing air through said exhaust valve and thereby creating said air flow through said Venturi to generate said vacuum on said vacuum line.

5,618,349
THERMAL TREATMENT WITH ENHANCED INTRA-WAFER, INTRA-AND INTER-BATCH UNIFORMITY
Tomohiro Yuuki, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan
Filed Jul. 22, 1994, Ser. No. 279,744
Claims priority, application Japan, Jul. 24, 1993, 5-202701
Int. Cl.^{6} C23C 16/00
U.S. Cl. 118—715 **40 Claims**



1. A furnace for manufacturing a semiconductor device, the furnace comprising:
(a) an inner tube for receiving semiconductor wafers, the inner tube including a wall having a plurality of holes therein; and
(b) an outer tube having a plurality of outer tube partitions disposed outside of and connected to said wall of the inner tube to jointly define independent gas passages with said wall, the gas passages communicating with the inside of the inner tube through associated holes of the plurality of holes, each of the gas passages serving as one of a gas inlet and a gas outlet.

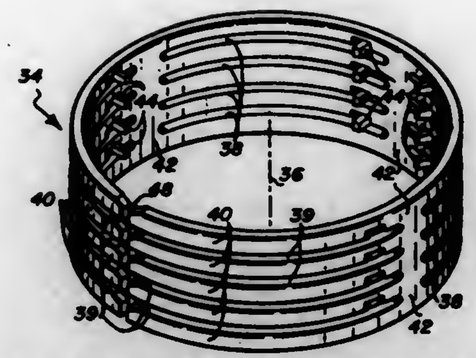
5,618,350
PROCESSING APPARATUS
Kenji Ishikawa, Sagamihara, and Junichi Arami, Tokyo, both of Japan, assignors to Tokyo Electron Limited, Tokyo, Japan
Filed Mar. 21, 1996, Ser. No. 619,245
Claims priority, application Japan, Mar. 23, 1995, 7-091672
Int. Cl.^{6} C23C 16/00
U.S. Cl. 118—725 **8 Claims**



1. A processing apparatus comprising:
a processing chamber for processing an object in a vacuum;
a mount member provided in the processing chamber and having an object placing surface;
an electric power receiving unit for receiving an electric power upon the processing of the object;
a receptacle terminal having a recess and contacts provided in the recess and electrically connected to the electric power receiving unit;
a plug terminal capable of being forced into the recess of the receptacle terminal and electrically connected to the contact when being forced into the recess of the receptacle terminal; and
inert gas supplying means for supplying an inert gas to a region near a mutually contacting area of the contact of the receptacle terminal and plug terminal.

5,618,351
THERMAL PROCESSING APPARATUS AND PROCESS
Terry A. Koble, Jr., Lake Forest, Calif.; Anthony Dip, Austin, Tex.; Erik H. Engdahl, Anaheim, Calif.; Ian R. Oliver, San Diego, Calif., and Christopher T. Ratliff, Corona del Mar, Calif., assignors to Silicon Valley Group, Inc., San Jose, Calif.
Continuation-in-part of Ser. No. 399,108, Mar. 3, 1995. This application Nov. 28, 1995, Ser. No. 563,875
Int. Cl.^{6} C23C 16/00
U.S. Cl. 118—728 **20 Claims**

1. A thermal treatment boat comprising a cylinder having a central axis and a plurality of sets of one or more band slots having opposed upper and lower surfaces in planes perpendicular to said central axis and spaced at predetermined locations along said central axis, at least one slot in each plane extending around at least 180° and less than of the full circumference of said cylinder, pairs of adjacent band slots defining an annular band therebetween, the height of each slot being from about 3.8 to 12.7 mm, each of the bands having a height, $Height_{Band}$, in mm, according to the equation:



$$Height_{Band} = \frac{ColumnHeight - \Sigma BandSlotHeight}{NumberBands}$$

wherein $Height_{Band}$ always ≧ wafer thickness; ColumnHeight is the total height of the cylinder, mm; BandSlotHeight is the height of the slot, mm; and NumberBands is the total number of bands in the treatment boat.

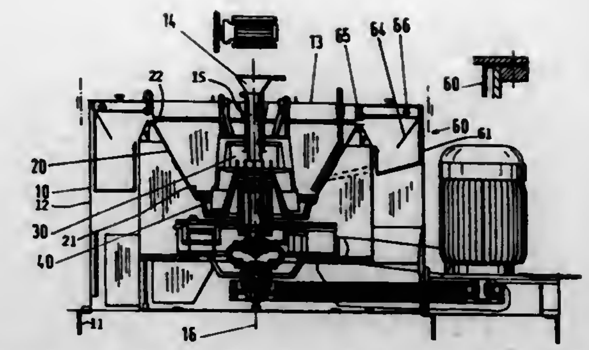
18. A process for heat treating multiple wafers positioned in a common vertical axis and positioned in a mutually parallel orientation in a heating zone surrounded by a heater emitting radiant heat, the improvement comprising shielding the outer portions of each wafer from radiant heat emitted by the heater with a annular heat band positioned between the outer edge of each wafer and the heater, each annular heat band being one of a plurality of heat bands formed in a cylinder having a central axis and a plurality of sets of one or more band slots having opposed upper and lower surfaces in planes perpendicular to said central axis and spaced at predetermined locations along the central axis, at least one band slot in each set extending around at least 180° and less than the full circumference of said cylinder, adjacent band slots defining an annular band therebetween, the height of each slot being from about 3.8 to 12.7 mm, each of the bands having a height, $Height_{Band}$, in mm, according to the equation:

$$Height_{Band} = \frac{ColumnHeight - \Sigma BandSlotHeight}{NumberBands}$$

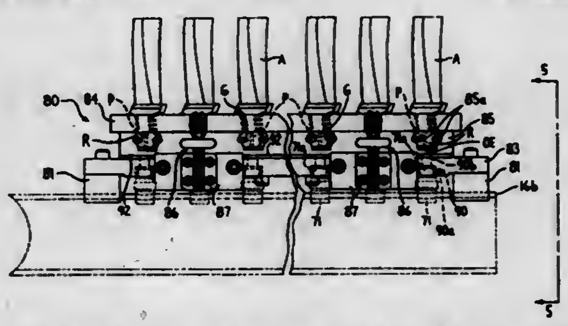
wherein $Height_{Band}$ is always ≧ wafer thickness; ColumnHeight is the total height of the cylinder, mm; BandSlotHeight is the height of the slot, mm; and NumberBands is the total number of bands in the treatment boat.

5,618,352
CONTINUOUSLY OPERATING CENTRIFUGE FOR SPINNING SUGAR MASSECUITE
Ralf-Martin Ebeling, and Helmut Schaper, both of Brunswick, Germany, assignors to Braunschweigische Maschinenbauanstalt AG, Brunswick, Germany
Filed Jul. 11, 1995, Ser. No. 500,581
Claims priority, application Germany, Jul. 15, 1994, 44 25 063.0
Int. Cl.^{6} B04B 7/02;11/06
U.S. Cl. 127—19 **21 Claims**

1. A continuously operable centrifuge for spinning sugar massecuite that is convertible to operate in a selected one of a dissolving mode and a magmatizing mode, comprising a perforated basket which widens conically, is adapted to rotate about a vertical axis and has a throwing-off edge from which sugar particles can be spun off outwardly, and a further processing device in which said sugar particles can be collected and further processed, wherein said further processing device comprises a collecting channel with at least one discharge nozzle arranged at a bottom of said channel, and a removable overflow nozzle that is arranged at said discharge nozzle in said dissolving mode.



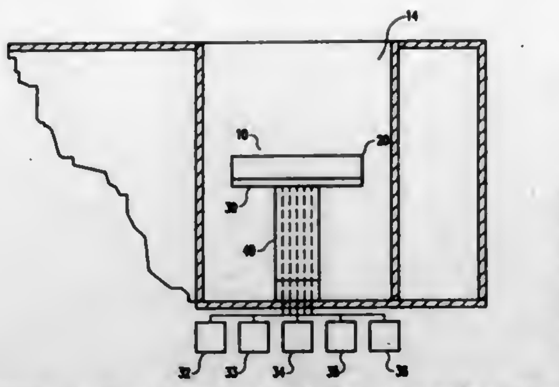
5,618,353
CLEANING, METHOD FOR CLEANING INTERNAL AIRFOIL COOLING PASSAGES
Jeffrey D. Irvine, Whitehall; Jeffery S. Smith, Muskegon, and Patrick L. Conroy, Montague, all of Mich., assignors to Howmet Corporation, Greenwich, Conn.
Division of Ser. No. 173,578, Dec. 23, 1993, Pat. No. 5,507,306. This application May 31, 1995, Ser. No. 455,343
Int. Cl.^{6} B08B 9/00;3/08
U.S. Cl. 134—22.17 **14 Claims**



1. Method for removing deposits from internal passages of a plurality of gas turbine engine-run airfoil components, comprising:
fixturing a plurality of said engine-run components on a cleaning fluid manifold with the internal passage of each component having a gas turbine engine-run deposit therein and with said internal passage communicated to a respective cleaning fluid spray nozzle on said cleaning fluid manifold,
pumping a heated caustic cleaning fluid to the manifold for flow through each nozzle and discharge to the internal passage of each component for flow through said internal passage for a time to remove said deposit therefrom, and
discharging the heated cleaning fluid from said internal passage of each said component.

5,618,354
APPARATUS AND METHOD FOR CARRIER BACKING FILM RECONDITIONING
Michael F. Lofaro, Milton, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Division of Ser. No. 382,724, Feb. 2, 1995, Pat. No. 5,558,111. This application May 3, 1996, Ser. No. 642,830
Int. Cl.^{6} B08B 11/02
U.S. Cl. 134—25.4 **5 Claims**

1. A method of reconditioning a carrier backing film that is attached to a wafer carrier, following a wafer unload cycle, the method comprising the steps of:
applying a spray of a cleaning solution to the carrier backing film through a perforated surface plate so as to rinse slurry



deposits from the carrier backing film, said surface plate having a flat perforated material on its surface;

extending the surface plate to make sealed contact with the wafer carrier, whereby the flat perforated material on the surface plate and the carrier backing film are in contact;

initiating a vacuum condition which presses the carrier backing film, thereby redistributing its membrane and any water content uniformly throughout, and drawing out slurry residuals and excessive water content from within the carrier backing film; and

retracting the surface plate, thereby separating the carrier backing film from the surface plate so as to provide an expansion of the carrier backing film as the material draws in surrounding air to break the vacuum condition.

5,618,355

HIGH-STRENGTH STEEL SHEET SUITABLE FOR DEEP DRAWING AND PROCESS FOR PRODUCING THE SAME

Kazuo Koyama; Matsuo Usuda; Manabu Takahashi, all of Futtsu; Yasuharu Sakuma, Kimitsu; Shunji Hiwatashi, and Kaoru Kawasaki, both of Futtsu, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

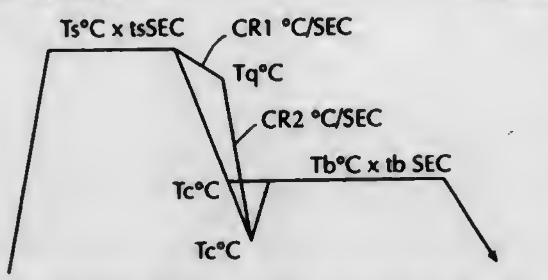
PCT No. PCT/JP95/00832, § 371 Date Dec. 12, 1995, § 102(e) Date Dec. 12, 1995, PCT Pub. No. WO95/29268, PCT Pub. Date Nov. 2, 1995

PCT Filed Apr. 26, 1995, Ser. No. 556,962

Claims priority, application Japan, Apr. 26, 1994, 6-088950

Int. Cl.[6] C21D *8/04*; C22C *38/02*;*38/06*

U.S. Cl. 148—320 **11 Claims**



1. A high-strength steel sheet suitable for deep drawing, characterized by comprising 0.04 to 0.25 mass % of C and 0.3 to 3.0 mass % in total of at least one of Si and Al with the balance consisting of Fe and unavoidable impurities, said steel sheet having a composite structure comprising ferrite as a main phase (a phase having the highest volume fraction), not less than 3 vol. % of austenite, and bainite and martensite as unavoidable phases;

said steel having multiple phases having a ratio of a volume fraction of austenite Vp (vol. %) (which is a volume fraction of austenite remaining when plane strain tensile deformation (strain ratio=(minimum principal strain within plane)/(maximum principal strain within plane)=0) is applied until a equivalent plastic strain of 1.15 times Eu (logarithmic strain of uniform elongation in the case of uniaxial tension) is imparted) to a volume fraction of austenite Vs (vol. %) (which is a volume fraction of austenite remaining when shrinkage flange deformation (strain ratio=−4 to −1) is applied until a equivalent plastic strain of 1.15 Eu is imparted), Vp/Vs, of not more than 0.8; and

said steel having multiple phases satisfying a requirement represented by the following formula

$$200<Vg\{300(2750Cg+600)/(HfVf+HbVb+HmVm)-1\}<990$$

wherein Vg represents the volume fraction of austenite before working (vol. %); Cg represents the content of C in the austenite (mass %); Vf represents the volume fraction of ferrite before working; Hf represents the microvickers hardness of the ferrite; Vb represents the volume fraction of bainite before working (vol. %); Hb represents the hardness of the bainite; Vb represents the volume fraction of martensite before working (vol. %); and Hm represents the hardness of the martensite.

5,618,356

METHOD OF FABRICATING ZIRCALOY TUBING HAVING HIGH RESISTANCE TO CRACK PROPAGATION

Ronald B. Adamson, Fremont, Calif., and Gerald A. Potts, Wilmington, N.C., assignors to General Electric Company, Wilmington, N.C.

Continuation-in-part of Ser. No. 52,791, Apr. 23, 1993, Pat. No. 5,437,747, and a continuation-in-part of Ser. No. 52,793, Apr. 23, 1993, Pat. No. 5,519,748. This application Jun. 12, 1995, Ser. No. 489,597

Int. Cl.[6] C22F *1/18*

U.S. Cl. 148—519 **24 Claims**

[illegible]	FABRICATION PROCESS							
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
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[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

20. A method of forming a barrier containing tube said method comprising the steps of:

(a) beta quenching a zirconium alloy billet;

(b) performing a coarsening anneal on the billet at between about 650° C. and 800° C. for between about 1 and 100 hours;

(c) converting the billet into a zirconium alloy tube;

(d) coextruding the zirconium alloy tube with a zirconium metal tube to form a barrier containing tube;

(e) conducting a cold work step;

(f) selectively heat treating an outer region of the barrier containing tube by first heating the outer region to the alpha plus beta region while cooling an inner region of the barrier containing tube and then rapidly quenching the outer region.

5,618,357

ALUMINUM-BASED SOLDER MATERIAL

Peter Knepper, Ganderkesee, and Olaf Scheffler, Bremen, both of Germany, assignors to Daimler-Benz Aerospace Airbus GmbH, Hamburg, Germany

Filed Jun. 22, 1995, Ser. No. 493,672

Claims priority, application Germany, Jun. 22, 1994, 44 21 732.3

Int. Cl.[6] C22C *21/00*; B23K *35/28*

U.S. Cl. 148—528 **20 Claims**

15. A method of hard soldering two aluminum-based components using a solder composition consisting of an aluminum-based

alloy containing aluminum, magnesium, silicon, 10 wt. % to 50 wt. % of germanium, and about 0.1 wt. % to about 3 wt. % of indium, said method comprising:

a) positioning said components proximate each other at a joint area thereof;

b) applying said solder composition to said components at said joint area;

c) heating at least said joint area of said components and said solder composition to a temperature in the range of 424° C. to about 600° C.; and

d) cooling said components and said solder composition to room temperature.

5,618,358

ALUMINUM ALLOY COMPOSITION AND METHODS OF MANUFACTURE

Thomas Davisson, 1489 Radcliff La., Aurora, Ill. 60504; Sadashiv Nadkarni, 85 Kendall Rd., Lexington, Mass. 02173, and Douglas Reesor, 232 Highland Ct., Terre Haute, Ind. 47802

Filed Mar. 1, 1995, Ser. No. 397,604

Int. Cl.[6] C22F *1/04*

U.S. Cl. 148—549 **24 Claims**

9. A method of manufacturing a sheet of aluminum based alloy comprising:

continuously casting an aluminum based alloy consisting essentially of by weight at least 0.04% and than 0.7% iron, at least 0.01% and less than 0.3% manganese, at least 0.1% and less than 0.25% copper, less than 0.1% silicon, up to 0.1% titanium and the balance aluminum and incidental impurities,

cooling the alloy,

cold rolling the alloy to form a sheet of aluminum based alloy having a desired final gauge, said sheet being substantially free of manganese precipitates, and

optionally annealing the sheet of aluminum based alloy after said cold rolling is complete.

5,618,359

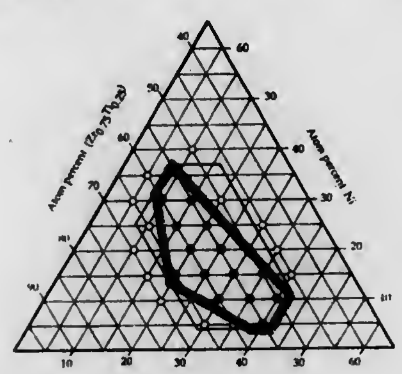
METALLIC GLASS ALLOYS OF ZR, TI, CU AND NI

Xianghong Lin; Atakan Peker, and William L. Johnson, all of Pasadena, Calif., assignors to California Institute of Technology, Pasadena, Calif.

Continuation-in-part of Ser. No. 385,279, Feb. 8, 1995, abandoned. This application Dec. 8, 1995, Ser. No. 569,276

Int. Cl.[6] C22C *45/00*

U.S. Cl. 148—561 **24 Claims**



18. A method for making a metallic glass having at least 50% amorphous phase with a thickness of at least 0.5 mm in its smallest dimension comprising the steps of:

formulating an alloy having the formula

$$(ETM_{1-x}Ti_x)_aCu_b(Ni_{1-y}Co_y)_c$$

where ETM is selected from the group consisting of Zr and Hf, x and y are atomic fractions, and a, b, and c are atomic percentages, wherein

x is in the range of from 0.1 to 0.3,

y·c is in the range of from 0 to 18,

a is in the range of from 47 to 67,

b is in the range of from 8 to 42, and

c is in the range of from 4 to 37 under the following constraints:

(i) when a is in the range of from 60 to 67 and c is in the range of from 13 to 32, b is given by: $b \leq 9+(12/7)\cdot(a-60)$;

(ii) when a is in the range of from 60 to 67 and c is in the range of from 4 to 13, b is given by: $b \leq 20+(19/10)\cdot(67-a)$; and

(iii) when a is in the range of from 47 to 55 and c is in the range of from 11 to 37, b is given by: $b \geq 8+(34/8)\cdot(55-a)$; and

cooling the alloy sufficiently rapidly for remaining as a metallic glass at least 0.5 mm thick.

5,618,360

PNEUMATIC TIRE INCLUDING PITCHES

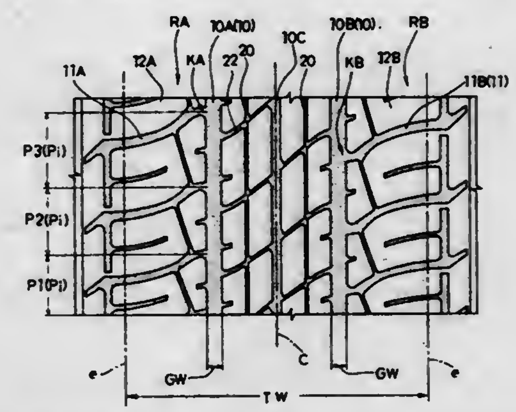
Hiroaki Sakuno, Kobe, Japan, assignor to Sumitomo Rubber Industries, Ltd., Hyogo-ken, Japan

Filed Dec. 2, 1994, Ser. No. 353,354

Claims priority, application Japan, Dec. 22, 1993, 5-346668

Int. Cl.[6] B60C *113/00*

U.S. Cl. 152—209 R **4 Claims**



1. A pneumatic tire comprising a tread portion, said tread portion provided with

a main groove extending continuously in the circumferential direction of the tire and having a depth that is substantially constant along its length; and

circumferentially spaced lateral grooves each extending axially from the main groove on one side of the main groove, wherein each lateral groove intersects the main groove such that pitches between the intersections of the lateral grooves with the main groove are defined,

the pitches including at least two different pitches,

the width of the main groove at the groove top being substantially constant along its length, but

the sectional area of the main groove being changed along its length such that

$$\{S(i+1)-S(i)\}/S(i)$$

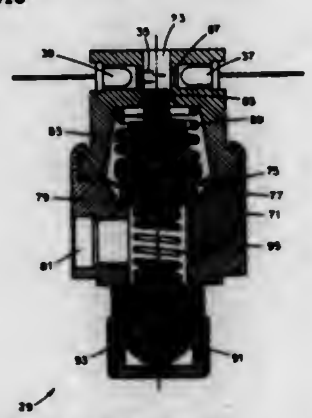
is 0.5 to 1.5 times

$$\{P(i+1)-P(i)\}/P(i)$$

wherein

S(i) is the sectional area of the main groove in one pitch P(i) and S(i+1) is the sectional area of the main groove in the next longer pitch P(i+1).

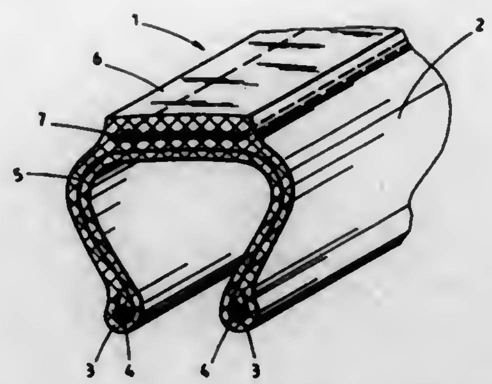
5,618,361
PRESSURE SENSOR AND APPARATUS CONTROLLING AND MAINTAINING AIR-PRESSURE IN VEHICLE TIRES
Rafael A. Colussi, and Néstor J. Vénica, both of Guadalupe Norte, Argentina, assignors to Col-Ven S.A., Provincia de Santa Fe, Argentina
Division of Ser. No. 47,240, Apr. 14, 1993, Pat. No. 5,465,772, which is a continuation-in-part of Ser. No. 380,620, Jul. 14, 1989, abandoned. This application Jun. 5, 1995, Ser. No. 462,431
Claims priority, application Brazil, Jul. 14, 1988, 8803606
Int. Cl.^{6} B60C *23/00*
U.S. Cl. 152—416 **5 Claims**



1. A pressure sensing unit comprising:
a housing having a longitudinal bore, said bore including a seat therein;
an orifice for receiving air at a pressure to be sensed into said bore, and a cross-bore traversing said bore and longitudinally spaced from said orifice;
piston means contained in said longitudinal bore between said orifice and said cross-bore, said piston means generally resting on said seat;
plunger means in said longitudinal bore and supporting shutter means projecting away from said piston means and towards said cross-bore;
a diaphragm sealing said bore between said orifice and said cross-bore, said diaphragm separating said piston means and said shutter means;
a light-emitting diode and a phototransistor housed in said cross-bore on opposite sides of each other across the longitudinal bore so as to define a light passage therebetween; and
elastic means urging said plunger means away from the light passage to enable light from the light-emitting diode to impinge on the phototransistor unless there is sufficient pressure at said orifice acting on said piston means to push the plunger means so that the shutter means crosses into the cross-bore to block the light passage.

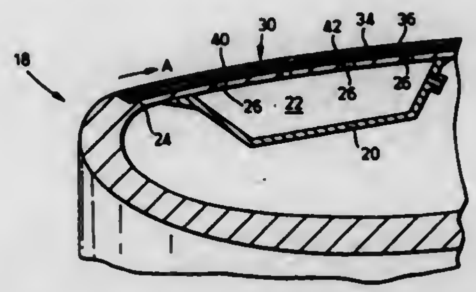
5,618,362
RADIAL PLY TIRE WITH BELT-SHAPED REINFORCING INSERT
Jonny Janus, Düsseldorf, and Wolfgang Markewitz, Ratingen, both of Germany, assignors to Tyre Consult Venlo B. V., Niederlande, Germany
Filed Dec. 28, 1994, Ser. No. 365,569
Claims priority, application Germany, Jan. 25, 1994, 44 02 068.6
Int. Cl.^{6} B60C *9/08;9/18*
U.S. Cl. 152—530 **13 Claims**

1. A radial ply tire for a vehicle wheel comprising a torus-shaped body of elastomeric material having a tread portion and a reinforcing insert arranged in said body, said reinforcing insert including in a region radially inwards of said tread portion a reinforcing strip adapted to stretch, compress and be pre-loaded in a circumferential direction of said tire, and adapted to be restored under the influence of external forces, wherein said reinforcing strip includes a length



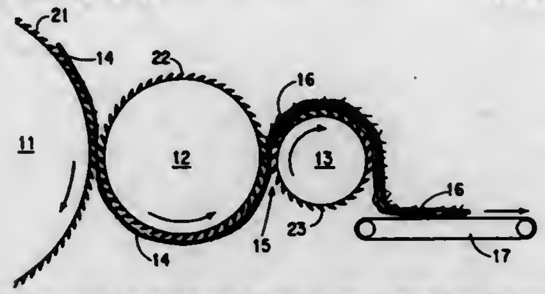
extending in said circumferential direction, a width extending between opposed side edges of said strip and a thickness extending in a radial direction of said tire, said thickness being substantially less than said length or width, said reinforcing strip also including apertures extending substantially transversely with respect to said circumferential direction, each said aperture extending only partially through said strip in said transverse direction and said apertures being arranged in rows and being offset with respect to one another in successive said rows, said apertures being cut-out portions of said strip, said cut-out portions forming web-shaped portions therebetween, said cut-out portions and web-shaped portions having similar dimensions in said circumferential direction.

5,618,363
METHOD OF MANUFACTURING A POROUS MATERIAL
Andrew J. Mullender, Nottingham, and Leonard J. Rodgers, Derby, both of England, assignors to Rolls-Royce plc, London, England
Filed Oct. 5, 1995, Ser. No. 539,606
Int. Cl.^{6} B32B *31/00;* **B64C** *21/02;21/06*
U.S. Cl. 156—62.2 **8 Claims**



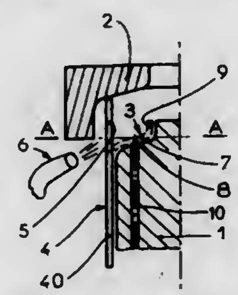
1. A method of manufacturing a porous material comprising the steps of producing a layer of woven fibres by interweaving carbon fibres of a certain orientation with thermoplastic fibres of a different orientation, superimposing a second layer of carbon fibres on the first layer of woven fibres, the carbon fibres in the second layer having the same orientation as the thermoplastic fibres in the first layer, bonding the first and second layers of fibres together, applying a ceramic slurry to the second layer and allowing it to penetrate through the second layer and part way through the first layer to a controlled depth, drying the ceramic slurry so that it forms a mask, applying a thermoplastic powder directly to the first layer of fibres and allowing it to penetrate until it meets the mask, sintering the thermoplastic powder and chemically removing the mask and the thermoplastic fibres in the first layer.

5,618,364
PROCESS FOR LOFTY BATTINGS
Wo K. Kwok, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of Ser. No. 542,975, Oct. 13, 1995, abandoned. This application Jan. 3, 1996, Ser. No. 582,267
Int. Cl.^{6} D01G *15/02*
U.S. Cl. 156—62.8 **6 Claims**



1. A process for preparing a bonded batt, comprising forming a feed blend of mechanically-crimped staple fibers intimately mixed with bicomponent staple fibers having a helical configuration, said bicomponent staple fibers being in amount by weight about 5 to about 30% of the blend, preparing a continuous batt from said feed blend by carding the feed blend to provide a web of parallelized fibers, passing the resulting carded web to a randomizer to provide a web of randomized fibers, many of which randomized fibers have a significant component that is vertical in relation to a web that is horizontal, cross-lapping one or more of said webs of randomized fibers to provide a batt of randomized fibers, many of which randomized fibers have a significant component that is vertical in relation to a batt that is horizontal, said batt having an upper face and a lower face, advancing said batt through a spray zone, whereby at least one face of the batt is sprayed with resin, in total amount about 5 to about 30% of the weight of the sprayed batt, including the resin, heating the sprayed batt in an oven to cure the resin, and cooling the resulting batt.

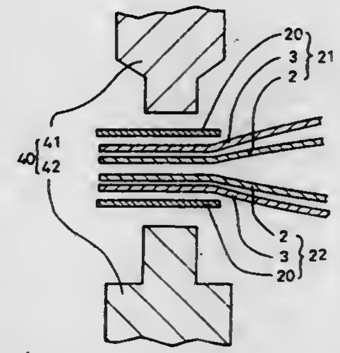
5,618,365
PROCESS FOR MANUFACTURING A TUBE WITH A WALL CONTAINING MORE THAN 60 OF PLASTICS MATERIAL AND HAVING A SKIRT AND A NECKED HEAD AND A CORRESPONDING TUBE
Michel Rebeyrolle, Sainte-Ménéhould; Jacques Benquet, Talant, and Emmanuel Bricout, Sainte-Ménéhould, all of France, assignors to Cebal S.A., Clichy, France
Filed Jan. 4, 1994, Ser. No. 177,330
Claims priority, application France, Jan. 19, 1993, 93 01065
Int. Cl.^{6} B32B *31/20*
U.S. Cl. 156—73.1 **27 Claims**



1. A process for manufacturing a necked collapsible tube (3) having an end portion defined by a wall containing more than 60% by volume of a plastic material and comprising a substantially cylindrical tubular blank (4) formed of a multilayer laminate having at least one intermediate layer and inner and outer layers, at least the inside and outside surfaces of the inner and outer layers of the tubular blank being of polymeric plastic material, said tube (3) having at least a skirt (40) and a necked head (7), said process comprising a shaping operation where an end portion (5) of the tubular blank (4) which is free of folds is necked by bringing closer together an inner tool (1) and an outer tool (2), said shaping operation producing crumpled folds (13) of said end portion (5), and wherein:

a) prior to the shaping operation only the inside and outside surfaces of the polymeric plastic material of the inner and outer layers of the end portion (5) are brought to a viscous molten state by heating; and
b) in said shaping operation necking said heated end portion (5) to form crumpled folds (13) in said end portion (5) by bringing closer together inner and outer tools (1 and 2) wherein said end portion is crushed to form crumpled folds absent a separate folding step, said crumpled folds (13) being formed only by movement of the inner and outer tools toward each other wherein said heated end portion (5) is crushed between said tools (1 and 2), and wherein the folds (13) are welded to each other, thereby producing said necked head (7) and thereby also forming a shoulder (8) between the necked head (7) and the skirt (40).

5,618,366
WELDING METHOD FOR DISPOSABLE DIAPERS
Makoto Suekane, Kawanoe, Japan, assignor to Uni-Charm Corporation, Ehime-ken, Japan
Division of Ser. No. 242,975, May 16, 1994. This application Mar. 31, 1995, Ser. No. 414,570
Claims priority, application Japan, May 19, 1993, 5-117345
Int. Cl.^{6} A61F *13/15;* **A41B** *9/12;* **B32B** *31/10;31/20*
U.S. Cl. 156—73.1 **8 Claims**



1. A welding method for a disposable diaper generally comprising the steps of assembling a liquid-permeable topsheet, a liquid-impermeable backsheet and a liquid-absorbent core sandwiched between these sheets into a configuration of a disposable diaper, putting wing-like portions of front and rear bodies outwardly extending from laterally opposite side edges of said core one upon another and welding said wing-like portions put one upon another under heat and pressure together to form opposite side portions at waist levels of said front and rear bodies, said welding method further comprising the steps of:
assembling topsheet members associated with said topsheet so as to form extensions thereof with said backsheet made of material having a melting point lower than a melting point of said topsheet members to form said wing-like portions, putting said wing-like portions one upon another with said topsheet members disposed face to face inside said diaper, placing covering sheets having a melting point higher than the melting point of said backsheet on an outer surface of said backsheet, and welding said wing-like portions along laterally opposite side edges thereof together with said covering sheets.

5,618,367

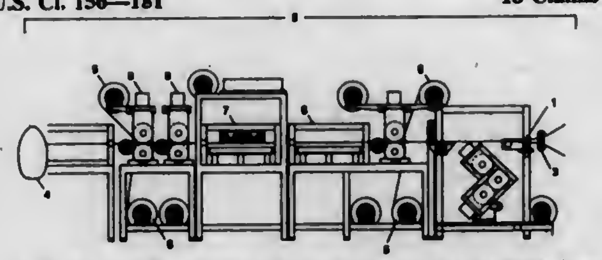
DRY POWDER PROCESS FOR PREPARING UNI-TAPE PREPREG FROM POLYMER POWDER COATED FILAMENTARY TOWPREGS

Steven P. Wilkinson, Coopersburg, Pa.; Norman J. Johnston, Newport News, and Joseph M. Marchello, Hampton, both of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Apr. 10, 1995, Ser. No. 425,005

Int. Cl.⁶ B32B *31/16;31/00*

U.S. Cl. 156—181 **18 Claims**



1. A dry powder process for preparing uni-tape prepreg from polymer powder coated filamentary towpregs, the process comprising the steps of:

(a) providing a plurality of polymer powder coated filamentary towpregs;

(b) collimating the polymer powder coated filamentary towpregs so that each polymer powder coated filamentary towpreg is parallel and each polymer powder coated filamentary towpreg has an upperside and an underside;

(c) applying a material to the uppersides of the polymer powder coated filamentary towpregs and the undersides of the polymer powder coated filamentary towpregs to form a sandwich;

(d) heating the sandwich to a temperature wherein the polymer flows and intimately contacts the filaments;

(e) applying pressure repeatedly perpendicularly to the sandwich with a longitudinal oscillating action wherein the filaments move apart and the polymer wets the filaments forming a uni-tape prepreg; and

(f) cooling the uni-tape prepreg.

5,618,368

Patent Not Issued For This Number

5,618,369

PROCESS FOR THE PRODUCTION OF MATTE TRANSFER METALLIZATION FILM

Herbert Peiffer, Mainz, and Ursula Murschall, Nierstein, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Division of Ser. No. 229,218, Apr. 18, 1994, Pat. No. 5,478,643. This application Sep. 27, 1995, Ser. No. 534,815

Claims priority, application Germany, Apr. 17, 1993, 43 12 543.3

Int. Cl.⁶ B29C *47/06;* **B32B** *27/18;31/30*

U.S. Cl. 156—233 **5 Claims**

4. A process for the metallization of sheet-like support material, comprising the steps of: depositing a metal layer onto a multilayer polypropylene film having at least one matte surface which comprises at least one base layer containing polypropylene and a migrating additive, or a mixture of migrating additives, and at least one outer layer which comprises a mixture or a blend of two components I and II, wherein

component I is selected from the group consisting of

a propylene homopolymer,

a copolymer of ethylene and propylene,

a copolymer of ethylene and butylene,

a copolymer of propylene and butylene,

a copolymer of ethylene and another α-olefin having 5 to 10 carbon atoms,

a copolymer of propylene and another α-olefin having 5 to 10 carbon atoms,

a terpolymer of ethylene and propylene and butylene,

a terpolymer of ethylene and propylene and another α-olefin having 5 to 10 carbon atoms,

mixtures or blends thereof, and

a blend of two or more of said homopolymers, copolymers and terpolymers mixed with one or more of said homopolymers, copolymers and terpolymers, and

component II selected from the group consisting of an HDPE and a blend of two components A and B, where

blend component A is essentially an HDPE and

blend component B is selected from the group consisting of

a propylene homopolymer,

a copolymer of ethylene and propylene,

a copolymer of ethylene and butylene,

a copolymer of propylene and butylene,

a copolymer of ethylene and another α-olefin having 5 to 10 carbon atoms,

a copolymer of propylene and another α-olefin having 5 to 10 carbon atoms,

a terpolymer of ethylene and propylene and butylene, a terpolymer of ethylene and propylene and another α-olefin having 5 to 10 carbon atoms, and

mixtures or blends thereof and transferring the metal layer from the film to the sheet-like support.

5,618,370

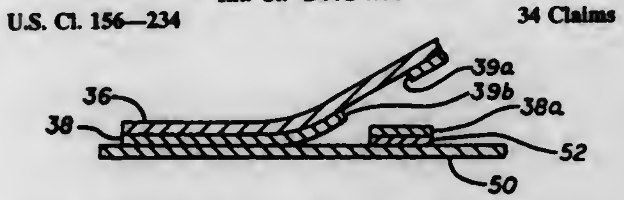
COLOR APPLICATOR FOR LASER PRINTERS AND PHOTOCOPIERS

Ghanshyam H. Popat, Alta Loma, Calif., and Michael E. Hannington, Dyer, Ind., assignors to Avery Dennison Corporation, Pasadena, Calif.

Continuation-in-part of Ser. No. 249,021, May 25, 1994, abandoned. This application Mar. 24, 1995, Ser. No. 410,226

Int. Cl.⁶ B44C *1/16*

U.S. Cl. 156—234 **34 Claims**



14. A method of selectively applying color to a toner image formed on a first substrate and transferring an image corresponding to the toner image onto a second toner-free substrate, the method comprising the steps of:

providing an applicator having

a backing member,

a color coating formed on the backing member, and

a pressure and heat sensitive adhesive associated with the backing member which is sufficiently tacky to removably adhere to the first substrate and to toner upon application of the applicator to the first substrate at room temperature and adhere to the substrate and to the toner image as the substrate passes through one of a laser printer and a photocopier without the aid of additional mounting structure, which will remain at a removable level of tackiness for a substantial period prior to an application of heat, which will bond to the toner image, but not to the substrate, in response to an application of heat to form the color layer on the toner image, and which will be sufficiently tacky after the application of heat to removably adhere to the second substrate;

placing the applicator on the toner image on the first substrate;

applying a sufficient amount of heat to the applicator to cause the pressure and heat sensitive adhesive to bond to the toner image;

removing the applicator from the first substrate; and

transferring the applicator to the second substrate.

5,618,371

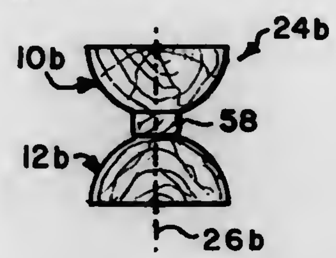
METHOD OF PRODUCING LAMINATED WOOD BEAMS

Peter Sing, P.O. Box 11532, Winslow, Wash. 98110

Filed Jun. 21, 1995, Ser. No. 493,011

Int. Cl.⁶ B27M *1/08*

U.S. Cl. 156—264 **19 Claims**



1. A method of producing a laminated space-containing wood beam from two elongate equal-length log portions and at least one pre-cut lumber plank of equal length to, and narrower in width than the widest dimension of the two log portions, all cut from at least one log, the log portions and the at least one plank all having parallel planar lower and upper surfaces, which comprises the steps of:

applying adhesive selectively to to-be-joined surfaces of the two log portions and the at least one plank;

superposing and aligning the two log portions, with the at least one pre-cut plank in centrally aligned position therebetween;

putting the to-be-joined surfaces, having adhesive thereon, together so that the two log portions and the at least one plank are assembled in a vertical symmetrically stacked pile;

causing the adhesive to set, thereby forming an intermediate assembly, the two elongate log portions being so configured and dimensioned that the intermediate assembly is wider at the top and bottom and narrower at the center portion and is symmetrical in cross-section;

making longitudinal cuts through the intermediate assembly along an axis perpendicular to the parallel planar surfaces of the two log portions to form outer sections, the outer sections thus formed being substantially equal-sized, asymmetric mirror-images of each other;

positioning the outer sections cut from the intermediate assembly into spaced relationship wherein the outer edges of the two log portions of the intermediate assembly now face each other; and

adhesively attaching at least one bracing spacer means for maintaining the outer sections in the spaced relationship position to complete the laminated space-containing wood beam structure.

5,618,372

PROCESS FOR THE PRODUCTION OF A FIRMLY ADHERING, MOISTURE-PROOF COATING OF PLASTIC ON A SUBSTRATE

Albert Erdrich, Bad Nauheim; Sonja Fremdt, Weinbach, and Steffen Oppawsky, Bad Homburg, all of Germany, assignors to Heraeus Kulzer GmbH, Hanau, Germany

Filed Nov. 15, 1995, Ser. No. 559,742

Claims priority, application Germany, Nov. 18, 1994, 44 41 124.3

Int. Cl.⁶ B05D *1/38;3/02*

U.S. Cl. 156—310 **20 Claims**

1. Process for the production of an adhering, moisture-proof coating of plastic on a substrate of metal, ceramic, glass, or polymer comprising:

applying a first preparation to the substrate and allowing said first preparation to at least partially dry;

applying a second preparation to the partially dried first preparation and allowing said second preparation to at least partially dry; and

solidifying the coating by heating said coating to a temperature in the range of 150°-400° C.;

the first preparation containing:

5–25 wt. % of an aqueous copolymer suspension, the copolymer consisting of a mixture of 40–80 wt. % of acrylonitrile and 60-20 wt. % of butyl acrylate;

5–20 wt. % of water;

35–75 wt. % of a polar solvent; and

3–15 wt. % of a (meth)acrylate which is nonvolatile at temperatures of up to 250° C., with the provision that the percentages add up to 100%; and

the second preparation containing:

5–20 wt. % of a 40–90 wt. % solution of an isocyanate group-free polyurethane heat curing resin in solvent naphtha having a boiling point of about 100 degrees C.;

65–85 wt. % of solvent; and

3–20 wt. % of a (meth)acrylate which is nonvolatile at temperatures of up to 250° C., with the provision that the percentages add up no 100%.

5,618,373

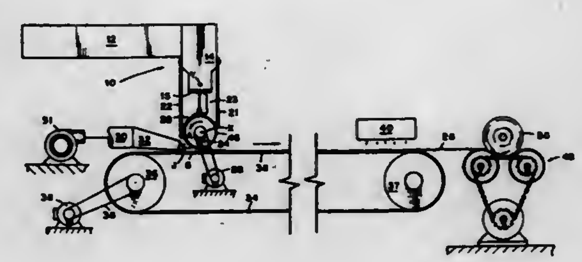
APPARATUS FOR FORMING EXTRUDED FILAMENT MAT MATERIAL

Stephen J. Redwine, and David K. Oaks, both of Knoxville, Tenn., assignors to Plastic Floor Mats Inc., Clinton, Tenn.

Division of Ser. No. 143,273, Oct. 26, 1993, Pat. No. 5,456,876. This application Apr. 13, 1995, Ser. No. 421,804

Int. Cl.⁶ D04H *3/16;* **B29C** *47/34;47/88;47/92*

U.S. Cl. 156—361 **8 Claims**



1. An apparatus for the manufacture of a porous, resilient mat comprising:

a thermoplastic polymer extrusion means for extruding a plurality of closely spaced filaments of viscous polymer through a short vertical free-fall distance;

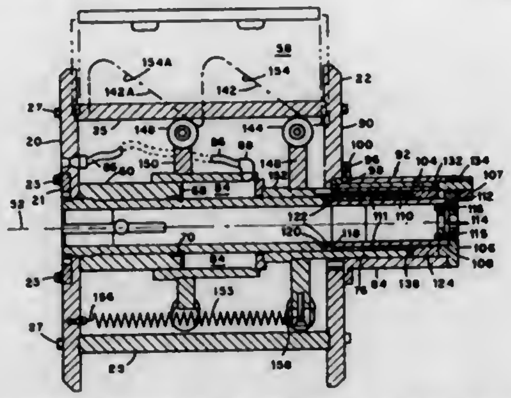
a rotatively driven casting cylinder disposed beneath said extrusion means to receive said plurality of filaments as a landing surface along a first elongated arc of cylindrical surface elements within about 30° of a top dead center rotational position of said cylinder;

cylinder rotational speed-control means to coordinate said cylinder surface speed to the extrusion velocity of said polymer filaments whereby a looping and lapping accumulation of said filaments on said rotating cylinder surface develops a mat continuum of predetermined thickness, said mat continuum being supported by said cylindrical surface to about the lower dead center position of cylinder rotation;

endless belt traveling surface support means for receiving said mat continuum upon separation from said rotating cylinder at about said lower dead center position; and,

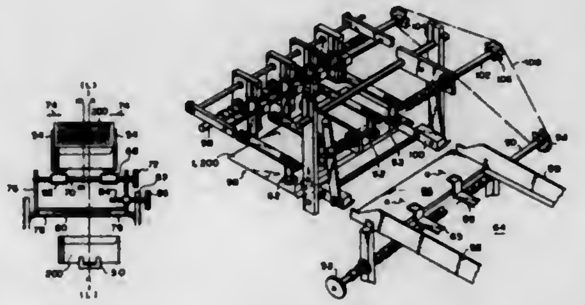
air jet discharge means for directing a jet of air between said mat continuum and said endless belt traveling surface support means along a direction generally parallel with said endless belt traveling surface support means.

5,618,374
BELT AND TREAD DRUM FOR VEHICLE TIRE MAKING MACHINE
Mark S. Byerley, Greenback, Tenn., assignor to WYKO, Inc., Greenback, Tenn.
Filed Feb. 10, 1994, Ser. No. 195,920
Int. Cl.^{6} B29D *30/24*
U.S. Cl. 156—418 **11 Claims**



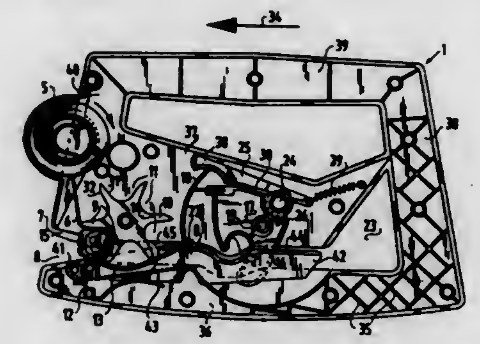
1. Apparatus substantially in the form of a drum having an adjustable outer cylindrical circumference for use in the forming of the belt and tread package of a vehicle tire comprising
shaft means disposed centrally of said apparatus and defining a longitudinal centerline of said apparatus, said shaft means including a central bore in one end thereof which ls adapted to provide for the attachment of said drum to a drive shaft of a tire making machine by reason of said shaft means being received within said central bore,
a plurality of radially positionable cam elements disposed in radialy spaced apart location about said shaft means, each of said cam elements having first and second opposite end portions, and at least one substantially flat cam surface with is disposed radially inwardly of said cam element and facing toward said central shaft,
first end plate means secured to said shaft means at one end of said shaft means, said first end plate means providing support for said first ends of said plurality of radially positionable cam elements,
second end plate means anchored with respect to said shaft means at a location along the length of said shaft means whereby said second end plate means is disposed in fixed spaced apart relationship with said first end plate means, said second end plate means supporting said second ends of said plurality of radially positionable cam elements,
cylinder means disposed fully internally of said drum, concentrically of, in longitudinal moveable relationship with, and extending along said shaft means, said cylinder means defining a fluid-tight chamber internally of said drum between said shaft means and said cylinder means, one end of said cylinder means adapted to contact a stop which is associated with said shaft means for limiting the movement of said cylinder means in one direction along said shaft means,
a plurality of cam follower means secured to said cylinder means in position to engage the cam surfaces of said cam elements and urge said cam elements radially outward upon the movement of said cylinder in a direction along the longitudinal axis of said shaft means which increases the volume of said fluid-tight chamber toward its maximum volume,
stop means associated with said second end plate means and one end of said shaft means and being disposed in the path of movement of said cylinder means to effect a halt to the movement of said cylinder means when said cylinder means contacts said stop means as a result of the movement of said cylinder means in response to expansion of the volume of said fluid-tight chamber, means for urging said cam elements toward a most inwardly radial position with respect to said central shaft means,
means associated with said cylinder means for urging said cylinder means toward a position with respect to said shaft means whereby said fluid-tight chamber is of maximum volume and said cam followers are urged into engagement with respective ones of said at least one cam surfaces of said cam elements to position said cam elements radially outwardly of said shaft means,
arcuate plate segment means secured to said cam elements at a location radially outward of respective ones of said cam elements, each of said plate segment means being of a geometry which defines a portion of an outer cylindrical circumference of said apparatus, said plurality of said plate segments collectively defining the outer circumferential cylindrical surface of said apparatus.

5,618,375
ENVELOPE PROCESSING UNIT
Norio Suzuki; Atsushi Satake, and Kohki Sato, all of Tokyo, Japan, assignors to Juki Corporation, Tokyo, Japan
PCT No. PCT/JP92/01468, § 371 Date May 4, 1995, § 102(e) Date May 4, 1995, PCT Pub. No. WO94/11206, PCT Pub. Date May 26, 1994
PCT Filed Nov. 11, 1992, Ser. No. 432,194
Int. Cl.^{6} B43M *5/04*
U.S. Cl. 156—442.3 **7 Claims**



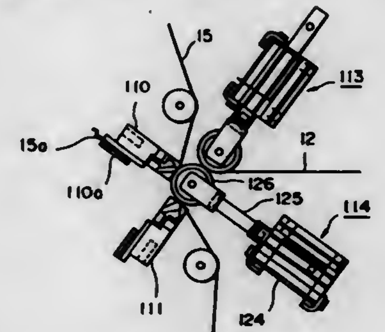
1. An enclosing and sealing device for taking out envelopes one by one from an envelope guide (54) of an envelope hopper portion (52) receiving therein envelopes (1, 200), with each envelope having a flap and being supplied to grippers (60) mounted on an intermittently driven envelope conveying chain (58), said envelope (1, 200) being conveyed by movement of the chain (58) with the envelope being retained by the grippers (60), the flap portion of the envelope being opened at a predetermined station (S2), then the envelope (1, 200) being conveyed to a first station (S3) to provide an envelope having an opened portion, the envelope (1, 200) being opened by opening means (62), an enclosure (66) conveyed through another route (64) being enclosed into the envelope, the envelope (1, 200) enclosing the enclosure (66) being conveyed to a second station (S4) and, thereafter, the envelope (1, 200) being ejected in a direction perpendicular to the movement of the chain 58 and the route (64), and the envelope is sealed; in which
there are provided in said another route (64) a pair of enclosure side guides (88), and enclosure side guide width adjusting shaft (90) for adjusting the width of the enclosure side guides, and adjusting knob (92) for rotatingly adjusting the shaft (90),
a position of the opening means (62) for opening the opening portion of the envelope (1, 200) is adjustable by an envelope opening means width adjusting shaft (98),
said shafts (90, 98) are formed to have left and right hand screw-threads of a same leading amount, and sprockets (94, 104) having a same pitch are provide on one end each of the shafts, and
sprockets (94, 104) are connected together through a chain (108) whereby rotation of one of the sprockets causes rotation of the other of the sprockets to adjust the machine for varying width envelopes.

5,618,376
GIRDING DEVICE
Leonardus F. M. van der Storm, Zandvoort, Netherlands, assignor to Household Innovations International B.V., Netherlands
PCT No. PCT/NL93/00190, § 371 Date Mar. 17, 1995, § 102(e) Date Mar. 17, 1995, PCT Pub. No. WO94/06687, PCT Pub. Date Mar. 31, 1994
PCT Filed Sep. 17, 1993, Ser. No. 403,705
Claims priority, application Netherlands, Sep. 18, 1992, 9201621
Int. Cl.^{6} B65B *51/00*
U.S. Cl. 156—468 **11 Claims**



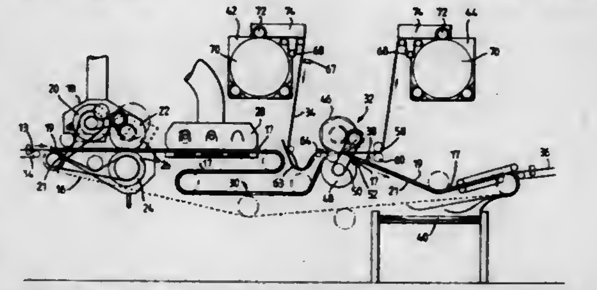
1. Device for girding an article with a strip of adhesive tape, whereof ends can adhere to one another, said device comprising:
a housing with a cavity for accommodating a supply roll of adhesive tape, said housing including
means for guiding the tape,
means for carrying an article at least along and against the adhesive side of the adhesive tape, and
cutting means actuable by a through-fed article for severing the tape after the article has passed over said cutting means;
a star wheel rotatable with light friction having a number of spokes bounding identical, substantially radial recesses, disposed at mutually equal angular distances;
two mutually registered slits having an open side, said slits being present in a front wall and a rear wall respectively of the housing and which said walls together bound a channel wherethrough an article for girding is moved from the open side,
wherein the adhesive tape is guided over the top part of the star wheel with the adhesive side facing outward;
wherein the star wheel is formed and positioned relative to the slits such that an article for girding engages onto the star wheel in a recess thereof adheringly carrying with the article the adhesive tape, the opening of which recess is situated in the region of the slits, whereby the star wheel is set into rotation so that in the recess the article is girded with the adhesive tape with the progressive rotation of the star wheel; and
wherein the cutting means are placed downstream in relation to the star wheel and comprise a tilt piece with an actuating part movable pivotally about a pivot axis toward and away from the channel, which said tilt piece is urged by a spring means to a peak position wherein the cutting means is located at a distance from the channel and the actuating part is located in a region of the channel for actuating of the tilt piece by an article carried through the channel to a cutting position for severing the tape wherewith the article is girded;
said device further comprising a movable positioning arm arranged hingedly on the tilt piece which, in the position wherein the cutting means severs the tape, engages with a free end thereof and into a recess in the star wheel, whereby this star wheel is positioned such that another recess is situated in the region of the channel and is ready to receive an article for girding;
wherein, when the tilt piece is moved out of the peak position to the cutting position thereof, the arm is carried to a positioning position in a recess of the star wheel by a stop present on the tilt piece; and
wherein the spring means comprises a draw spring connected at one side to the housing and on the other side to the positioning arm in a zone located on a side of the positioning arm remote from the free end.

5,618,377
FILM SPLICER
Yutaka Kaneko, Tokyo, and Junichi Satoyoshi, Kanagawa, both of Japan, assignors to Tetra Laval Holdings & Finance, S.A., Japan
PCT No. PCT/JP93/01927, § 371 Date Jun. 20, 1995, § 102(e) Date Jun. 20, 1995, PCT Pub. No. WO94/14656, PCT Pub. Date Jul. 7, 1994
PCT Filed Dec. 28, 1993, Ser. No. 481,340
Claims priority, application Japan, Dec. 28, 1992, 4-349051
Int. Cl.^{6} B65H *21/00*
U.S. Cl. 156—504 **2 Claims**



1. A film splicer in which two rolls of films are alternately set, and a portion of the first film near its trailing end delivered or unwound from one of the rolls of films is connected with a portion of the second film of the other roll of film near its leading end, said film splicer comprising
(a) a pair of rods disposed advanceably and retreatably and mounted to form a preset angle therebetween,
(b) a pair of heater-receiving rollers each rotatably supported on a corresponding one of said rods for alternately transporting the first and second films, and
(c) a pair of sealing and cutting heaters each disposed in an opposed relation to corresponding one of said heater-receiving rollers and each including a heater and a cutter,
(d) each said heater-receiving roller being adapted to clamp both the films between the heater-receiving roller itself and said opposed sealing and cutting heater, when said rod is advanced.

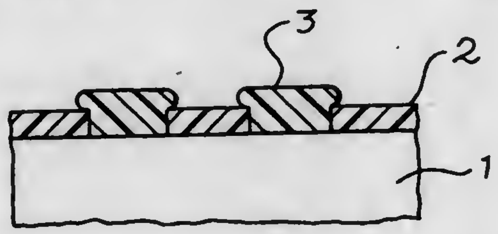
5,618,378
APPARATUS FOR APPLYING IMAGES, PARTICULARLY SECURITY IMAGES TO BANKNOTES
Michal J. Cahill, Coventry, England, assignor to Molins PLC, London, England
Filed Feb. 5, 1991, Ser. No. 650,597
Claims priority, application United Kingdom, Feb. 5, 1990, 9002519; Apr. 20, 1990, 9008928; Nov. 13, 1990, 9024631
Int. Cl.^{6} B32B *31/04*
U.S. Cl. 156—552 **28 Claims**



1. Apparatus for applying a series of images to a moving stock, comprising: means for conveying a carrier web, said web carrying

transferable images; means for conveying a stock to which the images are to be applied; means for advancing the stock at a controlled speed; means for advancing the web at a variable speed by alternately accelerating and decelerating the web in successive cycles; and means for transferring the images to predetermined positions of the stock; said web advancing means including means for moving the web at the speed of the stock while images are being transferred and means for moving the web at a lower speed at other times so as to reduce net travel of the web between successive transferring steps, said moving means including means for reversing motion of the web, wherein said reversing means is arranged to move the web in each cycle through a distance corresponding to that advanced during acceleration to and deceleration from the speed of the stock, whereby the net distance travelled by the web in each cycle is substantially equal to the repeat length of the image; and wherein the web advancing means is arranged to withdraw the web from a reservoir in which, during advancement and reversal, the web is maintained under controlled tension by pneumatic means.

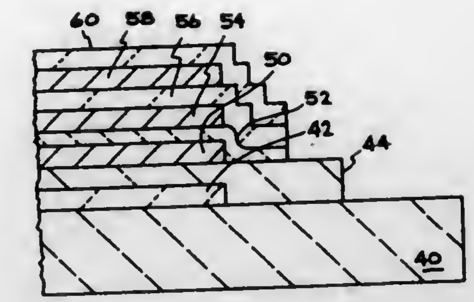
5,618,379
SELECTIVE DEPOSITION PROCESS
Michael D. Armacost, Winooski; Steven A. Grundon, Jericho; David L. Harmon, Essex; Son V. Nguyen, Williston, and John F. Rembetski, Burlington, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 1, 1991, Ser. No. 678,475
Int. Cl.⁶ H01L *21/208*
U.S. Cl. 438—595 **17 Claims**



1. A process for selectively depositing a conformal polymer coating on a substrate, comprising:
forming a patterned film on said substrate, so as to expose selected areas of said substrate, said film being formed by treating said substrate with a compound having strong electron donor characteristics; and
exposing said patterned film and said substrate to the vapor of a monomer under such conditions as to condense said monomer to form a conformal polymer coating on said selected areas not covered by said patterned film, said film inhibiting substantial deposition of said coating thereon.

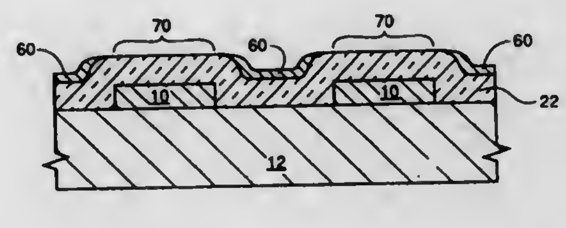
5,618,380
WAFER EDGE SEALING
Daniel D. Siems, Boerne; Judy U. Galloway, Fair Oaks, and Clayton Lantz, San Antonio, all of Tex., assignors to VLSI Technology, Inc., San Jose, Calif.
Filed Dec. 18, 1995, Ser. No. 574,069
Int. Cl.⁶ H01L *21/00*
U.S. Cl. 438—14 **20 Claims**

1. A method for reducing semiconductor wafer edge-related defects comprising the steps of:
calibrating multiple process units such that said multiple process units are equally referenced with respect to an edge of a semiconductor wafer;
utilizing said calibrated multiple process units to precisely control respective termination distances of deposited substrate layers with respect to said edge of said semiconductor wafer; and



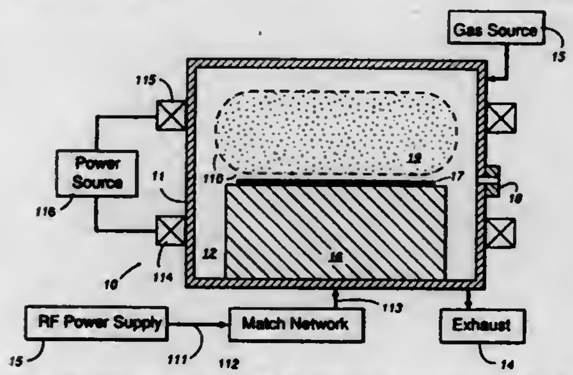
selectively stacking said deposited substrate layers such that semiconductor wafer edge-related defects are prevented.

5,618,381
MULTIPLE STEP METHOD OF CHEMICAL-MECHANICAL POLISHING WHICH MINIMIZES DISHING
Trung T. Doan, and Chris C. Yu, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.
Continuation of Ser. No. 866,378, Apr. 9, 1992, abandoned, which is a continuation-in-part of Ser. No. 824,980, Jan. 24, 1992, Pat. No. 5,244,534. This application Jan. 12, 1993, Ser. No. 3,920
Int. Cl.⁶ H01L *21/306*
U.S. Cl. 438—633 **11 Claims**



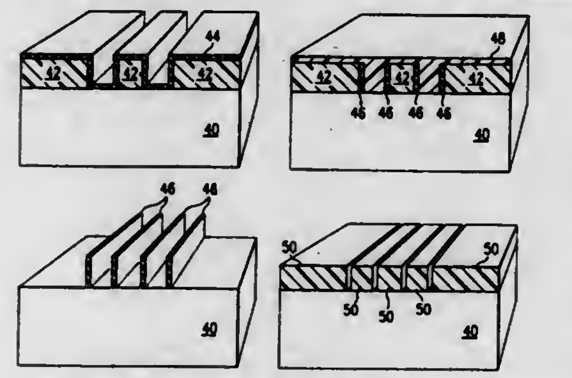
1. A semiconductor processing method of minimizing chemical-mechanical polishing dishing in the formation of a planar outer surface having an electrically conductive area adjacent an insulating dielectric area on a semiconductor wafer, the method comprising the following steps:
providing a trough in a dielectric layer and thereby defining a non-planar wafer topography;
providing a conformal blanketing layer of a conductive material over the dielectric layer and within the trough;
providing a chemical-mechanical polishing protective layer over the conformal layer of conductive material, the protective layer being of different composition than the conformal conductive layer; and
chemical-mechanical polishing the protective layer and conformal conductive layer in at least two chemical-mechanical polishing steps using first and second respective chemical-mechanical polishing slurries, the first chemical-mechanical polishing step and slurry removing outermost portions of the protective layer from said troughs in a manner which is substantially selective to the underlying conformal conductive layer to outwardly expose conformal conductive layer material in high topographical areas, the second chemical-mechanical polishing step and slurry removing the conformal conductive layer material at a faster rate than the protective layer material, the protective layer upon outward exposure of conformal conductive layer material in high topographical areas restricting material removal from low topographical areas during such second chemical-mechanical polishing step and thereby minimizing dishing of the conductive material within the trough.

5,618,382
HIGH-FREQUENCY SEMICONDUCTOR WAFER PROCESSING APPARATUS AND METHOD
Donald M. Mintz, Sunnyvale; Hiroji Hanawa, Santa Clara; Sasson Somekh; Dan Maydan, both of Los Altos Hills, and Kenneth S. Collins, San Jose, all of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.
Continuation of Ser. No. 774,127, Oct. 11, 1991, Pat. No. 5,223,457, which is a continuation of Ser. No. 416,750, Oct. 3, 1989, abandoned. This application Jun. 25, 1993, Ser. No. 83,750
Int. Cl.⁶ H05H *1/00*
U.S. Cl. 216—64 **7 Claims**



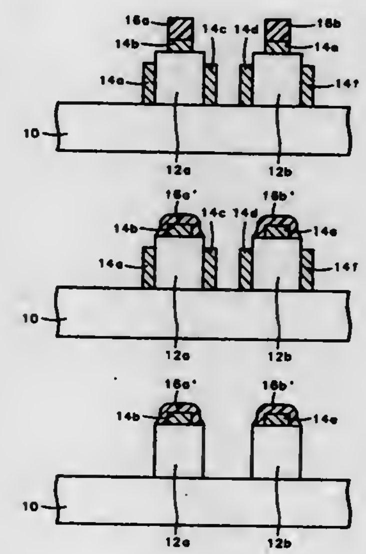
1. A process for performing a nonreactive plasma soft etch comprising the steps of:
(a) providing an inert gas mixture within a plasma reactor chamber; and
(b) coupling RF power to an electrode within the chamber, the RF power being of a frequency substantially higher than 13.56 MHz;
(c) wherein the RF power level and frequency are selected so as to excite the gas mixture to a plasma state and so as to produce a self-bias on said electrode less than or equal to 500 volts.

5,618,383
NARROW LATERAL DIMENSIONED MICROELECTRONIC STRUCTURES AND METHOD OF FORMING THE SAME
John N. Randall, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Mar. 30, 1994, Ser. No. 220,080
Int. Cl.⁶ H01L *21/312;21/302;21/465*
U.S. Cl. 430—314 **40 Claims**



1. A method of forming narrow lateral dimensioned microelectronic structures, said method comprising the steps of:
a. providing a semiconductor substrate;
b. depositing an uncured resist layer on said semiconductor substrate, wherein said uncured resist layer is soluble in an organic solvent;
c. patterning said resist layer to form a profile having horizontal surfaces and vertical walls;
d. depositing a conformal layer at a first temperature on said horizontal surfaces and on said vertical walls, said conformal layer forming vertical sidewalls having a first thickness on said vertical walls, wherein said conformal layer comprises silicon, and said first temperature is below a second temperature at which said uncured resist layer flows;
e. anisotropically etching to remove said conformal layer from said horizontal surfaces without substantially etching said vertical sidewalls; and
f. removing said uncured resist layer to form said narrow lateral dimensioned structures on said semiconductor substrate, said structures having lateral dimensions controlled by said thickness of said vertical sidewalls.

5,618,384
METHOD FOR FORMING RESIDUE FREE PATTERNED CONDUCTOR LAYERS UPON HIGH STEP HEIGHT INTEGRATED CIRCUIT SUBSTRATES USING REFLOW OF PHOTORESIST
Lap Chan, and Mei S. Zhou, both of Singapore, Singapore, assignors to Chartered Semiconductor Manufacturing Pte, Ltd., Singapore, Singapore
Filed Dec. 27, 1995, Ser. No. 579,165
Int. Cl.⁶ C23F *1/00*
U.S. Cl. 438—669 **18 Claims**



1. A method for forming a residue free patterned conductor layer upon a high step height integrated circuit substrate comprising:
providing a substrate layer having formed thereon a high step height patterned integrated circuit layer, the high step height patterned integrated circuit layer having a pair of sidewalls;
forming upon the high step height patterned integrated circuit layer a blanket conductor layer;
forming upon the blanket conductor layer a patterned photoresist layer;
patterning through the patterned photoresist layer the blanket conductor layer via an anisotropic etch process to yield a patterned conductor layer upon the surface of the high step height integrated circuit layer and conductor layer residues at a lower step level of the high step height integrated circuit layer;
reflowing the patterned photoresist layer to cover exposed edges of the patterned conductor layer; and
removing through an isotropic etch process the conductor layer residues formed at the lower step level of the high step height integrated circuit layer.

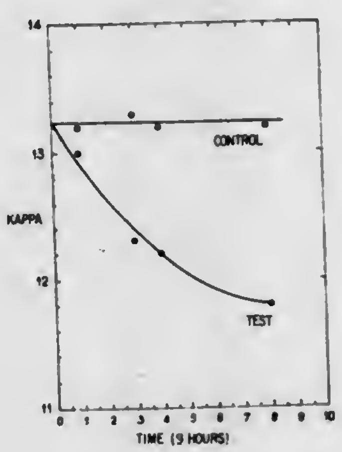
5,618,385
METHOD OF PEROXIDE BLEACHING OF PULP USING A PEROXIDE DECOMPOSING INACTIVATOR

Trevor E. Jones, Halesowen; Stephen Crelling, Droitwich, and Robert E. Talbot, Cannock, all of England, assignors to Albright & Wilson Limited, Warley, England
Continuation of Ser. No. 36,485, Mar. 24, 1993, abandoned. This application Oct. 28, 1994, Ser. No. 331,335
Claims priority, application United Kingdom, Mar. 24, 1992, 9206415
Int. Cl.[6] D21C *9/16*
U.S. Cl. 162—6 **20 Claims**

1. A method of bleaching lignocellulosic pulp which consists essentially of the steps of:
(A) contacting a diluting liquor containing a hydrogen peroxide decomposing enzyme, with an enzyme inactivator selected from the group consisting of chlorine, bromine, iodine, chlorine dioxide and ozone; and
(B) diluting hydrogen peroxide bleaching liquor with said dilution liquor containing said inactivator; and
(C) contacting the lignocellulosic pulp with an amount of hydrogen peroxide sufficient to bleach the pulp, wherein said inactivator is in an amount sufficient to inactivate said enzyme, but not sufficient to bleach said lignocellulosic pulp.

5,618,386
ENZYMATIC BLEACHING OF CHEMICAL LIGNOCELLULOSE PULP

Marguerite Arbeloa, Villenave D'Ornon; Joël de Leseleuc, Merignac; Gérard Goma, Ramonville-St-Agne, and Jean-Claude Pommier, Gradignan, all of France, assignors to La Cellulose Du Pin, Bordeaux, France
Continuation of Ser. No. 64,801, May 21, 1993, abandoned, which is a continuation of Ser. No. 826,415, Jan. 27, 1992, abandoned. This application Jun. 1, 1995, Ser. No. 457,793
Claims priority, application France, Jan. 25, 1991, 91 00870
Int. Cl.[6] D21C *3/20;9/10*
U.S. Cl. 162—72 **9 Claims**



1. A method of bleaching lignocellulose pulp, comprising the steps of:
(1) mixing a lignocellulose pulp in a homogeneous solution with an enzymatic preparation in a reactive medium having a pH of between 7 and 9, wherein said enzymatic preparation is obtained by culturing *Streptomyces viridosporus* bacteria in a culture medium, removing said bacteria from said cultured medium to obtain an enzyme-containing solution, contacting said enzyme-containing solution with a carboxymethylcellulose ion exchange gel at pH 5 and then separating said gel from said solution to obtain said enzymatic preparation, wherein said enzymatic preparation comprises at least one enzyme having a lignin-solubilizing activity between 0.01 and 0.1 U per gram of treated pulp and a xylanase activity of 0–20 U per gram of treated pulp, to obtain a treated pulp; and
(2) bleaching said treated pulp.

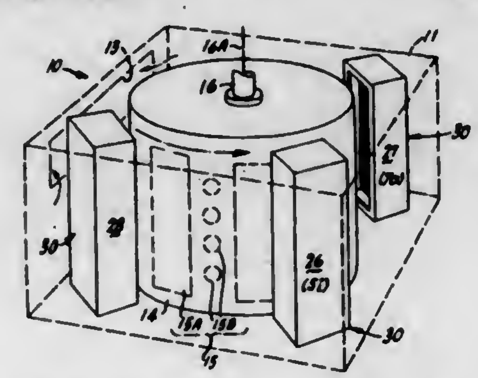
5,618,387
METHOD OF PREPARING BIODEGRADABLE, WATER-RESISTANT PAPER UTENSILS

Wen-Fuei Yeh, Taiwan; Long-Huei Wang, Tainan; Yao-Tung Liu, Pingtung Hsien, and Ying-Yu Cheng, Tainan, all of Taiwan, assignors to Taiwan Sugar Corp., Taiwan, Taiwan
Continuation-in-part of Ser. No. 174,186, Dec. 27, 1993, abandoned. This application Jan. 9, 1995, Ser. No. 370,489
Int. Cl.[6] D21F *13/00*
U.S. Cl. 162—224 **8 Claims**

1. A method of preparing biodegradable, water-resistant paper utensil, comprising the steps of:
preparing a pulp aqueous slurry at a consistency of about 4%;
adding surfactant selected from the group consisting of rosin soap, sodium oleate, sodium stearate, and sodium palmirate to the pulp aqueous slurry;
after said surfactant adding step, adding between 8–30% weight of a biodegradable and water-resistant agent selected from the group consisting of calcium stearate, cellulose stearate, calcium palmirate and cellulose palmitate to the pulp aqueous slurry to form a slurry mixture;
refining the slurry mixture at a consistency of about 4% to a desired drainage;
diluting the refined slurry mixture and adding thereto an aggregating agent as alum to form a furnish; and
after said diluting and adding step, forming the furnish to obtain a biodegradable, water-resistant paper board through a hot pressing at a temperature from 115° to 170° C.

5,618,388
GEOMETRIES AND CONFIGURATIONS FOR MAGNETRON SPUTTERING APPARATUS

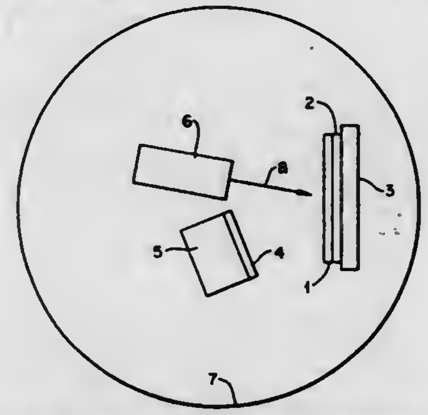
James W. Seeser; Thomas H. Allen, both of Santa Rosa, Calif.; Eric R. Dickey, Northfield, Minn.; Bryant P. Hichwa, Santa Rosa, Calif.; Rolf F. Illsley, Santa Rosa, Calif.; Robert F. Klinger, Rohnert Park, Calif.; Paul M. LeFebvre, Santa Rosa, Calif.; Michael A. Scobey, Santa Rosa, Calif.; Richard I. Seddon, Santa Rosa, Calif.; David L. Soberanis, Santa Rosa, Calif.; Michael D. Temple, Santa Rosa, Calif.; Craig C. Van Horn, Sebastopol, Calif., and Patrick R. Wentworth, Santa Rosa, Calif., assignors to Optical Coating Laboratory, Inc., Santa Rosa, Calif.
Continuation of Ser. No. 88,401, Jul. 6, 1993, abandoned, which is a continuation of Ser. No. 785,230, Oct. 24, 1991, abandoned, which is a continuation of Ser. No. 435,965, Nov. 13, 1989, abandoned, which is a continuation-in-part of Ser. No. 374,484, Jun. 30, 1989, abandoned, which is a continuation of Ser. No. 154,177, Feb. 8, 1988, Pat. No. 4,851,095. This application Oct. 4, 1994, Ser. No. 317,781
Int. Cl.[6] C23C *14/34*
U.S. Cl. 204—192.12 **42 Claims**



1. A coating system, comprising: a vacuum chamber; carrier means mounted within the vacuum chamber and adapted for mounting substrates thereon; coating means comprising at least a first device in the form of a deposition device positioned adjacent the carrier means and adapted for depositing a selected material onto the substrates and at least a second device in the form of an ion source device positioned adjacent the carrier means and adapted for providing a locally intensified plasma between the ion source device and the carrier means for effecting a selected chemical reaction with the selected material; the deposition device and the ion source device spatially separated such that each acts on a different portion of the carrier means; at least one of the carrier means and the coating means being adapted for movement relative to the other of the carrier means and the coating means along a selected path; and the combination of carrier means configuration, deposition device configuration and said relative movement being selected to provide controlled thickness profiles for deposited material.

5,618,389
PROCESS FOR PRODUCING TRANSPARENT CARBON NITRIDE FILMS

Kenneth G. Kreider, Potomac, Md., assignor to The United States of America as represented by the Secretary of Commerce, Washington, D.C.
Division of Ser. No. 328,806, Oct. 25, 1994, Pat. No. 5,573,864. This application Jun. 28, 1996, Ser. No. 671,633
Int. Cl.[6] C23C *14/34*
U.S. Cl. 204—192.15 **15 Claims**



1. A process for producing a transparent, carbon nitride film on a substrate comprising:
sputter depositing carbon atoms from a carbon target onto a substrate using a magnetron sputter gun; and
simultaneously depositing nitrogen atoms onto the substrate from an ion beam source in an atmosphere of less than 2.5 Pa of nitrogen gas to produce a carbon nitride film having a nitrogen content of about 36% and having a transmittance of at least 95% compared to glass throughout the visible spectrum when the film has a thickness of 40 nm.

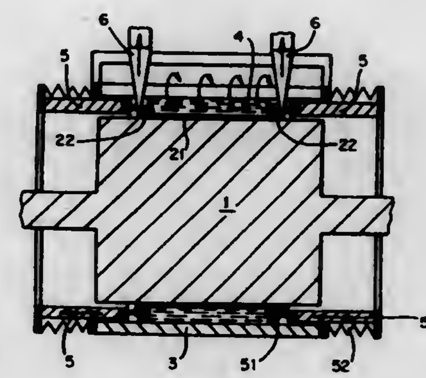
5,618,390
IRIDIUM OXIDE FILM FOR ELECTROCHROMIC DEVICE

Phillip C. Yu, Pittsburgh; David L. Backfisch, Monroeville, both of Pa.; Nada A. O'Brien, and Bryant P. Hichwa, both of Santa Rosa, Calif., assignors to PPG Industries, Inc., Pittsburgh, Pa.
Division of Ser. No. 337,783, Nov. 14, 1994, Pat. No. 5,520,851, which is a continuation-in-part of Ser. No. 267,724, Jun. 28, 1994, abandoned, which is a continuation-in-part of Ser. No. 152,339, Nov. 19, 1993, abandoned. This application Feb. 16, 1996, Ser. No. 602,392
Int. Cl.[6] C23C *14/08;14/34;* **H01B** *1/08*
U.S. Cl. 204—192.26 **14 Claims**

1. A method of producing a nitrogen-containing iridium oxide film on a surface of a substrate, comprising:
a. providing a substrate and iridium metal target in close association within a vacuum chamber;
b. sputtering the iridium metal target; and
c. contacting said sputtered iridium with a gas mixture comprising oxygen and a nitrogen-containing gas, thereby to deposit a nitrogen-containing iridium oxide film on the surface of the substrate facing the target.

5,618,391
DEVICE FOR ELECTROLYTICALLY COATING ONE SIDE OF METAL STRIPS

Hans J. May, Ulmenweg 17, D-58638 Iserlohn, and Roland Schnettler, Schwerter Strasse 138, D-58099 Hagen, both of Germany
PCT No. PCT/DE93/01015, § 371 Date May 9, 1995, § 102(e) Date May 9, 1995, PCT Pub. No. WO94/10360, PCT Pub. Date May 11, 1994
PCT Filed Oct. 22, 1993, Ser. No. 433,420
Claims priority, application Germany, Oct. 31, 1992, 42 36 927.4
Int. Cl.[6] C25D *17/00;5/02*
U.S. Cl. 204—212 **3 Claims**

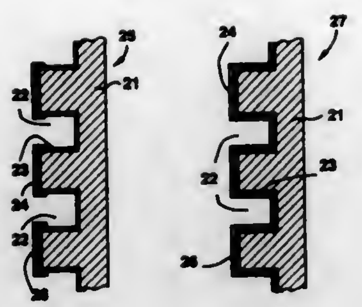


1. Device for electrolytically coating a metal strip on one side thereof comprising
a rotating cathodic current roller around which the metal strip section to be coated is contactingly guided;
a partially cylindrical, insoluble anode arranged approximately concentrically around the current roller with a spacing from the current roller;
an electrolyte for flowing through the spacing and having a coating material;
means for preventing a deposition of the coating material on the current roller in positions where no strip contact is achieved; and said means for preventing said deposition of coating-material comprising seals arranged between the strip section guided on the current roller and the anode, in each case within a zone of edges of the strip; and
said seals having means for being adjustable in an axially parallel direction to a width of the metal strip to be coated.

5,618,392
GAS DIFFUSION ELECTRODE

Nagakazu Furuya, No. 2-14, Nakamuramachi, Kofu-shi, Yamanashi, Japan, assignor to Tanaka Kikinzoku Kogyo K.K., and Nagakazu Furuya, both of Japan
Continuation-in-part of Ser. No. 969,089, Oct. 30, 1992, abandoned. This application Apr. 13, 1995, Ser. No. 421,840
Claims priority, application Japan, Oct. 31, 1991, 3-314086; Nov. 29, 1991, 3-340347; Feb. 28, 1992, 4-78597; Feb. 28, 1992, 4-78598
Int. Cl.[6] C25B *9/00;* **H01M** *4/86*
U.S. Cl. 204—252 **9 Claims**

1. A gas diffusion electrode comprising a reaction layer and a gas diffusion layer attached to each other and containing a plurality of concave-convex surfaces present on the electrode, said surfaces



facilitating the flow of a gas and/or a fluid electrolyte, when the electrode is immersed in said electrolyte.

5,618,393

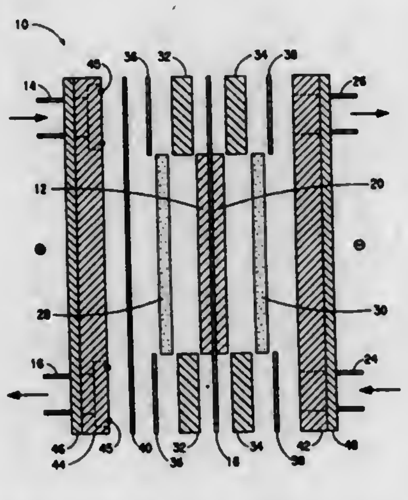
ELECTROCHEMICAL CELL HAVING A MASS FLOW FIELD MADE OF GLASSY CARBON

Clarence G. Law, Jr., West Trenton, N.J.; James A. Trainham, III, Newark, Del.; John S. Newman, Kensington, Calif., and Douglas J. Eames, Chamblee, Ga., assignors to E. I. Du Pont de Nemours Company, Wilmington, Del.

Continuation-in-part of Ser. No. 156,196, Nov. 22, 1993, Pat. No. 5,411,641, and Ser. No. 246,909, May 20, 1994, Pat. No. 5,580,437, which is a continuation-in-part of Ser. No. 156,196. This application May 1, 1995, Ser. No. 431,606

Int. Cl.[6] **C25B** *9/00*

U.S. Cl. 204—252 **23 Claims**



1. An electrochemical cell for the direct production of essentially anhydrous halogen gas from essentially anhydrous hydrogen halide, comprising:

(a) means for oxidizing molecules of essentially anhydrous hydrogen halide, to produce essentially anhydrous halogen gas and protons;

(b) cation-transporting means for transporting the protons therethrough, wherein one side of the oxidizing means is disposed in contact with one side of the cation-transporting means;

(c) reducing means for reducing the transported protons, wherein the reducing means is disposed in contact with the other side of the cation-transporting means; and

(d) a mass flow field disposed on at least one side of the cation-transporting means, wherein the mass flow field comprises glassy carbon.

5,618,394

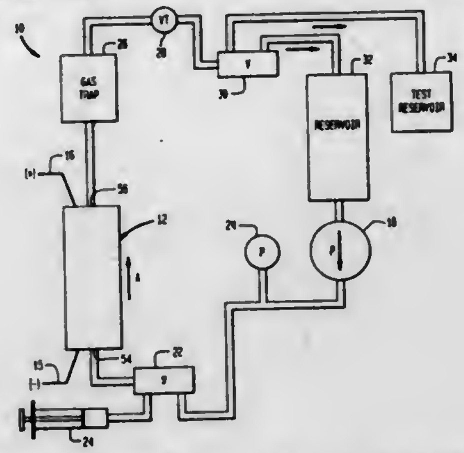
SYSTEM AND ELECTROLYTIC CELL HAVING INERT SPHERICAL CORE CATALYTIC ELEMENTS FOR HEATING A LIQUID ELECTROLYTE

James A. Patterson, 2074 20th St., Sarasota, Fla. 34234

Filed Jan. 16, 1996, Ser. No. 586,164

Int. Cl.[6] **C25B** *9/00;11/08;11/02*

U.S. Cl. 204—275 **16 Claims**



1. An electrolytic cell for producing excess heating of a liquid electrolyte for use external to said cell comprising:

a non-conductive housing having an inlet and an outlet;

a first conductive foraminous grid positioned within said housing adjacent to said inlet;

a second conductive foraminous grid positioned within said housing spaced from said first conductive grid and adjacent to said outlet;

a plurality of conductive microspheres each having an inert spherical core taken from the group consisting of steel, silver, plastic and ceramic each said spherical core completely covered with a uniformly thick outer conductive metallic layer formed over said inert core, said metallic layer, during operation of said cell, being adapted to combine with hydrogen or an isotope of hydrogen to form a metallic hydride or deuteride, said plurality of conductive microspheres in electrical communication with said first grid and electrically isolated from said second grid.

5,618,395

METHOD OF PLASMA-ACTIVATED REACTIVE DEPOSITION OF ELECTRICALLY CONDUCTING MULTICOMPONENT MATERIAL FROM A GAS PHASE

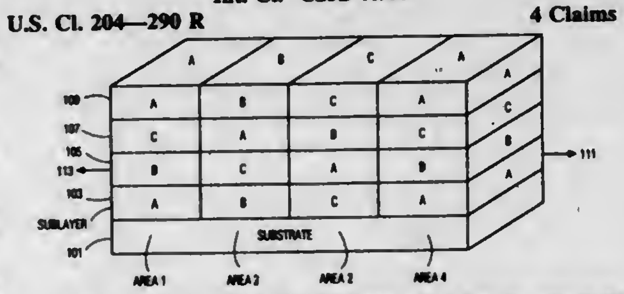
Georg Gartner, Aachen, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 389,446, Feb. 15, 1995, Pat. No. 5,549,937, which is a continuation of Ser. No. 133,544, Oct. 7, 1993, abandoned, which is a continuation-in-part of Ser. No. 879,058, Apr. 30, 1992, abandoned, which is a continuation of Ser. No. 595,118, Oct. 9, 1990, abandoned. This application May 2, 1996, Ser. No. 642,016

Claims priority, application Germany, Oct. 11, 1990, 39 33 900.9

Int. Cl.[6] **C25B** *11/00*

U.S. Cl. 204—290 R **4 Claims**



1. A substrate carrying a precursor layer for a multicomponent material layer, said precursor layer comprising a plurality of parallel sub-layers one deposited on top of the other, each sub-layer comprising a plurality of adjacent regions which regions each comprise a single component material of the multicomponent material, the distribution of the single component materials in the various sub-layers being such that in a cross section normal to said substrate the adjacent regions of each two adjacent sub-layers comprise different single component materials.

5,618,396

HOLDING AND CONTACTING APPARATUS FOR GALVANICALLY COATING WORK PIECES

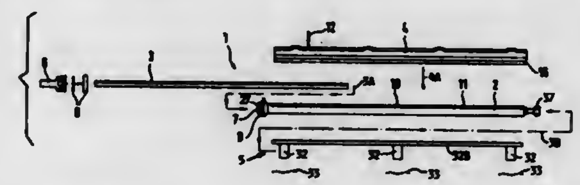
Manfred Hiermaier, Groebenzell; Paul Buenger, Munich, and Willi Buchecker, Tittling, all of Germany, assignors to MTU Motoren- und Turbinen-Union Muenchen GmbH, Munich, Germany

Filed Jun. 7, 1995, Ser. No. 480,896

Claims priority, application Germany, Jun. 8, 1994, 44 19 982.1

Int. Cl.[6] **C25D** *17/06*

U.S. Cl. 204—297 M **36 Claims**



1. A holding and contacting apparatus for galvanically coating parts to be plated on at least one part surface, comprising at least one hollow elongated parts carrier (2) of electrically conducting material enclosing an elongated channel (14), at least one elongated magnet (3) mounted in said elongated channel (14), an electrical connector tab (36) for feeding a plating current to said hollow parts carrier (2), an electrically conducting contact surface (19) extending along one side of and in contact with said parts carrier (2) and along said magnet (3), said elongated magnet (3) having a pole axis (P) extending perpendicularly to said contact surface (19).

5,618,397

SILICIDE TARGETS FOR SPUTTERING

Osamu Kano; Yasuhiro Yamakoshi; Junichi Anan, and Koichi Yasui, all of Kitaibaraki, Japan, assignors to Japan Energy Corporation, Tokyo, Japan

Division of Ser. No. 224,445, Apr. 7, 1994, Pat. No. 5,460,793. This application Apr. 17, 1995, Ser. No. 423,233

Claims priority, application Japan, May 7, 1993, 5-130113

Int. Cl.[6] **C23C** *14/34;* **C22C** *29/00;32/00*

U.S. Cl. 204—298.13 **3 Claims**

1. A metal silicide target for sputtering which has a density of at least 99%, no more than one coarse silicon phase 10 μm or larger in size that appears, per square millimeter, on the sputter surface of the target, an area ratio of silicon phases that appear on the sputter surface of 23% or less, a surface roughness ranging from more than 0.05 μm to 1 μm attained by at least partly removing a deformed layer on the target surface, and an oxygen content of at most 150 ppm.

5,618,398

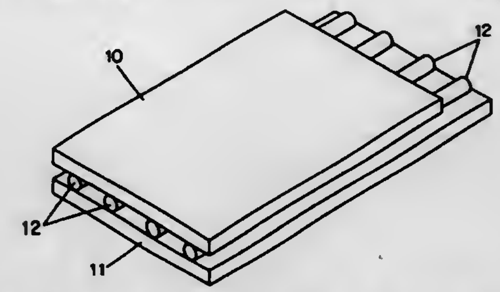
ELECTROPHORESIS GELS AND GEL HOLDERS HAVING FIBER SPACERS AND METHOD OF MAKING SAME

Alexandre M. Izmailov, Toronto; Paul Waterhouse, Copetown, and Henryk Zaleski, Niagara Falls, all of Canada, assignors to Visible Genetics Inc., Toronto, Canada

Filed Dec. 12, 1995, Ser. No. 571,297

Int. Cl.[6] **G01N** *27/26;27/447*

U.S. Cl. 204—470 **48 Claims**



1. A method for forming a gel holder for an electrophoresis gel comprising the steps of:

(a) placing a plurality of fibers between a first planar substrate and a second planar substrate, said fibers having an interior core having a first melting point and an external cladding having a second melting point lower than the first melting point;

(b) heating the fibers to a temperature sufficient to at least soften the exterior cladding of the fibers without softening the interior core of the fibers; and

(c) cooling the heated fibers while they are in contact with the first and second substrates to resolidify the exterior cladding and to adhere the fibers to the first and second substrates, thereby forming a gel chamber between said first and second substrates, said gel chamber having a thickness defined by the interior core of the fibers.

5,618,399

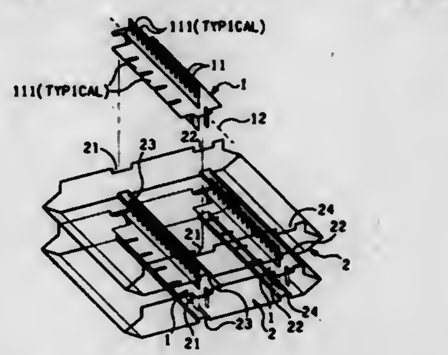
COMB ELEMENTS ROTATING IN POSITION TO PLACE SELECTED SLIT ARRAYS IN THE GEL OF AN ELECTROPHORESIS AGAROSE GEL TRAY, PARTICULARLY AS ALSO SERVE AS SPACERS BETWEEN STACKED TRAYS

James W. Gantsch, 451 S. Grenados Ave., Solana Beach, Calif. 92075, and Syed F. H. Rehan, 635 Cabezone Pl., Vista, Calif. 92083

Continuation-in-part of Ser. No. 377,866, Jan. 25, 1995, Pat. No. 5,514,255. This application Feb. 2, 1996, Ser. No. 595,648

Int. Cl.[6] **G01N** *27/26*

U.S. Cl. 204—620 **10 Claims**



1. A gel electrophoresis element cooperatively interactive with a tray that both (i) has and defines a central reservoir and sides, and (ii) contains a flat sheet of the gel state material that receives samples upon which electrophoresis is performed, for emplacing arrayed slit apertures within flat sheets of a gel state material that

itself receives samples upon which electrophoresis may be performed, the element comprising:

a longitudinal central axis;

three or more arrays radially extending about the central axis and extending along a length thereof, each of the arrays comprising a plurality of teeth for extending into and emplacing slit apertures within flat sheets of a gel state material that itself receives samples upon which electrophoresis may be performed into the slit apertures; and

engagement features, aligned with the central axis and extending beyond each and all of the pluralities of radially extending arrays at each end region of the central axis, for engaging two opposing sides of the tray while the element is set on top of the tray spanning the width thereof between the opposing sides, the engaging being in a manner so that the element is stably held with the arrayed of teeth of one only of its plurality of arrays extending downward into the central reservoir of the tray, and into the gel material contained therein.

5,618,400

ELECTROPLATING PROCESS

Steven M. Florio, Hopkinton; Jeffrey P. Burress, Milford; Carl J. Colangelo, New Bedford; Edward C. Couble, Brockton, and Mark J. Kapeckas, Worcester, all of Mass., assignors to Shipley Company, L.L.C., Marlborough, Mass.

Filed Sep. 19, 1995, Ser. No. 531,171

Int. Cl.[6] C25D *21/06;21/16;21/18;* **C23C** *28/00*

U.S. Cl. 205—98 **27 Claims**

1. A process for depositing metal on a substrate having metallic and non-metallic regions, said process comprising the steps of providing a dispersion of carbonaceous particles in an aqueous medium, said dispersion having a concentration of dispersing agent not exceeding 50% of that required to form a stable dispersion, providing a treatment tank containing said dispersion, contacting said substrate with said dispersion in said treatment tank while simultaneously physically dispersing the carbonaceous particles in said aqueous medium to form a uniform dispersion and a uniform coating of said dispersion over surfaces of said substrate, at least, partially drying, the coating of the carbonaceous particles, removing the carbonaceous coating from the metallic regions of the substrate and electroplating metal on said substrate from an electrolytic metal plating solution.

5,618,401

INNER-SHIELD MATERIAL TO BE ATTACHED INSIDE A COLOR CATHODE RAY TUBE AND MANUFACTURING METHOD THEREOF

Giichiro Nomura, and Osamu Yubuta, both of Kudamatsu, Japan, assignors to Toyo Kohan Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 197,273, Feb. 16, 1994, abandoned, which is a division of Ser. No. 91,683, Jul. 15, 1993, abandoned. This application Jan. 24, 1995, Ser. No. 378,873

Claims priority, application Japan, Jul. 16, 1992, 4-213309

Int. Cl.[6] C25D *5/02;7/06;5/34;* **C21D** *8/12*

U.S. Cl. 205—130 **3 Claims**

1. A manufacturing method used for the manufacture of inner-shield materials of a color cathode ray tube, comprising the steps of:

cold-rolling a cold-rolled steel sheet or strip to produce a surface roughness of 0.2–2.0 μm Ra,

electro-depositing a nickel layer with a thickness of 0.1–5.0 μm at least on one side of said steel sheet or strip,

annealing said surface-treated sheet or strip; and

inserting the annealed steel sheet or strip into the cathode ray tube for magnetic shielding.

5,618,402

TIN-ZINC ALLOY ELECTROPLATING BATH AND METHOD FOR ELECTROPLATING USING THE SAME

Hitoshi Sakurai, Matsudo, and Tadahiro Ohnuma, Funabashi, both of Japan, assignors to Dipsol Chemicals Co., Ltd., Tokyo, Japan

Filed Jan. 12, 1994, Ser. No. 180,345

Int. Cl.[6] C25D *3/56;3/60*

U.S. Cl. 205—244 **16 Claims**

1. A tin-zinc alloy electroplating bath which comprises:

0.01 to 30 g/l of an amphoteric surfactant selected from the group consisting of imidazolines, betaines, alanines, glycines and amides,

1 to 100 g/l of a water-soluble stannous salt,

0.2 to 80 g/l of a water-soluble zinc salt,

40 to 400 g/l of a carboxylic acid having 1 to 15 carbon atoms or 30 to 300 g/l of a pyrophosphoric acid, and

a balance of water,

wherein said electroplating bath has a pH of 3 to 10.

5,618,403

MAINTAINING PROTECTIVE SURFACES ON CARBON CATHODES IN ALUMINIUM ELECTROWINNING CELLS

Vittorio de Nora, Nassau, Bahamas, and Jean-Jacques Duruz, Geneva, Switzerland, assignors to Moltech Invent S.A., Luxembourg, Luxembourg

Filed Aug. 7, 1995, Ser. No. 511,647

Int. Cl.[6] C25C *3/08;3/14*

U.S. Cl. 205—372 **16 Claims**

1. A cell for the electrowinning of aluminium by the electrolysis of alumina dissolved in a molten fluoride-based electrolyte, comprising:

a cathode composed of a carbon body having an aluminium resistant aluminium-wettable surface layer containing particulate refractory hard metal boride and a non-organic bonding material providing a porous layer which contains cathodic molten aluminium;

a feeder adapted for delivering alumina feedstock which includes refractory hard metal boride and boron; and

molten cathodic aluminium in contact with the aluminium-resistant and aluminium-wettable surface of the carbon cathode, the molten aluminium external to the aluminium-resistant and aluminium-wettable surface, said molten aluminium containing refractory hard metal and boron fed into the cell in a total concentration varying from just above to just below that sufficient to inhibit dissolution into the molten aluminium of the refractory hard metal boride of the aluminium-resistant surface layer of the cathode.

5,618,404

ELECTROLYTIC PROCESS FOR PRODUCING LEAD SULFONATE AND TIN SULFONATE FOR SOLDER PLATING USE

Yoshiaki Okuhama; Seishi Masaki; Takao Takeuchi, all of Kobe; Yoshiharu Matsuda, Ube, and Masakazu Yoshimoto, Kobe, all of Japan, assignors to Daiwa Fine Chemicals Co., Ltd., Hyogo-ken, Japan

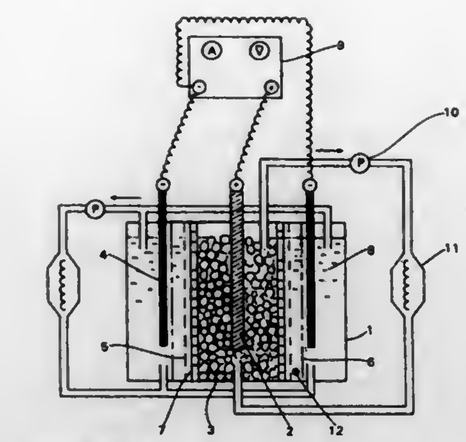
Filed May 16, 1995, Ser. No. 442,535

Claims priority, application Japan, May 17, 1994, 6-125880

Int. Cl.[6] C25B *1/00*

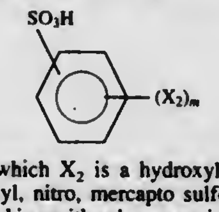
U.S. Cl. 205—445 **3 Claims**

1. An electrolytic process for producing a lead sulfonate or tin sulfonate having a reduced content of radioactive isotope impurities including uranium and thorium, which comprises applying a DC voltage to an anode made of lead or tin and a plurality of cathodes in an electrolytic cell to dissolve lead or tin in the electrolytic solution, said electrolytic cell being partitioned by cation- and anion-exchange membranes into anode and cathode chambers, said electrolytic solution being a solution of an organic sulfonic acid selected from the group consisting of aliphatic sulfonic acids of the formula (I)



$$(X_1)_n\text{—R—}SO_3H \qquad (I)$$

in which R is a C_1–C_5 alkyl group and X_1 is a hydroxyl, alkyl, aryl, alkylaryl, carboxyl, or sulfonic acid group which may be situated in any position relative to the alkyl group, n being an integer of 0 to 3, and aromatic sulfonic acids of the formula (II)



(II)

in which X_2 is a hydroxyl, alkyl, aryl, alkylaryl, aldehyde, carboxyl, nitro, mercapto sulfonic acid, or amino group, or two X_2 combine with a benzene ring to form the rings of naphthalene, m being an integer of 0 to 3.

5,618,405

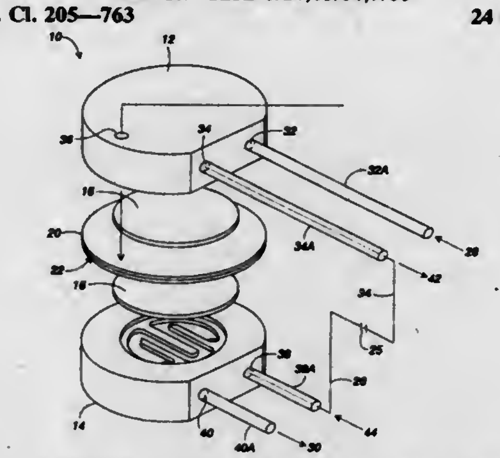
REMOVAL AND RECOVERY OF HYDROGEN HALIDES USING AN ELECTROCHEMICAL MEMBRANE

Jack Winnick, Atlanta, Ga., assignor to Georgia Tech Research Corporation, Atlanta, Ga.

Filed Jun. 7, 1995, Ser. No. 477,075

Int. Cl.[6] C25B *1/24;13/04;9/00*

U.S. Cl. 205—763 **24 Claims**



1. A method of removing halides from a gas mixture at a temperature of about 150° C. or above, said method comprising the steps of:

a. providing an electrochemical cell having a first and a second cell housing selected from the group consisting of graphite, alumina, boron nitride, and zirconia, an inert cathode and an inert anode;

b. providing said cell with a porous ceramic membrane filled with an electrolyte which is molten at temperatures above about 150° C. selected from the group comprising alkali metal halides;

c. raising the temperature of said cell to at least 150° C. whereby said electrolyte is in its molten state;

d. effecting current flow between said cathode and said anode;

e. directing the gas mixture past said cathode where oxidation of the halide occurs and halide anions are formed which migrate toward said anode and are converted to gaseous species,

whereby halide gases are evolved at said anode.

5,618,406

PROCESSES FOR REACTING BASTNAESITE WITH ALKALINE-EARTH METALS

Edward J. Demmel, Newport Beach, Calif., assignor to Intercat, Inc., Manasquan, N.J.

Division of Ser. No. 291,298, Aug. 16, 1994, Pat. No. 5,545,604, which is a continuation-in-part of Ser. No. 99,828, Jul. 30, 1993, Pat. No. 5,422,332. This application Dec. 28, 1995, Ser. No. 579,926

Int. Cl.[6] C10G *9/12*

U.S. Cl. 208—48 R **10 Claims**

1. A method for removing SO_x from a fluid catalytic cracking process wherein alumino-silicate hydrocarbon cracking catalyst particles and SO_x absorbent catalyst particles, which are each contaminated by sulfur-containing coke, are each regenerated by removal of the coke and wherein SO_x created by said removal of coke is captured in a catalyst regenerator that forms a part of the fluid catalytic cracking process, said process further comprising: (1) circulating a minor portion of SO_x absorbent-catalyst particles that are comprised of a bastnaesite/magnesium oxide/alumina compound having an ability to absorb SO_x with a major portion of alumino-silicate hydrocarbon cracking catalyst particles wherein the minor portion of SO_x absorbent-catalyst particles constitute from about 1 to about 5 weight percent of total catalyst used in said method for removing SO_x from a fluid catalytic cracking process and wherein the bastnaesite/magnesium oxide/alumina compound is further characterized by the fact that a bastnaesite component of the bastnaesite/magnesium oxide/alumina compound is chemically reacted with a magnesium oxide/alumina component of the bastnaesite/magnesium oxide/alumina compound.

5,618,407

CATALYTIC CRACKING PROCESS UTILIZING A CATALYST COMPRISING ALUMINUM BORATE AND ZIRCONIUM BORATE

Lyle R. Kallenbach; Dwayne R. Senn, and Marvin M. Johnson, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 18, 1995, Ser. No. 504,030

Int. Cl.[6] C10G *11/02*

U.S. Cl. 208—114 **22 Claims**

1. A process for catalytically cracking a hydrocarbon-containing oil feed, substantially in the absence of added hydrogen gas, in the presence of a catalytic cracking catalyst which comprises a coprecipitate of aluminum borate and zirconium borate, wherein said hydrocarbon-containing oil feed has a boiling range, measured at atmospheric pressure conditions, of about 400° F. to about 1200° F.

5,618,408

METHOD FOR REDUCING ELEMENTAL SULFUR PICK-UP BY HYDROCARBON FLUIDS IN A PIPELINE (LAW177)

Marc-Andre Poirier, Sarnia, and Robert J. Falkiner, Mississauga, both of Canada, assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Oct. 7, 1994, Ser. No. 320,024

Int. Cl.[6] C10G *45/00*

U.S. Cl. 208—370 **4 Claims**

1. A method for reducing the amount of elemental sulfur and other sulfur contaminants picked up by refined hydrocarbons fluids while being transported in a pipeline also used for the transportation of sour hydrocarbon fluids which contain elemental sulfur and other sulfur contaminants and leave such elemental sulfur and other sulfur contaminants in the pipeline as a residue after their

passage therethrough, such method comprising controlling the dissolved oxygen content in the refined hydrocarbon fluid so that that fluid contains about 30 wppm dissolved oxygen or less before it is introduced into the pipeline for transport.

5,618,409

CENTRIFUGE FOR THE CONTINUOUS SEPARATION OF SUBSTANCES OF DIFFERENT DENSITIES

Walter Kreill, Vilsbiburg, Germany, assignor to FLottweg GmbH, Vilsbiburg, Germany

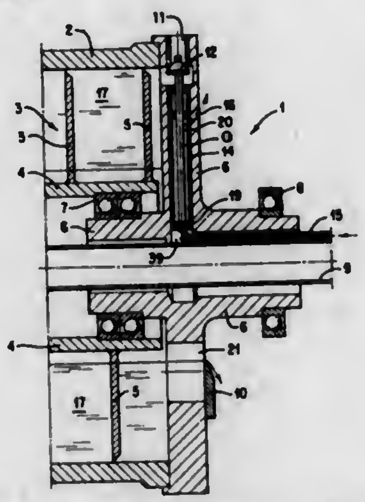
PCT No. PCT/DE92/00790, § 371 Date Aug. 12, 1994, § 102(e) Date Aug. 12, 1994, PCT Pub. No. WO93/05884, PCT Pub. Date Apr. 1, 1993

PCT Filed Sep. 16, 1992, Ser. No. 204,422

Claims priority, application Germany, Sep. 16, 1991, 41 30 759.7

Int. Cl.⁶ F16K *31/64*

U.S. Cl. 210—97 **22 Claims**



1. Centrifuge for separating substances comprising:

at least one operable device rotatably located in a rotating region of the centrifuge, controlled by at least one co-rotating mechanical actuator for determining the operation of said at least one device, in which the actuator exhibits a shape change, resulting in at least one temperature specific configuration which is controlled by heating and/or cooling, and

the actuator is bathed in a liquid or gaseous heating and/or cooling control medium to provide the temperature variation which causes the actuator shape change.

5,618,410

AUTOMATICALLY DRAINING VACUUM APPARATUS

George M. Wallace, Willow Grove, and Terence L. Snyder, Downingtown, both of Pa., assignors to Den-Tal-Ez, Inc., Audubon, Pa.

Filed Feb. 15, 1995, Ser. No. 388,856

Int. Cl.⁶ B01D *21/24;* **A47L** *5/38*

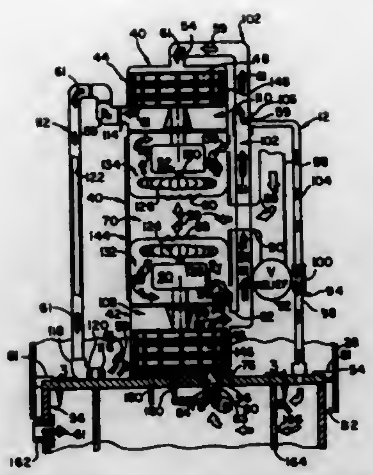
U.S. Cl. 210—123 **12 Claims**

1. An automatically draining vacuum apparatus for collecting a fluid to be vacuumed comprising:

a vacuum generating source;

a tank for holding the fluid to be vacuumed, the tank having a vacuum port in fluid communication through a passage with the vacuum generating source for creating a suction force of a first magnitude in the tank, an inlet in fluid communication with the fluid to be vacuumed, and a drainage opening for emptying fluid held within the tank, the suction force drawing the fluid to be vacuumed into the tank through the inlet and preventing the fluid within the tank from passing from the tank through the drainage opening;

a float located in the tank for closing off the vacuum port to prevent the fluid within the tank from passing through the



vacuum port, the float having a positive buoyancy with respect to the fluid such that the float rises as the tank is filled with the fluid to be vacuumed and falls as the fluid within the tank is drained from the tank, the float being positioned within the tank such that when the fluid within the tank is above a predetermined level, the suction force at the vacuum port and the float buoyancy maintain the float in a blocking position to at least partially block the vacuum port creating a reduced suction force having a second magnitude which is less than the first magnitude of the suction force in the tank, the suction force of the second, reduced magnitude allowing the fluid within the tank to drain to a level below the predetermined level thereby causing the float to move from the blocking position to restore the suction force in the tank to the first magnitude;

the passage being comprised of a relief tube having a wall and an opening which extends into the tank in alignment with the float, and the wall includes a vacuum by-pass opening extending therethrough; and

a plurality of float stops mounted in the tank which maintain a surface of the float in a parallel relation to the relief tube opening.

5,618,411

FLUIDIZED-BED FERMENTER

Christoph Donner, Kleinmachnow; Stephan Sokolowsky, and Lothar Reinke, both of Berlin, all of Germany, assignors to Schering Aktiengesellschaft, Berlin, Germany

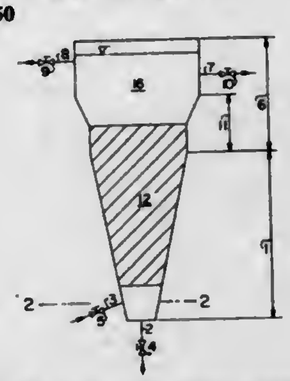
PCT No. PCT/DE93/00414, § 371 Date Feb. 3, 1995, § 102(e) Date Feb. 3, 1995, PCT Pub. No. WO93/22246, PCT Pub. Date Nov. 11, 1993

PCT Filed May 5, 1993, Ser. No. 331,635

Claims priority, application Germany, May 7, 1992, 42 14 896.0

Int. Cl.⁶ C02F *3/08*

U.S. Cl. 210—150 **11 Claims**



1. A two-phase fluidized-bed fermenter comprising: an inverted substantially frustoconical fermentation space (1) defined by a frustoconical shell formed about an axis, with two feed pipes (2 and 3) for a feeding solution to be fermented connected thereto of

which one feed pipe (2) is vertically aligned with the axis and the second pipe (3) is nonvertically aligned with the shell of the cone at a height which is 0.02 to 0.3 times the height of the fermentation space, and a sedimentation space (6) above the fermentation space (1), the sedimentation space having at least one drainpipe (7 or 8).

5,618,412

FIXED-BED BIOREACTOR AND CARRIER BODY FOR PURIFYING FLUIDS

Walter Herding, Hahnbach; Peter Vogel, Ursula Poppenricht, and Klaus Rabenstein, Hahnbach-Süss, all of Germany, assignors to Herding GmbH Entstaubungsanlagen, Amberg, Germany

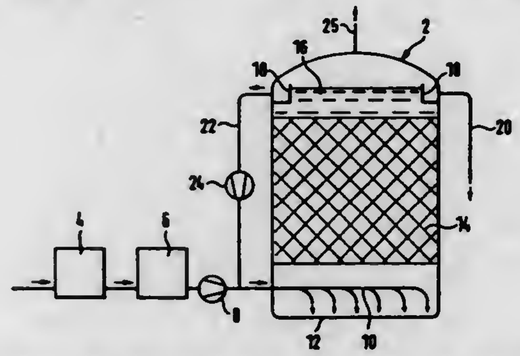
PCT No. PCT/EP94/00945, § 371 Date Sep. 22, 1995, § 102(e) Date Sep. 22, 1995, PCT Pub. No. WO94/21566, PCT Pub. Date Sep. 29, 1994

PCT Filed Mar. 24, 1994, Ser. No. 525,666

Claims priority, application Germany, Mar. 25, 1993, 43 09 779.0

Int. Cl.⁶ C02F *3/10;* **B29C** *43/00;43/22*

U.S. Cl. 210—150 **22 Claims**



1. A fixed-bed bioreactor for purifying fluids with the aid of microorganisms, containing a plurality of carrier bodies for microorganisms and flow paths for the fluid along the carrier bodies, with said carrier bodies being sheet-like structures with a small thickness in comparison with the carrier body surface and having porous structure with poles adapted to be penetrated by the fluid and to have microorganisms attach thereto, and being composed with plastics particles bonded together by the application of heat, said carrier bodies being spaced apart with the aid of spacing bars defining the flow paths between the carrier bodies; and said spacing bars being formed integrally with the plastics material of a respectively associated carrier body.

6. A carrier body for fixed-bed bioreactors for purifying fluids with the aid of microorganims, said carrier body being a sheetlike structure with a small thickness in comparison with the carrier body surface and having a porous structure with pores adapted to be penetrated by the fluid and to have microorganisms attach thereto, and being composed with plastics particles bonded together by the application of heat, said carrier body having spacing bars formed integrally with its plastics material for defining the distance to an adjacent carrier body.

14. A process for producing carrier bodies of porous structure adapted to have microorganisms attach thereto, said process comprising the following steps:

(a) providing plastics particles;

(b) introducing the plastics particles into a moulding space; and

(c) supplying heat to the plastics particles contained in the moulding space such that the plastics particles are bonded together forming the porous carrier body structure,

(d) the particular moulding space being confined by a first and second mould half;

(e) a number of the first mould halves being mounted on a first conveyor and a number of the second mould halves being mounted on a second conveyor;

(f) the mould halves in the closed condition thereof being adapted to be moved through a station for introduction of the plastics particles and through a station for the application of heat to the introduced plastics particles; and

(g) the mould halves, being closed and opened automatically due to the design of said first and second conveyors.

5,618,413

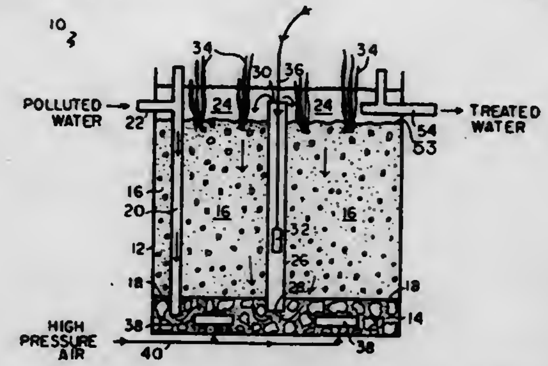
ECOLOGICAL FLUIDIZED BED SYSTEM

John H. Todd, Falmouth, Mass., and James M. Shaw, Shelburne, Vt., assignors to Ocean Arks International, Inc., Falmonth, Mass.

Division of Ser. No. 149,964, Nov. 10, 1993, Pat. No. 5,486,291. This application Jun. 1, 1995, Ser. No. 457,990

Int. Cl.⁶ C02F *3/08*

U.S. Cl. 210—151 **22 Claims**



1. An ecological fluidized bed system for the treatment of polluted water to provide treated water, which system comprises:

a) a housing having separate adjacent first and second chambers, said first and second chambers connected to permit the flow of circulated polluted water in the housing between said first and second chamber;

b) an inlet in said first chamber to introduce into said first chamber polluted water to be treated at an inlet flow-through rate, said first chamber having circulated, polluted water to be treated and essentially free of particulate media;

c) an inlet in said second chamber to introduce polluted water to be treated into said second chamber, and an outlet in said first chamber to discharge polluted water into said second chamber;

d) said second chamber comprised of polluted water, particulate media having a specific gravity of about 0.9 to 1.0 and an ecosystem means to treat the polluted water;

e) an outlet to withdraw treated water from the housing essentially free of particulate media;

f) circulating means to circulate polluted water between said first and second chambers at a high circulation flow rate of at least ten times the inlet flow-through rate of the polluted water into said first chamber; and

g) means to introduce polluted water at an inlet flow-through rate into the inlet of said first chamber.

5,618,414

TREATMENT SYSTEM FOR TREATING WASTE WATER

Patrick Goupil; Martin Pelletier; Rémy Simoneau, all of Rivière-du-Loup; Claude Talbot, and Pierre Talbot, both of Notre-Dame-du-Portage, all of Canada, assignors to Premier Tech ltee, Quebec, Canada

Filed Sep. 14, 1995, Ser. No. 528,280

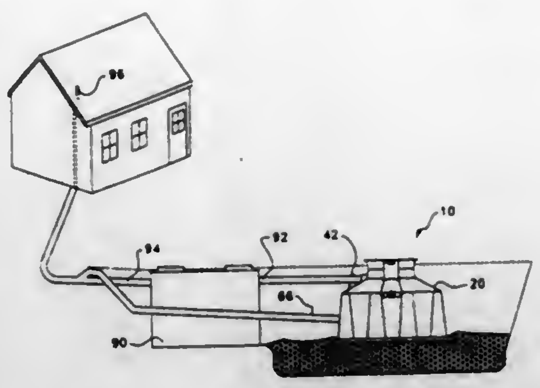
Claims priority, application Canada, May 11, 1995, 2149202

Int. Cl.⁶ C02F *3/04*

U.S. Cl. 210—151 **20 Claims**

1. A treatment system for treating waste water, said treatment system comprising:

a container having an upper portion, a lower portion, at least one waste water inlet in the upper portion of the container for



receiving the waste water, and an opening in the lower portion of said container for allowing the treated water to escape said container;

at least one elongated hollow casing within the lower portion of said container, said casing having an open bottom surface, said at least one casing defining at least two treatment chambers within said container, each of the treatment chambers comprising filtering means for treating the waste water;

means for aerating the treatment system;

at least one distribution means for distributing the waste water entering the container through the waste water inlet into at least one of said treatment chambers, each of said at least one distribution means comprising;

a water inlet pipe connected to said water inlet and leading above said casing;

a trough tiltably mounted on top of a corresponding casing, said trough extending along said casing and having two opposite sides, said trough defining at least one waste-water receiving means on one of said two sides, said trough being tiltable between a first position where said waste-water receiving means receives waste water exiting the water inlet pipe and a second position where the waste water received in the receiving means may flow out of the same, said trough also having counterweight means on its other side for holding said trough in said first position while it is filled up and for bringing it back from said second position to said first position after said at least one waste-water receiving means has been emptied; and

at least one distribution plate mounted above the filtering means in one of said treatment chambers defined by said corresponding hollow casing, said at least one distribution plate comprising a plurality of channels projecting from said trough, each of said channels having an end for receiving waste water flowing from the trough so that said waste water is divided into a plurality of flows each flowing in a corresponding channel, each of said channels also having at least one opening for letting the waste water drip into the corresponding treatment chamber.

5,618,415

METHOD FOR REMOVING DEBRIS FROM A FREE FLOWING WATER SYSTEM

Ronald L. Johnson, Jr., Midland, Mich., assignor to Johnson Technology Management, LLC, Midland, Mich.

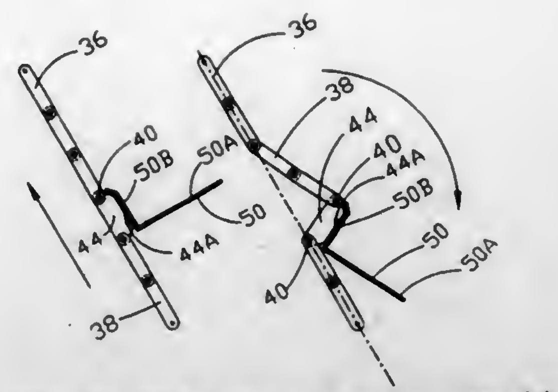
Division of Ser. No. 237,821, May 4, 1994, Pat. No. 5,573,659. This application Mar. 19, 1996, Ser. No. 618,202

Int. Cl.^{6} B01D *33/04;33/056;37/00*

U.S. Cl. 210—158 **14 Claims**

1. A method for removing debris from a free flowing water system, which comprises the steps of:

(a) providing an apparatus in the water system to remove the debris, the apparatus which comprises: a rail means having vertically oriented members defining an inclined path between the members, the rail means having a top and a bottom with the bottom extendable downward into the water system; a continuous belt means having a plurality of chain links hori-



zontally and vertically connected together in a plane of the belt means to form the belt means and having a plurality of openings extending horizontally across the belt means, wherein the belt means extends between and around the top and the bottom of the rail means and is moveable upward along the path; a first sprocket cylinder means mounted at the top of the rail means having a first longitudinal axis and with a plurality of first sprocket teeth which extend into the openings of the belt means across the belt means during movement of the belt means around the top of the rail means to clean the openings of the belt means; a second sprocket cylinder means mounted at the bottom of the rail means having a second longitudinal axis parallel to the first longitudinal axis and with a plurality of second sprocket teeth which engage the links of the belt means to move the belt means around the bottom of the rail means; a plurality of debris engaging means tiltably mounted on the belt means, wherein the debris engaging means extend horizontally across the belt means and tilt by moving the chain links of the belt means away from the path in response to debris of excessive weight which dumps the debris back into the water system wherein when one debris engaging means tilts, the debris engaging means horizontally aligned across the belt means with the one debris engaging means also tilt; and motor means mounted adjacent the top of the rail means and connected to the first sprocket cylinder means for moving the belt means around the rail means wherein there is

a collection means adjacent the top of the rail means of the apparatus to collect the debris removed from the water system; and

(b) activating the motor means of the apparatus to move the sprocket cylinder means and thus the belt means to remove debris from the water system and into the collection means, wherein the first sprocket teeth prevent accumulation of clogging deposits in the openings of the belt means.

5,618,416

ROOF DRAIN

William P. Haefner, McCullough Plumbing, Inc., 2436 Pennsylvania Ave., Madison, Wis. 53704

Filed May 30, 1995, Ser. No. 454,594

Int. Cl.^{6} E04D *13/04;* **E03F** *5/04*

U.S. Cl. 210—163 **3 Claims**

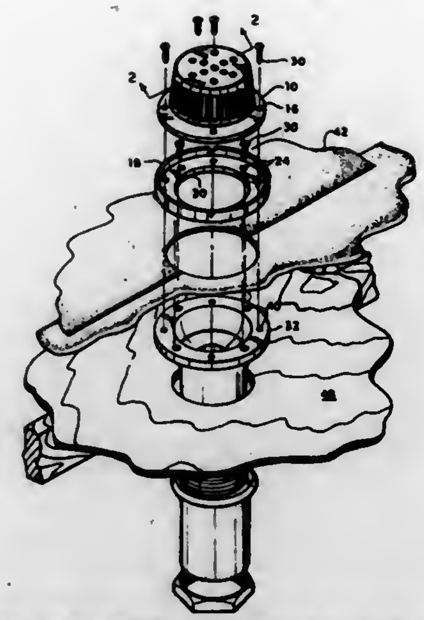
1. A roof drain apparatus comprising:

a grated, dome-shaped cover, said cover including an outward annular flange having throughbores;

a roofing material clamp having an upstanding radial flange, an upper surface, a lower surface and a central aperture, said roofing material clamp including throughbores in registration with the throughbores of said cover;

a generally funnel-shaped tubular drain body having an upper portion and a lower portion, said upper portion having an outward annular flange with threaded bores in registration with the throughbores of said roofing clamp, said lower portion having exterior threads;

threaded fasteners for demountably fixing said cover and said roofing material clamp to said drain body;



a generally funnel-shaped tubular sleeve for receiving said drain body, said sleeve having an upper portion and a lower portion, said upper portion having an outward annular flange; and

a nut interengaging said threads of said drain body, said nut abutting said lower portion of said drain body; whereby

upon installation of the roof drain apparatus and tightening said nut, said sleeve is urged against said drain body to exert a clamping force on a roof substrate therebetween, and thereby prevent the formation of bulges and depression in the roof substrate.

5,618,417

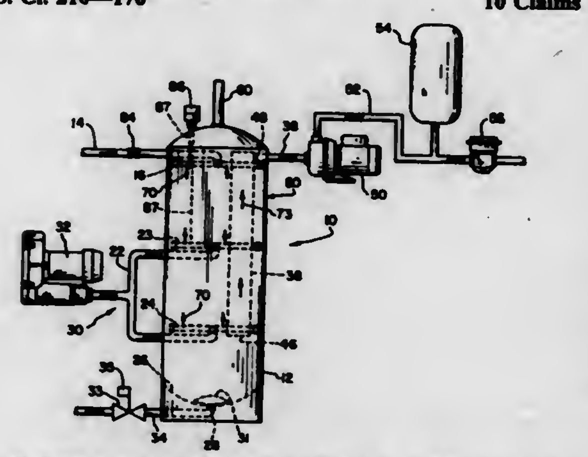
WATER AERATION SYSTEM

William E. Spindler, 5306 Indiana Ave., Fort Wayne, Ind. 46807

Filed Jul. 19, 1995, Ser. No. 504,343

Int. Cl.^{6} C02F *1/20;1/72*

U.S. Cl. 210—170 **10 Claims**



1. A water aeration system for receiving gas and/or iron laden water from a water source and delivering at least partially purified water to a service line, the system comprising:

a tank including an internal volume fillable with water, said internal volume comprising a top portion and a bottom portion;

a tank inlet, arranged in flow communication with the water source, through which the gas or iron laden water is introducible into said tank internal volume at a first elevation;

an aerator for introducing air bubbles into said tank at at least one elevation below said tank inlet, wherein said air bubbles migrate upwardly through the water introduced into said tank internal volume to at least partially purify the water, wherein said aerator comprises a regenerative blower for providing air at a sufficient pressure and volume to effect bubbling within said tank internal volume for causing said iron in said gas and/or iron laden water to precipitate, and said gas in said water to vent, whereby purified water is obtained;

a tank outlet, arranged in flow communication with the service line, through which purified water is removable from said tank internal volume; and

at least one generally upstanding water outlet pipe located within said internal volume and including a water inlet port and a water outlet port, wherein said water inlet port is positioned within said bottom portion of said tank internal volume, and wherein said water outlet port is positioned above said water inlet port and is connected in flow communication with said tank outlet;

whereby the water introduced through said tank inlet passes downwardly within said tank internal volume to said tank internal volume bottom portion while being subjected to the air bubbles for purification, enters said water inlet port and passes upwardly within said at least one generally upstanding water outlet pipe, and exists through said water outlet port into said tank outlet for removal from said tank internal volume.

5,618,418

DEAD-END MEMBRANE ADSORBERS

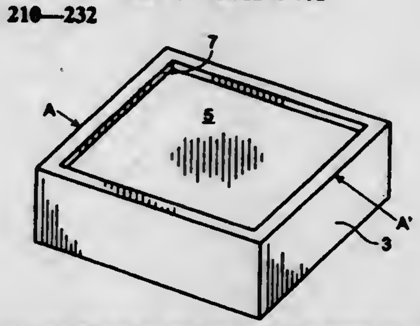
Wolfgang Demmer, Göttingen; Hans-Heinrich Hörl, Bovenden; Dietmar Nussbaumer, and Abdul R. Weiss, both of Göttingen, all of Germany, assignors to Sartorius AG, Gottingen, Germany

Filed Sep. 7, 1995, Ser. No. 525,311

Claims priority, application Germany, Sep. 14, 1994, 44 32 628.9

Int. Cl.^{6} B01D *64/02*

U.S. Cl. 210—232 **7 Claims**



1. A dead-end filtration unit having no housing and comprising:

(a) at least one modular filter cassette, each cassette comprising a plurality of laminar sections of porous adsorptive membrane, each laminar section of which has been rendered fluid-impermeable impermeable on its periphery and is encased at its periphery; with every other laminar section in said cassette by a durable elastic sealant wherein said durable elastic sealant overlaps said cassette on its periphery in both axial and radial directions; and

(b) two filter retainers having fittings for fluid feed inlet and permeate outlet, said retainers being adapted for retaining said at least one modular filter cassette in a fluid-tight connection.

5,618,419

FILTER CARTRIDGE WITH BACK STRUCTURE DEFINING A WEIR

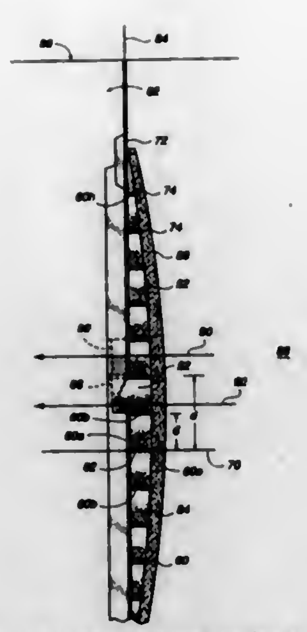
Charles O. Fuerst, Simi Valley, Calif., assignor to Aquaria, Inc., Moorpark, Calif.

Filed May 24, 1994, Ser. No. 248,052

Int. Cl.^{6} B01D *25/26*

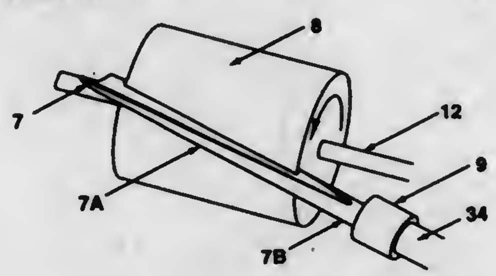
U.S. Cl. 210—238 **17 Claims**

14. A filter device for use in a filter box, comprising:



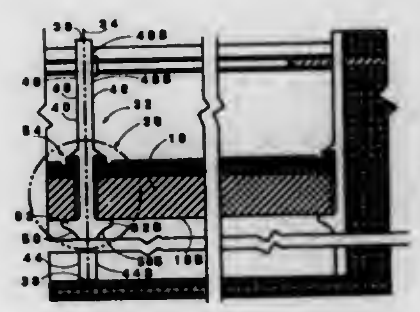
a substantially planar back structure having a plurality of integrally formed shelves, each shelf having a protruding edge extending on a first side of the structure, said structure further having a plurality of integrally formed pockets extending to the other side thereof, each pocket having one or more openings to enable fluid to flow through the back structure;
a plurality of granules of filter material disposed on the shelves and in the pockets, wherein the granules are generally larger than the openings; and
a porous filter element secured to the first side of the back structure, said filter element sealingly engaging the edges of the shelves and retaining the granules of filter material between the filter element and the shelves and pockets of the back structure, said filter device enabling a substantially uniform distribution of filter material granules to be maintained across the surface of the back structure, wherein the back structure defines an overflow weir at the top of the back structure to indicate by the passage of water over the weir that the filter is at least partially clogged, wherein the overflow weir has a predetermined size and position so that the combined flow of water through the device and over the weir remains above a predetermined minimum as the filter becomes progressively clogged, and wherein the weir is formed by an opening in the back structure which defines a handle above the weir by which the device may be manually grasped and removed from the filter box.

5,618,420
CONTAINING, RETRIEVING AND STORING OIL SPILLS
Carl J. Stella, 164 Ridge Rd., Bristol, Conn. 06010
Filed Jun. 3, 1994, Ser. No. 253,291
Int. Cl.[6] E02B *15/021*
U.S. Cl. 210—242.3 **6 Claims**



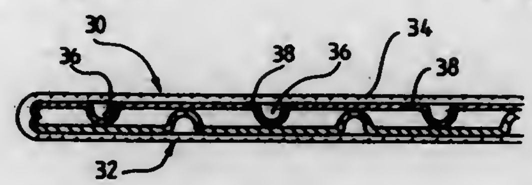
1. A system for containing and recovering oil spills from a vessel comprising: barrier means for containing the spilled oil, said barrier means and a means for deploying said barrier means being carried by said vessel; skimmer means for collecting said oil, said skimmer means comprising a rotating oil collection means, scraper means for removing said oil from said collection means, and pump means for pumping said oil; and collapsible storage means carried by said vessel for storing said collected oil; wherein said scraper means contacts said collection means at angle to the horizontal, said scraper means is of semi-circular cross section where said scraper means contacts said collection means, said semi-circular cross section increases in circumference to a circular, tubular cross section at a lower end of said scraper means, and said pump means is connected to said lower end of said scraper means.

5,618,421
UNDERDRAIN FILTER PLATE INSTALLATIONS IN AUTOMATIC BACKWASH FILTER SYSTEMS
Jerome C. Sorosinski, Pasadena, Md., assignor to Infilco Degremont Inc., Richmond, Va.
Filed Feb. 26, 1996, Ser. No. 607,136
Int. Cl.[6] B01D *24/38*
U.S. Cl. 210—264 **7 Claims**



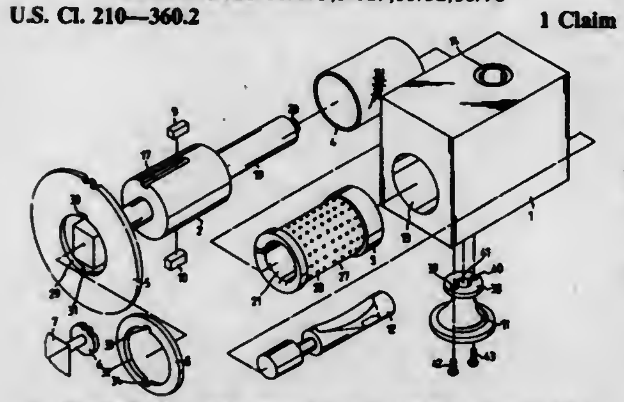
1. In an automatic backwash filter system that includes a filter tank having a bottom and being divided into a multiplicity of seriate cells of substantially the same width containing filtration material and defined by a plurality of parallel vertical cell sheets, each of said cells containing a horizontal rigid porous filter plate positioned between the pair of said cell sheets defining said each cell and at a fixed position above said bottom, the improvement of filter plate installation means which comprises:
contoured cell sheets each defined by a vertical longitudinal axis, a bottom edge, a top edge, a first profiled face on one side and a second profiled face on the opposite side,
said first profiled face comprising a lower straight segment that includes said bottom edge, an upper straight segment that includes said top edge, said lower and upper straight segments defining the facial plane of said first profiled face, a first protruding segment that includes a support ledge extending beyond said facial plane normal to said longitudinal axis and a second protruding segment that includes a retention section extending beyond said facial plane normal to said longitudinal axis,
said second profiled face being a mirror image of said first profiled face,
each said filter plate being defined by a bottom surface, a top surface, an aft side portion and a fore side portion, said bottom surface being supported at said aft side portion upon said support ledge of a profiled face of one of said contoured cell sheets and at said fore side portion upon said support ledge of a profiled face of a second of said contoured cell sheets and
retention means in combination with each said contoured cell sheets to engage said top surface of said filter plate to secure it against upward movement in said filter tank comprising said second protruding segments in said first and second profiled faces, elongated filler members and elongated retention bars.

5,618,422
DISC FILTER SECTOR
Ari Pelkiö, Savonlinna, Finland, assignor to Ahlstrom Machinery Oy, Helsinki, Finland
PCT No. PCT/FI94/00111, § 371 Date Feb. 6, 1996, § 102(e) Date Feb. 6, 1996, PCT Pub. No. WO94/26389, PCT Pub. Date Nov. 24, 1994
PCT Filed Mar. 28, 1994, Ser. No. 545,731
Claims priority, application Finland, May 6, 1993, 932039
Int. Cl.[6] B01D *33/23*
U.S. Cl. 210—323.1 **21 Claims**



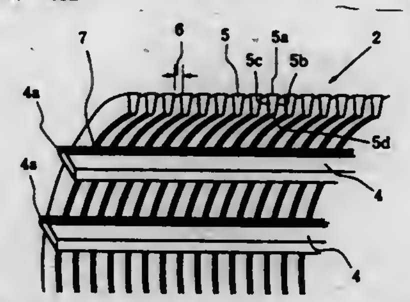
1. A disc filter sector comprising:
a filter member; and
a supporting structure for said filter member;
said supporting structure comprising two opposed perforated plate elements each consisting of a plurality of substantially flat supporting portions substantially parallel to said filter member and engaging said filter member, and a plurality of recess portions spaced from each other by said supporting portions and not engaging said filter member, recess portions of each of said opposed plate elements engaging a portion of the other of said opposed plate elements.

5,618,423
ON-THE-FLY LONG-RUNNING ROTARY FILTRATION SCREEN DEVICE
Ping Ho Lin, No. 2, Alley 54, Lane 747, Chung Cheng Pei Rd., Young Kang, Tainan, Taiwan
Filed Jul. 23, 1996, Ser. No. 685,297
Int. Cl.[6] B01D *33/073;33/29;33/52;33/76*
U.S. Cl. 210—360.2 **1 Claim**



1. An on-the-fly long-running rotary filtration screen device comprising a main housing, said housing includes a round through hole and an intake opening in the upper part of the housing which communicates with the housing through hole via a funnel-shaped opening in said housing, the device further comprising a filtration bar formed of a split-flow bar, a generally cylindrical filtration sleeve having a threaded hole, a cylindrical filtration screen, a large gear and a rotating small gear connected to a motor, a stopping disc, two square keys, an outlet housing and a residue-removing rod, wherein (1) one end of the split-flow bar of the filtration bar is equipped with a round rod connected to a hydraulic cylinder, the other end of the split-flow bar is also equipped with a round rod, the end of this other end round rod is equipped with a protruding threaded rod, and said protruding threaded rod is screwed into the threaded hole of the filtration sleeve, (2) the filtration sleeve is equipped with a number of small round holes that are opened to the round hole center inside the filtration sleeve, and the outer surface of the cylinder is equipped with the filtration screen, (3) the upper and lower sides of the split-flow bar are each equipped with a long square slot, the filtration bar is inserted into the round through hole of the main housing, and the large gear, being annular shaped with a round center hole having two opposed square slots, is then inserted onto the split-flow bar, which is followed by inserting the two square keys into the spaces formed by the two opposing square slots of the split-flow bar and the two opposing square slots of the round hole of the large gear and then inserting the stopping disc, being annular shaped with a round center hole having two opposed square slots, next to the large gear in a manner that the two square keys are housed inside the two square slots of the stopping disc, thereby immobilizing the large gear and the stopping disc, (4) the bottom of the main housing is equipped with a circular sunk slot, the circular sunk slot is equipped with two small threaded holes, said two threaded holes are aligned with the two threaded holes of the outlet housing, and then a pair of screws are inserted, thereby fastening the outlet housing onto the main housing, (5) the residue-removing rod is inserted into a non-piercing round hole at the lower part of the main housing and is coupled to said hydraulic cylinder, (6) after actuating the motor and the hydraulic cylinder, the rotating small gear which is coupled to the large gear causes the large gear to rotate, and, since the large gear and the split-flow bar are bound to each other by means of the two square keys, the filtration bar also rotates inside the round through hole of the main housing, (7) the action of the hydraulic cylinder causes the filtration bar to reciprocate, thereby allowing a plastic raw material to be fed from the intake opening on the upper part of the main housing and through said funnel-shaped opening in said housing, pass through the filtration screen and the small round holes, mix inside the filtration bar, flow into a conical opening at the bottom of the main housing via a space formed between the split-flow bar and the filtration sleeve and be discharged from a funnel-shape outlet of the outlet housing, and (8) the mixing and agitation action causes extraneous matters to be pushed from the cylindrical filtration screen into an upper elliptical opening and a lower round opening of the residue-removing rod, and the hydraulic cylinder pushes the residue-removing rod outward periodically or when a certain amount of the extraneous matters has been accumulated, thereby allowing the extraneous matters accumulated inside the elliptical opening and round opening to be discharged from the main housing.

5,618,424
ROTARY DRUM TYPE DEVICE FOR SEPARATING SOLID PARTICLES FROM A LIQUID
Tadayoshi Nagaoka, Mihara machi, Japan, assignor to Nagaoka International Corp., Japan
Filed Apr. 21, 1995, Ser. No. 427,089
Int. Cl.[6] B01D *39/10;33/06*
U.S. Cl. 210—402 **10 Claims**



1. A rotary drum type device for separating solid particles from a liquid comprising:
a rotary screen drum having a longitudinal axis and including support rods extending axially to the direction of rotation of said screen drum and arranged generally cylindrically at a predetermined interval, said support rods having a projecting portion which extends radially outward from the longitudinal axis of said rotary screen drum to an outer periphery of a end portion of said support rods, and a wedge wire wound spirally on said outer periphery of said support rods in substantially

crossing direction to said support rods, said wedge wire being arranged with one side facing outward from said longitudinal axis of said screen drum and one side of said wedge wire together with one side of an adjacent wedge wire forming a slit which widens radially inwardly to said longitudinal axis of said screen drum between said adjacent wedge wire portions and said wedge wire being welded, at an inward apex which is inclined toward said longitudinal axis of said screen drum, to the projecting portion of the support rods at crossing points of the wedge wire and the support rods, said screen drum including a seal plate on each end;

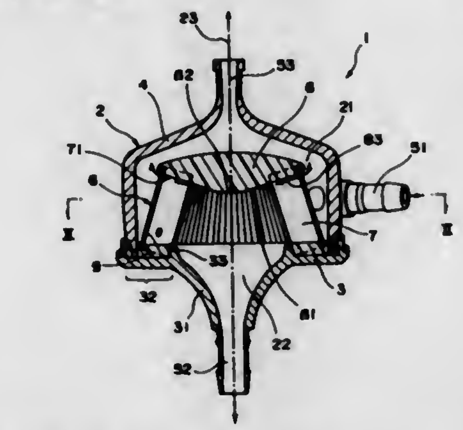
a container containing a liquid to be treated disposed adjacent to the outside of a portion of the surface of said rotary screen drum;

a suction device connected to the rotary screen drum for reducing pressure in the rotary screen drum; and

scraper means for stripping off cake produced on the outer periphery of the rotary screen drum,

the width of said slit of the wedge wire being within a range between 1 micron and 150 microns.

5,618,425
FILTERING APPARATUS WITH A PLEATED FILTERING ELEMENT EMBEDDED IN A FILLING MATERIAL
Makoto Mitamura, and Hidetaka Nakayama, both of Shizuoka-ken, Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 235,533, Apr. 29, 1994, abandoned. This application Jun. 14, 1996, Ser. No. 663,595
Claims priority, application Japan, Apr. 30, 1993, 5-128300; Feb. 3, 1994, 6-011743
Int. Cl.^{6} B01D *19/00;35/00*
U.S. Cl. 210—493.5 **10 Claims**



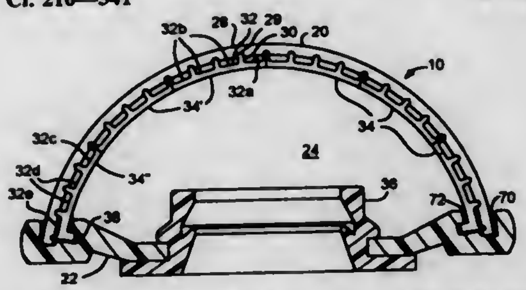
10. A filtering apparatus, comprising:

a housing formed with an inlet through which a fluid to be treated flows into the housing and an outlet through which treated fluid drains out of the housing, said housing also being formed with a vent;

a filtering element provided inside said housing to partition the inside of said housing into a first space that communicates with said inlet and a second space that communicates with said outlet, said filtering element being made from a porous material that has been folded to form a plurality of pleats and formed so as to have a substantially cylindrical shape with the pleats radiating outwardly, the cylindrically shaped filtering element having a bottom portion and a top portion provided with an opening;

a filling material for sealing the opening of the top portion of said filtering element with the top portion of said filtering element being embedded in said filling material, said filling material having a lower surface that is positioned at the side of said second space of said housing, at least a portion of said lower surface forming an upwardly inclined surface that intersects the pleats, with said upwardly inclined surface of said lower surface causing air bubbles generated in said second space to easily discharge to the first space.

5,618,426
LATERAL MEMBER ASSEMBLY FOR UNDERDRAIN LATERAL SYSTEM
Frederick W. Eischen, Stacy; Stephen A. Uban, Stillwater, and Richard C. Maxson, Maple Grove, all of Minn., assignors to Wheelabrator Water Technologies Inc., New Brighton, Minn.
Filed Jun. 15, 1995, Ser. No. 490,656
Int. Cl.^{6} B01D *24/38*
U.S. Cl. 210—541 **10 Claims**

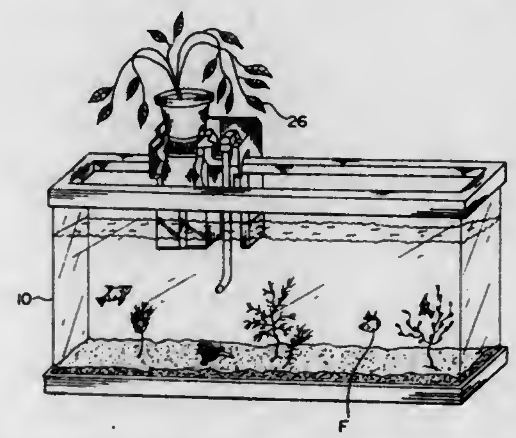


1. An elongated lateral member assembly for use in an underdrain lateral distribution system which is adapted to be positioned generally horizontally beneath a bed of granular media which must be periodically backwashed with fluids, the elongated lateral member assembly comprising an elongated generally flat baseplate member and an elongated screen member having an upwardly directed media retaining portion and being mounted at its elongated side edges to elongated side edge portions of said baseplate, the baseplate member being formed of a rigid extruded plastic, said screen member having an inner support portion comprising a plurality of extruded plastic channel-shaped members which have inner perforated web portions and elongated, radially outwardly extending outer rib portions to which a plurality of plastic wires are welded in a direction generally normal to the direction of the outer rib portions so as to form a plurality of narrow slot-shaped openings, elongated projections formed on a pair of said plurality of channel-shaped members which define the opposed elongated side edges of said screen member, said elongated projections extending generally radially inwardly toward each other along the length of said screen member, said elongated baseplate member having generally vertically extending channels formed in the upper surface of its opposed side edges and extending along the length thereof, the opposed elongated side edges of said screen member being mounted in said channels, each of said channels in said baseplate member having inner and outer spaced apart walls, with the inner wall having an inwardly extending recessed slotted portion spaced from the top surface of said inner wall, said slotted portion being complementary to and serving to retain the elongated projection formed on one of the opposed side edges of said screen member against upward movement, and at least one elongated, flexible sealing means positioned between at least one wall of each of the vertically extending channels and a surface of said screen member.

5,618,427
COMPOSITION AND METHOD FOR DEGRADATION OF NITROAROMATIC CONTAMINANTS
Alan G. Seech, Mississauga; James E. Cairns, Toronto, and Igor J. Marvan, Mississauga, all of Canada, assignors to W. R. Grace & Co.-Conn., New York, N.Y.
Continuation of Ser. No. 387,540, Feb. 13, 1995, abandoned. This application Dec. 12, 1995, Ser. No. 570,366
Int. Cl.^{6} C02F *1/58*
U.S. Cl. 210—602 **20 Claims**

1. A method of degrading nitroaromatic organic chemical contaminants in water, sediment, or soil comprising adding a combination of (a) fibrous organic matter capable of supporting growth of bacteria or fungus indigenous to said water, sediment or soil, and (b) multi-valent metal particles, to nitroaromatic contaminant containing water, sediment or soil, in amounts and under conditions sufficient to create a stable negative redox potential for said water, sediment or soil relative to the absence of (a) and (b) therein, thereby promoting anaerobic degradation of said nitroaromatic compounds.

5,618,428
FILTRATION SYSTEM FOR AQUARIUMS
Arthur D. Oslund, 302 Stanmore Rd., Baltimore, Md. 21212
Filed Jan. 22, 1996, Ser. No. 592,842
Int. Cl.^{6} A01K *63/00;63/04*
U.S. Cl. 210—602 **10 Claims**



1. A filtration system for an aquarium having water and fish therein, the filtration system comprising:

a container mounted in juxtaposition the aquarium, the container being in fluid communication with the aquarium,

a pot having soil and a plant having roots growing therein disposed above the container,

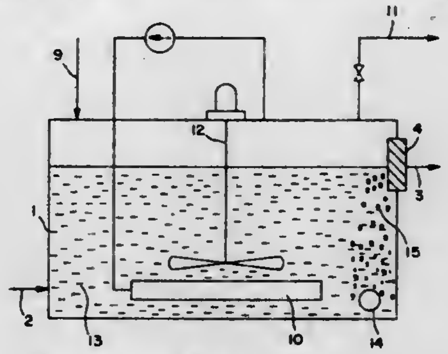
a porous cartridge having a top and having filtration means disposed therein, the porous cartridge being disposed within the container,

opening means in the pot communicating with the cartridge wherein the roots of the plant grow through the opening means into the cartridge and utilize nutrients carried by the water, thereby maintaining the aquarium in a substantially waste-free condition.

5,618,429
METHOD FOR REDUCING SLIME AND FILM FORMATION IN PLANTS IN WHICH THE WATER OF PAPER AND PULP MACHINES IS CIRCULATED AND IN PLANTS IN WHICH COOLING WATER IS CIRCULATED
Christine Möller-Bremer, Nordholz, Germany, assignor to Lumos Trading & Investments Corporation, Tortola, Virgin Islands (Br.)
Filed Mar. 22, 1995, Ser. No. 408,206
Claims priority, application Germany, Mar. 24, 1994, 44 10 271.2
Int. Cl.^{6} C02F *1/50*
U.S. Cl. 210—610 **17 Claims**

1. A method for reducing slime and film formation in a plant which circulates water from paper and pulp machines or a plant which circulates cooling water, said method comprising the steps of: (a) adding nutrients which favor the growth of non-sessile microorganisms to the circulating water; and (b) adjusting the addition of the nutrients to favor the growth of non-sessile microorganisms over the growth of sessile microorganisms.

5,618,430
PROCESS FOR PERFORMING REACTIONS
Uwe Fuchs, Munich, Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Germany
PCT No. PCT/EP93/00403, § 371 Date Feb. 23, 1995, § 102(e) Date Feb. 23, 1995, PCT Pub. No. WO93/16792, PCT Pub. Date Sep. 2, 1993
PCT Filed Feb. 19, 1993, Ser. No. 290,898
Claims priority, application Germany, Feb. 24, 1992, 42 05 572.5
Int. Cl.^{6} B01J *2/28;* **C02F** *1/28;3/08*
U.S. Cl. 210—616 **20 Claims**



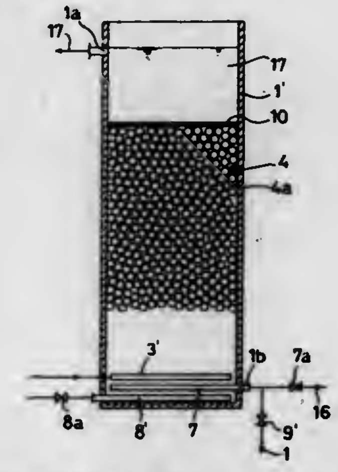
1. A process for treating a fluid comprising:

bringing said fluid into contact with reaction particles which promote or make possible a reaction, which particles are in suspension in a reactor and/or set in motion within a reactor,

wherein said fluid is drinking water, waste water, waste gas or combinations of waste water and waste gas, and

wherein said reaction particles are essentially planar particles having a thickness of 5 μm–1500 μm and an area of 5 mm^2–1000 mm^2.

5,618,431
METHOD OF CLEANING FLOATING FILTER MEDIUM FOR BIOLOGICAL FILTERING APPARATUS
Masao Kondo; Senichi Hozo, and Michihiro Fujii, all of Osaka-fu, Japan, assignors to Best Industries, Inc., Osaka-fu, Japan
Filed Mar. 12, 1996, Ser. No. 613,721
Int. Cl.^{6} C02F *3/06*
U.S. Cl. 210—618 **8 Claims**



1. A method of preparing and cleaning a floating filter medium for a biological cleaning apparatus, comprising the steps of:

forming a filter layer by placing in a treating tank a granular floating filter medium having a specific gravity of about 0.3 or less and a particle size of 1 to 15 mm;

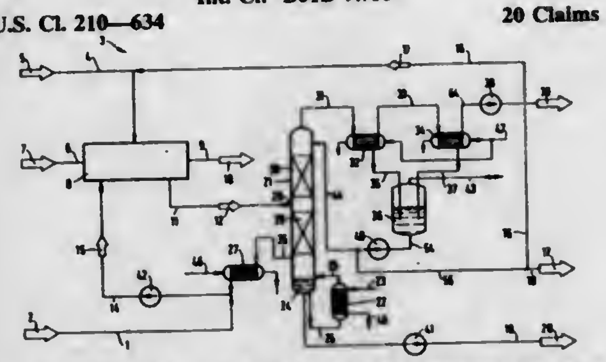
allowing wastewater to enter said treating tank and flow through the filter layer;

separating and removing excess sludge from the filter medium by discharging an amount of water from the treating tank, from below the filter layer, equivalent to 0.5 to 1.5 times the filling amount of the filter medium in a time of between 5 to 90 seconds.

5,618,432
PROCESS FOR SOLVENT RECOVERY

Siegfried Rewitzer, Ihrlerstein, and Peter M. Roth, Eppstein/Ts., both of Germany, assignors to Hoechst Agteingesellschaft, Germany

Filed Jan. 18, 1994, Ser. No. 183,155
Claims priority, application Germany, Jan. 15, 1993, 43 00 921.2
Int. Cl.[6] B01D *11/00*
U.S. Cl. 210—634 **20 Claims**



1. A method of recycling liquids used in a substance treatment process to form a treated substance comprising the steps of:
a) supplying at least one solvent to the substance treatment process,
b) supplying at least one diluent to the substance treatment process,
c) supplying at least one raw substance to the substance treatment process,
d) contacting the raw substance with said at least one solvent and said at least one diluent to form a mixture comprising a treated substance, an used solvent, an used diluent, and residues,
e) ejecting the treated substance from the substance treatment process,
f) separating the used solvent, used diluent and residues by liquid recovery into an used solvent fraction which contains a major portion of used solvent, an used diluent fraction which contains a major portion of used diluent, and a treated residue fraction which contains a major portion of treated residue,
g) returning the used solvent fraction to the substance treatment process,
h) returning the used diluent fraction to the substance treatment process, and
i) removing the treated residue fraction from the substance treatment process.

5,618,433
PROCESSES FOR SEPARATING AND CONCENTRATING CERTAIN IONS FROM MIXED ION SOLUTIONS USING ION-BINDING LIGANDS BONDED TO MEMBRANES

Bryon J. Tarbet, Highland; Ronald L. Bruening, Springville, both of Utah; Anthony J. Di Leo, Westford, Mass.; Philip M. Goddard, New Ipswich, N.H., and Louis M. Scarmoutzos, Andover, Mass., assignors to Millipore Corporation, Bedford, Mass.

Division of Ser. No. 233,640, Apr. 26, 1994, Pat. No. 5,547,760. This application Jul. 23, 1996, Ser. No. 685,432
Int. Cl.[6] B01D *11/00;63/00*
U.S. Cl. 210—634 **28 Claims**

1. A method for concentrating, removing, and separating selected ions from a source solution comprising the steps of:
(a) contacting said source solution having a first volume with a composition comprising an ion-binding ligand having an affinity for the selected ions which is covalently bonded to a membrane said membrane ligand combination represented by the formula:

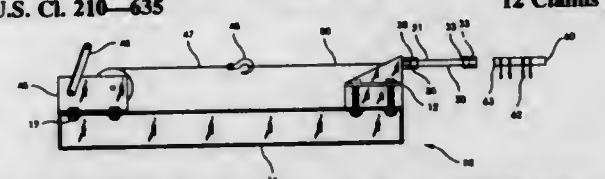
M-B-L

wherein M is any membrane having hydrophilic surface properties and containing polar functional groups. L is any ligand having an affinity for the selected ions containing a functional grouping reactive with an activated polar group from the membrane and B is the covalent linkage formed by the reaction between the activated polar group of the membrane and the functional group of the ligand wherein said ligand portion of the composition has an affinity for said selected ions such as to form a complex between said selected ions and said ligand portion of said composition;
(b) removing the source solution from contact with said composition to which said selected ions have been complexed; and
(c) contacting said composition having said selected ions complexed thereto with a smaller volume of an aqueous receiving solution in which said selected ions are either soluble or which has greater affinity for such selected ions than does the ligand portion of the composition thereby quantitatively stripping such selected ions from the ligand and recovering said selected ions in concentrated form in said receiving solution.

5,618,434
DEVICE FOR PACKING CHROMATOGRAPHIC STATIONARY PHASES

Michael Ladisch; Kent Hamaker; Richard Hendrickson, and Mark Brewer, all of West Lafayette, Ind., assignors to Purdue Research Foundation, West Lafayette, Ind.

Division of Ser. No. 260,021, Jun. 15, 1994. This application Oct. 23, 1995, Ser. No. 553,750
Int. Cl.[6] B01D *15/08*
U.S. Cl. 210—635 **12 Claims**



7. A process for packing a chromatography column with a rolled fabric stationary phase, comprising:
(i) providing a device including,
a brace member having an engagement surface, the brace member defining a thru-hole at a location so that a passageway defined through the column is aligned with the thru-hole of the brace member when a first end of time column is engaged with the engagement surface of the brace member,
a funnel member engageable with an end of the column opposite the first end, the funnel member having converging walls configured to radially compress the rolled fabric stationary phase for entry into the passageway of the column when the rolled fabric stationary phase is pulled through the funnel member,
a mechanism for applying mechanical force to pull the rolled fabric stationary phase through the funnel member wherein the stationary phase is radially compressed, and into the passageway of the column;
(ii) engaging the first end of the column to the engaging surface;
(iii) engaging a first end of the funnel member to the end of the column opposite the first end of the column;
(iv) positioning a rolled fabric stationary phase at a second end of the funnel member opposite the first end of the funnel member; and
(v) operating said mechanism to apply mechanical force to the rolled fabric stationary phase to pull the stationary phase through the funnel, wherein the stationary phase is radially compressed, and into the column.

5,618,435
SYNTHESIS OF INORGANIC MEMBRANES INCLUDING METALS

James R. Fehlner, Salem Township, Wayne County, Pa., and Zhenyu Zhang, New York, N.Y., assignors to Inrad, Northvale, N.J.

Continuation-in-part of Ser. No. 864,814, Mar. 31, 1992, Pat. No. 5,474,681. This application Jun. 7, 1995, Ser. No. 474,836
Int. Cl.[6] B01D *71/02*
U.S. Cl. 210—651 **48 Claims**

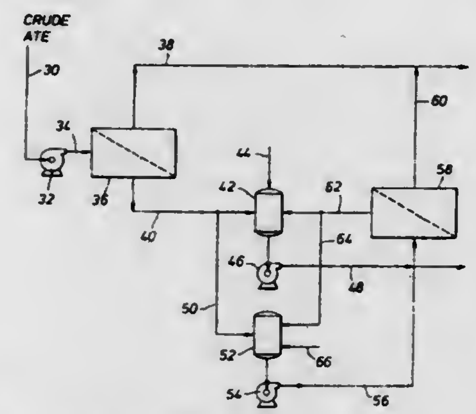
1. A method of forming a layer of zeotype material comprising the steps of combining silicone material with a basic solution, a structure directing template material and a source of heteroatom, reacting the combination with heat at a temperature from 90° C. to 300° C. for more than 4 hours and forming a layer of crystalline zeotype material including the heteroatom in the crystalline framework.

37. The method of claim 1, wherein the layer is mounted on a support for permitting fluids to pass therethrough.

5,618,436
PROCESS FOR CLARIFYING METAL ALKYLS

L. Ben Decker, Lago Vista; Mark W. Hellums, Austin, both of Tex., and Mark M. Chavez, Lake Charles, La., assignors to CONDEA Vista Company, Houston, Tex.

Filed Feb. 16, 1996, Ser. No. 602,983
Int. Cl.[6] B01D *61/00*
U.S. Cl. 210—651 **13 Claims**

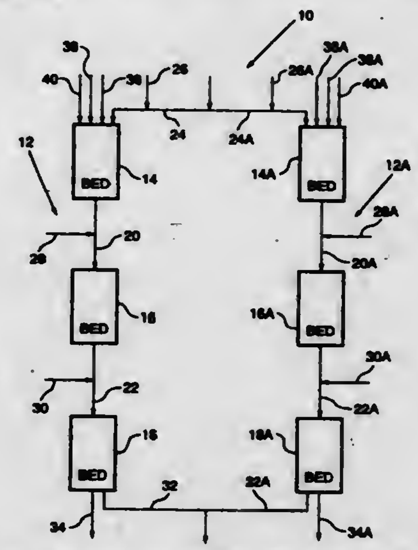


1. A process for clarifying a metal alkyl reaction product, comprising:
passing a first feed stream comprising a metal alkyl, a first, substantially water-immiscible organic solvent, and solid contaminants through a first vibrating membrane filter, said first filter being substantially continuously vibrated while said first feed stream is passing therethrough;
periodically interrupting the flow of said first feed stream through said first vibrating membrane filter while continuing to vibrate said first vibrating membrane filter; and
recovering from said first filter a first permeate substantially free of said solid contaminants and a first concentrate containing said solid contaminants.

5,618,437
PROCESS FOR REMOVING SULPHATE FROM AQUEOUS SOLUTION

Judith G. Ulan, Richmond; Kenneth R. Maycock, White Rock; Thomas S. Drackett, and Felix M. F. Mok, both of Vancouver, all of Canada, assignors to Chemetics International Company Ltd., Vancouver, Canada

Filed May 19, 1994, Ser. No. 246,091
Int. Cl.[6] B01D *15/04*
U.S. Cl. 210—679 **15 Claims**



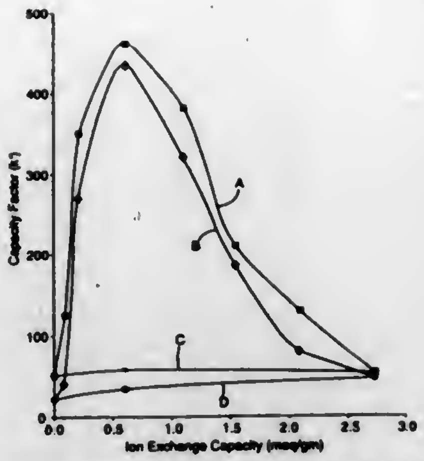
1. A method for removing sulphate ions from an aqueous solution of an alkali metal halide containing sulphate ions, which method comprises contacting said solution with a particulate, composite ion-exchange material comprising a first hydrous oxide of a first metal selected from the group consisting of titanium, zirconium and cerium dispersed on the surface of a support comprising a brine solution compatible material, wherein said support comprises a second hydrous oxide of a second metal selected from the group consisting of titanium, zirconium and cerium, provided that when said first metal and said second metal are the same, about 90% by number of the particles of said secood hydrous oxide is at least ten times greater in size than 90% by number of the particles of said first hydrous oxide.

5,618,438
METHOD OF ISOLATING AN ANALYTE USING A SOLID PHASE EXTRACTION MEDIUM

James S. Fritz; Philip J. Dumont, both of Ames, Iowa; Donald F. Hagen, Woodbury, Minn.; Craig G. Markell, White Bear Township, Ramsey County, Minn., and Luther W. Schmidt, Batesville, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 238,364, May 5, 1994. This application May 23, 1995, Ser. No. 447,662
Int. Cl.[6] B01D *15/04*
U.S. Cl. 210—679 **30 Claims**

1. A method of isolating at least one analyte from a fluid comprising the step of:
passing a fluid including at least one non-ionic neutral analyte through at least one solid phase extraction medium comprising
(a) a fibrous matrix, and
(b) sorptive particles enmeshed in said matrix comprising
(1) in the range of more than 20 to 100 weight percent, based on total particles, of functionalized poly(styrene divinylbenzene) particles comprising at least one ionic functional group selected from the group consisting of sulfonate group, carboxylate group, quaternary ammonium groups $N^{+}(R)_3$ wherein each R independently is selected from C_1 to C_4 alkyl groups and aminated groups



$N(R^1)_2$ wherein each R^1 is independently selected from the group consisting of hydrogen, C_1 to C_4 alkyl groups, and C_1 to C_4 alkanol groups covalently bonded thereto, the functionalized particles having sorptive capability towards said non-ionic neutral analyte, the ionic functional group being present in a concentration range of 0.1 to 2.5 milliequivalents per gram of poly(styrene divinylbenzene), and

(2) in the range of 0 to less than 80 weight percent, based on total particles, of porous, organic-coated or uncoated, inorganic particles,

the ratio of sorptive particles to fibrous matrix being in the range of 40:1 to 1:4 by weight.

5,618,439

METHOD FOR PURIFYING INDUSTRIAL SEWAGE WATER

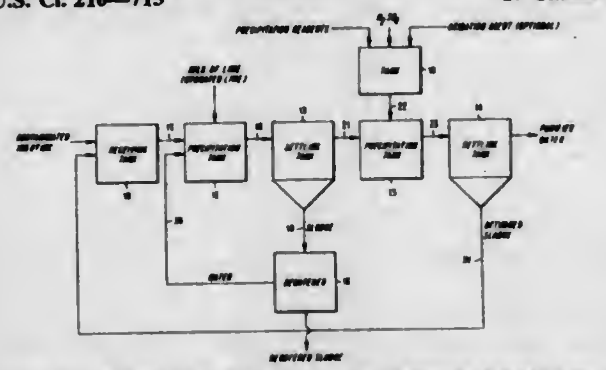
Torkel Allgulin, Helsingborg, Sweden, assignor to Boliden Contech AB, Stockholm, Sweden

Filed Mar. 24, 1994, Ser. No. 216,957

Claims priority, application Sweden, Apr. 20, 1993, 9301283

Int. Cl.⁶ C02F *1/52;1/62;1/72*

U.S. Cl. 210—713 **17 Claims**



1. A method for purifying contaminated industrial sewage water solutions or other aqueous solutions having varying concentrations of contaminants and/or various contaminants including ions of metals and elements selected from the group consisting of As, Bi, Sb, P and Se, said method consisting essentially of conducting precipitation in a first precipitation stage by adding lime in a surplus quantity whereby a pH of about 12 is established and maintained in the solution and contaminant is precipitated so as to form a solution and to form a precipitate that is isolated and removed together with residual lime, conducting precipitation in a second precipitation stage by adding a reagent for precipitation at a pH in the range of 4–11 wherein residual contaminant in the formed solution from the first precipitation stage is precipitated in the second precipitation stage and wherein the precipitate from the second precipitation stage is isolated and returned to the first precipitation stage.

5,618,440

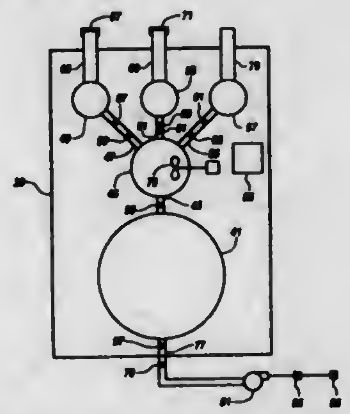
METHOD AND APPARATUS FOR TREATING AND DISINFECTING WATER AND/OR WASTEWATER

James A. Mason, Theodore, Ala., assignor to George L. Williamson, Fairhope, Ala.

Continuation-in-part of Ser. No. 352,583, Dec. 9, 1994, abandoned, which is a continuation-in-part of Ser. No. 65,402, May 24, 1993, abandoned, which is a continuation-in-part of Ser. No. 898,509, Jun. 15, 1992, abandoned, which is a continuation-in-part of Ser. No. 876,292, Apr. 30, 1992, abandoned, which is a continuation-in-part of Ser. No. 763,185, Sep. 20, 1991, Pat. No. 5,122,282, which is a continuation-in-part of Ser. No. 579,167, Sep. 7, 1990, abandoned, which is a continuation-in-part of Ser. No. 438,847, Nov. 20, 1989, abandoned. This application May 10, 1996, Ser. No. 644,741

Int. Cl.⁶ C02F *1/76*

U.S. Cl. 210—716 **10 Claims**



1. An apparatus for treating and disinfecting water and/or wastewater comprising:

(a) a rectangular housing;

(b) said housing being free standing;

(c) said housing being insulated;

(d) said housing having means for being heated;

(e) a product storage chamber;

(f) a first mixing chamber;

(g) fluid metering means being provided between said product storage chamber and said first mixing chamber;

(h) a source of sodium chloride and a first storage chamber for storing said sodium chlorite;

(i) fluid metering means being provided between said first storage chamber and said first mixing chamber;

(j) a source of organic acid and a second storage chamber for storing said organic acid;

(k) fluid metering means being provided between said second storage chamber and said first mixing chamber;

(l) a third storage chamber for storing water;

(m) fluid metering means being provided between said third storage chamber and said first mixing chamber;

(n) filling means being provided to said first storage chamber;

(o) filling means being provided to said second storage chamber;

(p) filling means being provided to said third storage chamber;

(q) said first mixing chamber being equipped with means for mixing;

(r) said storage chamber having outlet means for dispensing the mixture containing disinfecting solution;

(s) a source of water and/or wastewater to be disinfected and a contact chamber for mixing the disinfecting solution and said water and/or wastewater;

(t) said chamber having an inlet line and an outlet line for the water and/or wastewater;

(u) means containing an aqueous solution of (1) an organic hydroxy acid or carboxylic acid and (2) an alkali metal or alkaline earth metal chlorite;

(v) means for filtering the disinfecting solution wherein unreacted constituents are removed from the disinfecting solution;

(w) means for providing said aqueous solution to said contact chamber;

(x) said contact chamber being sized to provide a detention time of no more than 5 minutes for the water and/or wastewater;

(y) said contact chamber being sealed from the atmosphere; and

(z) said contact chamber having means for providing a pressure of greater than 1 atmosphere on the contents of said contact chamber, said apparatus thereby effective to destroy substantially all bacteria, microbes and other pathogenic organisms in said water and/or wastewater.

5,618,441

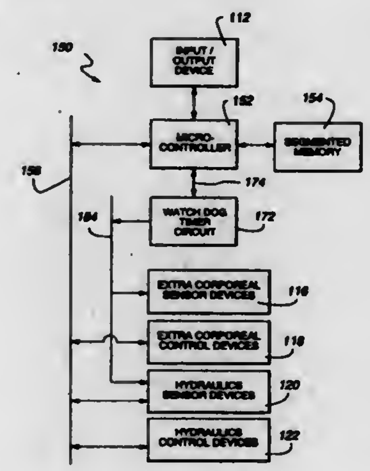
SINGLE MICROCONTROLLER EXECUTION OF CONTROL AND SAFETY SYSTEM FUNCTIONS IN A DIALYSIS MACHINE

Jim Rosa, 11183 Conifer Mountain Rd.; Conifer, Colo. 80433; Steve Love, 314 Bluebird Dr., Bailey, Colo. 80421; Preben A. Peterson, Rue Rollebeek 40, 1000 Bruxelles, Belgium, and Antonio Bosetto, Via Ippolito Nievo 18/A, 41037 Mirandola (Modena), Italy

Filed Jun. 7, 1995, Ser. No. 483,456

Int. Cl.⁶ B01D *61/32*

U.S. Cl. 210—739 **16 Claims**



16. A method of operating a dialysis machine during a dialysis treatment, comprising the steps of:

recording instructional code for use by a single microcontroller in a segmented memory;

isolating the instructional code defining safety system functions and safety data in a first portion of the segmented memory;

isolating the instructional code defining control system functions and control data in a second portion of the segmented memory;

executing the instructional code for the safety system functions on the microcontroller to perform safety system functions;

executing the instructional code for the control system functions on the microcontroller to perform control system functions;

executing the instructional code of a real time operating system (RTOS) on the microcontroller during execution of the instructional code for the safety system and control system functions;

including within the RTOS instructional code a capability to recover a state vector upon a failure in the execution of the instructional code for one of the safety system functions or the control system functions;

employing a protected mode of operation in the microcontroller to recover a state vector upon a failure in the execution of the instructional code of the RTOS and the safety system and the control system; and

accessing the segmented memory to retrieve the instructional code and data for the safety system functions only when the microcontroller is operating in one of a safety system or an RTOS context.

5,618,442

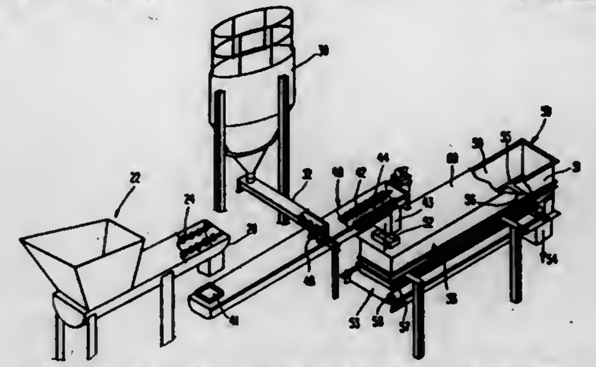
PROCESS FOR TREATMENT OF SEWAGE SLUDGE

Paul G. Christy, Wayne, Pa., assignor to RDP Company, Norristown, Pa.

Division of Ser. No. 311,933, Sep. 26, 1994, Pat. No. 5,554,279. This application Jun. 11, 1996, Ser. No. 661,933

Int. Cl.⁶ C02F *11/14*

U.S. Cl. 210—742 **16 Claims**



1. A process for treating sewage sludge comprising the steps of:

(a) providing sewage sludge;

(b) mixing the sludge with at least one alkaline additive proportionate to the sludge, such that a reaction caused thereby increases the temperature of the mixture to a minimum temperature and increases the pH of the mixture to a minimum level to reduce pathogens in said mixture;

(c) providing a pasteurization chamber having at least one inlet opening and at least one discharge opening;

(d) delivering the sludge and alkaline additive mixture to the inlet opening of the pasteurization chamber;

(e) continuously conveying substantially every particle of the mixture through the pasteurization chamber, without any substantial agitation of the mixture such that the mixture does not become more watery, wherein said mixture is substantially enclosed in the pasteurization chamber for a dwell time such that harmful pathogens in said mixture are substantially destroyed during said conveying; and

(f) discharging the mixture from the discharge opening of the pasteurization chamber.

5,618,443

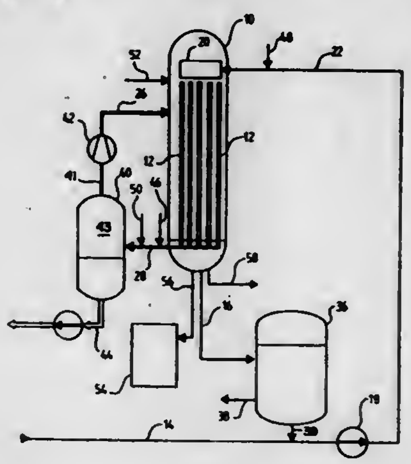
CLARIFICATION OF GREEN LIQUOR BY FALLING FILM CROSS-FLOW FILTRATION

Holger Engdahl, and Pekka Tormikoski, both of Savonlinna, Finland, assignors to Ahlstrom Machinery Oy, Helsinki, Finland

Continuation-in-part of Ser. No. 433,348, May 4, 1995. This application May 4, 1995, Ser. No. 434,689

Int. Cl.⁶ B01D *37/00;29/00*

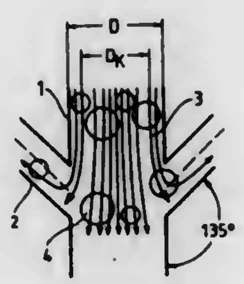
U.S. Cl. 210—767 **30 Claims**



1. A method of filtering a suspension of solids in a liquid, using a filter surface having first and second sides and a generally vertical orientation, comprising the steps of:
(a) causing the suspension to flow in a falling film down the first side of the filter surface in contact therewith so that the formation of a filter cake is substantially precluded throughout filtering;
(b) providing a higher gas pressure on the first side of the filter surface than on the second side of the filter surface, so that filtrate passes through the filter surface to the second side of the filter surface, while solids remain in the liquid flowing down the filter surface first side;
(c) withdrawing the filtrate away from the filter surface; and
(d) withdrawing the liquid with suspended solids away from the filter surface.

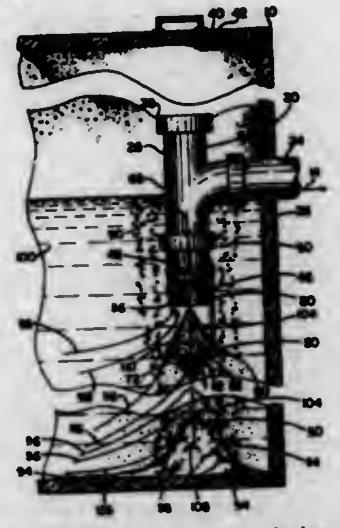
17. A method of cleaning green liquor using a filter surface having first and second sides and a generally vertical orientation, comprising the steps of:
(a) causing the green liquor to flow in a falling film down the first side of the filter surface in contact therewith so that the formation of a filter cake is substantially precluded throughout filtering;
(b) providing a higher gas pressure on the first side of the filter surface than on the second side of the filter surface, so that filtrate passes through the filter surface to the second side of the filter surface, while solids remain in the liquid flowing down the filter surface first side;
(c) withdrawing the filtrate away from the filter surface; and
(d) withdrawing the green liquor away from the filter surface.

5,618,444
METHOD FOR SEPARATING A DISPERSION OF PARTICLES IN LIQUIDS INTO A PARTICLE-ENRICHED AND A PARTICLE-DEPLETED PARTIAL STREAM
Bernd Koglin, Bergisch Gladbach, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany
Continuation of Ser. No. 294,226, Aug. 22, 1994, abandoned. This application Jun. 21, 1996, Ser. No. 666,998
Claims priority, application Germany, Aug. 27, 1993, 43 28 885.5
Int. Cl.[6] B01D *37/00*
U.S. Cl. 210—767 **14 Claims**



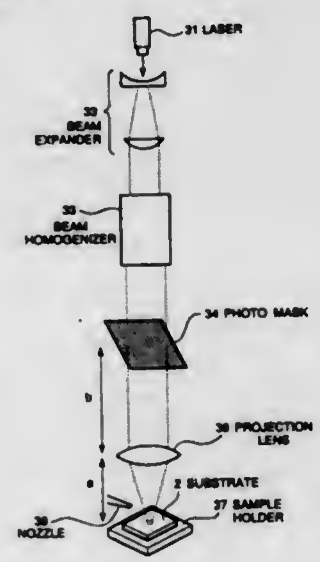
1. Method for concentrating suspended particles in a liquid, wherein the suspension is made to flow as the feed stream through a narrow channel or a capillary having a channel width or capillary diameter of from 0.5 μm to 10 mm and partial streams are drawn off from the wall on the periphery of the channel or the capillary through openings in the channel wall or capillary wall, the cross-section of which is larger than the mean particle cross-section, wherein a liquid boundary layer is formed in the proximity of the walls and the particle concentration is enriched in the main stream and diluted in the partial streams compared to the feed stream not by the action of centrifugal forces in the main stream, but by a geometrical blocking effect which prevents particles having a radius which is larger than the thickness of the boundary layer from entering the openings in the channel or capillary walls.

5,618,445
SEPTIC TANK SOLIDS RETAINER GAS BAFFLE
Norman W. Gavin, 2545 Ridge Rd., North Haven, Conn. 06473
Filed Jul. 20, 1995, Ser. No. 504,985
Int. Cl.[6] B01D *21/24*
U.S. Cl. 210—800 **9 Claims**



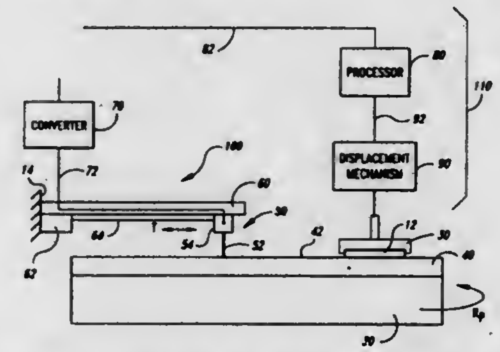
8. In a septic tank, the method for reducing the amount of particulate matter entering an outlet pipe in the tank, and thereby exiting the tank for a leaching field, the method comprising:
collecting the particulate matter in a downward facing cavity of a cup having a wall enclosing the top and sides of the cavity and a bottom open to the cavity, that is held directly below the downward facing opening of vertically upward extending constant diameter of said outlet pipe in said tank over a generally horizontally planar floor area of the septic tank that is larger than the open bottom of the cup.

5,618,446
METHOD FOR FORMING A STEP ON A DEPOSITION SURFACE OF A SUBSTRATE FOR A SUPERCONDUCTING DEVICE UTILIZING AN OXIDE SUPERCONDUCTOR
Tatsuoki Nagaishi, Hyogo, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan
Filed Feb. 24, 1995, Ser. No. 393,485
Claims priority, application Japan, Feb. 25, 1994, 6-53088
Int. Cl.[6] C25F *3/00;* **B44C** *1/22*
U.S. Cl. 216—65 **6 Claims**



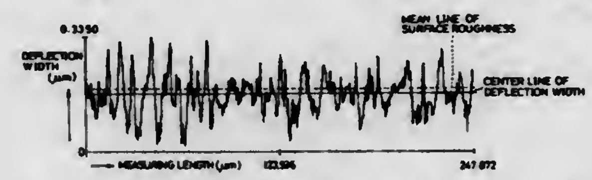
1. A method for forming a step on a deposition surface of a substrate for depositing a thin film on the surface, the method comprising the steps of:
etching a portion of the deposition surface of the substrate by emitting a laser beam to the portion, and cooling the substrate by forced water cooling during the etching.

5,618,447
POLISHING PAD COUNTER METER AND METHOD FOR REAL-TIME CONTROL OF THE POLISHING RATE IN CHEMICAL-MECHANICAL POLISHING OF SEMICONDUCTOR WAFERS
Gurtej S. Sandhu, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.
Filed Feb. 13, 1996, Ser. No. 600,342
Int. Cl.[6] H01L *21/00;* **B24B** *49/00*
U.S. Cl. 438—14 **18 Claims**



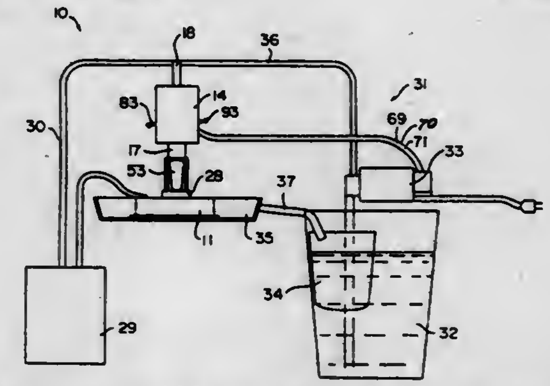
1. A method of measuring the contour of a polishing surface of a polishing pad in chemical-mechanical polishing of semiconductor wafers, comprising:
pressing a pin of a vertical displacement sensor against the pad, the sensor producing a signal proportionate to the vertical displacement between the pin and a support member to which the sensor is attached;
moving at least one of the sensor and the pad with respect to the other, wherein the sensor senses changes in displacement between the pin and the support member as the polishing surface passes across the pin and produces signals corresponding to the sensed displacement changes in proportion to the contour of the pad; and
converting the signals from the sensor into a numerical representation of the contour of the pad.

5,618,448
GLASS SUBSTRATE HAVING SURFACE PROTRUSIONS FOR USE AS A MAGNETIC DISC SUBSTRATE
Toru Kuroe, Machida; Fumiaki Yokoyama, Kanagawa-ken, and Daisuke Mouri, Yokohama, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan
Division of Ser. No. 111,223, Aug. 24, 1993. This application May 23, 1995, Ser. No. 447,604
Claims priority, application Japan, Sep. 2, 1992, 4-234695
Int. Cl.[6] C03C *15/00;* **C09K** *13/08*
U.S. Cl. 216—97 **4 Claims**



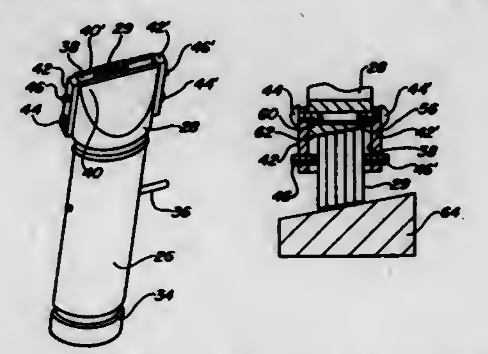
1. A process for preparing a substrate for a magnetic disc, comprising subjecting a glass substrate to a chemical etching treatment using an aqueous solution containing hydrofluoric acid at a concentration of 0.15 to 0.9N and potassium fluoride at a concentration of 2 to 6N, wherein the temperature of the solution is 5° to 20° C.

5,618,449
COMPACT PORTABLE HAND-HELD EDM TOOL
Leif J. Houman, Oyster Bay, N.Y., and A. Clifford Losee, 3346 Murray Rd., Finksburg, Md. 21048, assignors to A. Clifford Losee, Finksburg, Md.
Filed Mar. 29, 1995, Ser. No. 412,762
Int. Cl.[6] B23H *1/00*
U.S. Cl. 219—69.11 **9 Claims**



1. A hand-held compact portable EDM tool carried by a worker to a remote job site and used for drilling a hole in a metal workpiece, comprising a frame with handle means for carrying or manipulating the tool, means including an electrode carried by the frame for generating sparks in a gap between the electrode and the workpiece, and non-cyclic electronically-controlled servo means on the frame for continually monitoring and adjusting the distance between he electrode and the workpiece and preventing an undesired shorting therebetween, further including a magnetic holder removably securing the frame to the workpiece at various orientations of the workpiece, thereby permitting no-hands operation.

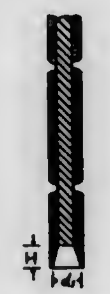
5,618,450
TOOL HAVING INTERCHANGEABLE INDICIA MARKING ELECTRODES FOR USE IN ELECTRICAL DISCHARGE MACHINING
James P. Stuart, 852 W. Glengarry Cir., Bloomfield Village, Mich. 48301, and Alberto Navarra, Jaun Ramon Jimenez-8, 08960 Sant Just Desvern, Barcelona, Spain
Filed Jun. 7, 1995, Ser. No. 476,195
Int. Cl.[6] B23H *1/04*
U.S. Cl. 219—69.15 **20 Claims**



1. An etching tool for use with an electrical discharge machining apparatus, the tool comprising:
an electrode receptacle having an electrode-receiving aperture defined therein, said electrode-receiving aperture having a base wall formed therein;

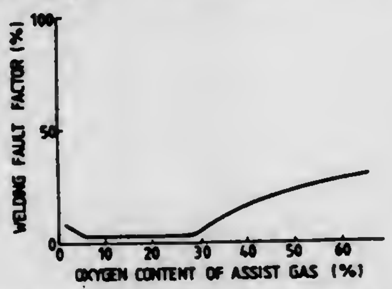
a row of electrodes defined by at least two electrodes removably positionable within said aperture of said electrode receptacle;
an interchangeable blank removably positionable between said base wall of said electrical receptacle and at least one of said at least two electrodes, said blank having a base wall-contacting surface and an electrode contacting surface, said surfaces being non-parallel;
means for selectively holding and releasing said at least two electrodes simultaneously with respect to said receptacle; and
means for attaching said electrode receptacle to the electrical discharge machining apparatus.

5,618,451
HIGH CURRENT PLASMA ARC WELDING ELECTRODE AND METHOD OF MAKING THE SAME
Jian M. Ni, 75 Springbrook Drive, Richmond Hill, Ontario, Canada
Filed Feb. 21, 1995, Ser. No. 391,968
Int. Cl.[6] **B23K** *10/02;35/02*
U.S. Cl. 219—121.53 **6 Claims**



1. An elongated welding electrode suitable for plasma arc welding comprising:
an elongated metal core provided with an outer welding flux coating,
a plurality of gaps formed at even intervals in said welding flux coating along the entire length of said electride, each gap of said plurality of gaps exposing a portion of said metal core therein and being operative for applying a welding current directly to said metal core,
said flux coating being made of a welding flux material having a melting point in the range of 0.9 to 1.05 times of the melting point of said metal core.

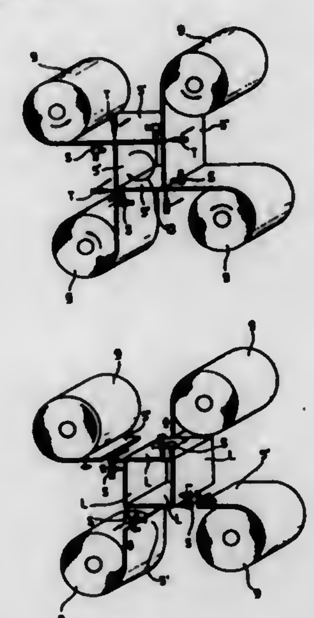
5,618,452
METHOD AND APPARATUS FOR LASER WELDING WITH AN ASSIST GAS INCLUDING DRIED AIR AND THE ASSIST GAS COMPOSITION
Setuo Matubara, and Masaru Kanaoka, both of Aichi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 13, 1993, Ser. No. 90,453
Claims priority, application Japan, Jul. 14, 1992, 4-186918; Jun. 30, 1993, 5-162806
Int. Cl.[6] **B23K** *26/12*
U.S. Cl. 219—121.63 **5 Claims**



1. A method for laser welding a plurality of plates by lapping the plurality of plates and by applying a laser beam thereto, said plurality of plates having film layers made of substance in which at least one material is lower in melting point than a base material, comprising the steps of:
1) lapping said plurality of plates without any intentional space being provided between the plates; and
2) welding said plurality of plates by the application of the laser beam concurrently with the injection of assist gas to the weld zone of said plurality of plates;
said assist gas being mixed gas including not less than 25% of dried air filtered for moisture and oil in terms of volume ratio to the whole assist gas.

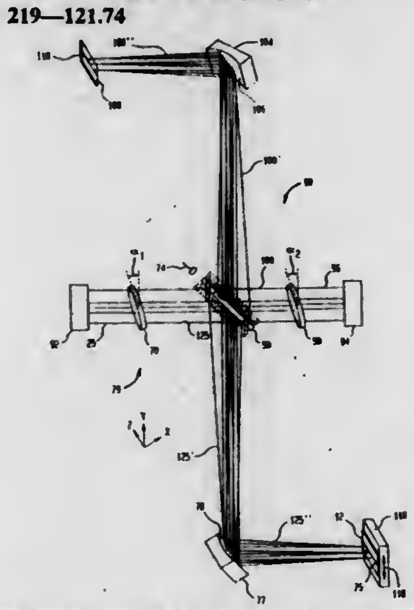
5. An assist gas for laser welding at least one material by applying a laser beam thereto, said at least one material having a film layer made of a substance lower in melting point than a base material, said gas comprising a mixture of an inactive gas and not less than 25% of dried air filtered for moisture and oil in terms of volume ratio to the whole assist gas.

5,618,453
COMBINED CUTTING AND WELDING METHOD AND RELATIVE APPARATUS FOR MANUFACTURING STRUCTURAL SHEET METAL PRODUCTS
Aldo V. La Rocca, Moncalieri, Italy, assignor to Lara Consultants S.r.l., Moncalieri, Italy
PCT No. PCT/IT93/00083, § 371 Date Mar. 10, 1995, § 102(e) Date Mar. 10, 1995, PCT Pub. No. WO94/02281, PCT Pub. Date Feb. 3, 1994
PCT Filed Jul. 23, 1993, Ser. No. 374,583
Claims priority, application Italy, Jul. 24, 1992, TO92A0639
Int. Cl.[6] **B23K** *28/02;26/08;37/04*
U.S. Cl. 219—121.63 **34 Claims**



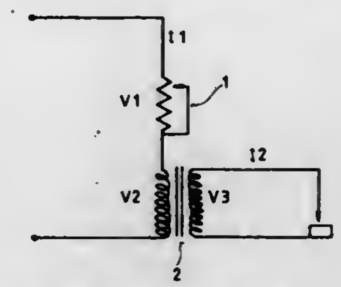
1. A method of manufacturing structural sheet metal products, comprising at least the following operations repeated cyclically:
a) at least two portions (5') of respective continuous strips (5) of sheet metal are fed simultaneously along respective concurrent planes (α);
b) a sheet (L) is cut simultaneously off each of said sheets (L);
c) said portions (5') are welded together substantially along a plane of contact; wherein said cutting and welding operations are performed using laser means (T,S).

5,618,454
MULTI-WAVELENGTH PROGRAMMABLE LASER PROCESSING MECHANISMS AND APPARATUS UTILIZING DESIGN DATA TRANSLATION SYSTEM
Candace J. Freedenberg, Poughkeepsie; David C. Long, Wappingers Falls; Joshua M. Cobb, Millbrook; Mark J. LaPlante, Walden; Uldis A. Ziemins, Poughkeepsie; Daniel G. Patterson, Wappingers Falls, and James G. Balz, Maybrook, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 430,480, Apr. 28, 1995. This application Jun. 6, 1995, Ser. No. 465,978
Int. Cl.[6] **B23K** *26/04*
U.S. Cl. 219—121.74 **3 Claims**



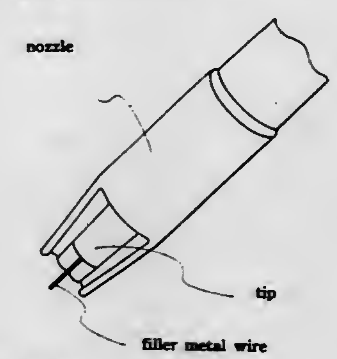
3. A method of controlling a machining system comprising the steps of:
a) providing a desired design for machining a workpiece;
b) converting said design into a graphic design format comprising pixels;
c) sorting said pixels into a pseudo-raster format corresponding to at least one scan line across a portion of said design for said workpiece;
d) generating a machining beam having a variable firing rate;
e) generating a tracking beam, said tracking beam being separate from said machining beam;
f) providing at least two tiltable lenses, one lens being positioned to at least partially focus said machining beam prior to being reflected by a scanning means, another lens being positioned to at least partially focus said tracking beam prior to being reflected by a scanning means;
g) providing means for scanning said machining and tracking beams along an axis, said scanning means being movable and having a first surface for reflecting said machining beam and a second surface for reflecting said tracking beam;
h) securing a workpiece to receive said machining beam;
i) simultaneously scanning said machining and tracking beams with said scanning means;
j) detecting said tracking beam after reflection from said scanning means second surface;
k) determining the position of the reflected tracking beam;
l) comparing the position of said reflected tracking beam with said scan line across a portion of said workpiece design;
m) controlling the firing rate of said machining beam as said machining beam is being scanned by determining the position of said machining beam relative to said workpiece based upon the workpiece design scan line; and
n) tilting each of said at least two lenses at an angle to said machining and tracking beams to add to said machining and tracking beams an amount of astigmatism opposite to astigmatism in the remainder of said system and to correct astigmatism in said machining and tracking beams prior to being focused on said workpiece and said detector, respectively.

5,618,455
ELECTRIC WELDING MACHINE
Guo M. Guo, No. 109, Alley 75, Lane 668, Yu Nung Road, Tainan City, Taiwan
Filed Jul. 28, 1995, Ser. No. 508,961
Int. Cl.[6] **B23K** *9/10*
U.S. Cl. 219—130.1 **1 Claim**



1. An electric welding machine comprising:
a high-power variable resistor,
a power transformer to output a constant voltage to provide an end voltage and an end electric current of said welding machine, said constant voltage of said transformer being varied by a user changing an impedance of said high-power variable resistor, and
an inductor to minimize variations in said end electric current, wherein
said high-power resistor comprises a partition plate, a bearing mounted on said partition plate, a plurality of metal guide blocks mounted on said partition plate at one side and spaced around said bearing, a resistance coil having a plurality of lead wires fastened to said partition plate and connected to said metal guide blocks, and a rotating member revolvably mounted on said bearing and having a metal guide plate at a first end and a plastic block at a second end, said metal guide plate contacts one of said metal guide blocks, said user changes said impedance of said high-power variable resistor by choosing which of said metal guide blocks to place into contact with said metal guide plate, said contact being established by said user rotating said rotating member.

5,618,456
IMPROVEMENT OF SURFACE PROPERTY OF TIP AND NOZZLE FOR GAS WELDER MADE OF COPPER AND COPPER ALLOYS BY CHEMICAL CONVERSION COATING TREATMENT
Chang-Joo Kim, Kyungnam, Rep. of Korea, assignor to Korea Institute of Machinery & Metals, Daejeon-Si, Rep. of Korea
Filed May 23, 1995, Ser. No. 445,561
Claims priority, application Rep. of Korea, May 24, 1994, 94-11494
Int. Cl.[6] **B23K** *9/28*
U.S. Cl. 219—137.61 **7 Claims**



1. A gas welding apparatus comprising:
a tip comprising copper,
a hole in said tip,

a filler metal wire protruding from and adapted to pass through said hole, and

a layer comprising black copper oxide, produced by a chemical conversion coating treatment utilizing an aqueous solution of at least one persulfate, on at least a surface of said tip proximate to said filler wire, and on at least a portion of material defining said hole;

wherein said layer comprising black copper oxide is sufficient to inhibit adherence of splatters, during welding with said apparatus, of said filler metal onto surfaces of said tip and onto material defining said hole.

5,618,457

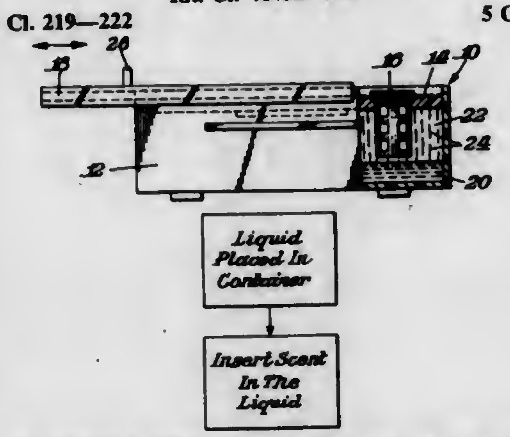
METHOD OF APPLYING A SCENT TO HAIR ROLLERS

William T. Wilkinson, P.O. Box 73, Salem, N.J. 08079

Filed Nov. 14, 1994, Ser. No. 337,892

Int. Cl.⁶ A45D *4/10*

U.S. Cl. 219—222 **5 Claims**



1. In a method of heating and moistening hair rollers wherein the rollers are mounted in a chamber where the rollers are exposed to steam in the chamber with the steam being created by heating a liquid, the improvement being in that a scent creating substance is added to the liquid before the liquid is heated to incorporate the scent creating substance in the resulting steam, and the scent creating substance applying a corresponding scent to the rollers.

5,618,458

COOKING APPLIANCE

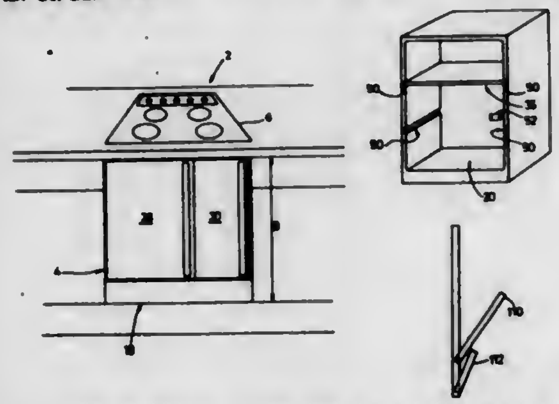
Peris W. Thomas, 17 Gaddum Road, Bowdon, Cheshire, England

Filed May 10, 1995, Ser. No. 438,566

Claims priority, application United Kingdom, May 10, 1994, 9409257; Dec. 8, 1994, 9424832; Feb. 10, 1995, 9502559

Int. Cl.⁶ A21B *1/22;* **F27D** *11/02;* **H05B** *3/68;* **F24C** *15/16*

U.S. Cl. 219—394 **15 Claims**



1. A cooking appliance comprising an oven unit, the oven unit being adapted to be built into a space within an item of kitchen furniture having a cooking cavity, the cooking appliance further comprising a control unit for the oven unit, and a hob unit separate from the oven unit, the control unit incorporating at least one control operable by a user to control operation of the oven unit and at least one further control operable by a user to control operation of the hob unit, the control unit being mounted on the hob unit remote from the oven unit, outside of the said space, so as to permit a volume within the cooking cavity to be maximized within the space.

5,618,459

HIGH-SPEED BUS APPARATUS WITH COOLING MEANS

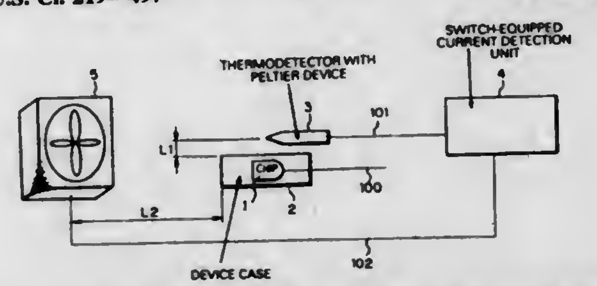
Hiroshi Kamiya, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 3, 1994, Ser. No. 336,214

Claims priority, application Japan, Nov. 4, 1993, 5-298906

Int. Cl.⁶ H05B *1/02*

U.S. Cl. 219—497 **6 Claims**



1. A high-speed bus apparatus for a high-speed bus said high speed apparatus having an optimal junction temperature for early settling of signals on said high-speed bus, said apparatus comprising:

temperature sensing means for sensing a junction temperature of said apparatus, said temperature sensing means comprising a thermodetector having a Peltier device embedded in a casing accommodating said apparatus;

cooling means for cooling said apparatus; and

control means for controlling said cooling means such that the junction temperature of said apparatus remains at the optimal junction temperature.

5,618,460

TEMPERATURE REGULATING CONTROL SYSTEM FOR AN OVEN OF A COOKING APPARATUS AND METHODS OF MAKING AND OPERATING THE SAME

Daniel L. Fowler, Kentwood, Mich., and Lee A. Hart, Minnetonka, Minn., assignors to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 130,019, Sep. 30, 1993, Pat. No. 5,477,032. This application Sep. 21, 1995, Ser. No. 531,540

Int. Cl.⁶ H05B *1/02*

U.S. Cl. 219—497 **14 Claims**

1. A temperature cooking apparatus regulating control system for an oven of a cooking apparatus, comprising:

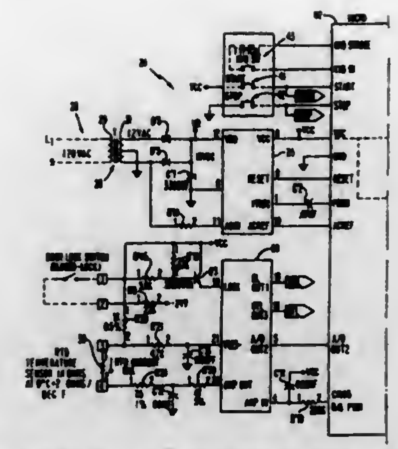
a circuit interconnecting a power source to a load of said apparatus in a regulated manner so as to tend to provide a selected temperature output of said load for said oven, said circuit comprising at least:

a microcomputer;

an external component;

a voltage regulator connected to said power source and said microcomputer so that said microcomputer can operate said external component;

temperature sensing means to sense the ambient temperature of a portion of said circuit that is remote from said oven and provide a warning signal to said microcomputer that a first high ambient temperature has been sensed so that said microcomputer can shut down said external component of



said system in a controlled manner before a second high ambient temperature is sensed by said temperature sensing means; and

wherein said voltage regulator comprises detection means to provide a warning signal to said microcomputer that said regulated voltage is going out of regulation so that said microcomputer can shut down said external component of said system in a controlled manner before said voltage regulator turns off.

5,618,461

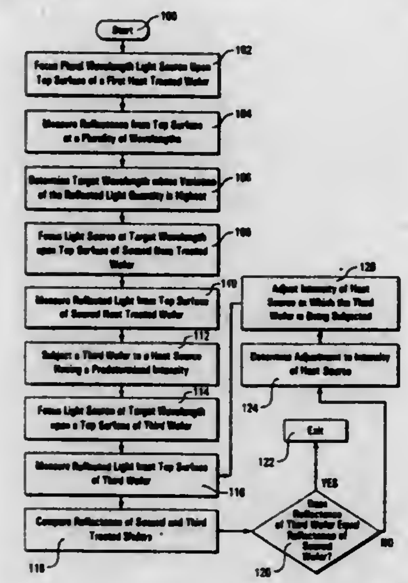
REFLECTANCE METHOD FOR ACCURATE PROCESS CALIBRATION IN SEMICONDUCTOR WAFER HEAT TREATMENT

Robert J. Burke; Russell C. Zahorik; Paul A. Paduano, and Randhir P. S. Thakur, all of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Nov. 30, 1994, Ser. No. 346,764

Int. Cl.⁶ H05B *1/02*

U.S. Cl. 219—502 **29 Claims**



1. A method of measuring a heat treatment status indicative of a heat treatment applied to a semiconductor wafer, the method comprising the steps of:

a) directing a light source having a plurality of predetermined wavelengths to a top surface of a first semiconductor wafer;

b) measuring the variation in the quantity of light at each of the predetermined wavelengths that is reflected off the top surface of the first semiconductor wafer from the light source;

c) determining a target wavelength from among the plurality of predetermined wavelengths at which the variation of the quantity of reflected light off the top surface of the first semiconductor wafer is the highest variation;

d) directing a light source of the target wavelength to a top surface of a second semiconductor wafer that has been heat treated to a predetermined heat treatment status indicative of a heat treatment applied to the second semiconductor wafer, the first and second semiconductor wafers being substantially similar in material and in geometry;

e) measuring the quantity of light at the target wavelength that is reflected off the top surface of the second semiconductor wafer;

f) directing a light source of the target wavelength to a top surface of a third semiconductor wafer, the second and third semiconductor wafers being substantially similar in material and in geometry;

g) measuring the quantity of light at the target wavelength that is reflected off the top surface of the third semiconductor wafer; and

h) comparing the measured quantity of light that is reflected off the top surface of the second semiconductor wafer and the top surface of the third semiconductor wafer to determine whether there is substantially no difference between the measured quantity of light that is reflected off the top surface of the second semiconductor wafer and the measured quantity of light that is reflected off the top surface of the third semiconductor wafer as an indication that the third semiconductor wafer has a heat treatment status that is substantially the same as the heat treatment of the second semiconductor wafer.

5,618,462

ELECTRICALLY INSULATING, GAS-TIGHT LEADTHROUGH FOR AT LEAST ONE ELECTRICAL CONDUCTOR THROUGH A METALLIC SHEATH

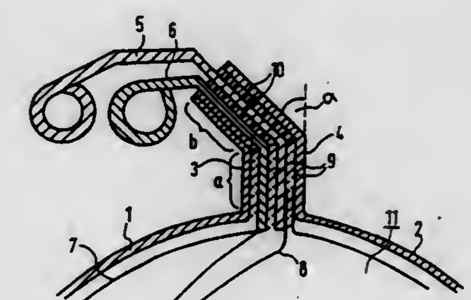
Helmut Swars, Bergisch Gladbach, Germany, assignor to Emitec Gesellschaft fuer Emissionstechnologie, Lohmar, Germany

Filed Jul. 10, 1995, Ser. No. 500,046

Claims priority, application Germany, Feb. 8, 1993, 43 03 581.7

Int. Cl.⁶ H05B *3/08;* **F01N** *3/10*

U.S. Cl. 219—541 **30 Claims**



1. In combination with an exhaust gas system for an internal combustion engine including a metallic sheath having tabs and at least one electrical conductor extending through the tabs,

an electrically insulating, gas-tight leadthrough for the at least one electrical conductor in vicinity of the tabs, comprising:

first and second successively disposed sections formed of mutually different materials, said first section being closer to the exhaust gas system for electrical insulation and being resistant to temperatures up to 1300° C., and said second section being farther from the exhaust gas system and being gas-tight and electrically insulating for temperatures up to 500° C.

5,618,463

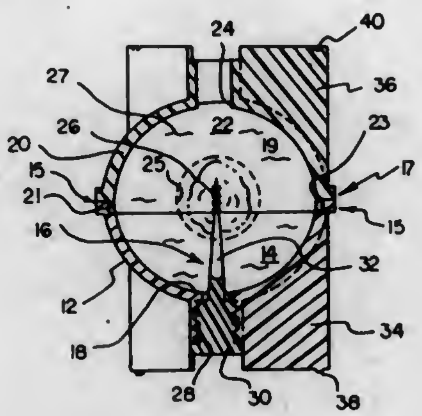
ICE BALL MOLDING APPARATUS

Joe Rindler, and Nanci Pintavalli, both of 5731 Henderson Dr., Delaware, Ohio 43015

Filed Dec. 8, 1994, Ser. No. 351,952

Int. Cl.^{6} A23B *7/16*

U.S. Cl. 249—92 **6 Claims**



1. An ice molding apparatus, comprising:

a first mold assembly which includes a first hollow chamber portion, which includes a cylindrical spike assembly which projects inward from a wall of said first hollow chamber portion, said spike assembly including a distal end adapted to support a quantity of solid material, and which includes a first joint member adapted to connect to a second mold assembly, and

a second mold assembly which includes a second hollow chamber portion, which includes a filler channel adapted for passing a quantity of liquid water therethrough into said second hollow chamber portion, and which includes a second joint member adapted to connect to said first joint member, such that said first hollow chamber portion and said second hollow chamber portion form a combined interior mold chamber,

wherein said distal end of said cylindrical spike assembly is located adjacent to a center portion of said combined interior mold chamber, wherein said distal end of said cylindrical spike assembly includes material-gripping ridges, wherein said first mold assembly includes a threaded channel portion, and said spike assembly includes a threaded plug portion and a spike portion connected to said threaded plug portion, wherein said threaded plug portion is adapted to be screwed into said threaded channel portion of said first mold assembly for installing said spike assembly into said first mold assembly.

5,618,464

NI FERRITE AND CORE MADE OF NI FERRITE FOR POWER SUPPLIES

Emi Nakagawa; Hitoshi Ueda; Akio Uchikawa, and Norikazu Koyuhara, all of Tottori, Japan, assignors to Hitachi Ferrite, Ltd., Tokyo, Japan

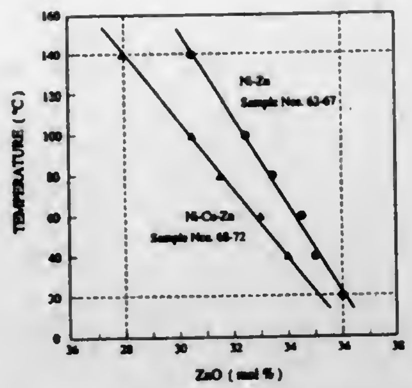
Filed Mar. 13, 1995, Ser. No. 402,693

Claims priority, application Japan, Mar. 16, 1994, 6-072497

Int. Cl.^{6} C04B *35/30*

U.S. Cl. 252—62.6 **3 Claims**

1. A Ni ferrite sintered body comprising 48.0–50.0 mol % of Fe_2O_3, 14.0–24.0 mol % of NiO, and 28.0–36.0 mol % of ZnO, 12 mol % or less, excluding 0 mol %, of NiO being replaced by the same amount of CuO, said sintered body containing 50 ppm or less



of P and having an average crystal grain size of 3–30 μm and a minimum core loss of 30 kW/m^3 or less at 50 kHz and 50 mT.

5,618,465

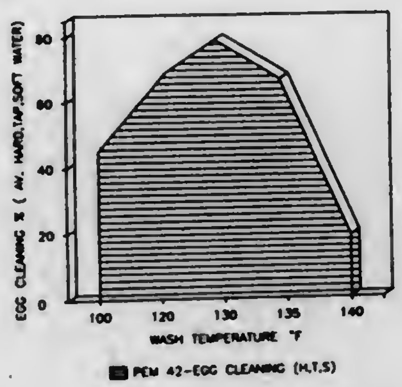
NONAQUEOUS LIQUID AUTOMATIC DISHWASHING COMPOSITION CONTAINING ENZYMES

Patrick Durbut, Verviers, Belgium; Fahim U. Ahmed, Plainsboro, N.J., and Julien Drapier, Seraing, Belgium, assignors to Colgate Palmolive Co., Piscataway, N.J.

Continuation of Ser. No. 928,622, Aug. 11, 1992, which is a continuation-in-part of Ser. No. 708,558, May 31, 1991, abandoned, Ser. No. 708,571, May 31, 1991, Pat. No. 5,240,633, and Ser. No. 708,322, May 31, 1991, abandoned. This application Jul. 21, 1994, Ser. No. 277,279

Int. Cl.^{6} C11D *3/386*

U.S. Cl. 510—221 **6 Claims**



1. A chlorine bleach free liquid dishwashing composition consisting essentially of approximately by weight:

(a) 2–15 percent of a liquid nonionic surfactant;

(b) 2 to 60 percent of at least one alkali metal phosphate detergent builder salt;

(c) 0.2 to 1.0% of an alkyl phosphoric ester;

(d) 1.5 to 12.0 percent of at least one protease enzyme;

(e) 0.1 to 6.0 percent of an amylase enzyme;

(f) 1 to 20 percent of a low molecular weight noncrosslinked polyacrylate polymer;

(g) 35 to 65 percent of polyethylene glycol; and

(h) 0.1 to 10.0 percent of a stabilizing agent which is selected from the group consisting of a long chain fatty acids and metal salts of fatty acids, a finely divided silica and wherein said composition has a free water content of less than about 3 weight percentage and a pH of less than about 11.

5,618,466

LIQUID CRYSTAL COMPOSITION AND A LIQUID CRYSTAL DISPLAY ELEMENT USING THE SAME

Yoshitaka Tomi; Etsuo Nakagawa, and Shinichi Sawada, all of Chiba, Japan, assignors to Chisso Corporation, Osaka-fu, Japan

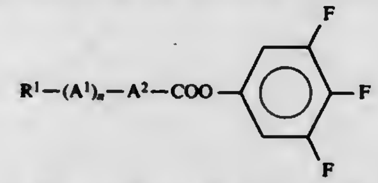
Filed Sep. 6, 1995, Ser. No. 523,916

Claims priority, application Japan, Sep. 6, 1994, 6-238554

Int. Cl.^{6} C09K *19/30;19/34;19/12;19/20*

U.S. Cl. 252—299.63 **11 Claims**

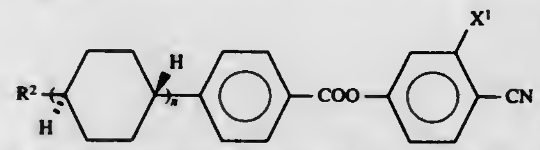
1. A liquid crystal composition which comprises as a first component, at least one compound expressed by the formula (1)



(1)

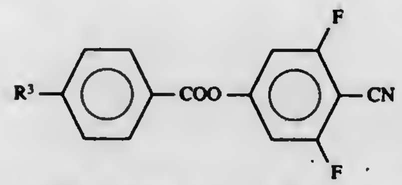
wherein R^1 represents an alkyl group of 1 to 10 carbon atoms and one —CH_2— group or two not-adjacent —CH_2— groups present in the alkyl group may be replaced by oxygen atom, —CO— group, —COO— group or —CH═CH— group; n represents 0 or 1; and A^1 and A^2 each independently represent trans-1,4-cyclohexylene or 1,4-phenylene,

as a second component, at least one compound chosen from a group of compounds expressed by either one of the formulas (2) to (5):



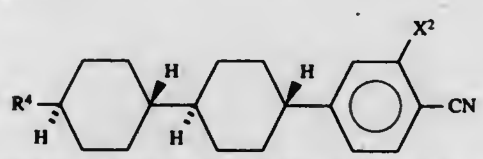
(2)

wherein R^2 represents an alkyl group of 1 to 10 carbon atoms and one —CH_2— group or two not-adjacent —CH_2— groups present in the alkyl group may be replaced by oxygen atom or —CH═CH— group; n represents 0 or 1; and X^1 represents H or F,



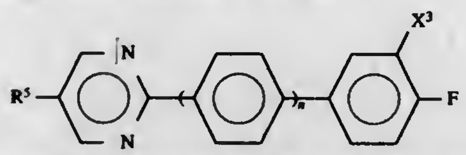
(3)

wherein R^3 represents a linear alkenyl group of 2 to 10 carbon atoms,



(4)

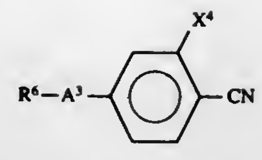
wherein R^4 represents a linear alkyl group of 1 to 10 carbon atoms; and X^2 represents H or F, and



(5)

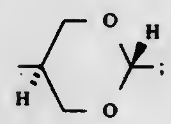
wherein R^5 represents an alkyl group of 1 to 10 carbon atoms; n represents 0 or 1; and X^3 represents H or F,

and as a third component, at least one compound chosen from a group of compounds expressed by either one of the formulas (6) to (9):

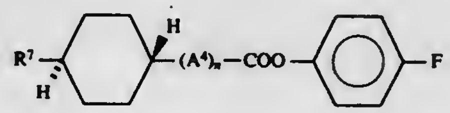


(6)

wherein R^6 represents an alkyl group of 1 to 10 carbon atoms; and one —CH_2— group or two not-adjacent —CH_2— groups may be replaced by oxygen atom or —CH═CH— group; A^3 represents trans-1,4-cyclohexylene, 1,4-phenylene or



and X^4 represents H or F,

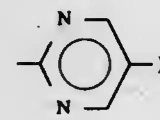


(7)

wherein R^7 represents a linear alkyl group of 1 to 10 carbon atoms; A^4 represents trans-1,4-cyclohexylene or 1,4-phenylene; and n represents 0 or 1,

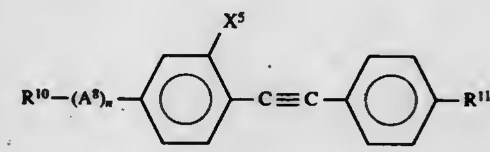
$$R^8—A^5—(A^6)n—Z^1—A^7—R^9 \qquad (8)$$

wherein R^8 and R^9 each independently represent an alkyl group of 1 to 10 carbon atoms and one —CH_2— group or two not-adjacent —CH_2— groups may be replaced by oxygen atom; A^5 and A^6 each independently represent 1,4-cyclohexylene or 1,4-phenylene, n represents 0 or 1; Z^1 represents —COO— or single bond; and A^7 represents trans-1,4-cyclohexylene, 1,4-phenylene or

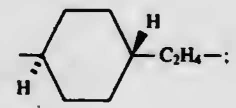


, and

(9)



wherein R^{10} and R^{11} each independently represent an alkyl group of 1 to 10 carbon atoms and one —CH_2— group or two not-adjacent —CH_2— groups may be replaced by oxygen atom; n represents 0 or 1; A^8 represents trans-1,4-cyclohexylene or



and X^5 represents H or F.

5,618,467
LUMINESCENT MATERIALS, PHOSPHORS AND COMPOSITIONS CONTAINING SUCH PHOSPHORS

Richard S. Turk, East Lansing, and Joel I. Dulebohn, Lansing, both of Mich., assignors to Michigan Biotechnology Institute, Lansing, Mich.

Continuation-in-part of Ser. No. 154,230, Nov. 18, 1993, Pat. No. 5,464,651. This application Oct. 26, 1995, Ser. No. 548,647
Int. Cl.[6] B05D *5/06*; **C09K** *11/06*

U.S. Cl. 252—301.16 **8 Claims**

1. A composition for imparting photoluminescence to an object when excited ultraviolet radiation in the range of 230 to 405 nm, said composition containing a compound selected from the group consisting of:
((L-glycine)(succinic acid)$Mg(OH)_2$
((L-glycine)(succinic acid)$Zn(OH)_2$
((L-glycine)(succinic acid)$Ca(OH)_2$
((L-glycine)(adipic acid)CaCl(OH)
((L-glycine)(L-malic acid)$Mg(OH)_2$
((L-glycine)(suberic acid)ZnCl(OH)
((L-glycine)(L-aspartic acid)$Mg(OH)_2$
((L-lysine)(succinic acid)$Mg(OH)_2$);
((L-lysine)(succinic acid)$Zn(OH)_2$);
((L-lysine)(succinic acid)$Ca(OH)_2$);
((L-lysine)(adipic acid)CaCl(OH);
((L-lysine)(L-malic acid)$Mg(OH_2)$);
((L-lysine)(suberic acid)ZnCl(OH);
((L-lysine)(L-aspartic acid)$Mg(OH_2)$;
((L-ornithine)(succinic acid)$Mg(OH_2)$;
((L-ornithine)(succinic acid)$Zn(OH_2)$;
((L-ornithine)(succinic acid)$Ca(OH_2)$;
((L-ornithine)(adipic acid)CaCl(OH);
((L-ornithine)(L-malic acid)$Mg(OH_2)$;
((L-ornithine)(suberic acid)ZnCl(OH); and
((L-ornithine)(L-aspartic acid)$Mg(OH)_2$.

5,618,468
CHEMICAL DISPERSANT FOR OIL SPILLS

Gerard P. Canevari, Cranford; Robert J. Flocco, Summit, both of N.J.; Kenneth W. Becker, Houston, Tex., and Richard R. Lessard, Morristown, N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation-in-part of Ser. No. 990,963, Dec. 15, 1992, abandoned. This application Jun. 22, 1994, Ser. No. 263,974
Int. Cl.[6] B01F *17/10*; **E02B** *15/04*

U.S. Cl. 252—354 **9 Claims**

1. An improved dispersant formulation effective on highly viscous hydrocarbons which comprises:
(a) a sorbitan monoester of a C_{10}–C_{20} aliphatic monocarboxylic acid,
(b) a polyoxyethylene adduct of a sorbitan monoester of a C_{10}–C_{20} aliphatic monocarboxylic acid, said adduct having from 6 to 30 ethylene oxide units per mole of ester,
(c) a water-dispersible salt of a dialkyl sulfosuccinate wherein the alkyl group is a branched chain radical containing 8 to 13 carbon atoms,
(d) a polyoxyethylene adduct of a sorbitan triester of a C_{10}–C_{20} aliphatic monocarboxylic acid having from 6 to 30 ethylene oxide units per mole of triester or a polyoxyethylene adduct of a sorbitol hexaester of a C_{10}–C_{20} aliphatic monocarboxylic acid having from 6 to 30 ethylene oxide units per mole of hexaester, and
(e) a propylene glycol ether solvent, said solvent being dipropylene glycol n-butyl ether wherein the dispersant has a HLB of from about 10 to about 11.

5,618,469
POLYANILINE-CONTAINING SOLUTION, ARTICLES COATED THEREWITH, AND METHODS FOR THE PREPARATION OF SAME

Eli Harlev, Arad; Tamilla Gulakhmedova, Tel Aviv, and Ilya M. Rubinovich, Rechovot, all of Israel, assignors to Al-Coat Ltd., Ness Ziona, Israel

Filed May 12, 1995, Ser. No. 440,125
Claims priority, application Israel, May 23, 1994, 109741; Jul. 14, 1994, 110318
Int. Cl.[6] H01B *1/00;1/12;1/20*

U.S. Cl. 252—500 **9 Claims**

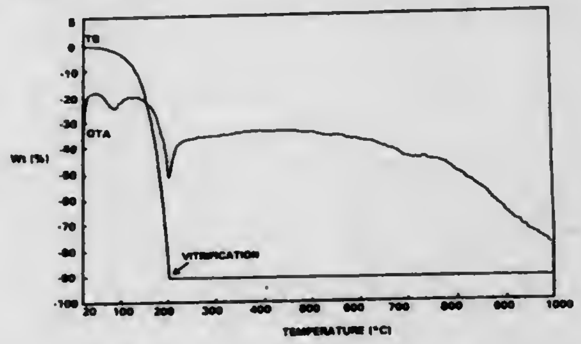
1. A solution which is liquid at ambient temperature, comprising a proton-doped polyaniline in combination with pyruvic acid which is a protonating agent and which is present in sufficient excess to act as a solvent for said proton-doped polyaniline wherein said solvent consists of pyruvic acid and, optionally, one or more second protonic acids which function as a stabilizer for said proton-doped polyaniline.

5,618,470
ELECTRICALLY CONDUCTIVE PASTE

Tsuyoshi Yamana, Kyoto, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Filed Jan. 18, 1996, Ser. No. 591,230
Claims priority, application Japan, Jan. 23, 1995, 7-008407
Int. Cl.[6] H01B *1/02*; **B32B** *15/04*

U.S. Cl. 252—512 **14 Claims**



1. An electrically conductive paste comprising a copper powder, a glass frit, an organic vehicle, and a solution containing a borate ester, boric acid, an organic salt of boron or combination thereof;
wherein the electrically conductive paste comprises from about 70 to 90 wt % of copper powder and the glass frit in which the ratio of copper powder to glass frit is from about 80:20 to 98:2, and from about 10 to 30 wt % of the organic vehicle
and wherein the solution is about 0.01 to 0.5 wt % calculated based on the atomic weight of boron and the combined weight of boron and the copper powder.

5,618,471
ALKALI METAL QUATERNARY CHALCOGENIDES AND PROCESS FOR THE PREPARATION THEREOF

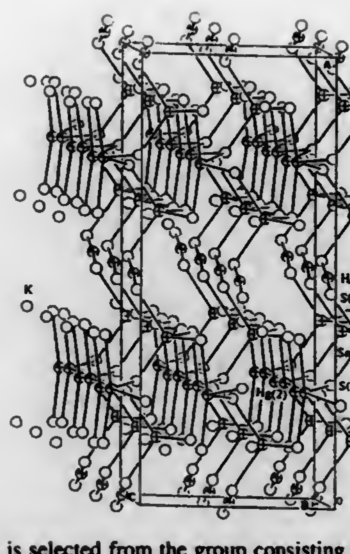
Mercouri G. Kanatzidis, Okemos; Jn H. Liao, Lansing, and Gregory A. Marking, Okemos, all of Mich., assignors to Board of Trustees operating Michigan State University, East Lansing, Mich.

Division of Ser. No. 298,620, Aug. 31, 1994, Pat. No. 5,531,936. This application Feb. 26, 1996, Ser. No. 606,886
Int. Cl.[6] F21V *9/00;9/04*; **C01B** *19/00;17/00*

U.S. Cl. 252—582 **5 Claims**

1. A process for preparing a chalcogenide compound having the empirical formula

$$A_xB_yC_zD_n$$



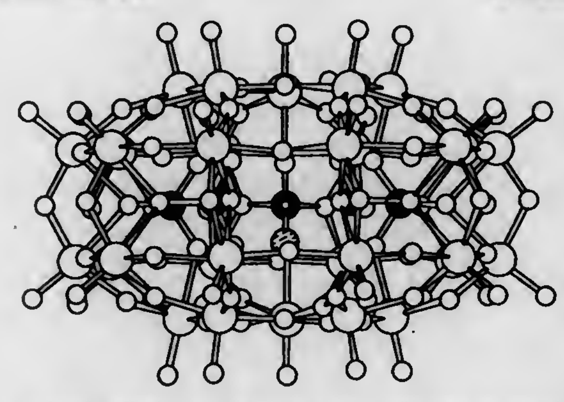
wherein A is selected from the group consisting of an alkali metal and a mixture of alkali metals, B is selected from the group consisting of mercury, zinc and manganese, C is a metal selected from the group consisting of germanium and tin and D is selected from the group consisting of sulfur and selenium, and wherein x is a number selected from the group consisting of 2 and 6, y is a number selected from the group consisting of 1, 3 and 4, z is a number selected from the group consisting of 2 and 5 and n is a number selected from the group consisting of 6, 8 and 17, which comprises reacting in a molten mixture ingredients selected from the group consisting of the B as an element, the C as an element, the A and the D together as an alkali metal Eide and the B and the D together as a metal Eide in molar amounts of the x, y, z or n and to produce the chalcogenide compound wherein Eide is selected from the group consisting of a sulfide or selenide.

5,618,472
COMPOUNDS AND METHODS FOR SEPARATION AND MOLECULAR ENCAPSULATION OF METAL IONS

Michael T. Pope, Washington, D.C.; Inge L Creaser, Scott Creek, Australia, and Mark C. Heckel, East Hampton, Mass., assignors to Georgetown University, Washington, D.C.

Division of Ser. No. 910,532, Jul. 8, 1992, Pat. No. 5,364,568. This application Sep. 13, 1994, Ser. No. 305,183
Int. Cl.[6] C09K *11/04*

U.S. Cl. 252—625 **10 Claims**



1. A glass, prepared by vitrifying a salt comprising an anion of the formula (II):

$$[ZA_5M_{30-x}O_{110-x}(M'L)_x]^{(m+1-n)-} \quad (II)$$

wherein n is 3 or 4; Z=Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu, Y, or Bi, when n=3, and Z=Ce, U, Np, Pu, or Am, when n =4; A is P, As, Sb, Si, Ge, or combinations thereof; M is W^{6+}, W^{5+}, or mixtures thereof; M' is a metallic element from groups 2 to 15 of the periodic table, other than W; L is O^{2-}, OH^-, or H_2O; x is 0–10 and m is 10–20.

5,618,473
FRACTIONATION TRAYS

John R. Sauter, Stow; Richard P. Hauser, Ravenna, and John Harris, Kent, all of Ohio, assignors to Norton Chemical Process Products Corporation, Worcester, Mass.

Continuation-in-part of Ser. No. 401,378, May 9, 1995. This application Jul. 29, 1996, Ser. No. 681,631
Int. Cl.[6] B01F *3/04*

U.S. Cl. 261—114.1 **3 Claims**

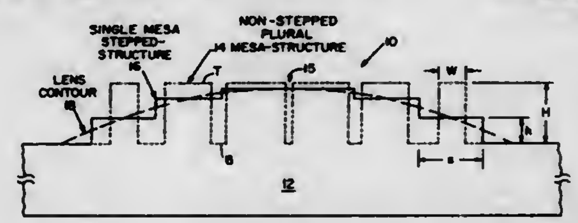
1. A fractionating column having an inner wall and comprising a plurality of horizontally disposed perforated fractionation trays located one above the other within said column including a first perforated fractionation tray with at least one downcomer for channeling an outflow from the first tray through at least one radially disposed exit port to a second perforated fractionation tray directly below the first, said second tray comprising an under-downcomer area located directly below the downcomer from the first fractionation tray, in which the exit port from each downcomer is located in such a way that the outflow therefrom is initially directed towards the inner wall of the column, and at least a portion of the under-downcomer area of the second tray is provided with a plurality of perforations.

5,618,474
METHOD OF FORMING CURVED SURFACES BY ETCHING AND THERMAL PROCESSING

Zong-Long Liau, Belmont, and Richard C. Williamson, Sudbury, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 901,375, Jun. 19, 1992, abandoned. This application Sep. 27, 1994, Ser. No. 313,550
Int. Cl.[6] B29D *11/00*

U.S. Cl. 264—1.1 **17 Claims**



1. In a process for forming an element on a surface of a substrate, the element having a desired predetermined surface contour comprising the steps of:
a) in a single step forming a plurality of spaced apart non-stepped mesas in the substrate, each mesas having a uniform height and a center-to-center spacing from one another with a void between them and wherein the width W of the mesas is indirectly related to the predetermined contour of the surface of the element by the relationship W equals hs divided by H wherein h is the height of the steps in a hypothetical stepped

structure which would directly approximate the desired contour in accordance with a requirement that the volume of substrate material relocated from above a predetermined contour line must be equal to the volume to be filled below the predetermined contour line, and s is the center-to-center spacing between mesas and H is the mesa height; and

b) subjecting the mesas to a heat treatment to relocate substrate material, from adjacent mesas, to fill in voids in the space between mesas to produce a smooth surface on the substrate conforming to the predetermined contour of the surface of the element.

5,618,475

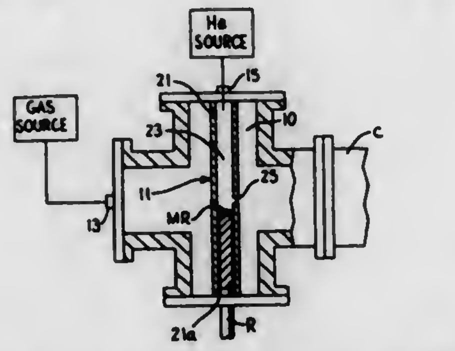
EVAPORATOR APPARATUS AND METHOD FOR MAKING NANOPARTICLES

D. Lynn Johnson, and Vinayak P. Dravid, both of Evanston, Ill., assignors to Northwestern University, Evanston, Ill.

Continuation-in-part of Ser. No. 330,326, Oct. 27, 1994, Pat. No. 5,472,749. This application Nov. 14, 1995, Ser. No. 557,206

Int. Cl.[6] B29B *9/00*

U.S. Cl. 264—10 **30 Claims**



1. Apparatus for forming particles of a material, comprising:

a) a chamber having a gaseous atmosphere therein,

b) an evaporator having an evaporation chamber communicated to said chamber by a discharge opening,

c) means for heating the material in said evaporation chamber to generate vapor of said material therein proximate said discharge opening, and

c) means for supplying carrier gas to said evaporation chamber in a manner to carry said vapor through said discharge opening into said chamber as a gaseous jet for entraining said gaseous atmosphere for quenching said vapor to form particles in said jet.

12. Method of making nanoparticles of a material, comprising evaporating the material in an evaporation chamber communicated by a discharge opening to a chamber having a gaseous atmosphere therein, introducing carrier gas into said evaporation chamber to carry vapor of said material in said evaporation chamber through said discharge opening into said chamber as a gaseous jet, and entraining said gaseous atmosphere in said gaseous jet for quenching said vapor to form nanoparticles.

5,618,476

PROCESS FOR SLIP FORM PRODUCTION OF PRESTRESSED CONCRETE RAILROAD TIES

Richard L. Mogel, 3418 Cypress Way, Santa Rosa, Calif. 95405

Filed Aug. 3, 1995, Ser. No. 510,964

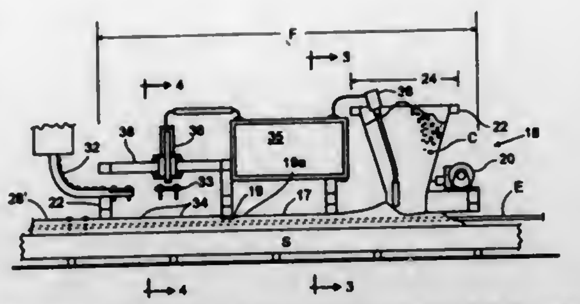
Int. Cl.[6] B28B *1/08;7/14*

U.S. Cl. 264—40.1 **7 Claims**

1. A process of constructing pre-stressed concrete railroad ties comprising the steps of:

providing a casting soffit;

disposing pre-tensioned tensile elements for the pre-stressed concrete railroad ties over the casting soffit;



providing a slip form for forming concrete railroad ties over the pre-tensioned tensile elements and on the casting soffit with a ground contacting section of the pre-stressed concrete railroad ties formed on the casting soffit and a track supporting section of the pre-stressed concrete railroad ties disposed upwardly and away from the casting soffit;

providing an upwardly exposed window in the slip form for insertion of track fastening hardware into the concrete railroad ties;

moving the slip form over the pre-tensioned tensile elements and the casting soffit to form the concrete railroad ties about the pre-tensioned tensile elements supported on the casting soffit by supplying the slip form with sufficient concrete to cast the railroad ties during the moving step;

vibrating the concrete during the moving and supplying steps;

measuring the movement of the slip form relative to the casting soffit to determine track fastening hardware locations and end of tie locations in the railroad ties;

inserting track fastening hardware into the concrete railroad ties at the track fastening hardware locations through the upwardly exposed window in the slip form during the moving step;

marking the end of tie locations;

curing the concrete slip formed over the tensile elements and on top of the casting soffit; and,

cutting the concrete railroad ties when cured at the end of tie locations to form the pre-stressed concrete railroad ties.

5,618,477

METHOD AND DIE APPARATUS FOR PRODUCING PLASTIC MOLDING HAVING FOAM WITH SKIN

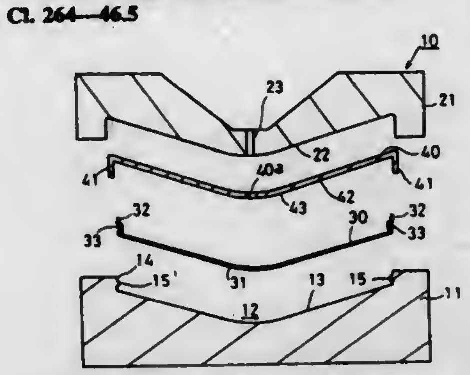
Hiroshi Suzuki, Anjo, Japan, assignor to Kabushiki Kaisha Inoac Corporation, Nagoya, Japan

Filed Nov. 8, 1994, Ser. No. 337,431

Claims priority, application Japan, Jun. 10, 1994, 6-152586

Int. Cl.[6] B29C *44/06;44/12*

U.S. Cl. 264—46.5 **5 Claims**



1. A method for producing a plastic molding having a core and a foam with a skin on an outer surface of the core wherein a foaming material is foamed in a space defined between a skin member and the core, disposed within a molding die assembly having an upper die and a lower die, comprising the steps of:

disposing the skin member, provided with edge portions that are bent backward from an outer surface of the skin member to define side portions and engaging recesses provided on the side portion, on the lower die of the molding die assembly, provided with engaging projections corresponding to the engaging recesses of the skin member, so that the engaging projections of the lower die are fitted in the corresponding engaging recesses of the skin member to position and hold the skin member;

disposing the core, provided with side walls to fit about the skin member, so that at least part of the outer surface of the side portions of the skin member are in contact with at least part of the side walls of the core; and,

pouring and foaming the foaming material in a cavity defined by and between the core and the skin member, so that the side portions of the skin member are pressed against the side walls of the core by foaming pressure generated by foaming of the foaming material so as to seal the connection between the core and the skin member and to produce the plastic molding.

5,618,478

PROCESS FOR PRODUCING MOLDINGS FROM FOAMED POLYOLEFINS

Reinhard Wirobski, Marl, and Michael Traeger, Haltern, both of Germany, assignors to Huels Aktiengesellschaft, Marl, Germany

Filed Mar. 29, 1996, Ser. No. 623,865

Claims priority, application Germany, Mar. 31, 1995, 195 12 059.0

Int. Cl.[6] B29C *44/02*

U.S. Cl. 264—50 **9 Claims**

1. A process for producing a molding from prefoamed polyolefin particles, comprising the steps of:

a) providing shrunken prefoamed polyolefin particles having a volume of from 30 to 95% of the original volume of the prefoamed polyolefin particles;

b) treating the shrunken particles at a temperature lying at least 20° C. below the softening temperature of the shrunken particles, in an inert gas atmosphere under a gauge pressure of from 0.2 to 10 bar, for a time sufficient to provide expansion of the shrunken particles upon removal of said gauge pressure;

c) charging the particles into a mold with substantial maintenance of internal pressure of the particles; and

d) foaming the particles.

5,618,479

PROCESS OF MAKING CORE-SHEATH FILAMENT YARNS

Franciscus A. T. Lijten, Heveadorp, and Johannes J. Meerman, Arnhem, both of Netherlands, assignors to Akzo N.V., Arnhem, Netherlands

Division of Ser. No. 328,605, Oct. 25, 1994, Pat. No. 5,468,555, which is a continuation of Ser. No. 139,883, Oct. 22, 1993, abandoned, which is a continuation of Ser. No. 635,185, Jan. 3, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 478,780

Claims priority, application Germany, May 16, 1989, 39 15 819.5; Aug. 9, 1989, 39 26 246.4

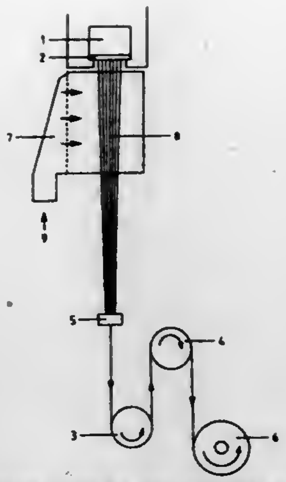
Int. Cl.[6] D01D *5/12;* **D01F** *8/04*

U.S. Cl. 264—103 **10 Claims**

1. Process for producing a yarn comprising core-sheath filaments, said yarn having a proportion of core-sheath filaments P having a substantially identical sheath content S, wherein a core and a sheath of the core-sheath filaments have been produced by extruding spinnable polymers, and out of 100% of the core-sheath filaments, P, in %, having sheath content within a range of (S ±0.1 S) % is a value defined by an area of FIG. 1 bounded by and including curve DE, line EF and line DF, wherein curve DE is represented by the formula $P=30+(0.1\ S)^{6}\%$, said process comprising:

feeding a core component through a first spinneret plate to a second spinneret plate in a plurality of individual streams;

enveloping, between the first and the second spinneret plates, each individual stream of core component by a sheath component fed onto it;



conjointly spinning, drawing and winding up the two components, and, at least in an area surrounding the plurality of individual streams of core component, subjecting the sheath component to a flow resistance through a flow resistor to produce said yarn comprising core-sheath filaments.

5,618,480

PROCESS OF MAKING MULTIFILAMENT YARN, MONOFILAMENT OR FILM OF POLYETHYLENE NAPHTHALATE

Christiaan J. M. Van Den Heuvel, Ellecom; Anton P. De Weijer, Nijmegen; Hendrik Middeljans, Dieren, and Herman M. Heuvel, Rheden, all of Netherlands, assignors to Akzo Nobel N.V., Arnhem, Netherlands

Division of Ser. No. 262,549, Jun. 20, 1994, Pat. No. 5,466,525. This application Jun. 7, 1995, Ser. No. 483,267

Claims priority, application Germany, Jun. 22, 1993, 43 20 593.3

Int. Cl.[6] D01D *5/088;* **D01F** *6/62*

U.S. Cl. 264—103 **12 Claims**

1. Method of producing a multifilament yarn, monofilament, or film, comprising melting a polymer, extruding the melted polymer from an extrusion device to form said multifilament yarn, monofilament or film, cooling to solidify said multifilament yarn, monofilament or film, withdrawing said multifilament yarn, monofilament or film at a rate of 500 to 10,000 m/min, blowing said multifilament yarn, monofilament or film extruded from the extrusion device with a fluid maintained at 10° to 15° C. at a rate of 0.1 to 1.0 m/sec and subjecting said multifilament yarn, monofilament or film to a draw-down B of 40 to 25,000 from the extrusion device output to a first withdrawal element, wherein said polymer comprises polyethylene naphthalate and has a melt-flow index C of 3 to 26.

5,618,481

PROCESS OF MAKING MULTIFILAMENT YARNS OF THERMOPLASTIC POLYMERS BASED ON TETRAFLUOROETHYLENE

Giandomenico Vita, Como; Giuseppe Ajroldi, Milan, and Mario Miani, Rho, all of Italy, assignors to Ausimont S.p.A., Milan, Italy

Division of Ser. No. 457,095, Jun. 1, 1995, Pat. No. 5,552,219, which is a division of Ser. No. 144,189, Oct. 27, 1993, Pat. No. 5,460,882. This application Jun. 4, 1996, Ser. No. 658,090

Claims priority, application Italy, Oct. 29, 1992, MI92A2476

Int. Cl.[6] D01D *5/088;5/16;* **D01F** *6/32*

U.S. Cl. 264—103 **9 Claims**

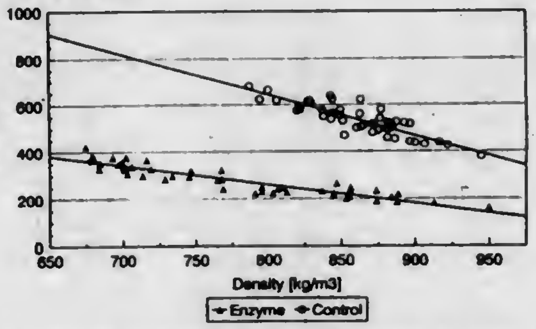
1. A process for the production of a multifilament yarn of a thermoplastic polymer based on tetrafluoroethylene with a Melt Flow Index (MFI) lower than 18 g10' according to ASTM D2116

standard, said multifilament yarn consisting of a plurality of filaments, wherein each filament of said multifilament yarn has a diameter between 10 and 150 μm, an ultimate tensile strength at 200° C. at least double with respect to a specimen of the same polymer obtained by compression molding according to the ASTM D3307 or ASTM D2116 standard, and a maximum shrinkage at 200° C. lower than 10%, said process comprising:

extruding said thermoplastic polymer in the molten state through an extrusion die having a plurality of holes and having a hole density of from 10 to 300 holes/cm^2, and directly obtaining said yarn from said extrusion die,

wherein said extrusion die is provided with a cooling system which provides polymer solidification of said filaments at an outlet distance from the die lower than 15 times the hole diameter of the die.

5,618,482
METHOD OF PRODUCING FIBREBOARD
Tine Olesen, Veksø; Lars S. Pedersen, Farum, and Lars H. D. Andersen, Lyngby, all of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark
PCT No. PCT/DK94/00378, § 371 Date Oct. 20, 1995, § 102(e) Date Oct. 20, 1995, PCT Pub. No. WO95/07604, PCT Pub. Date Mar. 23, 1995
PCT Filed Oct. 12, 1994, Ser. No. 446,801
Int. Cl.[6] B27N *3/00*
U.S. Cl. 264—109 **16 Claims**

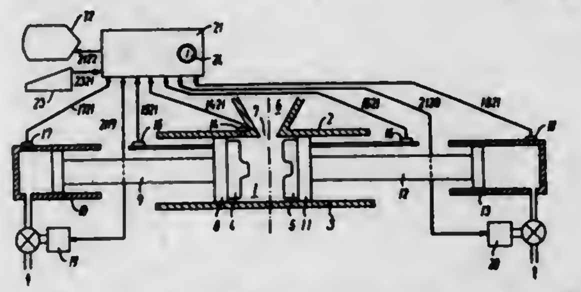


1. A method of producing fibreboard, comprising the sequential steps of:
(a) providing an aqueous slurry or suspension of lignin-containing wood material,
(b) adding a phenol oxidizing enzyme system to the slurry,
(c) forming the slurry into a mat, and
(d) pressing the formed mat by applying heat and pressure to produce the fibreboard,
wherein the enzyme system is added in an effective amount for achieving improved mechanical properties of the fibreboard produced, with the proviso that the method does not include addition of binder to the slurrv or fibreboard.

5,618,483
PROCESS OF MAKING FLEXIBLE CELLULOSE FIBERS
Peter Weigel, Kleinmachnow; Albrecht Bauer, Teltow; Konrad Frigge, Potsdam; Jürgen Gensrich, and Wolfgang Wagenknecht, both of Teltow, all of Germany, assignors to Fraunhofer Gesellschaft Petentabteilung, Munich, Germany
Filed Jun. 6, 1995, Ser. No. 469,426
Claims priority, application Germany, Jun. 10, 1994, 44 20 304.7
Int. Cl.[6] D01D *10/06;* **D01F** *1/10;2/24*
U.S. Cl. 264—187 **20 Claims**

1. A process for producing flexible cellulose fibers with a reduced modulus and a decreased NMR degree of order comprising pressing out a spinning solution comprising cellulose in hydrous NMMNO through a spinning nozzle along an air travel into a precipitation bath comprising NMMNO and water, an alcohol, or both, to thereby form said fibers, washing and drying, wherein at least one hydrophilic, low-molecular weight, organic additive which is soluble in the polymer solution and has mainly nitrogen-containing groupings, is added in a defined amount to the spinning solution of the cellulose and to the precipitation bath.

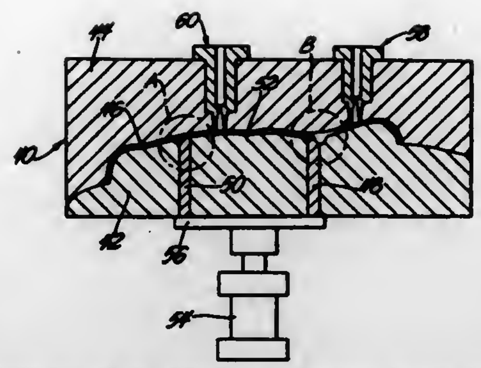
5,618,484
METHOD AND APPARATUS FOR MANUFACTURING MOULDS OR MOULD PARTS BY COMPACTING PARTICULATE MATERIAL
Vagn Mogensen, Gentofte, and Jan B. Johansen, Humlebaek, both of Denmark, assignors to Dansk Industri Syndikat A/S, Herlev, Denmark
Filed Jul. 8, 1994, Ser. No. 272,045
Claims priority, application Denmark, Jul. 20, 1993, 0858/93
Int. Cl.[6] B22C *19/04*
U.S. Cl. 264—220 **9 Claims**



1. A method of manufacturing a mold or a mold part for casting by compacting particulate material in a mold chamber, said method comprising the steps of:
providing a mold chamber and particulate material within the mold chamber, the mold chamber having surrounding walls which include first and second squeeze members capable of moving towards each other, at least one of the first and second squeeze members supporting a pattern which is shaped corresponding to a desired shape of a corresponding part of an object to be cast using the mold or mold part;
initially commencing a squeezing movement only of the first squeeze member against the material in the mold chamber;
measuring one of (a) a derivative with respect to the length of the path of the squeeze movement of the first squeeze member or with respect to time of a pressure in the mold chamber with which individual particles of the particulate material are pressed together which pressure increases as the first squeeze member is moved or (b) a derivative with respect to the length of the path of the squeeze movement of the first squeeze member or with respect to time of a parameter varying concurrently with said pressure in the mold chamber;
determining whether the squeezing movement of the first squeezing member has caused a predetermined change in said derivative; and
initiating a squeezing movement of the second squeeze member when the predetermined change in said derivative has occurred.

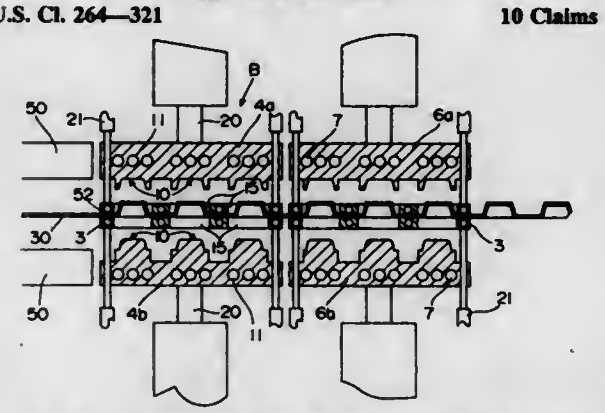
5,618,485
METHOD FOR MAKING AN INSERT FOR AIR BAG COVER ASSEMBLY
Gerard H. Gajewski, Dover, N.H., assignor to Davidson Textron Inc., Dover, N.H.
Division of Ser. No. 111,449, Aug. 25, 1993, Pat. No. 5,458,361. This application May 19, 1995, Ser. No. 446,166
Int. Cl.[6] B29C *45/10;45/33*
U.S. Cl. 264—255 **5 Claims**

1. A method of molding a door as an integral part of an insert for an air bag cover in which the door conceals an air bag assembly and is adapted to provide an air bag deployment opening within the



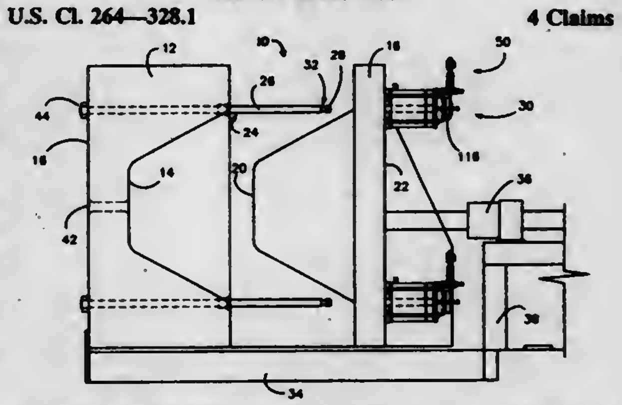
insert when the air bag impacts the door during air bag inflation, said method comprising the steps of:
providing a mold having an insert cavity defined by an upper mold half and lower mold half,
providing a plurality of blades for selective movement into said insert cavity so as to form a door cavity therein which is separated by the blades from a surrounding body portion of the insert cavity, and where at least one of the blades is formed with projections which extend into said body portion of the insert cavity,
moving said plurality of blades into said insert cavity to form said door cavity with said one of said blades having the projections thereof extending into the adjacent body portion of said insert cavity,
injecting into said body portion of the insert cavity a first compound of relatively rigid plastic material so that the first plastic material surrounds said blades and said door projections and fills said insert cavity in all areas except for the isolated door cavity portion to form a rigid body of the insert,
removing said plurality of blades from said insert cavity so as to form a plurality of interlock openings in said first plastic material in the areas previously occupied by said blades, and
injecting into said door portion of the cavity a second compound of plastic material which is compatible with but relatively more flexible than said first plastic material so as to bond said second plastic material to said first plastic material at an interface thereof and simultaneously filling said interlock openings with interlocking projections of the second material to form the door and provide a permanent interlocking connection between said door and the body of said insert in regions of the interlocking openings and projections.

5,618,486
PROCESS FOR MANUFACTURING A HEAT-RESISTANT MOLDED FOAM PRODUCT
Toru Yoshimi, Sasima-gun; Yasuo Imai, Nara, and Toshinobu Kogi, Souraku-gun, all of Japan, assignors to Sekisui Plastics Co., Ltd., Nara, Japan
Filed May 16, 1995, Ser. No. 441,964
Int. Cl.[6] B29C *43/04*
U.S. Cl. 264—321 **10 Claims**



1. A process for manufacturing a heat-resistant molded foam product which comprises:
(a) passing a foamed polyester resin sheet of low crystallinity into a preheating first zone operated under conditions such that the sheet attains a surface temperature of about 110° C. to about 150° C.;
(b) passing said preheated sheet into a molding second zone containing molding means having a first mold portion with a surface temperature from about 150° C. to about 200° C.,
(c) heating only that portion of said preheated sheet which will be thermally molded into a final product for a period of from about 2 seconds to about 20 seconds such that the heated portion of the sheet reaches an average crystallinity of greater than about 20%,
(d) at substantially the same time as said heating is being carried out, positively cooling the unheated portion of said preheated sheet in said molding second zone to a temperature below the glass transition point of said polyester resin;
(e) molding said sheet in said second zone;
(f) passing the resulting molded product into a third zone;
(g) cooling said resulting product to about ambient conditions in said third zone; and
(h) removing the cooled product from said third zone.

5,618,487
MULTI-CLAMP MOLD AND METHOD FOR CLAMPING AN INJECTION MOLD ASSEMBLY
Siebolt Hettinga, 2123 NW. 111th St., Des Moines, Iowa 50325
Filed Feb. 21, 1995, Ser. No. 391,552
Int. Cl.[6] B29C *45/64*
U.S. Cl. 264—328.1 **4 Claims**



1. A method for applying clamping pressure to a plastic injection mold unit for molding a plastic article, comprising:
(a) providing a first mold section;
(b) providing a second mold section in mating alignment with said first mold section, said second mold section forming a mold cavity with said first mold section when moved into mating engagement with said first mold section;
(c) securing a leader pin to said first mold section, said leader pin having a groove;
(d) securing a linear actuator to said second mold section;
(e) moving said second mold section into mating engagement with said first mold section to form said mold cavity;
(f) providing a locking mechanism on said leader pin sufficient to prevent inadvertent removal of said leader pin from said second mold section, said locking mechanism comprising: a pivot pin; a sleeve slidably provided on said pivot pin; a supplemental linear actuator operably secured to said sleeve; an arm operably secured to said supplemental linear actuator in a manner which causes said arm to move as said supplemental linear actuator is moved; and a locking plate secured to said arm and being of a sufficient size to fit within said groove of said leader pin;
(g) pushing said leader pin with said linear actuator in a manner which clamps said second mold section into sealed engagement with said first mold section;
(h) releasing said linear actuator;
(i) releasing said locking mechanism from said leader pin;
(i) moving said second mold section away from said first mold section; and
(k) securing a push plate to said linear actuator, said push plate being provided with a recess of a size large enough to engage

said locking plate and small enough to prevent inadvertent disengagement of said locking plate from said groove of said leader pin when said locking plate is positioned within said recess.

5,618,488

METHOD OF MANUFACTURING A SEAL FOR A ROLLER BEARING

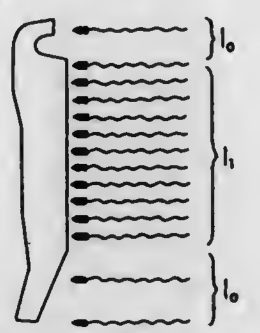
Vendran A. Tadic, Elst, and Johan C. M. Bras, Tricht, both of Netherlands, assignors to SKF Industrial Trading & Development Company B.V., Netherlands

Filed Aug. 29, 1994, Ser. No. 297,452

Claims priority, application Netherlands, Sep. 16, 1993, 9301601

Int. Cl.^{6} B29C *45/00*

U.S. Cl. 264—478 **12 Claims**



1. A method of manufacturing a seal for a roller bearing comprising the steps of:

forming a component configured as a seal for a roller bearing, the component being formed from thermoplastic polymer-containing material so as to include a sealing portion and a base portion; and

irradiating the component with radiation to cross-link the thermoplastic polymer-containing material, irradiation by the irradiating step being varied across the component to cross-link the base portion to a different degree than the sealing portion such that the base portion forms a form-retaining part and the sealing portion forms a sealing, elastic part.

5,618,489

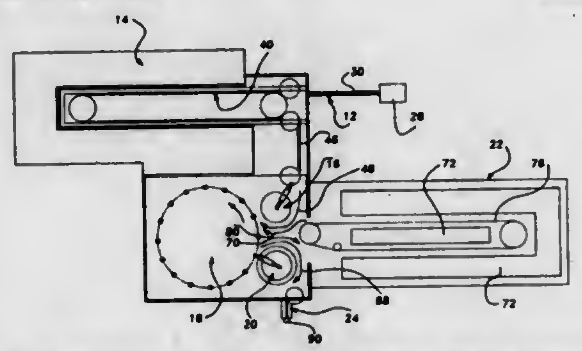
APPARATUS AND PROCESS FOR BLOW MOLDING CONTAINERS

Dan Weissmann, Ann Arbor, Mich., assignor to Hoover Universal, Inc., Plymouth, Mich.

Filed Oct. 5, 1995, Ser. No. 539,621

Int. Cl.^{6} B29C *49/18*

U.S. Cl. 264—530 **7 Claims**



1. An apparatus for blow molding thermally stable containers capable of withstanding processing conditions including hot-filling or pasteurizing of the contents of the container, the blow molding being performed as a double blow molding method, said apparatus comprising:

a preheat station adapted to condition preforms for subsequent blow molding;

a blow molding station including a single rotatable blow molding wheel, said wheel including a plurality of fist and second molds provided at spaced locations therearound, said first molds having first molding surfaces defining a first mold cavity of a first configuration for forming an intermediate container, said second molds having second molding surfaces defining a second mold cavity of a second configuration for forming a final container, said first configuration being different from said second configuration, said blow molding station also including a blow pin capable of introducing a blowing medium into and respectively causing inflation of said preforms and said intermediate container into conformity with said intermediate and final mold cavities;

a heat treating station adapted to heat treat said intermediate containers;

conveyor means for transporting preforms to, through and from said preheating station, said conveyor means also for transporting said intermediate containers through said heat treating station and for transporting said final containers from said blow molding station; and

transfer means for transferring said preforms from said conveyor means to said first molds for initial blow molding of said preforms into said intermediate containers, said transfer means also transferring said intermediate containers from said first molds to said heat treating station for producing heat treated intermediate containers, said transfer means also further transferring said heat treated intermediate containers from said heat treating station to said second molds for blow molding into said final containers, and said transfer means also transferring said final containers from said second molds to said conveyor means.

5,618,490

VACUUM INSTALLATION, IN PARTICULAR FOR RECYCLING METALLURGY

Reiner Schulz, Aachen, Germany, assignor to Mannesmann Aktiengesellschaft, Düsseldorf, Germany

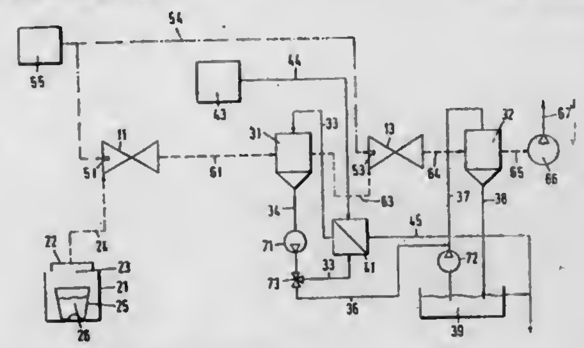
PCT No. PCT/EP93/03545, § 371 Date Aug. 7, 1995, § 102(e) Date Aug. 7, 1995, PCT Pub. No. WO94/14984, PCT Pub. Date Jul. 7, 1994

PCT Filed Dec. 15, 1993, Ser. No. 454,390

Claims priority, application Germany, Dec. 18, 1992, 42 43 687.7

Int. Cl.^{6} C21C *7/10*

U.S. Cl. 266—208 **10 Claims**



1. A vacuum plant, comprising:

a closed container configured to receive a metallurgical vessel which is to be placed under vacuum;

at least one steam ejector in communication with the closed container;

a further steam ejector connected in series with the at least one steam ejector;

an intermediate condenser connected between the at least one steam ejector and the further steam ejector, and having a condensate feed line and a condensate discharge line;

a final condenser;

a suction pump, the final condenser and the suction pump being connected in series to the further steam ejector; and

a heat exchanger provided in the condensate feed line of the intermediate condenser, the condensate feed line and the condensate discharge line of the intermediate condenser being configured to form a closed circuit, the final condenser having a condensate feed line in communication with the condensate discharge line of the intermediate condenser.

5,618,491

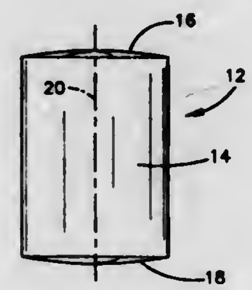
STUDS FOR BOILERS AND OTHER HIGH TEMPERATURE APPLICATIONS

Mohan Kurup, Richmond Hts., and Clark Champney, Elyria, both of Ohio, assignors to TRW, Inc., Lyndhurst, Ohio

Filed Feb. 22, 1996, Ser. No. 605,372

Int. Cl.^{6} C22C *38/06;* **B23K** *11/00;* **F23M** *5/00;* **F22B** *7/00*

U.S. Cl. 420—77 **29 Claims**



1. A stud for welding onto a surface exposed to high temperature, said stud comprising an iron aluminum alloy composition including:

about 8 to 13 wt % aluminum;

about 0.01 to about 0.3 wt % carbon;

said stud having a stud configuration.

5,618,492

PROCESS FOR STERILIZING ARTICLES AND PROVIDING STERILE STORAGE ENVIRONMENTS

Richard D. Auten, 5960 Rolling Oaks Ln., Cumming, Ga. 30130, and Barbara L. Heyl, 401 Glenwood Ave., Atlanta, Ga. 30312

Continuation of Ser. No. 294,517, Aug. 23, 1994, abandoned. This application Jan. 5, 1996, Ser. No. 583,695

Int. Cl.^{6} A61L *2/00*

U.S. Cl. 422—22 **17 Claims**

1. A method of sterilizing an article and providing a sterile storage container for an article, comprising the steps of:

(a) providing a sterilization solution including ozone dissolved therein;

(b) placing said sterilization solution in a container;

(c) placing an article to be sterilized in said container;

(d) sealing said container, thereby allowing said article to become at least partially immersed in said sterilization solution for a predetermined time, wherein said predetermined contact time is less than about 30 minutes; and

(e) applying ultraviolet radiation to said container after a predetermined contact time with said sterilization solution, wherein said contact time with ozone and ultraviolet radiation is a time sufficient to simultaneously sterilize said article and wherein said ultraviolet light degrades said ozone.

5,618,493

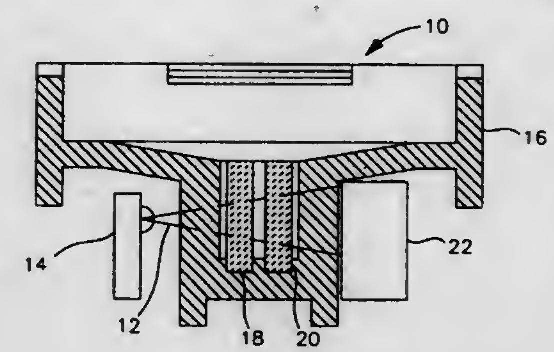
PHOTON ABSORBING BIODERIVED ORGANOMETALLIC CARBON MONOXIDE SENSORS

Mark K. Goldstein, Del Mar; Michelle S. Oum, and Kathleen L. Kerns, both of San Diego, all of Calif., assignors to Quantum Group, Inc., San Diego, Calif.

Filed Aug. 29, 1994, Ser. No. 297,141

Int. Cl.^{6} G01N *21/01;31/22*

U.S. Cl. 422—57 **31 Claims**



1. A biomimetic sensor system comprising:

at least two photon absorbing/transmitting organometallic sensors for detecting the presence of airborne carbon monoxide, wherein at least one sensor includes:

a first sensor substrate formed from a porous semi-transparent material, wherein the first sensor substrate has an average pore diameter of greater than 15 nanometers; and

a first self-regenerating chemical sensor reagent for detecting carbon monoxide, wherein the first self-regenerating chemical sensor reagent is impregnated into the first substrate and includes at least one compound selected from each of the following groups:

Group 1—palladium salts selected from the group consisting of palladium sulfate, palladium sulfite, palladium pyrosulfite, palladium chloride, palladium bromide, palladium iodide, palladium perchlorate, $CaPdCl_4$, Na_2PdCl_4, K_2PdCl_4, $PdCl_2.2H_2O$, $PdBr_2.2H_2O$, K_2PdBr_4, Na_2PdBr_4, $PdCl_2Br_2^{-2}$, $PdCl_3Br^{-2}$, $PdClBr_3^{-2}$, and mixtures thereof;

Group 2—molybdenum selected from the group consisting of silicomolybdic acid, salts of silicomolybdic acid, molybdenum trioxide, heteropolyacids of molybdenum containing vanadium, copper or tungsten, ammonium molybdate, alkali metal or alkaline earth salts of the molybdate anion, heteropolymolybdates and mixtures thereof;

Group 3—copper salts selected from the group consisting of copper sulfate, copper bromide, copper chloride, copper fluoride, copper iodide, and copper perchlorate;

Group 4—molecular encapsulants selected from the group consisting of α-cyclodextrin, β-cyclodextrin, modified β-cyclodextrin, and γ-cyclodextrin and mixtures thereof;

Group 5—soluble chloride and bromide ions selected from the group consisting of lithium, sodium, platinum, calcium, magnesium, and cobalt chlorides and bromides, and mixtures thereof; and

Group 6—an organic solvent and trifluorinated organic anion, the solvent selected from the group consisting of dimethyl sulfoxide, tetrahydrofuran, dimethyl formamide, trichloroacetic acid, and the anion is a soluble metal trifluoroacetylacetonate selected from the cation group consisting of copper, calcium, magnesium, sodium, potassium, and lithium, and mixtures thereof.

5,618,494

CAPILLARY FLOW LIQUID TRANSFER DEVICE HAVING WASTE RECEPTION AREA

Roger A. Bunce, Kings Norton; Stephen J. Starsmore, Selly Oak, and Gary H. G. H. Thorpe, Handsworth, all of England, assignors to British Technology Group Limited, London, England

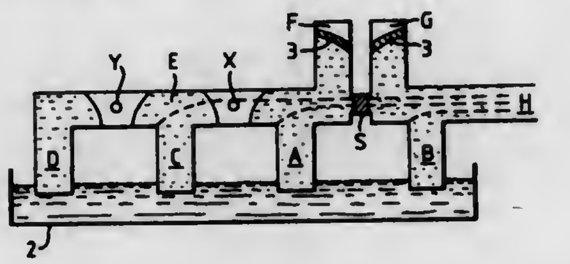
PCT No. PCT/GB94/00708, § 371 Date Oct. 25, 1994, § 102(e) Date Oct. 25, 1994, PCT Pub. No. WO94/22579, PCT Pub. Date Oct. 13, 1994

PCT Filed Mar. 31, 1994, Ser. No. 325,348

Claims priority, application United Kingdom, Apr. 7, 1993, 9307319

Int. Cl.[6] G01N *21/01;30/00*

U.S. Cl. 422—58 **14 Claims**



1. A capillary flow liquid transfer device comprising:

a first flow channel leading from a first channel end to a volume determination site for receiving an applied substance, said first channel end being connectable to a liquid supply;

a second flow channel leading from a second channel end connectable to said liquid supply; and

waste reception means connected to said second flow channel for receiving excess of said applied substance separate from substance received in said volume determination site;

said second flow channel crossing said first flow channel in fluid connection therewith in an interception area bordering said volume determination site directly upstream thereof relative to flow in said first flow channel, said first and second flow channels being constructed and arranged such that said liquid flow in said second flow channel reaches said interception area before that in said first flow channel upon simultaneous liquid application from said liquid supply at said first and second channel ends, and such that said excess substance is directed to said waste reception means separate from substance received in said volume determination site.

2. A device according to claim 1, and further including a third flow channel, leading from a third channel end connectable to said liquid supply, said third flow channel being connected to a further waste reception means for receiving excess of said applied substance separate from substance received in said volume determination site, said third flow channel crossing said first flow channel in fluid connection therewith in a further interception area bordering said volume determination site directly downstream thereof relative to flow in said first flow channel, said flow channels being constructed and arranged such that said liquid flow in said third flow channel reaches said further interception area before that in said first flow channel upon simultaneous liquid application from said liquid supply at said first, second and third channel ends, said further excess substance being directed to to said further waste reception means separate from substance received in said volume determination site.

3. A device according to claim 2, wherein said further waste reception means is a further waste reservoir.

4. A device according to claim 2, wherein the flow channels are conformed to prevent liquid flow in said first channel being diverted by flow in said second and third channels.

5,618,495

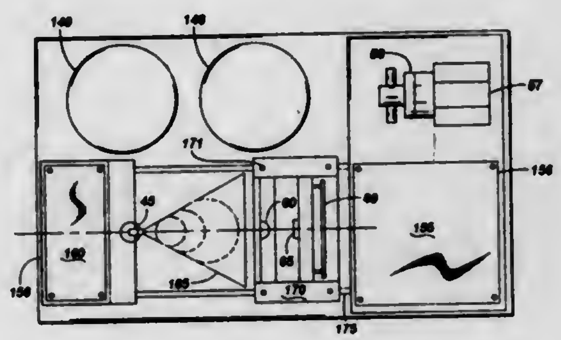
COLORIMETRIC TITRATION METHOD AND APPARATUS

Andrew S. Mount, 1024 Old Stone Church Rd., No. 414, Clemson, S.C. 29631; Douglas Paul, 418 Rockingham Rd., Seneca, S.C. 29678, and Alfred P. Wheeler, 201 Augusta Rd., Clemson, S.C. 29631

Continuation of Ser. No. 97,780, Jul. 26, 1993, abandoned. This application Apr. 5, 1995, Ser. No. 417,447

Int. Cl.[6] G01N *21/25*

U.S. Cl. 422—82.05 **24 Claims**



1. A device for determining the transmissivity of a sample by passing electromagnetic energy within a predetermined frequency band through the sample, said device comprising:

means located outside of the sample for generating an electromagnetic signal in one predetermined frequency band;

means for modulating said electromagnetic signal with a second signal of predetermined strength for transmitting said modulated signal through the sample;

means located outside of the sample for collecting electromagnetic energy transmitted through the sample, wherein collected electromagnetic energy includes, said modulated signal from the sample and any ambient electromagnetic radiation received by said collecting means;

means for demodulating said modulated signal from said collecting means to obtain said second signal, wherein said second signal substantially represents the amount of said modulated signal received by said collection means after transmission through the sample, and excludes a substantial portion of any ambient electromagnetic radiation received by said collection means; and

means for detecting a strength of said second signal from said demodulating means, said strength of said second signal representative of the transmissivity of the sample.

5,618,496

GAS SENSORS AND THEIR MANUFACTURING METHODS

Kazuhisa Hasumi, Odawara; Kentaro Nagano, Yokohama; Shuuichi Kamiyama, Tokyo; Hiroaki Yanagida, 1-3-19, Sasumachi, Choufu-shi, Tokyo, and Osamu Okada, Osaka, all of Japan, assignors to Hiroaki Yanagida; Mikuni Corporation, both of Tokyo, and Osaka Gas Co., Ltd., Osaka, all of Japan

Division of Ser. No. 117,025, Jan. 8, 1993, abandoned. This application Mar. 16, 1995, Ser. No. 406,097

Claims priority, application Japan, Jan. 10, 1992, 4-3294

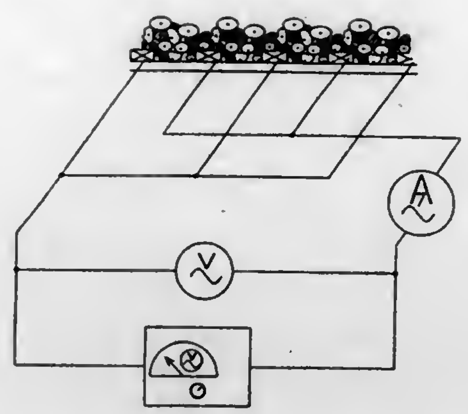
Int. Cl.[6] G01N *27/12*

U.S. Cl. 422—90 **15 Claims**

1. A gas sensor comprising:

a solid having p-type and n-type semiconductor particles in mutual contact, forming contact regions,

two electrodes connected to the solid, and



means for introducing to the contact regions a gas containing the gas to be detected.

5,618,497

POLYMERIZATION APPARATUS EFFECTIVE IN PREVENTING POLYMER SCALE DEPOSITION

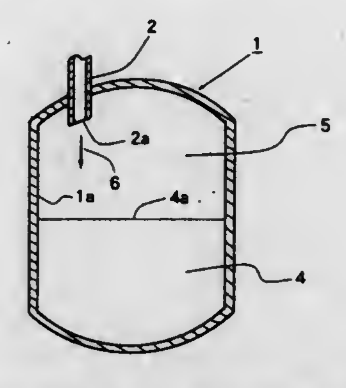
Takuya Ueda, Machida; Yoshihiro Shirota, Maebashi; Yoshihiko Hirai, Hasaki-machi; Toshiaki Maruyama, Sakura, and Tadashi Amano, Kamisu-machi, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Division of Ser. No. 193,866, Feb. 9, 1994, Pat. No. 5,447,999. This application Apr. 4, 1995, Ser. No. 415,984

Claims priority, application Japan, Dec. 28, 1993, 5-352184

Int. Cl.[6] C08F *2/16;* **F28B** *9/08*

U.S. Cl. 422—138 **4 Claims**



1. A polymerization apparatus for polymerizing a monomeric compound to produce a polymeric compound, comprising a polymerization vessel, a reflux condenser installed outside said polymerization vessel for removing heat by condensing a gaseous part of said monomeric compound to form a liquid condensate, and a pipe connected between said reflux condenser and a wall of said polymerization vessel with an end thereof opening into a gaseous phase region inside said polymerization vessel, for returning said liquid condensate to the polymerization vessel, wherein said end projects from an inner surface of said wall of said polymerization vessel into said gaseous phase region, and wherein said gaseous part of said monomeric compound passing from said polymerization vessel to said reflux condenser and said liquid condensate returning from said reflux condenser to said polymerization vessel both pass through said pipe between said reflux condenser and said wall of said polymerization vessel.

5,618,498

METHOD FOR BRAZING HEAT RESISTING ALLOY HAVING ON ITS SURFACE INSULATING OXIDE FILM AND PREHEAT TYPE METALLIC CARRIER FOR PURIFICATION OF EXHAUST GAS AND PROCESS FOR PRODUCING THE SAME

Shogo Konya, Kawasaki; Akira Okamoto, Ube, and Kouji Yoshizaki, Numazu, all of Japan, assignors to Nippon Steel Corporation, Tokyo, and Toyota Jidosha Kabushiki Kaisha, Toyota, both of Japan

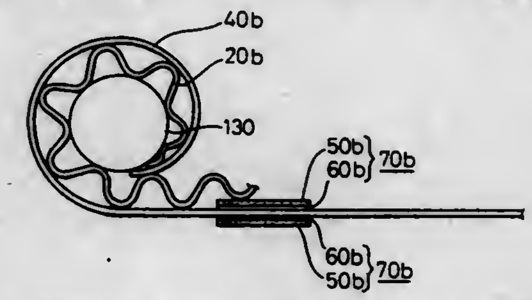
PCT No. PCT/JP94/00772, § 371 Date Jan. 12, 1995, § 102(e) Date Jan. 12, 1995, PCT Pub. No. WO94/26455, PCT Pub. Date Nov. 24, 1994

PCT Filed May 12, 1994, Ser. No. 367,274

Claims priority, application Japan, May 12, 1993, 5-110468

Int. Cl.[6] F01N *3/10;* **B23K** *31/02*

U.S. Cl. 422—174 **16 Claims**



1. A preheat type metallic carrier for purification of exhaust gas, comprising:

a mutually laminated flat heat resisting alloy sheet and corrugated heat resisting alloy sheet, with at least one of said flat sheet and said corrugated sheet having an insulating film covering a surface thereof;

said mutually laminated flat sheet and corrugated sheet wound around a central elongated electrode member in a honeycomb structure form;

a brazed joint connecting selected portions of said flat sheet and said corrugated sheet in said honeycomb structure providing an electrically conductive path between said flat sheet and said corrugated sheet;

said brazed joint including oxides of a reducing metal that has a strong reducing action with respect to said insulting film, said reducing metal oxides being dispersed and precipitated in a solidified melted brazing metal;

said dispersed and precipitated reducing metal oxides being formed during brazing by heating a brazing material disposed in said honeycomb structure between said wound flat and corrugated sheets at said selected portions for the brazed joint, said brazing material comprising a brazing metal having said reducing metal laminated thereon, with said reducing metal facing said insulating film covering said surface of at least one of said flat sheet and said corrugated sheet, said heating melting said brazing metal and resulting in a substitution reaction between said reducing metal and said insulating film forming said reducing metal oxides which disperse and precipitate in the melted brazing metal; and

said honeycomb structure wound around said central elongated electrode member being disposed in an outer jacket.

5,618,499

CATALYST OUTAGE PROTECTION SYSTEM

Edward C. Lewis, Wadsworth; Donald P. Tonn, Copley, and Michael G. Varner, Canton, all of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

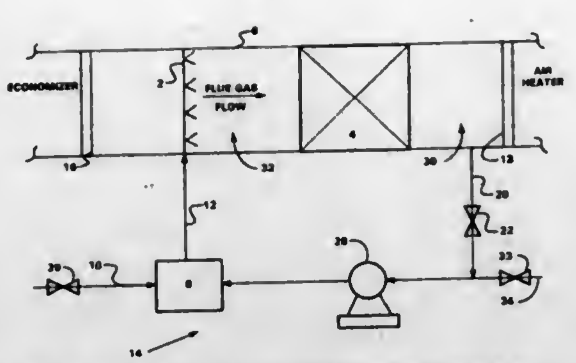
Filed Jan. 20, 1995, Ser. No. 375,884

Int. Cl.[6] B01J *8/00;* **C01B** *21/02*

U.S. Cl. 422—177 **6 Claims**

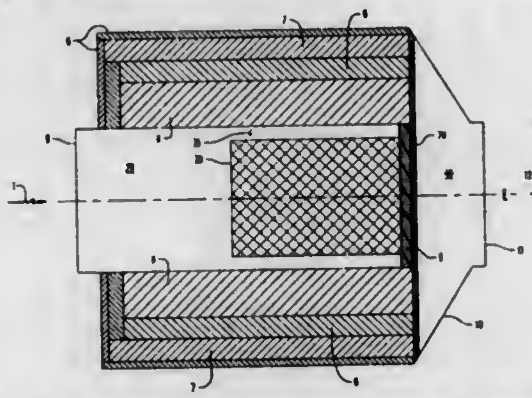
1. A catalyst protection system for a selective catalytic reduction reactor for protecting the catalyst during an outage, comprising:

a catalyst bed located in a selective catalytic reduction reactor;



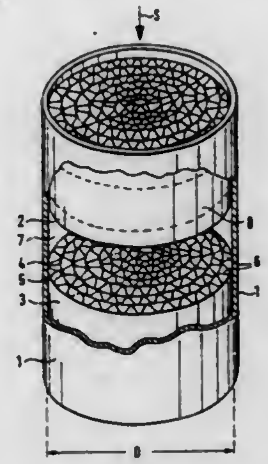
a fluid injection grid located upstream of said catalyst bed;
a first inlet damper and a second outlet damper situated at each end of the selective catalytic reduction reactor for isolating said catalyst bed and said injection grid during an outage, said inlet damper being mounted in the flue upstream of said fluid injection grid and said outlet damper being mounted downstream of said catalyst bed; and
means for recirculating heated air across said catalyst bed through said fluid injection grid during the outage for protecting the catalyst from contact with water.

5,618,500
CONSTITUENTS OF ENGINE EXHAUST
Chi-Shang Wang, 5923 Fairmount Dr., Woodridge, Ill. 60517
Filed Aug. 21, 1995, Ser. No. 517,345
Int. Cl.^{6} B01D *53/34;* **F01N** *3/10*
U.S. Cl. 422—177 **11 Claims**



1. A reactor for the oxidation and combustion of carbon soot particles, unburned hydrocarbons, carbon monoxide, and for the dissociation of nitrogen oxides and sulfur oxides in engine exhaust containing oxygen, said reactor comprising a metal casing containing:
a central reaction zone where exothermal oxidation and combustion of engine exhaust and formation of decomposition products occurs, such oxidation and combustion being sustained by heat of the exhaust and heat released in exothermal oxidation and combustion of the exhaust;
an inlet pipe that introduces engine exhaust into the central reaction zone;
a porous heat-retaining zone defining laterally the central reaction zone, the porous heat-retaining zone allowing passage of engine exhaust and decomposition products;
an impervious insulating plate bordering the central reaction zone opposite to said inlet pipe;
porous heat-retaining cells in the central reaction zone adjacent to said impervious insulating plate for deposit and combustion of soot particles, the porous heat-retaining cell occupying only part of the central reaction zone, impinging heat transfer occurring where the soot particles are deposited;
insulating means adjacent to and external to the porous heat-retaining zone for minimizing energy losses from the porous heat-retaining zone;
a metal net mesh adjacent to the impervious insulating plate, the porous heat-retaining zone, and the insulating means, that allows passage of engine exhaust and decomposition products;
the metal casing being penetrated by the inlet pipe and a metal outlet pipe, and the metal casing being shaped to allow space between the metal net mesh and the outlet pipe.

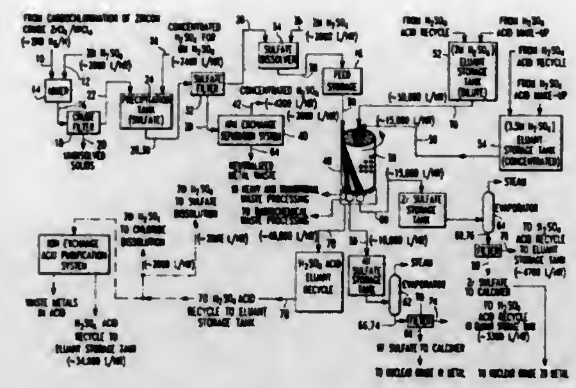
5,618,501
CATALYTIC CONVERTER WITH TWO OR MORE HONEYCOMB BODIES IN A CASING TUBE AND METHOD FOR ITS PRODUCTION
Ludwig Wieres, Overath, and Alfred Reck, Kürten, both of Germany, assignors to Emitec, Gesellschaft fuer Emissionstechnologie mbH, Lohmar, Germany
Filed Jun. 5, 1995, Ser. No. 463,700
Claims priority, application Germany, Dec. 9, 1992, 42 41 469.5
Int. Cl.^{6} B01D *53/34;* **F01N** *3/10*
U.S. Cl. 422—180 **15 Claims**



1. A catalytic converter, comprising:
a casing tube having a given internal diameter;
at least two individual honeycomb bodies through which a fluid can flow in a given flow direction, said honeycomb bodies being disposed in said casing tube;
said honeycomb bodies being formed of structured metal layers forming flow channels, said layers being joined to said casing tube by hard brazing; and
said honeycomb bodies having a given theoretical strain-free diameter and having an elastic compression capacity of from 2 to 10% of said given theoretical strain-free diameter for prestress.

5,618,502
ZIRCONIUM AND HAFNIUM SEPARATION IN SULFATE SOLUTIONS USING CONTINUOUS ION EXCHANGE CHROMATOGRAPHY
Charles H. Byers, Knoxville; Warren G. Sisson; Thomas S. Snyder, both of Oak Ridge, all of Tenn.; Richard J. Beleski, Pittsburgh; Umesh P. Nayak, Murrysville, both of Pa., and Timothy L. Francis, Ogden, Utah, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Jul. 17, 1995, Ser. No. 502,995
Int. Cl.^{6} C01G *25/00;27/00*
U.S. Cl. 423—70 **20 Claims**

1. A continuous method for separating and purifying zirconium from hafnium, which comprises:
(a) preparing an aqueous sulfate feedstock solution of zirconium and hafnium sulfate complexes;
(b) loading said aqueous sulfate feedstock solution to a continuously operating chromatographic ion exchange column containing anionic exchange resin;

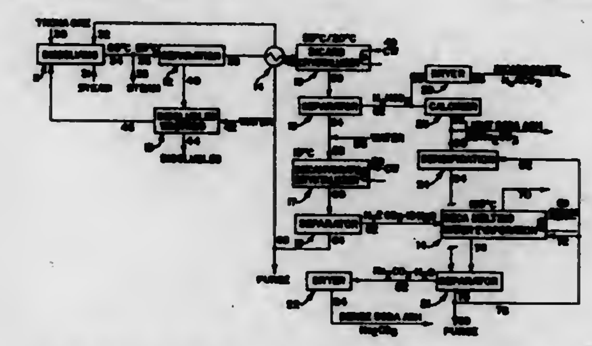


(c) feeding an aqueous sulfate eluant solution to said column to elute said aqueous sulfate feedstock solution from the anionic exchange resin; and,
(d) separately collecting a substantially pure zirconium fraction and a substantially pure hafnium fraction and at least one waste fraction from said column.

5,618,503
ANTIMONY PENTAFLUORIDE
Alan Johnson, Oakville; H. J. Woods, Milton, and H. J. Connor, Orillia, all of Canada, assignors to Chemical Research & Licensing Company, Pasadena, Tex.
Filed Jun. 28, 1996, Ser. No. 671,582
Int. Cl.^{6} C01G *28/00*
U.S. Cl. 423—87 **12 Claims**

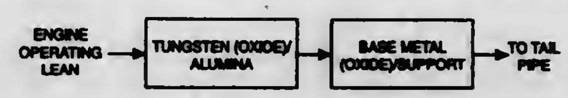
1. A method of preparing antimony pentafluoride comprising reacting hydroxonium fluoroantimonates with carbonyl difluoride to produce antimony pentafluoride.

5,618,504
METHOD FOR RECOVERY OF ALKALI VALUES FROM TRONA USING SEQUENTIAL CRYSTALLIZATION
David R. Delling, Taos, N.M.; Vladimir M. Zolotoochin, The Woodlands; Francis M. Coustry, Houston, both of Tex., and Kevin L. Green, Green River, Wyo., assignors to Solvay Minerals, Inc., Houston, Tex.
Filed May 10, 1995, Ser. No. 438,447
Int. Cl.^{6} C01D *1/00*
U.S. Cl. 423—206.2 **41 Claims**



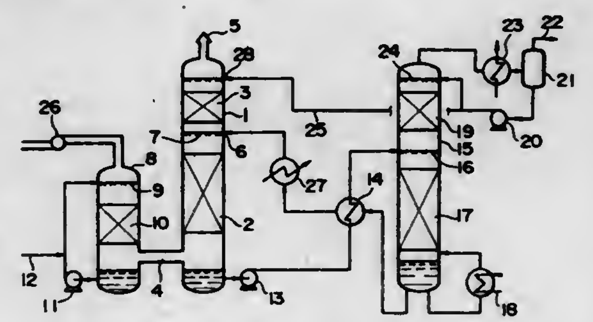
1. A method of recovering alkali values from underground trona deposits which comprises:
(a) dissolving an alkali-containing ore in a heated dissolving solution to form a dissolved alkali feed liquor having suspended therein insoluble particles;
(b) removing the suspended insoluble particles from the feed liquor;
(c) cooling the feed liquor and precipitating sodium bicarbonate crystals thereby forming a mother liquor;
(d) separating sodium bicarbonate crystals from the mother liquor;
(e) cooling the mother liquor and precipitating sodium carbonate decahydrate crystals thereby forming a weak liquor;
(f) separating sodium carbonate decahydrate crystals from the weak liquor; and
(g) heating the weak liquor and recirculating it as the dissolving solution in step (a); and
(h) recovering alkali values from the sodium carbonate decahydrate crystals.

5,618,505
METHOD FOR CONVERTING LEAN-BURN ENGINE EXHUST GASES USING A TWO STAGE CATALYST SYSTEM
Somasundaram Subramanian, Melvindale; Robert J. Kudla, Warren, and Mohinder S. Chattha, Northville, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Division of Ser. No. 1,702, Jan. 7, 1993, abandoned. This application Aug. 26, 1994, Ser. No. 296,638
Int. Cl.^{6} B01D *53/94*
U.S. Cl. 423—213.2 **24 Claims**



1. A method for the conversion of lean-burn engine exhaust gases, nitrogen oxides, carbon monoxide, and hydrocarbons, which comprises sequentially exposing, to said exhaust gases of a combustion system, a first-stage catalyst comprising between about 0.1 and 3% by weight tungsten carried on a support material comprising mostly γ-alumina which effects reduction of said nitrogen oxides to nitrogen by reaction with hydrocarbons and a second-stage catalyst comprising base metal carried on a support material which effects further reduction of said nitrogen oxides to nitrogen by reaction with hydrocarbons.

5,618,506
PROCESS FOR REMOVING CARBON DIOXIDE FROM GASES
Hitomi Suzuki, Kyoto; Atsushi Hayakawa, Nara; Tomio Mimura, Osaka; Shigeru Shimojo, Osaka; Hidenobu Shimayoshi, Osaka; Masaki Iijima, Tokyo; Shigeaki Mitsuoka, and Toru Iwaki, both of Hiroshima, all of Japan, assignors to The Kansai Electric Power Co., Inc., Osaka, and Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, both of Japan
Filed Aug. 4, 1995, Ser. No. 511,290
Claims priority, application Japan, Oct. 6, 1994, 6-242915; Mar. 16, 1995, 7-057120; Mar. 23, 1995, 7-064030; Mar. 23, 1995, 7-064031
Int. Cl.^{6} C01B *17/16*
U.S. Cl. 423—228 **11 Claims**

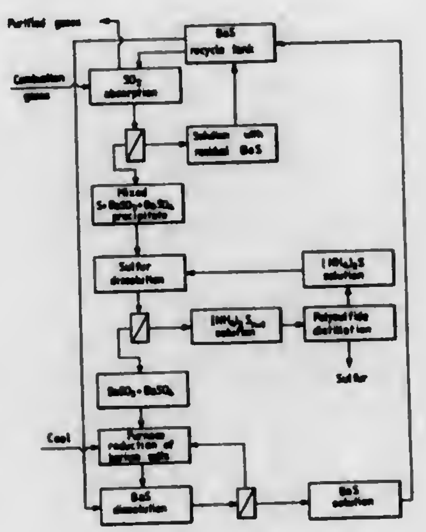


1. A process for removing CO_2 from a CO_2-containing gas said process comprising contacting the CO_2-containing untreated gas with an aqueous solution of an amine compound represented by the general formula (1)

$$R^1NHC(CH_3)_2CH_2OH \quad (I)$$

in which R^1 is an isopropyl group.

5,618,507
PROCESS FOR REMOVING SO_2 FROM GASES WHICH CONTAIN IT, WITH DIRECT PRODUCTION OF ELEMENTAL SULFUR
Marco Olper, Monza, and Massimo Maccagni, Sesto San Giovanni, both of Italy, assignors to Engitec S.p.A., Milan, Italy
Filed Feb. 21, 1996, Ser. No. 603,556
Claims priority, application Italy, Feb. 24, 1995, MI95A0357
Int. Cl.[6] B01D *53/50*
U.S. Cl. 423—243.08 **7 Claims**



1. A process for removing sulfur dioxide from a gas which contains it, comprising the steps of:
(a) reacting an SO_2-containing gas with an aqueous solution into which BaS has been supplied according to the reactions:

$$2BaS+2SO_2+2H_2O \rightarrow 2BaSO_3+2H_2S$$

$$2H_2S+SO_2 \rightarrow 3S+2H_2O$$

with a precipitate being thus formed which comprises $BaSO_3$ and S, and filtering-off said precipitate,
(b) dissolving elemental sulfur from said filtered-off precipitate, while leaving the $BaSO_3$ unchanged, in a solid residue, and separting the resulting solution from said solid residue,
(c) treating said solid residue from (b) with elemental carbon at a temperature of approximately 1100° C., according to reactions including:

$$2BaSO_3+3C \rightarrow 2BaS+3CO_2$$

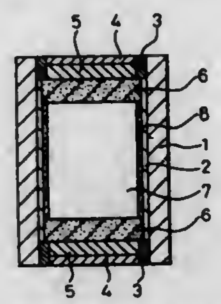
$$BaSO_3+3C \rightarrow BaS+3CO$$

and supplying the BaS solids into the absorption solution and recycling this resulting absorption solution to step (a);
(d) distilling said resulting solution obtained in step (b) to recover elemental sulfur in pure form.

5,618,508
PROCESS FOR PURIFYING EXHAUST GAS USING MODIFIED CALCIUM HYDROXIDE
Hermann Suchenwirth, Grafrath, and Roland Fichtel, Starnberg, both of Germany, assignors to FTU GmbH Technische Entwicklung und Forschung im Umweltschutz, Starnberg, Germany
Continuation of Ser. No. 801,679, Dec. 2, 1991, Pat. No. 5,306,475, which is a continuation-in-part of Ser. No. 302,593, Jan. 13, 1989, abandoned. This application Feb. 8, 1994, Ser. No. 193,238
Claims priority, application Germany, May 18, 1987, 37 16 566.6; May 10, 1988, 38 15 982.1; May 16, 1988, 38 16 595.3
Int. Cl.[6] B01J *8/00*
U.S. Cl. 423—245.1 **7 Claims**

1. A dry absorption process for purifying an exhaust gas containing impurities selected from the group consisting of volatile heavy metals, mercury, chlorinated hydrocarbons, polychlorinated dioxines and furanes, polychlorinated biphenyls, hexachlorobenzenes and pentachlorophenols, and polyaromatic hydrocarbons, comprising the steps of:
(a) manufacturing a modified calcium hydroxide by adding from 0.1 to 25 wt. % of at least one substance selected from the group consisting of activated coal and open-hearth lignite coke to calcium hydroxide;
(b) introducing said modified calcium hydroxide in dry powder form into the exhaust gas at a temperature of 20° to 1200° C.;
(c) mixing said modified calcium hydroxide with the exhaust gas to absorb said impurities; and
(d) removing the modified calcium hydroxide containing the absorbed impurities from said exhaust gas.

5,618,509
METHOD FOR PRODUCING CUBIC BORON NITRIDE
Kousuke Shioi, and Hidefumi Nakano, both of Shiojiri, Japan, assignors to Showa Denko K.K., Tokyo, Japan
Continuation-in-part of Ser. No. 272,573, Jul. 11, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 475,604
Claims priority, application Japan, Jul. 9, 1993, 5-170537; Feb. 6, 1994, 6-19508
Int. Cl.[6] C01B *21/064*
U.S. Cl. 423—290 **20 Claims**



1. A method for producing cubic boron nitride, comprising keeping hexagonal boron nitride under temperature and pressure conditions within the range of stability of cubic boron nitride in the presence of a mixture of at least two compounds selected from the group consisting of amides and imides of Li, Ca and Mg, to convert said hexagonal boron nitride to cubic boron nitride.

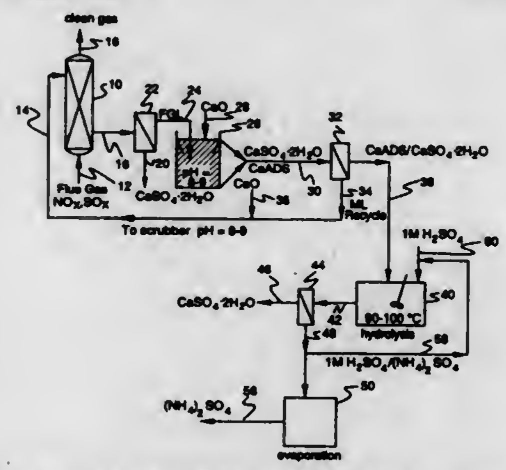
11. A method for producing cubic boron nitride, comprising keeping hexagonal boron nitride under temperature and pressure conditions within the range of stability of cubic boron nitride in the presence of a single compound selected from the group consisting of amides of Ca and Mg and imides of Li, Ca and Mg, to convert said hexagonal boron nitride to cubic boron nitride.

16. A method for producing cubic boron nitride, comprising keeping hexagonal boron nitride under temperature and pressure conditions within the range of stability of cubic boron nitride in the presence both of a single compound selected from the group consisting of amides and imides of Li, Ca and Mg and of one or more metals selected from the group consisting of elements of Groups Ia, IIa, IIIa, VIa, VIIa, VIII, IIb and IIIb of the Periodic Table, to convert said hexagonal boron nitride to cubic boron nitride.

5,618,510
PROCESS FOR PRODUCING SILICON CARBIDE MATERIAL
Kaoru Okada, Kawasaki; Keihachiro Nakajima, Yokohama, and Hitoshi Kato, Tokyo, all of Japan, assignors to New Oji Paper Co., Ltd., Tokyo, Japan
Filed Apr. 10, 1995, Ser. No. 419,544
Claims priority, application Japan, Apr. 12, 1994, 6-073425
Int. Cl.[6] C01B *31/36*
U.S. Cl. 423—346 **7 Claims**

1. A process for producing a silicon carbide material comprising the steps of:
reacting a carbon material consisting essentially of activated porous carbon fibers, said fibers having a specific surface area of 100 to 2500 m^2/g, with a silicon monoxide gas at a temperature of 800° C. to 2000° C., and heat-treating the resultant porous silicon carbide material in a non-oxidative gas atmosphere consisting essentially of nitrogen or ammonia and substantially no oxygen at a temperature of 800° C. to 2000° C.

5,618,511
PROCESS FOR PRODUCING AMMONIUM SULFATE FROM FLUE-GAS SCRUBBER WASTE LIQUOR
Alan D. Randolph; Sudarsan Mukhopadhyay, both of Tucson, Ariz., and Taeg M. Kwon, Seoul, Rep. of Korea, assignors to The Arizona Board of Regents on behalf of the University of Arizona, Tucson, Ariz.
Filed Aug. 11, 1995, Ser. No. 516,346
Int. Cl.[6] C01C *1/24;* **C01F** *11/46*
U.S. Cl. 423—545 **23 Claims**



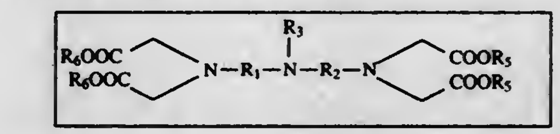
1. A method for regenerating a spent flue-gas liquor containing nitrogen and sulfur compounds in solution after separation of sulfite/sulfate waste product derived from a process for removing nitrogen and sulfur oxides from a flue gas by contact with a calcium and Fe (II) EDTA containing aqueous scrubbing solution in a scrubber, comprising the following steps:
adding a first slurry of calcium components selected from the group consisting of lime, limestone or mixtures thereof to said spent flue-gas liquor in a crystallizer, thereby producing a crystallizer slurry comprising calcium-amine-sulfonate salt crystals in a regenerated scrubbing solution, wherein said crystallizer is maintained approximately at a pH between 8.0 and 9.1;
filtering said crystallizer slurry to separate said calcium-amine-sulfonate salt crystals from said regenerated scrubbing solution; and
recycling said regenerated scrubbing solution to the scrubber.

5,618,512
NIOBIUM-CONTAINING ZEOLITES
Robert J. Saxton, West Chester, and John G. Zajacek, Devon, both of Pa., assignors to Arco Chemical Technology, L.P., Greenville, Del.
Filed Nov. 30, 1995, Ser. No. 565,711
Int. Cl.[6] C01B *39/08;39/40*
U.S. Cl. 423—705 **19 Claims**

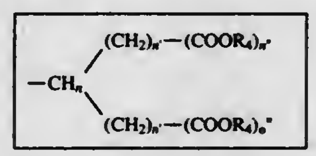
1. A method of making a crystalline siliceous molecular sieve zeolite having a zeolite framework structure isomorphous with ZSM-5, wherein niobium is substituted in said zeolite framework structure, and characterized by the substantial absence of exchangeable cations and aluminum, said method comprising:
(a) partially hydrolyzing a tetraalkoxysilane by reacting the tetraalkoxysilane with water containing a first portion of a quaternary ammonium species in hydroxide form to obtain a partial hydrolysis product;
(b) combining the partial hydrolysis product with a hydrolyzable niobium compound and a second portion of the quaternary ammonium species to yield a precursor product; and
(c) subjecting the precursor product to hydrothermal treatment at a temperature of from 100° C. to 200° C. for a time effective to form as-synthesized crystals of the crystalline siliceous molecular sieve zeolite.

5,618,513
METHOD FOR PREPARING RADIOLABELED PEPTIDES
Ananthachari Srinivasan, St. Charles, Mo., assignor to Mallinckrodt Medical, Inc., St. Louis, Mo.
Filed Jun. 7, 1995, Ser. No. 480,372
Int. Cl.[6] A61K *51/00;* **A61M** *36/14*
U.S. Cl. 424—1.69 **9 Claims**

1. A method for making a radiolabeled peptide composition comprising the steps of:
preparing a chelating agent of the formula:



where R_1 and R_2 are same or different and are linking moieties containing between about 1 and about 10 carbon atoms;
R_3 is a hydrogen or a branched or straight chain alkylcarboxyl group of the formula:



where n is 1, n^1 is 0, 1 or 2, and n^{11} is 1;
R_4–R_6 are hydrogen or a protecting group and wherein only one of R_4, R_5 or R_6 is hydrogen;
combining the chelating agent with a peptide in a solid phase peptide synthesizer to form a chelate-peptide conjugate; and
complexing a radionuclide to the conjugate to form the radiolabeled peptide.

5,618,514

DIAGNOSTIC AND CONTRAST AGENT

Ulf Schröder, and Leif G. Salford, both of Lund, Sweden, assignors to Nycomed Imaging AS, Oslo, Norway

Continuation of Ser. No. 186,096, Jan. 25, 1994, abandoned, which is a continuation of Ser. No. 43,982, Apr. 7, 1993, abandoned, which is a continuation of Ser. No. 888,305, May 27, 1992, abandoned, which is a continuation of Ser. No. 693,031, Apr. 30, 1991, abandoned, which is a continuation of Ser. No. 278,326, Nov. 30, 1988, abandoned, which is a continuation of Ser. No. 775,047, Aug. 15, 1985, abandoned. This application Dec. 22, 1994, Ser. No. 361,466

Claims priority, application Sweden, Dec. 21, 1983, 8307060

Int. Cl.^{6} A61B *8/13*

U.S. Cl. 424—9.5 **6 Claims**

1. A method of contrast enhanced ultrasonic diagnostic imaging comprising: administering to a subject a contrast enhancing amount of spheres or particles comprising a matrix enclosing a contrast agent which reflects sound waves, said matrix being a biocompatible, biodegradable, non-immunogenic non-polyamino acid synthetic polymer; and generating an ultrasonic image of said subject.

5,618,515

AEROSOL SPRAY COMPOSITION FOR THE TREATMENT OF DERMAL BURNS BY COOLING AND ANESTHETIZING THE WOUND AND VALVED CONTAINER FOR DISPENSING SAME

Mohinder Singh, Naperville, Ill.; Lisa Vail, Bethlehem, and Raymond S. Niedbala, Allentown, both of Pa., assignors to Blistex Inc., Oak Brook, Ill.

Division of Ser. No. 932,898, Aug. 19, 1992, abandoned. This application Feb. 7, 1994, Ser. No. 170,022

Int. Cl.^{6} A61K *9/12*

U.S. Cl. 424—45 **1 Claim**

1. A composition for treating dermal wounds in a container having a metered dose valve for delivering 0.01 ml to 15 ml of said product per application, said composition consists of: (i) 0.01% to 25% active ingredients by total weight, where the active ingredients are a solution of polysorbate 20 as the skin conditioner in the range of 0.5%–10% by total weight in combination with benzocaine as a topical anesthetic in the range of 0.01%–25% by total weight; (ii) water or ethanol as the solvent in the range of 1.0%–50% by total weight; and (iii) dimethyl ether as the propellant in the range of 25%–95% by total weight.

5,618,516

METHOD OF REDUCING SUBCUTANEOUS INFLAMMATION BY THE TOPICAL APPLICATION OF A HYDROPHILIC PHARMACEUTICAL COMPOSITION CONTAINING KETOPROFEN LYSINE SALT

Gaetano Clavenna, Rho Milano, and Giorgio Poletti, Milan, both of Italy, assignors to Dompé Farmaceutici SpA, Milan, Italy

Division of Ser. No. 199,972, Feb. 22, 1994, which is a continuation of Ser. No. 847,410, Mar. 6, 1992, abandoned. This application Mar. 25, 1996, Ser. No. 622,362

Claims priority, application Italy, Mar. 6, 1991, MI91A0584

Int. Cl.^{6} A61K *9/12*

U.S. Cl. 424—45 **16 Claims**

1. A method of reducing inflammation of an inflamed subcutaneous area of the body which comprises:

forming a composition comprising, by volume based on the total volume of the composition:
- at least about 67% water;
- 0.2 to 3% thickening agent;
- less than 15 volume percent by volume of a liquid excipient, comprising:
  - less than 5 volume percent of alcohol; and
  - 2 to 8% volume percent of at least one emulsifier; and
- 12 to 18 percent by volume of a lysine salt of ketoprofen;

forming an admixture of said composition with about 3 to 7 by weight, based on the weight of the entire admixture, of a propellant comprising at least one member selected from the group consisting of propane, butane and isobutane under sufficient pressure to prevent foaming thereof;

topically applying said admixture to a skin area proximate to said subcutaneous inflammation under conditions sufficient to permit said composition to foam and to become applied to said skin as a foam form material; and

causing at least lysine salt of ketoprofen to penetrate from said foam through said skin into effective engagement with the subcutaneous inflamed area of the body in an amount sufficient to have an anti-inflammatory effect thereon.

5,618,517

CHEWING GUM PRODUCT WITH DENTAL CARE BENEFITS

Regina M. Miskewitz, Somerville, N.J., assignor to Church & Dwight Co., Inc., Princeton, N.J.

Filed Oct. 3, 1995, Ser. No. 538,215

Int. Cl.^{6} A23G *3/30*

U.S. Cl. 424—48 **40 Claims**

1. A chewing gum product comprising between about 15–80 weight percent of a gum base, and between about 1–30 weight percent of dispersed particles of an organic-encapsulated alkali metal bicarbonate ingredient.

5,618,518

METHODS AND COMPOSITIONS FOR USE AGAINST DENTAL CALCULUS IN DOMESTIC ANIMALS

George K. Stookey, Noblesville, Ind., assignor to Indiana University Foundation, Bloomington, Ind.

Filed Jun. 6, 1995, Ser. No. 470,628

Int. Cl.^{6} A61K *7/16;* **A23L** *1/304*

U.S. Cl. 424—57 **17 Claims**

1. An article useful against the build-up of dental calculus on the teeth of animals comprising a chew product containing an amount of sodium hexametaphosphate effective to reduce the development of dental calculus.

5,618,519

SOLUBLE MELANIN

John M. Pawelek, Hamden, Conn., and Seth J. Orlow, Long Island City, N.Y., assignors to Yale University, New Haven, Conn.

Division of Ser. No. 603,111, Oct. 25, 1990, Pat. No. 5,218,079, which is a continuation-in-part of Ser. No. 525,944, May 18, 1990, Pat. No. 5,216,116. This application Feb. 11, 1993, Ser. No. 16,348

Int. Cl.^{6} A61K *7/42;7/40;9/06*

U.S. Cl. 424—59 **3 Claims**

1. A composition for a sunscreen for mammalian skin or hair or for providing a naturally-appearing tan to mammalian skin comprising an aqueous soluble melanin at a concentration of about 0.01 to 1.0 mg/ml, the soluble melanin having been produced by polymerizing a dihydroxyindolecarboxylic acid in an aqueous medium with aeration.

5,618,520

PHOTOSTABLE FILTERING COSMETIC COMPOSITION CONTAINING A UV-A FILTER AND A FILTERING POLYMER OF THE BENZOTRIAZOLE SILCONE TYPE

Isabelle Hansenne, Paris; Serge Forestier, Claye-Souilly, and Andre Deflandre, Orry la Ville, all of France, assignors to L'Oreal, Paris, France

PCT No. PCT/FR93/00886, § 371 Date May 4, 1995, § 102(e) Date May 4, 1995, PCT Pub. No. WO94/06404, PCT Pub. Date Mar. 31, 1994

PCT Filed Sep. 15, 1993, Ser. No. 382,310

Claims priority, application France, Sep. 17, 1992, 92 11099

Int. Cl.^{6} A61K *7/42;* **C08G** *77/00;* **C07C** *49/82*

U.S. Cl. 424—59 **13 Claims**

1. Photostable filtering cosmetic composition for the protection of the skin and the hair against ultraviolet rays with wavelengths between 280 and 380 nm, comprising in a cosmetically acceptable vehicle containing at least one fatty phase, 0.5 to 4% by weight of 4-(tert-butyl)-4'-methoxydibenzoylmethane 0.1 to 20% by weight benzotriazole silicone of a filtering polymer containing at least one unit of formula:

$$X-\overset{R'_a}{\overset{|}{Si}}-O_{\frac{3-a}{2}} \qquad (I)$$

in which

R' denotes a saturated or unsaturated C_1–C_{30} hydrocarbon group, a C_1–C_8 halogenated hydrocarbon group or a trimethylsilyloxy group;

a=1 or 2;

X=—A—Y

where A represents an aliphatic or aromatic divalent hydrocarbon radical containing at least 2 carbon atoms and optionally containing one or more oxygen atoms;

Y represents a 2-(2'-hydroxyphenyl)benzotriazole residue optionally bearing, on one or both of the aromatic rings, one or more C_1–C_8 alkyl, C_2–C_8 alkenyl, halogen, alkoxy, carboxyl, hydroxyl or amino substituents, the weight ratio of the benzotriazole silicone to the 4-(tert-butyl)-4'-methoxydibenzoylmethane being between 1 and 10.

5,618,521

PHOTOPROTECTIVE/COSMETIC COMPOSITIONS COMPRISING ANTIOXIDANTS AND FILAMENTOUS BACTERIAL EXTRACTS

Jean de Rigal, Claye Souilly; Jean-Luc Leveque, Le Raincy; Jean-Claude Contamin, Cantaron, and Lucien Aubert, Cap d'Ail, all of France, assignors to L'Oreal, Paris, France

Filed Jun. 16, 1995, Ser. No. 491,454

Claims priority, application France, Jun. 16, 1994, 94 07397

Int. Cl.^{6} A61K *7/42;35/74*

U.S. Cl. 424—59 **17 Claims**

1. A topically applicable sunscreen/cosmetic composition adopted for the photoprotection of human skin and/or hair, comprising a photoprotecting effective amount of (i) at least one antioxidant and (ii) at least one extract of at least one nonphotosynthetic and nonfructifying filamentous bacteria, in a cosmetically acceptable vehicle, diluent or carrier therefor.

5,618,522

EMULSION COMPOSITIONS

James E. Kaleta, Landen; Paul R. Tanner, Maineville; George E. Deckner, Cincinnati; Carlos G. Linares, Loveland, and Steve G. Fishter, Harrison, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jan. 20, 1995, Ser. No. 376,324

Int. Cl.^{6} A61K *7/44;7/40*

U.S. Cl. 424—60 **17 Claims**

1. An oil-in-water emulsion composition useful for topical application to human skin comprising:

(a) from about 5% to about 60% by weight of the total composition of an oil phase having a viscosity from about 3000 cps, measured at 25° C. using a Brook fied RVT viscometer equipped with a T bar "B" spindle rotating at 5 rpm, to about 10,000,000 cps, measured at 25° C. using a Brookfied RVT viscometer equipped with a T bar "F" spindle rotating at 0.5 rpm, wherein said oil phase comprises
  (i) from about 0.1% to about 10% by weight of the total composition of a particulate thickener selected from the group consisting of chemically treated or coated silica, polymethacrylate polymers, polymethacrylate and styrene copolymers, treated calcium silicate, treated bentonite, treated hectorite, and mixtures thereof; and
  (ii) from 0% to about 10% by weight of the total composition of an oil phase emulsifier; and

(b) from about 40% to about 95% by weight of the total composition of an aqueous phase selected from the group consisting of water, water-miscible solvents, and mixtures thereof, wherein said aqueous phase comprises
  (i) from 0% to about 10% by weight of the total composition of an aqueous phase emulsifier,

wherein the percentage by weight of the oil phase emulsifier and of the aqueous phase emulsifier are not simultaneously zero.

5,618,523

CERAMIDES, PROCESS FOR THEIR PREPARATION AND THEIR APPLICATIONS IN THE COSMETIC AND DERMOPHARMACEUTICAL FIELDS

Alexandre Zysman, Paris; Guy Vanlerberghe, Claye-Souilly, and Didier Semeria, Courtry, all of France, assignors to L'Oreal, Paris, France

Continuation of Ser. No. 837,935, Feb. 20, 1992, abandoned. This application Feb. 2, 1995, Ser. No. 384,434

Claims priority, application France, Feb. 21, 1991, 91 02091

Int. Cl.^{6} A61K *7/00;7/07*

U.S. Cl. 424—70.1 **3 Claims**

1. A synthetic compound having the formula:

$$R_1CHOH\underset{\underset{NHCOR_2}{|}}{CH}CH_2OH \qquad (I)$$

in which,

R_1 denotes a C_{11} to C_2, alkyl or alkenyl radical;

R_2 is a radical of oleic acid, in which the proportion of saturated radicals to unsaturated radicals does not exceed 35%,

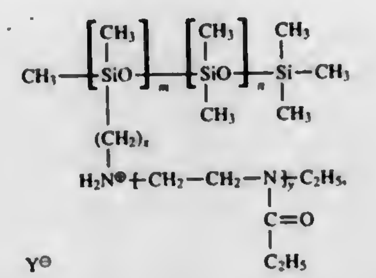
the compound being in the form of a racemic mixture of the erythro and threo diastereoisomers in the erythro:threo proportions of 85:15 to 60:40.

5,618,524
HAIR CONDITIONING AND STYLING COMPOSITIONS
Raymond E. Bolich, Jr., Maineville, and Peter M. Torgerson, Washington Court House, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Continuation of Ser. No. 104,470, Aug. 10, 1993, abandoned, which is a division of Ser. No. 758,319, Aug. 27, 1991, abandoned, which is a continuation of Ser. No. 505,755, Apr. 6, 1990, abandoned, which is a continuation-in-part of Ser. No. 390,568, Aug. 7, 1989, abandoned. This application Jun. 13, 1994, Ser. No. 258,901
Int. Cl.⁶ A61K *7/06*
U.S. Cl. 424—70.12 **1 Claim**

1. A solubilized polymer composition consisting of:
(a) a copolymer selected from the group consisting of:
(i) a copolymer prepared from the polymerization reaction of 56 weight percent t-butyl acrylate 24 weight percent t-butyl methacrylate, and 20 weight percent polydimethylsiloxane macromonomer having a weight average molecular weight of 10:000,
(ii) a copolymer prepared from the polymerization reaction of 80 weight percent t-butyl acrylate and 20 weight percent polydimethylsiloxane macromonomer having a weight average molecular weight of 10,000,
(iii) a copolymer prepared from the polymerization reaction of 75 weight percent t-butyl acrylate, 5 weight percent acid and 20 weight percent polydimethylsiloxane macromonomer having a weight average molecular weight of 10,000, and mixtures thereof; and
(b) a cyclomethicone solvent.

5,618,525
HAIR TREATMENT COMPOSITION
Einhard Bünning, Seeheim-Jugenheim, Germany, assignor to Goldwell GmbH, Germany
Filed Jul. 19, 1995, Ser. No. 503,974
Claims priority, application Germany, Jul. 28, 1994, 44 26 794.0
Int. Cl.⁶ A61K *7/075*
U.S. Cl. 424—70.122 **3 Claims**

1. Hair treatment composition comprising a solution of at least one quaternized aminoalkyl dimethyl polysiloxane/polyethyl oxazoline copolymer of the formula



wherein m and n each denote integers from 20 to 10,000, x is a number between 1 and 5, and y is a number from 5 to 500, Y⊖ being an anion, in at least one organic solvent.

5,618,526
COMPOSITION CONTAINING DIVALENT MANGANESE ION
Yoshikatsu Ikari, Abiko, Japan, assignor to Chief Resources Limited, Hong Kong
Continuation of Ser. No. 289,564, Aug. 12, 1994, abandoned, which is a division of Ser. No. 49,592, Apr. 20, 1993, Pat. No. 5,368,851, which is a continuation of Ser. No. 827,498, Jan. 30, 1992, abandoned, which is a continuation of Ser. No. 352,253, May 16, 1989, abandoned. This application Jul. 8, 1996, Ser. No. 677,580
Claims priority, application Japan, May 16, 1988, 63-116958
Int. Cl.⁶ A61L *9/00;* **A61K** *33/32;31/34;31/19*
U.S. Cl. 424—76.1 **8 Claims**

1. An oxidation resistant divalent manganese deodorizing composition, comprising:
a divalent manganese ion having an acid component bonded thereto, wherein said acid component comprises (1) citric acid, a salt thereof, or both, and (2) ascorbic acid, a salt thereof, or both; and
wherein the molar ratio of said acid component to said divalent manganese ion is in the range of 0.1:1 to 1:1.

5,618,527
CALCIUM POLYCARBOPHIL SPRINKLE
Robert W. Mendes, Dedham; Yuppadee Javroongrit, Boston; Aloysius Anaebonam, Burlington, and Emmett Clemente, Manchester, all of Mass., assignors to Ascent Pediatrics Inc., Billerica, Mass.
Continuation of Ser. No. 953,055, Sep. 30, 1992, abandoned. This application May 11, 1994, Ser. No. 240,820
Int. Cl.⁶ A61K *31/78;* **C08J** *3/12*
U.S. Cl. 424—78.01 **4 Claims**

1. An oral pharmaceutical composition, consisting essentially of a flowable, dispersible composition formed by wet-blending together (1) very fine calcium polycarbophil powder particles produced by milling calcium polycarbophil using an attritor mill such that the resultant very fine calcium polycarbophil powder particles have smooth edges with a good mouthfeel, with (2) a binder component comprising one or members selected from the group consisting of sucrose, dextrose, fructose, invert sugar, mannitol, sorbitol, saccharin, aspartame, and cyclamates and optionally with (3) an electrolyte component comprising one or members of selected from a group consisting of sodium chloride and potassium chloride,
wherein the ratio of said very fine calcium polycarbophil powder particles to said binder is about 80 to about 20 and said very fine calcium polycarbophil powder particles (1) and said binder component (2) are blended for a length of time effective to granulate and coat said very fine powder particles with binder.

5,618,528
BIOLOGICALLY COMPATIBLE LINEAR BLOCK COPOLYMERS OF POLYALKYLENE OXIDE AND PEPTIDE UNITS
Eugene R. Cooper, Berwyn, Pa.; Stephen P. Jones, Morpeth, United Kingdom; Colin W. Pouton, Bristol, United Kingdom, and Michael D. Threadgill, Bath, United Kingdom, assignors to Sterling Winthrop Inc., New York, N.Y.
Filed Feb. 28, 1994, Ser. No. 203,106
Int. Cl.⁶ A61K *47/42;* **C08G** *81/00*
U.S. Cl. 424—78.3 **17 Claims**

1. A linear block copolymer comprising units of an alkylene oxide, linked to units of peptide via a linking group comprising a —$CH_2CHOHCH_2(N)R$— moiety, wherein R is C_{1-4} alkyl group.

5,618,529
DIAPER RASH TREATMENT
Virgil F. Pichierri, 50 Brigham Hill Rd., Grafton, Mass. 01519
Continuation of Ser. No. 30,769, Mar. 15, 1993, abandoned, which is a continuation of Ser. No. 879,533, May 4, 1992, Pat. No. 5,194,261, which is a continuation of Ser. No. 618,395, Nov. 27, 1990, abandoned. This application Oct. 11, 1994, Ser. No. 321,203
Int. Cl.⁶ A61K *7/40*
U.S. Cl. 424—78.06 **2 Claims**

1. A method of treating a diaper rash which comprises the steps of:
applying to an area of diaper rash a composition about 5 to about 40% by weight of a mixture of copolymers of an alkyl vinyl ether, the copolymers having 1 to 3 carbon atoms in the alkyl group, and maleic acid and derivatives thereof selected from the group consisting of metal salts of calcium sodium and mixtures thereof and alkyl esters wherein the alkyl group is selected from the group consisting of propyl, isopropyl, butyl, isobutyl, and mixtures thereof, the mixture of copolymers being dispersed in a topically-acceptable carrier, the mixture of copolymers capable of reacting with waste by-products during use to become partially hydrated to thereby adhere to the skin and to form a barrier against diaper rash causative and irritant agents;
over-coating the composition with a layer consisting essentially of semi-solid ointment;
wherein when the mixture of copolymers becomes partially hydrated the over-coat layer prevents the composition from substantially adhering to a diaper surface; and
removing and reapplying the over-coat layer during successive diaper changes while allowing the composition underlying said layer to remain essentially undisturbed throughout said successive diaper changes to thereby enable the skin to heal.

5,618,530
HYDROPHOBIC AMINE POLYMER SEQUESTRANT AND METHOD OF CHOLESTEROL DEPLETION
W. Harry Mandeville, III, Lynnfield; Stephen R. Holmes-Farley, Arlington, and John S. Petersen, Acton, all of Mass., assignors to GelTex Pharmaceuticals, Inc., Waltham, Mass.
Continuation-in-part of Ser. No. 258,431, Jun. 10, 1994, and Ser. No. 332,096, Oct. 31, 1994. This application Jun. 6, 1995, Ser. No. 469,659
Int. Cl.⁶ A61K *31/785*
U.S. Cl. 424—78.12 **17 Claims**

1. A method for binding bile salts in a mammal, comprising the step of orally administering to the mammal a therapeutic amount of a hydrocarbon amine polymer having a substituent bound to an amine of the hydrocarbon amine polymer, the substituent including a quaternary amine-containing moiety that is bound to said amine of the hydrocarbon amine polymer by an alkylene linking group having three or more carbons, said quarternary amine-containing moiety also including at least one terminal hydrophobic alkyl substituent, having between about 6 and 20 carbons.

5,618,531
METHOD FOR INCREASING THE VIABILITY OF CELLS WHICH ARE ADMINISTERED TO THE BRAIN OR SPINAL CORD
Bruce D. Cherksey, Hoboken, N.J., assignor to New York University, New York, N.Y.
Continuation of Ser. No. 823,654, Jan. 23, 1992, abandoned, which is a continuation-in-part of Ser. No. 599,802, Oct. 19, 1990, abandoned. This application Jul. 13, 1993, Ser. No. 91,629
Int. Cl.⁶ A01N *63/00;* **C12N** *11/00;11/14;11/02;11/08;5/00*
U.S. Cl. 424—93.7 **20 Claims**

1. A method for increasing the viability of viable cells which are injected into a mammalian brain or spinal cord, comprising:
adhering viable cells to the surface of a support matrix, and injecting the adhered cells into a mammalian brain or spinal cord; whereby the injected cells remain viable for at least two months after said injection.

5,618,532
DIROFILARIA IMMITIS GP29 PROTEINS AND USES THEREOF
Cynthia A. Tripp, Ft. Collins, Colo.; Murray E. Selkirk, London, England, and Robert B. Grieve, Windsor, Colo., assignors to Heska Corporation, Ft. Collins, Colo.
Continuation of Ser. No. 208,885, Mar. 8, 1994, Pat. No. 5,569,603. This application Jun. 5, 1995, Ser. No. 462,177
Int. Cl.⁶ C12N *15/53;* **A61K** *38/44*
U.S. Cl. 424—94.4 **16 Claims**

15. A method to protect an animal from disease caused by a parasitic helminth, said method comprising administering to said animal in an effective manner a therapeutic composition comprising an isolated *Dirofilaria immitis* Gp29 protein.

5,618,533
FLAGELLIN-BASED POLYPEPTIDES FOR THE DIAGNOSIS OF LYME DISEASE
Richard A. Flavell, Killingworth; Erol Fikrig, Guilford, both of Conn., and Robert Berland, Kingston, N.Y., assignors to Yale University, New Haven, Conn.
Continuation of Ser. No. 837,193, Feb. 11, 1992, abandoned. This application Dec. 10, 1993, Ser. No. 166,160
Int. Cl.⁶ C07K *5/00;* **C07H** *21/04;* **C12N** *15/00;* **G01N** *33/536*
U.S. Cl. 424—184.1 **11 Claims**

1. A flagellin polypeptide capable of detecting *B. burgdorferi*-specific antibodies in a majority of seropositive samples and comprising an immunodominant region of a *B. burgdorferi* flagellin antigen or derivatives thereof, which polypeptide is recognized by antibodies elicited by infection with *B. burgdorferi*, but is substantially less reactive than the full-length flagellin protein when reacted with antibodies elicited by infection with other bacteria or treponemes.

5,618,534
ISOLATED ANTIGEN ENDO GLYX-1
Maria P. Sanz-Moncasi, Zaragoza, Spain; Pilar Garin-Chesa, Biberach, Germany; Elisabeth Stockert; Lloyd J. Old, both of New York, N.Y., and Wolfgang J. Rettig, Biberach, Germany, assignors to Memorial Sloan Kettering Cancer Center, New York, N.Y.
Division of Ser. No. 243,288, May 17, 1994. This application Sep. 28, 1995, Ser. No. 535,491
Int. Cl.⁶ C07K *14/705;* **A61K** *39/00*
U.S. Cl. 424—184.1 **2 Claims**

1. An isolated, vascular endothelium-associated glycoprotein consisting of four subunits having apparent molecular weights of 190,000 daltons, 140,000 daltons, 125,000 daltons, and 110,000 daltons as determined by SDS-PAGE under reducing conditions and an apparent molecular weight of 500,000 daltons as determined by SDS-PAGE under non-reducing conditions, said glycoprotein being that recognized by the monoclonal antibody H572 which is produced by the hybridoma deposited with the ATCC under accession number HB 11608.

5,618,535

Patent Not Issued For This Number

5,618,536

CHIMERIC PAPILLOMAVIRUS-LIKE PARTICLES

Douglas R. Lowy, Bethesda; John T. Schiller, and Heather Greenstone, both of Silver Spring, all of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation-in-part of Ser. No. 32,869, Mar. 16, 1993, Pat. No. 5,437,951, which is a continuation-in-part of Ser. No. 941,371, Sep. 3, 1992. This application Oct. 6, 1994, Ser. No. 319,467

Int. Cl.[6] A61K *39/12;* **C12N** *7/00;7/04;15/37*

U.S. Cl. 424—192.1 **24 Claims**

1. A papillomavirus-like particle characterized as having conformational epitopes, comprising a papillomavirus L1 product and a papillomavirus L2 fusion product.

5,618,537

PLANT-BASED MEDICAMENTS FOR INCREASING THE TONE AND MODULATING THE TONE OF THE SMOOTH MUSCULAR ORGAN

Samuel N. Okpanyi, Wiesbaden, Germany, assignor to Steigerwald Arzneimittelwerk GmbH, Darmstadt, Germany

Continuation of Ser. No. 915,706, Jul. 29, 1992, abandoned. This application Jan. 30, 1995, Ser. No. 380,322

Claims priority, application Germany, Jul. 29, 1991, 41 25 024.9; WIPO, Apr. 3, 1992, PCT/EP92/00751

Int. Cl.[6] A61K *35/78*

U.S. Cl. 424—195.1 **17 Claims**

1. A plant-based medicament having tonicising action on smooth muscular organs which are atonic or have decreased tone, comprising *Iberis amara* together with at least one other constituent selected from the group consisting of extracts of

Menthae piperitae,
Matricariae,
Carvi fructus,
Melissae folium, and
Liquiritiae radix,

as the sole carriers of the activity in combination with a pharmaceutically acceptable carrier, wherein said *Iberis amara* is selected from the group consisting of *Iberis amara* seeds, *Iberis amara* flowers, *Iberis amara* leaves, *Iberis amara* stalks, *Iberis amara* roots, an extract of *Iberis amara* or a combination thereof.

5,618,538

METHODS AND COMPOSITIONS FOR ISOLATING TAXANES

Hala N. ElSohly; Edward M. Croom, Jr.; Mahmoud A. ElSohly, all of Oxford, and James D. McChesney, Etta, all of Miss., assignors to The University of Mississippi, University, Miss.

Division of Ser. No. 95,817, Jul. 21, 1993, Pat. No. 5,480,639, which is a continuation of Ser. No. 690,805, Apr. 19, 1991, abandoned. This application Jun. 6, 1995, Ser. No. 470,746

Int. Cl.[6] A61K *35/78*

U.S. Cl. 424—195.1 **5 Claims**

1. A crude taxane mixture from plant matter containing taxanes obtained according to the following steps:

(a) separating intact clippings from live Taxus plants wherein said intact clippings include leaves attached to stems;
(b) drying the intact clippings of step (a) at a temperature of between 20° C. and 70° C. to form dried plant matter;
(c) contacting the dried plant matter from step (b) with an organic solvent, wherein the weight:volume ratio of plant matter to organic solvent ranges from 1:8 to 1:12, for a time sufficient to extract taxanes from the dried plant matter and obtaining a taxane-containing extract;
(d) evaporating the taxane-containing extract formed in step (c) to form a residue and partitioning the residue between water and an organic solvent to form a two phase solution comprising a taxane-containing organic phase and a polar aqueous phase;
(e) removing the polar aqueous phase from the taxane-containing organic phase;
(f) evaporating the taxane-containing organic phase of step (e) to form a crude taxane mixture.

5,618,539

STABILIZED VACCINE COMPOSITIONS

Brent Dorval, Leominster; Marie Chow, Brookline, and Alexander Klibanov, Newton, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 393,996, Aug. 15, 1989, abandoned. This application Sep. 29, 1994, Ser. No. 314,571

Int. Cl.[6] A61K *39/13*

U.S. Cl. 424—217.1 **32 Claims**

1. A non-lyophilized stabilized vaccine composition, consisting essentially of:

a) a physiologically acceptable aqueous solution;
b) a poliovirus; and
c) a stabilizer which is selected from the group consisting of:
 1) lysine;
 2) arginine; and
 3) a combination of lysine and arginine, said stabilizer being present in the vaccine composition at a concentration sufficient to stabilize the poliovirus against heat inactivation.

5,618,540

SUBUNIT VACCINE AGAINST *NEISSERIA MENINGITIDIS* INFECTIONS AND CORRESPONDING SUBUNITS IN THE PURIFIED STATE

Marie J. Quentin-Millet, Villeurbanne, and Ling Lissolo, Marcy L'Etoile, both of France, assignors to Pasteur Merieux Serums et Vaccins, Lyons, France

PCT No. PCT/FR92/00904, § 371 Date May 25, 1993, § 102(e) Date May 25, 1993, PCT Pub. No. WO93/07172, PCT Pub. Date Apr. 15, 1993

PCT Filed Sep. 29, 1992, Ser. No. 64,174

Claims priority, application France, Oct. 3, 1991, 91 12176

Int. Cl.[6] A61K *39/095*

U.S. Cl. 424—250.1 **15 Claims**

7. A vaccinal pharmaceutical composition which comprises, as therapeutic agent, the lower molecular weight subunit of the human transferrin receptor of at least one strain of *N. meningitidis;* in the absence of the high molecular weight subunit of the said receptor.

5,618,541

VACCINE AGAINST *NEISSERIA MENINGITIDIS* INFECTIONS

Marie-José Quentin-Millet, Villeurbanne, France, assignor to Pasteur Merieux Serums et Vaccins, Lyon, France

PCT No. PCT/FR92/00905, § 371 Date Jun. 2, 1993, § 102(e) Date Jun. 2, 1993, PCT Pub. No. WO93/06861, PCT Pub. Date Apr. 15, 1993

PCT Filed Sep. 29, 1992, Ser. No. 66,167

Claims priority, application France, Oct. 3, 1991, 91 12177

Int. Cl.[6] A61K *31/075*

U.S. Cl. 424—250.1 **9 Claims**

1. A vaccinal pharmaceutical composition intended for preventing a *Neisseria meningitidis* infection, which comprises, as therapeutic agents, at least a first and a second molecule capable of binding to human transferrin which are either a human transferrin receptor of *N. meningitidis* or a subunit thereof; the said first molecule originating from a first strain of *N. meningitidis* which possesses a human transferrin receptor comprising a high molecular weight subunit and a lower molecular weight subunit, and in which the lower molecular weight subunit is recognised by an antiserum to the receptor of *N. meningitidis* strain 2394 (receptor 2394) and is not recognised by an antiserum to the receptor of *N. meningitidis* strain 2169 (receptor 2169); and the said second molecule originating from a second strain of *N. meningitidis* which possesses a human transferrin receptor comprising a high molecular weight subunit and a lower molecular weight subunit, and in which the lower molecular weight subunit is recognised by an anti-receptor 2169 antiserum and is not recognised by an anti-receptor 2394 antiserum.

5,618,542

VACCINES COMPRISING ANTIGENIC POLYPEPTIDES OF *TAENIA OVIS*

Gavin B. L. Harrison; Robert P. Dempster, both of Upper Hutt, New Zealand; Michael D. Rickard, Merribee, Australia; David D. Heath; Stephen B. Lawrence, both of Upper Hutt, New Zealand; Jennifer G. Vinton, Lower Hutt, New Zealand; Marshall W. Lightowlers, Williamstown; Kim L. O'Hoy, Melbourne, both of Australia, and Kevin S. Johnson, Godmanchester, United Kingdom, assignors to Coopers Animal Health NZ Limited, Upper Hutt, New Zealand; University of Melbourne, Victoria, Australia, and Ministry of Agriculture & Fisheries, Wellington, New Zealand

Division of Ser. No. 851,112, Mar. 16, 1992, Pat. No. 5,348,740, which is a continuation of Ser. No. 349,723, May 9, 1989, abandoned. This application Jul. 6, 1994, Ser. No. 268,535

Claims priority, application New Zealand, May 12, 1988, 224597; Jun. 1, 1988, 224862

Int. Cl.[6] A61K *39/00*

U.S. Cl. 424—266.1 **6 Claims**

1. A vaccine comprising an immunologically effective amount of a polypeptide from a *T. ovis* oncosphere antigen running as a 47–52 kDa doublet on SDS-PAGE, and which reduces the severity of *T. ovis* infection in a ruminant, or a fragment of said polypeptide which reduces the severity of *T. ovis* infection in a ruminant, in combination with a pharmaceutically effective adjuvant, carrier or diluent therefor.

5,618,543

COMPOSITION AND METHOD FOR REDUCING SNORING AND RESPIRATORY PROBLEMS

Dennis H. Harris, 531 E. McDowell, Phoenix, Ariz. 85004, and Ronald E. General, 30 N. 56th St., Phoenix, Ariz. 85034

Filed Aug. 8, 1995, Ser. No. 512,460

Int. Cl.[6] A61K *38/16;38/43*

U.S. Cl. 424—400 **19 Claims**

1. A composition for reducing snoring and alleviating respiratory problems due to an interference with the passage of air through the upper respiratory system including in combination:

between 5,000 and 40,000 bemoglobin units (HU) of protease
between 500 and 20,000 dextrizing units (DU) of amylase,
between 10 and 1,600 lipase units (LU) of lipase,
between 50 and 10,000 cellulase units (CU) of cellulase,
between 25 and 250 milligrams (mg) of acerola, and
between 25 to 250 milligrams (mg) of yellowdock in a carrier.

5,618,544

METHOD OF DECREASING CUTANEOUS SENESCENCE

Gregory L. Brown, Louisville, Ky., assignor to Bays-Brown Dermatologics, Inc., Louisville, Ky.

Continuation-in-part of Ser. No. 103,398, Aug. 6, 1993, abandoned, which is a continuation-in-part of Ser. No. 928,264, Aug. 12, 1992, abandoned. This application Aug. 8, 1994, Ser. No. 287,340

Int. Cl.[6] A61K *37/66*

U.S. Cl. 424—401 **21 Claims**

1. A method for decreasing cutaneous cell senescence in a human which comprises topically administering to human skin an amount of a composition that is effective to decrease senescence, the composition comprising in a topical cosmetically acceptable carrier (a) a mixture of protein growth factors consisting essentially of epidermal growth factor (EGF), and (b) a member selected from the group consisting of transforming growth factor-alpha (TGF-α), fibroblast growth factor (FGF), and a combination of TGF-α and FGF.

5,618,545

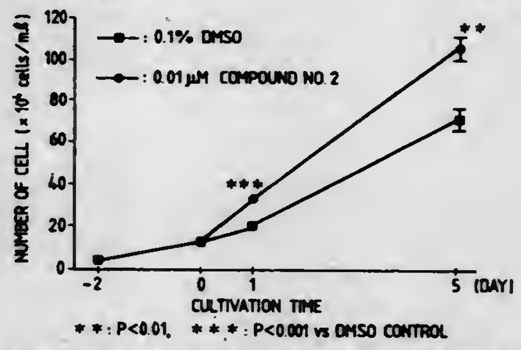
SKIN-COSMETIC COMPOSITION

Yasutaka Orita, Kumamoto; Hiroyasu Koga, Nagano, and Sumitaka Kose, Osaka, all of Japan, assignors to Nihon Nohyaku Co., Ltd., Tokyo, Japan

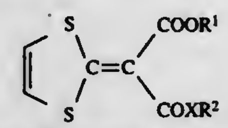
Filed Jul. 10, 1995, Ser. No. 500,130

Int. Cl.[6] A61K *7/40*

U.S. Cl. 424—401 **6 Claims**



1. A method of promoting or propagating epidermal keratinocytes for preventing a skin disorder, said method comprising topically applying to the skin a skin-cosmetic composition containing, as an active ingredient, at least one compound of a general Formula I:



(I)

wherein R^1 represents an alkyl group having 1 to 10 carbon atoms; R^2 represents an alkyl group having 1 to 10 carbon atoms, an alkenyl group having 2 to 6 carbon atoms, or a cycloalkyl group having 3 to 7 atoms; and x represents —O—or —NH—, and wherein said composition contains as an active ingredient 0.0001 to 20% of the at least one compound of the Formula I.

5,618,546

COMPOSITE OF SELECTIVELY REMOVABLE LAYERS OF SILK SCREEN PRINTING INK

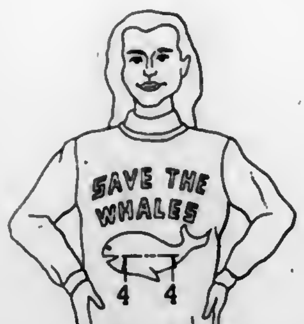
Monte D. Wood, 17765 Vista Ave., Monte Sereno, Calif. 95030; Asutosh Nigam, 20 Willow Rd., Apt. #9, and Orton D. Bergren, 194 Santa Margarita, both of Menlo Park, Calif. 94025

Filed Apr. 15, 1994, Ser. No. 228,045

Int. Cl.[6] A01N *25/34;* **B32B** *27/14;* **B27N** *9/00*

U.S. Cl. 424—402 **10 Claims**

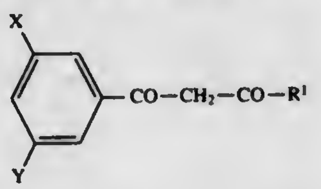
1. A composite comprising:



a fibrous base layer carrying a first permanent layer of printing ink impregnated into fibers of said fibrous base layer;
a second layer of pigmented printing ink absorbed into said fibrous base layer and characterized as being totally removable by washing with a detergent; and
said second ink layer including a binder selected from a group of polymers completely soluble at a basic pH.

5,618,547
CONTROL OF ECTOPARASITES
Rudolph J. Boisvenue, Greenfield, and Gary D. Crouse, Indianapolis, both of Ind., assignors to British Technology Group Limited, London, England
Continuation of Ser. No. 373,121, Jun. 28, 1989, abandoned, which is a division of Ser. No. 123,453, Nov. 20, 1987, Pat. No. 4,870,109, which is a continuation-in-part of Ser. No. 916,977, Oct. 9, 1985, abandoned, which is a continuation of Ser. No. 736,177, May 20, 1985, abandoned. This application Mar. 10, 1994, Ser. No. 208,199
Int. Cl.^{6} A01N *25/00*
U.S. Cl. 424—405 **31 Claims**

1. A pharmaceutically acceptable ectoparasiticidal composition suitable for oral or percutaneous administration to an economic or companion animal such as to kill insect and acarina parasites consuming the blood or other living tissue of the animal comprising a compound of the formula



wherein
R^1 is a C_2–C_4 perfluoroalkyl group or a C_3–C_6 perfluorocycloalkyl group, and X and Y are the same and are selected from the group consisting of chloro, bromo, fluoro or trifiuoromethyl; or a sodium potassium or lithium salt thereof,
together with a physiologically acceptable inert carrier.

5,618,548
PROCESS AND PRODUCT FOR ATTRACTING ANIMALS AND COVERING HUMAN SCENT
Richard A. Dawson, 472 Nine Mile Rd., NE., Comstock Park, Mich. 49321
Filed Jun. 14, 1994, Ser. No. 259,540
Int. Cl.^{6} A01N *25/00*
U.S. Cl. 424—405 **13 Claims**

1. A process for attracting game animals and covering human scent comprising burning a porous combustible material impregnated with aromatic fragrances that are attractive to the animal, the combustible material being such that smoke is produced by the material and the smoke is scented with the fragrance with which the material is impregnated.

5,618,549
USE OF PARTICLES OF A BIOCOMPATIBLE AND BIOABSORBABLE CALCIUM SALT AS ACTIVE INGREDIENT IN THE PREPARATION OF A MEDICINAL PRODUCT INTENDED FOR THE LOCAL TREATMENT OF BONE DEMINERALIZATION DISEASES
Jean-Louis Patat, and Yves Cirotteau, both of Paris, France, assignors to Inoteb, Saint Gonnery, France
PCT No. PCT/FR94/00564, § 371 Date Feb. 2, 1995, § 102(e) Date Feb. 2, 1995, PCT Pub. No. WO94/26283, PCT Pub. Date Nov. 24, 1994
PCT Filed May 11, 1994, Ser. No. 360,823
Claims priority, application France, May 13, 1993, 93 05783
Int. Cl.^{6} A61F *2/28*
U.S. Cl. 424—422 **16 Claims**

1. A method of treating a living organism having a disease associated with demineralization or mineralization defects of existing bone, comprising:
applying in a spongy portion of said bone or in a medullary canal of said bone at least one biocompatible and bioabsorbable calcium salt, in the form of particles having dimensions less than 8 mm, said biocompatible and bioabsorbable calcium salt being an active ingredient for reinitiating bone remineralization and reconstruction of resorbed bone spans, and
increasing bone density and bone mass of said existing bone.

5,618,550
METHOD FOR TREATMENT OF ABNORMAL CONDITIONS OF THE EPITHELIUM OF BODILY ORIFICES
Perry A. Ratcliff, Scottsdale, Ariz., assignor to RBR Holdings, British West Indies
Division of Ser. No. 87,606, Jul. 6, 1993, Pat. No. 5,489,435. This application May 19, 1995, Ser. No. 444,550
Int. Cl.^{6} A61K *9/00;33/00*
U.S. Cl. 424—422 **19 Claims**

14. A method for treating vaginitis and endometriosis by reducing any of Candida, *Actinobacillus actinomycetumcomitans*, Pseudomonades, and *Porphyromonas gingivalis* bacteria present in the vagina or the uterus, said method comprising the step of applying to the vagina or the uterus a composition comprising a topical preparation selected from the group consisting of liquid solutions, suspensions, semi-solids, salves, creams, and suppositories, wherein the topical preparation contains stabilized chlorine dioxide in a concentration in the range of 0.005%–2.0% and a phosphate compound selected from the group consisting of disodium hydrogen phosphate, sodium dihydrogen phosphate, trisodium phosphate, or sodium monofluorophosphate in a concentration of between 0.02%– 3.0% to retard escape of chlorine dioxide from the composition at a pH in the range of 6.0 to 7.4.

5,618,551
BIOCOMPATIBLE BIORESORBABLE AND NON-TOXIC ADHESIVE COMPOSITION FOR SURGICAL USE
Michel Tardy; Jérôme Tiollier, both of Lyons, and Jean-Louis Tayot, La Tour De Salvagny, all of France, assignors to Imedex, Chaponost, France
Filed Jan. 20, 1995, Ser. No. 376,185
Claims priority, application France, Jan. 24, 1994, 94 00715
Int. Cl.^{6} A61L *25/00*
U.S. Cl. 424—426 **26 Claims**

1. Non-crosslinked and potentially crosslinkable pepsin-treated collagen or gelatin powder modified by oxidative cleavage in an aqueous solution, which is soluble at an acidic pH and stable on storage at a temperature of below 0° C. and for a period of at least one month.

5,618,552
ABSORBABLE POLYOXAESTERS
Rao S. Bezwada, Whitehouse Station, and Dennis D. Jamiolkowski, Long Valley, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.
Continuation-in-part of Ser. No. 554,011, Nov. 6, 1995, abandoned, which is a continuation-in-part of Ser. No. 399,308, Mar. 6, 1995, Pat. No. 5,464,929. This application Mar. 5, 1996, Ser. No. 611,530
Int. Cl.^{6} A61F *2/00;6/06;* **A61L** *15/16;* **A61K** *9/14*
U.S. Cl. 424—426 **22 Claims**

1. An aliphatic polyoxaesters comprising a first divalent repeating unit of formula I:

$$[O—C(O)—C(R_1)(R_2)—O—(R_3)—O—C(R_1)(R_2)—C(O)—] \qquad I$$

and a second repeating unit selected from the group of formulas consisting of:

$$[—O—R_4—]_A, \qquad II$$

$$[—O—R_5—C(O)—]_B, \text{ and} \qquad III$$

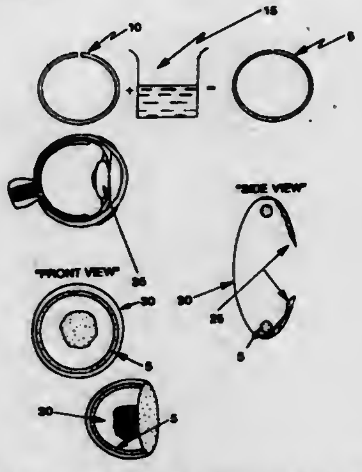
$$([—O—R_5—F(O)]_P—O—)_L G \qquad XI$$

and combinations thereof, wherein R_1 and R_2 are independently hydrogen or an alkyl group containing 1 to 8 carbon atoms; R_3 is an alkylene unit containing from 2 to 12 carbon atoms or is an oxyalkylene group of the following formula:

$$—[(CH_2)_C—O—]_D—(CH_2)_E— \qquad IV$$

wherein C is an integer in the range of from 2 to about 5, D is an integer in the range of from about 0 to about 2,000, and E is an integer in the range of from about 2 to about 5, except when D is zero, in which case E will be an integer from 2 to 12; R_4 is an alkylene unit containing from 2 to 8 carbon atoms; A is an integer in the range of from 1 to 2,000; R_5 is selected from the group consisting of — $C(R_6)(R_7)$—, —$(CH_2)_3$—O—, —CH_2—CH_2—O—CH_2—, —CR_8H—CH_2 —, —$(CH_2)_4$—, —$(CH_2)_F C(O)$—CH_2—; R_6 and R_7 are independently hydrogen or an alkyl containing from 1 to 8 carbon atoms; R_8 is hydrogen or methyl; F is an integer in the range of from 2 to 6; B is an integer in the range of from 1 to n such that the number average molecular weight of formula III is less than about 200,000; P is an integer in the range of from 1 to m such that the number average molecular weight of formula XI is less than about 1,000,000; G represents the residue minus from 1 to L hydrogen atoms from the hydroxyl groups of an alcohol previously containing from 1 to 200 hydroxyl groups; and L is an integer from about 1 to about 200.

5,618,553
METHODS AND COMPOSITIONS FOR THE MODULATION OF CELL PROLIFERATION AND WOUND HEALING
Peter J. Kelleher, The Woodlands, Tex., assignor to Houston Biotechnology Incorporated, The Woodlands, Tex.
Continuation-in-part of Ser. No. 329,366, Oct. 26, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 483,795
Int. Cl.^{6} A61F *2/02*
U.S. Cl. 424—428 **12 Claims**



1. A method for modulation of proliferation of target cells in a localized region of the eye, said method comprising:
contacting said localized region with a polymer implant with which is reversibly associated a modulating agent, wherein said modulating agent is released from said polymer implant into said localized region at a rate such that said modulating agent primarily affects target cells in said localized region of the eye as compared to cells outside said localized region.

5,618,554
INHIBITION OF EXOPROTEIN USING AMINE COMPOSITIONS IN ABSORBENT ARTICLE AND METHOD THEREOF
Rae E. Syverson, Fond du Lac, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Jun. 7, 1995, Ser. No. 487,875
Int. Cl.^{6} A61F *13/20*
U.S. Cl. 424—431 **9 Claims**

1. An absorbent article comprising an effective amount of an amine compound having the formula;

$$\begin{array}{c} R_1—N—R_2 \\ | \\ R_3 \end{array}$$

wherein R_1 is alkyl group having from 8 to 18 carbon atoms; and R_2 and R_3 can be the same or different and are selected from the group consisting of hydrogen and alkyl group having from 1 to 18 carbon atoms and which can have one or more substitutional moieties selected from the group consisting of hydroxyl, carboxyl, carboxyl salts, and imidazoline wherein said compound is effective in substantially inhibiting the production of exoprotein from Gram positive bacteria.

6. An absorbent article comprising an effective amount of an amine salt having the formula:

$$\begin{array}{c} R_4 \\ | \\ R_1^{+}—N—R_2 \\ | \\ R_3 \end{array}$$

wherein R_1^{+} is alkyl group having from 8 to 18 carbon atoms; and R_2–R_4 can be the same or different and are selected from the group

consisting of hydrogen and alkyl group having from 1 to 18 carbon atoms and which can have one or more substitutional moieties selected from the group consisting of hydroxyl, carboxyl, carboxyl salts, and imidazoline wherein said compound is effective in substantially inhibiting the production of exoprotein from Gram positive bacteria.

7. A method of inhibiting the production of exoprotein from Gram positive bacteria in an absorbent product comprising the steps of contacting said absorbent product with an effective amount of an amine compound wherein said amine compound is selected from the group consisting of lauramine, lauramino propionic acid, sodium lauriminodipropionic acid, lauryl hydroxyethyl imidazoline and mixtures thereof, said amine compound being present in an amount greater than about $5\times(10^{-4})$ millimoles per gram of absorbent in said absorbent product and exposing said absorbent product to at least one Gram positive bacteria.

5,618,555

PERCUTANEOUS ABSORPTION PREPARATION

Shoichi Tokuda; Kazuhisa Ninomiya; Yasuhiro Fukushima; Shigeyuki Watanabe, all of Osaka; Mitsuru Ochiai, Saitama; Mutsuo Okumura, Saitama, and Yuko Hosokawa, Saitama, all of Japan, assignors to Itto Denko Corporation, Osaka, and Nikken Chemicals Co., Ltd., Tokyo, both of Japan

Filed Apr. 28, 1995, Ser. No. 430,384

Claims priority, application Japan, May 6, 1994, 6-094241

Int. Cl.⁶ A61F *13/00*

U.S. Cl. 424—443 **7 Claims**

1. A percutaneous absorption preparation for administering buprenorphine hydrochloride and/or buprenorphine, which comprises a support having on one surface thereof a plaster layer containing a pressure-sensitive adhesive, buprenorphine hydrochloride and/or buprenorphine, and a penetration enhancer, wherein the penetration enhancer consists essentially of a combination of a monoglyceride of fatty acid having 6 to 8 carbon atoms and isopropyl myristate, and the plaster layer contains at least 10% by weight of a monoglyceride of a fatty acid having 6 to 8 carbon atoms and at least 5% by weight of isopropyl myristate, with the proviso that the content of the whole penetration enhancer ranges from 25 to 50 by weight.

5,618,556

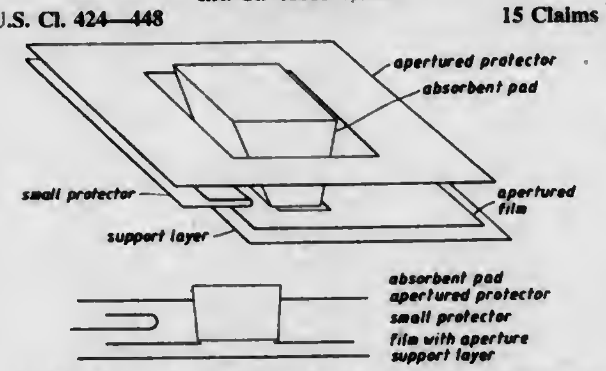
DRESSINGS

Owen L. Johns, Madeira Beach, and Peter J. Metcalfe, St. Petersburg, both of Fla., assignors to Smith & Nephew United Inc, Largo, Fla.

Continuation of Ser. No. 216,581, Mar. 23, 1994, abandoned. This application Dec. 28, 1995, Ser. No. 579,922

Int. Cl.⁶ A61F *13/00*

U.S. Cl. 424—448 **15 Claims**



1. An adhesive dressing comprising a water vapor permeable, liquid water and bacteria impermeable backing layer having a pressure sensitive adhesive layer over one surface thereof and coextensive therewith, a pad adhered to a portion of the adhesive layer, a removable protector which covers the remainder of the adhesive layer, and a conformable support layer which is removably attached to the non-adhesive surface of the backing layer, said removable protector being provided with an aperture through which the pad is adhered to the adhesive layer.

5,618,557

PROPHYLACTIC TREATMENT OF ALLERGIC CONTACT DERMATITIS

John J. Wille, Trenton; Agis Kydonieus, Kendall Park, and Frank S. Castellana, Princeton, all of N.J., assignors to E.R. Squibb & Sons, Inc., Princeton, N.J.

Filed Nov. 22, 1994, Ser. No. 343,157

Int. Cl.⁶ A61F *13/00*

U.S. Cl. 424—449 **16 Claims**

1. A method of preventing a sensitization reaction of the skin of a warm-blooded animal to the presence of a skin-sensitizing material comprising administering to said warm-blooded animal before the onset of a sensitization reaction an amount of at least one potassium-sparing diuretic sufficient to prevent said skin sensitization reaction, said amount being insufficient to impart a diuretic effect to said warm-blooded animal.

5,618,558

FATTY ACID TREATMENT

David F. Horrobin, and Brenda E. Reynolds, both of Guildford, England, assignors to Scotia Holdings PLC, United Kingdom

Filed Aug. 16, 1993, Ser. No. 106,989

Claims priority, application United Kingdom, Aug. 21, 1992, 9217780

Int. Cl.⁶ A61K *9/20;9/48*

U.S. Cl. 424—464 **8 Claims**

1. A method for increasing gut calcium absorption in humans or animal comprising administering a calcium salt of gamma-linolenic acid (GLA), dihomo-gamma-linolenic add (DGLA) or linoleic acid (LA), optionally in association with eicosapentaenoic acid (EPA), docosahexaenoic acid (DHA) or other essential fatty acid of the n-3 or n-6 series, additional to the calcium salt of GLA, DGLA or LA, as such or pharmacologically acceptable form convertible thereto in the body.

5,618,559

METHOD OF MAKING MODIFIED-RELEASE METRONIDAZOLE COMPOSITIONS

Subhash Desai, Grayslake; Alan M. Mancini, Indian Head Park, and Steven C. Schumann, Elgin, all of Ill., assignors to G.D. Searle & Co., Chicago, Ill.

Division of Ser. No. 187,568, Jan. 27, 1994. This application May 19, 1995, Ser. No. 445,309

Int. Cl.⁶ A61K *9/22;9/16;47/32*

U.S. Cl. 424—468 **9 Claims**

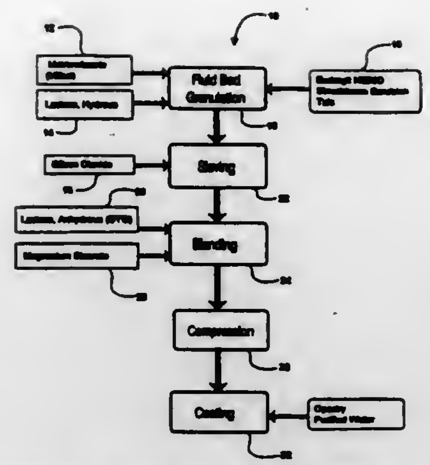
1. A method for making a modified release metronidazole composition, the method comprising the steps of:

(a) contacting in a fluid bed granulator, under conditions suitable for producing granules, (1) a dry mixture comprising from about 59 to about 79 parts by weight of a first portion of metronidazole and optionally up to 23 parts by weight of a first aqueous soluble diluent with (2) an aqueous suspension comprising from about 1.5 to about 3.0 parts by weight of an aqueous insoluble, pH-independent, aqueous expandable polymethacrylic acid ester copolymer, and an effective amount of a detackifying agent;

(b) combining the granules produced in step (a) with an effective amount of a pharmaceutically acceptable glidant;

(c) if necessary, particle-sizing the mixture of (b) to provide a mixture with a substantially uniform particle size suitable for compressing into tablet form;

(d) optionally blending the mixture with up to about 20 parts by weight of a second portion of metronidazole;



(e) blending the mixture with up to 23 parts by weight of a second aqueous soluble diluent and an effective amount of a pharmaceutically acceptable lubricant; and

(f) compressing a predetermined amount of the blended mixture of step (e) to produce a tablet;

wherein the percentage of metronidazole provided by (a)(1) and (d) is from about 72% to about 79% by weight, based on the total weight of the tablet, and wherein the percentage of aqueous soluble diluent provided by (a)(1) and (e) is from about 16% and about 23% by weight, based on the total weight of the tablet.

5,618,560

CONTROLLED RELEASE ERODIBLE COMPOSITION

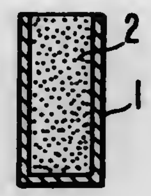
Daniel Bar-Shalom, Rypevænget 213, DK-2980 Kokkedal, Denmark, and Ture Kindt-Larsen, Hotelstien 8, DK-2950 Vedbæk, Denmark

Continuation of Ser. No. 469,446, Jun. 26, 1990, abandoned. This application Jun. 6, 1995, Ser. No. 470,828

Claims priority, application WIPO, Mar. 24, 1988, PCT/DK88/00049; Denmark, Oct. 31, 1988, 6062188

Int. Cl.⁶ A61K *9/10;9/24;9/26;47/34*

U.S. Cl. 424—486 **60 Claims**



1. A composition for the controlled delivery of an active substance into an aqueous phase, the composition comprising:

a matrix comprising a crystalline polyethylene glycol polymer, and

a non-ionic emulsifier dispersed in the matrix in an amount of between about 2% and about 50% by weight of the crystalline polyethylene glycol polymer and the non-ionic emulsifier, the non-ionic emulsifier having at least one domain which is compatible with the crystalline polyethylene glycol polymer and being selected from the group consisting of a fatty acid ester and a fatty alcohol ether,

the active substance being dispersed in the matrix, whereby the active substance is delivered into the aqueous phase by erosion of a surface of the composition at an approximately constant and pH-independent rate,

wherein the non-ionic emulsifier has an HLB value in the range of from about 4 to about 16, and

wherein the matrix retains approximately its geometric shape during erosion of its surface.

5,618,561

PREPARATION OF HIGHLY HYDRATED SELF-SUPPORTING HYALURONIC ACID CONTAINING FILMS

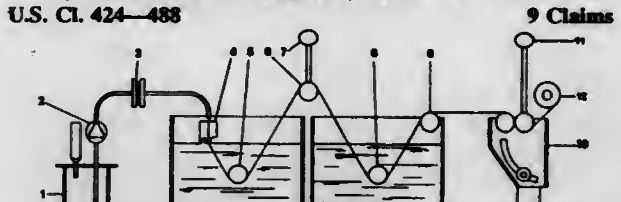
Francesco Della Valle; Alessandro Rastrelli, both of Padua; Gabriella Calderini, Carrara San Giorgio, and Aurelio Romeo, Rome, all of Italy, assignors to Fidia S.p.A., Italy

Division of Ser. No. 707,790, May 30, 1991, Pat. No. 5,523,093. This application Jun. 7, 1995, Ser. No. 488,049

Claims priority, application Italy, May 30, 1990, 20477A90

Int. Cl.⁶ A61K *9/70;* **D01F** *9/04*

U.S. Cl. 424—488 **9 Claims**



1. A process for preparing a hydrated self supporting gel film containing the following components:

i) from 1 to 7.5% by weight of one or more alkaline alginates and/or ammonium alginate,

ii) from 0.1 to 5% of an earth alkaline alginate,

iii) from 0.1 to 10% by weight of a polyhydric alcohol,

iv) from 0.05 to 10% by weight of a polymer having a hydrophilic character selected from the group consisting of hyaluronic acid and a derivative thereof,

v) the remainder being water said process comprising the following steps:

a) preparing an initial fluid gel containing the following components:

i') from 3.5 to 7.5% by weight of said alkaline alginates and/or ammonium alginate

ii') from 0.5 to 7.5% by weight of said polyhydric alcohol,

iii') from 0.1 to 10% by weight of said polymer having hydrophilic character,

b) extruding the initial fluid gel obtained in the preceding step by pumping it through a slit of adjustable width and thickness to provide an extruded film,

c) coagulating said extruded film by passing it through from 2 to 4 successive coagulation baths, said coagulation baths containing one or more earth alkaline salts, wherein the concentration of the earth alkaline ion in said baths is 1% in the first bath, and 2% in the subsequent baths at temperatures of 20° C. for the first bath and 30° C. for the successive baths.

5,618,562

SPHERICAL GRANULE, PRODUCTION METHOD THEREOF AND MEDICINAL PREPARATION USING SAID GRANULE

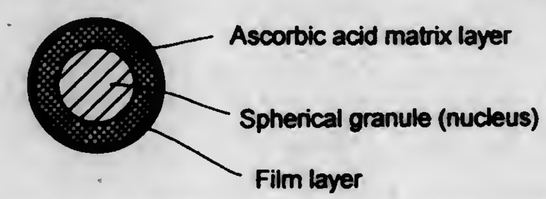
Hiroshi Saito; Toshio Mikami, and Nagayoshi Myo, all of Tokyo, Japan, assignors to Freund Industrial Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 176,969, Jan. 3, 1994, abandoned. This application Oct. 17, 1995, Ser. No. 544,061

Claims priority, application Japan, Jan. 12, 1993, 5-003218

Int. Cl.⁶ A61K *9/14*

U.S. Cl. 424—489 **7 Claims**



1. A spherical granule comprising at least 95% by weight of lactose, which has a long diameter/short diameter ratio of 1.2 or less, and, when aggregated, has a bulk density of 0.7 g/ml or more, and an angle of repose of 35 or less, wherein said granule is produced by a method comprised of feeding particles comprising

lactose to a granulating and coating apparatus equipped with a rotary disk having a smooth-faced portion for contacting with the granules; and

spraying a lactose solution and optionally a binder while the rotary disk is rotated.

5,618,563

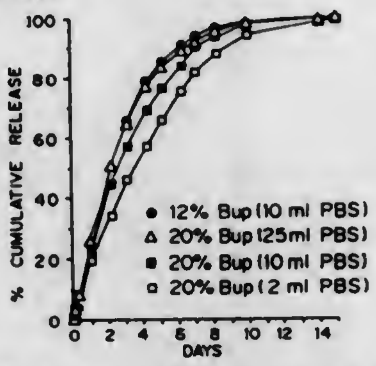
BIODEGRADABLE POLYMER MATRICES FOR SUSTAINED DELIVERY OF LOCAL ANESTHETIC AGENTS

Charles B. Berde, Brookline, and Robert S. Langer, Newton, both of Mass., assignors to Children's Medical Center Corporation, Boston, Mass.

Continuation-in-part of Ser. No. 943,287, Sep. 10, 1992, abandoned. This application Sep. 10, 1993, Ser. No. 119,958

Int. Cl.⁶ A61K *9/16*

U.S. Cl. 424—501 **7 Claims**



1. A method for sustained local anesthesia or regional nerve blockade at a site in a patient, the improvement comprising

administering by injection into tissue a local anesthetic incorporated into microparticles formed of a biocompatible polymer degrading at least fifty percent in less than six months following injection into the patient which is selected from the group consisting of polyanhydrides, copolymers of lactic acid and glycolic acid, poly(glycolic acid), polyorthoesters, proteins, and polysaccharides,

wherein the local anesthetic is uniformly incorporated into the microparticles in a concentration effective to achieve sustained release of anesthetic at the site for at least three days following injection of the microparticles.

5,618,564

COMPOSITION FOR THE TREATMENT OF HELICOBACTER PYLORI INFECTION

Ken Kimura, 31-3 Shimouma 1-chome, Setagaya-ku, Tokyo 154, Japan; Yushi Taniguchi; Kiichi Satoh, both of Oyama, Japan; Kouji Saifuku, Shimodate, Japan; Ken Kihira, Kawachi, Japan; Kenichi Ido, Utsunomiya, Japan; Yukio Yoshida, Urawa, Japan, and Takuya Takimoto, Kawachi, Japan, assignors to Ken Kimura, and Kaken Pharmaceutical Co., Ltd., both of Japan

Filed Jul. 27, 1995, Ser. No. 508,321

Claims priority, application Japan, Jun. 14, 1995, 7-147701

Int. Cl.⁶ A61K *33/24;38/00;31/65;31/43;31/415;31/29*

U.S. Cl. 424—653 **12 Claims**

1. A method for the therapy of a *Helicobacter pylori* infected patient, which comprises blocking a part of the patient's superior duodenal angulus to prevent gastric contents from leaking into the small intestine, then directly instilling a composition which contains, as active ingredients, a protease and an antibacterial agent into the patient's stomach thereby treating the gastric wall through exposure of said wall to said composition for a predetermined period of time in which the position of the patient is changed, and recovering the gastric contents from the patient's stomach after the treatment.

5,618,565

COMPOSITION FOR EXTERMINATING FIRE ANTS

Michael H. Thomas, Rte. 3, 193-1, Espanola, N.M. 87532

Filed Sep. 19, 1995, Ser. No. 531,237

Int. Cl.⁶ A01N *59/00;65/00*

U.S. Cl. 424—717 **2 Claims**

1. A dry powder composition of matter for killing fire ants which consists essentially of sodium bicarbonate, an ant attractant, and red chili powder.

5,618,566

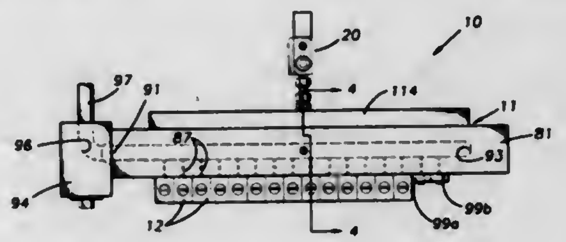
MODULAR MELTBLOWING DIE

Martin A. Allen, and John T. Fetcko, both of Dawsonville, Ga., assignors to Exxon Chemical Patents, Inc., Linden, N.J.

Filed Apr. 26, 1995, Ser. No. 429,193

Int. Cl.⁶ B29C *47/12;* **D01D** *5/00*

U.S. Cl. 425—7 **10 Claims**



1. A modular meltblowing die comprising:

a. a manifold having a polymer flow passage and an air flow passage formed therein; and

b. a plurality of self-contained die modules mounted in side-by-side relationship on the manifold, each module having

(i) a body having a polymer flow passage and an air flow passage formed therein, which are, respectively, in fluid communication with the polymer flow passage and the air flow passage of the manifold,

(ii) a die tip assembly comprising

(1) a die tip having a base portion mounted on the module body and a triangular nosepiece protruding outwardly from the base in a direction away from the module body and terminating in an apex extending substantially the full width of the module body, said apex having formed therein polymer discharge means for discharging a row of filaments therefrom, said die tip base having formed therein a polymer flow passage in fluid communication with the polymer flow passage of the die body and being shaped to distribute the polymer laterally within the die tip for substantially the full width of the module and deliver polymer to the polymer discharge means, and air flow passages in fluid communication with the air flow passage of the body and extending through the die tip base;

(2) air plates mounted on opposite sides of the nosepiece and therewith defining converging air slits, each air slit being in fluid communication with an air flow passage of the die tip base; and

(iii) an internal valve mounted in each module die body for controlling polymer flow therethrough, said modules mounted on the manifold in side-by-side relationship the nosepieces thereof defining a substantially continuous or discontinuous apex for the full length of the meltblowing die.

5,618,567

MANUFACTURING DEVICE FOR PRODUCING A MULTI-LAYER MOLDED PRODUCT

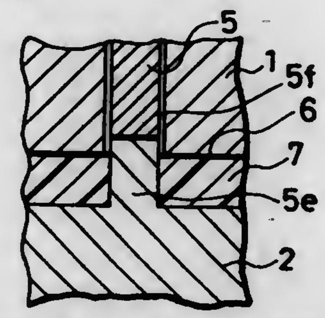
Takahisa Hara, Hyogo, and Masahito Matsumoto, Osaka, both of Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

Division of Ser. No. 81,158, Jun. 25, 1993. This application Jun. 2, 1995, Ser. No. 460,527

Claims priority, application Japan, Jul. 1, 1992, 4-174177; Jul. 1, 1992, 4-174180

Int. Cl.⁶ B29C *45/16*

U.S. Cl. 425—111 **3 Claims**



1. A manufacturing device for multi-layer molded-products comprising:

a mold having a pair of upper and lower molds, one of which is a movable mold and the other is a fixed mold, said upper and lower molds each having a molding surface; and

a protrusion installed on the molding surface of either the upper mold or the lower mold;

a recessed section formed in the molding surface of the other of the upper mold and the lower mold, the recessed section being arranged to shear a covering material and provide a hole therethrough by fitting to the protrusion; and

a movable member provided in the recessed section so as to move in a sliding manner therein.

5,618,568

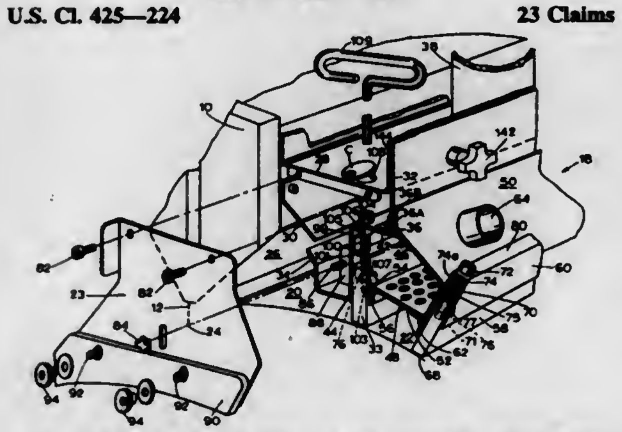
DUAL-CHAMBER VACUUM BOX

Vernon J. Krupa; Jeffrey M. Seckora, both of Chippewa Falls, and Brian M. Pitsch, Jim Falls, all of Wis., assignors to Extrusion Dies, Inc., Chippewa Falls, Wis.

Filed Feb. 1, 1995, Ser. No. 382,252

Int. Cl.⁶ B29C *39/42*

U.S. Cl. 425—224 **23 Claims**



18. A dual-chamber vacuum box for pinning a thermoplastic web to a cooling roll, comprising:

a primary vacuum chamber having a first side located proximate a surface of the web at a line of contact between the web and the cooling roll and a second side opposite the first side;

a secondary vacuum chamber adjacent the second side of the primary vacuum chamber; and

means disposed between the primary and secondary vacuum chambers including a flexible blade which is deformable while in position between the primary and secondary chambers to create a non-rectangular gap with respect to the cooling roll for adjustably creating a pressure variation along the line of contact between the web and the cooling roll.

5,618,569

Patent Not Issued For This Number

5,618,570

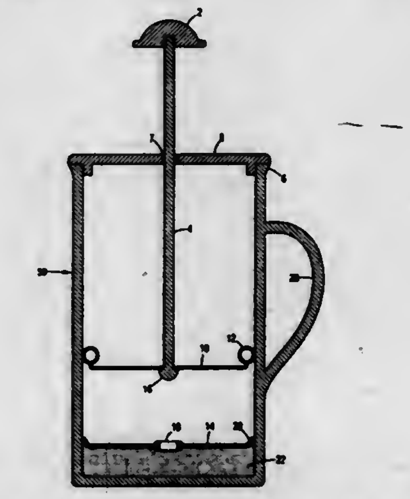
SYSTEM FOR THE PREPARATION OF COFFEE OR THE LIKE

Stephen H. Banks, and Keiko S. Banks, both of 138 18th Ave., San Francisco, Calif. 94121

Filed Sep. 25, 1995, Ser. No. 533,065

Int. Cl.⁶ A47J *31/18;* **A23L** *1/20*

U.S. Cl. 426—435 **19 Claims**



1. A system for producing coffee or tea directly in a drinking vessel, comprising:

a drinking vessel having interior side walls and a bottom,

a substantially rigid disc with an outer edge having means for fitting closely against the interior side walls of the vessel while permitting up and down sliding movement along the side walls, said disc having perforations,

a push rod secured to the substantially rigid disc and extending upwardly sufficiently to extend out of the top of the vessel, with gripping means at the top of the push rod for gripping by a hand of a user,

cover means for the drinking vessel, for generally containing liquid from splashing out of the vessel,

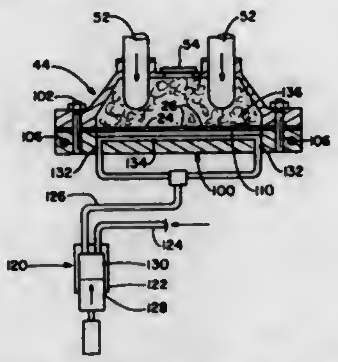
a second disc sized to fit closely within the interior side walls of the drinking vessel, the second disc being finely perforated such as to pass liquid but substantially to block passage of coffee grounds or tea leaves, and

means for temporarily and releasably retaining the second disc immediately below and against the bottom of said substantially rigid disc, said means for retaining being such that the second disc is easily released from the substantially rigid disc upon upward movement of the push rod and substantially rigid disc when immersed in liquid,

whereby coffee, tea or other beverages can be brewed directly in the drinking vessel by first placing coffee grounds or tea leaves or other infusible particulate flavoring material in hot water in the vessel to brew the beverage, then placing the substantially rigid disc and push rod down into the vessel with the second disc below, then pressing the push rod down to separate the coffee grounds or tea leaves out of the liquid and to press them firmly down against the bottom of the drinking vessel, and finally by removing the push rod and rigid disc

from the vessel, leaving the second disc against the pressed coffee grounds or tea leaves at the bottom of the vessel.

5,618,571
FOOD MOLDING APPARATUS AND METHOD OF FORMING FOOD PRODUCTS
Eugene J. London, Sandusky, Ohio; Winje Green, Hjarnarp, Sweden, and Gary Dare, Colorado Spgs., Colo., assignors to Stein, Inc., Sandusky, Ohio
Filed Jul. 10, 1995, Ser. No. 500,305
Int. Cl.[6] A22C *7/00;* A23P *1/00*
U.S. Cl. 426—512 **28 Claims**

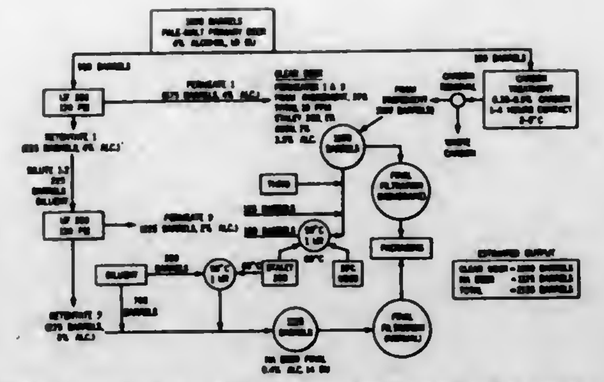


15. A method of molding formable materials comprising the steps of:
supplying a formable material into at least one supply manifold of a molding apparatus,
providing a mold plate having at least one mold cavity, said mold plate being selectively positioned so the at least one mold cavity is exposed to the formable material within said supply manifold,
positioning a clamp member adjacent said mold plate, and applying pressure on said clamp member to substantially prevent deflection of said mold plate from a clamped position relative to said supply manifold;
applying pressure on said formable material in said manifold to fill said at least one mold cavity exposed thereto,
relieving pressure applied on said clamp member to unclamp said mold plate from said supply manifold, and
removing said formable material from said at least one mold cavity.

5,618,572
FLAVORED MALT BEVERAGES PREPARED BY USING ULTRAFILTRATION METHODS
Matthew L. Tripp, Nashotah; Sydney R. Rader, Fredonia; Subba C. Rao, Brookfield, all of Wis., and David S. Ryder, Libertyville, Ill., assignors to Miller Brewing Company, Milwaukee, Wis.
Continuation-in-part of Ser. No. 29,740, Mar. 11, 1993, Pat. No. 5,439,699. This application Oct. 20, 1994, Ser. No. 326,625
Int. Cl.[6] C12C *12/04;* C12G *3/08;* C12H *3/00*
U.S. Cl. 426—592 **19 Claims**

1. A method of preparing a flavored malt beverage, comprising:
subjecting a base beer to ultrafiltration to obtain a reduced color malt base as a permeate; and
combining the reduced color malt base with at least one flavoring, a sweetening agent, malic acid, and carbon dioxide, wherein the flavored malt beverage contains 2.5 to 2.8% v/v CO_2, 2.9 to 3.5% w/w alcohol, 12.5 to 13.5 calories/fluid oz., 0.2 to 0.4 g/100 ml malic acid, 5.4 to 5.8% w/w real extract, and no tartaric acid.

9. The flavored malt beverage produced by the method of claim 1, wherein the malic acid and the absence of tartaric acid cooperate to minimize sensations of lingering dryness and sourness experi-



enced by consumers of the flavored malt beverage, and to enhance sensations of a smooth and round mouthfeel experienced by said consumers.

12. A flavored malt beverage product, consisting essentially of:
a reduced color malt base produced by ultrafiltering at least a portion of the color from a base beer;
at least one flavoring;
a sweetening agent;
2.5 to 2.8% v/v CO_2;
2.9 to 3.3% w/w alcohol;
12.5 to 13.5 calories/fluid oz.;
0.2 to 0.4 g/100 ml malic acid;
5.4 to 5.8% w/w real extract; and
no tartaric acid;
wherein the malic acid and the absence of tartaric acid cooperate to minimize sensations of lingering dryness and sourness experienced by consumers of the flavored malt beverage, and to enhance sensations of a smooth and round mouthfeel experienced by said consumers.

5,618,573
PRODUCTION OF VODKA BY SUPERCOOLING TECHNOLOGY
Irina V. Filippova, and Nadezhda L. Filippova, both of Bethlehem, Pa., assignors to RTD Corporation, Bethlehem, Pa.
Filed Nov. 20, 1995, Ser. No. 560,818
Int. Cl.[6] C12G *3/08;3/04*
U.S. Cl. 426—592 **8 Claims**

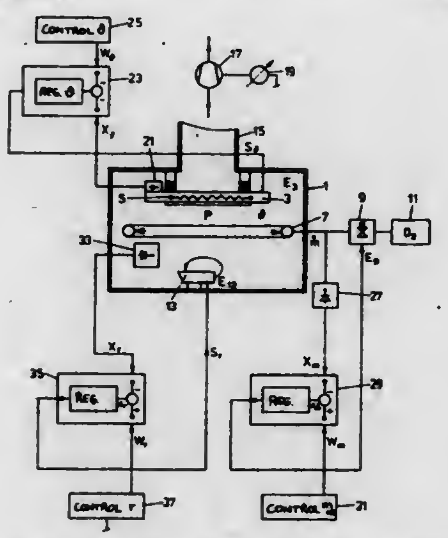
1. A method of treating a mixture of ethyl alcohol and water to reduce impurities contained therein consisting first and second treatment steps, wherein said first treatment step comprises:
a) mixing of from about 65% to about 75% v/v of ethyl alcohol and of from about 25% v/v to about 35% v/v of water to obtain a solution at a superlow temperature of from about −45° C. to about −22° C.;
flowing the solution through three layers of an activated charcoal adsorber at a temperature of from about −45° C. to about −22° C., said activated charcoal adsorber layers having surface activities of
1) from about 2.0 to about 3.0 mg-equivalent/liter,
2) from about 3.0 to about 4.0 mg-equivalent/liter, and
3) from about 4.0 to about 5.4 mg-equivalent/liter;
said activated charcoal adsorber having a total pore volume of from about 0.9 to about 1.5 cm^3/g;
allowing the solution to contact the activated charcoal adsorber for about 0.5 to 5 minutes;
wherein said second treatment step comprises:
b) mixing the ethyl alcohol-water solution obtained in said first treatment step with water to obtain an ethyl alcohol-water solution containing of from about 35% v/v to about 45% v/v of ethyl alcohol and of from about 55% v/v to about 65% v/v of water at a temperature of from about −22° C. to about 5° C.;
flowing the solution through three layers of an activated charcoal adsorber at a temperature of from about −22° C. to about 5° C., said activated charcoal adsorber layers having surface activities of

4) from about 1.2 to about 1.8 mg-equivalent/liter,
5) from about 1.8 to about 2.2 mg-equivalent/liter, and
6) from about 2.2 to about 2.6 mg-equivalent/liter;
said activated charcoal adsorber having a total pore volume of from about 0.5 to about 0.7 cm^3/g;
allowing the solution to contact the activated charcoal adsorber for about 0.5 to 10 minutes; and
collecting the purified ethyl alcohol-water solution.

5,618,574
FISH FOOD
Gene W. Bunch, Aloha, Oreg., assignor to Clearwater Fish & Pond Supply, Inc., Aloha, Oreg.
Filed May 12, 1995, Ser. No. 440,231
Int. Cl.[6] A23L *1/31;* A23K *1/18*
U.S. Cl. 426—641 **8 Claims**

1. A method of improving the coloration of a koi comprising feeding the koi a diet comprising: preserved immature insects, fish meal, krill, cooked hydrolyzed fish, blood meal, fish oil, lecithin, vitamin A, vitamin D3, vitamin E, pantothenic acid, niacin, inosicol, vitamin B2, vitamin B6, thiamine, folic acid, biotin, vitamin B12, processed grain byproducts, guar gum, propylene glycol, choline chloride, vitamin C, zinc sulfate, manganese sulfate, ethylene diamine dihydroiodide, copper sulfate, potassium sotbate, canthaxanthin, and ethoxyquin, wherein the preserved immature insects (i) comprise at least one member of the group consisting of houseflies and soldier flies, and (ii) comprise between about 5 and 50 percent of the diet of the koi.

5,618,575
PROCESS AND APPARATUS FOR THE PRODUCTION OF A METAL OXIDE LAYER
Günter Peter, Plons, Switzerland, assignor to Balzers Aktiengesellschaft, Furstentum, Liechtenstein
Continuation of Ser. No. 86,011, Jul. 1, 1993, abandoned. This application Apr. 21, 1995, Ser. No. 427,658
Claims priority, application Switzerland, Jul. 2, 1992, 2095/92
Int. Cl.[6] C23C *14/08;16/00*
U.S. Cl. 427—8 **35 Claims**



1. Process for producing a metal oxide layer on a substrate, the metal oxide layer being free of cracks, the process comprising:
holding the substrate in an evacuated vacuum chamber, evacuated to 10^{-1} mbar or lower;
setting particles of a metal free into the chamber, the freed metal particle having a kinetic energy;
introducing oxygen into the chamber;
keeping a temperature of the substrate below 900° C.;
reacting said particles with said oxygen to form metal oxide deposition on said substrate;
steadily raising a ratio of a quantity of the oxygen introduced per unit time into said chamber to the metal particles freed into said chamber per unit time, controlled for each mono-atomic or mono-molecular layer deposited on the substrate, to result in a steadily rising degree of oxidation of metal oxide on said substrate; and
limiting the kinetic energy of the metal particles freed into said chamber to a maximum of 10 eV at said substrate.

5,618,576
LEAD FRAME MANUFACTURING METHOD
Young-ho Baek, Kyungki-do, Rep. of Korea, assignor to Samsung Aerospace Industries, Ltd., Kyongsangnam-do, Rep. of Korea
Filed Apr. 4, 1996, Ser. No. 627,289
Claims priority, application Rep. of Korea, Apr. 6, 1995, 95-7944
Int. Cl.[6] B05D *5/12*
U.S. Cl. 427—96 **4 Claims**

1. A method for making a lead frame, comprising the steps of:
forming a metal plate made of an alloy, into a lead frame shape;
plating nickel onto said metal plate;
plating palladium or a palladium alloy onto said nickel-plated metal plate; and
heating said palladium plated metal plate at a temperature of 450°–800° C. for 30–160 seconds.

5,618,577
RELEASE COATING
John D. Pearson, Hamilton Square, and Salvatore Diodati, Yardville, both of N.J., assignors to Congoleum Corporation, Lawrenceville, N.J.
Continuation of Ser. No. 87,598, Jul. 2, 1993, Pat. No. 5,536,571. This application Jun. 6, 1995, Ser. No. 468,448
Int. Cl.[6] B05D *5/08*
U.S. Cl. 427—135 **20 Claims**

1. A continuous process for forming a multiply structure comprising: (A) applying to a support surface moving at the rate of at least about 190 ft. per minute an aqueous coating composition having a dispersed solids portion consisting essentially of resin binder solids, clay and magnesium or calcium hydroxide in an amount such that the aqueous coating composition in dry form on the surface constitutes about 10 to about 20 g/sq. yd. of release coating; (B) drying the aqueous coating composition to form said release coating on the surface; (C) thereafter applying to the thus coated support surface poly(vinyl chloride) (PVC) in the form of a plastisol; and (D) thereafter fusing the plastisol to provide a multiply structure which includes a PVC ply; wherein the PVC ply is capable of being removed from the structure by the application of a force of between about 110 to about 600 grams/inch, as determined by the Keil test procedure.

5,618,578
PROTECTIVE SOLVENT FREE LIQUID MASKING COMPOUNDS AND RELATED METHOD
Sally J. Blaine, and Kim K. Wilson, both of North Canton, Ohio, assignors to Alco Industries, Inc., Valley Forge, Pa.
Continuation-in-part of Ser. No. 262,856, Jun. 21, 1994, Pat. No. 5,494,702. This application Feb. 16, 1996, Ser. No. 602,965
Int. Cl.[6] B65B *33/00*
U.S. Cl. 427—154 **16 Claims**

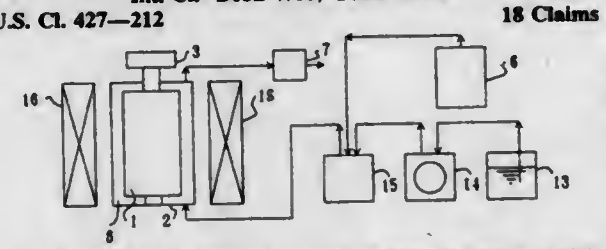
8. A method for protecting selected surfaces from paint in painting operations comprising:

applying a solvent free liquid masking composition to selected surfaces of an object where paint subsequently applied is not desired;
allowing said liquid masking composition to dry, forming a film;
painting said object, whereby surfaces carrying said film are protected from the application of paint; and
removing said film, wherein said solvent free liquid masking composition comprises
from about 5 to about 20 percent by weight of polyvinyl alcohol;
from about 1 to about 20 percent by weight of a plasticizer;
from about 0.1 to about 1 percent by weight of a surfactant; and
sufficient water to total 100 percent by weight, wherein said masking composition is water-soluble and devoid of volatile organic chemicals; it is devoid of polymer resins other than polyvinyl alcohol in amounts sufficient to render the film water-insoluble and is stain resistant to applied surfaces.

5,618,579
PROCESS FOR THE VAPOR DEPOSITION OF A METAL NITRIDE-BASED LAYER ON A TRANSPARENT SUBSTRATE
Philippe Boire, Paris, and Bertrand Testulat, Sarcelles, both of France, assignors to Saint-Gobain Vitrage, Courbevoie, France
Filed Aug. 12, 1994, Ser. No. 288,801
Claims priority, application France, Aug. 12, 1993, 93 09916
Int. Cl.⁶ B05D *5/06*
U.S. Cl. 427—166 **27 Claims**

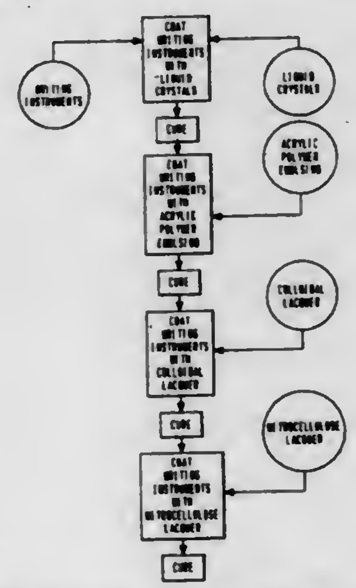
1. A process for the vapor phase pyrolytic deposition of a metal nitride or oxynitride layer on a transparent substrate, comprising:
simultaneously bringing at least one metal precursor and a nitrogen precursor into contact with a surface of said substrate which is heated to an elevated temperature sufficient to pyrolytically decompose said precursors, thereby effecting decomposition of said precursors as said metal nitride or oxynitride layer,
wherein said nitrogen precursor is a mixture of at least one amine and ammonia.

5,618,580
METHOD FOR PRODUCING CERAMIC FINE PARTICLES AND APPARATUS USED THEREFOR
Kentaro Oshima, Wakayama; Toshiharu Numata, Tokyo; Toru Nishimura, Wakayama; Sachiko Kokubo, Saitama, and Keiichi Tsuto, Wakayama, all of Japan, assignors to Kao Corporation, Tokyo, Japan
PCT No. PCT/JP93/01889, § 371 Date Jun. 15, 1995, § 102(e) Date Jun. 15, 1995, PCT Pub. No. WO94/14530, PCT Pub. Date Jul. 7, 1994
PCT Filed Dec. 24, 1993, Ser. No. 454,292
Claims priority, application Japan, Dec. 28, 1992, 4-360755; Feb. 27, 1993, 5-063280
Int. Cl.⁶ B05D *7/00;* **C01G** *23/047*
U.S. Cl. 427—212 **18 Claims**



1. A method for producing ceramic particles having a particle diameter in the range of from 0.001 to 10 μm comprising the steps of vaporizing one or more metal compounds to give gaseous starting materials; supplying said gaseous starting materials with a carrier gas to a reaction space arranged in an annular portion between inner and outer cylinders of a coaxial, double-cylinder reaction apparatus, the reaction apparatus having a stationary outer cylinder and a rotatable inner cylinder; and subjecting said gaseous starting materials to reaction in said reaction space while rotating the inner cylinder.

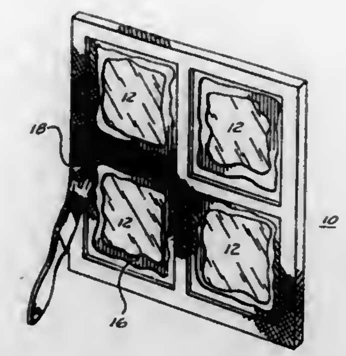
5,618,581
METHOD FOR MAKING THERMOCHROMIC WRITING INSTRUMENTS HAVING A REPTILIAN TEXTURE
Jeffrey D. Sheets, Plano, Tex., assignor to Calladium Corporation, Richardson, Tex.
Filed Jul. 1, 1996, Ser. No. 673,145
Int. Cl.⁶ B32B *5/00;1/00*
U.S. Cl. 427—257 **10 Claims**



1. A method for making a thermochromic writing instrument having a reptilian texture, comprising the sequential steps of:
(a) topically applying a liquid crystal coating to a writing instrument;
(b) curing said coating;
(c) topically applying an acrylic polymer emulsion coating to the writing instrument;
(d) curing said acrylic polymer emulsion coating and causing the acrylic polymer emulsion coating to react with the liquid crystal coating to form the reptilian texture;
(e) topically applying a colloidal lacquer coating to the writing instrument;
(f) curing said colloidal lacquer coating;
(g) topically applying a nitrocellulose lacquer coating to the writing instrument; and
(h) curing said coating.

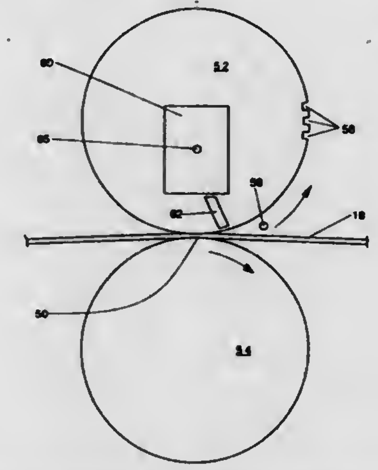
5,618,582
COATING COMPOSITION AND METHODS OF USE
Walter VanWinckel, 46 Triton Point, Littleton, N.C. 27850-9565
Division of Ser. No. 254,136, Jun. 6, 1994, which is a continuation of Ser. No. 7,664, Jan. 22, 1993, abandoned, which is a continuation-in-part of Ser. No. 557,104, Jul. 25, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 485,235
Int. Cl.⁶ B05D *1/32;7/24*
U.S. Cl. 427—259 **10 Claims**

1. A method for painting a non-glass material whicb resides adjacent a glass surface, comprising the steps of:
applying a liquid coating composition to said glass surface proximate said non-glass material and at least a portion of said non-glass material, said coating composition when dried having a high enough adhesion to said non-glass material to



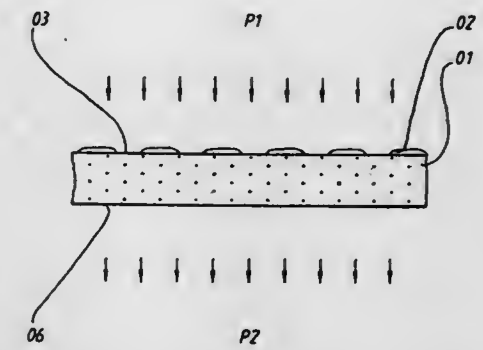
be a permanent coating thereon and a low enough adhesion to said glass surface to be removed therefrom.
allowing said liquid coating composition to dry to produce a dried coating composition,
painting at least the non-glass material including portions having the dried coating composition thereon, and
lifting and removing said dried coating composition away from said glass surface.

5,618,583
SHEET MATERIAL HAVING A FIBROUS SURFACE AND METHOD OF MAKING THE SAME
Terrill A. Young; George C. Dobrin, and Dennis A. Thomas, all of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Division of Ser. No. 298,109, Aug. 29, 1994, abandoned. This application Jun. 6, 1995, Ser. No. 468,255
Int. Cl.⁶ B05D *3/12;5/00*
U.S. Cl. 427—277 **11 Claims**



1. A method for manufacturing a sheet material having at least one surface exhibiting an appearance and texture similar to fibrous cloth, said method comprising the steps:
heating a thermally sensitive polymeric material to at least the melting point of said thermally sensitive polymeric material so that said thermally sensitive polymeric material is flowable and can be deposited on a substrate;
depositing discrete amounts of said flowable thermally sensitive polymeric material onto a surface of said substrate in an array having a density of about 4 to about 62 deposits of said thermally sensitive material per square millimeter;
drawing said discrete deposits of said thermally sensitive polymeric material from said surface of said substrate; and
terminating said fibers so as to form an array of fibers having a density of about 4 to about 62 fibers per square millimeter, said fibers having no hooked positions and having a peel strength of about 0 grams per square inch.

5,618,584
METHOD AND APPARATUS FOR DAMPING A PAPER WEB
Johannes G. Schaede, Würzburg, Germany, assignor to Koenig & Bauer-Albert Aktiengesellschaft, Wurzburg, Germany
Filed Oct. 13, 1995, Ser. No. 542,740
Claims priority, application Germany, Oct. 13, 1994, 44 36 627.2
Int. Cl.⁶ B05D *3/04;3/10*
U.S. Cl. 427—336 **6 Claims**



1. A method for damping a printed and subsequently thermally dried paper web including the steps of:
providing a damping solution;
applying said damping solution to a first side of a paper web;
providing a first gas pressure on said first side of said paper web;
providing a second gas pressure, lower than said first gas pressure on a second side of said paper web;
forming a gas pressure gradient across a web area of said paper web using said first and said second gas pressures; and
using said gas pressure gradient to transport said damping solution into said paper web.

5,618,585
PROCESS FOR THE PRODUCTION OF A COATED SYSTEM
Wolfgang Hechler, Lautertal; Johann Dietz, Bickenbach; Manfred Weigand, Weiterstadt, and Karl Osterried, Dieburg, all of Germany, assignors to Merck Patent Gesellschaft mit Beschrankter Haftung, Darmstadt, Germany
Division of Ser. No. 838,162, Feb. 20, 1992, abandoned. This application Mar. 15, 1996, Ser. No. 616,376
Claims priority, application Germany, Feb. 20, 1991, 41 05 235.8
Int. Cl.⁶ B05D *3/02*
U.S. Cl. 427—376.1 **13 Claims**

1. A process for the production of a coated system having a chemically and mechanically very stable surface coating of high aesthetic attraction and a specular and optionally iridescent color and/or body color on a metal, ceramic or quartz glass substrate having an enamel or glaze coating comprising the steps of:
a) applying at least one aqueous metal oxide sol to an enamel or glaze coating on a metal, ceramic or quartz substrate;
b) subsequently drying and optionally igniting the metal oxide coating at each application step; provided that the ignition is carried out at least once after the completion of the final application step at a temperature higher than 700° C. and below the softening point of the substrate; wherein the metal oxide sol(s) have a mean particle size of between 5 and 200 nm; the metal oxide coating on the glaze or enamel coating after ignition has a refractive index of at least 0.5 higher than the refractive index of the enamel or glaze coating; and the total coating thickness of the ignited metal oxide coating is less than 500 nm.

5,618,586

N-ALKOXYMETHYL (METH)ACRYLAMIDE FUNCTIONAL POLYMERS AND THEIR USE IN SELF-CROSSLINKABLE COATING COMPOSITIONS

Shanti Swarup, Gibsonia, and Michael A. Mayo, Pittsburgh, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 314,468, Sep. 28, 1994, abandoned, which is a continuation-in-part of Ser. No. 219,322, Mar. 29, 1994, abandoned. This application Mar. 16, 1995, Ser. No. 405,470

Int. Cl.[6] **B05D** *1/36;7/16;1/38*

U.S. Cl. 427—407.1 **12 Claims**

1. A method for applying a composite coating to a substrate which comprises applying to the substrate a colored film-forming composition to form a base coat and applying to said base coat a clear film-forming composition to form a transparent top coat over the base coat characterized in that the clear film-forming composition is self-crosslinkable and comprises as the main resinous component a non-gelled addition polymer which is the free radical initiated reaction product of the following polymerizable ethylenically unsaturated monomers:

a) about 40 to 80% by weight of an N-alkoxymethyl(meth)acrylamide;

b) about 20 to 60% total by weight of at least one polymerizable ethylenically unsaturated monomer selected from the group consisting of styrene, methyl (meth)acrylate, butyl (meth-)acrylate, cyclohexyl (meth)acrylate, and mixtures thereof;

c) up to 10% by weight, based on total weight of the polymerizable ethylenically unsaturated monomers used in preparing the polymer, of a hydroxyl functional ethylenically unsaturated monomer selected from the group consisting of hydroxypropyl (meth)acrylate, hydroxyethyl (meth)acrylate, and hydroxybutyl (meth)acrylate, and

d) up to 5% by weight, of an acid functional ethylenically unsaturated monomer, and

where the percentage by weight is based on total weight of the polymerizable ethylenically unsaturated monomers used in preparing the polymer.

5,618,587

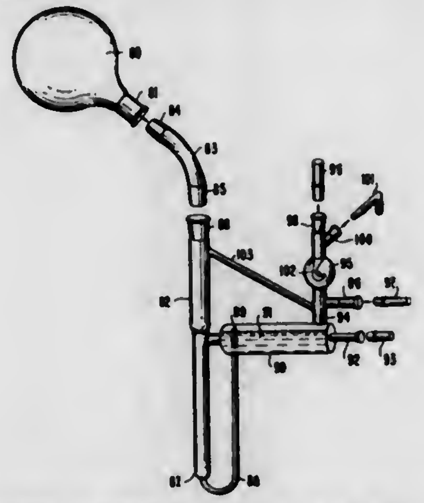
VACUUM RIG APPARATUS

David R. Markle, Paoli, Pa.; Barry C. Crane, Aston Clinton, England; Michael P. Irvine, Watlington, England; Stuart P. Hendry, Aylesbury, England, and William Paterson, High Wycombe, England, assignors to Biomedical Sensors, Ltd., High Wycombe, England

Division of Ser. No. 85,844, Jun. 30, 1993, abandoned. This application Dec. 7, 1994, Ser. No. 350,867

Int. Cl.[6] **B05D** *1/18;* **C23C** *14/00*

U.S. Cl. 427—430.1 **5 Claims**



1. A vacuum rig apparatus for introducing a liquid into a space defined by a shaped article, which apparatus comprises a series of interconnected vessels attached through a port to a vacuum line, the vessels comprising a first vessel connected to a second vessel, which second vessel is adapted to hold said shaped article and is a hollow tube with a proximal end and a distal end, said distal end being integral with a "U" shaped tube having an open distal end which projects into a space defined by a third vessel which is a reservoir for liquid and has a distal end with a first port and a second port, said first port providing a drain adapted to be plugged or opened as desired and said second port connected to a fourth vessel having first and second sealable ports and a third port for connecting the apparatus to a vacuum line and a tubular conduit connecting the second vessel, from a port adjacent the proximal end thereof, to the fourth vessel, so that said conduit, second vessel, "U" shaped tube, third vessel and fourth vessel form a closed circuit, the apparatus being tiltable about a point midway along the second vessel so that liquid in the reservoir initially at a level below the end of the U shaped tube flows into and along the U shaped tube into the second vessel to surround the shaped article and fill the space therein when a vacuum is applied to the apparatus.

5,618,588

COATING ON MARINE CONSTRUCTIONS

Kjell K. Alm, Göteborg, Sweden, assignor to Sealflock Aktiebolag, Gothenburg, Sweden

PCT No. PCT/SE93/00504, § 371 Date Feb. 28, 1995, § 102(e) Date Feb. 28, 1995, PCT Pub. No. WO93/25432, PCT Pub. Date Dec. 23, 1993

PCT Filed Jun. 7, 1993, Ser. No. 347,377

Claims priority, application Sweden, Jun. 5, 1992, 9201736

Int. Cl.[6] **B05D** *1/14;1/04;* **B63B** *59/04*

U.S. Cl. 427—462 **5 Claims**

1. A method of preventing overgrowth on surfaces under the water line of vessels and other marine constructions, comprising:

applying an adhesive to underwater surfaces thereof,

electrostatically applying a fiber flock, comprising synthetic fibers having lengths between 0.5 and 5 mm and no anti-fouling toxic chemicals, to at least a portion of the underwater surfaces, said fiber flock being adhered essentially perpendicular to said surfaces with said adhesive, at a density of 50 to 300 fibers per square mm.

5,618,589

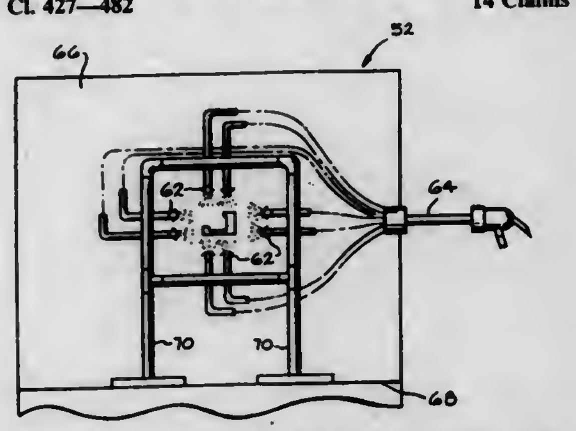
METHOD AND APPARATUS FOR COATING ELONGATE MEMBERS

Roger A. McFarland, Newark, Ohio, assignor to Owens Corning Fiberglas Technology, Inc., Summit, Ill.

Filed Dec. 2, 1994, Ser. No. 348,691

Int. Cl.[6] **B05B** *5/14*

U.S. Cl. 427—482 **14 Claims**



1. Apparatus for applying and distributing a powder coating having a cure temperature to an advancing elongate member having a constant cross-sectional shape comprising:

a booth having an interior which provides a controlled area for applying a powder coating to an elongate member advancing through the booth;

means for enhancing adhesion of the powder coating to the elongate member prior to the elongate member entering the booth;

means for heating the advancing elongate member to a temperature above the cure temperature of the powder coating prior to the elongate member entering the booth;

means for providing a powder coating onto the elongate member mounted in the interior of the booth;

means for providing a flow of air through the interior of the booth wherein the flow of air comes in contact with the powder coating and directs the powder coating into contact with the elongate member;

means for providing an electrostatic charge to the powder coating in the booth prior to contact with the elongate member; and

means for keeping the advancing elongate member under tension wherein the means for providing powder coating is located above the elongated member, the means for providing a flow of air is located above the means for providing a powder coating, and the means for providing a flow of air directs the air in a downwardly direction, and wherein the means of enhancing adhesion the elongate member is corona discharge unit.

5,618,590

PROCESS FOR MANUFACTURING A PISTON RING

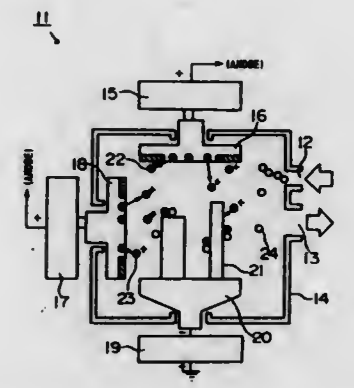
Yoshio Naruse, and Satomichi Miyazaki, both of Tokyo, Japan, assignors to Teikoku Piston Ring Co., Ltd., Tokyo, Japan

Division of Ser. No. 943,289, Sep. 10, 1992, abandoned. This application Jun. 5, 1995, Ser. No. 464,306

Claims priority, application Japan, Sep. 20, 1991, 3-268791

Int. Cl.[6] **B05D** *3/06*

U.S. Cl. 427—528 **8 Claims**



1. A process for manufacturing a piston ring, comprising:

(a) causing an arc discharge in a process gas atmosphere comprised of nitrogen or carbon as a component element, using as a cathode a target comprised of (i) a metal selected from the group consisting of cobalt and nickel and (ii) a metal selected from the group consisting of silicon, titanium, vanadium, chromium, iron, zirconium, niobium and tungsten, wherein the cobalt or nickel is applied to the piston ring without forming a carbide or nitride and wherein the metal selected from the group consisting of silicon, titanium, vanadium, chromium, iron, zirconium, niobium and tungsten is applied to the piston ring as a nitride or a carbide, to release metal ions from said target; and

(b) applying a bias voltage to a piston ring body to bring said metal ions together with particles of the process gas, into adhesion to a surface of the piston ring body to form a film coating thereon.

5,618,591

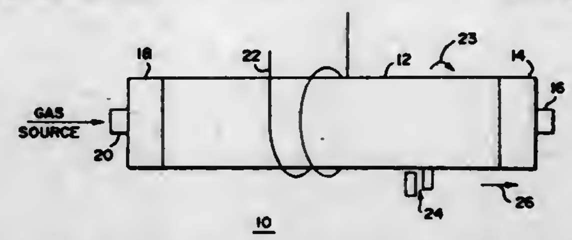
METHOD OF COATING AN INSIDE OF A PIPE OR TUBE

Philip Bernstein, Jr., Chicago, Ill., assignor to Fuse Co., Chicago, Ill.

Filed May 15, 1995, Ser. No. 441,379

Int. Cl.[6] **H05B** *6/02;* **B05D** *7/22*

U.S. Cl. 427—544 **14 Claims**



1. A method of coating an interior surface of a metal tube with a metallic coating material comprising the steps of: filling the tube with an organic polymeric material containing a dispersion of metallic particles of the metallic coating material; rotating the tube; and induction heating the tube to a fusion point of the metallic particles of the metallic coating material.

5,618,592

LIQUID CRYSTAL DISPLAY DEVICE

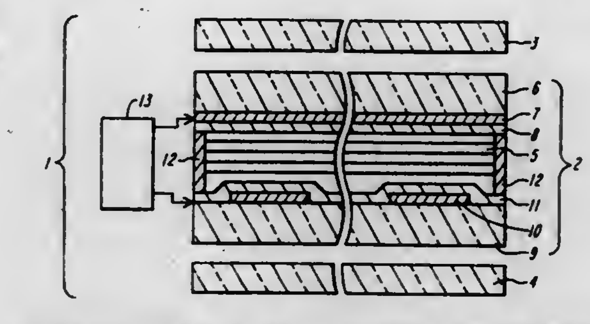
Nobukazu Nagae, Tenri; Motohiro Yamahara, Osaka, and Nobuaki Yamada, Higashiosaka, all of Japan, assignors to Sharp Kabushiki, Osaka, Japan

Filed Jun. 2, 1995, Ser. No. 459,723

Claims priority, application Japan, Jun. 9, 1994, 6-127618

Int. Cl.[6] **G02F** *1/1337*

U.S. Cl. 428—1 **6 Claims**



1. A liquid crystal display device, comprising a pair of substrates opposing each other, a liquid crystal layer interposed between said substrates, and an alignment film formed on the liquid crystal layer side of at least one of said substrates,

wherein said alignment films contain a crystalline branched polymer and have a spherulite structure.

5,618,593

WEATHERSTRIP MOLDING AND METHOD OF MAKING SAME

John W. Beiser, Northville, and Willard C. Christian, Lambertville, both of Mich., assignors to The Standard Products Company, Cleveland, Ohio

Filed May 8, 1991, Ser. No. 697,073

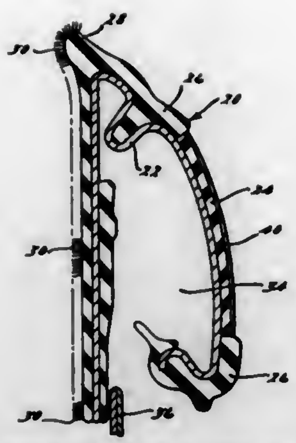
Int. Cl.[6] **B60R** *13/04*

U.S. Cl. 428—31 **11 Claims**

1. A weatherstrip molding comprising:

an EPDM rubber molding body having a first portion having a durometer hardness greater than that of the remainder of said molding body; and

a laminated film bonded onto said first portion of said molding body, said laminated film including a layer of polyvinylidene fluoride and a layer of polypropylene;

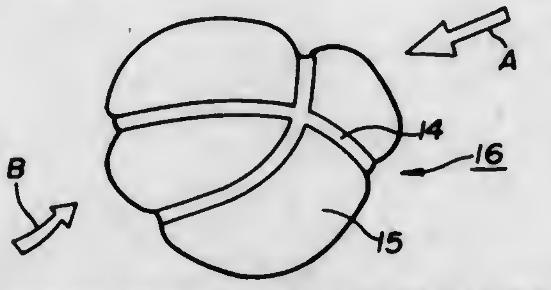


wherein said laminated film has an outer surface of a predetermined color and a predetermined level of gloss.

5,618,594
COMPOSITE THERMOCOUPLE PROTECTION TUBES
Kenneth F. Tulloch, Hyde Park; Lee E. Burns; Hemandt D. Desai, both of Reading, and Raymond L. Taylor, Swampscott, all of Mass., assignors to CVD, Incorporated, Woburn, Mass.
Filed Apr. 13, 1995, Ser. No. 421,177
Int. Cl.^{6} B29D *22/00;* **A47G** *19/22;* **B32B** *1/04*
U.S. Cl. 428—34.1 **8 Claims**

1. A thermocouple protection tube comprising
an elongated ceramic tube having an open front end and an open rear end, and
a silicon carbide layer covering and being in intimate contact with at least a portion of said ceramic tube adjacent said front end, and said silicon carbide layer extending forward of said open front end to form a tubular silicon carbide tip that has a closed-off front end.

5,618,595
AIR BAG
Yosuke Matsushima, Sagamihara; Yasuhiro Iino, Kodaira; Shinichi Toyosawa; Takeshi Kimura, both of Tokorozawa; Yoshihide Fukahori, Hachiouji, and Akeshi Noda, Yamato, all of Japan, assignors to Bridgestone Corporation, Tokyo, Japan
Continuation of Ser. No. 810,867, Dec. 20, 1991, abandoned. This application Aug. 25, 1994, Ser. No. 295,483
Claims priority, application Japan, Dec. 27, 1990, 2-407989
Int. Cl.^{6} B60R *21/16*
U.S. Cl. 428—35.2 **6 Claims**



1. An air bag comprising; an elastomer body defining an air bag, said elastomer body having a spheroid shape when inflated, a shape-retaining member attached to the exterior surface of the elastomer body, said shape-retaining member having a thin elongated string shape and being composed of (a) elastic fibers or threads and (b) high-modulus fibers, said shape-retaining member dividing said surface of said elastomer body into a plurality of separate sections, and said elastomer body formed from a membranous material having an elongation of 100% or more having a higher elongation than that of said elastic fibers or threads.

5,618,596
ARTICLE FORMING SYSTEM
Donald E. Weder; E. H. Weder, both of Highland, Ill.; R. E. Jack Dunn, St. Louis, and Franklin J. Craig, Valley Park, both of Mo., assignors to Southpac Trust International, Inc., Oklahoma City, Okla.
Continuation of Ser. No. 108,093, Aug. 17, 1993, Pat. No. 5,472,752, which is a continuation of Ser. No. 24,573, Mar. 1, 1993, abandoned, which is a continuation of Ser. No. 464,694, Jan. 16, 1990, Pat. No. 5,208,027, which is a continuation of Ser. No. 219,083, Jul. 13, 1988, Pat. No. 4,897,031, which is a continuation of Ser. No. 4,275, Jan. 5, 1987, Pat. No. 4,773,182, which is a continuation of Ser. No. 613,080, May 22, 1984, abandoned. This application May 30, 1995, Ser. No. 452,792
Int. Cl.^{6} B29D *22/00*
U.S. Cl. 428—35.7 **51 Claims**

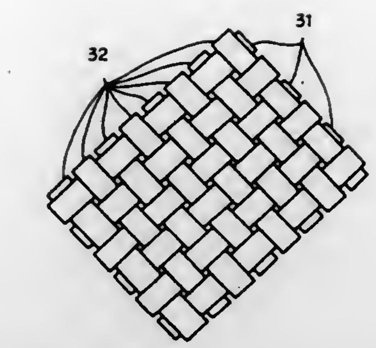
1. A pan made by forming at least one sheet of material into a predetermined shape for receiving an object, wherein the pan comprises a shallow base having a closed lower end and an open upper end with an object opening extending therethrough, wherein the sheet of material is a polymer film which normally is flexible and substantially non-shape-sustaining, wherein the formed pan is flexible and maybe substantially flattened and unflattened to assume the original shape of the formed pan without substantial loss of the preformed shape thereby providing the flexible yet shape-sustaining nature of the formed pan, wherein the forming of the sheet of material is accomplished by substantially permanently fixing a portion of the sheet of material into a plurality of folds to form the base of the pan and for cooperating to retain the pan in the formed shape.

5,618,597

Patent Not Issued For This Number

5,618,598
STRONG FLEXIBLE PRE-INPREGNATION OF FIBER REINFORCED THERMOPLASTIC RESIN FREE FROM A VOID IN MATRIX
Toshiharu Fukushima; Kunimasa Muroi, and Kunio Hiyama, all of Shizuoka, Japan, assignors to Yamaha Corporation, Japan
Division of Ser. No. 240,908, May 11, 1994, Pat. No. 5,520,995. This application Feb. 29, 1996, Ser. No. 610,164
Claims priority, application Japan, May 14, 1993, 5-113468
Int. Cl.^{6} B32B *5/12*
U.S. Cl. 428—36.3 **4 Claims**

1. A pre-impregnation comprising:
a) a tow of reinforcing fibers shaped into a ribbon; and
b) a ribbon of thermoplastic resin overlapped with said tow so as to be fixed thereto at intervals, in which warps each implemented by the lamination of said tow and said ribbon and wefts each implemented by the lamination of said tow and said ribbon are woven into a plain fabric.
2. A pre-impregnation comprising:
a) a tow of reinforcing fibers shaped into a ribbon; and
b) a ribbon of thermoplastic resin overlapped with said tow so as to be fixed thereto at intervals, in which warps each implemented by the lamination of said tow and said ribbon and wefts each implemented by the lamination of said tow and said ribbon are woven into a tubular fabric.

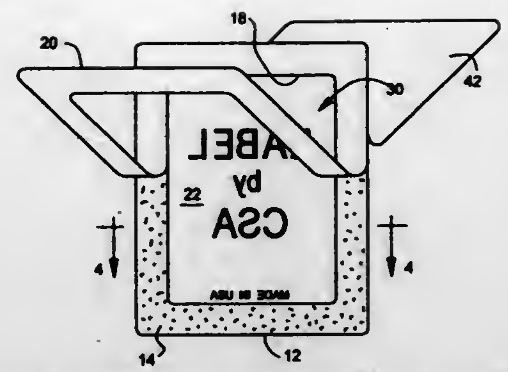


5,618,599
MULTI-LAYER MOLDED POLYMER COMPOSITIONS
Mark Nulman, West Bloomfield, and Rose A. Ryntz, Clinton Twp., both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Feb. 15, 1996, Ser. No. 601,811
Int. Cl.^{6} B32B *27/32;1/02;* **B65D** *65/40*
U.S. Cl. 428—36.7 **2 Claims**

1. A method of molding a three-layer polymer fuel tank comprising the steps of:
providing an HDPE material;
providing a barrier material, said barrier material comprising a blend of between 1–15% by weight compatibilizer and 99–85% by weight EVOH, said compatibilizer having a polyolefin backbone selected from the group comprising isotactic polypropylene or polyethylene and a functional polymer graft of polycaprolactone; and
extruding a three layer laminate having said barrier material between two layers of said HDPE material, whereby said compatibilizer bonds with both said HDPE material and said EVOH to form a strong multi-wall fuel tank resistive to delamination.
2. A method of molding a three-layer polymer fuel tank comprising the steps of:
providing an HDPE material;
providing a barrier material, said barrier material comprising a blend of between 1–15% by weight compatibilizer and 99–85% by weight EVOH, said compatibilizer having a polyolefin backbone selected from the group comprising isotactic polypropylene or polyethylene and a functional polymer graft of polyvinyl acrylate; and
extruding a three layer laminate having said barrier material between two layers of said HDPE material, whereby said compatibilizer bonds with botch said HDPE material and said EVOH to form a strong multi-wall fuel tank resistive to delamination.

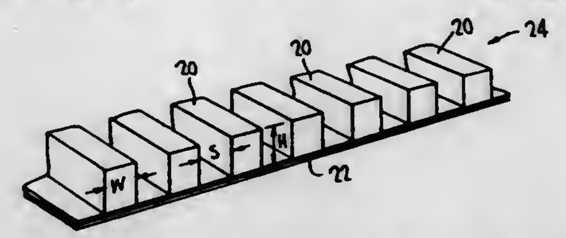
5,618,600
MASKED PROTECTED IMAGE PRESSURE SENSITIVE LABEL
Michael D. Denklau, Lisle, Ill., assignor to Uarco Incorporated, Barrington, Ill.
Filed Feb. 12, 1996, Ser. No. 599,676
Int. Cl.^{6} B32B *7/06*
U.S. Cl. 428—41.8 **7 Claims**

1. In a pressure sensitive label form for providing a label with protected imaging including:
a sheet of transparent face stock;
a layer of transparent pressure sensitive adhesive on one side of said face stock sheet;



a sheet of transparent release liner releasably adhered to said one side of said face stock sheet by said adhesive;
a die cut in said release liner sheet and defining a first removable frame section and a second label defining section, said first section being in at least partial surrounding relation to said second section so that when removed, a pattern of said adhesive in said partial surrounding relation to said second section will be exposed; and
reverse image printed on said release liner second section, the improvement comprising
a mask on the other side of said face stock sheet and a further layer of pressure sensitive adhesive removably adhering said mask to said other side of said face stock sheet.

5,618,601
CONTROL OF DELAMINATION IN CONTOURED LAMINATED STRUCTURES
Victor (Pete) L. Ruby, 1736 Fleet St., Baltimore, Md. 21231
Filed Dec. 30, 1993, Ser. No. 174,318
Int. Cl.^{6} B32B *3/10;3/14;3/30*
U.S. Cl. 428—56 **18 Claims**



1. A composite structural material having an outer surface for surface-covering applications, comprising:
a sheet material having an outer surface and an opposing inner surface;
a plurality of parallely-spaced rib members extending substantially across the width of said sheet material on the opposing inner surface and attached thereto by an adhesive with said sheet material being substantially flat: and
the adhesive bond between the sheet material and the rib members being such that when the structural member is bent a self detachment of the sheet material from at least some of said rib members occurs allowing the sheet material to form a smooth curved shape devoid of ridges or planes.

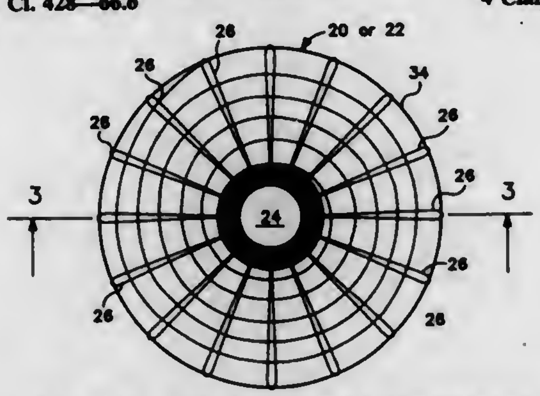
5,618,602
ARTICLES WITH TONGUE AND GROOVE JOINT AND METHOD OF MAKING SUCH A JOINT
Thomas J. Nelson, 3209-B Iris Cir., Temple, Tex. 76502
Filed Mar. 22, 1995, Ser. No. 409,221
Int. Cl.^{6} B32B *3/06*
U.S. Cl. 428—60 **16 Claims**

1. An article having a planar, decorative wear surface, a grooved edge and a tongued edge,

wherein the tongue and groove have planar lower surfaces positioned the same distance from and parallel to the planar decorative surface, and

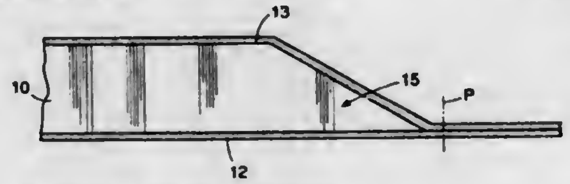
wherein the upper surfaces of the tongue and groove are parallel, planar surfaces and wherein the upper surface of the groove is closer to the planar decorative surface than the upper surface of the tongue such that upon joining two pieces of the article by positioning the lower surfaces of the tongues and grooves together and moving the tongue of one piece into the groove of another piece, liquid glue placed in the groove will be squeezed out between the upper surfaces of the tongue and groove and upwardly between the tongued and grooved edge toward the decorative surfaces of the two pieces.

5,618,603
FIBER REINFORCEMENT MAT FOR COMPOSITE STRUCTURES
Delbert D. DeRees, Romeo, Mich., assignor to Chrysler Corporation, Auburn Hills, Mich.
Division of Ser. No. 356,070, Dec. 14, 1995. This application Apr. 24, 1996, Ser. No. 637,025
Int. Cl.⁶ D03D *3/00*
U.S. Cl. 428—66.6 **4 Claims**



1. A fiber mat for reinforcing a structural member proximate a location of high stress, the improvement comprising:
a central opening through the fiber mat;
a warp material projecting radially from the central opening; and weft material woven through the warp material at a higher circumferential concentration and radially closer together proximate the central opening than distant from the central opening to provide a gradual reduction in density of weft material in the radial direction away from the central opening.

5,618,604
BALSA CORE LAMINATE HAVING BEVELLED EDGES
George D. Dohn, 24 Colony Ave., Park Ridge, N.J. 07656
Filed Sep. 15, 1995, Ser. No. 528,991
Int. Cl.⁶ B32B *3/02*
U.S. Cl. 428—72 **7 Claims**

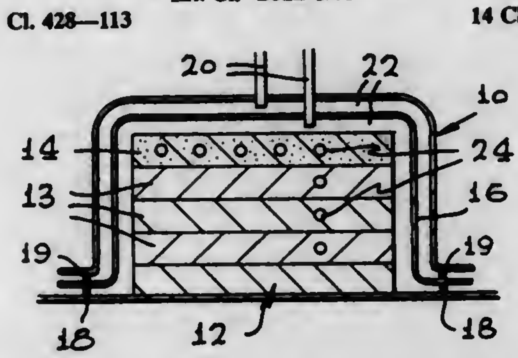


1. A structural laminate comprising:
A. an end-grain balsa core panel having an internal structure formed by substantially parallel cellular columns, said panel having an upper face at least one edge of which is bevelled to impart a gentle slope thereto, the surface of said edge having a staircase formation defined by a series of right angle microsteps; and
B. a facing skin adhesively laminated to said upper face of said panel and to said edge, said facing skin being incapable of being sharply bent, but being bent to fully conform to said sloped edge.

5,618,605
FLAME-RETARDANT POLYAMIDE CARPETS
Gary W. Shore, Asheville, N.C., assignor to BASF Corporation, Mt. Olive, N.J.
Division of Ser. No. 109,413, Aug. 19, 1993, Pat. No. 5,604,007, which is a continuation of Ser. No. 846,510, Mar. 6, 1993, abandoned. This application May 16, 1995, Ser. No. 441,865
Int. Cl.⁶ B32B *3/02;* **C08L** *83/05*
U.S. Cl. 428—92 **14 Claims**

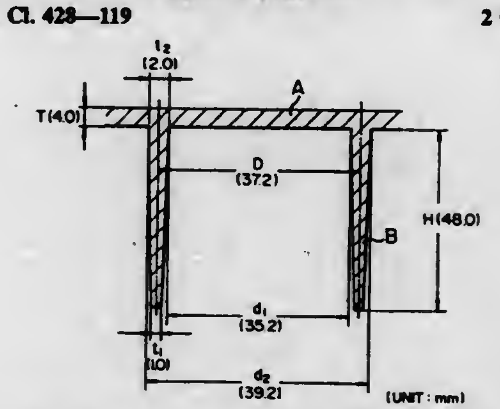
1. A carpet comprising:
a backing, and
a tufted or woven pile on said backing comprised of drawn and crimped flame-retardant carpet fibers having a denier per filament of between about 6 to about 35 and formed of a melt-spun polyamide mixture of:
(i) at least about 80% by weight of a polyamide, wherein at least 90% of the polyamide is at least one nylon selected from the group consisting of nylon 6, nylon 6/6, copolymers thereof, and combinations thereof, and
(ii) an additive containing (1) a thermoplastic matrix polymer, (2) silicones in an amount between about 5% to about 20% based on the total weight of the additive, and (3) a platinum complex catalyst, wherein
said additive is present in said polyamide mixture in an amount between about 0.05% to about 20% by weight of the polyamide mixture so that said silicones are present in said polyamide mixture in an amount less than about 1.0% by weight sufficient to render the polyamide more flame retardant than the polyamide is without the additive.

5,618,606
PROCESS FOR BONDING STAGED COMPOSITES WITH A COBONDED STAGED ADHESIVE AND ARTICLE
George O. Sherrick, Tulsa, Okla., and Robert A. Susnik, Pittsburg, Kans., assignors to Rockwell International Corporation, Seal Beach, Calif.
Filed Sep. 18, 1989, Ser. No. 408,571
Int. Cl.⁶ B32B *5/12*
U.S. Cl. 428—113 **14 Claims**



1. A process for producing a composite, which comprises providing a fiber reinforced thermosetting resin material, applying a thermosetting resin adhesive to a surface of said material,
devolatilizing said adhesive, and
staging said resin material and said adhesive to form a staged cobonded laminate capable of being cured by heating at elevated temperature.

5,618,607
PLASTIC-MADE REINFORCED STRUCTURE
Yoshiaki Togawa, Ichihara; Masahito Matsumoto, Ibaraki; Makoto Nagata, and Tohru Yabe, both of Ichihara, all of Japan, assignors to Sumitomo Chemical Company, Limited, Japan
Continuation-in-part of Ser. No. 325,601, Oct. 19, 1994, abandoned. This application Apr. 25, 1995, Ser. No. 428,456
Claims priority, application Japan, Oct. 21, 1993, 5-263505
Int. Cl.⁶ B32B *7/00*
U.S. Cl. 428—119 **2 Claims**



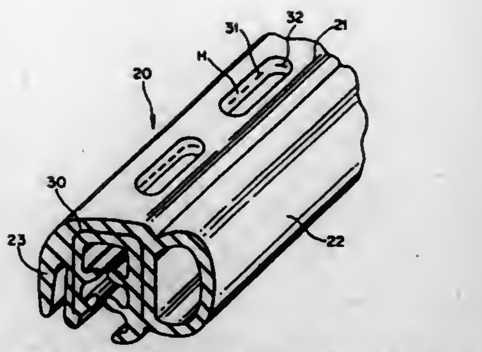
1. A plastic-made reinforced structure comprising a plate made of a thermoplastic resin and at least one cylindrical hollow rib made of the same resin as that of said plate, connected to at least one side of said plate perpendicularly to the side so that the plate and at least one rib form one piece, in which structure the following relationships hold:

$80 \geqq d_1 \geqq 20$ mm,
$0.98 > d_1/d_2 \geqq 0.7$,
$H \geqq 30$ mm,
$1 \geqq d_1/H \geqq 0.5$, and
$1 > t_1/t_2 \geqq 0.4$ [>0.3]

wherein d_1 and d_2 are the inside and outside diameters of each rib at the root of the rib, i.e., the joint of the rib to the plate; H is the length of each rib from the root to the front end; and t_1 and t_2 are the rib thicknesses at the front end and at the root; and wherein said thermoplastic resin is selected from the group consisting of polyethylene, polypropylene, polyvinyl chloride, nylon, polycarbonate, polyethylene terephthalate, [PMMA] polymethyl methacrylate, [ABS] acrylonitrile-butadiene-stylene copolymer resin, mixtures between one of said resins and a rubber component, and mixtures thereof.

5,618,608
WEATHER STRIP
Minoru Teishi, Hiroshima, Japan, assignor to Nishikawa Rubber Co., Ltd., Hiroshima, Japan
Filed Nov. 7, 1995, Ser. No. 551,854
Claims priority, application Japan, Nov. 15, 1994, 6-307034
Int. Cl.⁶ E06B *7/16*
U.S. Cl. 428—122 **3 Claims**

1. A weather strip for sealing the joint between the door frame of the body of a car and a door put on the door frame, comprising, in an integral structure: a welt part of a substantially U-shaped cross section to be put on a flange formed on the door frame; a hollow sealing part protruding from the outer side wall of the welt part; and a fish-bone core having a plurality of U-shaped loops and a linear connecting part successively connecting the middle portions of the U-shaped loops, and buffed in the welt part with the connecting part thereof extended in the upper wall of the welt part;



slots being punched in the upper wall of the welt part in a section of the weather strip to be extended on the lower side of the door frame to cut out portions of the connecting part of the fish-bone core so that breaks are formed in the connecting part of the fish-bone core.

5,618,609
BIAXIALLY ORIENTED FILM OF POLYETHYLENE-2,6-NAPHTHALENEDICARBOXYLATE
Takao Chujo; Masanori Nishiyama, and Hisashi Hamano, all of Sagamihara, Japan, assignors to Teijin Limited, Osaka, Japan
Filed Dec. 20, 1994, Ser. No. 359,892
Claims priority, application Japan, Dec. 22, 1993, 5-324050; Dec. 24, 1993, 5-327276
Int. Cl.⁶ C08G *63/02;63/18*
U.S. Cl. 428—141 **18 Claims**

1. A biaxially oriented film of a polyethylene-2,6-naphthalenedicarboxylate having a longer length in the longitudinal direction that width in the transverse direction, which
(1) has a Young's modulus of at least 600 kg/mm² in the transverse direction and a Young's modulus of at least 500 kg/mm² in the longitudinal direction, the Young's modulus in the transverse direction being greater than the Young's modulus in the longitudinal direction,
(2) satisfies the following relationships between an elongation S_T (%) in the transverse direction per a load of 1 kg/mm² and the Young's modulus Y_T (kg/mm²) in the transverse direction,

$$-0.001Y_T+0.89<S_T<-0.001Y_T+1.57 \quad (A)$$

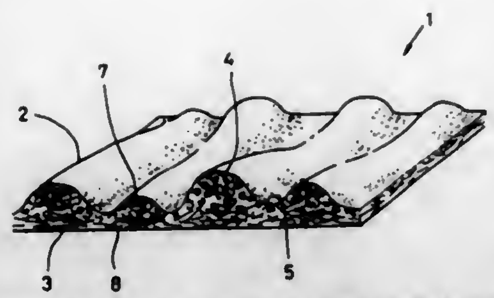
when Y_T is at least 1,200 kg/mm², and

$$-0.31<S_T<0.37 \quad (B)$$

when Y_T is greater than 1,200 kg/mm², and
(3) has a heat shrinkage percentage of 0.1% or less in the longitudinal direction when heat-treated under no load at 70° C. for 1 hour.

5,618,610
NONWOVEN FABRIC WIPER AND METHOD FOR MAKING IT
Katsushi Tomita, Kanonji; Masahiko Shikatani, Kawanoe; Hiroo Hayashi, Kagawa-ken, and Mitsuhiro Wada, Kawanoe, all of Japan, assignors to Uni-Charm Corporation, Ehime-ken, Japan
Filed Aug. 29, 1995, Ser. No. 521,095
Claims priority, application Japan, Aug. 29, 1994, 6-203202
Int. Cl.⁶ D04H *1/06;1/48;1/72*
U.S. Cl. 428—152 **9 Claims**

1. A nonwoven fabric wiper having a plurality of undulations at least on its one surface and being obtained by a method for making it comprising steps of:
a. forming a laminate with at least one layer of hydrophilic fiber web and at least one layer of thermally shrinkable hydrophobic fiber web;

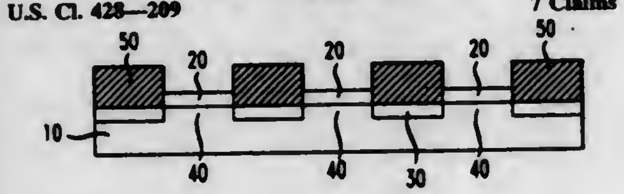


b. jetting high pressure water from nozzles with fine orifices onto said laminate supported on a surface of supporting means provided on its surface with a continuous planar zone, a plurality of intermittently and independently distributed projections and/or recesses and a plurality of fine drainage apertures, causing constituent fibers of said two layers of web to be entangled and rearranged, and thereby forming a non-woven a fabric having uneven fiber distribution densities in the direction of the plane defined by said laminate; and

c. dewatering and/or drying said nonwoven fabric followed by heat-treating said nonwoven fabric to crimp said synthetic fibers.

5,618,611
METALLIZATION OF FERRITES THROUGH SURFACE REDUCTION

Sungho Jin, Millington; Henry H. Law, Berkeley Heights; Thomas H. Tiefel, North Plainfield, and Te-Sung Wu, New Providence, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.
Continuation of Ser. No. 268,487, Jun. 30, 1994, abandoned. This application Apr. 25, 1995, Ser. No. 428,283
Int. Cl.⁶ B32B *9/00*
U.S. Cl. 428—209 **7 Claims**



1. A ferrite device comprising:
a ferrite substrate having a first composition including at least two metal elements in a first ratio and oxygen; and
a metallized surface region integral with said ferrite substrate and having a second composition including said at least two metal elements in said first ratio but differing from said first composition with respect to oxygen, at least a portion of said metallized region being formed from at least a portion of said ferrite substrate, said metallized surface region comprising a reduced portion of the ferrite substrate.

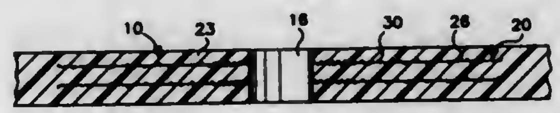
5,618,612
PRESS FELT HAVING FINE BASE FABRIC

Hippolit Gstrein, Gloggnitz, Austria, assignor to Huyck Licensco, Inc., Wilmington, Del.
Filed May 30, 1995, Ser. No. 453,635
Int. Cl.⁶ D03D *3/00*
U.S. Cl. 442—189 **25 Claims**

1. A base fabric structure for a press felt for a papermaking machine comprising:
at least one base fabric, said at least one base fabric produced from at least one set of machine direction yarns interwoven with at least one set of cross machine direction yarns, wherein each cross machine direction yarn of at least one set of said at least one set of cross machine direction yarns is a single, plied yarn of at least two twisted monofilaments.

5,618,613
STRUCTURAL ELEMENT HAVING A HIGH STRESS DISCONTINUITY AND A FIBER REINFORCEMENT MAT EMBEDDED THEREIN

Delbert D. DeRees, Romeo, Mich., assignor to Chrysler Corporation, Auburn Hills, Mich.
Filed Dec. 14, 1994, Ser. No. 356,070
Int. Cl.⁶ D03D *3/00*
U.S. Cl. 442—203 **9 Claims**



1. In a structural element having a high stress discontinuity therein, the improvement comprising:
at least one fiber reinforcement mat embedded in the structural element and surrounding the discontinuity, the mat having warp material radially extending outwardly from the discontinuity and weft material woven through the warp material, the weft material being circumferentially positioned, more densely concentrated, and radially closer together proximate the discontinuity than distal of the discontinuity.

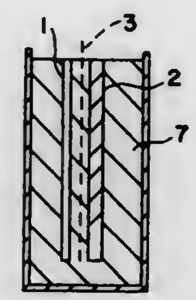
5,618,614
MIXED SURFACTANT SYSTEM AS A DURABLE FABRIC COATING

Ronald S. Nohr, Roswell, and John G. MacDonald, Decatur, both of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.
Division of Ser. No. 174,734, Dec. 29, 1993, abandoned. This application Mar. 3, 1995, Ser. No. 398,333
Int. Cl.⁶ B32B *7/00*
U.S. Cl. 442—118 **21 Claims**

1. A wettable polymeric fabric to which surfactants have been applied, which surfactants are resistant to removal by an aqueous liquid, which fabric comprises:
fibers having a plurality of fiber-fiber interstices at the junctions of two or more of said fibers;
a first surfactant; and
a second surfactant;
in which:
one of said first and second surfactants bas a solubility in water at 20° C. no greater than about 5 percent by weight, based on the weight of the water;
said second surfactant is structurally dissimilar to and less soluble in water than said first surfactant; and
said first and second surfactants preferentially are located in the fiber-fiber interstices.

5,618,615
GRAPHITE LAYER MATERIAL

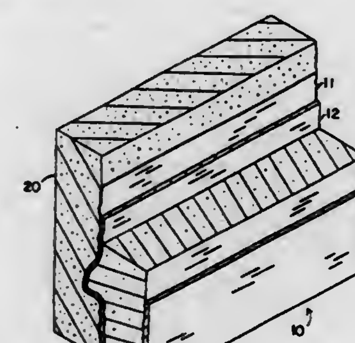
Takao Inoue, Hirakata; Junji Ikeda, Ikoma, and Naomi Nishiki, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan
Filed Jul. 5, 1995, Ser. No. 498,224
Claims priority, application Japan, Jul. 6, 1994, 6-154626
Int. Cl.⁶ H01M *4/00*
U.S. Cl. 428—315.5 **9 Claims**



1. A graphite layer material comprising highly oriented graphite layers of which a direction of crystalline orientation is adjusted to a planar direction, and an intercalant being inserted between the graphite layers, wherein said highly oriented graphite layers are provided with micropores.

5,618,616
MULTI-LAYER LINER FOR WASTE WATER SYSTEM REHABILITATION

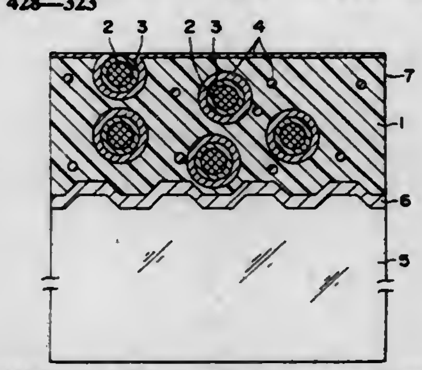
James M. Hume, St. Augustine, and Joseph T. Daniele, Jacksonville, both of Fla., assignors to CCI Spectrum, Inc., Jacksonville, Fla.
Continuation of Ser. No. 126,376, Sep. 24, 1993, abandoned. This application Apr. 19, 1995, Ser. No. 426,420
Int. Cl.⁶ B32B *27/00*
U.S. Cl. 428—319.3 **10 Claims**



1. A multi-layered liner comprising:
a primer layer, a first and second moisture barrier layer, and an intermediate foam layer, said first moisture barrier layer is impervious to moisture, and said foam layer is sandwiched between said first barrier layer and said second barrier layer.

5,618,617
MAGNETO-OPTIC DISK

Kiyoshi Uchida, Katano; Norio Miyatake, Kobe, and Kazunori Omoya, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Continuation-in-part of Ser. No. 983,756, Dec. 1, 1992, abandoned. This application Aug. 12, 1994, Ser. No. 288,695
Claims priority, application Japan, Dec. 2, 1991, 3-317933; May 27, 1992, 4-134690
Int. Cl.⁶ G11B *5/66;* **B32B** *5/16;* **B05D** *5/12*
U.S. Cl. 428—323 **36 Claims**



1. A magneto-optic disk comprising a substrate, a magneto-optic recording layer applied to the substrate and a protective coating applied to the magneto-optic recording layer, the protective coating being made from a composite comprising minute particles of an inorganic compound having a particle size of 0.02–2 μm, the surfaces of the minute particles being coated with a surface coating agent, a lubricant and a radical-polymerizable compound, the surface coating agent having a lyophilic property with respect to the radical-polymerizable compound, and wherein 5–50 wt % of the minute particles is included in the protective coating based on the total weight of the minute particles, surface coating agent, lubricant and radical-polymerizable compound.

5,618,618
SILICON OIL-FREE HEAT-SEALABLE ORIENTED MULTILAYER POLYOLEFIN FILM, PROCESS FOR THE PRODUCTION THEREOF, AND THE USE THEREOF

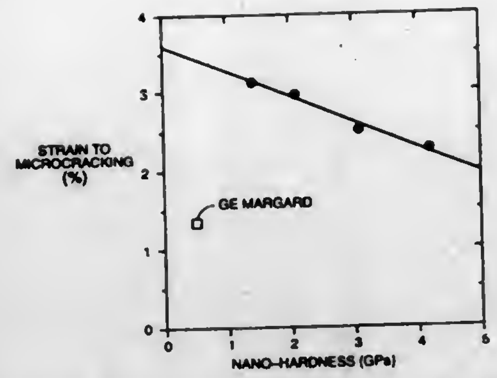
Ursula Murschall, Nierstein; Herbert Peiffer, Mainz, and Gunter Schloegl, Kelkheim, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany
Filed Feb. 23, 1994, Ser. No. 200,145
Claims priority, application Germany, Feb. 27, 1993, 43 06 153.2
Int. Cl.⁶ B32B *5/16;7/10;27/08;27/10*
U.S. Cl. 428—331 **22 Claims**

1. A biaxially-oriented multilayer polyolefin film comprising:
a base layer consisting essentially of a propylene polymer, a tertiary aliphatic amine, and an amide of a water-insoluble carboxylic acid having 8 to 24 carbon atoms, and
a heat-sealable outer layer containing a heat-sealable olefin polymer and SiO_2 particles,
wherein the multilayer film is free from silicone oil.

5,618,619
HIGHLY ABRASION-RESISTANT, FLEXIBLE COATINGS FOR SOFT SUBSTRATES

Rudolph H. Petrmichl, Center Valley; Bradley J. Knapp, Kutztown; Fred M. Kimock, Macungie, and Brian K. Daniels, Emmaus, all of Pa., assignors to Monsanto Company, St. Louis, Mo.
Filed Mar. 3, 1994, Ser. No. 205,954
Int. Cl.⁶ B32B *9/04*
U.S. Cl. 428—334 **91 Claims**

1. An abrasion wear resistant coated substrate product comprising a substrate and at least one layer of an abrasion wear resistant



coating material comprised of carbon, hydrogen, silicon, and oxygen, using ion-assisted plasma deposition and using mixtures of organosiloxane or organosilazane precursor gases and oxygen; said abrasion wear resistant coating material having the properties of Nanoindentation hardness in the range of about 2 to about 5 GPa, a strain to microcracking of about 2% to about 3%, and an abrasion resistance at least equal to the abrasion resistance of glass.

5,618,620

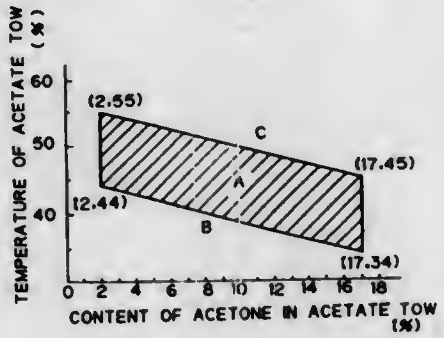
FILTER ROD FOR FILTERING THE SMOKE OF A CIGARETTE

Masaharu Takegawa, Osaka, and Akihisa Matsuda, deceased, late of Osaka, both of Japan, assignors to Daicel Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 967,751, Oct. 28, 1992, abandoned, which is a division of Ser. No. 614,206, Nov. 16, 1990, Pat. No. 5,225,277. This application May 18, 1995, Ser. No. 443,821

Int. Cl.⁶ D02G *3/00;* A24D *3/06*

U.S. Cl. 428—339 **10 Claims**



1. A filter rod for filtering the smoke of a cigarette, comprising: an acetate tow obtained by a dry spinning method in which cellulose acetate is dissolved in acetone and in which the acetate tow is bloomed and wrapped by a paper to the filter rod, wherein the acetate tow has a high crimp modulus, and wherein a degree of crimping of the acetate tow at a position just downstream of a delivery roller of a filter rod making machine is as low as at least 1.4 and is obtained by conditions satisfying the following equations by having the crimping operation performed under the conditions satisfying the following equations (1) and (2):

$$2 \leq A \leq 17 \tag{1}$$

$$-\frac{2}{3}A + \frac{136}{3} \leq T \leq -\frac{2}{3}A + \frac{169}{3} \tag{2}$$

wherein:

A stands for the weight percent of acetone of the acetate tow just after the tow is fed from a stuffing box crimping apparatus; and

T stands for a temperature of the acetate tow just after the tow is fed from the stuffing box crimping machine; and

wherein conditions satisfying equations (1) and (2) are represented by the shaded A in FIG. 1, with a temperature in degrees centigrade of acetate tow is used as an ordinate and the weight percent of acetone in the acetate tow is used as an abscissa, the content of acetone in the acetate falls within a range of 2.44 to 17.34 in a horizontal or abscissa direction and 2.55 to 17.45 in the vertical or ordinate direction, with the first number designating the weight percent of acetone in the acetate tow in percentage and the second number representing the temperature in degrees centigrade of the acetate tow, to obtain a filter body having a required pressure drop and to eliminate the tendency with which the acetate tow is caught on a feed roller of the filter rod making machine.

5,618,621

BIAXIALLY ORIENTED LAMINATED POLYESTER FILM FOR USE AS FILM TO BE BONDED ONTO METAL SHEET

Kinji Hasegawa, Hachioji; Takeo Asai, Sagamihara; Mitsumasa Ono, Sagamihara, and Yoji Murakami, Sagamihara, all of Japan, assignors to Teijin Limited, Osaka, Japan

Continuation of Ser. No. 94,962, Jul. 22, 1993, abandoned. This application May 30, 1995, Ser. No. 453,476

Claims priority, application Japan, Jul. 22, 1992, 4-195371; Jul. 22, 1992, 4-195372; Jul. 23, 1992, 4-196898

Int. Cl.⁶ C09J *7/02*

U.S. Cl. 428—343 **16 Claims**

1. A biaxially oriented laminated polyester film for use as a film to be bonded to a metal sheet, comprising:

(A) a first layer formed from a first copolyester which is composed of ethylene terephthalate unit as a main recurring unit and has a melting point of 210° to 245° C. and a glass transition temperature of 50° C. or higher, and

(B) a second layer formed from a polyester composition containing (B1) a second copolyester which is composed of ethylene terephthalate unit as a main recurring unit and has a melting point of 210° to 245° C., and (B2) a third (co)polyester which is composed of butylene terephthalate unit as a main recurring unit and has a melting point of 200° to 223° C., the third (co)polyester being contained in an amount of 1 to 40% by weight based on the total weight of the second copolymer and the third (co)polyester,

the second layer being to constitute a surface to be bonded onto a metal surface when the laminated film is laminated on the metal sheet.

5,618,622

SURFACE-MODIFIED FIBROUS MATERIAL AS A FILTRATION MEDIUM

Gunilla E. Gillberg-Laforce, Roswell; Leonid A. Turkevich, and Kristi L. Kiick-Fischer, both of Alpharetta, all of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Jun. 30, 1995, Ser. No. 497,676

Int. Cl.⁶ D02G *3/00*

U.S. Cl. 428—357 **2 Claims**

1. A surface-modified fibrous material comprising hydrocarbon polymer fibers having anionic carboxylic acid or sulfonic acid groups on the surfaces thereof and coated with a polyelectrolyte which is chitosan.

5,618,623

FLAME-RETARDANT FIBER AND NONWOVEN FABRIC

Yuji Nakajima, and Masahiko Taniguchi, both of Moriyama, Japan, assignors to Chisso Corporation, Osaka, Japan

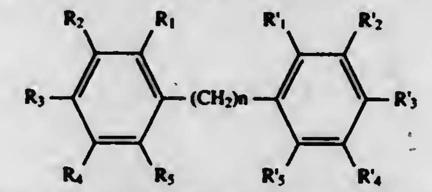
Division of Ser. No. 496,226, Jun. 28, 1995, Pat. No. 5,567,517. This application Jul. 23, 1996, Ser. No. 681,405

Claims priority, application Japan, Jul. 8, 1994, 6-180633

Int. Cl.⁶ D02G *3/00*

U.S. Cl. 428—364 **8 Claims**

1. A flame-retardant fiber in which 0.02 to 1% by weight of the fiber of a surface treating agent comprising an alkyl phosphate salt with the alkyl moiety having 12 to 18 carbon atoms is deposited to the surface of said fiber, wherein said fiber comprises a mixture of a thermoplastic resin and 5 to 15% by weight of the fiber of a flame retardant having the following general formula (1):



(1)

where R1 to R5 and R'1 to R'5 are independently Br or Cl with the Br/Cl ratio lying in the range of 100/0 to 40/60, and n is an integer of 2 to 16, and 2 to 8% by weight of the fiber of antimony oxide as a flame retardant promoter, said fiber obtained by mixing said resin, flame retardant and flame retardant promoter, to form a mixture, and then forming said mixture into a fiber.

5,618,624

FORMABLE, HEAT-STABILIZABLE TEXTILE PILE MATERIAL

Rolf Dinger, Grossaitingen; Joachim Wiegand, Bobingen, and Armin Fendt, Graben, all of Germany, assignors to Hoechst Trevira GmbH & Co. KG, Germany

Filed Feb. 22, 1996, Ser. No. 605,785

Claims priority, application Germany, Feb. 22, 1995, 195 06 037.7

Int. Cl.⁶ B32B *3/02;9/00;* D02G *3/02*

U.S. Cl. 428—368 **10 Claims**

1. A multifilament hybrid yarn consisting of at least 2 varieties A and B of filaments with or without cofilaments C, wherein

said filaments A

are textured and have a melting point above 180° C.,

said filaments B

are flat and have a melting point below 220° C.,

the melting point of said filaments B being at least 20° C. below the melting point of said filaments A, and the weight ratio of said filaments A:B being within the range from 20:80 to 80:20, and the multifilament hybrid yarn additionally containing up to 40% by weight of cofilaments C.

5,618,625

CVD DIAMOND COATED CUTTING TOOLS AND METHOD OF MANUFACTURE

Toshihiko Okamura, Ishige-machi, Japan, assignor to Mitsubishi Materials Corporation, Tokyo, Japan

Continuation of Ser. No. 838,938, Feb. 21, 1992, abandoned. This application Feb. 14, 1994, Ser. No. 195,835

Claims priority, application Japan, Feb. 21, 1991, 3-049099

Int. Cl.⁶ C23C *16/26;* B22F *3/14*

U.S. Cl. 428—408 **15 Claims**

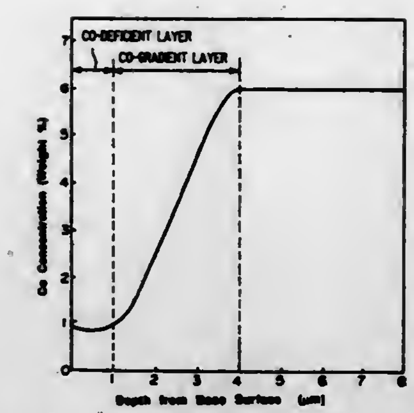
1. A diamond-coated cutting tool, comprising:

(A) a substrate base comprising

(i) from 4 to 20 weight percent of Co, and

(ii) tungsten carbide;

(B) a Co-gradient layer thereon, having a thickness of from 2.4 to 10 μm;



(C) a Co-deficient layer having a thickness of from 0.05 to 5 μm, containing not more than 1.0 weight percent Co at the interface with said Co-gradient layer;

wherein said Co-gradient layer has a concentration gradient of Co which increases from a lower Co concentration at the interface with said Co-deficient layer to a higher Co concentration toward the interior of said substrate,

prepared by a process comprising

(1) primary sintering of said substrate,

(2) secondary sintering of the sintered substrate obtained in (1) under a pressure of 5–1000 atmospheres at a temperature between a Co liquid phase formation temperature and 1500° C., and

(3) chemical etching the product obtained in (2); and

(D) a diamond coating formed on the product obtained in (3) by a chemical vapor deposition process.

5,618,626

GLASS PLATE WITH ULTRAVIOLET ABSORBING MULTILAYER COATING

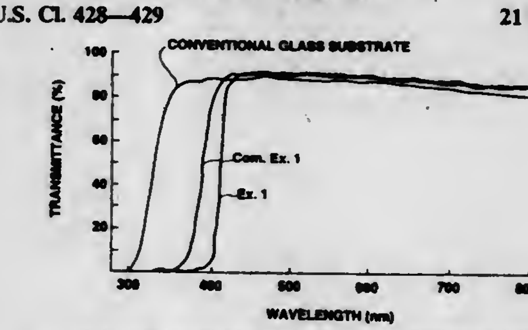
Toshikazu Nagashima; Haruki Kuramashi; Yasunobu Iida, and Sachio Asai, all of Matsusaka, Japan, assignors to Central Glass Company, Limited, Ube, Japan

Continuation of Ser. No. 144,479, Nov. 2, 1993, abandoned. This application Dec. 19, 1995, Ser. No. 574,790

Claims priority, application Japan, Nov. 9, 1992, 4-298841; Apr. 30, 1993, 5-104555; Apr. 30, 1993, 5-104557

Int. Cl.⁶ B32B *15/00*

U.S. Cl. 428—429 **21 Claims**



1. An ultraviolet absorbing colorless and transparent multilayer coating formed on one side of a transparent substrate, said multilayer coating comprising:

a first layer formed on a surface of the transparent substrate having a heat resistance against a temperature not lower than 80° C., said first layer being an ultraviolet absorbing film prepared by hardening a primer coating solution of a synthetic resin which is mixed with a fluorescent brightening agent and an ultraviolet absorbing agent, wherein the molar ratio of brightening agent to ultraviolet absorbing agent is 1:8 to 1:1, wherein the concentration of the synthetic resin in the primer coating solution is from about 1 to about 15 wt %, wherein the concentration of a total of the fluorescent brightening

agent and the ultraviolet absorbing agent in the primer coating solution is from about 0.5 to about 3 wt %, and wherein viscosity of the primer coating solution is from about 10 to about 1000 cP; and

a second layer formed on said first layer, said second layer being a film of a siloxane polymer.

5,618,627

WATER-REPELLENT WALLBOARD

James H. Merrifield, Ballston Spa, and Donna A. Riccio, Watervliet, both of N.Y., assignors to General Electric Company, Waterford, N.Y.

Continuation of Ser. No. 301,289, Sep. 6, 1994, abandoned, which is a division of Ser. No. 959,307, Oct. 9, 1992, Pat. No. 5,366,810. This application Apr. 29, 1996, Ser. No. 639,536

Int. Cl.⁶ B32B *9/06*

U.S. Cl. 428—447 **10 Claims**

1. A method for imparting water repellency to wallboard which comprises 1) forming a mixture of an inorganic building material with a water repellent composition, said water repellent composition consisting essentially of water, a frothing agent selected from the group consisting of organosulfonates and organosulfates, a hydrogen siloxane and a silicone having a weight average molecular weight ranging from about 50,000 to 300,000, 2) whipping said mixture to provide a froth and 3) applying said froth to the wallboard.

5,618,628

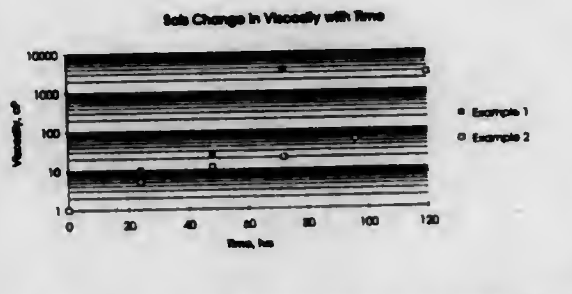
SOL GEL BARRIER FILMS

Raymond A. Volpe, Highland Mills, N.Y., assignor to International Paper Company, Purchase, N.Y.

Division of Ser. No. 398,636, Mar. 3, 1995, Pat. No. 5,510,147. This application Jan. 30, 1996, Ser. No. 594,080

Int. Cl.⁶ B01J *13/00*

U.S. Cl. 428—450 **21 Claims**



1. A relaxed sol-gel composition produced by the method which comprises

(a) hydrolyzing a tetrafunctional alkoxide silicate in an aqueous solution comprising water or water plus a C_1 to C_4 alcohol, and an acid catalyst selected from the group consisting of a protic acid, a Lewis acid, a metal chelate, a Lewis acid plus a protic acid, and a metal chelate plus a protic acid, until a viscosity of 2600–3200 cps is obtained to thereby produce a crosslinked sol-gel polymer composition;

(b) relaxing the crosslinked sol-gel polymer composition and effecting hydrolysis of any residual alkoxyl groups thereof by diluting the crosslinked sol-gel polymer composition with water or water plus a C_1 to C_4 alcohol optionally containing a Lewis acid or metal chelate until a viscosity of about 0.5 to about 10 cps is obtained to thereby produce a relaxed sol-gel polymer composition while substantially not depolymerizing said polymer and which relaxed sol-gel polymer composition has substantially no visible polymer particles therein; and wherein at least one of steps (a) and (b) is conducted with a Lewis acid or metal chelate.

5,618,629

FLEXIBLE PARTITION MEMBER FOR HYDRAULIC ACCUMULATOR, INCLUDING ETHYLENE-VINYL ALCOHOL COPOLYMER GAS-BARRIER LAYER AND POLYAMIDE RESIN ELASTIC LAYER

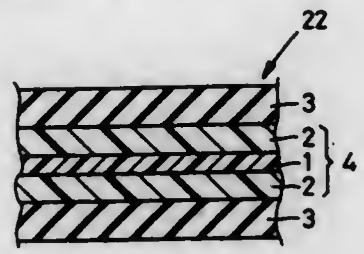
Shigeaki Takamatsu, Hekinan, and Koyo Murakami, Nagoya, both of Japan, assignors to Tokai Rubber Industries, Inc., Japan

Continuation of Ser. No. 993,028, Dec. 18, 1992, abandoned. This application Jul. 5, 1994, Ser. No. 270,796

Claims priority, application Japan, Dec. 27, 1991, 3-360712; Mar. 14, 1992, 4-089819; Mar. 31, 1992, 4-108684; Mar. 31, 1992, 4-108687

Int. Cl.⁶ B32B *27/08*

U.S. Cl. 428—475.5 **22 Claims**



1. A partition member for a hydraulic accumulator that divides an interior of a shell of the accumulator into two sections that provide a gas chamber and a liquid chamber, respectively, said partition member comprising:

an integrally laminated composite portion comprising two adjacent layers that consist of (i) a gas-barrier layer consisting of a copolymer of ethylene and vinyl alcohol, and (ii) an elastic layer consisting essentially of a polyamide resin and a polyolefin material, said polyamide resin being present in an amount of at least 50% by weight of said elastic layer and being selected from the group consisting of nylon 6, nylon 66, nylon 6-10 and nylon 6-12, and said polyolefin material being present to prevent the copolymer of ethylene and vinyl alcohol in said gas-barrier layer from absorbing an aqueous hydraulic fluid component as opposed to an elastic layer without said polyolefin material; and

a rubber layer bonded to each of opposite outer surfaces of said integrally laminated composite portion.

5,618,630

CROSS-LAMINATED MULTILAYER FILM STRUCTURE FOR USE IN THE PRODUCTION OF BANKNOTES OR THE LIKE

Gordon L. Benoit, Victor, and Rudolph VanderVelden, Macedon, both of N.Y., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation of Ser. No. 266,916, Jun. 27, 1994, abandoned. This application Feb. 15, 1996, Ser. No. 601,886

Int. Cl.⁶ B32B *9/00*

U.S. Cl. 428—500 **14 Claims**

1. A laminated multilayer film substrate comprising:

(a) an imbalanced biaxially oriented first layer comprising at least about 50 weight percent of a high density polyethylene having a density of at least about 0.95, said first layer oriented in at least a first direction to a degree which is at least three times greater than the degree of orientation present in a direction substantially normal to said first direction; and

(b) an imbalanced biaxially oriented second layer comprising at least about 50 weight percent of a high density polyethylene having a density of at least about 0.95, said second layer oriented in at least a first direction to a degree which is at least three times greater than the degree of orientation present in a direction substantially normal to said first direction;

wherein said second layer is laminated to the film substrate so that said first direction of orientation of said second layer is

substantially normal to said first direction of orientation of said first layer and wherein (a) further comprises a coextruded propylene copolymer skin on its inner side.

5,618,631

SILICONE RUBBER/EPOXY RESIN INTEGRAL COMPOSITE AND METHOD FOR MAKING

Noriyuki Meguriya, and Takeo Yoshida, both of Usui-gun, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Mar. 24, 1995, Ser. No. 409,591

Claims priority, application Japan, Mar. 25, 1994, 6-079819

Int. Cl.⁶ B32B *27/38*

U.S. Cl. 428—513 **11 Claims**

1. An integral composite comprising an organic peroxide-cured or addition reaction-cured silicone rubber part and a cured epoxy resin part, said cured epoxy resin part being obtained by curing an epoxy resin composition predominantly comprising

(A) 100 parts by weight of an epoxy resin,

(B) 0.001 to 10 parts by weight based on 100 parts by weight of the epoxy resin of an aluminum compound,

(C) 0.1 to 25 parts by weight based on 100 parts by weight of the epoxy resin of an organosilane or organopolysiloxane containing in a molecule at least one silanol group represented by the following general formula (3):

$$R_m^3(HO)_nSiO_{(4-m-n)/2} \qquad (3)$$

wherein R^3 is a halo-, cyano-, trimethylsilyl-, trialkoxysilyl- or epoxy-substituted or unsubstituted monovalent hydrocarbon group having 1 to 20 carbon atoms, letter m is $0<m\leqq 3$, letter n is $0<n\leqq 3$, and the sum of m and n is 1.5 to 4, and

(D) 0.2 to 25 parts by weight based on 100 parts by weight of the epoxy resin of an organohydrogenpolysiloxane containing in a molecule at least one hydrogen atom bonded to a silicon atom and at least one trialkoxysilyl functional or epoxy functional group represented by the following general formula (4):

$$R_p^4H_qSiO_{(4-p-q)/2} \qquad (4)$$

wherein R^4 is a trialkoxysilyl- or epoxy-substituted or unsubstituted monovalent hydrocarbon group having 1 to 10 carbon atoms, letter p is $0<p<3$, letter q is $0<q<3$, and the sum of p and q is 1.5 to 2.6.

5,618,632

METHOD OF FORMING A STRENGTHENED BOND IN A PAPERBOARD PRODUCT AND PRODUCTS THEREFROM

R. Kenneth Watkins, McDonough; James W. Wright, Woodstock, both of Ga., and William J. Culhane, Chillicothe, Ohio, assignors to The Mead Corporation, Dayton, Ohio

Division of Ser. No. 195,973, Feb. 14, 1994, Pat. No. 5,458,723, which is a continuation of Ser. No. 791,083, Nov. 12, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 474,370

Int. Cl.⁶ B32B *29/00;23/06;27/10*

U.S. Cl. 428—537.5 **11 Claims**

1. A paperboard product having a strengthened glue joint between opposed first and second paperboard surfaces, comprising:

(a) a first paperboard surface having a first bonding portion;

(b) a second paperboard surface having a second bonding portion in opposed and overlapping relationship to the first paperboard bonding portion;

(c) a strengthened glue joint bonding the first paperboard bonding portion to the second paperboard bonding portion, wherein the glue joint comprises:

(i) an emulsion copolymer strengthening adhesive, wherein the strengthening adhesive comprises a styrene-butadiene latex adhesive or a modified styrene-butadiene latex adhesive and wherein the viscosity of the strengthening adhesive is less than 1000 centipoise; and

(ii) a green-strength adhesive, wherein the green strength adhesive does not substantially overlap the strengthening adhesive.

5,618,633

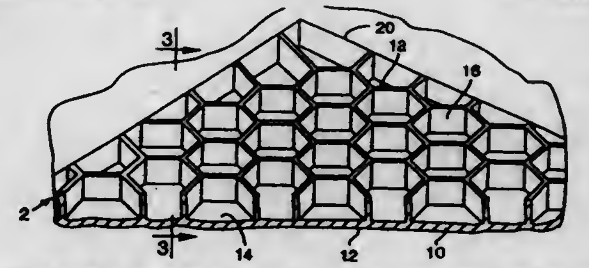
HONEYCOMB CASTING

Roger A. Swanson, Gladstone; Terry M. Nelson, West Linn; James R. Barrett, Milwaukie, and Laxmappa Hosamani, Beaverton, all of Oreg., assignors to Precision Castparts Corporation, Portland, Oreg.

Filed Jul. 12, 1994, Ser. No. 274,171

Int. Cl.⁶ B32B *3/12;* **E04C** *2/30*

U.S. Cl. 428—593 **12 Claims**



1. A metal investment casting of a high-temperature superalloy, the casting comprising:

a base having a thickness of 5 mm or less; and

plural walls integral with the base, the walls having a substantially uniform thickness and forming a honeycomb structure, the walls projecting outwardly in a first direction from at least a portion of the base, the honeycomb structure being open opposite to the base, the plural walls having a thickness of from about 0.3 mm to about 3.2 mm.

5,618,634

COMPOSITE ZINC- OR ZINC ALLOY-ELECTROPLATED METAL SHEET AND METHOD FOR THE PRODUCTION THEREOF

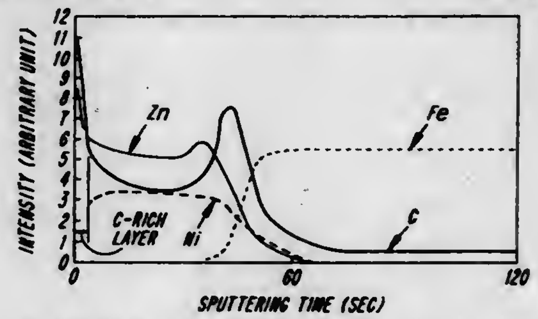
Yasushi Hosoda, Amagasaki; Masanari Kimoto, Kobe; Shinya Hikino, Wakayama; Tsutomu Yoshida, Amagasaki, and Kiyoyuki Fukui, Kobe, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Jun. 23, 1994, Ser. No. 264,291

Claims priority, application Japan, Jun. 23, 1993, 5-176191; Jul. 6, 1993, 5-167094

Int. Cl.⁶ B32B *15/18;15/08;* **C25D** *3/22*

U.S. Cl. 428—610 **24 Claims**



1. A method for producing a composite zinc or zinc alloy electroplated metal sheet comprising subjecting a metal sheet to electroplating with zinc or a zinc alloy in a plating solution which contains at least one organic compound selected from the group consisting of alkynes, alkynols, amines and salts thereof, thio compounds, heterocyclic compounds, and aromatic carboxylic acids and salts thereof in an amount in the range of 0.001–10 wt % to form, on at least one surface of the metal sheet, a composite zinc

or zinc alloy plated coating having a coating weight of 0.5-200 g/m^2 and containing 0.001-10 wt % of co-deposited carbon, the composite zinc alloy plated coating having a carbon-rich surface layer wherein the carbon content is higher than the rest of the plating, the electroplating being performed by using a pulse current having an off-time of 1 msec to 1 second and a duty factor of at least 0.5 or a superimposed AC current having a frequency of 1-100 Hz and a current variation peak of ±1% to ±50%.

5,618,635

MACROCOMPOSITE BODIES

Marc S. Newkirk, Newark, Del.; Danny R. White, Elkton, Md.; Christopher R. Kennedy, Newark; Alan S. Nagelberg, Wilmington, both of Del.; Michael K. Aghajanian, Bel Air, Md., and Robert J. Wiener, Newark, Del., assignors to Lanxide Technology Company, LP, Newark, Del.

Continuation of Ser. No. 197,225, Feb. 16, 1994, abandoned, which is a continuation of Ser. No. 966,124, Oct. 23, 1992, abandoned, which is a continuation of Ser. No. 747,213, Aug. 19, 1991, abandoned, which is a continuation of Ser. No. 269,464, Nov. 10, 1988, Pat. No. 5,040,588. This application Mar. 27, 1995, Ser. No. 411,055

Int. Cl.^{6} C22C *1/09;1/10*

U.S. Cl. 428—614 **9 Claims**

1. An article comprising:

an aluminum metal matrix composite body comprising a matrix consisting essentially of a body of metal comprising aluminum, said matrix having embedded therein throughout its bulk (1) a plurality of discrete bodies of at least one ceramic filler material and (2) aluminum nitride, at least some of said aluminum nitride characterized as discrete, discontinuous bodies each contacted by only said matrix metal and at least some other of said aluminum nitride characterized as a surface layer covering at least a portion of said at least one ceramic filler material; and

at least one second or additional body, said at least one second or additional body comprising at least one body selected from the group consisting of ceramic bodies, ceramic matrix composite bodies, and metal matrix composite bodies, and said at least one second or additional body being integrally attached or bonded to said metal matrix composite body at least partially along an interface between said metal matrix composite body and said at least one second or additional body, wherein said at least one second or additional body maintains said aluminum metal matrix composite body under compression.

5,618,636

THIN FILM MULTI-LAYER STRUCTURE AND METHOD FOR MANUFACTURING THE SAME

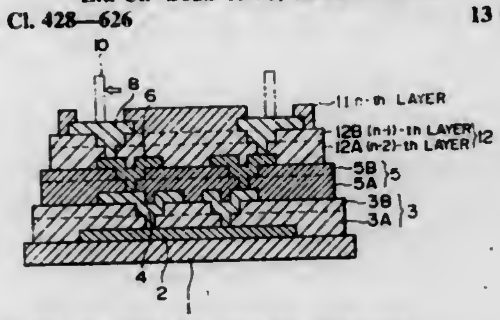
Manabu Watanabe, and Kazuaki Satoh, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 16, 1995, Ser. No. 404,881

Claims priority, application Japan, Mar. 18, 1994, 6-048751

Int. Cl.^{6} B32B *15/08;* **H05K** *1/03:3/46*

U.S. Cl. 428—626 **13 Claims**



1. A thin film multi-layer structure comprising:

a plurality of metal thin film layers; and

a plurality of layers made of polyimide, said plurality of metal thin film layers and said plurality of layers made of polyimide being stacked together in a stacked structure, said plurality of layers made of polyimide being grouped into a first group and a second group including at least a layer located at a top of said plurality of layers, wherein a Young's modulus value of the polyimide of which each layer in said second group is made is less than that of the polyimide of which each layer in said first group is made and a thermal expansion coefficient of the polyimide of which each layer in said first group is made is less than that of the polyimide of which each layer in said second group is made.

5,618,637

MAGNETIC RECORDING MEDIUM

Kiminori Tamai, and Takashi Handa, both of Nagano, Japan, assignors to TDK Corporation, Tokyo, Japan

Continuation of Ser. No. 981,312, Nov. 25, 1992, abandoned. This application Mar. 21, 1995, Ser. No. 408,106

Claims priority, application Japan, Nov. 25, 1991, 3-335646; Dec. 28, 1991, 3-360326

Int. Cl.^{6} G11B *5/66*

U.S. Cl. 428—694 B **19 Claims**

1. A magnetic recording medium, comprising a non-magnetic and a magnetic layer thereon, said magnetic layer containing a magnetic powder having a carbon base surface, a fatty acid of about 10 to 20 carbon atoms and a binder resin, said binder resin having amino group- or ammonium salt group-containing side chains or both.

5,618,638

OPTICAL MAGNETIC RECORDING MEDIUM

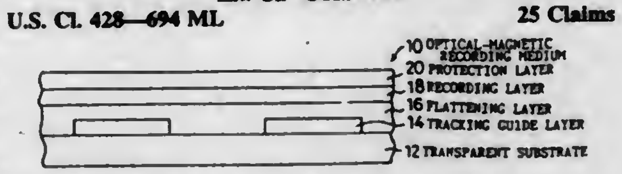
Kazunari Taki, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Continuation of Ser. No. 631,402, Dec. 21, 1990, abandoned. This application Jun. 4, 1993, Ser. No. 71,617

Claims priority, application Japan, Jan. 29, 1990, 2-18174

Int. Cl.^{6} G11B *5/66*

U.S. Cl. 428—694 ML **25 Claims**



1. A magneto-optical recording device, comprising:

a substrate;

a tracking guide layer formed over the substrate and formed of a first magnetic material having a compensation temperature T_{cp}, and a Curie temperature T_{c2}, the tracking guide layer comprising multiple guide regions formed of the first magnetic material, the multiple guide regions being horizontally spaced from each other such that gaps are defined between adjoining guide regions, the gaps being devoid of the first magnetic material; and

a recording layer formed over the tracking guide layer and formed of a second magnetic material having a Curie temperature T_{c1}, the recording layer including multiple recording regions horizontally spaced from each other such that non-recording regions are defined between adjoining recording regions, a guide region of the tracking guide layer being disposed below each non-recording region, and a gap of the tracking guide layer being disposed below each recording region;

wherein the compensation temperature T_{cp} is below the Curie temperature T_{c1} and the Curie temperature T_{c1} is below the Curie temperature T_{c2}.

5,618,639

MAGNETIC RECORDING MEDIUM AND MAGNETIC RECORDING APPARATUS

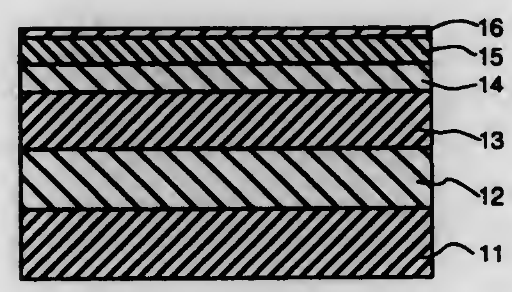
Tomoyuki Ohno, Hiratsuka; Yoshihiro Shiroishi, Hachiouji; Yotsuo Yahisa; Akira Osaki, both of Odawara, and Yuichi Ootani, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 28, 1994, Ser. No. 266,644

Claims priority, application Japan, Jun. 28, 1993, 5-156701

Int. Cl.^{6} G11B *5/66;* **B05D** *5/12;* **C23C** *14/00*

U.S. Cl. 428—694 T **29 Claims**



1. A magnetic recording medium, comprising:

a non-magnetic substrate, a magnetic film formed on said non-magnetic substrate, said recording medium having an outermost lubricating layer of an organic polymer having molecules with interstices of not greater than 0.31 nm.

5,618,640

NONAQUEOUS SECONDARY BATTERY

Yoshio Idota; Masayuki Mishima; Yukio Miyaki; Tadahiko Kubota, and Tsutomu Miyasaka, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 20, 1994, Ser. No. 326,365

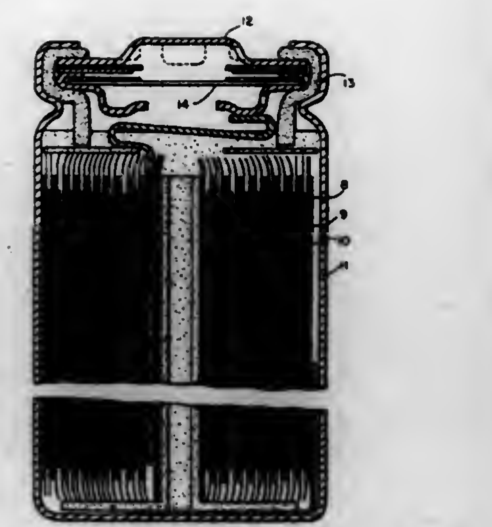
Claims priority, application Japan, Oct. 22, 1993, 5-264995; Jan. 27, 1994, 6-007760; Feb. 24, 1994, 6-026745; Feb. 28, 1994, 6-030206; Mar. 11, 1994, 6-066422

Int. Cl.^{6} H01M *6/14*

U.S. Cl. 429—194 **9 Claims**

1. A nonaqueous secondary battery comprising a positive electrode active material, a negative electrode active material, and a lithium salt, wherein said negative electrode active material mainly comprises a compound represented by formula (I):

$$M^1M^2_pM^4_q \qquad (I)$$



wherein M^1 and M^2, which are different from each other, each represent at least one of Si, Ge, Sn, Pb, P, B, Al, As, and Sb; M^4 represents at least one of O, S, Se, and Te; p represents a number of from 0.001 to 10; and q represents a number of from 1.00 to 50.

5,618,641

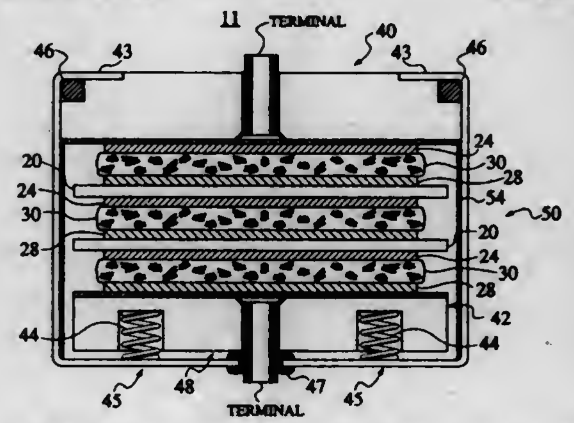
BIPOLAR BATTERY CONSTRUCTION

Jeffrey L. Arias, Downey, Calif., assignor to Bipolar Power Corporation, Whittier, Calif.

Filed Dec. 3, 1993, Ser. No. 161,970

Int. Cl.^{6} H01M *2/22*

U.S. Cl. 429—210 **17 Claims**



1. A lead-acid battery apparatus for producing electrical energy, comprising:

a battery stack including a plurality of bipolar cells, said battery stack being bounded at one end by a first end plate current collector and an opposite end by a second end plate current collector, said second end plate current collector being of opposite polarity to said first end plate current collector;

each of said plurality of bipolar cells including two bipolar plates, each having an upper surface, a lower surface, peripheral edges, and a thickness; said upper surface coated to an area adjacent said peripheral edges with a positive active material and said lower surface coated to adjacent said peripheral edges with a negative active material;

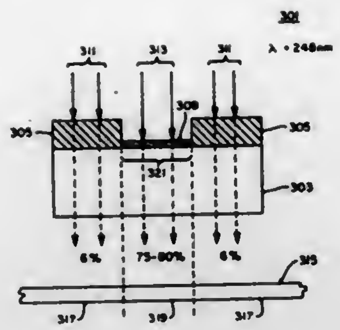
a separator including an absorbed electrolyte separating said positive active material from said negative active material, said peripheral edges defining an open cavity

each of said plurality of bipolar plates coated with an inhibitor which inhibits leakage current through said electrolyte bridging between any two of said plurality of bipolar cells generally adjacent;

a compression element having a plurality of threaded bolts, a plurality of calibrated springs and a plurality of threaded nuts,

a bead of each of said threaded bolts bearing on said first end plate and a grip of each one of said threaded bolts passing axially adjacent said battery stack and through one of said calibrated springs, a first end of said calibrated springs bearing on said second end plate in opposition to said bead and each of said nuts being threaded against a second end of each of said calibrated springs, creating the pressure by compressing said calibrated springs;
said compression element being disposed internally in said lead-acid battery apparatus, operating to apply a substantially uniform pressure on each one of said plurality of bipolar places and each said separator in each of said plurality of bipolar cells; and
a container having a gas-tight case which prevents escape of gas, vapor and liquid, operating to confine said battery stack and said compression element.

14. A bipolar battery apparatus, comprising:
a housing, defining internal surfaces with a gas-tight chamber, said housing also defining a first electrode area and a second electrode area;
a stack of bipolar battery elements, said bipolar battery elements including a plurality of bipolar battery assemblies, each including a bipolar plate, a positive active material, a separator material and a negative active material, a first surface of said stack bounded by a non-movable member which defines said first terminal and is electrically connected to said first terminal, said non-movable member being fixed relative to said housing such that it cannot move relative to said housing; and
a second biasing element, defining a surface which biases a second, opposite side of said battery plates, said second biasing element including a compression element which allows said second element to move relative to said housing, said second element pressing against said second surface by a predetermined amount to press said second surface relative to said non movable member.



5,618,642
BATTERY SEPARATOR WITH SODIUM SULFATE

Abbas Samii, Belmont, and Wai M. Choi, West Newton, both of Mass., assignors to Daramic, Inc., Cambridge, Mass.
Filed Jun. 6, 1995, Ser. No. 466,097
Int. Cl.[6] H01M *2/16*
U.S. Cl. 429—247 **15 Claims**

1. A battery separator comprising a microporous layer formed of a blend of polyolefin, silica and a processing aid, said silica having a sodium sulfate content of about 7–13 %.

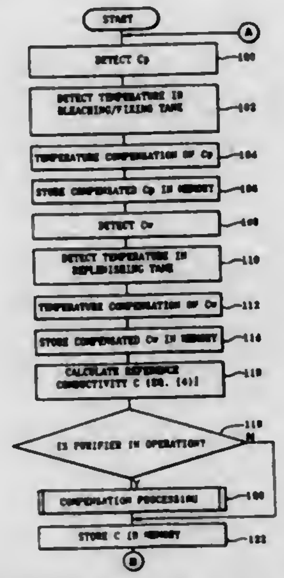
5,618,643
EMBEDDED PHASE SHIFTING MASK WITH IMPROVED RELATIVE ATTENUATED FILM TRANSMISSION

Giang T. Dao, Fremont, and Gang Liu, Santa Clara, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.
Filed Dec. 15, 1995, Ser. No. 573,526
Int. Cl.[6] G03F *9/00*
U.S. Cl. 430—5 **19 Claims**

1. A method of fabricating a mask for use in patterning a radiation sensitive layer in a lithographic printer comprising the steps of
providing a first region on a mask, the first region transmitting substantially all of the radiation incident thereon;
disposing a second region on the mask proximate to the first region, the second region substantially reducing the transmission of radiation incident thereon, wherein the radiation transmitted through the second region is phase shifted approximately 160 to 200 degrees relative to the radiation transmitted through the first region; and
reducing the transmission of radiation incident on the first region.

5,618,644
METHOD OF MONITORING WASHING WATER FOR A DEVELOPING PROCESS OF A PHOTOSENSITIVE MATERIAL

Satoshi Morita, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed May 18, 1995, Ser. No. 444,031
Claims priority, application Japan, May 25, 1994, 6-111436
Int. Cl.[6] G03C *5/00;3/00;11/00*
U.S. Cl. 430—30 **30 Claims**



1. A method of monitoring washing solution used in a developing process of a color silver halide photosensitive material, wherein washing solution stored in a washing tank, which is one of a plurality of processing tanks for processing the photosensitive material, is monitored so as to determine the degree of mixing of the washing solution with at least one processing solution, wherein said processing solution comprises at least one of a bleaching solution and a fixing solution, wherein mixing of the processing solution and washing solution occurs due to processing of the photosensitive material in at least one processing tank prior to processing in said washing tank, said method comprising the steps of:
(a) calculating, at at least one interval, a reference value for the washing solution in the washing tank in accordance with an equation based on the conductivity of the processing solution stored in the processing tank and the conductivity of replenishing solution for replenishing the washing tank, and storing the reference value in a memory means to update the reference value;
(b) measuring the conductivity of the washing solution in the washing tank at periodic intervals; and
(c) comparing the measured conductivity of the washing solution and the reference value to determine the degree of mixing of the processing solution in the washing solution in the washing tank.

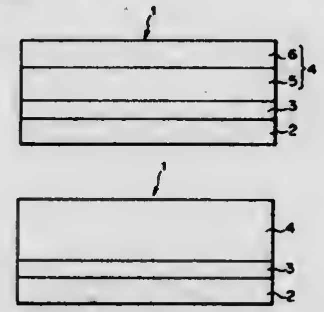
5,618,645
ELECTROPHOTOGRAPHIC PRINTING PLATE PRECURSOR

Junji Nakano; Nobuo Suganuma, and Hiromichi Tachikawa, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara, Japan
Filed Mar. 17, 1995, Ser. No. 405,784
Claims priority, application Japan, Apr. 12, 1994, 6-073478
Int. Cl.[6] G03G *5/00;13/28*
U.S. Cl. 430—56 **3 Claims**

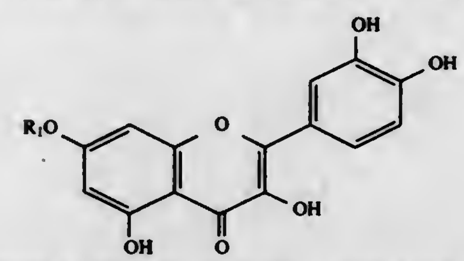
1. An electrophotographic printing plate precursor comprising a conductive support and a photoconductive layer, said photoconductive layer comprising (1) an organic photoconductive compound, (2) a binder resin which is dissolved or swelled in an alkaline solution and (3) an additive selected from the group consisting of phosphoric acid, monoalkyl phosphates, dialkyl phosphates, trialkyl phosphates, primary phosphates, secondary phosphates, phosphonic acid, phosphonic acid salts, phosphinic acid, phosphinic acid salts, polyphosphoric acids represented by the formula $H_{n+2}P_nO_{3n+1}$ wherein n=1–5, polyphosphates represented by the formula $M_{n+2}P_nO_{3n+1}$ wherein M is an alkali metal and n=1–3, diphosphonic acid, diphosphonic acid salts, metaphosphoric acids, compounds represented by formulae MPO_3, $M^2(PO_3)_2$ and $M^3(PO_3)_3$ wherein M is an alkali metal, M^2 is a divalent metal and M^3 is a trivalent metal, and mixtures thereof wherein a toner image can be formed on the photoconductive layer and non-image area of the photoconductive layer can be removed by an alkaline solution.

5,618,646
ELECTROPHOTOGRAPHIC PHOTORECEPTORS WITH ANTI-OXIDIZING AGENTS

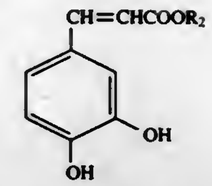
Sumitaka Nogami; Michihiro Kitazawa; Katsuhiro Sato, and Yoshimasa Tomiuchi, all of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan
Filed Jan. 11, 1996, Ser. No. 586,467
Claims priority, application Japan, Jan. 10, 1995, 7-001615; Feb. 17, 1995, 7-029050
Int. Cl.[6] G03G *5/047*
U.S. Cl. 430—59 **12 Claims**



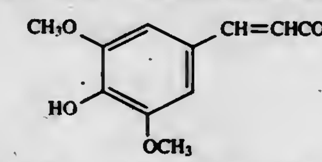
1. An electrophotographic photoreceptor, comprising:
a conductive substrate; and
a photosensitive layer formed on said conductive substrate,
wherein said photosensitive layer contains one compound selected from the group consisting of compounds respectively represented by formulae (I), (II), (III), (IV) , and (V);


(I)

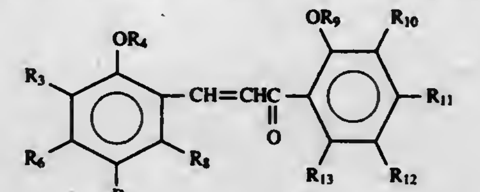
wherein R_1 stands for an atom or a group selected from the group consisting of a hydrogen atom, an alkyl group, an acyl group, and glycocyl group;


(II)

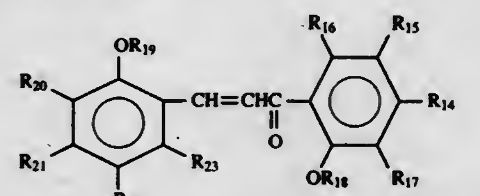
wherein R_2 stands for an atom or a group selected from the group consisting of a hydrogen atom, an alkyl group which may optionally have at least one substituent, and an aryl group which may optionally have at least one substituent;


(III)

wherein R_3 stands for an atom or a group selected from the group consisting of a hydrogen atom, an alkyl group which may optionally have at least one substituent, and an aryl group which may optionally have at least one substituent;


(IV)

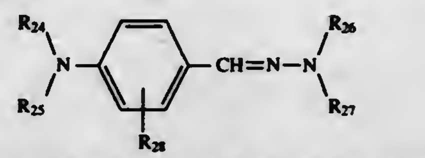
wherein each of R_4 to R_{13} stands for an atom or a group selected from the group consisting of a hydrogen atom, an alkyl group which may optionally have at least one substituent, and an aryl group which may optionally have at least one substituent; and


(V)

wherein each of R_{14} to R_{23} stands for an atom or a group selected from the group consisting of a hydrogen atom, an alkyl group, an alkoxy group, an aroyl group, and an aryl group, which may optionally have at least one substituent.

4. The electrophotographic photoreceptor as claimed in claim 1, wherein said photosensitive layer has a multi-layered structure having a charge generation layer comprising a charge generation material and a charge transport layer comprising a charge transport material.

11. The electrophotographic photoreceptor as claimed in claim 4,
wherein said change transport material is a hydrazone compound represented by formula (VI):


(VI)

where each of R_{24}, R_{25}, R_{26}, and R_{27} stands for a group selected from the group consisting of an alkyl group, an aralkyl group, and an aryl group, which may be substituted,
wherein R_{28} stands for an atom or a groups selected from the group consisting of a hydrogen atom, a halogen atom, an alkyl group, and an alkoxy group, and

wherein R_{24} and R_{25} may be bound together to form a ring. and R_{24} or R_{25} may be bound with R_{28} to form a ring.

5,618,647

MAGNETIC TONER AND IMAGE FORMING METHOD

Tsutomu Kukimoto; Yasuhide Goseki, both of Yokohama; Motoo Urawa, Funabashi; Masayoshi Shimamura, Yokohama; Keiji Okano, Tokyo; Keita Nozawa, Yokohama; Satoshi Yoshida, Tokyo, and Masaki Ojima, Inagi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 28, 1995, Ser. No. 520,558

Claims priority, application Japan, Sep. 2, 1994, 6-232544; Dec. 27, 1994, 6-336924; Dec. 27, 1994, 6-337035; Jun. 30, 1995, 7-186479

Int. Cl.⁶ G03G *9/083*

U.S. Cl. 430—106.6 **57 Claims**

1. A magnetic toner comprising magnetic toner particles containing a binder resin and a magnetic material, and an inorganic fine powder treated with an organic compound, wherein said magnetic toner has:

a volume average particle diameter D_v (μm) of 3 μm$\leqq D_v<$6 μm;

a weight average particle diameter D_4 (μm) of 3.5 μm$\leqq D_4<$6.5 μm;

a percentage M_r of particles with particle diameters of 5 μm or smaller in number particle size distribution of the magnetic toner, of 60% by number$<M_r\leqq$ 90% by number; and

a ratio of a percentage N_r of particles with particle diameters of 3.17 μm or smaller in number particle size distribution of the magnetic toner to a percentage N_v of particles with particle diameters of 3.17 μm or smaller in volume particle size distribution of the magnetic toner, N_r/N_v, of from 2.0 to 8.0.

5,618,648

TONER BINDER, TONER, ELECTROPHOTOGRAPHIC METHOD AND APPARATUS THEREFOR

Yuzo Horikoshi; Norio Sawatari; Takeshi Ogino, all of Kawasaki; Hiroaki Naito, Kato-gun; Makoto Koshi, Kawasaki; Kazuhiko Kido, Kawasaki; Takashi Yamamoto, Kawasaki; Eiji Sakurai, Kawasaki; Yoshimichi Katagiri, Kawasaki; Masatoshi Maruyama, Tokyo; Hidenori Nitta, Tokyo, and Sonoo Matsuoka, Tokyo, all of Japan, assignors to Fujitsu Limited, Kawasaki, and Nippon Carbide Industries, Co., Inc., Tokyo, both of Japan

Filed Jul. 12, 1995, Ser. No. 501,444

Claims priority, application Japan, Sep. 19, 1994, 6-223650

Int. Cl.⁶ G03G *9/087*

U.S. Cl. 430—109 **23 Claims**

1. A toner binder comprising a polyester resin comprising, as a constituent element, ethylene as a liner aliphatic hydrocarbon chain terminated by (i) an ether bond bonded to an aromatic group and/or (ii) an ester bond, in an amount of 1 to 5% by weight based on the total weight of the polyester resin.

5,618,649

STORAGE STABILITY OF A DIAZO-BASED IMAGING ELEMENT FOR MAKING A PRINTING PLATE

Joan Vermeersch, Deinze; Guido Hauquier, Nijlen, and Dirk Kokkelenberg, St. Niklaas, all of Belgium, assignors to AGFA-Gevaert, N.V., Mortsel, Belgium

Division of Ser. No. 267,508, Jun. 29, 1994, Pat. No. 5,543,261. This application May 6, 1996, Ser. No. 643,569

Claims priority, application European Pat. Off., Jul. 2, 1993, 93201934

Int. Cl.⁶ G03F *7/30;7/021*

U.S. Cl. 430—168 **4 Claims**

1. A method for making a lithographic printing plate comprising the steps of image-wise exposing an imaging element comprising on a hydrophilic support a light sensitive layer containing a diazo resin or a diazonium salt characterized in that said light sensitive layer contains pullulan wherein said hydrophilic support comprises a hydrophilic layer containing a hydrophilic (co) polymer or (co) polymer and having been hardened with a hydrolyzed tetraalkyl orthosilicate and subsequently developing a thus obtained image-wise exposed imaging dement by means of plain water.

5,618,650

IMAGING ELEMENT AND METHOD FOR MAKING A PRINTING PLATE ACCORDING TO THE SILVER SALT DIFFUSION TRANSFER

René De Keyzer, Waasmunster, and Jos Vaes, Betekom, both of Belgium, assignors to AGFA-Gevaert, N.V., Mortsel, Belgium

Filed Nov. 8, 1995, Ser. No. 554,653

Claims priority, application European Pat. Off., Nov. 29, 1994, 94203463

Int. Cl.⁶ G03C *8/28;* **G03F** *7/07*

U.S. Cl. 430—204 **8 Claims**

1. An imaging element comprising on a support a silver halide emulsion layer and an image receiving layer comprising physical development nuclei being in water permeable contact with said silver halide emulsion layer, characterized in that said image receiving layer comprises a colloidal clay selected from the group consisting of synthetic smectite clay and synthetic laponite clay.

5,618,651

IMAGING ELEMENT WITH A FLEXIBLE SUPPORT AND METHOD FOR MAKING A LITHOGRAPHIC PRINTING PLATE

Marc Stevens, Belsele; Johan Van Hunsel, Hasselt, and Jos Vaes, Betekom, all of Belgium, assignors to AGFA-Gevaert, N.V., Mortsel, Belgium

Continuation-in-part of Ser. No. 453,832, May 30, 1995, abandoned. This application Jan. 29, 1996, Ser. No. 593,452

Claims priority, application European Pat. Off., Aug. 22, 1994, 94202380

Int. Cl.⁶ G03F *7/07;* **G03C** *1/795;8/06;8/52*

U.S. Cl. 430—204 **6 Claims**

1. An imaging element having a flexible support and comprising on said support a photosensitive layer comprising a silver halide emulsion and an image-receiving layer comprising physical development nuclei, said layers being in water permeable contact with each other, characterized in that said flexible support is a biaxially oriented polyester film having Young-moduli of at least 9500N/mm² at least one of said Young-moduli being at least 5100N/mm², and a thickness between 0.15 mm and 0.35 mm and consisting of polyethylene 2,6-naphthalenedicarboxylate.

5,618,652

IMAGE FORMATION METHOD BY SILVER SALT DIFFUSION TRANSFER

Shinji Ueda; Hisashi Okada, and Kazumi Nii, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 14, 1996, Ser. No. 615,464

Claims priority, application Japan, Mar. 22, 1995, 7-062634

Int. Cl.⁶ G03C *8/36;8/06;5/305*

U.S. Cl. 430—250 **2 Claims**

1. An image formation method by silver salt diffusion transfer comprising:

subjecting a photosensitive element containing at least one photosensitive silver halide emulsion layer to image exposure, then

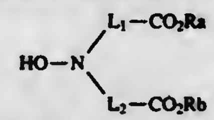
developing the photosensitive element by use of an alkali processing composition containing a solvent for a silver halide to

turn at least a part of unexposed silver halide of said photosensitive silver halide emulsion layer into a transferable silver complex salt,

transferring at least a part of said transferable complex salt to a silver precipitating nucleus-containing image receiving layer to form an image on said silver precipitating nucleus-containing image receiving layer, and

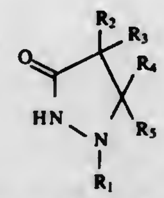
separating said silver precipitating nucleus-containing image receiving layer from said photosensitive element after image formation to obtain the image,

wherein said image is formed in the presence of at least one compound represented by the following formula (I-a) and at least one compound represented by the following formula (II):



(I-a)

wherein Ra and Rb each represents a hydrogen atom, an alkyl group or a cation; L_1 and L_2 each represents an alkylene group;



(II)

wherein R_I represents an aryl group; and R_2, R_3, R_4 and R_5 each represents a hydrogen atom, an alkyl group, an aryl group, an alkoxyl group or an aryloxy group.

5,618,653

KIT FOR PREPARING A PROCESSING LIQUID FOR USE IN THE PREPARATION OF A LITHOGRAPHIC PRINTING PLATE ACCORDING TO THE SILVER SALT DIFFUSION TRANSFER PROCESS

Jos Vaes, Betekom, and Renaat Ceulemans, Ranst, both of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

Filed Mar. 18, 1996, Ser. No. 617,385

Claims priority, application European Pat. Off., Mar. 21, 1995, 95200692

Int. Cl.⁶ G03C *5/50*

U.S. Cl. 430—250 **8 Claims**

1. A kit for preparing a processing liquid for use in the preparation of a lithographic printing plate according to the silver salt diffusion transfer process, and comprising all necessary active compounds for preparing said processing liquid, said active compounds including a hydrophobizing agent being provided on the surface of solid particles, said solid particles being soluble in said processing liquid.

5,618,654

PHOTO-CONTROLLED SPATIAL LIGHT MODULATOR

Hiroyuki Takei, Saitama-ken, and Norio Shimizu, Sayama, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

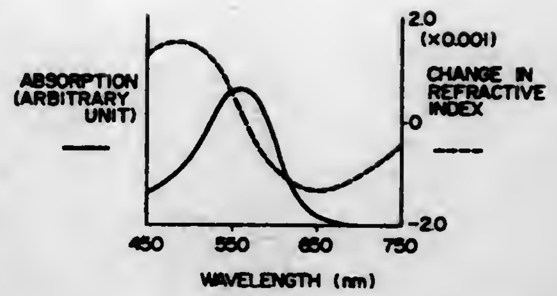
Filed Dec. 17, 1993, Ser. No. 168,171

Claims priority, application Japan, Dec. 24, 1992, 4-343809; Jun. 10, 1993, 5-138156

Int. Cl.⁶ G02F *1/01*

U.S. Cl. 430—347 **4 Claims**

1. A photo-controlled spatial modulator of a Fabry-Perot cavity construction having rhodopsin family protein inserted between two partially reflecting mirrors forming a two-dimension plane for coupling with a first light and a second light which are irradiated



on a substantially same position on a surface of the mirrors, wherein a transmission of said partially reflecting mirrors is selected to be 30% or more for the first light and a reflectivity of said partially reflecting mirrors is selected to be 50% or more for the second light so that a refractive index for the second light of said protein is changed by an irradiation and an absorption of the first light and wherein the wavelength of the second light has a value in a wavelength region which is not substantially affected by absorption in the protein.

5,618,655

PROCESS OF REDUCING TRACE LEVELS OF METAL IMPURITIES FROM RESIST COMPONENTS

James M. Davidson, Corydon, Ind., assignor to Olin Corporation, Norwalk, Conn.

Filed Jul. 17, 1995, Ser. No. 503,364

Int. Cl.⁶ C08F *6/00*

U.S. Cl. 430—347 **8 Claims**

1. A process of removing trace metal impurities from an impure resist component solution comprising the steps of:

(1) forming an impure resist component solution containing trace amounts of dissolved metallic impurities, the resist component solvent selected from the group consisting of ethyl lactate, ethyl 3-ethoxypropionate, methyl 3-methoxypropionate, propylene glycol methyl ethyl acetate, and mixtures thereof;

(2) contacting said impure resist component solution with a mixture of cyclohexane and isopropyl acetate and with an aqueous acidic solution for a sufficient amount of time to form a first two-phase reaction mixture comprising a first aqueous phase containing metallic impurities extracted from said impure resist component solution and a first organic phase containing said resist component solution with a reduced amount of trace metal impurities, wherein the ratio of cyclohexane:isopropyl acetate is from about 80:20 to about 20:80 parts by weight;

(3) separating said first aqueous phase from said first organic phase;

(4) contacting said first organic phase with a mixture of water and the resist component solvent as defined in step (1) for a sufficient amount of time to form a second two-phase reaction mixture comprising a second aqueous phase containing metallic impurities extracted from said first organic phase and a second organic phase containing said resist component solution with further reduced amount of trace metal impurities;

(5) separating said second aqueous phase from said second organic phase; and

(6) removing said cyclohexane and said isopropyl acetate from said second organic phase, thereby forming a purer resist component solution.

5,618,656

METHOD OF PROCESSING ORIGINATING AND DISPLAY PHOTOGRAPHIC ELEMENTS USING COMMON PROCESSING SOLUTIONS

Richard P. Szajewski, and John M. Buchanan, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 35,347, Mar. 22, 1993, Pat. No. 5,443,943. This application Apr. 20, 1995, Ser. No. 425,522

Int. Cl.[6] G03C *7/00;1/005;1/999;5/18*

U.S. Cl. 430—393 57 Claims

1. A method of processing an exposed originating color silver halide photographic element and its counterpart exposed display color silver halide photographic element comprising:

the steps of developing using a first developing solution and desilvering, by blixing with a first blixing solution or bleaching and fixing using first bleaching and first fixing solutions, the originating silver halide photographic element, and

the steps of developing using a second developing solution and desilvering, by blixing with a second blixing solution or bleaching and fixing with second bleaching and second fixing solutions, the display silver halide photographic element;

wherein the originating silver halide photographic element comprises a radiation sensitive emulsion containing a silver halide grain population comprised of at least 50 mole percent silver chloride, based on total silver forming the grain population projected area, wherein at least 50 percent of total grain projected area is accounted for by intrinsically stable tabular silver halide grains

(1) bounded by {100} major faces having adjacent edge ratios of less than 10 and

(2) having an aspect ratio of at least 2, and wherein the silver halide content of the photographic element comprises at least 50 mole % silver chloride and no more than 2 mole % silver iodide;

wherein the silver halide content of the display silver halide photographic element comprises at least 50 mole % silver chloride and no more than 2 mole % silver iodide;

wherein said originating silver halide photographic element comprises a development inhibitor or development inhibitor releasing compound that forms a development inhibitor upon release, said development inhibitor or released development inhibitor comprising a heterocyclic nitrogen as a silver binding group; or said originating element comprises a bleach accelerator releasing compound; and

wherein one or more of the corresponding first and second developing, blixing, or bleaching and fixing solutions used for the originating and display photographic elements have substantially the same chemical compositions.

5,618,657

PHOTOGRAPHIC SILVER HALIDE ELEMENT HAVING POLYESTER SUPPORT AND EXHIBITING IMPROVED WET ADHESION

John B. Rieger; Paul L. Zengerle, both of Rochester, and John W. Boettcher, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb, 17, 1995, Ser. No. 390,846

Int. Cl.[6] G03C *5/26;1/04;1/38*

U.S. Cl. 430—434 30 Claims

1. A photographic element comprising a polyester support bearing a light-sensitive silver halide photographic emulsion layer, the support having adjacent thereto a polymer-containing subbing layer, the subbing layer having adjacent thereto a layer comprising a hydrophilic binder containing dispersed droplets of a selected high boiling organic liquid, said liquid being selected from the group consisting of oleyl alcohol and esters of organic or inorganic acids which have a value for the logarithm of their octanol/water partition coefficient (Log P) of from 2.6 to 6.7 wherein the wt. ratio of hydrophilic binder to total organic liquid in the hydrophilic binder layer is at least 3 to 1.

21. A process for forming an image after image-wise exposing the photographic element of claim 1 to light, comprising contacting the element with a developing agent.

5,618,658

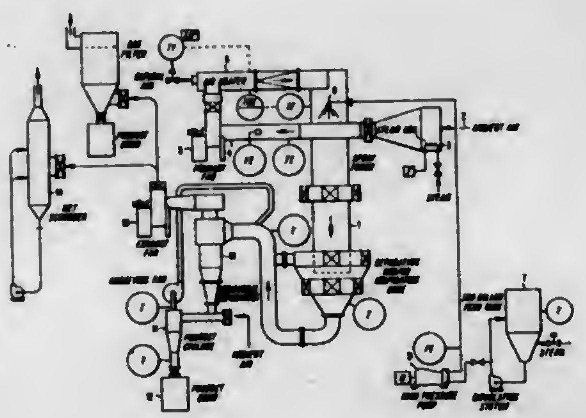
PROCESS FOR PRODUCING AN AMMONIUM THIOSULFATE PRODUCT

Malcolm S. Penman, Gurnee, Ill.; Edward C. Saunders, Oakland, and Peter R. Wardle, Wanaque, both of N.J., assignors to Fuji Hunt Photographic Chemicals, Inc., Paramus, N.J.

Division of Ser. No. 394,167, Feb. 22, 1995, abandoned. This application Aug. 28, 1995, Ser. No. 520,212

Int. Cl.[6] G03C *5/38*

U.S. Cl. 430—455 16 Claims



1. A process for producing an ammonium thiosulfate containing product comprising:

(a) providing an aqueous solution containing ammonium thiosulfate and:

(i) at least one carbonate component selected from among ammonium carbonate or bicarbonate, an alkali metal carbonate or bicarbonate, or an alkaline earth metal carbonate or bicarbonate; and

(ii) at least one sulfite component selected from among ammonium sulfite or bisulfite, alkali metal sulfite or bisulfite, and alkaline earth metal sulfite or bisulfite; and

(b) spray drying the solution wherein the amount of the carbonate component (i) is not less than about 0.5% by weight, the amount of the sulfite component (ii) is not less than 0.5% by weight and the amounts of the carbonate component (i) and sulfite component (ii) are selected so as to obtain a product that contains less than 0.02% by weight of sulfur.

5,618,659

PHOTOGRAPHIC ELEMENT CONTAINING A NITROGEN GLOW-DISCHARGE TREATED POLYESTER SUBSTRATE

Jeremy M. Grace; Janglin Chen, both of Rochester; Louis J. Gerenser, Webster, and David A. Glocker, West Henrietta, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 396,838, Mar. 1, 1995, Pat. No. 5,538,841. This application Feb. 14, 1996, Ser. No. 599,884

Int. Cl.[6] G03C *1/76*

U.S. Cl. 430—523 3 Claims

1. A photographic element comprising:

a polyester substrate having a surface approximately 5.0 nm thick, the surface including nitrogen from about 7.0 atomic percent to about 15 atomic percent wherein the nitrogen is in the form of imine, secondary amine and primary amine groups in a ratio of about 1:1:2, and

a photographic emulsion applied to the polyester support.

5,618,660

SILVER HALIDE PHOTOGRAPHIC MATERIAL AND METHOD FOR PROCESSING THE SAME

Itsuo Fujiwara, and Tadashi Ito, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

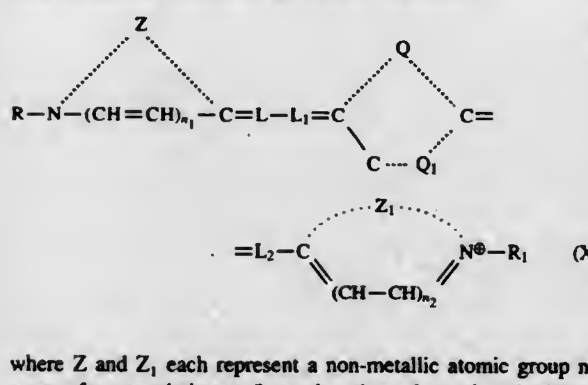
Continuation of Ser. No. 179,228, Jan. 10, 1994, abandoned, which is a continuation of Ser. No. 990,257, Dec. 14, 1992, abandoned. This application Mar. 9, 1995, Ser. No. 401,295

Claims priority, application Japan, Dec. 12, 1991, 3-350667

Int. Cl.[6] G03C *1/035;1/09;1/12*

U.S. Cl. 430—567 10 Claims

1. A silver halide photographic material for laser exposure comprising a support having thereon at least one light-sensitive silver halide emulsion layer comprising a silver halide emulsion containing cubic silver chlorobromide grains having a silver chloride content of from 5 to 50 mol %, wherein the cubic silver chlorobromide grains have been prepared in the presence of an iridium metal dopant, and wherein the silver halide emulsion is spectrally sensitized with a spectral sensitizing dye selected from the group consisting of compounds represented by formulae (I), (II) and (III) and the silver halide emulsion is chemically sensitized with a selenium compound and a gold compound:



(I)

where Z and Z_1 each represent a non-metallic atomic group necessary for completing a 5-membered or 6-membered nitrogen-containing heterocyclic nucleus;

R and R_1 each represent an alkyl group or an aryl group;

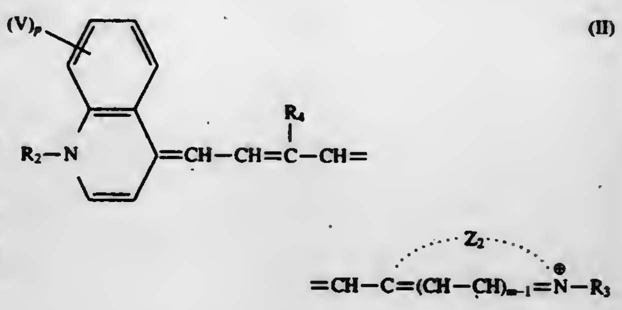
Q and Q_1 together represent a non-metallic atomic group necessary for completing a 4-thiazolidinone, 5-thiazolidinone or 4-imidazolidinone nucleus;

L, L_1 and L_2 each represent a methine group;

n_1 and n_2 each represent 0 or 1;

X represents an anion; and

ι represents 0 or 1, and when the compound forms an internal salt, then ι is 0:



(II)

where R_2 and R_3 may be the same as or different from each other and each represent an alkyl group;

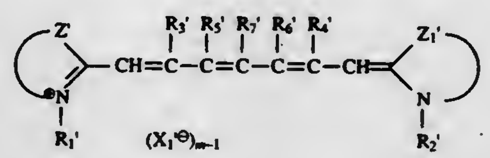
R_4 represents a hydrogen atom, an alkyl group having from 1 to 4 carbon atoms, an alkoxy group having from 1 to 4 carbon atoms, a phenyl group, a benzyl group or a phenethyl group;

V represents a hydrogen atom, an alkyl group having from 1 to 4 carbon atoms, an alkoxy group, or a halogen atom;

Z_2 represents a non-metallic atomic group necessary for completing a 5-membered or 6-membered nitrogen-containing hetero ring;

X_1 represents an acid anion; and

m, p and q independently represent 1 or 2, provided that when the compound forms an internal salt, then q is 1:



(III)

where R_1' and R_2' may be the same as or different from each other and each represent an alkyl group;

R_3' and R_4' independently represent a hydrogen atom, an alkyl group having from 1 to 4 carbon atoms, an alkoxy group having from 1 to 4 carbon atoms, a phenyl group, a benzyl group or a phenethyl group;

R_5' and R_6' each represent a hydrogen atom, or R_5' and R_6' are bonded to each other to form a divalent alkylene group;

R_7' represents a hydrogen atom, an alkyl group having from 1 to 4 carbon atoms, an alkoxy group having from 1 to 4 carbon atoms, a phenyl group, a benzyl group, or —$NW_1'(W_2')$ in which W_1' and W_2' independently represent an alkyl group or an aryl group or W_1' and W_2' may be bonded to each other to form a 5-membered or 6-membered nitrogen-containing hetero ring;

R_3' and R_7', or R_4' and R_7' may be bonded to each other to form a divalent alkylene group;

Z' and Z_1' independently represent a non-metallic atomic group necessary for forming a 5-membered or 6-membered nitrogen-containing hetero ring;

X_1' represents an acid anion; and

m' represents 1 or 2, provided that when the dye forms an internal salt, then m' is 1;

wherein the silver halide emulsion of the at least one light-sensitive silver halide emulsion layer is coated in an amount of silver of 2.8 g/m² or less based on one surface side of the support, and further the same surface side of the support is coated with gelatin in a total amount of gelatin of 4 g/m² or less.

5,618,661

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL AND PROCESSING METHOD THEREFOR

Takeshi Sampei, Hino, Japan, assignor to Konica Corporation, Japan

Filed Oct. 31, 1995, Ser. No. 550,843

Claims priority, application Japan, Nov. 18, 1994, 6-285298

Int. Cl.⁶ G03C *3/00*

U.S. Cl. 430—398 **19 Claims**

1. A method for processing a silver halide photographic light-sensitive material by an automatic processor comprising the steps of

imagewise exposing a sivlver halide photographic light-sensitive material to light

developing said imagewise exposed silver halide photographic light-sensitive material with a developer being in a developing tank of said automatic processor while replenishing a developer replenisher in a rate of from 50 ml to 330 ml per square meter of the light-sensitive material and

fixing said developed silver halide photographic light-sensitive material with a fixer being in a fixing tank of said automatic processor while replenishing a fixer replenisher in a rate of from 50 ml to 330 ml per square meter of the light-sensitive material,

wherein said silver halide photographic light-sensitive material comprises a support and at least one silver halide emulsion layer provided on a surface of a support which is a stretched film composed of a styrene copolymer having a syndiotactic structure or a composition containing said styrene copolymer.

5,618,662

INTRAVENOUS ADMINISTRATION OF PSORALEN

Lily Lin, Berkeley, and Laurence Corash, San Francisco, both of Calif., assignors to Cerus Corporation, Concord, Calif.

Continuation-in-part of Ser. No. 72,485, Jun. 2, 1993, Pat. No. 5,459,030, which is a continuation-in-part of Ser. No. 926,477, Aug. 7, 1992, abandoned, which is a continuation-in-part of Ser. No. 844,790, Mar. 2, 1992, Pat. No. 5,288,605. This application Jan. 21, 1994, Ser. No. 184,016

The portion of the term of this patent subsequent to Feb. 22, 2011, has been disclaimed.

Int. Cl.⁶ A01N *1/02;* C12N *13/00;* A61K *35/14*

U.S. Cl. 435—2 **5 Claims**

1. A method of intravenous administration of a pooled treated platelet preparation, comprising:

a) providing, in any order, i) a patient having a body weight measured in kilograms, ii) a plurality of random donor platelet bags between four and eight in number containing approximately three hundred milliliters of platelet rich plasma, iii) an aqueous salt solution comprising 8-methoxypsoralen, and iv) means for activating said 8-methoxypsoralen;

b) centrifuging said platelet bags to concentrate said platelets and create platelet poor plasma;

c) removing a portion of said platelet poor plasma and adding said aqueous salt solution to each of said bags such that said platelets are resuspended in a mixture having a residual plasma concentration between approximately eight and twenty-five percent by volume and having a concentration of approximately five micrograms of 8-methoxypsoralen per milliliter; and

d) activating said 8-methoxypsoralen in said mixture in each of said bags with said means for activating said 8-methoxypsoralen, without causing significant damage to said platelets, to create a plurality of treated platelet preparations;

e) storing said plurality of treated platelet preparations at approximately room temperature;

f) pooling said plurality of treated platelet preparations to create a pooled treated platelet preparation for intravenous infusion; and

g) administering said pooled treated platelet preparation by intravenous infusion to said patient at a rate of between approximately 1.0 and 10 milliliters per kilogram per hour.

5,618,663

DEVICE FOR PRODUCING A SUPERNATANT OF ACTIVATED THROMBOCYTES, METHOD FOR IMPLEMENTING THE DEVICE AND SUPERNATANT OBTAINED

Olivier Delmas, 14, rue Bellevue, 37250 Montbazon, France, assignor to Inoteb, St. Gonnery, and Olivier Delmas, Montbazon, both of France

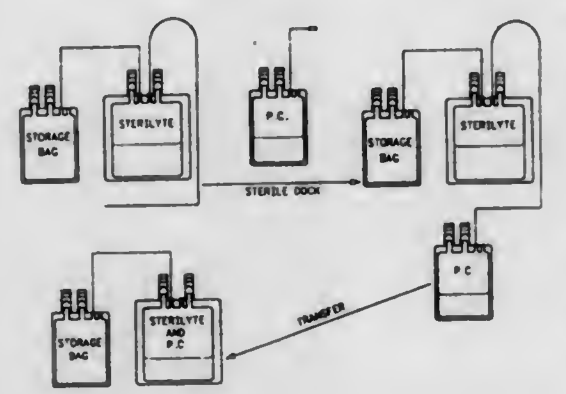
PCT No. PCT/FR93/00544, § 371 Date Jan. 13, 1995, § 102(e) Date Jan. 13, 1995, PCT Pub. No. WO93/25215, PCT Pub. Date Dec. 23, 1993

PCT Filed Jun. 7, 1993, Ser. No. 343,605

Claims priority, application France, Jun. 5, 1992, 92 06826

Int. Cl.⁶ A01N *1/02*

U.S. Cl. 435—2 **6 Claims**



1. A method for obtaining a solution of platelet factors comprising:

activating thrombocytes by contacting the thrombocytes with a thrombocyte activator solution; and

collecting platelet factors released by the thrombocytes as a result of said activating,

wherein a liquid containing a suspension of thrombocytes is passed through a filter capable of retaining the thrombocytes, the activator solution is contacted with the thrombocytes retained on the filter and a filtrate containing the platelet factors in solution is separated by filtration while the thrombocytes remain retained on the filter.

5,618,664

PROCESS FOR SIMULTANEOUSLY DISINFECTING AND FIXING BIOLOGICAL FLUIDS

Ann A. Kiessling, 53 Concord Rd., Bedford, Mass. 01730

Continuation of Ser. No. 147,022, Nov. 2, 1993, abandoned. This application Mar. 21, 1995, Ser. No. 408,137

Claims priority, application United Kingdom, Nov. 3, 1992, 9223035

Int. Cl.⁶ A01N *1/02;35/00;* A61L *2/00;* C12Q *1/22*

U.S. Cl. 435—2 **26 Claims**

1. A method for processing a biological fluid sample containing red blood cells and leukocytes, the method comprising:

(a) contacting the biological fluid sample with an amount of a hypoosmolar fixative solution that is sufficient to simultaneously

(I) disinfect the biological fluid sample,

(ii) fix the biological fluid sample to form a fixed specimen comprising a suspension of fixed leukocytes and fixed non-cellular components, and

(iii) lyse the red blood cells,

wherein the fixative solution contains between about 2% and about 10% of a fixative selected from the group consisting of glutaraldehyde, paraformaldehyde and formaldehyde.

5,618,665

ENZYMATIC FLUOROMETRIC ASSAY FOR ADENYLATE CYCLASE

Keith G. Lurie, Minneapolis, Minn.; Phi Wiegn, Valhalla, N.Y., and Atsushi Sugiyama, Isawa-cho, Japan, assignors to Regents of the University of Minnesota, Minneapolis, Minn.

Continuation-in-part of Ser. No. 7,847, Jan. 22, 1993, Pat. No. 5,316,907. This application Jan. 21, 1994, Ser. No. 184,040

Int. Cl.⁶ C12Q *1/00*

U.S. Cl. 435—4 **16 Claims**

1. A method of measuring an amount of adenylate cyclase (AC) in a sample of physiological material comprising:

(a) combining a sample of physiological material comprising (i) cAMP produced by endogenous AC, (ii) other endogenous adenine nucleotides selected from the group consisting of ATP, AMP, ADP and mixtures thereof, and (iii) glucose-6-phosphate, with effective amounts of apyrase, 5'-nucleotidase and adenosine deaminase, to enzymatically eliminate said other endogenous adenine nucleotides in said sample and with an amount of alkaline phosphatase effective to enzymatically eliminate said glucose-6-phosphate in said sample;

(b) enzymatically converting the cAMP to AMP; and

(c) measuring the AMP without the use of radioactive reagents, said measurement indicating the amount of cAMP and AC in said sample.

5,618,666

NUCLEIC ACIDS DERIVED FROM *SALMONELLA TYPHI* AND DETECTION OF SALMONELLA USING THEREOF

Michel Y. Popoff, Plaisir, and Michel Dion, Paris, both of France, assignors to Institut Pasteur, and Institut National de la Sante et de la Recherche Medicale, both of Paris Cedex, France

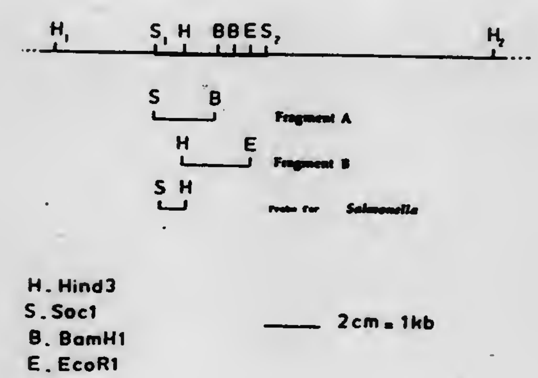
PCT No. PCT/FR91/00564, § 371 Date Mar. 10, 1993, § 102(e) Date Mar. 10, 1993, PCT Pub. No. WO92/01056, PCT Pub. Date Jan. 23, 1992

PCT Filed Jul. 11, 1991, Ser. No. 961,702

Claims priority, application France, Jul. 11, 1990, 90 08852

Int. Cl.⁶ C07H *21/02;21/04;* C12N *15/70;* C12Q *1/68*

U.S. Cl. 435—6 **16 Claims**



1. A nucleic acid sequence isolated from the genome of *Salmonella typhi* strain Ty2, wherein said sequence is 7.9 kb in length and is delimited by two HindIII sites, designated as H_1 and H_2 on the restriction map shown in FIG. 1.

5,618,667

Patent Not Issued For This Number

5,618,668

Patent Not Issued For This Number

5,618,669

Patent Not Issued For This Number

5,618,670

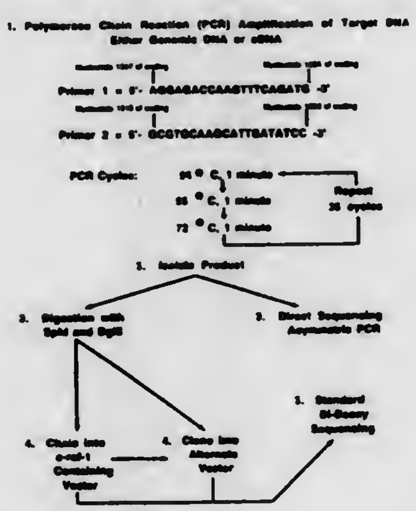
DETECTION METHOD FOR C-RAF-1 GENES

Ulf R. Rapp, Washington, D.C., and Stephen M. Storm, Frederick, Md., assignors to The United States of America as represented by the Department of Health & Human Services, Washington, D.C.

Continuation of Ser. No. 759,738, Sep. 16, 1991, abandoned, which is a continuation-in-part of Ser. No. 236,947, Aug. 26, 1988, Pat. No. 5,156,841. This application Jan. 24, 1994, Ser. No. 185,282

Int. Cl.[6] C12P *19/34;* **C12Q** *1/68*

U.S. Cl. 435—6 **15 Claims**



1. A method of classifying a lung cancer or lymphoma in an individual, comprising:

a) sampling nucleic acid from a lung cancer or lymphoma of said individual;

b) amplifying a conserved region of the c-raf-1 gene in said nucleic acid of said lung cancer or lymphoma;

c) analyzing products of said amplification for evidence of point mutations; and

d) classifying said lung cancer or lymphoma having one or more point mutations in said conserved region as having a c-raf-1 mutation associated cancer.

5,618,671

METHOD AND SYSTEM FOR MOLECULAR-BIOLOGICAL DIAGNOSTICS

Per Lindström, Uppsala, Sweden, assignor to Pharmacia Biotech AB, Uppsala, Sweden

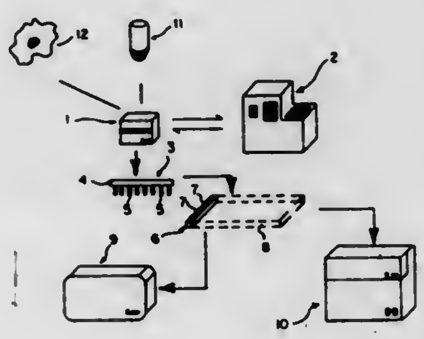
PCT No. PCT/SE93/00557, § 371 Date Dec. 22, 1994, § 102(e) Date Dec. 22, 1994, PCT Pub. No. WO94/00597, PCT Pub. Date Jan. 6, 1994

PCT Filed Jun. 23, 1993, Ser. No. 356,346

Claims priority, application Sweden, Jun. 23, 1992, 9201929

Int. Cl.[6] C12P *19/34;* **C12Q** *1/00;1/68*

U.S. Cl. 435—6 **22 Claims**



1. A method for testing genomic DNA or RNA for the presence of mutations, comprising the steps of:

a) providing a genomic DNA or RNA preparation;

b) processing said genomic DNA or RNA preparation to produce a processed preparation which contains desired DNA or RNA fragments to be tested for the presence of mutations;

c) contacting at least one first set of interconnected pins, each pin supporting an oligonucleotide primer capable of hybridizing with a specific DNA or RNA fragment, with said processed DNA or RNA preparation to bind a defined DNA or RNA fragment to be tested for the presence of a stable mutation to each pin, and/or

d) contacting at least one second set of interconnected pins, each pin supporting an oligonucleotide primer capable of hybridizing with a specific DNA or RNA fragment, with said processed DNA or RNA preparation to bind a defined DNA or RNA fragment to be tested for the presence of an unstable mutation, or several stable mutations to each pin;

e) introducing the pins of said first set into a matching first set of interconnected receptacles containing reaction mixtures for producing in each receptacle reaction products which reaction products, when there is a mutation in the supported DNA or RNA fragment, contain a marker incorporated therein because of the mutation, and/or

f) introducing the pins of said second set into a matching second set of interconnected receptacles containing reaction mixtures for performing sequencing reactions in said receptacles;

g) analysing the contents of said first set of receptacles to determine the presence of said marker indicating a stable mutation, and/or

h) analysing the contents of said second set of receptacles to determine the sequence of the DNA or RNA fragments; and

i) determining on the basis of the results of the analyses in steps g) and/or h) the genetic status of said genomic DNA or RNA material.

5,618,672

METHOD FOR ANALYZING PARTIAL GENE SEQUENCES

Robert K. Stodola, Flourtown; Frank L. Tobin, Broomall, and Arthur L. Williams, Jr., Bethlehem, all of Pa., assignors to SmithKline Beecham Corporation, Philadelphia, Pa.

Filed Jun. 2, 1995, Ser. No. 459,899

Int. Cl.[6] C12Q *1/68;* **G06F** *15/18*

U.S. Cl. 435—6 **10 Claims**

10. A computer-based iterative method for building putative gene assemblies from a plurality of partial gene sequences, allowing the incremental addition of new partial gene sequences to be integrated with an existing plurality of putative gene assemblies, comprising the steps of:

(a) annotating regions within each of the plurality of partial gene sequences and each of the plurality of existing putative gene assemblies;

(b) grouping annotated partial gene sequences with other annotated partial gene sequences, wherein some of the other annotated partial gene sequences may be components of existing putative gene assemblies;

(c) assembling, responsive to grouping relationships, a consensus sequence from the grouped annotated partial gene sequences;

(d) characterizing the consensus sequence; and

(e) generating a sequence.

5,618,673

OLIGONUCLEOTIDES AND THEIR USE IN AN ASSAY FOR ENCEPHALOPATHIES

Harash K. Narang, Newcastle-upon-Tyne, England, assignor to British Technology Group Limited, London, England

Continuation of Ser. No. 196,156, May 13, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 476,614

Claims priority, application United Kingdom, Aug. 20, 1991, 9117910

Int. Cl.[6] C07H *21/02;21/04;* **C12P** *19/34;* **C12Q** *1/68, 1/70*

U.S. Cl. 435—6 **58 Claims**

1. Oligonucleotides having a length of 16 to 200 nucleotides, of formula

$$(X)_a\text{-}(6N\text{-palindrome})_n\text{-}(Y)_b \qquad (1)$$

wherein:

"6N-palindrome" represents TACGTA, ACGTAT, CGTATA, GTATAC, TATACG or ATACGT, read in the conventional notation with the 5'-end at the left;

"n" is an integer of at least 2;

X is 5'-end DNA and "a" is 0 or 1; and

Y is 3'-end DNA and "b" is 0 or 1;

provided that when n is 2, either (1) "a" is 1 and X comprises at least the last four nucleotides of TACGTA, ACGTAT, CGTATA, GTATAC, TATACG or ATACGT respectively, immediately to the 5'-end of the respective 6N-palindrome sequence or (2) "b" is 1 and Y comprises at least the first four nucleotides of TACGTA, ACGTAT, CGTATA, GTATAC, TATACG or ATACGT respectively, immediately to the 3'-end of said respective "6N-palindrome" sequence,

or any labeled form thereof.

5,618,674

CHLAMYDIAE PROBES FOR USE IN SOLUTION PHASE SANDWICH HYBRIDIZATION ASSAYS

Ray Sanchez-Pescador, San Leandro; Diana J. Besemer, Albany, and Michael S. Urdea, Alamo, all of Calif., assignors to Chiron Corporation, Emeryville, Calif.

Continuation of Ser. No. 813,587, Dec. 23, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 479,487

Int. Cl.[6] C12Q *1/68;* **C12P** *19/34;* **C07H** *21/04;* **C12N** *15/00*

U.S. Cl. 435—6 **20 Claims**

1. A synthetic oligonucleotide useful as an amplifier probe in a sandwich hybridization assay for Chlamydiae, wherein said oligonucleotide consists of:

a first segment having a minimum length of about 25 nucleotides and a maximum length of about 100 nucleotides which segment is at least 90% complementary to a segment of Chlamydiae plasmid DNA, wherein said first segment comprises a nucleotide sequence selected from the group consisting of SEQ ID NOS: 5–28 and 43–50; and

a second segment consisting of a nucleotide sequence which is at least 90% complementary to an oligonucleotide segment of a nucleic acid multimer wherein said second segment is not complementary to Chlamydiae plasmid DNA;

and optionally one or more noncomplementary segments each consisting of a nucleotide sequence that is not complementary to Chlamydiae plasmid DNA.

5,618,675
METHODS AND COMPOSITIONS FOR DETECTING LIPOPOLYSACCHARIDES USING CAP18 FRAGMENTS
James W. Larrick, Woodside, and Susan C. Wright, Saratoga, both of Calif., assignors to Panorama Research, Inc., Mountain View, Calif.
Continuation-in-part of Ser. No. 916,961, Jul. 16, 1992, Pat. No. 5,277,707, and Ser. No. 916,765, Jul. 17, 1992, abandoned. This application Sep. 27, 1994, Ser. No. 313,681
Int. Cl.^{6} G01N *33/53;33/569*
U.S. Cl. 435—7.1 **5 Claims**

1. An assay for detecting lipopolysaccharide in a sample, said assay comprising:
exposing the sample to a polypeptide having lipopolysaccharide binding activity and having RNIP activity and an amino acid sequence substantially identical to amino acids 134–158 of SEQ ID NO:2, amino acids 135–159 of SEQ ID NO:4, or amino acids 1–25 of SEQ ID NO:6; and
detecting binding between the polypeptide and lipopolysaccharide which may be present in the sample.

5,618,676
EXPRESSION OF POLYPEPTIDES IN YEAST
Ronald A. Hitzeman, Pacifica; Franklin E. Hagie, IV, Foster City, both of Calif.; Benjamin D. Hall, Bellevue, and Gustav Ammerer, Seattle, both of Wash., assignors to Genentech, Inc., So. San Francisco, Calif., and Washington Research Foundation, Seattle, Wash.
Continuation of Ser. No. 383,668, Feb. 3, 1995, abandoned, which is a continuation of Ser. No. 198,535, Feb. 18, 1994, abandoned, which is a continuation of Ser. No. 89,419, Jul. 9, 1993, abandoned, which is a continuation of Ser. No. 708,828, May 29, 1991, abandoned, which is a continuation of Ser. No. 349,918, May 9, 1989, abandoned, which is a continuation of Ser. No. 284,774, Dec. 12, 1988, abandoned, which is a continuation of Ser. No. 173,008, Mar. 28, 1988, abandoned, which is a continuation of Ser. No. 764,145, Aug. 9, 1985, abandoned, which is a continuation of Ser. No. 237,913, Feb. 25, 1981, abandoned. This application Jun. 7, 1995, Ser. No. 474,333
Int. Cl.^{6} C12N *1/16;* **C12P** *21/00;21/02;21/04, 19/34;* **C12N** *15/00;1/18;15/11*
U.S. Cl. 435—69.1 **31 Claims**

1. A process of forming a transformant of a given yeast strain, which transformant is capable of expressing a biocompetent polypeptide ordinarily exogenous to yeast and not required for growth of said strain, which comprises:
(a) providing a DNA transfer vector having bacterial and yeast origins of replication and genes for phenotypic selection of both bacterial and yeast moieties transformed with said genes;
(b) providing a DNA fragment comprising a structural gene encoding said biocompetent polypeptide;
(c) providing a DNA fragment comprising a yeast promoter genetically distinct from said structural gene which yeast promoter is from within the about 1500 bp DNA sequence 5' flanking the start codon of a yeast structural gene;
(d) inserting the fragments of steps (b) and (c) into said transfer vector together with appropriately positioned translation start and stop signals for said structural gene for said biocompetent polypeptide to form an expression vector in which said structural gene for said biocompetent polypeptide is under the control of said promoter, while maintaining said origins of replications and genes for phenotypic selection, wherein the promoter is resected free of the yeast structural gene and the gene encoding the polypeptide is located at the endpoint of the resection; and
(e) transforming said strain with the resulting expression vector, wherein said yeast strain is *Saccharomyces cerevisiae*.

5,618,677
HUMAN BRAIN SODIUM DEPENDENT INORGANIC PHOSPHATE COTRANSPORTER ASSAY
Binhui Ni, and Steven M. Paul, both of Carmel, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.
Division of Ser. No. 430,033, Apr. 27, 1995. This application May 14, 1996, Ser. No. 647,484
Int. Cl.^{6} G01N *33/53*
U.S. Cl. 435—7.1 **2 Claims**

1. A method of evaluating the effectiveness of a test compound for modulating a human Na^+-dependent inorganic phosphate cotransporter protein which method comprises:
a) introducing into a mammalian host cell an expression vector comprising DNA encoding a human hBNPI protein having SEQ ID NO:2;
b) culturing said host cell under conditions such that the human hBNPI protein is expressed;
c) exposing said host cell expressing the human hBNPI protein to a test compound; and
d) measuring the change in a physiological condition known to be influenced by the binding of native ligand to the human hBNPI protein relative to a control in which the transfected host cell is exposed to native ligand.

5,618,678
METHODS FOR DETECTING PDGF AGONIST OR ANTAGONIST ACTIVITY USING PDGF α-RECEPTOR
James D. Kelly, and Mark J. Murray, both of Seattle, Wash., assignors to ZymoGenetics, Inc., Seattle, Wash.
Division of Ser. No. 947,358, Sep. 18, 1992, Pat. No. 5,371,205, which is a continuation of Ser. No. 355,018, May 22, 1989, abandoned. This application Nov. 16, 1994, Ser. No. 340,754
Int. Cl.^{6} C12Q *1/00*
U.S. Cl. 435—7.21 **17 Claims**

1. A method for detecting PDGF receptor-binding activity in a test compound, comprising:
incubating cultured mammalian cells transfected or transformed with a DNA construct comprising a transcriptional promoter operably linked to a DNA molecule encoding a PDGF receptor, wherein said receptor comprises the amino acid sequence of FIGS. 1A–1D from leucine, amino acid number 20, to leucine, amino acid number 1089, and wherein said cells express the PDGF receptor as a cell surface protein, with a test compound under conditions suitable for binding of PDGF to the receptor;
incubating said cells in the presence of PDGF coupled to a label capable of providing a detectable signal, concurrent with or subsequent to incubating said cells with the test compound; and
detecting binding of said labeled PDGF to the receptor as an indicator of PDGF receptor-binding activity in the test compound.

5,618,679
METHOD OF MONITORING EXPOSURE TO BOWMAN BIRK INHIBITOR USING MONOCLONAL ANTIBODIES AGAINST BOWMAN BIRK INHIBITOR METABOLITES
Ann R. Kennedy, Wynnewood; Cameron J. Koch, Aldan, both of Pa.; Edith M. Lord, Rochester, N.Y., and Xingsheng Wan, Upper Darby, Pa., assignors to Trustees of the University of Pennsylvania, Philadelphia, Pa., and University of Rochester, Rochester, N.Y.
Filed Dec. 19, 1994, Ser. No. 358,265
Int. Cl.^{6} G01N *33/53*
U.S. Cl. 435—7.21 **4 Claims**

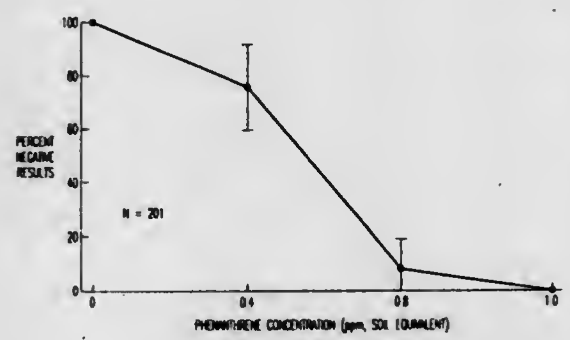
1. A method of monitoring exposure to Bowman Birk inhibitor in a body fluid or tissue comprising contacting a body fluid or tissue with a monoclonal antibody capable of detecting Bowman Birk inhibitor metabolites in the body fluid or tissue.

2. The method of claim 1 wherein the monoclonal antibody is selected from a group consisting of 3E3 having ATCC designation HB-12180, 4H8 having ATCC designation HB-12179 and 5G2 having ATCC designation HB-12178.

5,618,680
USE OF LIGANDS SPECIFIC TO MAJOR HISTOCOMPATIBILITY COMPLEX-CLASS I ANTIGENS FOR DIAGNOSING ENDOMETRIOSIS
Pierre Miron; Denis-Claude Roy, and Marie-Hélène Lachapelle, all of Laval, Canada, assignors to Institut de Medecine de la Reproduction de Montreal, Quebec, Canada
Filed Dec. 28, 1994, Ser. No. 365,085
Int. Cl.^{6} C12Q *1/68;* **G01N** *33/50*
U.S. Cl. 435—7.21 **13 Claims**

1. A method for diagnosing endometriosis comprising: contacting a biological sample containing glandular endometrial cells with a ligand which specifically binds a Major Histocompatibility Complex (MHC)-class I antigen, a proteic precursor or a protein fragment thereof, or a messenger RNA or a cDNA to a messenger RNA encoding said antigen, precursor or fragment; wherein the ligand forms a complex with said antigen precursor or fragment, and the presence of the complex is an indication of the presence of endometriosis.

5,618,681
POLYAROMATIC HYDROCARBON (PAH) IMMUNOASSAY METHOD, ITS COMPONENTS AND A KIT FOR USE IN PERFORMING THE SAME
Stephen B. Friedman, Chapel Hill, and Randy L. Allen, Apex, both of N.C., assignors to Ensys Enviromental Products, Inc., Morrisville, N.C.
Continuation-in-part of Ser. No. 97,223, Jul. 27, 1993, Pat. No. 5,449,611. This application Feb. 28, 1995, Ser. No. 395,607
Int. Cl.^{6} G01N *33/577;* **C07K** *16/44*
U.S. Cl. 435—7.93 **25 Claims**

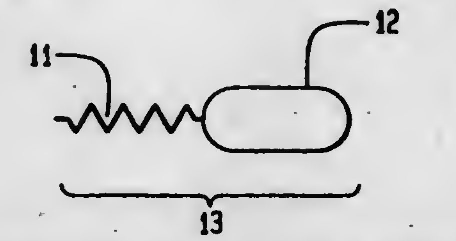


1. An immunoassay for determining the presence of PAHs in a sample, comprising:
(i) combining (ia) a monoclonal antibody with specific reactivity towards phenanthrene, anthracene, fluorene, benzo[a]anthracene, chrysene, and fluoranthene, with (ib) a mixture of (ibi) the sample and (ibii) a reporter molecule reagent which is cross reactive with said monoclonal antibody, wherein said reporter molecule reagent is susceptible to producing a detectable signal, to form an assay mixture;
(ii) incubating said assay mixture to allow competitive monoclonal antibody binding between at least one of said plurality of characteristic compounds, if present, in the sample, and said reagent;
(iii) causing production of said signal and correlating said signal to the amount of reagent bound to said monoclonal antibody to obtain a measure of the amount of PAHs in said sample.

5,618,682
BIOLUMINESCENCE MEASUREMENT SYSTEM
Winfried Scheirer, Wienergasse, Austria, assignor to Packard Instrument Co., Inc., Downers Grove, Ill.
Filed Feb. 8, 1994, Ser. No. 193,679
Claims priority, application Austria, Feb. 10, 1993, 243/93
Int. Cl.^{6} C12Q *1/66;* **G01N** *21/00*
U.S. Cl. 435—8 **25 Claims**

1. A method for detecting the presence of luciferase in a biological sample by measuring the luminescence of said sample comprising:
(a) mixing a sample suspected of containing luciferase with a reaction mixture containing luciferin, adenosine triphosphate ("ATP"), cofactors necessary for luciferase catalytic activity, and adenosine monophosphate ("AMP"), the amounts of ingredients in said reaction mixture being selected to produce luminescence having a duration of at least one hour and an intensity that varies substantially linearly with time; and
(b) measuring said luminescence produced by said reaction mixture containing said sample.

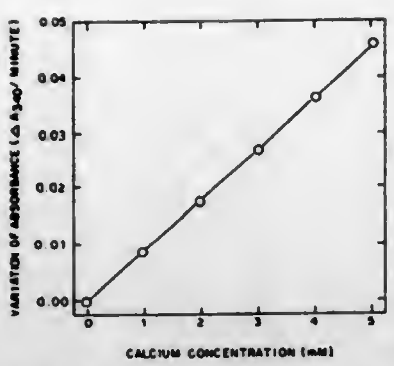
5,618,683
DIAGNOSTIC KIT FOR CHOLESTERYL ESTER TRANSFER PROTEIN (CETP) ACTIVITY MEASUREMENT AND A NEW SYNTHETIC PARTICLE USED THEREIN
Robert W. Brocia, 15 Moore Rd., Bronxville, N.Y. 10708, and Theresa L. Swenson, 445 E. 68th St., Apt. 8B, New York, N.Y. 10021
Filed Apr. 13, 1993, Ser. No. 46,772
Int. Cl.^{6} C12Q *1/60;* **G01N** *33/53*
U.S. Cl. 435—11 **25 Claims**



1. A synthesized donor particle for donating a cholesterol ester or derivative thereof to a neutral lipid transfer protein comprising:
a fluorescent group covalently bonded to a cholesteryl ester to form a N-(7-nitrobenz-2-oxa-1,3-diazol-4-yl)amino-cholesteryl ester (NBD-CE) core;
a monolayer of phospholipid that surrounds the NBD-CE core; and
an apolipoprotein apoA-I dispersed within the monolayer and associated with an aqueous phase that surrounds the particle and the monolayer.

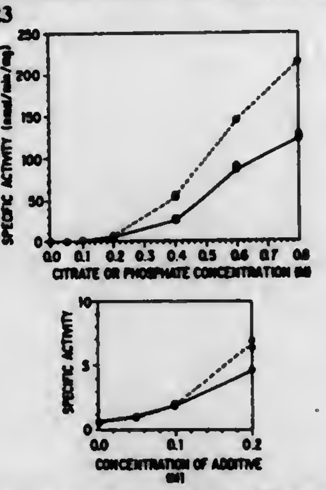
5,618,684
METHOD OF DETERMINATION OF CALCIUM
Masatsugu Nonobe, Hyogo-ken; Hozumi Nishida, and Tsuyoshi Fujita, both of Osaka-fu, all of Japan, assignors to Oriental Yeast Co., Ltd., Tokyo, Japan
Continuation-in-part of Ser. No. 16,143, Feb. 5, 1993, abandoned. This application Apr. 20, 1995, Ser. No. 425,972
Claims priority, application Japan, Feb. 7, 1992, 4-56044
Int. Cl.^{6} C12Q *1/52;1/00;1/48;* **G01N** *33/48*
U.S. Cl. 435—16 **16 Claims**

1. A method of determining the amount of calcium in blood serum, comprising the steps of:
(1) providing a sample of blood serum;
(2) bringing blood serum calcium in said sample of blood serum into contact with a transglutaminase capable of being activated with calcium to provide an activated transglutaminase;



(3) allowing the activated transglutaminase to act on a substrate which is a mixture of a donor and an acceptor to generate NH_3; and
(4) measuring the activity of transglutaminase by detecting the amount of NH_3 generated; and
(5) determining the amount of calcium in the sample of blood serum by correlating the amount of NH_3 generated with an amount of calcium.

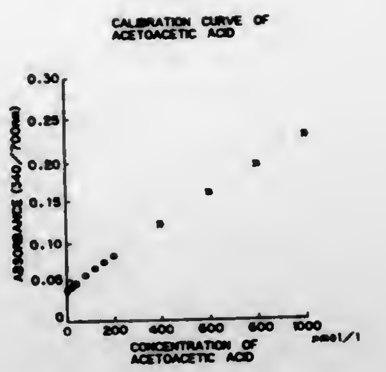
5,618,685
ACTIVATION OF HERPES SIMPLEX VIRUS PROTEASE BY KOSMOTROPES
Paul L. Darke, Blue Bell; Dawn L. Hall, Spring City, and Lawrence C. Kuo, Solebury, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.
Filed Apr. 6, 1995, Ser. No. 417,624
Int. Cl.[6] C12Q *1/37;1/34;1/02;* A61K *38/00*
U.S. Cl. 435—23 **16 Claims**



1. A method for increasing the activity of Herpes Simplex Virus type 1 (HSV-1) protease comprising adding a kosmotropic anion to a reaction medium containing said protease and a suitable substrate.

5,618,686
METHOD OF MEASURING THE TOTAL KETONE BODY AND A SAMPLE REAGENT
Ryo Kojima; Yoshiro Sato; Akiko Takekawa, and Katsuhiro Katayama, all of Fukushima-ken, Japan, assignors to Nitto Boseki Co., Ltd., Fukushima-ken, Japan
Filed Mar. 4, 1994, Ser. No. 205,797
Claims priority, application Japan, Mar. 8, 1993, 5-046628
Int. Cl.[6] C12Q *1/32;1/26;* G01N *33/53;31/00*
U.S. Cl. 435—26 **6 Claims**

1. A method of assaying the total ketone body in a sample, which is applicable to an automatic analyzer and comprises the steps of:



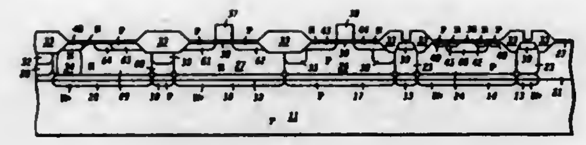
(1) converting acetoacetic acid in the sample to 3-hydroxybutyric acid with the aid of 3-hydroxybutyrate dehydrogenase in the presence of reduced-type nicotinamide adenine dinucleotide, said reaction being conjugated with another reaction in which the resulting oxidized-type nicotinamide adenine dinucleotide is used as a coenzyme to form its reduced-type;
(2) converting both 3-hydroxybutyric acid originally existed in the sample and 3-hydroxybutyric acid converted by step (1) to acetoacetic acid with the aid of 3-hydroxybutyrate dehydrogenase and oxide-type nicotinamide adenine dinucleotide; and
(3) measuring the absorbance of reduced-type nicotinamide adenine dinucleotide formed by step (2).

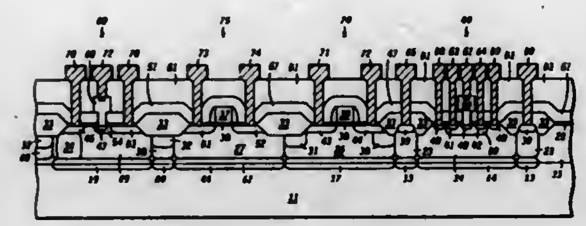
5,618,687
PRODUCTION OF 7-AMINO CEPHALOSPORANIC ACID WITH D-AMINO OXIDASE AND DEACYLASE
Bing L. Wong, Lexington, and Yong Q. Shen, Medford, both of Mass., assignors to Biopure Corporation, Cambridge, Mass.
Continuation of Ser. No. 184,773, Jan. 21, 1994, abandoned, which is a continuation of Ser. No. 873,596, Apr. 21, 1992, abandoned, which is a continuation of Ser. No. 333,546, Apr. 4, 1989, abandoned. This application Nov. 2, 1994, Ser. No. 333,623
Int. Cl.[6] C12P *35/00;* C12N *9/79*
U.S. Cl. 435—47 **8 Claims**

1. A process for producing 7-amino cephalosporanic acid comprising the steps of:
(a) contacting cephalosporin C with catalase and with D-amino acid oxidase obtained from *T. variabilis* strain ATCC 20931, in a reaction vessel having externally supplied oxygen to cause deamination of cephalosporin C, thereby forming glutaryl 7-amino cephalosporanic acid;
(b) contacting the product of step (a) with a deacylase enzyme obtained from *Acinetobacter sp.* strain ATCC 53891, said deacylase enzyme being specific for the glutaryl side-chain of glutaryl 7-amino cephalosporanic acid under conditions sufficient to produce 7-amino cephalosporanic acid; and
(c) recovering said 7-amino cephalosporanic acid.

5,618,688
METHOD OF FORMING A MONOLITHIC SEMICONDUCTOR INTEGRATED CIRCUIT HAVING AN N-CHANNEL JFET
Robert H. Reuss, Inverness, Ill., and Frederic B. Shapiro, Phoenix, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Feb. 22, 1994, Ser. No. 200,035
Int. Cl.[6] H01L *21/70*
U.S. Cl. 438—189 **13 Claims**

1. A method of fabricating a monolithic semiconductor integrated circuit which comprises an N-channel junction field effect transistor, complementary insulated gate field effect transistors, and a bipolar junction transistor, the method comprising the steps of:





providing a semiconductor material of a first conductivity type and having a major surface;
forming an isolated N-channel junction field effect transistor region, an N-channel insulated gate field effect transistor region, an isolated P-channel insulated gate field effect transistor region, and an isolated bipolar junction transistor region in the semiconductor material, wherein the isolated N-channel junction field effect transistor region is contiguous with a buried layer of a second conductivity type;
forming a gate oxide layer on a portion of the major surface in the N-channel insulated gate field effect transistor region and on a portion of the major surface in the isolated P-channel insulated gate field effect transistor region;
forming a first gate conductor on the gate oxide on the portion of the major surface in the N-channel insulated gate field effect transistor region and a second gate conductor on the gate oxide on the portion of the major surface in the isolated P-channel insulated gate field effect transistor region;
forming a first source region and a first drain region in portions of the isolated N-channel junction field effect transistor region, a second source region and a second drain region in portions of the N-channel insulated gate field effect transistor region, and a collector contact region in a portion of the isolated bipolar junction transistor;
forming a third source region and a third drain region in portions of the isolated P-channel insulated gate field effect transistor region, and a gate contact region in a portion of the N-channel junction field effect transistor region;
forming a base region in another portion of the isolated bipolar junction transistor region;
forming a channel region in the N-channel junction field effect transistor region, wherein the channel region contains the first source region and the first drain region;
forming a polysilicon emitter in contact with a portion of the base region; and
forming a polysilicon gate, wherein the polysilicon gate is in contact with a portion of the channel region between the first source region and the first drain region.

5,618,689
ENHANCED PROCEDURES FOR PREPARING FOOD HYDROLYSATES
James G. McCarthy, Washington Depot, and Dharam V. Vadehra, New Milford, both of Conn., assignors to Nestec S.A., Vevey, Switzerland
Filed May 25, 1995, Ser. No. 450,421
Int. Cl.[6] C12P *21/00*
U.S. Cl. 435—68.1 **20 Claims**

1. A process for preparing a comestible hydrolysate product comprising hydrolyzing a proteinaceous substance with a proteolytic enzyme preparation to obtain a hydrolysate substrate, heating the hydrolysate substrate at a temperature sufficient for a time sufficient to obtain a substrate devoid of viable mesophilic microorganisms and spores and hydrolyzing the substrate devoid of viable mesophilic microorganisms and spores in a sterile system with a sterile enzyme preparation suitable for hydrolyzing the substrate.

5,618,690
METHOD OF USING AN ER-LOCATED ENDOPROTEASE
Bhabatosh Chaudhuri, Münchenstein, Switzerland; Christine Stephan, Kingersheim, France; Peter Seeboth, Inzlingen, Germany, and Howard Riezman, Biel-Benken, Switzerland, assignors to CIBA-Geigy Corporation, Tarrytown, N.Y.
Division of Ser. No. 328,961, Oct. 24, 1994, Pat. No. 5,501,975, which is a continuation of Ser. No. 989,260, Dec. 11, 1992, abandoned. This application Jun. 5, 1995, Ser. No. 462,397
Claims priority, application Germany, Dec. 16, 1991, 91810984
Int. Cl.[6] C12P *21/06;* C12N *9/50*
U.S. Cl. 435—68.1 **5 Claims**

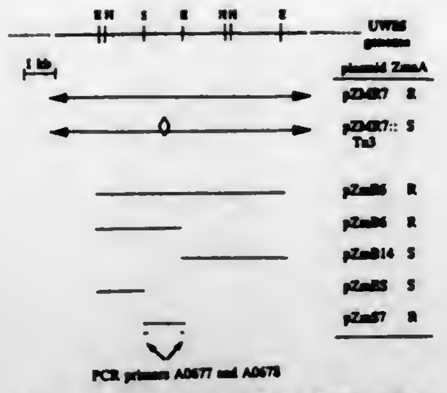
1. A process for the preparation of a heterologous protein cleaved off a pro-sequence in a host cell, said process comprising the use of a host cell having an ER-located dibasic processing endoprotease for said cleavage, said ER-located endoprotease consisting of a dibasic processing endoprotease fused to an ER retention signal.

5,618,691
RECOMBINANT DNA ENCODING A EUKARYOTIC TYROSINE KINASE TARGET PROTEIN
Joseph Schlessinger; Edward Y. Skolnik, and Benjamin L. Margolis, all of New York, N.Y., assignors to New York University, New York, N.Y.
Division of Ser. No. 906,349, Jun. 30, 1992, Pat. No. 5,434,064, which is a continuation of Ser. No. 643,237, Jan. 18, 1991, abandoned. This application Dec. 16, 1993, Ser. No. 167,035
Int. Cl.[6] C12N *5/10;15/12;15/62*
U.S. Cl. 435—69.1 **28 Claims**

1. A recombinant nucleic acid encoding a protein containing the amino acid sequence shown in (SEQ ID NO:6).

5,618,692
ZWITTERMICIN RESISTANCE GENE AND BIOCONTROL BACTERIA WITH THE GENE
Jo Handelsman; Jocelyn L. Milner; Elizabeth A. Stohl; Sandra J. Stewart, and Eric Stabb, all of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.
Continuation-in-part of Ser. No. 207,335, Mar. 8, 1994, abandoned, which is a continuation-in-part of Ser. No. 878,800, May 5, 1992, abandoned, which is a continuation-in-part of Ser. No. 758,644, Sep. 12, 1991, abandoned, which is a division of Ser. No. 194,399, May 16, 1988, Pat. No. 5,049,379, which is a continuation-in-part of Ser. No. 77,850, Jul. 22, 1987, abandoned. This application Sep. 12, 1994, Ser. No. 304,076
Int. Cl.[6] C07H *21/04;* C12P *21/00;* C12N *15/63*
U.S. Cl. 435—69.1 **5 Claims**

1. A novel DNA construction isolated from its native host comprising a nucleotide sequence which can be expressed to encode a *Bacillus cereus* protein which, when present in a bacterial



The 1.2 kb SphI-BamHI fragment conferred zwittermicin A resistance on E. coli strains in either orientation when carried on a shuttle vector or on a pGEM vector.

host cell, confers resistance in the host cell to the antibiotic zwittermicin A.

5,618,693

INTERLEUKIN-2 SIGNAL TRANSDUCERS AND BINDING ASSAYS

Steven L. McKnight; Jinzhao Hou, and Ulrike Schindler, all of So. San Francisco, Calif., assignors to Tularik, Inc., South San Francisco, Calif.

Filed Feb. 23, 1995, Ser. No. 393,333

Int. Cl.⁶ C12P *21/06;* **C12N** *5/00;15/12;15/63*

U.S. Cl. 435—69.1 **28 Claims**

1. An isolated nucleic acid encoding a human Signal Transducer and Activator of Transcription number 5, hSTAT5 (SEQ ID NO:2) or an hSTAT5 peptide comprising at least one amino acid sequence selected from the group consisting of ATQLQK (SEQ ID NO:2, residues 91–96), YDRCPLELV (SEQ ID NO:2, residues 98–106), NNCSSP (SEQ ID NO:2, residues 124–129), QQLAGNGG (SEQ ID NO:2, residues 259–266), NGGPPEG (SEQ ID NO:2, residues 264–270), NASADAG (SEQ ID NO:2, residues 708–714), SPAVCPQAP (SEQ ID NO:2, residues 726–734), HVLQDGEF (SEQ ID NO:2, residues 744–752), MDSLDSRLS (SEQ ID NO:2, residues 772–780), and FTSARGSLS (SEQ ID NO:2, residues 786–794).

5,618,694

HUMAN PAPILLOMA VIRUS TYPE 57, A METHOD FOR PREPARING EXPRESSION PRODUCTS THEREOF

Ethel-Michele de Villiers, Hirschberg; Anja Hirsch-Behnam, and Harald zur Hausen, both of Heidelberg, all of Germany, assignors to Behringwerke Aktiengesellschaft, Marburg, Germany

Division of Ser. No. 394,215, Feb. 24, 1995, which is a continuation of Ser. No. 195,064, Feb. 14, 1994, abandoned, which is a continuation of Ser. No. 964,308, Oct. 21, 1992, abandoned, which is a division of Ser. No. 389,807, Aug. 4, 1989, Pat. No. 5,187,090. This application Jun. 7, 1995, Ser. No. 479,401

Claims priority, application Germany, Aug. 6, 1988, 38 26 793.4

Int. Cl.⁶ C12P *21/00;* **C12N** *7/00;15/00*

U.S. Cl. 435—69.1 **1 Claim**

1. A method for preparation of HPV 57 protein, comprising expressing an open reading frame of HPV 57 or an equivalent thereto in a prokaryotic or eukaryotic expression system.

5,618,695

DNA ENCODING HEM-1, A GENE EXPRESSED BY SCLEROSING HEMANGIOMA CELLS

Rajiv Kumar, Rochester, Minn., assignor to Mayo Foundation for Medical Education and Research, Rochester, Minn.

Filed Jun. 7, 1995, Ser. No. 487,810

Int. Cl.⁶ C12P *21/06;* **C07H** *21/04;* **C12N** *15/00;1/20*

U.S. Cl. 435—69.1 **13 Claims**

1. An isolated and purified DNA molecule comprising a DNA segment encoding hemangioma factor-1.

5,618,696

HUMAN KUNITZ-TYPE PROTEASE INHIBITOR AND VARIANTS THEREOF

Fanny Norris; Kjeld Norris, both of Hellerup; Søren E. Bjørn, Lyngby; Lars C. Petersen, Hørsholm; Ole H. Olsen, Brønshøj, all of Denmark; Donald C. Foster, and Cindy A. Sprecher, both of Seattle, Wash., assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

Continuation of Ser. No. 21,534, Feb. 22, 1993, abandoned. This application Feb. 6, 1995, Ser. No. 384,489

Claims priority, application WIPO, Jan. 7, 1992, PCT/DK92/00003

Int. Cl.⁶ C12N *15/00;15/12;1/19;* **C07K** *14/81*

U.S. Cl. 435—69.2 **17 Claims**

1. A variant of a human Kunitz-type protease inhibitor comprising a variant of SEQ ID NO:2 having the sequence

Asp Leu Leu Pro Asn Val Cys Ala Phe Pro Met Glu Lys Gly Pro Cys Xaa^4 Xaa^5 Tyr Met Thr Arg Trp Phe Phe Asn Phe Glu Thr Gly Glu Cys Glu Leu Phe Ala Tyr Gly Gly Cys Gly Gly Asn Ser Asn Asn Phe Leu Arg Lys Glu Lys Cys Glu Lys Phe Cys Lys Phe Thr;

in which Xaa^4 is Val, Leu, Lys, Ile, Thr, Gln or Arg; and Xaa^5 is Thr, Gly or Ala.

5,618,697

PROCESS FOR PREPARING A DESIRED PROTEIN

Henrik Dalbøge, Virum; John Pedersen, Kokkedal; Thorkild Christensen, Allerød; Jørli W. Ringsted, Brøndby, and Torben E. Jessen, Holbaek, all of Denmark, assignors to Novo Nordisk A/S, Denmark

Continuation of Ser. No. 959,856, Nov. 12, 1992, abandoned, which is a continuation of Ser. No. 759,106, Sep. 6, 1991, abandoned, which is a continuation of Ser. No. 215,602, Jul. 1, 1988, abandoned, which is a continuation-in-part of Ser. No. 910,230, Oct. 2, 1986, abandoned, which is a continuation-in-part of Ser. No. 640,081, Aug. 8, 1984, abandoned. This application Jan. 13, 1995, Ser. No. 372,692

Claims priority, application Denmark, Dec. 10, 1982, 5493/82; Feb. 7, 1985, 556/85

Int. Cl.⁶ C12P *21/06;* **C12N** *5/10;15/18;* **C07K** *14/61*

U.S. Cl. 435—69.4 **12 Claims**

1. A process for producing ripe human growth hormone comprising

(a) introducing into bacteria a recombinant DNA vector comprising a DNA sequence encoding an amino-terminal extended human growth hormone having the formula

X-human growth hormone

in which X is a negatively charged amino acid sequence having an even number of amino acids, in which the amino acid sequence X contains no more than 4 amino acids and in which the N-terminal amino acid of X is different from Lys and Arg, all other uneven amino acids are different from Pro, Lys and Arg, and all even amino acids are different from Pro and in which the C-terminal amino acid of X is a negatively charged amino acid;

(b) growing the bacteria such that the amino-terminal extended human growth hormone is expressed;

(c) separating the amino-terminal extended human growth hormone in step (b) from contaminants;

(d) cleaving the amino-terminal extension of the amino-terminal extended human growth hormone of step (c) with dipeptidyl aminopeptidase I to obtain ripe human growth hormone; and

(e) isolating ripe human growth hormone from step (d) from uncleaved amino-terminal extended human growth hormone and partially cleaved amino-terminal extended human growth hormone on the basis of the difference in the net electrical charge between said ripe human growth hormone and said uncleaved and partially cleaved amino-terminal extended human growth hormone.

5,618,698

PRODUCTION OF ERYTHROPOIETIN

Fu-Kuen Lin, Thousand Oaks, Calif., assignor to Kirin-Amgen, Inc., Thousand Oaks, Calif.

Continuation of Ser. No. 113,179, Oct. 23, 1987, Pat. No. 5,441,868, which is a continuation of Ser. No. 675,298, Nov. 30, 1984, Pat. No. 4,703,008, which is a continuation-in-part of Ser. No. 655,841, Sep. 28, 1984, which is a continuation-in-part of Ser. No. 582,185, Feb. 21, 1984, abandoned, which is a continuation-in-part of Ser. No. 561,024, Dec. 13, 1983. This application Jun. 6, 1995, Ser. No. 468,381

The portion of the term of this patent subsequent to Aug. 15, 2012, has been disclaimed.

Int. Cl.⁶ C12P *71/02;* **C12N** *15/27*

U.S. Cl. 435—69.4 **9 Claims**

1. A process for the preparation of an in vivo biologically active erythropoietin product comprising the steps of:

(a) growing, under suitable nutrient conditions, host cells transformed or transfected with an isolated DNA sequence selected from the group consisting of (1) the DNA sequences set out in FIGS. 5 and 6, (2) the protein coding sequences set out in FIGS. 5 and 6, and (3) DNA sequences which hybridize under stringent conditions to the DNA sequences defined in (1) and (2) or their complementary strands; and

(b) isolating said erythropoietin product therefrom.

5,618,699

PLANT VIRUS VECTOR, PLASMID, PROCESS FOR EXPRESSION OF FOREIGN GENE AND PROCESS FOR OBTAINING FOREIGN GENE PRODUCT

Hiroshi Hamamoto, Tsukuba; Yoshinori Sugiyama, Odawara; Noriaki Nakagawa, Odawara; Eiji Hashida, Odawara; Suguru Tsuchimoto, Odawara; Noriyuki Nakanishi, Zama; Yuji Matsunaga, Osaka, and Yoshimi Okada, Matsudo, all of Japan, assignors to Kanebo Limited, Tokyo, Japan

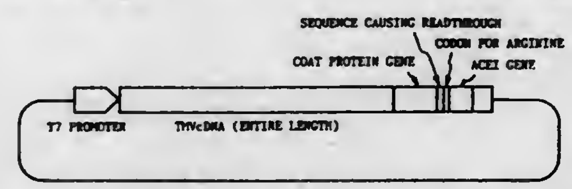
PCT No. PCT/JP93/00408, § 371 Date Nov. 30, 1994, § 102(e) Date Nov. 30, 1994, PCT Pub. No. WO93/20217, PCT Pub. Date Oct. 14, 1993

PCT Filed Mar. 31, 1993, Ser. No. 313,127

Claims priority, application Japan, Mar. 31, 1992, 4-108628; Jun. 22, 1992, 4-188744; Dec. 8, 1992, 4-351970

Int. Cl.⁶ C12N *15/40;15/62;15/82;15/83*

U.S. Cl. 435—69.7 **25 Claims**



9. A process for systemically expressing a fusion protein of a coat protein and a foreign protein in a plant comprising the steps of:

(a) inoculating a plant with a plant virus vector, wherein the plant virus vector comprises a viral assembly origin and a foreign protein gene linked downstream of a coat protein gene of a Tobamovirus via a nucleotide sequence of a Tobamovirus which causes readthrough, such that upon expression of the vector in the plant, the coat protein and the fusion protein are systemically produced in the plant; and

(b) expressing the fusion protein systemically in the plant.

5,618,700

IL-6 SPECIFIC MONOCLONAL ANTIBODIES, HYBRIDOMAS THEREFOR AND METHODS OF MAKING AND USING SAME

Daniela Novick; Michel Revel; Yves Mory, all of Rehovot; Menachem Rubinstein, Givat Shmuel, and Eran Hadas, Rishon le-Zion, all of Israel, assignors to Yeda Research & Development Co. Ltd., Rehovot, Israel

Filed Nov. 14, 1989, Ser. No. 436,321

Claims priority, application Israel, Nov. 14, 1988, 88375

Int. Cl.⁶ C12P *21/08;* **C12N** *5/20;* **C07K** *16/24;1/22*

U.S. Cl. 435—70.21 **5 Claims**

1. The hybridoma cell line CNCM I-813 (No. 34-1).

5,618,701

METHOD OF PROCESSING NUCLEIC ACID SAMPLES

Ulf Landegren, Upsala, Sweden, assignor to Pharmacia Biotech AB, Upsala, Sweden

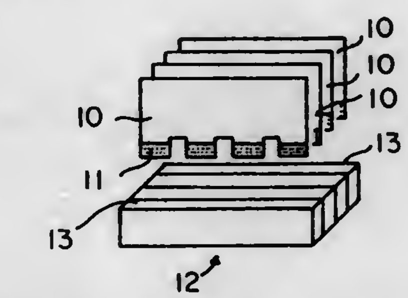
PCT No. PCT/SE93/00929, § 371 Date May 5, 1995, § 102(e) Date May 5, 1995, PCT Pub. No. WO94/11529, PCT Pub. Date May 26, 1994

PCT Filed Nov. 5, 1993, Ser. No. 432,115

Claims priority, application Sweden, Nov. 6, 1992, 9203320

Int. Cl.⁶ C12P *19/34*

U.S. Cl. 435—91.1 **12 Claims**



1. A method of processing nucleic acid samples for analysis, comprising the steps of providing one or more manifolds having a plurality of individual solid phase members wherein said solid phase members extend from said one or more manifolds and are adapted for cooperation with a corresponding set or sets of receptacles;

binding a nucleic acid containing species from a sample to each solid phase member of a first manifold by introducing the solid phase members of said first manifold into a first receptacle or set of receptacles containing said sample;

optionally processing each nucleic acid containing species while it is bound to the solid phase member of said first manifold to produce nucleic acid containing reaction products by introducing the solid phase members of said first manifold into a second set or sets of receptacles;

optionally introducing the solid phase members of a second manifold into said second set or sets of receptacles to immobilize one or more nucleic acid containing reaction products generated therein to the solid phase members of said second manifold;

and releasing directly to an analyzer said nucleic acid containing species or said reaction products from the solid phase members of the first and second manifold for analysis of the nucleic acid containing species or reaction products by intro-

ducing the solid phase members into a sample receptacle or receptacles of said analyzer, which receptacle or receptacles provide for the necessary environment for said release.

5,618,702

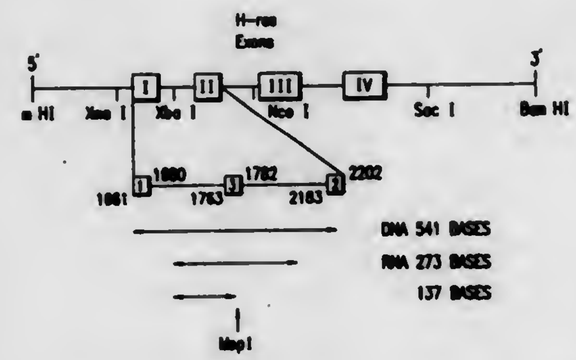
PCR AMPLIFICATION OF MRNA

Kevin J. Scanlon, Pasadena, Calif., assignor to City of Hope, Duarte, Calif.

Continuation-in-part of Ser. No. 234,096, Aug. 19, 1988, which is a continuation-in-part of Ser. No. 46,127, May 5, 1897, abandoned. This application Aug. 6, 1993, Ser. No. 102,946

Int. Cl.⁶ G12P *19/34*

U.S. Cl. 435—91.2 **7 Claims**



1. A method for producing a substantially contaminating DNA free PCR amplification product of a mRNA from a cellular DNA contaminated gene transcript, the method comprising:

(a) providing a gene transcript mRNA,
said gene having an intron flanked by first and second exons,
said gene transcript mRNA being contaminated with template DNA from which said mRNA was transcribed,
said mRNA having a first portion complementary only to a sequence of said first exon and an abutting second portion complementary only to a sequence of said second exon;

(b) providing first and second PCR primers,
said first PCR primer being complementary to said first portion of said mRNA and, said second PCR primer being complementary to the completment of said abutting second portion of said mRNA;

(c) annealing said primers to said mRNA and thereafter.

(d) reacting said mRNA having said primers anealed thereto with reverse transcriptase to provide double stranded DNA, one strand of which has the sequence of said mRNA and the other strand of which is complementary to said sequence of said mRNA;

(e) reacting said double stranded DNA with said first and second primers in a PCR to simultaneously amplify (i) said double stranded DNA and (ii) said DNA contaminant to provide an amplification reaction product containing amplified double stranded DNA which has no sequence complementary to said intron and amplified DNA contaminant which includes said intron,

wherein said amplified double stranded DNA which has no sequence complementary to said intron is of substantially lower molecular weight than said amplified DNA contaminant which includes said intron; and

(f) utilizing the difference in molecular weights to separate said amplified double stranded DNA from said amplified DNA contaminant to produce a substantially contaminating DNA free PCR amplification product.

5,618,703

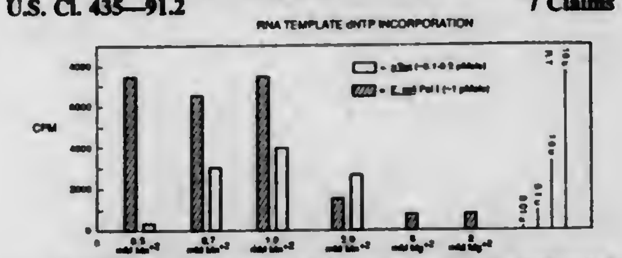
UNCONVENTIONAL NUCLEOTIDE SUBSTITUTION IN TEMPERATURE SELECTIVE RT-PCR

David H. Gelfand, Oakland, and Thomas W. Myers, Emeryville, both of Calif., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 82,182, Jun. 24, 1993, Pat. No. 5,310,652, and a continuation-in-part of Ser. No. 455,967, Dec. 22, 1989, abandoned, and a continuation-in-part of Ser. No. 609,157, Nov. 2, 1990, abandoned, said Ser. No. 82,182is a continuation of Ser. No. 746,121, Aug. 15, 1991, abandoned, which is a continuation-in-part of Ser. No. 585,471, Sep. 20, 1990, abandoned, which is a continuation-in-part of Ser. No. 455,611, Dec. 22, 1989, Pat. No. 5,322,770, said Ser. No. 455,967is a continuation-in-part of Ser. No. 143,441, Jan. 12, 1988, abandoned, which is a continuation-in-part of Ser. No. 63,509, Jun. 17, 1987, Pat. No. 4,889,818, which is a continuation-in-part of Ser. No. 899,241, Aug. 22, 1986, abandoned, said Ser. No. 609,157is a continuation-in-part of Ser. No. 557,517, Jul. 24, 1990, abandoned. This application Feb. 22, 1994, Ser. No. 199,509

Int. Cl.⁶ C12Q *1/68;* **C12P** *19/34*

U.S. Cl. 435—91.2 **7 Claims**



1. A method for selective amplification of a cDNA synthesized from an RNA template in a sample consisting of a mixture of RNA and double-stranded DNA, which RNA and double-stranded DNA comprise conventional nucleotides and which DNA does not comprise unconventional nucleotides, wherein the steps comprise:

(a) treating said sample, in a reverse transcription reaction mixture wherein said mixture comprises an unconventional nucleotide, under conditions for synthesis of an RNA:cDNA hybrid at a temperature in the range of about 55°–75° C.;

(b) removing the RNA template from said hybrid to provide single stranded cDNA;

(c) treating said cDNA in an amplification reaction mixture comprising an unconventional nucleotide, to provide a double stranded primer extension product DNA comprising said unconventional nucleotide, wherein said amplification reaction mixture comprises a thermostable. DNA polymerase;

(d) treating said amplification reaction mixture under conditions sufficient for denaturing said double stranded product DNA comprising said unconventional nucleotide, wherein under said conditions said DNA comprising conventional nucleotides is not denatured; and

(e) repeating steps (c) and (d) at least once.

5,618,704

BACKBONE-MODIFIED OLIGONUCLEOTIDE ANALOGS AND PREPARATION THEREOF THROUGH RADICAL COUPLING

Yogesh S. Sanghvi, San Marcos, and Phillip D. Cook, Vista, both of Calif., assignors to ISIS Pharmacueticals, Inc., Carlsbad, Calif.

Continuation of Ser. No. 40,933, Mar. 31, 1993, abandoned, which is a continuation-in-part of Ser. No. 903,160, Jun. 24, 1992, abandoned, Ser. No. 703,619, May 21, 1991, Pat. No. 5,378,825, Ser. No. 566,836, Aug. 13, 1990, Pat. No. 5,223,618, and Ser. No. 558,663, Jul. 27, 1990, Pat. No. 5,138,045. This application Sep. 2, 1994, Ser. No. 300,072

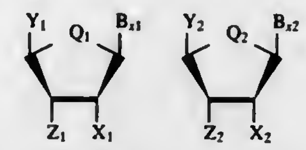
Int. Cl.⁶ C12P *19/34*

U.S. Cl. 435—91.5 **10 Claims**

1. A method for forming a covalent, internucleoside linkage having structure 3'-CH_2—R_A—NH—CH_2- 4', 3'-CH_2—NH—R_A—

CH_2-4', 3'-CH_2—CH_2—NH—R_A-4', or 3'-R_A—NH—CH_2—CH_2-4' where R_A is O or NR_1 comprising the steps of:

(a) providing synthons having the structure:



wherein

Z_1 and Y_2 are selected such that

(i) Z_1 is R_B and Y_2 is CH_2—R_A—N═CH_2; or

(ii) Z_1 is CH_2—R_B and Y_2 is R_A—N═CH_2; or

(iii) Z_1 is CH_2—R_A—N═CH_2 and Y_2 is R_B; or

(iv) Z_1 is R_A—N═CH_2 and Y_2 is CH_2—R_B; and

where the synthon bearing said R_B group is a donor synthon and the synthon bearing said N═CH_2 group is an acceptor synthon;

R_1 is H or alkyl having 1 to 10 carbon atoms;

R_B is a radical generating group selected from I, OC(S)O—C_6H_5, Se—C_6H_5, OC(S)O—C_6F_5, OC(S)O—C_6Cl_5, OC(S)O—(2,4,6-C_6Cl_3), Br, NO_2, Cl, OC(S)S—Me, OC(S)O—(p-CH_4F), bis-dimethylglyoximato-pyridine cobalt, OC(S)C_6H_5, OC(S)SCH_3, OC(S)-imidazole, and OC(O)O-pyridin-2-thione;

Y_1 and Z_2 are, independently, H, hydroxyl, aminomethyl, hydrazinomethyl, hydroxymethyl, C-formyl, phthalimidohydroxymethyl, aryl-substituted imidazolidino, aminohydroxylmethyl, ortho-methylaminobenzenethio, methylphosphonate, methylalkylphosphonate, a nucleoside, a nucleotide, an oligonucleotide, an oligonucleoside, or a hydroxyl-protected or amine-protected derivative thereof;

B_{x1} and B_{x2} are, independently, nucleosidic bases;

Q_1 and Q_2 are, independently, O, S, CH_2, CHF or CF_2; and

X_1 and X_2 are, independently, H, OH, alkyl, alkaryl or aralkyl, F, Cl, Br, CN, CF_3, OCF_3, OCN, O-alkyl, S-alkyl, N-alkyl, O-alkenyl, S-alkenyl, N-alkenyl, $SOCH_3$, SO_2CH_3, ONO_2, NO_2, N_3, NH_2, heterocycloalkyl, heterocycloalkaryl, aminoalkylamino, polyalkylamino or silyl, an RNA cleaving group said alkyl group having 1 to 10 carbon atoms, said alkaryl and aralkyl group having 7 to 14 carbon atoms, and said alkenyl group having 2 to 10 carbon atoms;

(b) contacting said donor synthon with a radical species for a time and under reaction conditions effective to generate a radical-bearing donor synthon having a radical centered at said Z_1 or Y_2; and

(c) contacting said radical-bearing donor synthon with said acceptor synthon for a time and under reaction conditions effective to form said covalent linkage.

5,618,705

SYNTHESIS OF ANTI-INFLAMMATORY COMPOUNDS AND NOVEL TRISACCHARIDES USEFUL IN THE SYNTHESIS OF ANTI-INFLAMMATORY COMPOUNDS

Roger A. Laine, Baton Rouge, La., and Eunsun Yoon, Seoul, Rep. of Korea, assignors to Board of Supervisors of Louisiana State University Mechanical College, Baton Rouge, La.

Division of Ser. No. 40,550, Mar. 31, 1993, Pat. No. 5,426,178. This application May 31, 1995, Ser. No. 454,740

Int. Cl.⁶ C12P *19/04;19/00;* **C07H** *3/06;* **C08B** *37/00*

U.S. Cl. 435—97 **9 Claims**

1. A method of synthesizing a trisaccharide, comprising the steps of:

(a) reacting a disaccharide selected from the group consisting of laminaribiose, gentiobiose, and maltose with UDP-galactose in the presence of α-lactalbumin and lactose synthase at a pH between about 5.8 and about 6.2, until a trisaccharide is formed; and

(b) recovering the trisaccharide.

5,618,706

PREPARATION OF PHYTOSPHINGOSINE DERIVATIVE

John Casey, Wellingborough; Katherine A. Maume, Camberly, both of Great Britain; Alfons L. J. Peters, Bussum, and Rudolf M. Veloo, Naarden, both of Netherlands, assignors to Quest International B.V., Naarden, Netherlands

Filed Jun. 26, 1995, Ser. No. 494,850

Claims priority, application European Pat. Off., Jun. 24, 1994, 94201825

Int. Cl.⁶ C12P *13/00;* **C12N** *1/16*

U.S. Cl. 435—128 **12 Claims**

1. A process for producing Tetraacetyl-phytospingosine (TAPS) by growing a F-60-10 mating type strain of *Pichia ciferrii* which comprises the steps of:

I subjecting a F-60-10 mating type strain of *Pichia ciferrii* to mutagenesis;

II selecting the TAPS producing mutant strains of *Pichia ciferrii;*

III growing the selected strains in a fed-batch mode on a non-fermentative carbon source at a temperature above 26° C.;

IV collecting the TAPS produced or the hydrolysis product thereof from the culture medium.

5,618,707

STEREOSELECTIVE MICROBIAL REDUCTION OF 5-FLUOROPHENYL-5-OXO-PENTANOIC ACID AND A PHENYLOXAZOLIDINONE CONDENSATION PRODUCT THEREOF

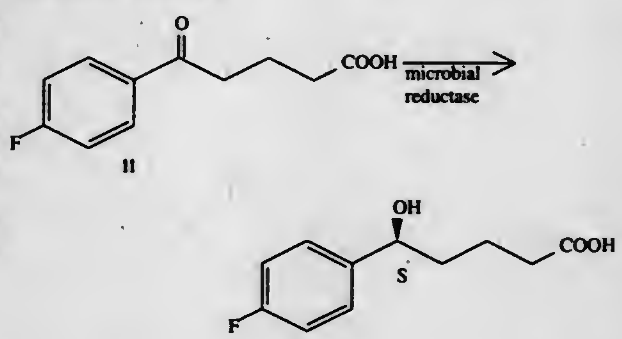
Michael J. Homann, Clinton, and Edward Previte, N. Brunswick, both of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Jan. 4, 1996, Ser. No. 583,166

Int. Cl.⁶ C12P *7/42;17/14*

U.S. Cl. 435—146 **2 Claims**

1. A stereoselective reduction of a compound of formula II to compound of formula I



which comprises adding a compound of formula II to a culture broth of *Zygosaccharomyces bailii* ATCC 38924, incubating the resulting mixture, and isolating a hydroxy compound of formula I.

5,618,708

PROCESS FOR PRODUCTION OF INOSITOL AND MICROORGANISM USED THEREFOR

Makoto Shirai, Anjo, and Tetsu Yonehara, Nagoya, both of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Apr. 19, 1995, Ser. No. 425,066

Claims priority, application Japan, Apr. 19, 1994, 6-080064; Jul. 27, 1994, 6-175315; Jul. 27, 1994, 6-175316

Int. Cl.⁶ C12P *7/02;* **C12N** *1/14*

U.S. Cl. 435—155 **19 Claims**

1. A process for the production of inositol comprising the steps of:

(1) culturing a microorganism capable of extracellularly secreting inositol in an amount of more than 1.5 g/L and belonging to the species *Candida boidinii* in a medium so as to extracellularly accumulate inositol in the medium; and optionally,
(2) recovering inositol from the culture.

5,618,709
ANTISENSE OLIGONUCLEOTIDES SPECIFIC FOR STK-1 AND METHOD FOR INHIBITING EXPRESSION OF THE STK-1 PROTEIN
Alan M. Gewirtz, Philadelphia, Pa.; Donald Small, and Curt I. Civin, both of Baltimore, Md., assignors to University of Pennsylvania, Philadelphia, Pa., and The Johns Hopkins University, Baltimore, Md.
Filed Jan. 14, 1994, Ser. No. 183,211
Int. Cl.[6] C12N *15/00;* **C07H** *21/04*
U.S. Cl. 435—172.3 **15 Claims**

1. An oligonucleotide having the nucleotide sequence SEQ ID NO:3 or SEQ ID NO:5.

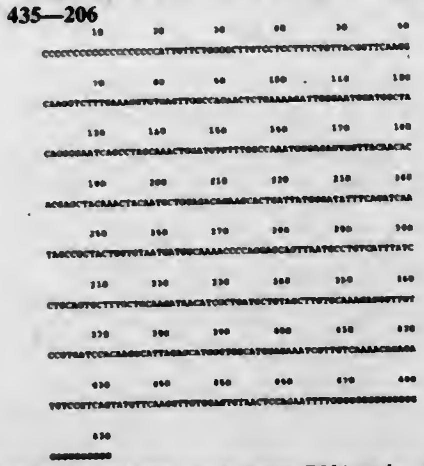
5,618,710
CROSSLINKED ENZYME CRYSTALS
Manuel A. Navia, Lexington, and Nancy L. St. Clair, Charlestown, both of Mass., assignors to Vertex Pharmaceuticals, Inc., Cambridge, Mass.
Continuation-in-part of Ser. No. 864,424, Apr. 6, 1992, abandoned, which is a continuation-in-part of Ser. No. 720,237, Jun. 24, 1991, abandoned, which is a continuation-in-part of Ser. No. 562,280, Aug. 3, 1990, abandoned. This application Feb. 12, 1993, Ser. No. 17,510
Int. Cl.[6] C12N *1/00;* **C12P** *1/00;* **G01N** *33/543;* **C07K** *17/00*
U.S. Cl. 435—174 **13 Claims**

1. An enzyme crystal crosslinked with a multifunctional crosslinking agent, said crosslinked enzyme crystal having resistance to exogenous proteolysis, such that said crosslinked enzyme crystal retains at least 91% of its initial activity after incubation for three hours in the presence of a concentration of Pronase™ that causes the soluble uncrosslinked form of the enzyme that is crystallized to form said enzyme crystal that is crosslinked to lose at least 94% of its initial activity under the same conditions.

5,618,711
RECOMBINANT EXPRESSION VECTORS AND PURIFICATION METHODS FOR *THERMUS THERMOPHILUS* DNA POLYMERASE
David H. Gelfand, Oakland; Frances C. Lawyer, Davis, and Susanne Stoffel, El Cerrito, all of Calif., assignors to Hoffmann-La Roche Inc., Nutley, N.J.
Continuation of Ser. No. 148,133, Nov. 2, 1993, abandoned, which is a continuation of Ser. No. 880,478, May 6, 1992, abandoned, which is a continuation of Ser. No. 455,967, Dec. 22, 1989, abandoned, which is a continuation-in-part of Ser. No. 143,441, Jan. 12, 1988, abandoned, which is a continuation-in-part of Ser. No. 63,509, Jun. 17, 1987, Pat. No. 4,889,818, which is a continuation-in-part of Ser. No. 899,241, Aug. 22, 1986, abandoned. This application Feb. 6, 1995, Ser. No. 384,490
Int. Cl.[6] C12N *15/54;9/12*
U.S. Cl. 435—194 **11 Claims**

1. A purified recombinant DNA polymerase that is encoded by a nucleic acid sequence derived from *Thermus thermophilus,* wherein said polymerase has the following properties:
(a) it catalyzes the combination of nucleoside triphosphates to form a nucleic acid strand complementary to a nucleic acid template strand;
(b) it is thermostable;
(c) it has an optimum temperature of activity between 50° C. and 90° C.;
(d) it is able to function effectively in a polymerase chain reaction, wherein said reaction includes repeated exposure to denaturation temperature of 90°–100° C.;
(e) has reverse transcriptase activity;
(f) it is about 94 kilodaltons;
(g) it is free of nucleic acid encoding other *Thermus thermophilus* proteins;
(h) it is free of contaminating *Thermus thermophilus* proteins; and
(i) wherein said polymerase comprises an amino acid sequence selected from the group consisting of: the sequence that is amino acids 10 to 834 of Seq ID No. 31, the sequence that is amino acids number 80 to 834 of Seq ID No. 31, and the sequence that is approximately amino acids number 278 to 834 of Seq ID No. 31.

5,618,712
HUMAN LYSOZYME
Andrzej Sledziewski; Ewa Chlebowicz-Sledziewska, both of Seattle, Wash.; Peter Swetly, Vienna, Austria; Gunther Adolf, Vienna, Austria; Rudolf Hauptmann, Vienna, Austria; Maria J. Castanon, Vienna, Austria, and Walter Spevak, Stockeran, Austria, assignors to Boehringer Ingelheim Zentrale GmbH, Germany
Continuation of Ser. No. 61,346, May 17, 1993, abandoned, which is a continuation of Ser. No. 545,129, Jun. 27, 1990, abandoned, which is a continuation of Ser. No. 929,582, Nov. 12, 1986, abandoned. This application Apr. 4, 1994, Ser. No. 225,280
Claims priority, application Germany, Nov. 12, 1985, 35 40 075.7
Int. Cl.[6] C12N *15/56;9/36;15/70;15/81*
U.S. Cl. 435—206 **46 Claims**



1. A purified and isolated recombinant DNA molecule coding for human lysozyme, wherein said DNA molecule has the following sequence:

5' AAG GTC TTT GAA AGG TGT GAG TTG GCC AGA
ACT CTG AAA AGA TTG GGA
ATG GAT GGC TAC AGG GGA ATC AGC CTA GCA AAC
TGG ATG TGT TTG GCC
AAA TGG GAG AGT GGT TAC AAC ACA CGA GCT ACA
AAC TAC AAT GCT GGA
GAC AGA AGC ACT GAT TAT GGG ATA TTT CAG ATC
AAT AGC CGC TAC TGG

-continued

TGT AAT GAT GGC AAA ACC CCA GGA GCA GGT AAT
GCC TGT CAT TTA TCC
TGC AGT GCT TTG CTG CAA GAT AAC ATC GCT GAT
GCT GTA GCT TGT GCA
AAG AGG GTT GTC CGT GAT CCA CAA GGC ATT AGA
GCA TGG GTG GCA TGG
AGA AAT CGT TGT CAA AAC AGA GAT GTC CGT CAG
TAT GTT CAA GGT TGT
GGA GTG

5,618,713
MUTANTS OF HUMAN ANTITHROMBIN III
Gerd Zettlmeissl, Lahntal; Hermann E. Karges, Marburg, and Achim Becker, Dautphetal, all of Germany, assignors to Behringwerke Aktiengesellschaft, Marburg, Germany
Continuation of Ser. No. 469,913, Jan. 22, 1990, abandoned. This application Dec. 18, 1992, Ser. No. 993,910
Claims priority, application Germany, Jan. 24, 1989, 39 01 917.9
Int. Cl.[6] C12N *9/64;* **A61K** *38/17*
U.S. Cl. 435—226 **4 Claims**

1. An antithrombin III mutant, which contains an amino acid substitution at position 96, 135, 155, 192, or 393, wherein the substitution can be present either singly or in combination with one or more other substitutions, and wherein the amino acid substituted at position 393 is not His.

5,618,714
METHODS FOR PRODUCING PROTEIN C
Brian W. Grinnell, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.
Filed Dec. 15, 1993, Ser. No. 168,035
Int. Cl.[6] C12N *5/10;5/16;* **C12Q** *1/37;* **C12P** *21/00*
U.S. Cl. 435—226 **7 Claims**

1. A method for increasing the production of protein C in an adenovirus-transformed recombinant mammalian host cell said method comprising culturing said adenovirus-transformed recombinant mammalian host cell at a temperature of about 39° C., wherein the recombinant mammalian host cell is selected from the group consisting of recombinant AV12 cells and recombinant 293 cells.

5,618,715
ONCOSTATIN M AND NOVEL COMPOSITIONS HAVING ANTI-NEOPLASTIC ACTIVITY
Mohammed Shoyab; Joyce M. Zarling, both of Seattle; Hans Marquardt, Mercer Island; Marcia B. Hanson, Seattle; Najma Malik, Seattle; Peter S. Linsley, Seattle; Timothy M. Rose, Seattle, and Anthony F. Purchio, Seattle, all of Wash., assignors to Oncogen Limited Partnership, Seattle, Wash.
Continuation of Ser. No. 689,723, Apr. 22, 1991, abandoned, which is a continuation of Ser. No. 144,574, Jan. 15, 1988, abandoned, which is a continuation-in-part of Ser. No. 115,139, Oct. 30, 1987, abandoned, which is a continuation-in-part of Ser. No. 46,846, May 4, 1987, Pat. No. 5,120,535, which is a continuation-in-part of Ser. No. 935,283, Nov. 26, 1986, abandoned, which is a continuation-in-part of Ser. No. 811,235, Dec. 20, 1985, abandoned. This application Jun. 10, 1993, Ser. No. 75,199
Int. Cl.[6] C12N *5/00;15/00;* **C12P** *21/06;* **C07H** *17/00*
U.S. Cl. 435—325 **8 Claims**

1. A substantially pure nucleotide sequence comprising (a) the nucleotide sequence as depicted in FIGS. 3A–3C from about nucleotide residue number −384 to nucleotide residue number 1741 or (b) the complement of the nucleotide sequence of (a).

5,618,716
MATERIALS AND METHODS FOR BIOSYNTHESIS OF SERINE AND SERINE-RELATED PRODUCTS
Richard P. Burlingame, Manitowoc, Wis., assignor to Wacker-Chemie GmbH, Munich, Germany
PCT No. PCT/EP92/01873, § 371 Date May 24, 1994, § 102(e) Date May 24, 1994, PCT Pub. No. WO93/12235, PCT Pub. Date Jun. 24, 1993
PCT Filed Aug. 17, 1992, Ser. No. 244,491
Claims priority, application European Pat. Off., Dec. 12, 1991, 91121385
Int. Cl.[6] C12N *9/04;15/53*
U.S. Cl. 435—106 **9 Claims**

1. Engineered DNA encoding 3-phosphoglycerate dehydrogenase (PGD) from *E. Coli* with reduced sensitivity to inhibition by serine in comparison to wild-type PGD;
said DNA encoding PGD from *E. Coli* comprising a C-terminal insertion into a wild-type PGD sequence;
wherein said insertion is between VAL 363 and ASN 364 of wild-type PGD of (SEQ ID NO:1) or between ALA 392 and GLN 394 of wild-type PGD (SEQ ID NO:1).

5,618,717
DNA ENCODING HUMAN ALKB
Ying-Fei Wei, Darnestown, and Granger G. Sutton, III, Columbia, both of Md., assignors to Human Genome Sciences, Inc., Rockville, Md.
Filed Jun. 5, 1995, Ser. No. 463,975
Int. Cl.[6] C12N *5/00;15/00;* **C12P** *21/06;* **C07H** *17/00*
U.S. Cl. 435—325 **16 Claims**

1. An isolated polynucleotide comprising a polynucleotide having at least 95% identity to a member selected from the group consisting of:
(a) a polynucleotide encoding a polypeptide comprising amino acid 2 to 307 of SEQ ID NO:2;
(b) the complement of (a).

5,618,718

PRODUCTION OF A CONTRACTILE SMOOTH MUSCLE

François A. Auger; Nicolas L'Heureux, and Lucie Germain, all of Quebec, Canada, assignors to Université Laval, Quebec, Canada

Filed Dec. 30, 1994, Ser. No. 368,205

Int. Cl.⁶ C12N *5/00;5/08;* A61F *2/08*

U.S. Cl. 435—366 **9 Claims**

1. A contractile smooth muscle cell construct comprising:

i) sub-cultured human smooth muscle cells that have been cultured in vitro under conditions to allow the formation of a sheet of smooth muscle cells; and

ii) an endogenous fibrous matrix formed by the smooth muscle cells; wherein the smooth muscle cell construct retains the ability to contract in response to vasoactive agonists.

5,618,719

Patent Not Issued For This Number

5,618,720

CELLS EXPRESSING CALCIUM CHANNEL α2 SUBUNIT-ENCODING DNA, OPTIONALLY WITH A REPORTER GENE FOR SCREENING ASSAYS

Steven B. Ellis, San Diego; Mark E. Williams, Carlsbad; Michael M. Harpold, San Diego, all of Calif.; Arnold Schwartz, Cincinnati, Ohio; Jean Sartor, and Robert Brenner, both of San Diego, Calif., assignors to Sibia Neurosciences, Inc., La Jolla, Calif.

Continuation of Ser. No. 314,083, Sep. 28, 1994, which is a division of Ser. No. 914,231, Jul. 13, 1992, Pat. No. 5,407,820, which is a continuation of Ser. No. 603,751, Apr. 4, 1989, which is a continuation-in-part of Ser. No. 176,899, Apr. 4, 1988, abandoned. This application Feb. 15, 1995, Ser. No. 404,354

Int. Cl.⁶ C12N *15/12;5/10;* G01N *33/50*

U.S. Cl. 435—325 **5 Claims**

1. A eukaryotic cell comprising a heterologous calcium channel, wherein the calcium channel is produced by a process comprising expressing in the cell cDNA that encodes the α_1 subunit of a calcium channel of an animal of a first species, and cDNA that encodes the α_2 subunit of an animal of a second species, wherein:

the first and second species are the same or different; and

the cDNA that encodes the α_2 subunit comprises a sequence of nucleotides that encodes the α_2 subunit of a naturally occurring mammalian calcium channel, wherein the sequence of nucleotides hybridizes under conditions of high stringency with DNA that includes all or a portion of the nucleotide sequence set forth in FIGS. 2*a* to 2 *f* (SEQ ID NO: 2), wherein the portion includes at least nucleotides 43–272 as set forth in FIGS. 2*a* to 2*f*.

2. The eukaryotic cell of claim 1, further comprising a heterologous reporter gene, wherein the heterologous reporter gene comprises a transcriptional control element which is active in the cell and the transcriptional activity of which responds to an ion or molecule capable of entering the cell through a functional calcium channel, linked operatively for expression to a structural gene for an indicator protein.

5,618,721

Patent Not Issued For This Number

5,618,722

PHOTURIS FIREFLY LUCIFERASE GENE

Shubei Zenno; Shinji Shiraishi, both of Yokohamashi; Satoshi Inouye, and Kaoru Saigo, both of Tokyo, all of Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Apr. 20, 1994, Ser. No. 231,729

Claims priority, application Japan, Apr. 21, 1993, 5-119050

Int. Cl.⁶ C12N *15/53;9/02*

U.S. Cl. 435—252.3 **11 Claims**

1. An isolated DNA molecule comprising the nucleotide sequence of SEQ ID NO:1, wherein the sequence is displayed in numbered triplets of capital letters, which numbers proceed sequentially from left to right and from the 5' terminus to the 3' terminus; and the sequence of capital letters represent the purine and pyrimidine bases of the nucleotide sequence, as follows:

A is adenine; G is guanine; C is cytosine; T is thymine;

R is A or G; Y is T or C; N is A, T, C, or G; H is A, C, or T; and M is A or C;

wherein further:

(a) triplet number 553 thereof is TAA or TAG or TGA;

(b) for triplets numbered 8, 17, 26, 40, 49, 57, 63, 72, 74, 96, 114, 118, 133, 137, 143, 152, 159, 184, 189, 203, 237, 252, 255, 263, 271, 273, 276, 286, 287, 291, 294, 299, 305, 308, 318, 332, 341, 358, 373, 375, 381, 410, 437, 440, 453, 456, 457, 458, 479, 486, 511, 538, and 552, if the 3' nucleotide of a triplet is A or G, then the 5' nucleotide of said triplet is T or C, or if the 3' nucleotide of a triplet is T or C, then the 5' nucleotide of said triplet is C; and if the 5' nucleotide of a triplet is C, then the 3' nucleotide of said triplet is A, T, C, or G, or if the 5' nucleotide of a triplet is T, then the 3' nucleotide of said triplet is A or G; and

(c) for triplets numbered 28, 32, 112, 130, 142, 190, 212, 217, 222, 266, 329, 336, 386, 436, 512, and 532, if the 3' nucleotide of a triplet is T or C, then the 5' nucleotide of said triplet is A or C, or if the 3' nucleotide of a triplet is T or C, then the 5' nucleotide of said triplet is C; and if the 5' nucleotide of a triplet is G, then the 3' nucleotide of said triplet is A, T, C, or G, or if the 5' nucleotide of a triplet is A, then the 3' nucleotide of said triplet is A or G.

5,618,723

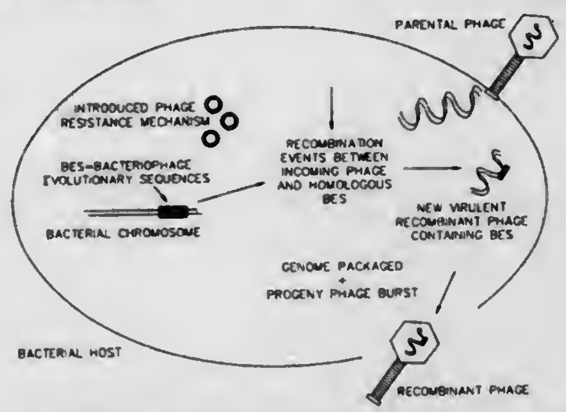
METHOD OF ELIMINATING GENETIC ROUTES FOR BACTERIOPHAGE EVOLUTION AND PRODUCTS PRODUCED THEREBY

Todd R. Klaenhammer, Raleigh, N.C., and Sylvain Moineau, Bradenton, Fla., assignors to North Carolina State University, Raleigh, N.C.

Division of Ser. No. 229,548, Apr. 19, 1994, Pat. No. 5,580,725. This application Apr. 18, 1995, Ser. No. 424,723

Int. Cl.⁶ C12N *1/20;1/21*

U.S. Cl. 435—252.3 **11 Claims**



1. A recombinant Lactococcus bacterium produced by the method comprising:

(a) introducing a bacteriophage defense mechanism into a bacterium of genera Lactococcus;

(b) culturing said Lactococcus bacterium in the presence of a first lytic bacteriophage to produce a bacterial culture, said first lytic bacteriophage being sensitive to said bacteriophage defense mechanism, wherein said first lytic bacteriophage is selected from the group consisting of P335, c2 and 936 bacteriophage;

(c) isolating from said bacterial culture a second lytic bacteriophage which is resistant to said bacteriophage defense mechanism, said second lytic bacteriophage being derived from said first lytic bacteriophage;

(d) identifying DNA sequences present in said second lytic bacteriophage which are not present in said first lytic bacteriophage; and then

(e) identifying a Lactococcus bacterium chromosomal DNA sequence which is homologous to a DNA sequence of said second lytic bacteriophage identified in step (d);

wherein said identified bacterial DNA sequence is capable of recombination with DNA of said first lytic bacteriophage;

(f) cloning said homologous DNA sequence into an integration vector capable of homologous recombination with said Lactococcus bacterium chromosomal DNA and incapable of replication in said Lactococcus bacterium;

(g) inserting said integration vector into said Lactococcus bacterium; and

(h) selecting a recombinant bacterium in which said recombinant bacterium has undergone homologous recombination with said integration vector, such that said identified bacterial sequences are disrupted in said recombinant bacterium.

5,618,724

ANTIBIOTICS GE 37468 A, B AND C

Sergio Stella, Legnano; Nicoletta Montanini, Carpiano; Francis J. LeMonnier, Saronno; Luigi Colombo, Malnate; Enrico Selva, Gropello Cairoli, all of Italy, and Maurizio Denaro, Cincinnati, Ohio, assignors to Gruppo Lepetit SpA, Gerenzano, Italy

Division of Ser. No. 493,043, Jun. 21, 1995. This application May 16, 1996, Ser. No. 648,646

Int. Cl.⁶ C12M *1/02;* A61K *38/00*

U.S. Cl. 435—253.4 **1 Claim**

1. A biologically pure culture of *Streptomyces sp.* GE 37468 ATCC 55365 or an antibiotics GE 37468 producing variant or mutant thereof.

5,618,725

OLEOPHILIC BIODEGRADING ADDITIVE AND METHOD OF TREATING HYBROCARBON POLLUTED MEDIUM

Anne Basseres, Pau; Patrick Eyraud, Poey De Lescar, and Alain Ladousse, Pau, all of France, assignors to Elf Aquitaine, Courbevoie, France

PCT No. PCT/FR93/00834, § 371 Date May 8, 1995, § 102(e) Date May 8, 1995, PCT Pub. No. WO94/05773, PCT Pub. Date Mar. 17, 1994

PCT Filed Aug. 27, 1993, Ser. No. 387,723

Claims priority, application France, Aug. 31, 1992, 92 10409

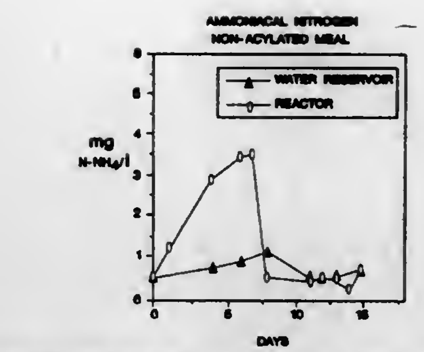
Int. Cl.⁶ C07C *209/02*

U.S. Cl. 435—262 **21 Claims**

1. A biodegradation enhancing additive consisting of a mixture comprising:

(i) at least one source of assimilable nitrogen consisting of at least one unsubstituted or substituted aminated acid selected from the group consisting of lysine, methionine, cystine, threonine, tryptophan, hydroxylysine, hydroxyproline, and mixtures thereof;

(ii) at least one source of phosphorous;



in a nitrogen/phosphorous (N/P) ratio of from 2 to 100; said additive having been subjected to a treatment designed to render said additive oleophilic.

5,618,726

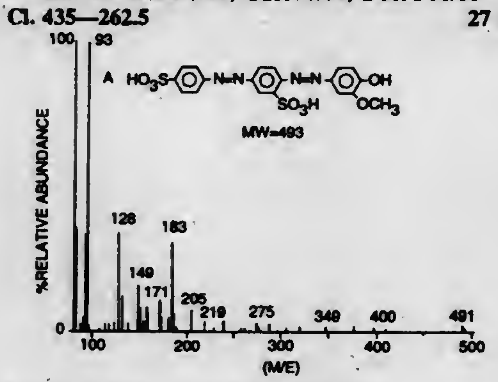
BIODEGRADABLE AZO DYES

Andrzej Paszczynski; Stefan Goszczynski; Ronald L. Crawford; Donald L. Crawford, and Maria B. Pasti, all of Moscow, Id., assignors to Idaho Research Foundation, Inc., Moscow, Id.

Continuation of Ser. No. 970,716, Nov. 2, 1992, abandoned, which is a continuation-in-part of Ser. No. 930,162, Aug. 12, 1992, abandoned, which is a continuation-in-part of Ser. No. 615,514, Mar. 27, 1991, abandoned. This application Nov. 23, 1994, Ser. No. 345,261

Int. Cl.⁶ B09B *3/00;* C12N *1/14;* D06M *16/00*

U.S. Cl. 435—262.5 **27 Claims**



1. A biodegradable composition, comprising:

a biodegradable azo dye including first and second nitrogen atoms bonded together and linked to first and second aromatic rings, wherein the first ring has a first substituent R_1 and a second substituent R_2, wherein R_1 is selected from the group consisting of a hydroxy group in a position meta or para to the nitrogen atom, a lower alkoxy group, and an amino group, and R_2 is selected from the group consisting of lower alkyl, lower alkoxy and halogen, the remainder of the substituents on the first aromatic ring being hydrogen; and

a microbe capable of producing extracellular peroxidase for degrading said dye.

5,618,727

BIOREMEDIATION PROCESS DESIGN UTILIZING IN SITU SOIL WASHING

Curtis A. Lajoie, Rockwood; Alice C. Layton, Knoxville, and Gary S. Sayler, Blaine, all of Tenn., assignors to University of Tennessee Research Corporation, Knoxville, Tenn.

Filed Mar. 6, 1995, Ser. No. 399,980

Int. Cl.⁶ B09B *3/00*

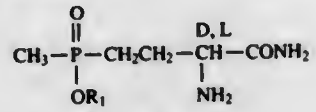
U.S. Cl. 435—262.5 **8 Claims**

1. A method for bioremediation of soil contaminated with PCBs, the method comprising:

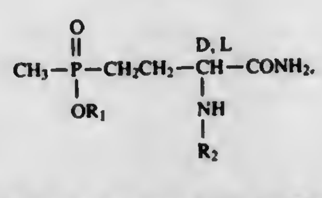
washing said soil with a biodegradable surfactant whereby said PCBs are solubilized;
removing effluent comprising said surfactant and said solubilized PCBs to a bioreactor comprising an inert substrate, wherein said effluent enters the bioreactor at a rate such that surfactant concentration in the reactor is maintained at about the critical micellar concentration;
inoculating said bioreactor with a microbial strain capable of utilizing surfactant as an energy source and biodegrading said surfactant, and capable of biodegrading PCBs to their corresponding chlorobenzoic acids;
growing said microbial strain for a period of time sufficient to biodegrade said surfactant, and to produce chlorobenzoic acid degradation products from said PCBs; wherein residual undegraded PCBs are deposited on an inert substrate; and
removing said inert substrate and residual undegraded PCBs.

5,618,728
PROCESS FOR THE ENZYMATIC CLEAVAGE OF 2-AMINO-4-METHYL-PHOSPHINOBUTYRAMIDE DERIVATIVES
Lothar Willms, Hofheim, and Klaus Bartsch, Königstein, both of Germany, assignors to Hoechst Schering AgrEvo GmbH, Berlin, Germany
Filed Jun. 7, 1995, Ser. No. 478,561
Claims priority, application Germany, Jun. 26, 1994, 44 22 045.6
Int. Cl.^{6} C12P *41/00;9/00;13/04*
U.S. Cl. 435—280 **11 Claims**

1. A process for the enzymatic conversion of DL-phosphinothricin amide to L-phosphinothricin, which comprises treating a mixture of D- and L-phosphinothricine amide of the formulae (I) and/or (II)

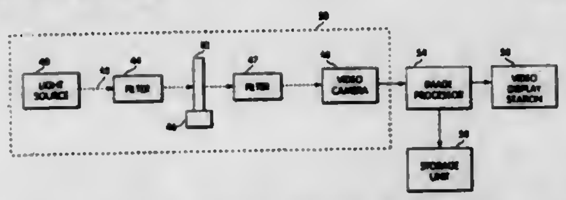

(I)

and


(II)

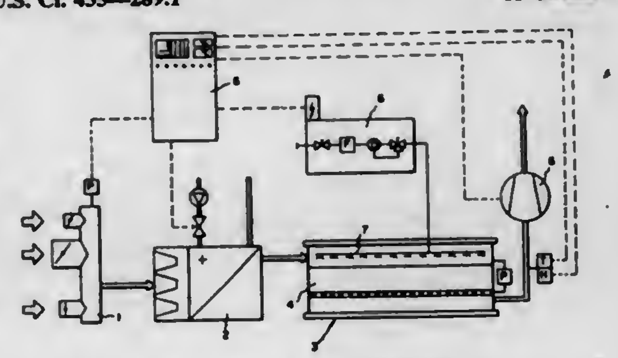
in which
R^1 is unbranched or branched $(C_1–C_{20})$-alkyl which is unsubstituted or substituted by one or more halogen radicals, or mono- or polysubstituted by $(C_1–C_8)$-alkoxy, or is $(C_3–C_8)$-cycloalkyl which can be substituted by one or more groups selected from the group consisting of $(C_1–C_4)$-alkyl, $(C_1–C_4)$-alkoxy and halogen, or is $(C_3–C_{10})$-alkenyl, $(C_3–C_{10})$-alkynyl or benzyl, and
R^2 is formyl, unbranched or branched $(C_1–C_{20})$-alkylcarbonyl which is unsubstituted or substituted in the alkyl moiety by one or more radicals selected from the group consisting of hydroxyl, halogen, $(C_1–C_4)$-alkoxy, $(C_1–C_4)$-alkylthio and phenyl which can be substituted by up to 3 radicals selected from the group consisting of $(C_1–C_{12})$-alkyl, $(C_1–C_{12})$-alkoxy, halogen, nitro and CF_3; or is benzoyl or benzoyl which is substituted by 1 to 3 radicals selected from the group consisting of $(C_1–C_{12})$-alkyl, $(C_1–C_{12})$-alkoxy, halogen, nitro and CF_3, in an aqueous or aqueous-organic medium with at least one microorganism which is selected from the group consisting of *Enterobacter aerogenes* (DSM 9164), *Klebsiella oxytoca* (DSM 9162), *Klebsiella trevisanii* (DSM 9163), *Corynebacterium aquaticum* (DSM 9171), *Rhodococcus rubropertinctus* (ATCC 21930), *Rhodococcus rhodochrous* (ATCC 33278), Arthrobacter sp. (ATCC 31652), and Corynebacterium sp. (ATCC 31662) which has an L-amino acid amidase which selectively cleaves the L-phosphinothricin amide of formula (I) and/or (II).

5,618,729
AUTOMATED SYSTEM AND METHOD FOR ESTIMATING ANTIBIOTIC EFFECTIVENESS FROM DRUG DIFFUSION TESTS
David Izraelevitz, Chelmsford, and Karen S. Cochand, Manchester, both of Mass., assignors to The Analytic Sciences Corporation, Reading, Mass.
Division of Ser. No. 323,906, Oct. 17, 1994. This application Jun. 6, 1995, Ser. No. 471,377
Int. Cl.^{6} C12M *1/34;1/18*
U.S. Cl. 435—288.7 **9 Claims**



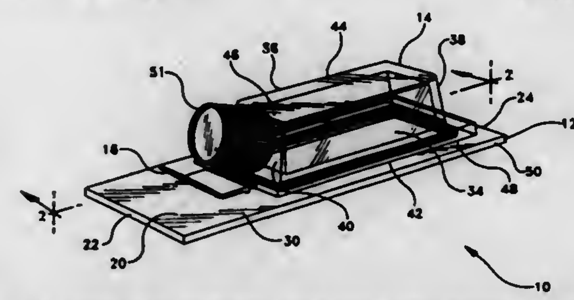
1. Apparatus for estimating antibiotic effectiveness from an antibiotic diffusion sample comprising a plate having a medium containing a population of a test organism and a plurality of antibiotic disks positioned on said plate in said medium, each of said antibiotic disks being impregnated with an antibiotic whose effectiveness is to be estimated, an inhibition zone surrounding each of said antibiotic disks after a predescribed incubation period, said apparatus comprising;
a light source for illuminating said antibiotic diffusion sample;
a video camera for acquiring an image of said illuminated antibiotic diffusion sample; and
an image processor for analyzing said image, said image processor including an electronic digital computer comprising:
means for determining locations of said antibiotic disks in said image;
means for determining an average brightness and a brightness variance of said image in a region surrounding each of said antibiotic disks; and
means for estimating a radius of an inhibition zone surrounding each of said antibiotic disks from said average brightness and said brightness variance, thereby providing an estimated radius of said inhibition zone which is indicative of antibiotic effectiveness.

5,618,730
ASSEMBLY AND PROCESS FOR PURIFYING EXHAUST GAS, AND A PROCESS FOR RECLAIMING CONTAMINATED SOIL
Günter Eder, Zellerstrasse 37, and Rudolf Kahr, Barbarastrasse 16, both of 5730 Mittersill, Austria
Filed Oct. 30, 1995, Ser. No. 550,216
Claims priority, application Austria, Oct. 28, 1994, 2020/94
Int. Cl.^{6} C12M *3/00*
U.S. Cl. 435—289.1 **11 Claims**



1. An assembly for purifying gases, comprising:
a bulk quantity of a cleaning composition through which the gases to be purified are guided, said cleaning composition being populated with micro-organisms and being a mixture of components including grapeseeds, beer draff and minerals.

5,618,731
CULTURE SLIDE ASSEMBLY
Timothy A. Stevens, Madison, and Tadeusz A. Tyndorf, Manalapan, both of N.J., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.
Filed Jun. 6, 1995, Ser. No. 468,787
Int. Cl.^{6} C12M *1/22;1/24*
U.S. Cl. 435—304.3 **10 Claims**



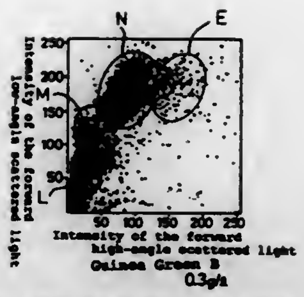
1. A culture slide apparatus comprising a base member, a vessel comprising a chamber and a neck connected to said chamber having an opening for introducing cells and culture fluids into said chamber of said vessel, a cap for covering said opening in said neck; means for removably attaching said vessel to said base member and a movable lever attached to said vessel for separating said vessel from said base member.

5,618,732
METHOD OF CALIBRATION WITH PHOTOACTIVATABLE CHEMILUMINESCENT MATRICES
John S. Pease, Los Altos; Hrair Kirakossian, San Jose; Daniel B. Wagner, Sunnyvale, and Edwin F. Ullman, Atherton, all of Calif., assignors to Behringwerke AG, Marburg, Germany
Division of Ser. No. 923,069, Jul. 31, 1992. This application May 4, 1995, Ser. No. 434,617
Int. Cl.^{6} G01N *21/64;21/76*
U.S. Cl. 436—8 **3 Claims**

1. A method for calibrating light intensity emitted by a luminescent composition, said method comprising the steps of:
(a) combining in a medium a luminescent composition capable of emitting light upon irradiation and a composition comprising a solid matrix having incorporated therein a photosensitizer capable upon activation of generating singlet oxygen and a chemiluminescent compound capable of being activated by singlet oxygen, one of said compositions when activated by light having a decay time for light emission substantially greater than the decay time for the other,
(b) irradiating said medium to activate said luminescent composition and said composition,
(c) measuring the intensity of light emitted during the decay of the activated composition having the shorter decay time,
(d) measuring the intensity of light emitted after said measuring of step (c) and after at least partial decay of the activated composition having the shorter decay time, and
(e) comparing the intensity of the light emitted during the decay of the activated composition having the shorter decay time with the intensity of light emitted in step (d) to provide for internal calibration.

5,618,733
REAGENT FOR ANALYZING LEUCOCYTES
Takashi Sakata; Takashi Morikawa; Kinya Uchihashi, all of Kakogawa, and Tomomi Hashimoto, Kobe, all of Japan, assignors to Toa Medical Electronics Co., Ltd., Japan
Filed Dec. 20, 1994, Ser. No. 360,005
Claims priority, application Japan, Dec. 22, 1993, 5-324860
Int. Cl.^{6} G01N *33/52*
U.S. Cl. 436—17 **28 Claims**

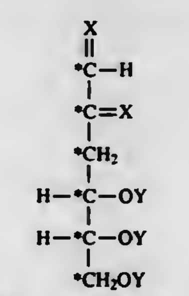
1. A reagent for analyzing leucocytes comprising



(a) at least one ionic surfactant, being either a cationic or an amphoteric surfactant, in an amount sufficient for lysing erythrocytes and causing damage to a part of cell membranes of leucocytes;
(b) at least one organic compound having a hydrophobic group and an acidic group which has a negative charge in an aqueous solution in an amount sufficient for preserving leucocyte morphology by combining with a cationic component in leucocytes;
(c) a nonioinic surfactant; and
(d) a buffer for adjusting pH.

5,618,734
METHOD FOR MEASURING 3-DEOXYGLUCOSONE DERIVATIVES IN A SAMPLE
Toshimitsu Niwa, Kounan; Koichi Niimura, Warabi; Minoru Ohara, Tokyo, and Sigemi Tomiyama, Matsudo, all of Japan, assignors to Kureha Chemical Industry Co., Ltd., Tokyo, Japan
Division of Ser. No. 314,687, Sep. 29, 1994. This application Mar. 20, 1995, Ser. No. 406,704
Claims priority, application Japan, Sep. 29, 1993, 5-264092
Int. Cl.^{6} G01N *30/06;30/14;30/72*
U.S. Cl. 436—173 **14 Claims**

1. A method for measuring an analyte in a sample to be determined, which comprises analyzing the sample in a mass spectrometer by utilizing a ^{13}C- or ^{14}C-labelled 3-deoxyglucosone derivative as an internal standard substance, wherein the 3-deoxyglucosone derivative is a compound having the formula (I):


(I)

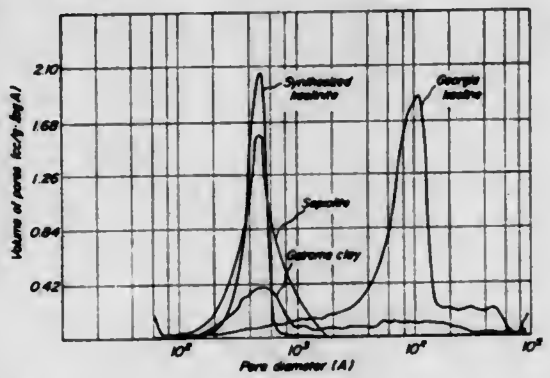
wherein *C is ^{13}C or ^{14}C, X is O or N—OR wherein R is Me, Et or H, and Y is $SiMe_3$ or $SiMe_2tBu$.

5,618,735
FLUORESCENT LIPID POLYMER-MACROMOLECULAR LIGAND COMPOSITIONS
Tom Saul, El Granada; Georges Der-Balian; Paul Kenney, both of Mountain View; Heidi Mathis, Burlingame; Shirley Johnson, Mountain View; Hans Ribi, Hillsborough, and Tom Witty, Santa Cruz, all of Calif., assignors to Biocircuits Corporation, Sunnyvale, Calif.
Division of Ser. No. 89,975, Jul. 9, 1993, Pat. No. 5,415,999. This application Mar. 16, 1995, Ser. No. 405,549
Int. Cl.^{6} G01N *33/53;33/543*
U.S. Cl. 436—518 **12 Claims**

1. A fluorescent layer comprising:
(a) a solid support;

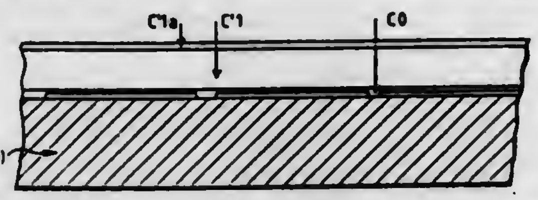
(b) a macromolecular proteinaceous ligand adsorbed onto to said solid support; and
(c) a polymerized polydiacetylene lipid layer layered onto said macromolecular proteinaceous ligand.

5,618,736
METHOD FOR USING SYNTHESIZED KAOLINITE AS CARRIER FOR BIOREACTOR, A COMPOSITE BODY COMPOSED SUBSTANTIALLY OF SYNTHESIZED KAOLINITE AS CARRIER AND ENZYME CARRIED ON SYNTHESIZED KAOLINITE, AND BIOREACTOR SYSTEM USING SUCH A COMPOSITE BODY
Kisato Tone, Nagoya, Japan, assignor to NGK Insulators, Ltd., Japan
Filed Jun. 20, 1994, Ser. No. 262,506
Claims priority, application Japan, Jun. 18, 1993, 5-147584
Int. Cl.⁶ G01N *33/552*
U.S. Cl. 436—527 **35 Claims**



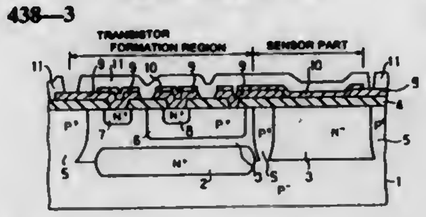
1. A method of using porous synthesized kaolinite as a carrier for use in a bioreactor, said synthesized kaolinite being synthesized by hydrothermal crystallization.

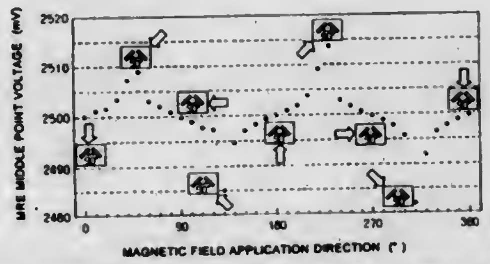
5,618,737
THERMAL DETECTOR COMPRISING A THERMAL INSULATOR MADE OF EXPANDED POLYMER
Philippe Robin, Bourg la Reine; Jean-Marc Bureau, Bures S/Yvette; François Bernard, Les Ulis, and Hugues Facoetti, Vincennes, all of France, assignors to Thomson-CSF, Paris, France
Division of Ser. No. 193,741, Feb. 9, 1994, Pat. No. 5,418,365. This application Feb. 15, 1995, Ser. No. 389,143
Claims priority, application France, Feb. 12, 1993, 93 01609
Int. Cl.⁶ H01L *31/18*
U.S. Cl. 216—56 **14 Claims**



1. A method for the making of a thermal detector comprising a substrate and a layer of material sensitive to infrared radiation, wherein said method comprises the following steps:
the making, on the substrate, of a layer C_1 of polymer dissolved in a solvent A,
the separation of the layer C_1 prompting the appearance of a heterogeneous layer with two phases;
the elimination of the solvent A to obtain a layer C'_1 of polymer having a microporous structure with reduced thermal conductivity;
the making of the layer of sensitive material on said layer C'_1.

5,618,738
MANUFACTURING METHOD FOR MAGNETORESISTANCE ELEMENTS
Kenichi Ao, Tokai; Minoru Murata, Obu; Hiroki Noguchi, Nishio; Yoshimi Yoshino, Inuyama, and Hirofumi Uenoyama, Anjo, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Filed Mar. 14, 1995, Ser. No. 404,147
Claims priority, application Japan, Mar. 14, 1994, 6-042682; Feb. 1, 1995, 7-015067
Int. Cl.⁶ H01L *21/66*
U.S. Cl. 438—3 **17 Claims**

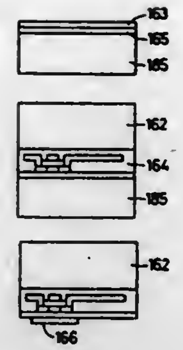




1. A method of manufacturing a magnetoresistance element comprising the steps of:
forming a magnetic thin film on a substrate;
patterning said magnetic thin film into a pattern having long sides and short sides;
applying a magnetic field to said patterned magnetic thin film after said patterning step, wherein a direction of said magnetic field applied to said patterned magnetic thin film in said applying step is at an angle no greater than 75° with respect to a lengthwise direction of said patterned magnetic thin film; and
testing said patterned magnetic thin film after said step of applying a magnetic field to said patterned magnetic thin film to determine whether said patterned thin film is defective.

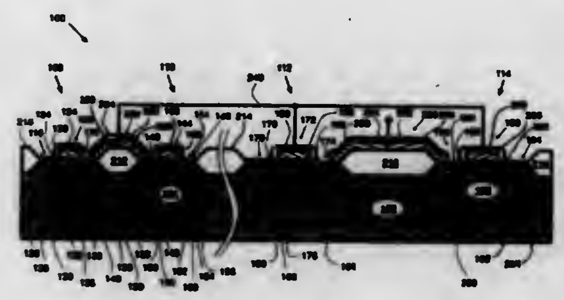
5,618,739
METHOD OF MAKING LIGHT VALVE DEVICE USING SEMICONDUCTIVE COMPOSITE SUBSTRATE
Kunihiro Takahashi; Yoshikazu Kojima; Hiroaki Takasu; Nobuyoshi Matsuyama; Hitoshi Niwa; Tomoyuki Yoshino, and Tsuneo Yamazaki, all of Tokyo, Japan, assignors to Seiko Instruments Inc., Japan
Division of Ser. No. 264,635, Jun. 23, 1994, Pat. No. 5,486,708, which is a continuation of Ser. No. 791,912, Nov. 13, 1991, Pat. No. 5,347,154. This application Jun. 2, 1995, Ser. No. 459,834
Claims priority, application Japan, Nov. 15, 1990, 2-309437; Jan. 23, 1991, 3-6501; Feb. 16, 1991, 3-22420; Apr. 11, 1991, 3-79330; Apr. 11, 1991, 3-79337
Int. Cl.⁶ H01L *21/84*
U.S. Cl. 438—158 **13 Claims**

1. A process for manufacturing a semiconductor device, comprising:
a first step of forming an SOI substrate by depositing an insulating film of silicon dioxide on a surface of a temporary silicon substrate, thermally bonding a semiconductor substrate of single crystal silicon on a surface of the insulating film, and polishing the semiconductor substrate to form a single crystal semiconductor thin film;
a second step of forming a semiconductor integrated circuit in the single crystal semiconductor thin film;
a third step of fixedly adhering a support substrate in face-to-face relation to a surface of the semiconductor integrated circuit opposite to the temporary substrate;



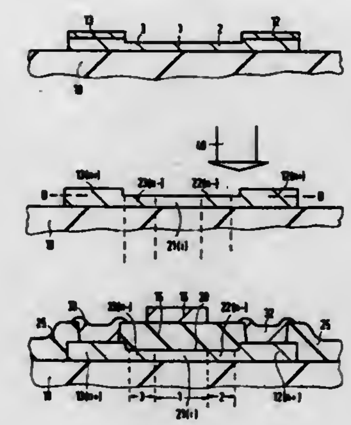
a fourth step of removing the temporary substrate to expose a surface of the insulating film to the outside; and
a fifth step of subjecting the exposed surface of the insulating film to a treatment including at least forming an electrode.

5,618,740
METHOD OF MAKING CMOS OUTPUT BUFFER WITH ENHANCED ESD RESISTANCE
Tiao-Yuan Huang, Cupertino, Calif., assignor to VLSI Technology, Inc., San Jose, Calif.
Division of Ser. No. 316,313, Sep. 30, 1994, Pat. No. 5,517,049. This application Apr. 23, 1996, Ser. No. 636,552
Int. Cl.⁶ H01L *21/8238*
U.S. Cl. 438—224 **5 Claims**



1. In a method of fabricating an integrated circuit structure, the steps of:
a) forming a structure having a silicon substrate and a field oxide thereon, said field oxide leaving exposed a core NMOS region, a core PMOS region, an output NMOS region, and an output PMOS region, said NMOS regions being p-type and said PMOS regions being n-type;
b) after step a, forming a gate oxide layer;
c) after step b, depositing and patterning a polysilicon layer so as to define a core NMOS gate, a core PMOS gate, an output NMOS gate, and an output PMOS gate, said patterning being performed so that the channel lengths of said output gates are greater than the channel lengths of said core gates;
d1) after step c, performing a relatively light and deep p-type implant into said core NMOS region while masking said output NMOS region and said PMOS regions;
d2) after step c, performing a relatively light and deep n-type implant into said core PMOS region while masking said output PMOS region and said NMOS regions;
e) after steps d, forming sidewalls on said gates; and
f1) after step e, masking said NMOS regions while leaving exposed said PMOS regions, and peribrining a relatively deep and heavy p-type implant to define a core PMOS drain, a core PMOS source, an output PMOS drain, and an output PMOS source; and
f2) after step e, masking said PMOS regions while leaving exposed said NMOS regions, and performing a relatively deep and heavy n-type implant to define a core NMOS drain, a core NMOS source, an output NMOS drain, and an output NMOS source.

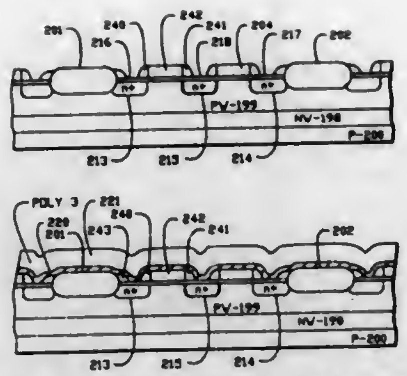
5,618,741
MANUFACTURE OF ELECTRONIC DEVICES HAVING THIN-FILM TRANSISTORS
Nigel D. Young, Redhill, and John R. Ayres, Reigate, both of England, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Apr. 5, 1995, Ser. No. 417,292
Claims priority, application United Kingdom, Apr. 7, 1994, 9406900
Int. Cl.⁶ H01L *21/786*
U.S. Cl. 438—151 **9 Claims**



1. A method of manufacturing an electronic device comprising a thin-film field-effect transistor having a channel region in a first area of a semiconductor film between source and drain regions of the transistor, a gate coupled to the channel region for controlling current flow along a current path between the source and drain regions, and a field-relief region which is of lower doping concentration than the drain region and which is formed in the current path at an area where the channel region is laterally separated from the drain region, characterized in that a second area of the semiconductor film is provided for the current path where the channel region is laterally separated from the drain region, a lateral diffusion doping step is carried out by heating the drain region and the second area with an energy beam to an extent sufficient to form the field-relief region in this second area by laterally diffusing a doping concentration of the drain region into this second area of the semiconductor film along a distance which is larger than the thickness of the semiconductor film, and dopant ions are implanted in a surface portion of the semiconductor film to provide the doping concentration of the drain region, and the implanted surface portion is etched away from at least the second area of the semiconductor film before the lateral diffusion doping step with the energy beam.

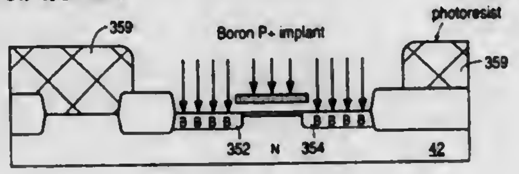
5,618,742
METHOD OF MAKING FLASH EPROM WITH CONDUCTIVE SIDEWALL SPACER CONTACTING FLOATING GATE
Fuchia Shone, Hsinchu, Taiwan; Tom D.-H. Yiu, Milpitas, and Tien-Ler Lin, Cupertino, both of Calif., assignors to Macronix Internatioal, Ltd., Hsinchu, Taiwan
Continuation-in-part of Ser. No. 187,118, Jan. 25, 1994, Pat. No. 5,399,891, which is a continuation of Ser. No. 823,892, Jan. 22, 1992, Pat. No. 5,341,468. This application Oct. 26, 1994, Ser. No. 329,487
Int. Cl.⁶ H01L *21/8247*
U.S. Cl. 438—263 **10 Claims**

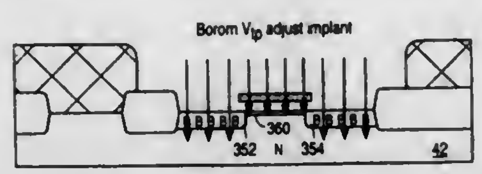
1. A method for fabricating a plurality of floating gate transistors on a substrate, comprising:
forming a floating gate insulating layer over at least a portion of the substrate;
defining a plurality of strips of conductive material in a first layer of conductive material over the floating gate insulating layer;



exposing the substrate to dopants so that the plurality of strips act as a mask and a plurality of doped regions in the substrate are formed between the plurality of strips of conductive material;
annealing the substrate to drive in the dopants in the doped regions to establish buried diffusion regions aligned with the strips of conductive material;
forming a thicker insulator with an insulating material over the buried diffusion regions;
exposing the plurality of strips of conductive material;
depositing a second layer of conductive material over and in with the plurality of strips of conductive material;
etching the second layer of conductive material for a time to form self-aligned conductive spacer lines overlying the thicker insulator over the buried diffusion regions, each conductive spacer line contacting only one of the plurality of strips of conductive material;
forming a control gate insulator over the plurality of strips of conductive material and the conductive spacer lines;
depositing a third layer of conductive material over the control gate insulator; and
etching the third layer the conductive spacers, and the plurality of conductive strips to define control gate conductors and floating gates.

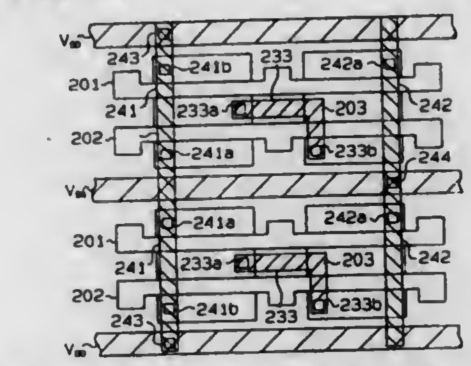
5,618,743
MOS TRANSISTOR HAVING ADJUSTED THRESHOLD VOLTAGE FORMED ALONG WITH OTHER TRANSISTORS
Richard K. Williams, Cupertino; Hamza Yilmaz, Saratoga; Michael E. Cornell, Campbell, and Jun W. Chen, Saratoga, all of Calif., assignors to Siliconix incorporated, Santa Clara, Calif.
Division of Ser. No. 323,950, Oct. 17, 1994, Pat. No. 5,559,044, which is a continuation-in-part of Ser. No. 226,419, Apr. 11, 1994, Pat. No. 5,426,328, which is a continuation of Ser. No. 948,276, Sep. 21, 1992, abandoned. This application Jun. 5, 1995, Ser. No. 463,417
Int. Cl.⁶ H01L *21/265*
U.S. Cl. 438—276 **2 Claims**





1. A method for forming an MOS transistor in conjunction with transistors of a different type in the same substrate comprising the steps of:
forming a gate of said MOS transistor overlying and isolated from a channel region of a semiconductor material of a first conductivity type;
forming a source region of a second conductivity type;
lowering a threshold voltage of said MOS transistor by implanting dopants of said second conductivity type into said channel region in said semiconductor material at an implant energy such that said dopants of said second conductivity type penetrate said gate to implant into said channel region underlying said gate, said dopants being sufficient to lower a threshold voltage of said MOS transistor to achieve a desired threshold so that said MOS transistor is capable of being selectively controlled to change between a conductive state and a nonconductive state,
said step of lowering a threshold voltage of said MOS transistor occurring after a diffusion step for forming a diffused body or base region of another transistor in said same substrate to prevent said dopants of said second conductivity in said channel region from being subjected to said diffusion step,
wherein said step of forming said source region comprises patterning a photoresist masking layer overlying said semiconductor material and depositing dopants of said second conductivity type into exposed portions of said semiconductor material, and wherein said step of lowering a threshold voltage is conducted while said photoresist masking layer remains overlying said semiconductor material so that said step of lowering said threshold voltage does not require another masking step.

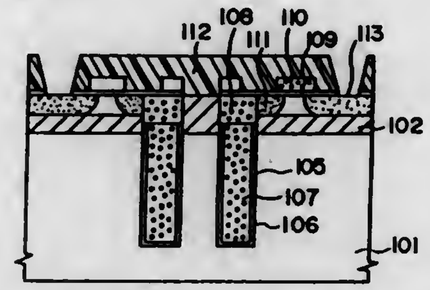
5,618,744
MANUFACTURING METHOD AND APPARATUS OF A SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE
Rieko Suzuki; Kiyoshi Saida; Kazushige Itazu; Eiji Fujine; Yoshihiro Kamiya; Yoshitaka Uchida; Takako Murakami; Teruhisa Tsuyuki; Kazunori Kawazoe; Takeshi Shimazaki, and Yukimi Nishiwaki, all of Kasugai, Japan, assignors to Fujitsu Ltd., Kawasaki, and Fujitsu VLSI Ltd., Kasugai, both of Japan
Filed Sep. 22, 1993, Ser. No. 124,702
Claims priority, application Japan, Sep. 22, 1992, 4-253046; Sep. 25, 1992, 4-257009; Sep. 28, 1992, 4-258588; Nov. 17, 1992, 4-307224; Mar. 19, 1993, 5-060774; May 18, 1993, 5-116168; Jun. 14, 1993, 5-142347
Int. Cl.⁶ H01L *21/70*
U.S. Cl. 438—599 **4 Claims**



1. A method for disposing an actual pattern of a logic cell utilizing basic cells provided on a semiconductor substrate of a semiconductor integrated circuit device, wherein each of said basic cells includes a PMOS transistor and an NMOS transistor adjacent to each other, and wherein a high power supply line and low power supply line are formed to pass over each of said basic cells, the method comprising:
alternately forming said high power supply line and low power supply line so that they extend along both PMOS and NMOS transistors in each of said basic cells without overlapping said transistors;
preforming said actual pattern including a plurality of wirings connected to said high power supply line and said low power supply line and internal wirings within said basic cells; and

disposing said actual pattern utilizing said basic cells at a determined location.

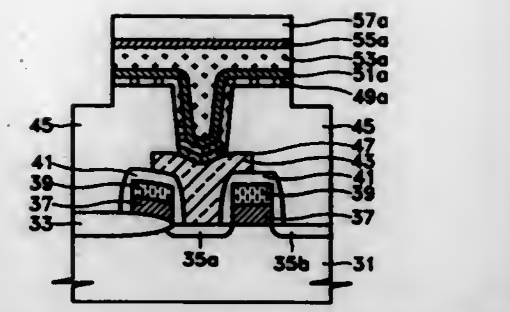
5,618,745
METHOD OF MANUFACTURING A ONE TRANSISTOR ONE-CAPACITOR MEMORY CELL STRUCTURE WITH A TRENCH CONTAINING A CONDUCTOR PENETRATING A BURIED INSULATING FILM
Akio Kita, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan
Division of Ser. No. 156,620, Nov. 23, 1993, Pat. No. 5,442,211. This application Dec. 30, 1994, Ser. No. 366,505
Claims priority, application Japan, Dec. 1, 1992, 4-321644
Int. Cl.⁶ H01L *21/70;27/00*
U.S. Cl. 438—164 **17 Claims**



1. A method for manufacturing a one-transistor, one-capacitor memory cell, comprising the steps of:
(a) forming a buried insulating film layer on a semiconductor substrate;
(b) forming a semiconductor layer on the buried insulating film layer;
(c) forming a trench in the semiconductor substrate by etching through the buried insulating film layer;
(d) forming a dielectric film layer for a capacitor directly contacting an inner side wall surface of a lower portion of the trench;
(e) filling a conductive material into the trench from a bottom of the trench up to a top edge of said dielectric film layer;
(f) forming a conductive plug in an upper portion of the trench, from the top edge of the dielectric film layer, in contact with the conductive material, up to a top edge of said trench; and
(g) forming a MIS transistor, having drain and source impurity regions, in the semiconductor layer in such a manner that one of the impurity regions makes contact with the conductive plug.

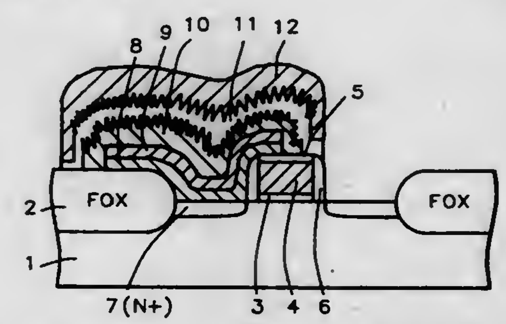
5,618,746
METHOD FOR MANUFACTURING A CAPACITOR OF SEMICONDUCTOR DEVICE HAVING DIFFUSION-BLOCKING FILMS
Cheol-seong Hwang, Seongnam, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea
Filed Sep. 6, 1995, Ser. No. 524,287
Claims priority, application Rep. of Korea, May 30, 1995, 94-13959
Int. Cl.⁶ H01L *21/70;27/00*
U.S. Cl. 438—3 **9 Claims**

1. A method for manufacturing a capacitor of a semiconductor device comprising the steps of:
forming a gate insulation film and a gate electrode on a semiconductor substrate;
ion-implanting to form a source and drain region on said semiconductor substrate, using said gate electrode as a mask;
forming a first insulation film for insulating said gate electrode;
forming a plug film on said source region;
forming a second insulation film having a contact hole on said plug film;



forming a first diffusion-blocking film formed on said plug film in said contract hole;
forming a second diffusion-blocking film on the surface of said first diffusion-blocking film, on the surface of said second insulation film, and on sidewalls of said contact hole;
forming a third diffusion-blocking film on said second diffusion-blocking film;
forming a first conductive layer on said third diffusion-blocking film, to be used as a storage electrode;
forming a dielectric layer on said first conductive layer; and
forming a second conductive layer on said dielectric layer, to be used as a plate electrode.

5,618,747
PROCESS FOR PRODUCING A STACKED CAPACITOR HAVING POLYSILICON WITH OPTIMUM HEMISPHERICAL GRAINS
Chine-Gie Lou, Hsinchu, Taiwan, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan
Filed Jun. 3, 1996, Ser. No. 657,073
Int. Cl.⁶ H01L *21/70;27/00*
U.S. Cl. 438—398 **12 Claims**



1. A method for fabricating a stacked capacitor, dynamic random access memory, (DRAM), device, on a semiconductor substrate, using a hemispherical grained polysilicon layer as part of a storage node structure, with said hemispherical grain polysilicon layer being deposited in a LPCVD tool, featuring multiple heating zones and multiple reactant injection inlets, comprising the steps of:
providing a transfer gate transistor in said substrate, comprised of a gate insulator, a polysilicon gate structure, completely protected with insulator, and source and drain regions;
depositing a first polysilicon layer on an underlying, said transfer gate transistor;
depositing a second polysilicon layer on said first polysilicon layer;
patterning of said second polysilicon layer, and of said first polysilicon layer, to form bottom portion of said storage node structure, contacting source and drain region of said transfer gate transistor;
depositing said hemispherical grained polysilicon layer, on said bottom portion of said storage node, and on said transfer gate transistor, using an LPCVD tool for deposition of said hemispherical grained polysilicon layer, in which said LPCVD tool is equipped with multiple heating zones, and multiple reactant injection inlets;

patterning of said hemispherical grained polysilicon layer, to complete formation of said storage node structure;

formation of a composite dielectric layer on said storage node structure;

depositing a fourth polysilicon layer on said storage node structure, and on said transfer gate transistor, not covered by said storage node structure; and

patterning of said fourth polysilicon layer, and of said capacitor dielectric, to form cell plate for said stacked capacitor structure.

5,618,748

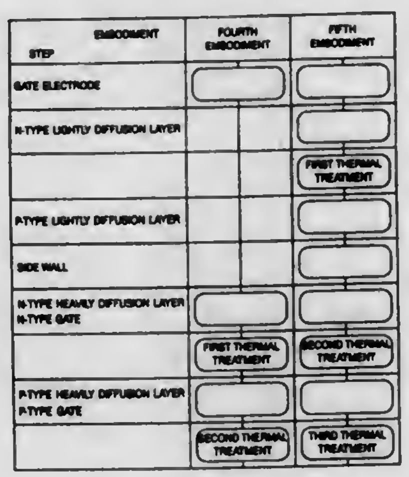
MANUFACTURING METHOD OF CMOS TRANSISTOR WITH NO REDUCTION OF PUNCH-THROUGH VOLTAGE

Mizuki Segawa, Kyoto; Yoshiaki Kato, Hyogo; Hiroaki Nakaoka, Osaka; Takashi Nakabayashi, Osaka; Atsushi Hori, Osaka; Hiroshi Masuda, Osaka; Ichiro Matsuo, Kyoto; Akihira Shinohara, Osaka; Takashi Uehara, Osaka, and Mitsuo Yasuhira, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 340,375, Nov. 14, 1994, Pat. No. 5,447,872, which is a division of Ser. No. 141,727, Oct. 27, 1993, Pat. No. 5,409,847. This application May 17, 1995, Ser. No. 443,266

Int. Cl.[6] H01L *21/70*

U.S. Cl. 438—232 **2 Claims**



1. A method of manufacturing a CMOS transistor, said method comprising the steps of:

forming gate electrodes of an N-channel transistor and a P-channel transistor on a semiconductor substrate with a gate insulating layer therebetween;

forming N-type heavily doped diffusion layers to be a source or a drain of the N-channel transistor, using the gate electrode of the N-channel transistor as a mask;

conducting a first thermal treatment to said gate electrodes and said N-type heavily doped diffusion layers at a first temperature;

forming P-type heavily doped diffusion layers to be a source or a drain of the P-channel transistor, using the gate electrode of the P-channel transistor as a mask; and

conducting a second thermal treatment to said P-type heavily doped diffusion layers at a second temperature lower than that of said first thermal treatment,

a difference in temperature between said first temperature and said second temperature being a minimum of approximately 50° C.

5,618,749

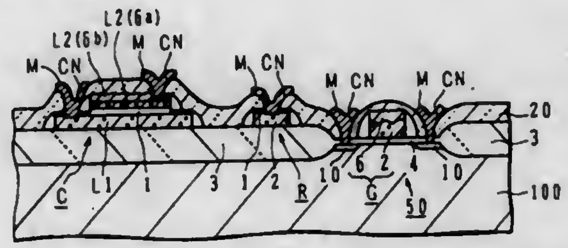
METHOD OF FORMING A SEMICONDUCTOR DEVICE HAVING A CAPACITOR AND A RESISTOR

Toshiyuki Takahashi; Shigeru Suga, and Touhachi Makino, all of Hamamatsu, Japan, assignors to Yamaha Corporation, Japan

Filed Mar. 31, 1995, Ser. No. 414,761

Int. Cl.[6] H01L *21/70;27/00*

U.S. Cl. 438—384 **13 Claims**



1. A method of manufacturing a semiconductor device having at least a MOSFET, a capacitor element, and a resistor formed on the surface of a semiconductor substrate, comprising the steps of:

(a) forming a gate oxide film on the surface of said semiconductor substrate;

(b) forming a first conductive layer of a first material on said gate oxide film;

(c) forming a dielectric film used for capacitor insulating film on said first conductive layer;

(d) forming a second conductive layer of the first material on said dielectric film;

(e) removing said dielectric film and said second conductive layer while leaving unremoved areas corresponding to a lower electrode of said capacitor element and said resistor element respectively;

(f) forming a refractory material layer covering said first conductive layer, said dielectric film and said second conductive layer;

(g) forming a masking member covering said refractory material layer at an area corresponding to an upper electrode of said capacitor element and an area corresponding to a gate electrode of said MOSFET; and

(h) removing said refractory material layer and said second conductive layer at an area other than said areas corresponding to the upper electrode and the gate electrode and removing said first conductive layer not covered with said dielectric film, by using said mask member as an etching mask and said dielectric film as an etching stopper,

wherein said capacitor element has a structure such that said dielectric film is sandwiched between said first conductive layer and said second conductive layer, and said resistor element is made of said first conductive layer.

5,618,750

METHOD OF MAKING FUSE WITH NON-CORROSIVE TERMINATION OF CORROSIVE FUSE MATERIAL

Hideyuki Fukuhara, Ami-machi, and Yoichi Miyai, Ibaraki, both of Japan, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 13, 1995, Ser. No. 421,331

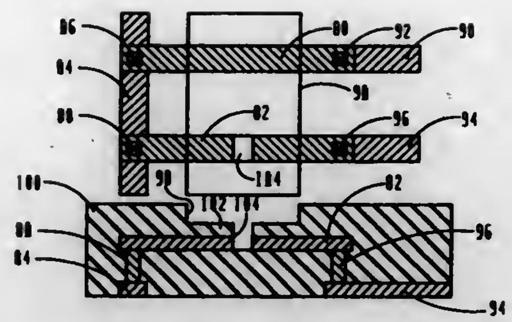
Int. Cl.[6] H01L *21/70;27/00*

U.S. Cl. 438—601 **5 Claims**

1. A method for forming a fuse in a semiconductor integrated circuit, the method comprising the steps of:

forming a barrier region of non-corrosive conductive material interfaced on one side thereof to other circuitry on the integrated circuit;

disposing a fuse region of corrosive conductive material interfaced with the barrier region such that the fuse region is in an electrical series configuration through the barrier region to the other circuitry, the non-corrosive conductive material of the barrier region exhibiting minimum corrosive properties upon



exposure to an atmosphere and the corrosive conductive material exhibiting substantial corrosive properties upon exposure to the atmosphere;

disposing an electrically insulating layer over the fuse region to a thickness that will allow penetration therethrough by a fuse programming device that will cause the fuse region to substantially reduce the conductivity thereof and will expose the fuse region to the atmosphere; and

wherein any corrosion that occurs in the fuse region will not proceed past the barrier region.

5,618,751

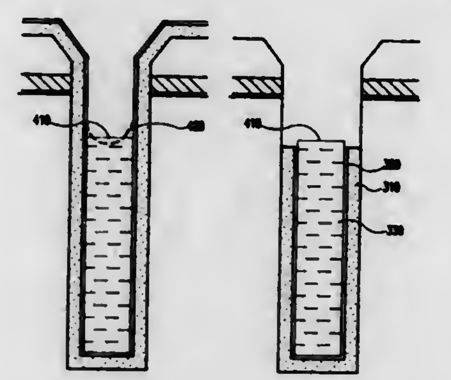
METHOD OF MAKING SINGLE-STEP TRENCHES USING RESIST FILL AND RECESS

Kevin M. Golden, Wallkill, N.Y.; Pai-Hung Pan, Boise, Id.; Kevin J. Stewart, Murrysville, Pa., and Alan C. Thomas, Hughsonville, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 23, 1996, Ser. No. 652,063

Int. Cl.[6] H01L *21/8242*

U.S. Cl. 438—392 **20 Claims**



1. A method of fabrication of a trench capacitor including the steps of

forming a trench in a substrate,

forming a diffusion source layer within said trench,

filling said trench with a resist,

exposing and developing said resist to a depth less than a depth of said trench,

etching said diffusion source in accordance with an unexposed portion of said resist, and

completing said trench capacitor.

5,618,752

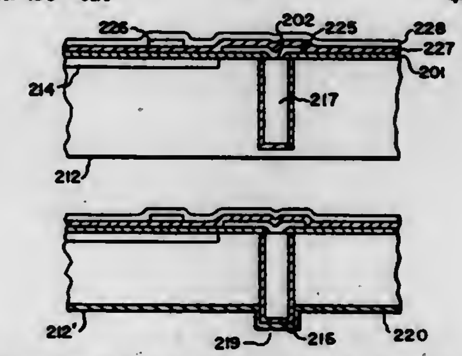
METHOD OF FABRICATION OF SURFACE MOUNTABLE INTEGRATED CIRCUITS

Stephen J. Gaul, Melbourne, Fla., assignor to Harris Corporation, Palm Bay, Fla.

Filed Jun. 5, 1995, Ser. No. 462,171

Int. Cl.[6] H01L *21/28*

U.S. Cl. 438—626 **44 Claims**



1. A method for fabricating surface mountable integrated circuits comprising the steps of:

providing a wafer of semiconductor material with first and second surfaces and with integrated circuits formed on the first surface of said wafer;

forming a via comprising a first open end on the first surface of the wafer, an elongated, open passage extending from said open end a controlled depth into the wafer and toward said second surface of said wafer and terminating at a second end closed by said semiconductor material, said via having an interior surface defined by said semiconductor material;

depositing a conductive material in the via over the interior surface and the closed end of the via;

removing semiconductor material from the second surface of said wafer to expose the conductive material over the via interior surface.

5,618,753

METHOD FOR FORMING ELECTRODES ON MESA STRUCTURES OF A SEMICONDUCTOR SUBSTRATE

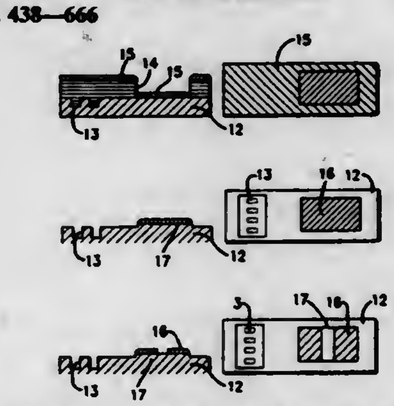
Masatoshi Tokushima, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 4, 1995, Ser. No. 539,065

Claims priority, application Japan, Oct. 4, 1994, 6-239927; Mar. 30, 1995, 7-073099

Int. Cl.[6] H01L *21/28*

U.S. Cl. 438—666 **7 Claims**



1. A method for forming an electrode on a mesa structure of a semiconductor substrate, said method comprising the steps of:

selectively forming an electrode on a portion of a surface of said semiconductor substrate, said electrode being formed by the steps of: providing a photoresist pattern on said substrate; depositing an electrically conductive material on said photoresist pattern and on an exposed part of said substrate, said exposed part not being covered by said photoresist pattern;

and removing said photoresist pattern being covered by said electrically conductive material to cause said electrically conductive material to remain only on said exposed part of said substrate, to form an electrode comprising a remaining part of said electrically conductive material;

providing an additional photoresist pattern on an entire surface of said substrate, said additional photoresist pattern having at least an opening over a part of said electrode;

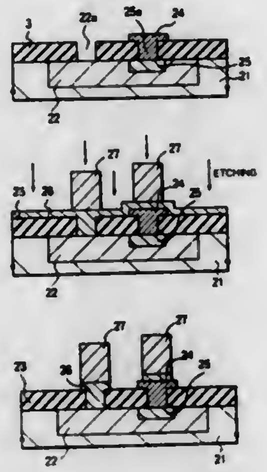
subjecting said electrode to a selective etching using said additional photoresist pattern as a mask; and

removing of said additional photoresist pattern;

subjecting said substrate to a selective etching by use of said electrode as a mask to form a mesa structure on said substrate, said mesa structure thereby being self-aligned just under said electrode.

5,618,754
METHOD OF FABRICATING A SEMICONDUCTOR DEVICE HAVING AN AU ELECTRODE

Tomokazu Kacahara, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Dec. 21, 1995, Ser. No. 576,403
Claims priority, application Japan, Dec. 22, 1994, 6-335436
Int. Cl.⁶ H01L *21/44*
U.S. Cl. 438—653 **10 Claims**



1. A method of fabricating a semiconductor device having an Au electrode comprising:

a first step of forming an insulating film on a semiconductor substrate;

a second step of selectively forming a contact hole in said insulating film to expose a part of said substrate;

a third step of forming a barrier metal layer on an entire surface of a resultant structure to bury at least a part of said contact hole and form a barrier metal layer on said insulating film;

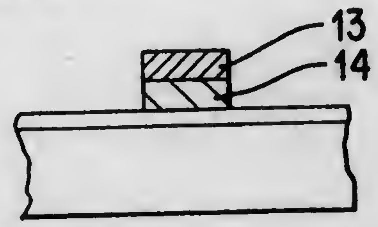
a fourth step of selectively forming an Au layer on said barrier metal layer; and

a fifth step of performing reactive dry etching using said Au layer as a mask and using an etching gas, obtained by adding an O_2 gas to a mixed gas of at least one type of chlorine based gas and at least one type of fluorine based gas, thereby etching said barrier metal layer;

wherein said at least one type of chlorine based gas is selected from a group of a chlorine gas and a carbon chloride gas, and wherein said at least one type of fluorine base gas is selected from a group of a carbon fluoride gas in which CCl_2F_2 and $C_2Cl_2F_4$ gas are not included, and a carbon hydrogen fluoride gas, and wherein said an etching gas is mixed in such a manner that a flow rate ratio of O_2:chlorine based gas:fluorine based gas becomes (0.4 to 2.4):9.6:2.4.

5,618,755
METHOD OF MANUFACTURING A POLYCIDE ELECTRODE

Naoki Ito, Kawasaki, Japan, assignor to Fuji Electric Co., Ltd., Kawasaki, Japan
Filed May 9, 1995, Ser. No. 437,385
Claims priority, application Japan, May 17, 1994, 6-101451
Int. Cl.⁶ H01L *21/28*
U.S. Cl. 438—592 **10 Claims**



1. A method of manufacturing a semiconductor device, comprising:

forming a partially poly-crystalline silicon thin film by a CVD method at a film formation temperature of 550° C. or lower by using a source gas containing silane;

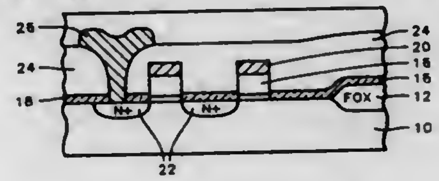
laminating a metal silicide film at a film formation temperature of 500° C. or lower on said partially poly-crystalline silicon thin film to form a film lamination;

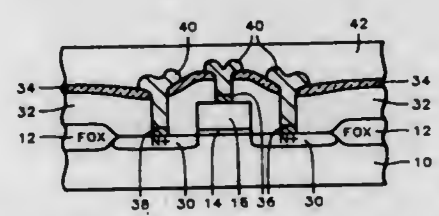
patterning and etching said film lamination; and

heat treating said film lamination to simultaneously crystallize said partially poly-crystalline silicone thin film and said metal silicide film to integrally bond the patterned film lamination.

5,618,756
SELECTIVE WSIX DEPOSITION

Peter Chew, and Chuck Jang, both of Singapore, Singapore, assignors to Chartered Semiconductor Manufacturing Pte Ltd., Singapore, Singapore
Filed Apr. 29, 1996, Ser. No. 639,391
Int. Cl.⁶ H01L *21/312; 21/44*
U.S. Cl. 438—586 **19 Claims**





1. A method of selective WSi_x deposition in the fabrication of an integrated circuit device comprising:

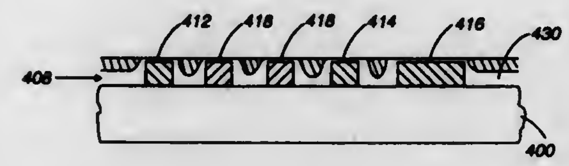
providing semiconductor device structures in and on a semiconductor substrate wherein WSi_x is to be deposited overlying a first portion of said substrate and wherein WSi_x is not to be deposited overlying a second portion of said substrate;

providing a layer of organic material over the surface of said substrate overlying said second portion of said substrate; and

depositing a layer of WSi_x over the surface of said substrate wherein said WSi_x is deposited overlying said first portion of said substrate and wherein the presence of said organic material layer prevents said WSi_x from depositing overlying said second portion of said substrate completing said selective WSi_x deposition in the fabrication of said integrated circuit device.

5,618,757
METHOD FOR IMPROVING THE MANUFACTURABILITY OF THE SPIN-ON GLASS ETCHBACK PROCESS

Subhas Bothra, and Milind G. Weling, both of San Jose, Calif., assignors to VLSI Technology, Inc., San Jose, Calif.
Filed Jan. 30, 1996, Ser. No. 593,898
Int. Cl.⁶ H01L *21/302; 21/304; 21/463*
U.S. Cl. 438—699 **12 Claims**



1. A method of fabricating an integrated circuit, the method comprising the steps of:

a) forming a multiplicity of active conductive traces on a substrate of the integrated circuit to form an active trace layer, the active conductive traces each being arranged to electrically couple associated elements of the associated integrated circuit, there being gaps between adjacent ones of the active conductive traces;

b) determining a standardized pattern density for a surface of the integrated circuit;

c) forming a multiplicity of dummy raised lines on the substrate in the gaps based on the determined standardized pattern density, wherein the dummy raised lines are not arranged to electrically couple any elements in the integrated circuit;

d) depositing an insulating layer over the active conductive traces to electrically insulate the active conductive traces, wherein the depositing of the insulating layer over the active conductive traces and the dummy raised lines serves to form raised areas in the insulating layer which have the determined standardized pattern density;

e) spinning a layer of glass over the insulating layer to provide a planar surface on the wafer, the glass layer being superimposed over the active conductive traces and the dummy raised lines;

f) etching the glass layer and portions of the insulating layer at a substantially uniform rate to expose at least portions of the insulating layer directly over the active conductive traces and the dummy raised lines; and

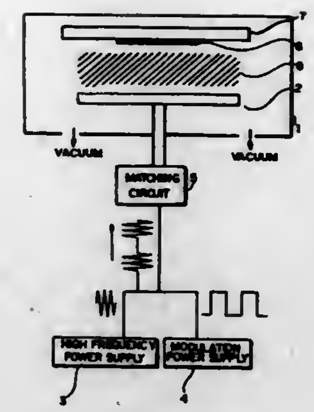
whereby the standardized pattern density substantially reduces microloading.

5,618,758
METHOD FOR FORMING A THIN SEMICONDUCTOR FILM AND A PLASMA CVD APPARATUS TO BE USED IN THE METHOD

Takashi Tomita, Nara; Katsuhiko Nomoto, Kashiwara; Yoshihiro Yamamoto, Nara; Hitoshi Sannomiya, Osaka, and Sae Takagi, Tondabayashi, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Feb. 15, 1996, Ser. No. 601,990
Claims priority, application Japan, Feb. 17, 1995, 7-29086; Feb. 17, 1995, 7-29087; Dec. 26, 1995, 7-339696
Int. Cl.⁶ H01L *21/302*
U.S. Cl. 438—485 **5 Claims**

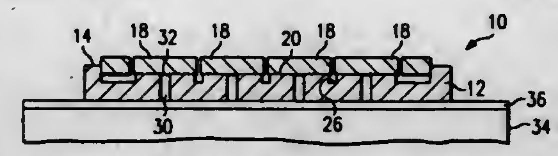
1. A method for producing a thin semiconductor film comprising the steps of: placing a group-IV compound or a derivative thereof in a plasma state; decomposing the group-IV compound or the derivative thereof into active species; and depositing the active species on a substrate, wherein

energy for generating plasma is intermittently supplied at a supply time interval which is equal to or less than a reciprocal of {(secondary reaction rate constant of a source gas reacting with active species other than long-life active species within the plasma)× (number of source gas molecules)}.



5,618,759
METHODS OF AND APPARATUS FOR IMMOBILIZING SEMICONDUCTOR WAFERS DURING SAWING THEREOF

Robert M. Boysel, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed May 31, 1995, Ser. No. 454,766
Int. Cl.⁶ H01L *21/302*
U.S. Cl. 438—464 **29 Claims**



1. A method of immobilizing (i) a semiconductor wafer during the sawing thereof to form individual chips and (ii) the resulting chips as and after sawing is completed, which comprises

placing the wafer on a carrier so that the wafer and the chips to be formed have a predetermined orientation relative to the carrier;

applying a negative pressure to the wafer through the carrier to immobilize the wafer and to maintain the wafer-carrier orientation and the orientation of the chips to be formed relative to the carrier, negative pressure being applied to the wafer in alignment with the location of each chip to be formed;

sawing the wafer along saw paths into chips while the negative pressure is applied in alignment with and immobilizes each chip as it is formed to maintain the orientation of the chips relative to the carrier; and

applying restraining forces to the chips to maintain chip-carrier orientation as the carrier and the chips thereon are transported following sawing.

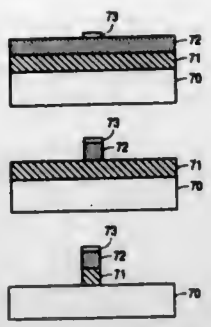
5,618,760
METHOD OF ETCHING A PATTERN ON A SUBSTRATE USING A SCANNING PROBE MICROSCOPE

Hyongsok Soh, Stanford, Calif.; Stephen C. Minne, Danville, Ill., and Calvin F. Quate, Stanford, Calif., assignors to The Board of Trustees of the Leland Stanford, Jr. University, Stanford, Calif.
Continuation-in-part of Ser. No. 297,691, Aug. 26, 1994, abandoned, which is a continuation-in-part of Ser. No. 296,340, Aug. 25, 1994, abandoned, which is a continuation-in-part of Ser. No. 226,784, Apr. 12, 1994, Pat. No. 5,517,280. This application Sep. 23, 1994, Ser. No. 311,763
Int. Cl.⁶ H01L *21/465*
U.S. Cl. 438—703 **37 Claims**

1. A method of etching a pattern on a semiconductor substrate, said method comprising:

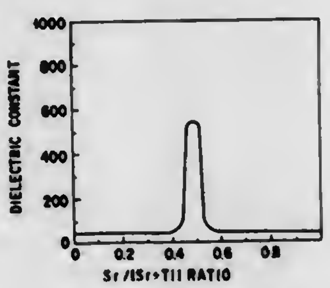
depositing an underlayer on a surface of said semiconductor substrate;

depositing a top layer on a surface of said underlayer;



creating a pattern in a region at a surface of said top layer with a tip of a cantilever of a scanning probe microscope;
applying a first etchant to said surface of said top layer so as to remove a portion of said top layer, using said pattern as a mask, thereby exposing a portion of said surface of said underlayer;
applying a second etchant to said portion of said surface of said underlayer so as to remove a portion of said underlayer thereby exposing a portion of said surface of said substrate;
etching a portion of said substrate; and
etching a further portion of said underlayer so as to cause a remaining portion of said top layer to lift off.

5,618,761
METHOD OF MANUFACTURING A PEROVSKITE THIN FILM DIELECTRIC
Kazuhiro Eguchi, Yokohama; Masahiro Kiyotoshi, Sagamihara, and Keitaro Imai, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Sep. 11, 1995, Ser. No. 526,387
Claims priority, application Japan, Sep. 16, 1994, 6-221446; Mar. 9, 1995, 7-050104
Int. Cl.⁶ H01L *21/02*
U.S. Cl. 438—785 **7 Claims**



1. A method of manufacturing a semiconductor device, comprising the step of forming a dielectric thin film on a semiconductor layer, said dielectric thin film being made of a compound represented by the general formula (1) given below:

$$ABO_3 \qquad (1)$$

where "A" is at least one element selected from the group consisting of Ca, Ba, Sr, Pb and La, and "B" is at least one element selected from the group consisting of Zr and Ti,
wherein said dielectric thin film is formed by a chemical vapor deposition carried out under the kinetically limited conditions in which a pressure is 400 Torr or less and a temperature is 1,000° C. or less by using a raw material gas containing a β-diketone complex compound of said element A, a β-diketone complex compound of said element B, and an oxidizing agent; and
wherein the supply amount of said β-diketone complex compound of said element B is at least 5 times as much in molar ratio as the supply amount of said β-diketone complex compound of said element A so as to form said dielectric thin film in which the element ratio A/A+B is substantially equal to stoichiometric ratio of 0.5.

5,618,762
LIGHT-WEIGHT ANTIBACTERIAL CERAMIC AND ANTIBACTERIAL CERAMIC FILTER
Hiroshi Shirakawa, Kagamigahara; Osamu Yamakawa, Kani; Hiroaki Nihonmatsu, Gifu, and Kiminori Atsumi, Saitama, all of Japan, assignors to NGK Insulators, Ltd.; NGK Adrec Co. Ltd., both of Nagoya, and Sangi Co. Ltd., Tokyo, all of Japan
Filed May 11, 1995, Ser. No. 439,374
Claims priority, application Japan, May 16, 1994, 6-101429
Int. Cl.⁶ C04B *35/00;* **A01N** *59/16;* **B01D** *39/20*
U.S. Cl. 501—1 **12 Claims**

1. A lightweight antibacterial ceramic comprising:
an antibacterial material of 0.01–20 wt % in which an antibacterial metal or metallic ion is loaded on a carrier; and
an inorganic material of 99.9–80 wt %, said inorganic material being selected from the group consisting of an oxide inorganic material, a non-oxide inorganic material, and mixtures thereof;
wherein said antibacterial ceramic has a particle bulk density of 0.6–2.0 g/cm³.

5,618,763
ALKALI-ZINC-SILICATE GLASS-CERAMICS AND GLASSES
Martin Frank, Schaan; Susanne Wegner, Lindau; Volker Rheinberger, Vaduz, and Wolfram Hoeland, Schaan, all of Germany, assignors to Ivoclar AG, Liechtenstein
Filed Jul. 27, 1995, Ser. No. 507,857
Claims priority, application Germany, Aug. 1, 1994, 44 28 839.5
Int. Cl.⁶ C03C *14/00;* **A61K** *6/02*
U.S. Cl. 501—5 **14 Claims**

1. An alkali-zinc-silicate glass-ceramic, comprising the following components:

Components	% by wt.
SiO_2	52.0 to 63.5
$Me(III)_2O_3$	8.5 to 13.0
K_2O	0 to 20.5
Na_2O	1.5 to 20.0
Li_2O	0 to 5.0
ZnO	3.6 to 8.0
Me(II)O	2.5 to 6.5
$TiO_2 + ZrO_2$	0.5 to 6.0
SnO_2	0 to 9.5
P_2O_5	0 to 4.0
F	0 to 2.0
CeO_2	0 to 3.0

where
a) $Me(III)_2O_3$ is formed from 0 to 13% by wt. Al_2O_3 and 0 to 9.5% by wt. La_2O_3; and
b) Me(II)O is formed from 0 to 3.5% by wt. CaO, 0 to 4.5% by wt. BaO and 0 to 5.0% by wt. MgO.

5,618,764
COLORED CERAMIC COMPOSITION AND METHOD FOR PRODUCING CURVED GLASS PLATE USING THE SAME
Hiroshi Usui; Hitoshi Onoda, and Tsuneo Manabe, all of Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan
Filed Sep. 14, 1995, Ser. No. 527,870
Claims priority, application Japan, Sep. 14, 1994, 6-220375
Int. Cl.⁶ C03C *8/14;8/04;3/066*
U.S. Cl. 501—17 **20 Claims**

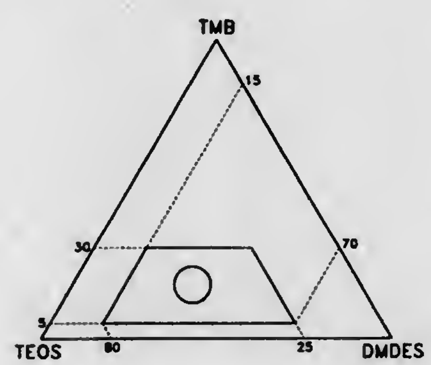
1. A colored ceramic composition comprising, as inorganic components, from 5 to 40 wt % of a colored heat resistance pigment powder, from 60 to 95 wt % of a zinc-containing glass powder and from 0 to 10 wt % of a refractory filler powder, wherein said glass powder consists essentially of the following components:

SiO_2	27 to 40 wt %
B_2O_3	10 to 20 wt %
ZnO	35 to 45 wt %
Li_2O	0 to 5 wt %
Na_2O	0 to 10 wt %
K_2O	0 to 5 wt %
$Li_2O + Na_2O + K_2O$	0 to 15 wt %.

5,618,765
CERAMICS POROUS BODY AND METHOD OF PREPARING THE SAME
Hisao Takeuchi, Ita; Seiji Nakahata, Itami; Takahiro Matsuura, Itami, and Chihiro Kawai, Itami, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan
PCT No. PCT/JP94/00803, § 371 Date Jan. 6, 1995, § 102(e) Date Jan. 6, 1995, PCT Pub. No. WO94/27929, PCT Pub. Date Dec. 8, 1994
PCT Filed May 19, 1994, Ser. No. 367,220
Claims priority, application Japan, May 20, 1993, 5-118711
Int. Cl.⁶ C04B *35/58*
U.S. Cl. 501—80 **18 Claims**

1. A ceramic porous body comprising silicon nitride ceramic crystal grains including columnar β silicon nitride ceramic crystal grains with a hexagonal cross-section, and a compound of a rare earth element with at least 1 vol. % and not more than 20 vol. % of an oxide of said rare earth element relative to the total composition of said porous body, wherein said porous body has pores with a mean pore size of at least 0.05 μm and not more than 12 μm and has a porosity of at least 30%, said columnar ceramic crystal grains have an aspect ratio of at least 3, and at least 60% of all of said silicon nitride ceramic crystal grains are said β silicon nitride grains.

5,618,766
LIGHTWEIGHT CERAMIC COMPOSITION OF CARBON SILICON OXYGEN AND BORON
Daniel B. Leiser; Ming-Ta Hsu, and Timothy S. Chen, all of San Jose, Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Filed Jul. 22, 1996, Ser. No. 681,146
Int. Cl.⁶ C04B *35/571;35/58*
U.S. Cl. 501—87 **5 Claims**

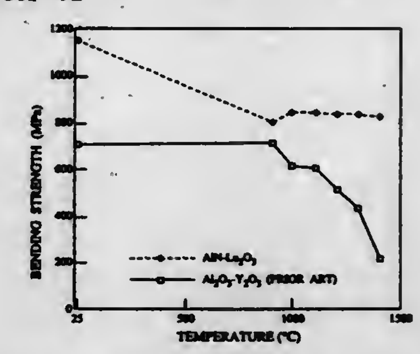


1. A ceramic composition consisting essentially of $C_aSi_bO_cB_d$ wherein b has a value of 1, the value of a ranges from 2–4, the value of c ranges from 1–3 and the value of d ranges from 0.03–0.1.

5,618,767
PROCESS FOR PRODUCING CERAMIC COMPONENTS OF SILICON CARBIDE
Werner Benker, Selb, Germany, assignor to Hoechst CeramTec Aktiengesellschaft, Selb, Germany
Division of Ser. No. 368,643, Jan. 4, 1995, abandoned. This application Jan. 11, 1996, Ser. No. 584,386
Claims priority, application Germany, Jan. 5, 1994, 44 00 131.2
Int. Cl.⁶ C04B *35/565*
U.S. Cl. 501—90 **20 Claims**

1. A process for producing shaped components of silicon carbide comprising:
admixing a silicon carbide powder, optionally a carbon component, and a binder comprising aqueous solution of starch modified by a sulfamate or a sulfonic ester to form a mixture,
shaping the mixture into a shaped body, and
infiltrating the shaped body with silicon or sintering the shaped body.

5,618,768
SINTERED BODY OF SILICON NITRIDE AND COMPOSITE SINTERED BODY OF SILICON NITRIDE AND SILICON CARBIDE
Yoshikatsu Higuchi, and Kazumi Miyake, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 5, 1996, Ser. No. 628,486
Claims priority, application Japan, Apr. 7, 1995, 7-082310; Apr. 12, 1995, 7-111142
Int. Cl.⁶ C04B *35/596;35/599*
U.S. Cl. 501—92 **9 Claims**



5. An article of manufacture for use at 1200° C. or higher temperature, composed of a silicon nitride sintered body formed by sintering a mixture of silicon nitride powder, aluminum nitride powder and a powder of at least one rare earth oxide selected from the group consisting of Ce_2O_3, Pr_2O_3, Nd_2O_3, Dy_2O_3, Ho_2O_3, Er_2O_3, Tm_2O_3, Yb_2O_3 and Lu_2O_3.

5,618,769
PROCESS FOR THE RECOVERY OF ALKYLATION CATALYST
Sven I. Hommeltoft, Hillerod, Denmark, assignor to Haldor Topsøe A/S, Denmark
Filed Mar. 8, 1995, Ser. No. 400,859
Claims priority, application Denmark, Mar. 10, 1994, 0278/94
Int. Cl.⁶ B01G *38/60;38/66*
U.S. Cl. 502—26 **4 Claims**

1. Process for the recovery of spent fluorinated sulfonic catalyst from acid soluble oil (ASO) being formed during alkylation of hydrocarbons in the presence of the acid catalyst, comprising the steps of:
washing the ASO with water and recovering an aqueous solution of the acid catalyst;
neutralizing the acid in the aqueous solution by adding to the solution a basic compound being selected from the group consisting of amino compounds, ammonia and ammonium

salts to obtain ammonium salts of the acid catalyst, the obtained acid catalyst salts having a melting point;
forming a melt of the obtained acid catalyst salts;
drying the acid catalyst salts in the form of the melt to obtain a dried melt; and
recovering the acid catalyst by protonization of the dried melt with sulfuric acid and distilling off the recovered acid catalyst from the sulfuric acid.

5,618,770
PROCESS FOR THE PRODUCTION OF POWDER CATALYSTS
Jean-Pierre Dath, Beloeil, and Guy Debras, Bons-Villers, both of Belgium, assignors to Fina Research, S.A., Feluy, Belgium
Filed Nov. 18, 1994, Ser. No. 341,824
Claims priority, application Belgium, Nov. 18, 1993, 09301272
Int. Cl.^{6} C08F *4/62;4/04*
U.S. Cl. 502—107 **11 Claims**

1. In a process for the production of a magnesium chloride and titanium chloride based powder catalyst comprising the steps:
(a) providing a plasma field;
(b) introducing into said plasma field, magnesium chloride in solution or in suspension in a liquid medium;
(c) introducing into said plasma field a liquid medium containing titanium chloride selected from the group consisting of (i) a liquid solution or suspension of a solid titanium chloride and (ii) liquid titanium tetrachloride;
(d) introducing an electron donor into said plasma field; and
(e) withdrawing a reaction product of said electron donor, magnesium chloride and titanium chloride from said plasma field, cooling said reaction product and collecting a magnesium chloride and titanium chloride based powder catalyst after cooling of said reaction product.

5,618,771
COMPONENTS AND CATALYSTS FOR THE POLYMERIZATION OF OLEFINS
Sandro Parodi; Roberto Nocci, both of Novara; Umberto Giannini, Milan; Pier Camillo Barbé, and Umberto Scatá, both of Ferrara, all of Italy, assignors to Montell Technology Company B.V., Netherlands
Continuation of Ser. No. 315,670, Sep. 30, 1994, abandoned, which is a continuation of Ser. No. 214,087, Mar. 16, 1994, abandoned, which is a continuation of Ser. No. 73,246, Jun. 4, 1993, abandoned, which is a continuation of Ser. No. 815,873, Jan. 3, 1992, abandoned, which is a continuation of Ser. No. 698,344, May 7, 1991, abandoned, which is a continuation of Ser. No. 584,387, Sep. 14, 1990, abandoned, which is a continuation of Ser. No. 455,809, Dec. 26, 1989, abandoned, which is a continuation of Ser. No. 328,779, Mar. 27, 1989, abandoned, which is a continuation of Ser. No. 157,063, Feb. 2, 1988, abandoned, which is a continuation of Ser. No. 32,994, Apr. 6, 1987, abandoned, which is a continuation of Ser. No. 885,212, Jul. 14, 1986, abandoned, which is a continuation of Ser. No. 692,196, Jan. 17, 1985, abandoned, which is a continuation of Ser. No. 292,156, Aug. 12, 1981, abandoned. This application Jun. 6, 1995, Ser. No. 469,734
Claims priority, application Italy, Aug. 13, 1980, 24141/80
Int. Cl.^{6} C08F *4/651;10/06*
U.S. Cl. 502—127 **2 Claims**

1. A solid catalyst component to be used in combination with an Al alkyl compound and a silicon compound having at least one Si—OR, Si—OCOR, or Si—NR_2 bond, to form a catalyst for the polymerization of alpha olefins, said silicon compound being selected from the class consisting of compounds having formula:

$$R_mSiY_nX_p$$

wherein:
R is and alkyl, alkenyl, aryl, arylalkyl, cycloalkyl radical with from 1 to 20 carbon atoms;
Y is —OR', —OCOR' or —NR'_2 wherein R', either equal to or different from R, has the same meaning as R;
X is either a halogen or a hydrogen atom or a —OCOR" or —NR'_2 group wherein R", either equal to or different from R', has the same meaning as R';
m, n and p are numbers wherein respectively m is between 0 and 3, n is between 1 and 4, p is between 0 or 1; and m+n+p is equal to 4;
wherein said solid catalyst component comprises an anhydrous Mg dihalide in active form, as essential support and, supported on said Mg dihalide, a Ti halide or Ti haloalcoholate and an electron donor compound which is diethylphthalate.

5,618,772
METHOD FOR PRODUCING CATALYST
Akihiko Soda; Yoshio Ukyo; Hideo Sobukawa; Toshio Kandori, and Masayuki Fukui, all of Aichi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi-ken, Japan
Filed Apr. 19, 1995, Ser. No. 424,092
Claims priority, application Japan, Apr. 20, 1994, 6-081951
Int. Cl.^{6} B01J *21/08*
U.S. Cl. 502—238 **17 Claims**

1. A method for producing a catalyst comprising sequentially the steps of:
mixing a catalytic component, alumina particles of which 50% by weight or more have a particle size of 100 nm or less, and at least one substance to form a slurry mixture;
drying said slurry mixture; and
calcining the dried mixture;
wherein said substance is at least one selected from the group consisting of:
(a) silica particles, of which 50% by weight or more have a particle size of 100 nm or less;
(b) a sol dispersion of silica particles, of which 50% by weight or more have a particle size of 100 nm or less;
(c) a solution of silica;
(d) particles each of which is composed of both alumina and silica, 50% by weight or more of the particles having a particle size of 100 nm or less;
(e) a sol dispersion of particles each of which is composed of both alumina and silica, 50% by weight or more of the particles having a particle size of 100 nm or less;
(f) particles of barium compound, of which 50% by weight or more have a particle size of 100 nm or less;
(g) a sol dispersion of barium compound particles, of which 50% by weight or more have a particle size of 100 nm or less;
(h) a solution of a barium compound;
(i) particles of lanthanum compound, of which 50% by weight or more have a particle size of 100 nm or less; and
(j) a solution of a lanthanum compound;
wherein said catalytic component is at least one catalytic metal selected from the group consisting of: Mg, Ca, Sc, Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Mo, Tc, Ru, Rh, Pd, Ag, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu, Hf, Ta, W, Re, Os, Ir, Pt, Au and oxides thereof.

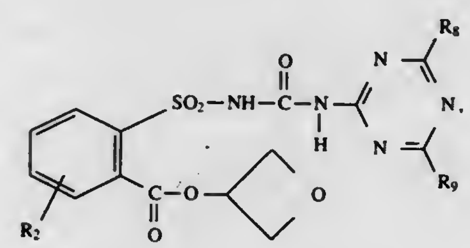
5,618,773
STABILIZERS FOR DYE-DONOR ELEMENT USED IN THERMAL DYE TRANSFER
David B. Bailey, Webster, and Kristine B. Lawrence, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 21, 1996, Ser. No. 620,714
Int. Cl.^{6} B41M *5/035;5/38*
U.S. Cl. 503—227 **18 Claims**

7. A process of forming a thermal dye transfer image comprising:
I) contacting at least one dye-donor element comprising a support having thereon a dye layer comprising an image dye in a polymeric binder, with a dye-receiving element comprising a support having thereon a polymeric dye image-receiving layer;

II) imagewise-heating said dye-donor element; and
III) transferring a dye image to said dye-receiving element to form said thermal dye transfer image,
wherein said dye layer also contains a stabilizer comprising an oligomeric, polycarbonate polyol having a molecular weight between about 1000 and about 10,000.

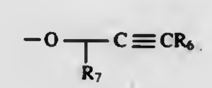
5,618,774
SELECTIVE SAFENED HERBICIDAL COMPOSITION
Jutta Glock, Mumpf; Manfred Hudetz, Rheinfelden, both of Switzerland, and Elmar Kerber, Görwihl, Germany, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.
Continuation of Ser. No. 462,444, Jun. 5, 1995, abandoned, which is a continuation of Ser. No. 325,913, Oct. 19, 1994, abandoned. This application Dec. 21, 1995, Ser. No. 576,269
Claims priority, application Switzerland, Dec. 8, 1993, 3658/93
Int. Cl.^{6} A01N *25/32;43/20;43/42;43/56*
U.S. Cl. 504—105 **10 Claims**

1. A composition for the selective control of weeds in crops of cultivated plants, comprising, in addition to inert carriers and adjuvants, as active component a mixture of
a) a herbicidally effective amount of a N-phenylsulfonyl-N'-triazinylurea of formula I

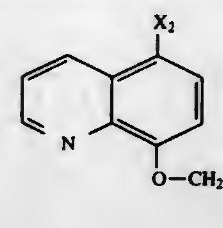


(I)

wherein
R_2 is hydrogen, fluoro, chloro, bromo, iodo, $(O)_nR_3$, NO_2, NR_4R_5, —C≡CR_6,

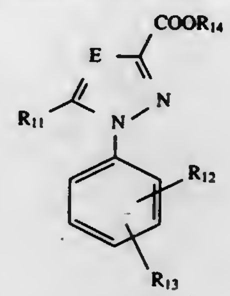


or cyano;
n is 0 or 1;
R_3 is C_1-C_4alkyl or C_1-C_4alkyl which is substituted by 1 to 4 halogen atoms, C_1-C_3alkoxy or C_1-C_3alkylthio; C_2-C_4alkenyl or C_2-C_4alkenyl which is substituted by 1 to 4 halogen atoms;
R_4 is hydrogen, CH_3O, CH_3CH_2O or C_1-C_3alkyl;
R_5 is hydrogen or C_1-C_3alkyl;
R_6 is hydrogen, methyl or ethyl;
R_7 is hydrogen or methyl;
R_8 is C_1-C_4alkyl, C_1-C_4alkoxy, C_1-C_4haloalkoxy, C_1-C_4haloalkyl, C_1-C_4haloalkylthio, C_1-C_4alkylthio, halogen, C_2-C_5alkoxyalkyl, C_2-C_5alkoxyalkoxy, amino, C_1-C_3alkylamino or di(C_1-C_3alkyl)amino; and
R_9 is C_1-C_4alkoxy, C_1-C_4haloalkoxy, C_1-C_4haloalkylthio, C_1-C_4alkylthio, C_2-C_5alkoxyalkyl, C_2-C_5alkoxyalkoxy, C_2-C_5alkylthioalkyl or cyclopropyl; with the proviso that R_8 and R_9 are not $OCHF_2$ and $SCHF_2$;
and
b) an antidotally effective amount of a safener to antagonise the herbicide, said safener selected from the group consisting of:
a quinoline derivative of formula IIa



(IIa)

wherein
R_{10} is hydrogen, C_1-C_8alkyl or C_1-C_8alkyl which is substituted by C_1-C_6 alkoxy or C_3-C_6alkenyloxy; and
X_2 is hydrogen or chloro; and
a 1-phenylazole-3-carboxylic acid derivative of formula IIb

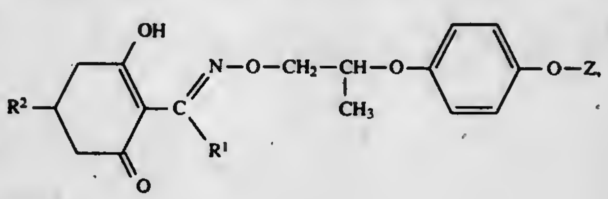


(IIb)

wherein
E is nitrogen or methine;
R_{11} is —CCl_3, phenyl or halogen-substituted phenyl;
R_{12} and R_{13} are each independently of the other hydrogen or halogen; and R_{14} is C_1-C_4alkyl; with the proviso that R_2 is not hydrogen when the safener consists of a compound of formula IIb.

5,618,775
MIXTURES OF OPTICALLY ACTIVE CYCLOHEXENONE OXIME ETHERS, THEIR PREPARATION, INTERMEDIATES FOR THIS PURPOSE AND THEIR USE AS HERBICIDES
Ulf Misslitz, Neustadt; Norbert Meyer, Ladenburg; Juergen Kast, Boehl-Iggelheim; Wolfgang Ladner, Fussgoenheim; Helmut Walter, Obrigheim; Karl-Otto Westphalen, Speyer; Uwe Kardorff, Mannheim, and Matthias Gerber, Mutterstadt, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany
PCT No. PCT/EP93/00210, § 371 Date Aug. 11, 1994, § 102(e) Date Aug. 11, 1994, PCT Pub. No. WO93/16061, PCT Pub. Date Aug. 19, 1993
PCT Filed Jan. 30, 1993, Ser. No. 290,726
Claims priority, application Germany, Feb. 13, 1992, 42 04 204.6
Int. Cl.^{6} A01N *43/60;43/16;* **C07D** *241/44;309/06*
U.S. Cl. 504—235 **6 Claims**

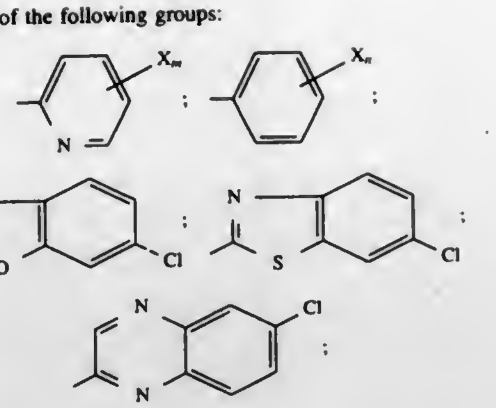
1. Mixtures of optically active cyclohexenone oxime ethers, having R- and S-configuration in the oxime ether moiety and containing at least 50 mol % of the R-configuration, of the formula I



I

where:
R^1 is C_1–C_6-alkyl

Z is one of the following groups:



X is halogen or C_1–C_4-haloalkyl;

m is from 0 to 3, or from 1 to 4 where all X's are halogen;

n is from 0 to 3, or from 1 to 5 where all X's are halogen;

R^2 is C_1–C_4-alkoxy-C_1–C_6-alkyl or C_1–C_4-alkylthio-C_1–C_6-alkyl; C_3–C_7-cycloalkyl or C_5–C_7-cycloalkenyl, where these groups are unsubstituted or bear from one to three substituents selected from the group consisting of C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkyl, hydroxyl and halogen;

the 5-membered heterocyclic structure tetrahydrofuranyl tetrahydrothienyl or dioxolanyl, which heterocyclic structure is unsubstituted or bears from one to three substituents selected from the group consisting of C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio and C_1–C_4-haloalkyl; a 6- or 7-membered saturated or mono- or diunsaturated heterocyclic structure which in addition to the carbon atoms of the ring has one or two oxygen or sulfur atoms or one oxygen and one sulfur atom as heteroatoms and which is unsubstituted or bears from one to three substituents selected from the group consisting of hydroxyl, halogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio and C_1–C_4-haloalkyl; a 5-membered heteroaromatic structure selected from the group consisting of isoxazolyl and furanyl, which heteroaromatic structure is unsubstituted or bears from one to three substituents selected from the group consisting of halogen, cyano, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkyl, C_2–C_6-alkenyl, C_2–C_6-alkenyloxy and C_1–C_4 -alkoxy-C_1–C_4-alkyl;

phenyl or pyridyl, where these aromatic structures are unsubstituted or bear from one to three substituents selected from the group consisting of nitro, C_1–C_4-alkyl, and C_3–C_6-alkynyloxy

or the agriculturally useful salts and esters of the compounds I with C_1–C_{10}-carboxylic acids.

5,618,776

YTTRIUM OR RARE-EARTH SUBSTITUTED METAL OXIDE MATERIALS

Jeffrey L. Tallon, 3 Marine Drive, York Bay, Eastbourne; Robert G. Buckley, 145 Creswick Terrace, Northland, Wellington, and Murray R. Presland, 4/1 Mahina Bay Road, Mahina Bay, Eastbourne, all of New Zealand

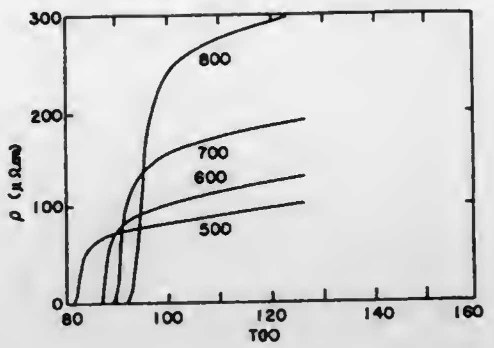
Continuation of Ser. No. 129,800, Sep. 30, 1993, abandoned, which is a continuation of Ser. No. 706,592, May 28, 1991, abandoned, which is a division of Ser. No. 335,819, Apr. 10, 1989, abandoned. This application Oct. 17, 1994, Ser. No. 324,456

Claims priority, application New Zealand, Apr. 8, 1988, 224205; Nov. 17, 1988, 226995; Feb. 24, 1989, 228132

Int. Cl.^{6} H01B *12/00;* **C04B** *35/50;35/45*

U.S. Cl. 505—120 **18 Claims**

1. A metal oxide material which exhibits bulk superconductivity



at a temperature of at least about 90K, said metal oxide material having the formula

$$B_bSr_2Ca_{1-X}R_XCu_2O_{8-d}$$

wherein

b is about 2.1,

$0<X\leq 0.1$,

B is Bi or Bi partially replaced by Tl,

Sr and Ca can be replaced in part by any alkali metal, alkali earth metal, or a combination thereof,

R is Y or any rare earth element, and wherein

d is fixed by, or at a level equivalent to that achieved by, annealing said metal oxide material at a temperature of at least 500° C. in oxygen at a pressure or partial pressure not greater than the partial pressure of oxygen in air.

5,618,777

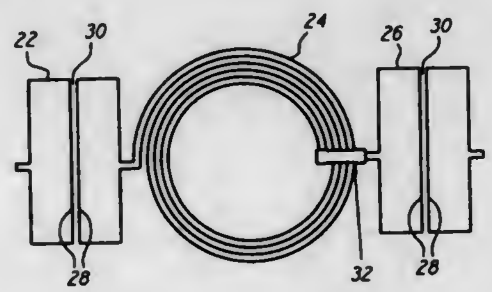
HIGH TEMPERATURE SUPERCONDUCTOR LUMPED ELEMENTS AND CIRCUIT THEREFROM

Gregory L. Hey-Shipton; Roger J. Forse, both of Santa Barbara, and David L. Skoglund, Mountain View, all of Calif., assignors to Superconductor Technologies, Inc., Santa Barbara, Calif.

Filed May 28, 1993, Ser. No. 70,100

Int. Cl.^{6} H03H *7/01;* **H01B** *12/06*

U.S. Cl. 505—210 **35 Claims**



30. An electrical resonant circuit comprising:

a substantially non-magnetic substrate having a first face, and

a high temperature superconducting lumped inductor having a zig-zag pattern disposed on the first face, the inductor being coupled to a capacitive element and configured into a resonant circuit having a Q in excess of 1000.

5,618,778

ADDITIVES FOR LUBRICANTS

Hermann O. Wirth, Bensheim, and Hans-Helmut Friedrich, Lautertal, both of Germany, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Continuation of Ser. No. 999,173, Dec. 28, 1992, abandoned, which is a continuation of Ser. No. 825,437, Jan. 23, 1992, abandoned, which is a continuation of Ser. No. 717,163, Jun. 17, 1991, abandoned, which is a continuation of Ser. No. 107,896, Oct. 9, 1987, abandoned, which is a continuation of Ser. No. 23,939, Mar. 5, 1987, abandoned, which is a continuation of Ser. No. 894,460, Jul. 30, 1986, abandoned, which is a continuation of Ser. No. 750,839, Jul. 1, 1985, abandoned.

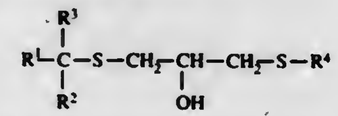
This application Apr. 12, 1995, Ser. No. 422,670

Claims priority, application Switzerland, Jun. 29, 1984, 3148/84; May 14, 1985, 2047/85

Int. Cl.^{6} C01M *135/24;133/00*

U.S. Cl. 508—274 **6 Claims**

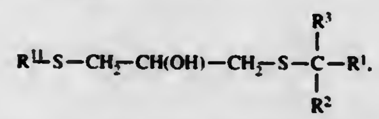
1. A composition containing a lubricant or hydraulic fluid and in an effective amount to improve extreme pressure and anti-wear properties of said lubricant or hydraulic fluid of at least one compound of the formula II



(II)

which

R^1, R^2, and R^3 together with the C atom to which they are bound are tert-C_4–C_{14}-alkyl, and none of these substituents R^1, R^2 and R^3 may be hydrogen, and wherein R^4 is phenyl, —CH_2—CH_2—NH_2, —CH_2CH_2OH, —$CH_2CH(OH)$—CH_2—OH, tert-C_4–C_{14}alkyl, —$(CH_2)_2$—S—CH(OH)—CH_2—S—(tert-C_8–C_{12}alkyl), —CH_2—COOH, —CH_2—COO—(i-C_8H_{17}), —CH_2—CO—OH.H_2N—(tert-C_{10}–C_{16}-alkyl), —P(S)—[O—(i-C_3H_7)]$_2$, —P(S)—[O—(i-C_8H_{17})]$_2$, α-naphthyl, benzothiazolyl, benzimidazolyl, thiazolyl, —CH_2—CH—(OH)—CH_2—S—R^{10} is wherein R^{10} is tertiary C_1–C-alkyl, tertiary C_4–C_{14}-alkyl,



wherein R^1, R^2 and R^3 have the meaning defined above, and R^{11} is —$(CH_2)_2$—O—$(CH_2)_2$—O—$(CH_2)_2$—, o-phenylene, thiadiazol-2,5-ylene or —$(CH_2)_u$—, u being zero to 2.

5,618,779

TRIGLYCERIDE-BASED BASE OIL FOR HYDRAULIC OILS

Johann Klein; Frank Bongardt, both of Duesseldorf; Peter Daute, Essen, and Matthias Fies, Krefeld, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP94/02212, § 371 Date Feb. 8, 1996, § 102(e) Date Feb. 8, 1996, PCT Pub. No. WO95/02659, PCT Pub. Date Jan. 26, 1995

PCT Filed Jul. 6, 1994, Ser. No. 581,571

Claims priority, application Germany, Jul. 15, 1993, 43 23 771.1

Int. Cl.^{6} C10M *107/34;101/04*

U.S. Cl. 508—486 **16 Claims**

1. In a hydraulic oil comprising a base oil and at least one of an antioxidant, corrosion inhibitor, extreme-pressure additive, or anti-wear additive, the improvement wherein the base oil comprises either

a) the product of the ethoxylation and/or propoxylation of glycerol with from about 0.5 to about 3 moles of ethylene oxide and/or propylene oxide and subsequent esterification with a saturated or unsaturated C_{6-24} fatty acid, or mixtures thereof; or

b) the product of the insertion of from about 0.5 to about 3 moles of EO and/or PO into a natural oil or fat other than castor oil.

5,618,780

LUBRICATING COMPOSITION INCLUDING AN ESTER-USE OF THE COMPOSITION AND WELL FLUID INCLUDING THE COMPOSITION

Jean-François Argillier, Suresnes; Annie Audibert, Le Vesinet; Pierre Marchand, Orgeval, all of France; André Demoulin, Beauvechain, and Michel Janssen, Wezelbeej-Oppem, both of Belgium, assignors to Institut Francais Du Petrole, Rueil-Malmaison, France

Filed Mar. 22, 1995, Ser. No. 408,309

Claims priority, application France, Nov. 22, 1994, 94 14254

Int. Cl.^{6} C10M *129/28;129/70;129/74*

U.S. Cl. 508—503 **22 Claims**

1. A lubricating composition for water-base well fluids, comprising:

from 50% to 99% by weight of a part A consisting of one or several esters obtained by reaction of a monocarboxylic acid (A.1), linear or branched, having 8 to 24 carbon atoms, and of a polyol (A.2), linear or branched, having 2 to 20 carbon atoms, wherein the acid:alcohol molar ratio (A.1:A.2) is between 1:1 and n-n/10: 1, where n represents the number of hydroxyl groups of the alcohol A.2,

from 1% to 50% by weight of a part B consisting of monocarboxylic acids, linear or branched, having 8 to 24 carbon atoms,

and wherein the monocarboxylic acids in B are a mixture of at least 80% carboxylic acids having 1 to 3 unsaturations.

5,618,781

AZEOTROPE-LIKE COMPOSITIONS OF DICHLOROPENTAFLUOROPROPANE AND METHYLPENTANE

Hillel Magid, Buffalo; David P. Wilson, E. Amherst; Dennis M. Lavery, Springville; Richard M. Hollister; Richard E. Eibeck, Orchard Park, and Michael Vanderpuy, Cheektowage, all of N.Y., assignors to AlliedSignal Inc., Morris County, N.J.

Continuation of Ser. No. 526,874, May 22, 1990, Pat. No. 5,118,438, which is a continuation-in-part of Ser. No. 417,951, Oct. 6, 1989, abandoned, and a continuation-in-part of Ser. No. 418,050, Oct. 6, 1989, abandoned, and a continuation-in-part of Ser. No. 454,789, Dec. 21, 1989, abandoned. This application Feb. 11, 1992, Ser. No. 834,022

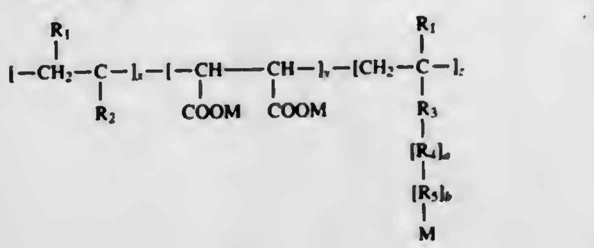
Int. Cl.^{6} C11D *7/30;7/50;* **C23G** *5/028*

U.S. Cl. 510—177 **8 Claims**

1. Azeotrope-like compositions consisting essentially of from about 68 to about 85 weight percent 1,3-dichloro-1,1,2,2,3-pentafluoropropane and from about 15 to about 32 weight percent 2-methylpentane which boil at about 52.7° at 750.4 mm Hg wherein the components of the azeotrope-like composition consist of 1,3-dichloro-1,1,2,2,3-pentafluoropropane and 2-methylpentane.

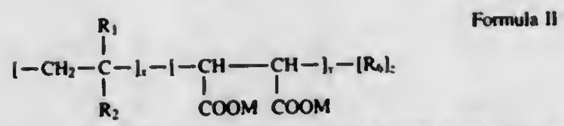
5,618,782
HYDROPHILIC COPOLYMERS FOR REDUCING THE VISCOSITY OF DETERGENT SLURRIES
Sridhar Gopalkrishnan, Woodhaven; Kathleen M. Guiney, Wyandotte; John V. Sherman, Allen Park; David T. Durocher, Westland, and Michael C. Welch, Woodhaven, all of Mich., assignors to BASF Corporation, Mount Olive, N.J.
Filed May 23, 1995, Ser. No. 447,513
Int. Cl.⁶ C11D *17/00;3/37;11/02*
U.S. Cl. 510—418 **10 Claims**

1. An aqueous detergent slurry composition comprising by weight:
(A) about 5–60% of inorganic builder salts;
(B) about 5–70% of detergent active materials selected from the group consisting of anionic, nonionic, cationic, amphoteric and zwitterionic surfactants; and
(C) about 0.01–10% of a hydrophilic copolymer, comprising an unsaturated hydrophilic monomer copolymerized with an oxyalkylated monomer wherein said hydrophilic copolymer (C) is selected from Formula I, Formula II, or both wherein Formula I is:



and

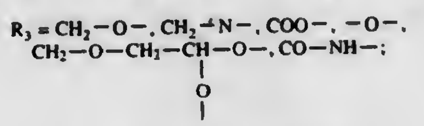
Formula II



wherein x, y, a, and b are integers, (x+y):z is from about 5:1 to 1000:1, and y can be any value ranging from zero up to the value of x; M is an alkali metal or hydrogen; a:b is from about 1:4 to about 1:99;

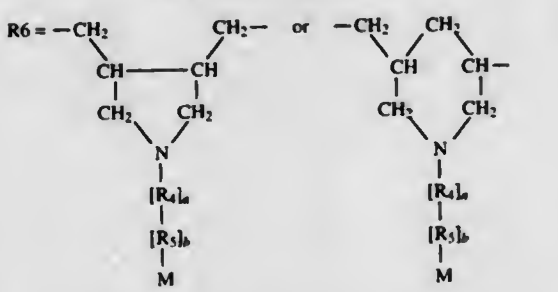
R_1 = H or CH_3;

R_2 = COOM, OCH_3, SO_3M, O—CO—CH_3, CO—NH_2;



R_4 = C_3 to C_4 alkyleneoxy group;

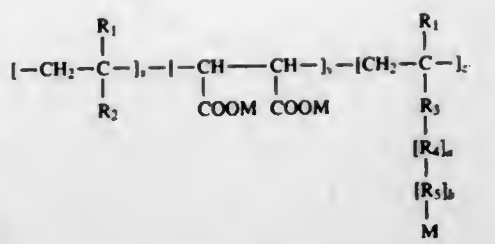
R_5 = —CH_2—CH_2—O;



or mixtures of both.

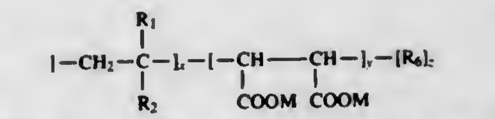
6. A method of reducing the viscosity of aqueous detergent slurries comprising the step of adding thereto about 0.01–10% by weight of said slurries of a hydrophilic copolymer comprising an unsaturated hydrophilic monomer copolymerized with an oxyalkylated monomer wherein said hydrophilic copolymer has at least one of the following formulas:

Formula I



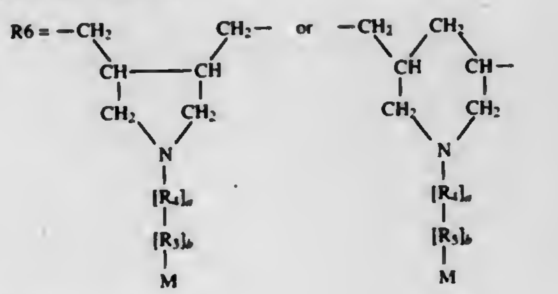
or

Formula II



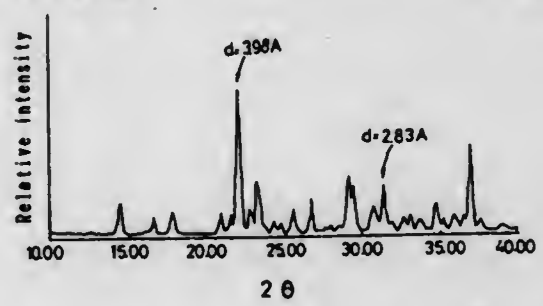
wherein x, y, z, a and b are integers, (x+y):z is from about 5.1 to 1000: 1, and y can be any value ranging from zero up to the value of x; M is an alkali metal or hydrogen; a:b is from about 1:4 to about 1:99, and the hydrophilic and oxyalkylated monomers may be in random order;

R_1=H or CH_3;
R_2=COOM, OCH_3, SO_3M, O—CO—CH_3, CO—NH_2;
R_3=CH_2—O—, CH_2—N—, COO—, —O—, CH_2—O—CH_2—CH—O—, CO—NH—;
R_4=C_3 to C_4 alkyleneoxy group;
R_5=—CH_2—CH_2—O;



or mixtures of both.

5,618,783
SYNTHESIZED INORGANIC ION EXCHANGE MATERIAL AND DETERGENT COMPOSITION CONTAINING THE SAME
Mikio Sakaguchi; Ichiro Sakamoto; Ryuichi Akagi; Shu Yamaguchi, and Masaki Tsumadori, all of Wakayama, Japan, assignors to KAO Corporation, Tokyo, Japan
Filed Feb. 28, 1995, Ser. No. 395,994
Claims priority, application Japan, Mar. 3, 1994, 6-060142
Int. Cl.⁶ C11D *7/02;7/14*
U.S. Cl. 510—507 **8 Claims**



1. A synthesized inorganic crystalline ion exchange material comprising a composition having the following general formula in an anhydride form:

$aX_2O.bSiO_2.cX'O$,

wherein X represents Na and K; X' represents Ca, or Ca and Mg; b/a is 1.4 to 2.1; c/a is 0.001 to 0.35; K/Na, expressed in (molar ratio), in X_2O is 0.09 to 1.11; Mg/Ca, expressed in (molar ratio, in X'O is 0 to 100; and KO/SiO_2, expressed in (molar ratio), is 0.06 to 0.25,
wherein the synthesized inorganic crystalline ion exchange material exhibits main shift peaks at least at 1080±6 cm^{-1} in Raman scattering spectra in the range of from 900 to 1200 cm^{-1} and exhibits a cation exchange speed of from 110 to 250 $CaCO_3$ mg/g.minute.

5,618,784
METHYLBUTOXY-PROPIONITRILES AND THEIR USE AS PERFUMES
Paul N. Davey, Willesborough, Great Britain, assignor to Quest International B.V., Naarden, Netherlands
PCT No. PCT/EP93/03417, § 371 Date Sep. 26, 1995, § 102(e) Date Sep. 26, 1995, PCT Pub. No. WO94/13626, PCT Pub. Date Jun. 23, 1994
PCT Filed Dec. 2, 1993, Ser. No. 454,146
Claims priority, application European Pat. Off., Dec. 9, 1992, 92311227
Int. Cl.⁶ A61K *7/46;* **C07C** *255/17*
U.S. Cl. 512—6 **3 Claims**

1. 3-(2-methylbut-1-oxy)-2-methylpropionitrile or 3-(3-methylbut-1-oxy)-2-methylpropionitrile.

5,618,785
PEPTIDE INHIBITORS OF SELECTIN BINDING
George A. Heavner, Malvern; Marian Kruszynski, West Chester, and Miljenko Mervic, King of Prussia, all of Pa., assignors to Centocor, Inc., Malvern, Pa.
Continuation of Ser. No. 156,415, Nov. 22, 1993, abandoned. This application Jun. 1, 1995, Ser. No. 457,804
Int. Cl.⁶ A61K *38/08;* **C07K** *7/06*
U.S. Cl. 514—2 **39 Claims**

1. A peptide selected from the group consisting of

(SEQ ID NO: 1)	Tyr—Thr—Lys—Leu—Val—Phe—Ile—Gln—NH_2
(SEQ ID NO: 2)	Tyr—Thr—Lys—Phe—Val—Ala—Ile—Gln—NH_2
(SEQ ID NO: 3)	Tyr—Thr—Lys—Tyr—Val—Ala—Ile—Gln—NH_2
(SEQ ID NO: 4)	Ac—Arg—Gly—His—Leu—Val—(4-Br—Phe)—Ile—Gln—NH_2
	Ac—Tyr—Thr—Lys—Leu—Val—(D-homo-Phe)—Ile—Gln—NH_2
(SEQ ID NO: 5)	Ac—Tyr—Thr—Lys—Leu—Val—His—Ile—Gln—NH_2
(SEQ ID NO: 6)	Ac—Tyr—Thr—Lys—Leu—Val—Phe—Glu—Gln—NH_2
(SEQ ID NO: 7)	Ac—Tyr—Thr—Lys—Leu—Val—Phe—Ile—Gln—NH_2
(SEQ ID NO: 8)	Tyr—Thr—Lys—(homo-Phe)—Val—Ala—Ile—Gln—NH_2
(SEQ ID NO: 9)	Tyr—Thr—Met—Leu—Val—Ala—Phe—Gln—NH_2
(SEQ ID NO: 10)	Tyr—Thr—Met—Phe—Val—Ala—Ile—Gln—NH_2
	Ac—D—Arg—Gly—D—His—D—Leu—D—Val—D—Phe—D—Ile—D—Gln—NH_2
(SEQ ID NO: 11)	Ac—Arg—Gly—His—Leu—Val—Phe—Ile—Gln—NH_2
	D—Arg—Gly—D—His—D—Leu—D—Val—D—Phe—D—Ile—D—Gln—NH_2
and	
(SEQ ID NO: 12)	Ac—Arg—Gly—His—Leu—Val—Tyr—Ile—Gln—NH_2.

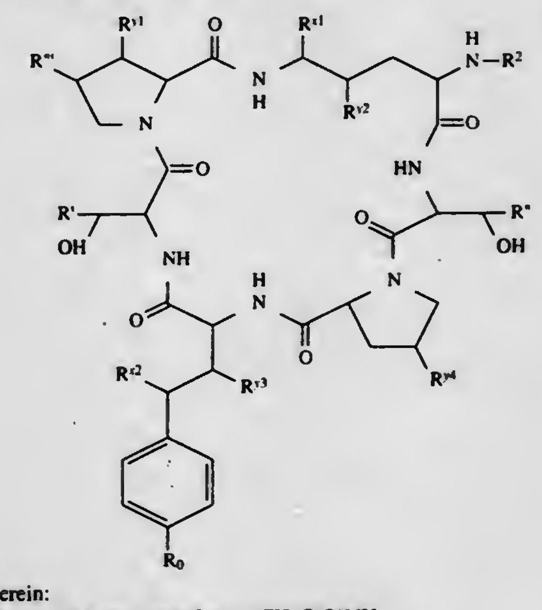
5,618,786
AEROSOLIZATION OF PROTEIN THERAPEUTIC AGENT
Nicolaas J. Roosdorp, Foster City, Calif., and Ronald G. Crystal, Washington, D.C., assignors to Cooper Laboratories, Inc., Mountain View, Calif., and The United States of America as represented by the Department of Health and Human Services, Washington, D.C.
Continuation of Ser. No. 873,640, Apr. 23, 1992, abandoned, which is a continuation of Ser. No. 504,047, Apr. 3, 1990, abandoned, which is a continuation of Ser. No. 44,446, Apr. 30, 1987, abandoned. This application Mar. 9, 1994, Ser. No. 208,491
Int. Cl.⁶ A61K *38/43*
U.S. Cl. 514—8 **10 Claims**

1. A method for augmenting the inhibition of elastase in an individual comprising administering to the lungs of an individual a therapeutically effective amount of aerosolized particles, wherein said particles consist essentially of naturally occurring isolated and purified α_1-antitrypsin or recombinant α_1-antitrypsin which are in the range of about 0.5 to about 5 micrometers in diameter, such that said α_1-antitrypsin is retained in the lung epithelial lining fluid or lung lymph.

5,618,787
CYCLIC PEPTIDE ANTIFUNGAL AGENTS
James A. Jamison, and Michael J. Rodriguez, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.
Continuation of Ser. No. 453,050, May 26, 1995, abandoned. This application Mar. 8, 1996, Ser. No. 612,520
Int. Cl.⁶ A61K *38/12;* **C07K** *5/00*
U.S. Cl. 514—11 **30 Claims**

1. A compound of the formula:

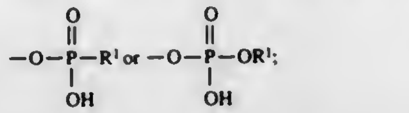
(I)



wherein:
R' is hydrogen, methyl or —$CH_2C(O)NH_2$;
R" and R'" are independently methyl or hydrogen;
R^{x1} is hydrogen, hydroxy or —O—R;
R is C_1–C_6 alkyl, benzyl, —$(CH_2)_2Si(CH_3)_3$, —$CH_2CHOHCH_2OH$, —$CH_2CH{=}CH_2$, —$(CH_2)_aCOOH$, —$(CH_2)_bNR^{z1}R^{z2}$, —$(CH_2)_cPOR^{z3}R^{z4}$ or —$[(CH_2)_2O]_d$—$(C_1$–$C_6)$alkyl;
a, b and c are independently 1, 2, 3, 4, 5 or 6;
R^{z1} and R^{z2} are independently hydrogen, C_1–C_6 alkyl, or R^{z1} and R^{z2} combine to form —$CH_2(CH_2)_eCH_2$—;
R^{z3} and R^{z4} are independently hydroxy or C_1–C_6 alkoxy;
d is 1 or 2;
e is 1, 2 or 3;

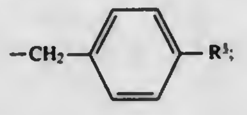
R^{x2}, R^{y1}, R^{y2}, R^{y3} and R^{y4} are independently hydroxy or hydrogen;

R^0 is hydroxy, —OP(O) $(OH)_2$ or a group of the formulae:

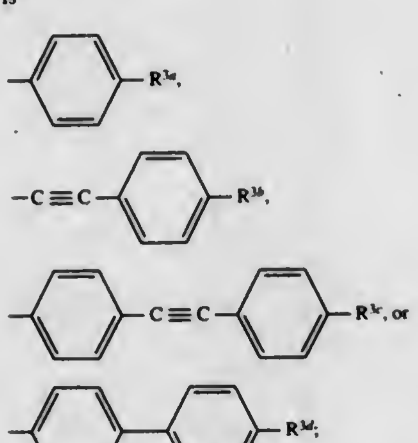


R^1 is C_1–C_6 alkyl, phenyl, p-halo-phenyl, p-nitrophenyl, benzyl, p-halo-benzyl or p-nitro-benzyl;

R^2 is



R^3 is



R^{3a}, R^{3b}, R^{3c} and R^{3d} are independently hydrogen, C_1–C_{12} alkyl, C_2–C_{12} alkynyl, C_1–C_{12} alkoxy, C_1–C_{12} alkylthio, halo, or —O—$(CH_2)_m$—[O—$(CH_2)_n$]$_p$—O—(C_1–C_{12} alkyl) or —O—$(CH_2)_q$—X—R^4;

m is 2, 3 or 4;

n is 2, 3 or 4;

p is 0 or 1;

q is 2, 3 or 4;

X is pyrrolidino, piperidino or piperazino; and

R^4 is hydrogen, C_1–C_{12} alkyl, C_3–C_{12} cycloalkyl, benzyl or C_3–C_{12} cycloalkylmethyl;

or a pharmaceutically acceptable salt thereof.

5,618,788

PREPARATION OF FUNCTIONAL HUMAN FACTOR VIII AND PHARMACEUTICAL TREATMENT THEREWITH

Daniel J. Capon, San Mateo; Richard M. Lawn, San Francisco; Gordon A. Vehar, San Carlos, and William I. Wood, San Mateo, all of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Continuation of Ser. No. 83,758, Aug. 7, 1987, Pat. No. 4,965,199, which is a continuation of Ser. No. 602,312, Apr. 20, 1984, abandoned. This application Aug. 20, 1990, Ser. No. 570,096

Int. Cl.[6] A61K *38/37;* **C07K** *14/755;* **C12N** *15/12*

U.S. Cl. 514—12 **1 Claim**

1. A method of treating a patient deficient in factor VIII coagulant activity comprising administering to said patient a therapeutically effective amount of a composition comprising a recombinant functional human factor VIII free of viral contaminants that affect humans.

5,618,789

FUNCTIONAL HUMAN FACTOR VIII

Daniel J. Capon, San Mateo; Richard M. Lawn, San Francisco; Gordon A. Vehar, San Carlos, and William I. Wood, San Mateo, all of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Division of Ser. No. 570,096, Aug. 20, 1990, which is a continuation of Ser. No. 83,758, Aug. 7, 1987, Pat. No. 4,965,199, which is a continuation of Ser. No. 602,312, Apr. 20, 1984, abandoned. This application Feb. 3, 1992, Ser. No. 829,867

Int. Cl.[6] A61K *38/36;38/37;* **C07K** *14/755;* **C12N** *15/12*

U.S. Cl. 514—12 **7 Claims**

1. A composition comprising a recombinant functional human factor VIII free of viral contaminants that affect humans and a pharmaceutically acceptable carrier.

5,618,790

PROTEASE MEDIATED DRUG DELIVERY SYSTEM

James C. Kennedy, Kingston; Michel Ringuet, Trois Rivieres, and Roy H. Pottier, Kingston, all of Canada, assignors to Queen's University at Kingston, Kingston, Canada

Continuation-in-part of Ser. No. 833,183, Feb. 10, 1992, abandoned, which is a continuation-in-part of Ser. No. 593,867, Oct. 5, 1990, abandoned. This application Mar. 16, 1994, Ser. No. 213,897

Int. Cl.[6] A61K *37/36;38/00;* **C07K** *13/00*

U.S. Cl. 514—12 **10 Claims**

1. A conjugate system for delivering a therapeutic or diagnostic agent to a tissue abnormality site in a patient, comprising:

a selected lipophilic or amphiphilic said agent;

a protease sensitive polypeptide, having an amino acid sequence readily cleavable by a protease active at said tissue abnormality site but not readily cleavable by a protease active at a normal tissue site, covalently linked to said agent; and

a solubility modifier conjugated to said protease sensitive polypeptide.

5,618,791

MEMORY ENHANCING PEPTIDES

Yu-Cang Du, Shanghai, China, assignor to Shanghai Institute of Biochemistry, Shanghai, China

Filed Aug. 6, 1993, Ser. No. 102,896

Claims priority, application China, Aug. 8, 1992, 92108527.3

Int. Cl.[6] A61K *38/07;38/08*

U.S. Cl. 514—17 **13 Claims**

1. A memory enhancing peptide of the formula:

$$R_1—Asn—X_1—X_2—X_3—R_2$$

where

Asn=asparaginyl

R_1=pyroglutamyl, acetyl, H, peptidyl

R_2=OH, NH_2, OR_3, glycyl,

R_3=C_{1-6} alkyl

X_1=alanyl (Ala), isoleucyl (Ile), leucyl (Leu), tyrosyl (Tyr), phenylalanyl (Phe), valyl (Val), tryptophanyl (Trp), cystinyl (Cyt) homomethionyl (Hme)

X_2=prolyl (Pro), leucyl (Leu), isoleucyl (Ile), valyl (Val) provided that when X_2 is prolyl (Pro), X_1 is not Cyt or Ala;

X_3=arginyl (Arg)

and each optically active amino acid residue may be in either the D or L enantiomeric configuration.

5,618,792

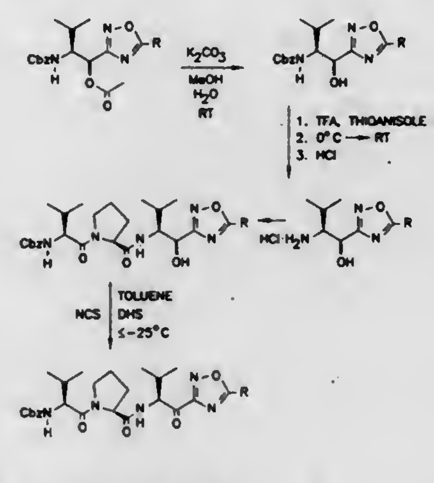
SUBSTITUTED HETEROCYCLIC COMPOUNDS USEFUL AS INHIBITORS OF (SERINE PROTEASES) HUMAN NEUTROPHIL ELASTASE

Albert Gyorkos, Westminster, and Lyle W. Spruce, Arvada, both of Colo., assignors to Cortech, Inc., Denver, Colo.

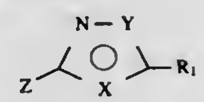
Filed Nov. 21, 1994, Ser. No. 345,820

Int. Cl.[6] A61K *31/38;31/535;31/54;38/06*

U.S. Cl. 514—18 **12 Claims**



1. A compound of the formula:



wherein:

Z is an α-amino-carbonyl containing group wherein the carbon of the heterocyclic ring is attached directly to a carbonyl carbon of said carbonyl containing group;

R_1 is selected from alkyl, alkenyl, haloalkyl, haloalkenyl, alkynyl being linear or branched; a phenyl, phenylalkenyl, or phenylalkyl optionally substituted with halogen, cyano, nitro, haloalkyl, amino, aminoalkyl, dialkylamino, alkyl, alkenyl, alkynyl, alkoxy, haloalkoxy, carboxyl, carboalkoxy, alkylcarboxamido, arylcarboxamido, alkylthio, or haloalkylthio groups being linear or branched; a heteroaryl, heteroarylalkyl or heteroarylalkenyl wherein the heteroaryl group is a monocyclic five or six membered ring containing one or two heteroatoms independently selected from oxygen, sulfur and nitrogen optionally substituted with halogen, cyano, nitro, haloalkyl, amino, aminoalkyl, dialkylamino, alkyl, alkoxy, alkenyl, alkynyl, haloalkoxy, carboxyl, carboalkoxy, alkylcarboxamido, arylcarboxamido, alkylthio or haloalkylthio groups being linear or branched; and

X and Y are independently O, S or N wherein N is optionally substituted with alkyl, alkenyl, alkynyl being linear or branched; a phenyl, phenylalkenyl, or phenylalkyl optionally substituted with halogen, cyano, nitro, haloalkyl, amino, aminoalkyl, dialkylamino, alkyl, alkenyl, alkynyl, alkoxy, haloalkoxy, carboxyl, carboalkoxy, alkylcarboxamido, arylcarboxamido, alkylthio, or haloalkylthio groups being linear or branched; a heteroaryl, heteroarylalkyl or heteroarylalkenyl wherein the heteroaryl group is a monocyclic five or six membered ring containing one or two heteroatoms independently selected from oxygen, sulfur and nitrogen optionally substituted with halogen, cyano, nitro, haloalkyl, amino, aminoalkyl, dialkylamino, alkyl, alkoxy, alkenyl, alkynyl, haloalkoxy, carboxyl, carboalkoxy, alkylcarboxamido, arylcarboxamido, alkylthio or haloalkylthio groups being linear or branched,

provided at least one of X or Y is N; and

provided that where both X and Y are N, only one of X or Y is substituted.

5,618,793

NIKKOMYCIN ANALOGS

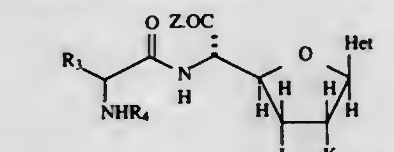
Alan B. Cooper, West Caldwell; Anil K. Saksena, Upper Montclair; Raymond Lovey, West Caldwell; Viyyoor Girijavallabhan, Parsippany, and Ashit Ganguly, Upper Montclair, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Division of Ser. No. 253,640, Jun. 3, 1994, Pat. No. 5,461,055, which is a continuation of Ser. No. 900,712, Jun. 18, 1992, Pat. No. 5,346,898, which is a continuation-in-part of Ser. No. 747,554, Aug. 20, 1991, abandoned. This application Aug. 1, 1995, Ser. No. 509,923

Int. Cl.[6] A61K *31/70;37/02;* **C07H** *19/06;* **C07D** *239/10*

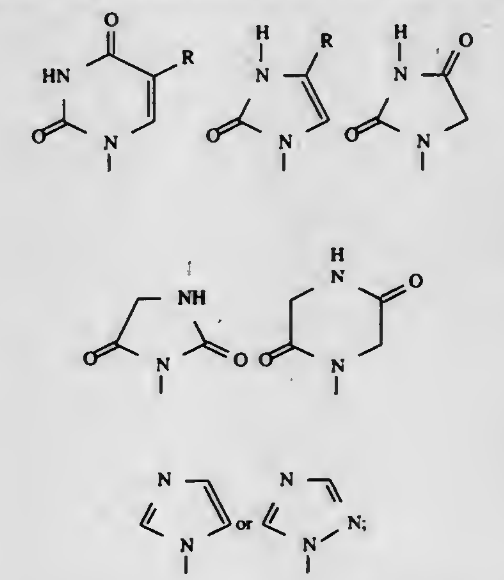
U.S. Cl. 514—19 **8 Claims**

1. A compound of the formula:



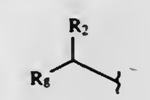
I

or pharmaceutically acceptable salts thereof, wherein Het is

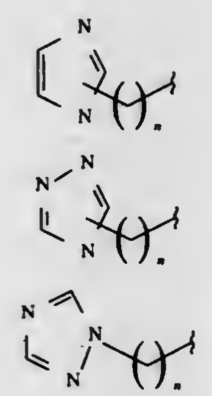


R is H, COOH; C_1–C_{12} alkyl; CHO; CN; CH_2OH; or $CONH_2$;

wherein R_3 is



wherein R_8 is



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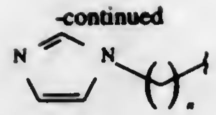
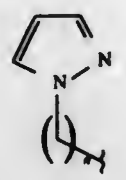
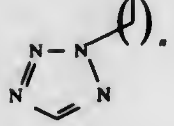
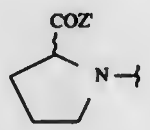
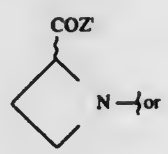


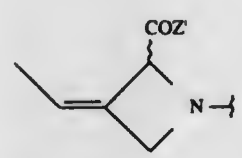




R_2 is H; OH; F; C_1–C_6 alkoxy; alkyl; SH; S-alkyl; or SO_2-alkyl;
R_4 is H; a natural amino acid attached by a peptide bond; or a metabolizable group;
R_x is C_1–C_{12} alkyl;
J is OH, H, Br, Cl, or F;
K is OH, H, Br, Cl, or F;
X and Y are the same or different and are independently selected from the group consisting of H; OH; O—C_1–C_{14} alkyl; F; Cl; Br; NO_2, and alkyl;
Z is R_5NR_6;







wherein Z' is R_5 NR_6,
R_5 is H, a saturated or unsaturated C_6–C_{18} aliphatic side chain; or a hydroxylated C_6–C_{18} aliphatic side chain;
R_6 is H; OH; O-benzyl; O-aryl; O—C_4–C_{14} alkyl; C_1–C_{12} alkyl; phenyl; substituted phenyl; or CO—R_7; and
R_7 is H, C_1–C_{16} alkyl, aryl or alkylaryl; and
n is an integer from 0 to 16.

5,618,794

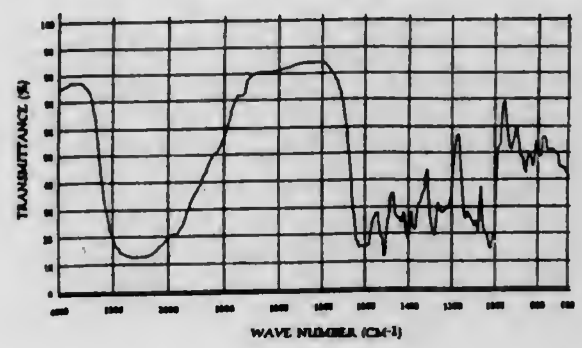
α-GLYCOSYL DERIVATIVE OF CATECHOLAMINE OR ITS SALT, AND ITS PREPARATION AND USES

Tetsuya Nakada, Okayama, and Michio Kubota, Osaka, both of Japan, assignors to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Okayama, Japan

Division of Ser. No. 297,527, Aug. 26, 1994, abandoned, which is a division of Ser. No. 57,915, May 7, 1993, Pat. No. 5,300,837. This application Jun. 7, 1995, Ser. No. 483,260

Int. Cl.[6] C07H *15/20*; A61K *31/70*; C12P *19/44*

U.S. Cl. 514—25 7 Claims



4. A pharmaceutical composition which comprises as an effective ingredient an effective amount of an α-glycosyl derivative of a catecholamine or its salt and a pharmaceutically-acceptable carrier, said catecholamine being dopa.

5,618,795

DIBEKACIN DERIVATIVES AND ARBEKACIN DERIVATIVES ACTIVE AGAINST RESISTANT BACTERIA, AND THE PRODUCTION THEREOF

Shinichi Kondo, Yokohama; Seiji Shibahara, Machida; Takayuki Usui, Kawasaki; Toshiaki Kudo, Yokohama; Shuichi Gomi, Tokyo; Atsushi Tamura, Yokohama; Yoko Ikeda, Tokyo; Daishiro Ikeda, Tokyo, and Tomio Takeuchi, Tokyo, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

Division of Ser. No. 154,002, Nov. 18, 1993, Pat. No. 5,488,038. This application Sep. 8, 1995, Ser. No. 524,644

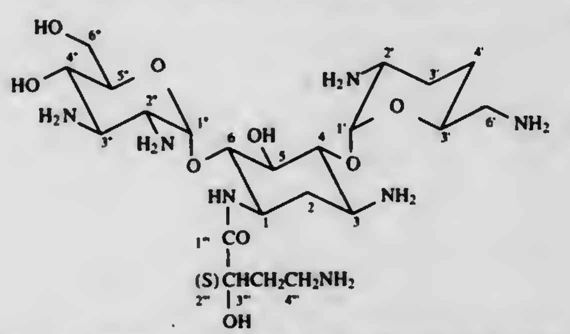
Claims priority, application Japan, Nov. 27, 1992, 4-341314; Sep. 9, 1993, 5-247327

Int. Cl.[6] A61K *31/70*

U.S. Cl. 514—41 9 Claims

1. 2"-Amino-2"-deoxyarbekacin having the formula

(I-1)



or a pharmaceutically acceptable acid addition salt thereof.

4. An antibacterial composition comprising an antibacterially effective amount of 2"-amino-2"-deoxyarbekacin according to claim 1 or a pharmaceutically acid addition salt thereof as active ingredient, in combination with a pharmaceutically acceptable carrier for the active ingredient.

5,618,796

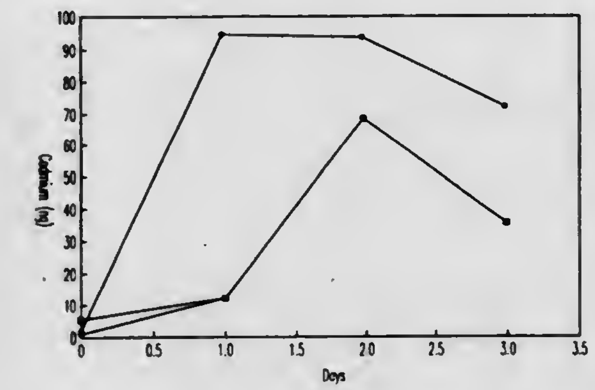
METAL BINDING OLIGONUCLEOTIDE AND METHODS AND COMPOSITIONS FOR THEIR USE TO TREAT METAL TOXICITY

Patrick L. Iversen, Omaha, Nebr., assignor to The Board of Regents of the University of Nebraska, Lincoln, Nebr.

Filed Sep. 12, 1991, Ser. No. 759,841

Int. Cl.[6] A01N *43/04*; A61K *31/70*; C07H *21/04*; C12N *15/06*

U.S. Cl. 514—44 5 Claims



1. A method of treating an animal suffering from heavy metal poisoning comprising:

a) chelating heavy metal ions in said animal by administering a phosphorothioate oligonucleotide to said animal in an amount sufficient to chelate heavy metals and to cause excretion thereof; and

b) monitoring the presence of chelated metals in the urine of said animal.

5,618,797

EXPRESSION OF A PROTEIN IN MYOCARDIUM BY INJECTION OF A GENE

Jeffrey M. Leiden, and Ellay Barr, both of Ann Arbor, Mich., assignors to The Regents of the University of Michigan, Ann Arbor, Mich.

Continuation of Ser. No. 789,983, Nov. 12, 1991, abandoned. This application Jan. 23, 1995, Ser. No. 376,521

Int. Cl.[6] A01N *43/04*; A61K *31/70*; C12N *15/00*

U.S. Cl. 514—44 3 Claims

1. A method for expressing a protein in cardiac myocytes which comprises: injecting an expression vector containing a DNA segment encoding a selected gene into the myocardium of a mammalian host, and obtaining expression in cardiac myocytes of the protein encoded by said selected gene.

5,618,798

USE OF SUCRALFATE TO TREAT BALDNESS

Daniel Bar-Shalom, Rypevaenget 213, DK-2980 Kokkedal, and Niels Bukh, Strandvejen 122, DK-2900 Hellerup, both of Denmark

Continuation of Ser. No. 47,078, Apr. 16, 1993, abandoned, which is a continuation of Ser. No. 613,559, Nov. 21, 1990, abandoned. This application May 23, 1994, Ser. No. 247,478

Claims priority, application Denmark, Apr. 20, 1989, 1918

Int. Cl.[6] A61K *31/70*

U.S. Cl. 514—53 15 Claims

1. A method of treating male androgenic alopecia comprising administering to a patient in need thereof a therapeutically effective amount of a compound selected from the group consisting of sucrose octasulfate, and sodium and potassium salts and aluminum complexes thereof.

5,618,799

POWDER PREPARATION FOR HEALING DAMAGED SKIN

Toshio Inagi, Mishima, and Saibi Suehiro, Numazu, both of Japan, assignors to Kowa Co., Ltd., Nagoya, Japan

Filed Jun. 5, 1995, Ser. No. 464,345

Claims priority, application Japan, Jun. 27, 1994, 6-144393

Int. Cl.[6] A01N *43/04*

U.S. Cl. 514—53 9 Claims

1. A composition, consisting essentially of:

(a) 50–90 wt. % of sucrose;

(b) 0.5–10 wt. % of povidone-iodine powder; and

(c) a water-soluble polymer selected from the group consisting of polyvinyl alcohol, polyvinyl pyrrolidone, polyacrylic acid and salts thereof, pullulan, carboxyvinyl polymers, methylcellulose, hydroxymethylcellulose, hydroxypropylmethylcellulose, and carboxymethylcellulose and salts thereof,

wherein said composition is a powder.

5,618,800

THERMALLY-GELLING DRUG DELIVERY VEHICLES CONTAINING CELLULOSE ETHERS

Bhagwati P. Kabra, Fort Worth, and John C. Lang, Arlington, both of Tex., assignors to Alcon Laboratories, Inc., Fort Worth, Tex.

Continuation-in-part of Ser. No. 298,244, Aug. 30, 1994, abandoned. This application Aug. 23, 1995, Ser. No. 518,289

Int. Cl.[6] A61K *31/715*; C08B *11/02*; *11/08*

U.S. Cl. 514—57 39 Claims

1. A nontoxic drug delivery vehicle which reversibly increases in either loss modulus or storage modulus, or both, by at least the smaller of 10 Pa or 100% in response to an increase in temperature upon contact with the eye, skin, mucous membrane or body cavity, wherein the vehicle does not require a charged surfactant or pH-sensitive polymer for such increase in either loss modulus or storage modulus, or both, and wherein the vehicle comprises a nonionic cellulose ether having a molecular weight no less than 30 kD and which is substituted with one or more substituents selected from the group consisting of alkyl, hydroxyalkyl and phenyl groups such that

$$2.2 \leqq \sum_{n=1}^{N} \{n \cdot Q(n) \cdot [MS(R_n) + MS(R_nO)] - P_N \cdot MS(R_nO)\} + Q_\phi \cdot MS(\phi) \leqq 3.8$$

wherein,

n=substituent carbon chain length;
N=maximum value of n, ≦22;
R_n=alkyl group of chain length n;
R_nO=alkoxy group of chain length n;
$MS(R_n)$=MS of R_n;
$MS(R_nO)$=MS of R_nO;
MS(Φ)=MS of phenyl groups;
$Q(n)=0.837+0.155*n+0.0075*n^2\pm0.15$;
P_N=4.4 if N ≦3; 4.4–1.82 if 3<N<10; and 1.82 if N≧10; and
Q_Φ=2.0 to 3.52;

provided that the nonionic cellulose ether is not a cellulose ether having only ethyl and hydroxyethyl substituents, an ethyl MS from 1.2 to 2.5 and a hydroxyethyl MS from 0.5 to 1.5, and a cloud point from 30° to 35° C. as spectrophotometrically determined for a 1.0 wt % solution of the cellulose ether in water, heated at a rate of 10° C./min.

5,618,801

COMPOSITION FOR PREVENTING AND TREATING CATARACT

Kazuhiko Tsutsumi, Tokushima; Yasuhide Inoue, Naruto; Chieko Yoshida, Naruto, and Yoshihiko Tsuda, Naruto, all of Japan, assignors to Otsuka Pharmaceutical Factory, Inc., Tokushima-ken, Japan

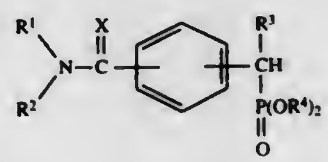
Filed Jan. 7, 1994, Ser. No. 178,829

Int. Cl.^{6} A61K *31/66;31/195*

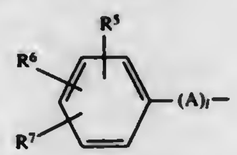
U.S. Cl. 514—75 **4 Claims**

1. A method of treating cataract comprising administering, as an active ingredient, a therapeutically effective amount of a carboxylic acid amide derivative represented by the following general formula:

wherein:



R^1 and R^2 taken individually each represents a hydrogen atom, an alkyl group, a cycloalkyl group, a diphenyl-lower alkyl group or a group of the formula:



in which

R^5, R^6 and R^7 each represents a hydrogen atom, a halogen atom, a nitro group, a lower alkoxy group, a lower alkoxycarbonyl group, a lower alkyl group, a halogen-substituted lower alkyl group, a cyano group, a carboxyl group or a hydroxyl group;

A represents a lower alkaline group and l represents 0 or 1;

R^3 represents a hydrogen atom, an alkyl group or a phenyl-lower alkyl group;

R^4 represents a lower alkyl group or a phenyl group; and

X represents an oxygen atom or a sulfur atom; to a patient in need of the same.

5,618,802

ACTIVATOR FOR GERMICIDE

Tetsuji Iwasaki, Wakayama, Japan, assignor to Kao Corporation, Tokyo, Japan

Division of Ser. No. 451,187, May 26, 1995, abandoned, which is a division of Ser. No. 166,597, Dec. 13, 1993, abandoned, which is a continuation of Ser. No. 418,903, Oct. 5, 1989, abandoned, which is a continuation of Ser. No. 139,720, Dec. 30, 1987, abandoned, which is a division of Ser. No. 42,545, Apr. 24, 1987, abandoned, which is a continuation of Ser. No. 725,028, Apr. 19, 1985, abandoned. This application Jun. 7, 1995, Ser. No. 478,265

Claims priority, application Japan, Apr. 23, 1984, 59-81538

Int. Cl.^{6} A01N *57/26*

U.S. Cl. 514—78 **18 Claims**

1. An agricultural germicidal composition which consists essentially of an effective amount of an agricultural chemical germicide selected from the group consisting of tetrachloroisophthalonitrile, methyl 1-(butylcarbamoyl)-2-benzimidazole carbamate, and manganese ethylenebis(dithiocarbamate); and an effective amount of a substance for increasing the germicidal rate of said germicide; said substance being selected from the group consisting of an alkyl phosphate, an alkenyl phosphate, a hydroxyalkyl phosphate, a polyoxyalkylene alkyl ether phosphate, a polyoxyalkylene alkenyl ether phosphate, a polyoxyalkylene hydroxyalkyl ether phosphate and salts thereof, said substance having from 1 to 22 carbon atoms in the alkyl or alkenyl group thereof, the weight ratio of said substance/said herbicide being in the range of 1/1 to 15/1.

5,618,803

TARGETED DRUG DELIVERY VIA PHOSPHONATE DERIVATIVES

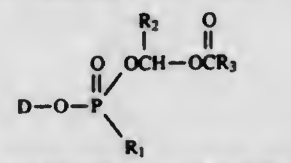
Nicholas S. Bodor, Gainesville, Fla., assignor to University of Florida, Gainesville, Fla.

Division of Ser. No. 962,504, Oct. 16, 1992, Pat. No. 5,413,996, which is a division of Ser. No. 553,548, Jul. 13, 1990, Pat. No. 5,177,064. This application Nov. 15, 1994, Ser. No. 340,896

Int. Cl.^{6} A61K *31/675;31/135;* **C07F** *9/06;* **C07H** *19/04*

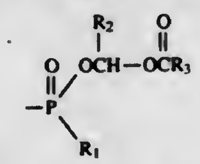
U.S. Cl. 514—81 **15 Claims**

1. A compound of the formula:



(Ia)

or a pharmaceutically acceptable salt thereof, wherein D-O— is the residue of a drug having a reactive hydroxyl functional group, said drug being a narcotic analgesic, narcotic antagonist or narcotic agonist/antagonist, the oxygen atom of said functional group being bonded to the phosphorus atom of the



moiety; R_1 is C_{1-8} alkyl, C_6–C_{10} aryl or C_7–C_{12} aralkyl; R_2 is hydrogen, C_1–C_8 alkyl, C_6–C_{10} aryl, C_4–C_9 heteroaryl, C_3–C_7 cycloalkyl, C_3–C_7 cycloheteroalkyl or C_7–C_{12} aralkyl; and R_3 is selected from the group consisting of C_1–C_8 alkyl; C_2–C_8 alkenyl having one or two double bonds; (C_3–C_7 cycloalkyl)-C_rH_{2r}— wherein r is zero, one, two or three, the cycloalkyl portion being unsubstituted or bearing 1 or 2 C_1–C_4 alkyl substituents on the ring portion; (C_6–C_{10} aryloxy)C_1–C_8 alkyl; 2-, 3- or 4-pyridyl; and phenyl-C_r-H_{2r}— wherein r is zero, one, two or three and phenyl is unsubstituted, or is substituted by 1 to 3 alkyl each having 1 to 4 carbon atoms, alkoxy having 1 to 4 carbon atoms, halo, trifluoromethyl, dialkylamino having 2 to 8 carbon atoms or alkanoylamino having 2 to 6 carbon atoms.

5,618,804

METHANEDIPHOSPHONIC ACID DERIVATIVE, PROCESS FOR PRODUCTION THEREOF AND USE FOR PHARMACEUTICALS

Norio Kawabe, Fujisawa; Hiromi Uchiro, Kamakura; Teruo Nakadate, Yokohama; Masahiko Tanahashi, Kamakura, and Yuriko Funaba, Fujisawa, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

PCT No. PCT/JP93/00014, § 371 Date Jan. 14, 1994, § 102(e) Date Jan. 14, 1994, PCT Pub. No. WO94/01442, PCT Pub. Date Jan. 20, 1994

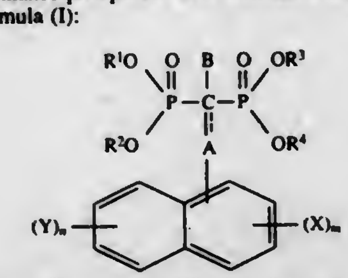
PCT Filed Jan. 8, 1993, Ser. No. 178,320

Claims priority, application Japan, Jul. 10, 1992, 4-183866

Int. Cl.^{6} A61K *31/66;* **C07F** *9/38;9/40*

U.S. Cl. 514—103 **13 Claims**

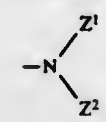
1. A methanediphosphonic acid derivative represented by the general formula (I):



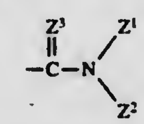
(I)

wherein X and Y represent substitution groups on the naphthyl group, and represent a halogen atom, nitro group, nitrile group,

alkyl group, alkoxy group, trifluoromethyl group, the group:



provided that Z^1 and Z^2 represent, independently of each other, a hydrogen atom or an alkyl group, or Z^1 or Z^2 may form a ring comprising carbon atoms or a ring comprising carbon atoms and hetero atoms, the group:



provided that Z^1 and Z^2 are the same as above, and Z^3 represents oxygen or sulfur, thiol group, hydroxyl group, alkylthio group, arylthio group, acyloxy group, acylamino group, acylthio group, acyl group, alkenyl group, aryl group, cycloalkyl group, COOH group or COO-alkyl group; m represents an integer of 0 to 3; n represents an integer of 0 to 4; and each X of the $(X)_m$ and each Y of the (Y)n may be either identical or different; . . . represents a double bond or single bond; A is —(CH_2)a—(D)b—(CH_2)c—, wherein D is sulfur, NH, alkyl-substituted N or CH_2, a and c are integers of 0 to 10 and b is 0 or 1, or —(CH═CH)d—CH═, wherein d is an integer of 0 to 2, and B does not exist when A represents —(CH═CH)d—CH═. B refers to a hydrogen atom, alkyl group, amino group, monoalkylamino group, dialkylamino group, acylamino group, alkoxy group, trialkylsiloxy group or acyloxy group, and each of R^1, R^2, R^3 and R^4 is the same or different and is a hydrogen atom, straight or branched alkyl group having 1 to 7 carbon atoms, or a pharmacologically allowed cation; with the proviso that when D is sulfur, X is not a hydroxyl group and both a and c are 0; and with the proviso that when D is —CH_2—, or when d is 0 or 1, X is not an alkyl group and m is 2 to 3.

5,618,805

19-NOR-VITAMIN D COMPOUNDS

Hector F. DeLuca, Deerfield; Heinrich K. Schnoes; Kato L. Perlman, both of Madison, all of Wis.; Rafal R. Sicinski, Warsaw, Poland, and Jean M. Prahl, Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

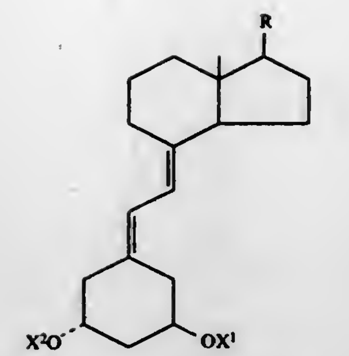
Division of Ser. No. 281,261, Jul. 27, 1994, which is a division of Ser. No. 123,485, Sep. 17, 1993, Pat. No. 5,342,975, which is a division of Ser. No. 960,241, Oct. 13, 1992, Pat. No. 5,246,925, which is a continuation of Ser. No. 879,706, May 5, 1992, abandoned, which is a continuation of Ser. No. 557,400, Jul. 23, 1990, abandoned, which is a division of Ser. No. 481,354, Feb. 16, 1990, Pat. No. 5,237,110, which is a continuation-in-part of Ser. No. 321,030, Mar. 9, 1989, abandoned. This application May 16, 1995, Ser. No. 442,483

The portion of the term of this patent subsequent to May 16, 2015, has been disclaimed.

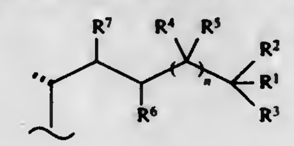
Int. Cl.^{6} A61K *31/59;31/695*

U.S. Cl. 514—167 **8 Claims**

1. A method for inducing cell differentiation in HL-60 leukemia cells which comprises exposing said cells to an effective amount of at least one 19-nor-vitamin D compound sufficient to induce differentiation, said 19-nor-vitamin D compound having the formula



where X^1 and X^2 are each selected from hydrogen, acyl, alkylsilyl and alkoxyalkyl, and where R is selected from alkyl, hydrogen, hydroxyalkyl, fluoroalkyl and a side chain of the formula



wherein R^1 represents hydrogen, hydroxy or O-acyl, R^2 and R^3 are each selected from alkyl, hydroxyalkyl and fluoroalkyl, or, when taken together represent the group—$(CH_2)_m$—where m is an integer having a value of from 2 to 5, R^4 is selected from hydrogen, hydroxy, fluorine, O-acyl, alkyl, hydroxyalkyl and fluoroalkyl, R^5 is selected from hydrogen, fluorine, alkyl, hydroxyalkyl and fluoroalkyl, or R^4 and R^5 taken together represent double-bonded oxygen, R^6 and R^7 are each selected from hydrogen, hydroxy, O-acyl, fluorine and alkyl, or, R^6 and R^7 taken together form a carbon-carbon double bond, and wherein n is an integer having a value of from 1 to 5 and wherein any of the groups —$CH(CH_3)$—, —$CH(R^7)$—, or —$CH(R^6)$— at positions 20, 22 and 23, respectively, may be replaced by an oxygen atom, with the proviso that when n is 2 to 5 each R^4 is independently selected from hydrogen, hydroxy, fluorine, O-acyl, alkyl, hydroxyalkyl and fluoroalkyl, and each R^5 is independently selected from hydrogen, fluorine, alkyl, hydroxyalkyl and fluoroalkyl.

5,618,806

17α AND 17β-SUBSTITUTED ESTRA-1,3,5(10)-TRIENE-3-CARBBOXLIC ACID

Dennis A. Holt, Stow, Mass., and Mark A. Levy, Wayne, Pa., assignors to SmithKline Beecham Corporation

PCT No. PCT/US93/03778, § 371 Date Oct. 28, 1994, § 102(e) Date Oct. 28, 1994, PCT Pub. No. WO93/22333, PCT Pub. Date Nov. 11, 1993

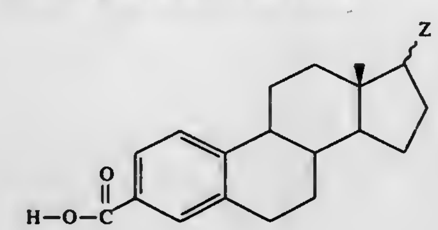
PCT Filed Apr. 22, 1993, Ser. No. 325,462

Claims priority, application United Kingdom, Apr. 30, 1992, 9209408; Nov. 18, 1992, 9224210

Int. Cl.^{6} A61K *31/56;* **C07J** *75/00;9/00*

U.S. Cl. 514—169 **24 Claims**

1. A compound represented by the formula:



(I)

wherein Z is α or β

$$-\overset{O}{\overset{\|}{C}}-A-R$$

in which A is absent or present as a linear or branched, saturated or unsaturated hydrocarbon chain containing from 1–12 carbon atoms; and

R is substituted alkyl, cycloalkyl or aryl, where

a) substituted alkyl is a linear or branched, saturated or unsaturated hydrocarbon chain containing from 1–12 carbon atoms substituted with one or more substituents selected from the group consisting of: aryloxy, alkoxy, acyloxy, amino, N-acylamino, nitro, cyano, oxo, halogen, —C(O)OR^6 and —S(O)$_n$R^5,

where

R^6 is hydrogen or alkyl,

n is 0–2 and

R^5 is hydrogen, cycloalkyl, C_6–C_{12}aryl, substituted cycloalkyl, substituted C_6–C_{12}aryl, alkyl or alkyl substituted with one or more substituents selected from the group consisting of:

alkoxy, acyloxy, amino, N-acylamino, oxo, hydroxy, cycloalkyl, substituted cycloalkyl, aryloxy, —C(O)OR^6, —S(O)$_n$R^7, nitro, cyano, halogen, C_6–C_{12}aryl, substituted C_6–C_{12}aryl and protected —OH, where R^6 is hydrogen or alkyl, n is 0–2 and R^7 is hydrogen or alkyl;

b) cycloalkyl is nonaromatic, unsaturated or saturated, cyclic or polycyclic C_3–C_{12}, optionally containing one or more heteroatoms, and optionally substituted with one or more substituents selected from the group consisting of: aryloxy, aryl, alkyl, alkoxy, acyloxy, cycloalkyl, substituted cycloalkyl, amino, N-acylamino, nitro, cyano, oxo, hydroxy, halogen, —C(O)OR^6, —S(O)$_n$R^5, protected —OH and alkyl substituted with one or more substituents selected from the group consisting of: alkoxy, acyloxy, C_6–C_{12}aryl, substituted C_6–C_{12}aryl, amino, N-acylamino, oxo, hydroxy, cycloalkyl, substituted cycloalkyl, —C(O)OR^6, —S(O)$_n$R^7, aryloxy, nitro, cyano, halogen and protected —OH,

where

R^6 is hydrogen or alkyl,

n is 0–2,

R^7 is hydrogen or alkyl and

R^5 is hydrogen, cycloalkyl, C_6–C_{12}aryl, substituted cycloalkyl, substituted C_6–C_{12}aryl, alkyl or alkyl substituted with one or more substituents selected from the group consisting of:

alkoxy, acyloxy, cycloalkyl, substituted cycloalkyl, aryloxy, amino, N-acylamino, oxo, hydroxy, —C(O)OR^6, —S(O)$_n$R^7, nitro, cyano, halogen, C_6–C_{12}aryl, substituted C_6–C_{12}aryl and protected —OH, where R^6 is hydrogen or alkyl, n is 0–2 and R^7 is hydrogen or alkyl; and

c) aryl is cyclic or polycyclic aromatic C_3–C_{12}, optionally containing one or more heteroatoms, provided that when C is 3 the aromatic ring contains at least two heteroatoms, and when C is 4 the aromatic ring contains at least one heteroatom, and optionally substituted with one or more substituents selected from the group consisting of: aryloxy, cycloalkyl, substituted cycloalkyl, alkyl, C_6–C_{12}aryl, alkoxy, acyloxy, substituted C_6–C_{12}aryl, amino, N-acylamino, nitro, cyano, halogen, hydroxy, —C(O)OR^6, —S(O)$_n$R^5, protected —OH and alkyl substituted with one or more substituents selected from the group consisting of: alkoxy, acyloxy, C_6–C_{12}aryl, substituted C_6–C_{12}aryl, amino, N-acylamino, oxo, hydroxy, cycloalkyl, substituted cycloalkyl, —C(O)OR^6, —S(O)$_n$R^7, aryloxy, nitro, cyano, halogen and protected —OH,

where

R^6 is hydrogen or alkyl,

n is 0–2,

R^7 is hydrogen or alkyl and

R^5 is hydrogen, cycloalkyl, C_6–C_{12}aryl, substituted cycloalkyl, substituted C_6–C_{12}aryl, alkyl or alkyl substituted with one or more substituents selected from the group consisting of: alkoxy, acyloxy, aryloxy, amino, N-acylamino, oxo, hydroxy, —C(O)OR^6, —S(O)$_n$R^7, nitro, cyano, cycloalkyl, substituted cycloalkyl, halogen, C_6–C_{12}aryl, substituted C_6–C_{12}aryl and protected —OH, where R^6 is hydrogen or alkyl, n is 0–2 and R^7 is hydrogen or alkyl; or pharmaceutically acceptable salts, hydrates, solvates and esters thereof.

5,618,807

METHOD FOR PREPARING 17-SUBSTITUTED STEROIDS USEFUL IN CANCER TREATMENT

Susan E. Barrie, Kent; Michael Jarman, London; Gerard A. Potter, Cheshire, and Ian R. Hardcastle, Sutton, all of Great Britain, assignors to British Technology Group Limited, London, England

Division of Ser. No. 315,882, Sep. 30, 1994. This application Feb. 22, 1995, Ser. No. 392,178

Claims priority, application United Kingdom, Mar. 31, 1992, 9207057; Nov. 27, 1992, 9224880; Sep. 30, 1993, 9320132; Jul. 14, 1994, 9414192

Int. Cl.^{6} A61K *31/58;* C07J *43/00*

U.S. Cl. 514—176 9 Claims

1. A method of preparing a 3β]-hydroxy- or 3β- (lower acyloxy) 16,17-ene-17-(3-pyridyl)-substituted steroid, wherein the 3β-(lower acyloxy) group of steroid has from 2 to 4 carbon atoms, which comprises:

cross-coupling a 3β-hydroxy-16,17-ene-17-iodo or -bromo steroid with a (3-pyridyl)-substituted borane using a palladium complex catalyst, wherein the pyridine ring in said borane is unsubstituted or substituted at the 5-position by an alkyl group of 1 to 4 carbon atoms, in a proportion of at least 1.0 equivalent of borane per equivalent of steroid, in an organic liquid which is a solvent for the 3β-hydroxy steroidal reaction product, and,

where the 3β-(lower acyloxy) ester is to be prepared, reacting the resulting 3β-hydroxy steroidal reaction product with an esterifying agent effective to replace the hydroxy group by a said lower acyloxy group,

wherein (a) the reaction is carried out with 1.0 to 1.2 equivalents of borane per equivalent of steroid or (b) the product of the cross-coupling reaction is crystallized from a mixture of acetonitrile and methanol.

5,618,808

BENZOTHIAZEPINE AND BENZOXAZEPINE DERIVATIVES AS CHOLECYSTOKININ RECEPTOR ANTAGONISTS

Arthur A. Nagel, Gales Ferry, Conn., assignor to Pfizer, Inc., New York, N.Y.

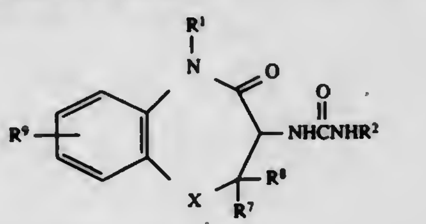
PCT No. PCT/US93/03389, § 371 Date Dec. 21, 1994, § 102(e) Date Dec. 21, 1994, PCT Pub. No. WO94/01421, PCT Pub. Date Jan. 20, 1994

PCT Filed Apr. 14, 1993, Ser. No. 360,843

Int. Cl.^{6} C07D *267/02;281/02;* A61K *31/55*

U.S. Cl. 514—211 10 Claims

1. A compound of the formula



I

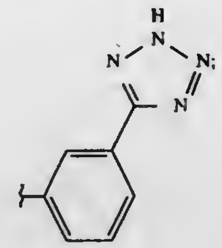
wherein

X is oxygen, sulfur, sulfoxide or sulfone;

$$R^1 \text{ is } CH_2\overset{O}{\overset{\|}{C}}OR^3,\ CH_2\overset{O}{\overset{\|}{C}}NR^4R^5, \text{ or } CH_2\overset{O}{\overset{\|}{C}}R^6;$$

R^2 is phenyl optionally substituted with one or more substituents independently selected from (C_1–C_6)alkyl, nitro, amino,

(C_1–C_6)alkylamino, di-(C_1–C_6)alkylamino, halo, hydroxy, CO_2H, CO_2(C_1–C_6)alkyl, tetrazolyl, SO_3H, SO_2NH_2, SO_2NH(C_1–C_6)alkylamino, SO_2N-di-(C_1–C_6)alkylamino and a group of the formula



R^3 and R^5 are independently selected from (C_1–C_6)alkyl, 1-adamantyl and 2-adamantyl;

R^4 is hydrogen or (C_1–C_6)alkyl;

R^6 is a six membered saturated heterocyclic ring containing 5 carbon atoms and one nitrogen atom, wherein the nitrogen atom is the point of attachment, one of the carbon atoms may optionally be replaced by an oxygen or nitrogen atom, and one or more of said carbon atoms may optionally be substituted with one or two substituents independently selected from cyano and (C_1–C_6)alkyl;

R^7 is hydrogen or methyl;

R^8 is hydrogen or methyl; and

R^9 is hydrogen, halo, phenyl or (C_1–C_6)alkyl;

or a pharmaceutically acceptable salt thereof.

5,618,809

INDOLOCARBAZOLES FROM SACCHAROTHRIX AEROCOLONIGENES COPIOSA SUBSP. NOV SCC 1951 ATCC 53856

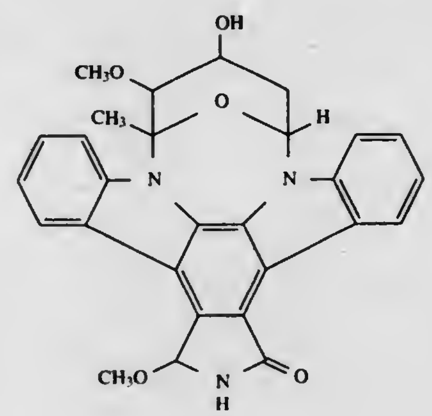
Ellen B. Barrabee, Fanwood; Ann C. Horan, Summit; Frank A. Gentile, Wayne, and Mahesh G. Patel, Verona, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Continuation of Ser. No. 451,487, Dec. 14, 1989, abandoned. This application Feb. 27, 1995, Ser. No. 394,937

Int. Cl.^{6} C07D *498/22;* A61K *31/55*

U.S. Cl. 514—211 9 Claims

1. A compound to



A

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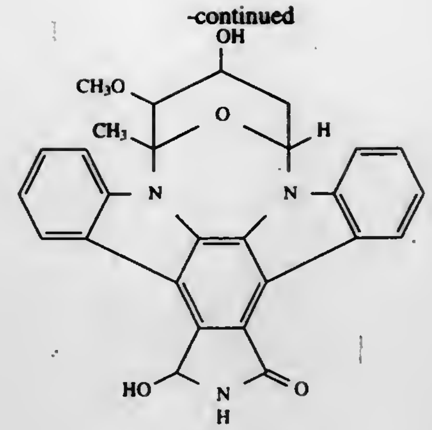

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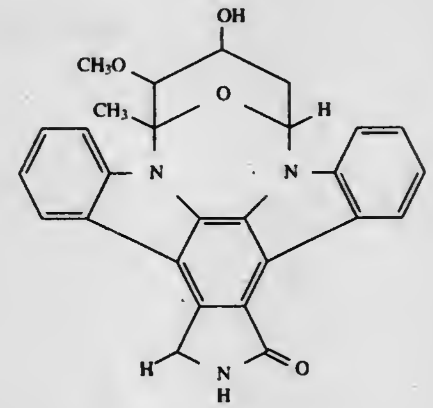

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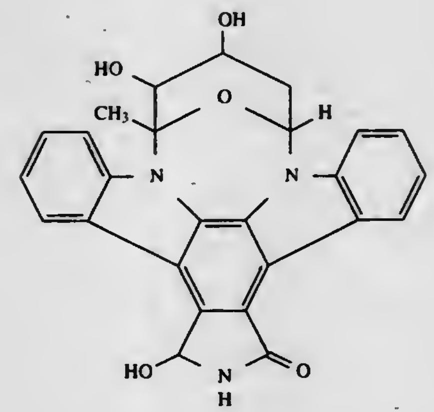

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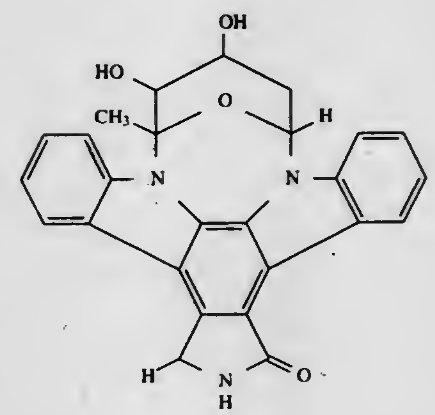

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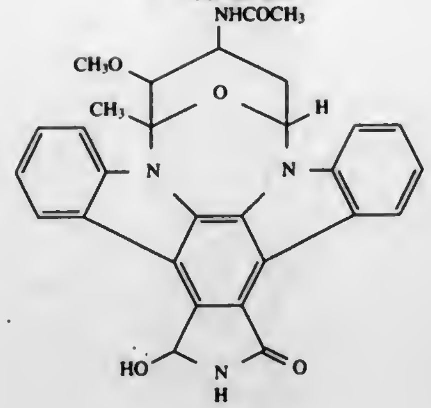

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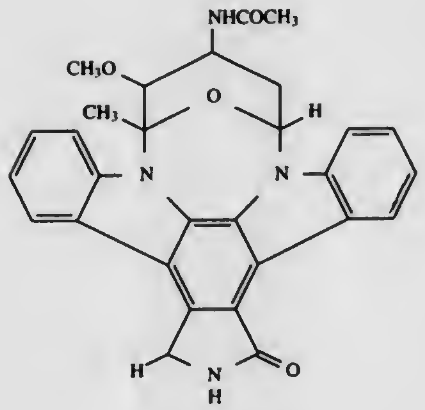

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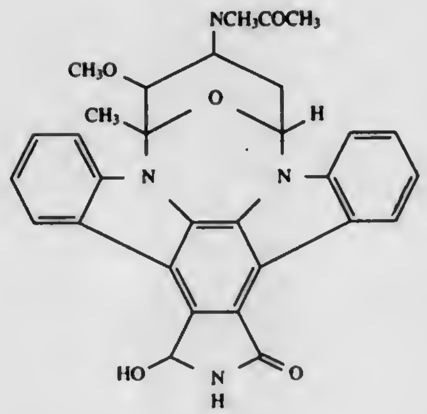

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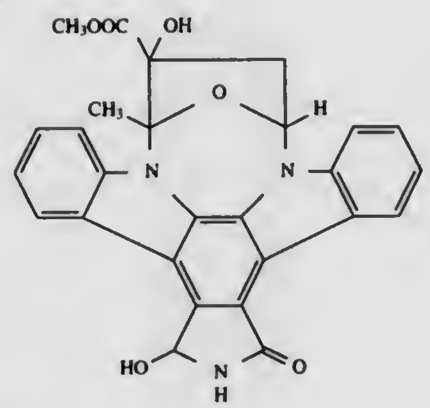

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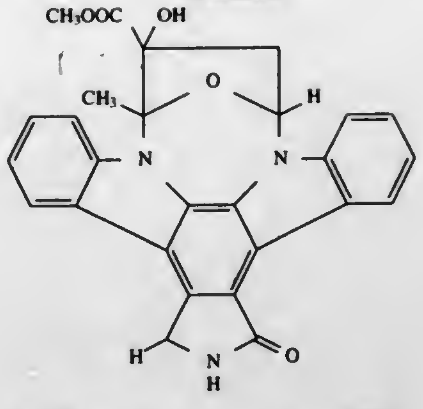
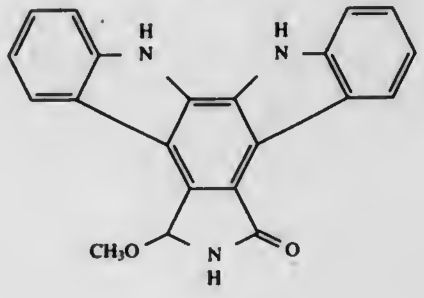
J



K



5,618,810

Patent Not Issued For This Number

5,618,811

TETRAHYDRO-1H-BENZAZEPINONES AND HEXAHYDROAZEPINONES AS SELECTIVE CHOLECYSTOKININ-B RECEPTOR ANTAGONISTS

John A. Lowe, III, Stonington, Conn., assignor to Pfizer Inc., New York, N.Y.

PCT No. PCT/IB94/00111, § 371 Date Jan. 18, 1996, § 102(e) Date Jan. 18, 1996, PCT Pub. No. WO95/03281, PCT Pub. Date Feb. 2, 1995

Continuation of Ser. No. 97,640, Jul. 26, 1993, abandoned.

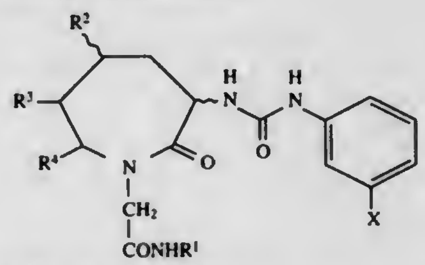
This PCT application May 19, 1994, Ser. No. 586,685

Int. Cl.^{6} A61K *31/55;* C07D *223/12*

U.S. Cl. 514—218 **13 Claims**

1. A compound of the formula

I



I

wherein R^1 is $(C_1–C_{10})$alkyl;

R^2 is phenyl or $(C_1–C_{10})$alkyl, each of which may be substituted by Y^1;

R^3 and R^4 are independently selected from the group consisting of hydrogen, $(C_1–C_{10})$alkyl and phenyl, or may be taken together with the two carbons to which they are attached to form a phenyl which may be substituted by Y^2;

X is tetrazolyl or

$$-\overset{O}{\overset{\|}{C}}-NHW,$$

wherein W is selected from

$$-\overset{O}{\overset{\|}{C}}-O-(C_1–C_8)alkyl,$$

$—SO_2(C_1–C_8)$alkyl, $—SO_2NH(C_1–C_8)$alkyl, $—SO_2CF_3$,

$$-\overset{O}{\overset{\|}{C}}-O\text{-aryl},$$

$—SO_2$(phenyl), $—SO_2$(benzyl), $—SO_2NH$(phenyl), $—SO_2NH$(heteroaryl) and $—SO_2$(heteroaryl), wherein said heteroaryl is a 5 to 7 membered saturated or unsaturated hydrocarbon ring containing one to four heteroatoms selected from oxygen, nitrogen and sulfur and wherein the phenyl and heteroaryl moieties of W may optionally be substituted with one or two substituents independently selected from $(C_1–C_6)$alkyl optionally substituted with from one to three fluorine atoms, phenyl, halo, $(C_1–C_6)$alkoxy optionally substituted with from one to three fluorine atoms.

$$-\overset{O}{\overset{\|}{C}}-O-(C_1–C_6)alkyl,$$

$—SO_2$, $—SO_2NH(C_1–C_6)$alkyl,

$$-\overset{O}{\overset{\|}{C}}-NH_2,\ -\overset{O}{\overset{\|}{C}}-NH(C_1–C_6)alkyl,$$

cyano and $—S(C_1–C_6)$alkyl; and

Y^1 and Y^2 are independently selected from the group consisting of hydrogen, thienyl, pyridyl, furyl, and pyrimidyl, halo, $(C_1–C_6)$ alkyl optionally substituted with from one to three fluorine atoms, $(C_1–C_6)$ alkoxy optionally substituted with from one to three fluorine atoms, nitro, cyano, amino, $—NH(C_1–C_6)$alkyl, $—N[(C_1–C_8)alkyl]_2$, $—S—(C_1–C_8)$alkyl, $—SO—(C_1–C_8)$alkyl, $—SO_2—(C_1–C_8)$alkyl,

$$-\overset{O}{\overset{\|}{C}}-(C_1–C_8)alkyl,\ -\overset{O}{\overset{\|}{C}}-O-(C_1–C_8)alkyl$$

and phenyl, wherein said phenyl may optionally be substituted with one or two substituents independently selected from halo, $(C_1–C_6)$alkyl, $(C_1–C_6)$alkoxy, nitro, cyano, amino and trifluoromethyl;

or a pharmaceutically acceptable salt thereof.

12. A method of treating or preventing a condition selected from the group consisting of pain, gastrointestinal disorders such as ulcer and colitis, and central nervous system disorders such as anxiety and panic disorder in a mammal, comprising administering to a mammal in need of such treatment or prevention an amount of a compound according to claim 1 effective in treating or preventing such condition.

5,618,812

BENZODIAZEPINE DERIVATIVES

Jose L. Castro Pineiro, Harlow; William R. Carling, Bishops Stortford; Mark S. Chambers, Watford; Stephen R. Fletcher, Hatfield Heath, Nr. Bishops Stortford; Sarah C. Hobbs, Bishops Stortford; Victor G. Matassa, Furneux Pelham; Kevin W. Moore, Buntingford; Graham A. Showell, Welwyn Garden City, and Michael G. Russell, Welwyn Garden City, all of United Kingdom, assignors to Merck Sharp & Dohme, Ltd., Hoddesdon, England

PCT No. PCT/GB93/01599, § 371 Date Jan. 26, 1995, § 102(e) Date Jan. 26, 1995, PCT Pub. No. WO94/03437, PCT Pub. Date Feb. 17, 1994

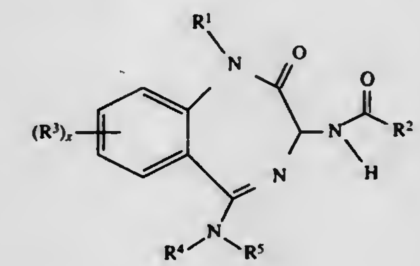
PCT Filed Jul. 28, 1993, Ser. No. 374,748

Claims priority, application United Kingdom, Jul. 29, 1992, 9216123; Jul. 30, 1992, 9216231; Jul. 30, 1992, 9216238; Oct. 6, 1992, 9220957; Oct. 30, 1992, 9222821; Nov. 2, 1992, 9222934; Nov. 11, 1992, 9223583; Dec. 16, 1992, 9226242; Dec. 17, 1992, 9226360; Jan. 22, 1993, 9301277; Apr. 7, 1993, 9307318

Int. Cl.^{6} A61K *31/55;* C07D *401/04;403/04*

U.S. Cl. 514—221 **18 Claims**

1. A compound of formula (I), or a pharmaceutically acceptable salt or prodrug thereof:



(I)

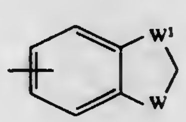
wherein:

R^1 represents C_{1-6}alkyl, C_{3-7}cycloalkyl, cyclopropylmethyl, $CH_2CO_2R^{11}$ (wherein R^{11} is C_{1-4}alkyl) or a group $CH_2CONR^6R^7$ (where R^6 and R^7 each independently represents H or C_{1-4}alkyl, or R^6 and R^7 together from a chain (CH_2)p where p is 4 or 5);

R^2 represents NHR^{12};

R^{12} represents a phenyl group optionally substituted by one or more substituents selected from C_{1-6}alkyl, halo, hydroxy, $(CH_2)_q$-tetrazolyl optionally substituted in the tetrazole ring by C_{1-4}alkyl, (CH_2)q-imidazolyl, (CH_2)q-triazolyl (where q is 0, 1, 2 or 3), 5-hydroxy-4-pyrone, NR^6R^7, NR^9COR^{11}, $NR^9CONR^{9'}R^{11}$ (where R^9 and $R^{9'}$ are each independently H or C_{1-4}alkyl and R^{11} is as previously defined), $CONR^6R^7$ (where R^6 and R^7 are as previously defined), $SO(C_{1-6}alkyl)$, $SO_2(C_{1-6}alkyl)$, trifluoromethyl, $CONHSO_2R^8$, SO_2NHCOR^8 (where R^8 is C_{1-6}alkyl, optionally substituted aryl, 2,2-difluorocyclopropane or trifluoromethyl), SO_2NHR^{10} (where R^{10} is a nitrogen containing heterocycle), $B(OH)_2$, $(CH_2)_tCO_2H$, where t is zero, 1 or 2; or

R^{12} represents a group

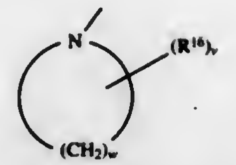


where W represents CH_2 or NR^9, where R^9 is as previously defined and W^1 represents CH_2, or W and W^1 both represent oxygen;

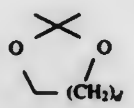
R^3 represents C_{1-6}alkyl, halo or NR^6R^7, where R^6 and R^7 are as previously defined;

x is 0, 1, 2, or 3

and NR^4R^5 represents a group



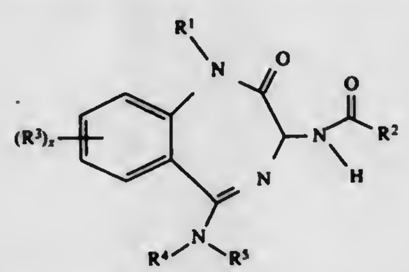
wherein each R^{16} independently represents C_{1-6}alkyl, C_{1-6}alkoxy, hydroxy, oxo, SR^{11}, NR^6R^7, NR^9C_{1-4}alkylR^{17}, $=NOR^9$ or



where R^{11}, R^6, R^7 and R^9 are as previously defined, R^{17} is halo or trifluoromethyl, and d is 2 or 3; v is 1, 2, 3, 4, 5, 6, 7 or 8; and w is 4, 5, 6, 7, 8, 9, 10 or 11.

6. A method for the treatment or prevention of a physiological disorder involving CCK and/or gastrin, which method comprises administration to a patient in need thereof a CCK and/or gastrin reducing amount of a compound according to claim 1.

10. A compound of formula (I), or a salt or prodrug thereof:



(I)

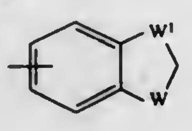
wherein:

R^1 represents H, C_{1-6} alkyl, C_{3-7} cloalkyl, cyclopropylmethyl, $(CH_2)_r$imidazolyl, $(CH_2)_r$triazolyl, (CH_2)tetrazolyl (where r is 1, 2 or 3), $CH_2CO_2R^{11}$ (where R^{11} is C_{1-4}alkyl) or a group $CH_2CONR^6R^7$ (where R^6 and R^7 each independently represents H or C_{1-4} alkyl, or R^6 and R^7 together form a chain $(CH_2)_p$ where p is 4 or 5);

R^2 represents NHR^{12};

R^{12} represents a phenyl group optionally substituted by one or more substituents selected from C_{1-6} alkyl, halo, hydroxy, C_{1-4} alkoxy, $(CH_2)_q$-tetrazolyl optionally substituted in the tetrazole ring by C_{1-4} alkyl, $(CH_2)_q$-imidazolyl, $(CH_2)_q$-triazolyl (where q is 0, 1, 2 or 3), 5-hydroxy-4-pyrone, NR^6R^7, NR^9COR^{11}, $NR^9CONR^{9'}R^{11}$ (where R^9 and $R^{9'}$ are each independently H or C_{1-4} alkyl and R^{11} is as previously defined), $CONR^6R^7$ (where R^6 and R^7 are as previously defined), $SO(C_{1-6}$ alkyl), $SO_2(C_{1-6}$ alkyl), trifluoromethyl, $CONHSO_2R^8$, SO_2NHCOR^8 (where R^8 is C_{1-6} alkyl, optionally substituted aryl, 2,2-difluorocyclopropane or trifluoromethyl), SO_2NHR^{10} (where R^{10} is a nitrogen containing heterocycle), $B(OH)_2$, $(CH_2)_qCO_2H$, where q is as previously defined; or

R^{12} represents a group



where W represents CH_2 or NR^9, and R^9 is as previously defined, and W^1 represents CH_2, or W and W^1 each represent oxygen;

R^3 represents C_{1-6} alkyl, halo or NR^6R^7, where R^6 and R^7 are as previously defined; R^4 and R^5 together with the nitrogen to which they are attached form a residue of a bridged azabicyclic system;

x is 0, 1, 2 or 3.

15. A method for the treatment or prevention of a physiological disorder involving CCK and/or gastrin, which method comprises administration to a patient in need thereof a CCK and/or gastrin reducing amount of a compound according to claim 10.

5,618,813
BENZO[5.6]PYRANO[2.3.4-IJ]QUINOLIZINE AND BENZO[5.6]THIOPYRANO[2.3.4-IJ]QUINOLIZINE DERIVATIVES AS ANTIBACTERIAL AND ANTINEOPLASTIC AGENTS

Daniel T. Chu, Santa Clara, Calif.; Qun Li, Gurnee, and Kathleen Raye, Highland Park, both of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

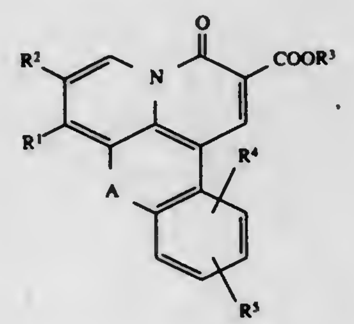
Filed May 26, 1995, Ser. No. 451,243

Int. Cl.⁶ A61K *31/535;31/495;31/44;* **C07D** *491/147*

U.S. Cl. 514—233.2 **16 Claims**

1. A compound of formula

(I)



or a pharmaceutically acceptable salt, ester or amide thereof, wherein:

A is sulfur or oxygen;

R^1 is selected from the group consisting of hydroxy, protected-hydroxy, C_1–C_6-alkoxy, halo, amino, C_1–C_6-alkylamino, hydroxy-C_1–C_6-alkylamino, bicyclic nitrogen-containing heterocycle selected from the group consisting of benzopyrrolidine, octahydroisoindole, bicyclo(3,2,2,7-nonane and azabicyclo[3.1.0]hex, nitrogen-containing aromatic heterocycle selected from the group consisting of pyridine, pyrazine, pyrimidine, pyrrole, pyrazole, imidazole, thiazole, oxazole, isooxazole, and nitrogen-containing heterocycle selected from the group consisting of azetidine, pyrrolidine, piperidine, piperazine, morpholine, and thiomorpholine;

R^2 is selected from the group consisting of hydrogen, halo, C_1–C_6-alkyl, and halo-C_1–C_6-alkyl;

R^3 is selected from the group consisting of hydrogen, carboxy-protecting group, C_1–C_6-alkyl and C_5–C_7-cycloalkyl; and

R^4 and R^5 are independently selected from the group consisting of hydrogen, C_1–C_6-alkyl and C_1–C_6-alkoxy.

5,618,814
TRISUBSTITUTED PYRIMIDO [5,4-D] PYRIMIDINES FOR MODULATING MULTI-DRUG RESISTANCE AND PHARMACEUTICAL COMPOSITIONS CONTAINING THESE COMPOUNDS

Armin Heckel, Biberach; Uwe Bamberger, Ochsenhausen, and Annerose Mauz, Langenenslingen-Emerfeld, all of Germany, assignors to Dr. Karl Thomae GmbH, Biberach an der Riss, Germany

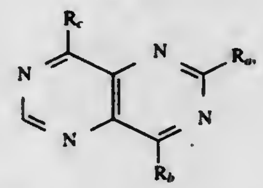
Filed Aug. 2, 1994, Ser. No. 284,325

Claims priority, application Germany, Aug. 2, 1993, 43 25 900.6

Int. Cl.⁶ A61K *31/535;* **C07D** *487/04*

U.S. Cl. 514—234.2 **9 Claims**

1. A trisubstituted pyrimido[5,4-d]pyrimidine of formula (I)



(I)

wherein

R_a denotes a piperidino group in which a methylene group in the 3- or 4-position is replaced by $>CR_1$-A-(R_2NR_3)

wherein

A denotes a carbon-nitrogen bond or a C_{1-3}-alkylene group;

R_1 denotes a hydrogen atom or a C_{1-3}-alkyl group;

R_2 denotes a hydrogen atom or a C_{1-3}-alkyl group optionally substituted by a phenyl group;

R_3 denotes a hydrogen atom or C_{1-4}-alkyl group optionally substituted by a phenyl group;

R_b denotes a morpholino group and

R_c denotes an $-NR_8R_9$ group wherein

R_8 denotes a hydrogen atom or a C_{1-4}-alkyl group which may be substituted by a phenyl group, and

R_9 denotes a hydrogen atom, or a C_{1-4} alkyl group optionally substituted by a phenyl or naphthyl group, wherein the phenyl or naphthyl group may each be mono- or disubstituted by fluorine, chlorine or bromine atoms or by C_{1-3} alkyl or C_{1-3} alkoxy,

or R_c denotes a 1,2,3,4-tetrahydro-isoquinolinyl group which may be mono-or di-substituted by C_{1-3} alkoxy,

or a physiologically acceptable salt thereof.

5,618,815
1,9-BRIDGED THIAZOLO[3,2-A]QUINOLINE DERIVATIVES

Thomas Jaetsch, Köln; Werner Hallenbach, Monheim; Thomas Himmler, Odenthal; Burkhard Mielke, Leverkusen; Klaus D. Bremm, Recklinghausen; Rainer Endermann, Wuppertal; Franz Pirro, Langenfeld; Michael Stegemann, and Heinz-Georg Wetzstein, both of Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed May 19, 1995, Ser. No. 444,246

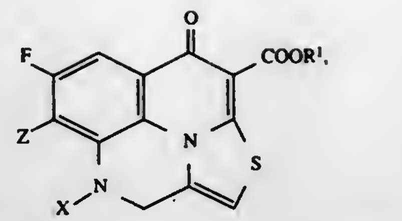
Claims priority, application Germany, May 27, 1994, 44 18 510.3

Int. Cl.⁶ C07D *513/16;498/00;* **A61K** *31/495;31/535*

U.S. Cl. 514—250 **11 Claims**

1. A 1,9-bridged thiazolo[3,2-a]quinoline derivative of the formula

(I)

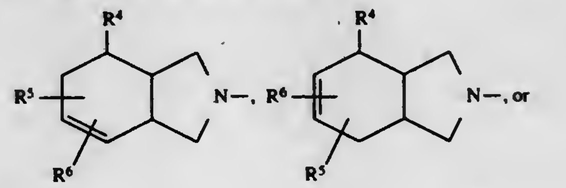


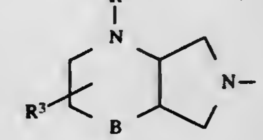
in which

R^1 represents hydrogen, optionally hydroxyl-, methoxy-, amino-, methylamino- or dimethylamino-substituted alkyl having 1 to 4 carbon atoms or (5-methyl-2-oxo-1,3-dioxol-4-yl)-methyl,

X represents straight-chain or branched C_1–C_3-alkyl or cyclopropyl,

Z represents a radical of the formula





in which

R^4 represents hydrogen, hydroxyl, $-NR^7R^8$, hydroxymethyl, $—CH_2—NR^7R^8$, carboxyl, methoxycarbonyl or ethoxycarbonyl, where

R^7represents hydrogen, optionally hydroxyl-substituted C_1–C_3-alkyl, alkoxycarbonyl having 1 to 4 carbon atoms in the alkoxy moiety or C_1–C_3-acyl,

represents hydrogen or methyl,

R^5 represents hydrogen, straight-chain or branched C_1–C_3-alkyl or cyclopropyl,

R^6 represents hydrogen or methyl,

R^3 represents hydrogen or methyl,

R^2 represents hydrogen, methyl or a radical of the formula $—CH{=}CH—COOR^2$, $—CH_2—CH_2—COOR^{2'}$, $—CH_2—CO—CH_3$, or $—CH_2—CH_2—CN$, wherein

R^2 represents methyl or ethyl,

B represents $—CH_2—$, O or a direct bond,

in its racemate or a enantiomerically pure form or a pharmaceutically acceptable hydrate or acid addition salt thereof.

5,618,816
ANTIMIGRAINE 1,2,5-THIADIAZOLE DERIVATIVES OF INDOLYLALKYL-PYRIDNYL AND PYRIMIDINYLPIPERAZINES

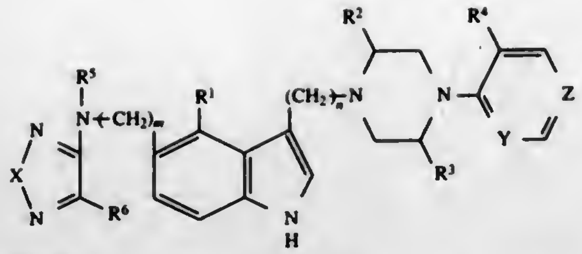
Ronnie R. Crenshaw, Dewitt, N.Y.; Edward H. Ruediger, Quebec, Canada; David W. Smith, Madison, Conn.; Carola Solomon, Quebec, Canada, and Joseph P. Yevich, Sonthington, Conn., assignors to Bristol-Myers Squibb Company, New York, N.Y.

Filed Mar. 2, 1995, Ser. No. 396,825

Int. Cl.⁶ C07D *417/14;403/14;* **A61K** *31/495;31/505*

U.S. Cl. 514—253 **14 Claims**

1. A compounds of Formula I or a pharmaceutically acceptable acid addition salt and/or solvate thereof



I

wherein

R[1] is selected from hydrogen, halogen, lower alkyl and lower alkoxy;

R[2], R[3] and R[5] are independently selected from hydrogen and lower alkyl;

R[4] is lower alkoxy;

R[6] is amino, lower alkylamino, di-lower alkylamino and lower alkoxy;

X is selected from S, SO, and SO_2;

Y and Z are independently selected from N and CH with the proviso that both Y and Z cannot be CH simultaneously;

m is selected from zero and the integers 1 to 3; and

n is selected from the integers 1 to 5.

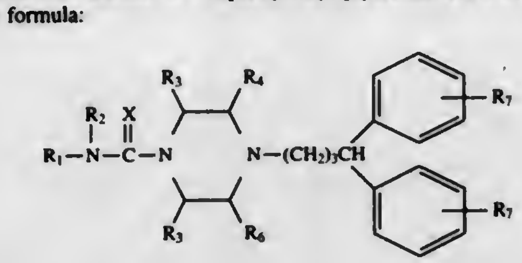
5,618,817
USE OF DIPHENYLBUTYL-PIPERAZINECARBOXAMIDES IN THE TREATMENT OF SUBSTANCE DISORDERS

Anders Björk, Bjärred, and Erik Christensson, Lund, both of Sweden, assignors to Kabi Pharmacia AB, Helsingborg, Sweden

Continuation of Ser. No. 949,869, Oct. 12, 1993, Pat. No. 5,434,156. This application Apr. 25, 1995, Ser. No. 428,899
Claims priority, application Sweden, Mar. 22, 1991, 9100860
Int. Cl.[6] A61K *31/495*

U.S. Cl. 514—255 **6 Claims**

1. A method for the relief or prevention of a withdrawal syndrome in a subject resulting from addiction to a non-opiate type drug of abuse or for the suppression of dependence on non-opiate type drugs of abuse which comprises administering to the subject an effective amount of a diphenylbutyl-piperazinecarboxamide of the formula:



wherein

R_1 and R_2 are independently selected from the group consisting of H, alkyl chains, straight or branched, with 1–10 carbon atoms, cycloalkyl with 3–8 carbon atoms, aralkyl with 7–9 carbon atoms, alkenyl with 2–10 carbon atoms, phenyl unsubstituted or substituted by one to three groups selected from halogen, lower alkyl with 1–5 carbon atoms, lower alkoxy with 1–5 carbon atoms, amine unsubstituted or substituted by one or two lower alkyl groups with 1–5 carbon atoms, $—CF_3$ and —CN groups;

R_3, R_4, R_5 and R_6 are independently selected from the group consisting of:

H, lower alkyl having from 1–3 carbon atoms and phenyl;

R_7 is selected from the group consisting of:

hydrogen, halogen, lower alkoxy with 1–3 carbon atoms, and $—CF_3$; and

X is O or S,

or a physiologically acceptable salt thereof.

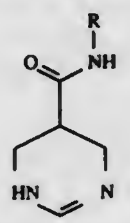
5,618,818
MUSCARINIC AGONIST COMPOUNDS

Babatunde Ojo, Richmond, Va., and Philip G. Dunbar, Medical Lake, Wash., assignors to The University of Toledo, Toledo, Ohio

Filed Mar. 20, 1996, Ser. No. 618,986
Int. Cl.[6] A61K *31/505;* **C07D** *239/06;239/14*

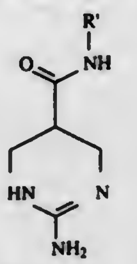
U.S. Cl. 514—256 **5 Claims**

1. A compound having the formula (I) or (II) below or a pharmaceutically acceptable salt thereof:



(I)

where R is methyl or dimethylamino; or



(II)

where R' is dimethylamino.

5. In a method of providing a therapeutic benefit to a mammal comprising administering to said mammal a drug in effective amounts to stimulate a muscarinic receptor so as to provide such benefit, the improvement where in said drug is a compound of claim 1 or its pharmaceutically acceptable salt.

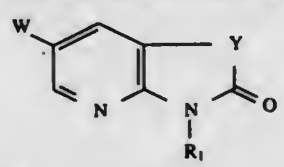
5,618,819
1,3-DIHYDRO-2H-PYRROLO[2,3-B]PYRIDIN-2-ONE AND OXAZOLO[4,5-B]PYRIDIN-2-(3H)-ONE COMPOUNDS

Gérald Guillaumet, St-Jean-Le-Blanc; Marie-Claude Viaud, Orleans; Laurence Savelon, Saint-Jean-De-Braye, all of France; Panayota Pavli, Athenes, Greece; Pierre Renard, Versailles, France; Bruno Pfeiffer, Eaubonne, France; Daniel-Henri Caignard; Jean-Guy Bizot-Espiard, both of Paris, France, and Gérard Adam, Le Mesnil-Le-Roi, France, assignors to Adir et Compagnie, Courbevoie, France

Filed Jul. 3, 1995, Ser. No. 497,524
Claims priority, application France, Jul. 7, 1994, 94 08419; Jul. 7, 1994, 94 08418
Int. Cl.[6] A61K *31/52;31/44;* **C07D** *471/04;498/04*

U.S. Cl. 514—264 **8 Claims**

1. A compound selected from those of formula (I):



(I)

wherein:

R_1 is selected from hydrogen, alkyl, alkenyl, cyanoalkyl, and arylalkyl,

W is selected from

$$-A-R_2 \text{ and } -(A)_m-(CH_2)_n-N\begin{matrix} R_3 \\ \\ R_4 \end{matrix} ,$$

R_2 is selected from alkyl, cycloalkyl, cycloalkylalkyl, phenyl, phenylalkyl, naphthyl, and naphthylalkyl,

R_3 and R_4 are selected, each independently of the other, from hydrogen, alkyl, phenyl, phenylalkyl, cycloalkyl, and cycloalkylalkyl,

n is 1 to 4 inclusive,

m is 0 or 1,

A is selected from

$$\overset{\overset{\displaystyle O}{\|}}{-C-} \text{ and } \overset{\overset{\displaystyle OH}{|}}{-CH-},$$

Y represents oxygen

it being understood that:

the terms "alkyl "alkenyl" and "alkoxy" denote straight-chain or branched groups having 1 to 6 carbon atoms inclusive which may be unsubstituted or substituted by one or more alkoxy,

the term "aryl" denotes phenyl, naphthyl, or pyridyl,

the radicals phenyl, phenylalkyl, naphthyl, pyridyl, and may be unsubstituted or substituted by one or more halogen, hydroxy, alkyl, alkoxy, trifluoromethyl, or nitro,

the term "cycloalkyl" denotes a ring system having 3 to 8 carbon atoms inclusive,

the terms "cycloalkylalkyl", "arylalkyl", "phenylalkyl" and "naphthylalkyl" denote cycloalkyl, aryl, phenyl, or naphthyl bonded by way of a linear or branched carbon chain containing 1 to 6 carbon atoms inclusive,

its possible geometric and/or optical isomers, in pure form or in the form of a mixture, and its pharmaceutically-acceptable addition salts with an acid or a base.

5,618,820
1,3-OXATHIOLANE NUCLEOSIDE ANALOGUES AND METHODS FOR USING SAME

Gervais Dionne, Laval, Canada, assignor to BioChem Pharma, Inc., Laval, Canada

Continuation of Ser. No. 190,203, Feb. 1, 1994, Pat. No. 5,538,975. This application Jun. 7, 1995, Ser. No. 487,452
Claims priority, application United Kingdom, Aug. 1, 1991, 9116601; WIPO, Jul. 24, 1992, PCT/CA92/00321
Int. Cl.[6] A61K *31/505*

U.S. Cl. 514—274 **4 Claims**

1. A method for treating a viral infection in a mammal comprising administering to a mammal in need thereof, an antiviral effective amount of (–)-Cis-4-amino-5-fluoro-1-(2-hydroxymethyl-1,3-oxathiolan-5yl)-(1H)-pyrimidin-2-one or a pharmaceutically acceptable salt, ester or salt of an ester thereof.

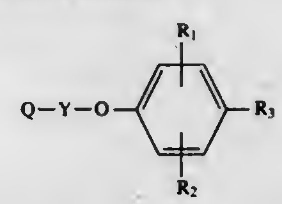
5,618,821
THERAPEUTIC PHENOXYALKYLHETEROCYCLES

David J. Aldous, Glenmore; Thomas R. Bailey, Phoenixville; Guy D. Diana, Pottstown; Gee-Hong Kuo, Blue Bell, and Theodore J. Nitz, Pottstown, all of Pa., assignors to Sanofi, S.A., Paris Cedex, France

Continuation of Ser. No. 242,508, May 13, 1994, abandoned. This application May 26, 1995, Ser. No. 451,692
Int. Cl.[6] A61K *31/44;31/505;* **C07D** *213/16;239/26*

U.S. Cl. 514—277 **19 Claims**

1. A compound of formula:



Formula I

wherein

Q is chosen from the group consisting of pyridyl, pyrazyl, pyrimidyl, quinolyl, indolyl and 7-azaindolyl or any of these substituted with one or two substituents chosen from alkyl, alkoxy, hydroxy, halo, cyano, nitro, hydroxyalkyl, alkoxyalkyl, alkanoyl, fluoroalkyl or the N-oxide of any of these;

Y is an alkylene bridge of 3–9 carbon atoms;

R_1 and R_2 are each independently chosen from hydrogen, halo, alkyl, alkenyl, amino, alkylthio, hydroxy, hydroxyalkyl, alkoxyalkyl, alkylthioalkyl, alkylsulfinylalkyl, alkylsulfonylalkyl, alkoxy, nitro, carboxy, alkoxycarbonyl, dialkylaminoalkyl, alkylaminoalkyl, aminoalkyl, difluoromethyl, trifluoromethyl or cyano;

R_3 is alkoxycarbonyl, alkyltetrazolyl or substituted or unsubstituted heterocyclyl chosen from benzoxazolyl oxazolyl oxadiazolyl isoxazolyl, wherein the substitution is with alkyl, alkoxyalkyl, cycloalkyl, halo alkyl, hydroxyalkyl, alkoxy, hydroxy, furyl, thienyl or fluoroalkyl; or a pharmaceutically acceptable acid addition salt thereof.

5,618,822
N-SUBSTITUTED TRIFLUOROMETHYLPHENYLTETRAHYDROPYRIDINES, PROCESS FOR THE PREPARATION THEREOF, INTERMEDIATES IN SAID PROCESS AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Umberto Guzzi; Costantino Palmieri, and Tiziano Croci, all of Milan, Italy, assignors to Sanofi, France

Continuation-in-part of Ser. No. 141,066, Oct. 26, 1993, Pat. No. 5,462,945, which is a continuation of Ser. No. 705,704, May 23, 1991, Pat. No. 5,281,606. This application Jun. 7, 1995, Ser. No. 477,569
Claims priority, application France, May 23, 1990, 90 06474
Int. Cl.[6] A61K *31/44*

U.S. Cl. 514—277 **3 Claims**

1. A method of treating neuronal degenerative processes which comprises administering to a mammal in need thereof, the 1-[4-(3-trifluoromethylphenyl)-1,2,3,6-tetrahydropyrid-1-yl]-2-(6,7-dimethoxy naphth-2-yl)ethane or a pharmaceutically acceptable salt thereof, wherein said compound is administered in an amount effective to treat said neuronal degeneration.

5,618,823
GLUTATHIONE AS CHEMOPROTECTIVE AGENT

Ennio Cavalletti, and Sergio Tognella, both of Milan, Italy, assignors to Boehringer Mannheim Italia S.p.A., Milan, Italy

PCT No. PCT/EP93/01494, § 371 Date Dec. 22, 1994, § 102(e) Date Dec. 22, 1994, PCT Pub. No. WO94/00141, PCT Pub. Date Jan. 6, 1994
PCT Filed Jun. 14, 1992, Ser. No. 351,403
Claims priority, application Italy, Jun. 24, 1992, MI92A1551
Int. Cl.[6] A61K *31/44;31/335;31/195*

U.S. Cl. 514—283 **2 Claims**

1. A method of treating a patient, comprising administering to said patient reduced glutathione, subsequently administering to said patient an antitumor effective amount of a drug which is active on the mitotic fuse, said antitumor drug being selected from vinblastine and taxol, the amount of said reduced glutathione being effective to protect said patient against neurotoxicity against peripheral nerve caused by said drug.

5,618,824
TREATMENT OF OBSESSIVE-COMPULSIVE DISORDERS WITH 5-HT$_2$ ANTAGONISTS

Christopher J. Schmidt, Oregonia; John H. Kehne, Cincinnati, and Robert A. Padich, Mason, all of Ohio, assignors to Merrell Pharmaceuticals Inc., Cincinnati, Ohio

Filed Mar. 9, 1994, Ser. No. 209,084
Int. Cl.[6] A61K *31/445*

U.S. Cl. 514—317 **3 Claims**

1. A method for the treatment of obsessive-compulsive disorders comprising the administration of a therapeutically effective amount of a 5-HT_2 antagonist to a patient in need thereof.

5,618,825

COMBINATORIAL SULFONAMIDE LIBRARY

John J. Baldwin, Gwynedd Valley, Pa.; Michael H. J. Ohlmeyer, and Ian Henderson, both of Plainsboro, N.J., assignors to Pharmacopeia, Inc., Princeton, N.J.

Division of Ser. No. 212,024, Mar. 11, 1994. This application Jun. 7, 1995, Ser. No. 482,489

Int. Cl.[6] C07D *207/09;211/62;* A61K *31/40;31/445*

U.S. Cl. 514—317 10 Claims

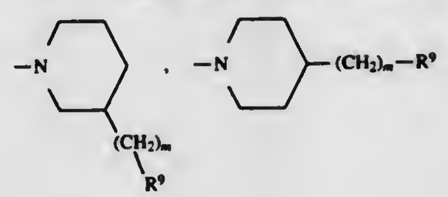
1. A compound of the formula:

Y—A—CO—R^1 II

wherein:

R^1 is

—$N(R^6)$—$(CH_2)_{2-5}$—Z—$(CH_2)_{2-5}$—R^9, —$NH(CH_2)_{2-5}$—R^9,



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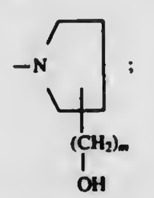
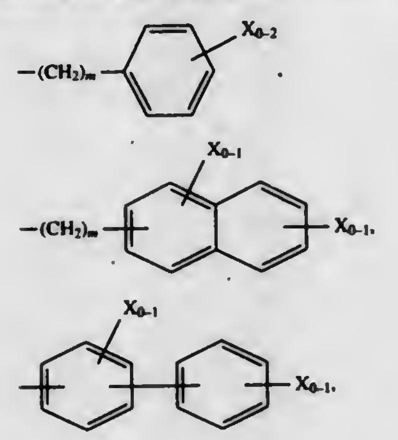


;

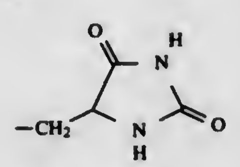
R^2 is the residue on the α carbon of methionine, O-t-butylserine, serine, S-trityl-cysteine, cysteine, aspartic acid-β-butyl ester, aspartic acid, glutamic acid-γ-t-butyl ester, glutamic acid, N^{im}-trityl-histidine, histidine, N^{ϵ}-Boc-lysine, N^{g}-Mtr-arginine, arginine, N-β-trityl-asparagine, asparagine, N-γ-trityl-glutamine, glutamine, N^{in}-Boc-tryptophan, tryptophan, isoleucine, phenylalanine, glycine, alanine, valine, or leucine;

R^3 is lower alkyl or —$(CH_2)_m$—Q—X;

R^4 is —$Q(R^7, R^8)$—SO_2NH_2, —$(CH_2)_m$—R^{10}, lower alkyl, a 6-membered aromatic heterocyclic ring containing 1 or 2N atoms, heteroaryl-lower alkyl,



or



with the proviso that when m=0, R_{10} is not OH;

R^5 is lower alkyl, lower cycloalkyl, alkenyl, alkynyl, a mono- or bicyclic 6- to 10-membered aromatic ring system, or a mono- or bicyclic 5- to 10-membered heteroaromatic ring system containing 1 or 2N atoms, either system unsubstituted or substituted with 1–2 substituents selected from halogen, alkoxy, alkyl, CF_3, CN, —N(lower alkyl)$_2$, and acylamino;

R^6 is H or lower alkyl;

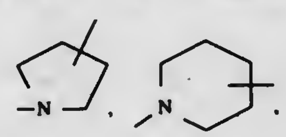
R^7, R^8 is each independently H, halogen, lower alkyl, alkoxy, CN, —NO_2, —CO-lower alkyl, —N(lower alkyl)$_2$, or NH—CO—lower alkyl;

R^9 is OH, $CONH_2$, or COOH;

R^{10} is alkoxy, OH, or COOH;

m is 0–6;

A is —NH—CHR^2—, —$NH(CH_2)_{2-12}$—,



or the descarboxy residue of a primary or secondary amino acid other than lysine;

Q is a 5- or 6-membered aromatic or heteroaromatic ring containing 0–3 heteroatoms selected from O, N, and S, or a bicyclic 9- or 10-membered aromatic or heteroaromatic ring system containing 0–3 heteroatoms selected from O, N, and S;

X is H, lower alkyl, halogen, alkoxy, CF_3, CN, —NO_2, —CO-lower alkyl, —N(lower alkyl)$_2$, NH—CO-lower alkyl, or COOH;

Y is —SO_2R^3, —COR^4, —CO—$CH(R^2)$—$NHCOR^4$, —CO—NHR^5, or — $COOR^5$, or —$COOR^5$; and

Z is —O—, —S—, or —N(lower alkyl)—;

or a pharmaceutically acceptable salt thereof.

5,618,826

ANTICHOLINERGIC COMPOUNDS, COMPOSITIONS AND METHODS OF TREATMENT

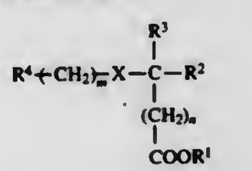
Richard H. Hammer, and Nicholas S. Bodor, both of Gainesville, Fla., assignors to University of Florida, Gainesville, Fla.

Division of Ser. No. 366,464, Dec. 30, 1994, which is a division of Ser. No. 104,650, Aug. 11, 1993, Pat. No. 5,418,244, which is a division of Ser. No. 931,320, Aug. 18, 1992, Pat. No. 5,258,388, which is a division of Ser. No. 558,823, Jul. 27, 1990, Pat. No. 5,223,528, which is a continuation of Ser. No. 245,333, Sep. 16, 1988, abandoned, which is a continuation-in-part of Ser. No. 189,709, May 3, 1988, abandoned, which is a continuation-in-part of Ser. No. 130,454, Nov. 17, 1987, abandoned, and Ser. No. 839,941, Mar. 17, 1986, abandoned. This application May 30, 1995, Ser. No. 452,675

Int. Cl.[6] A61K *31/445;* C07D *211/08*

U.S. Cl. 514—318 23 Claims

1. A compound of the formula



(I)

wherein:

R^1 is C_1–C_8 straight or branched alkyl; C_2–C_8 straight or branched alkenyl; (C_3–C_8 cycloalkyl)-C_pH_{2p}- wherein p is an integer from 0 to 4, and wherein the 3- to 8-membered ring portion optionally bears 1 to 4 C_1–C_4 straight or branched alkyl substituents; (C_3–C_8 cycloalkenyl)-C_pH_{2p}- wherein p is an integer from 0 to 4 and wherein the 3- to 8-membered ring portion optionally bears 1 to 4 C_1–C_4 straight or branched alkyl substituents; C_6H_5-C_qH_{2q}- wherein q is an integer from 1 to 4; or (C_6–C_{18} polycarbocyclic)-C_pH_{2p}- wherein p is an integer from 0 to 4, the 6- to 18-membered ring portion consisting of 2 to 4 rings which are bridged or fused, which

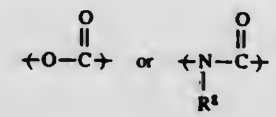
are saturated or unsaturated and which optionally bear one or more C_1–C_8 straight or branched alkyl substituents, the total carbon atom content of all such optional alkyl substituents being from 1 to 10;

R^2 is phenyl optionally bearing 1 to 3 C_1–C_4 straight or branched alkyl substituents; C_3–C_8 branched alkyl; C_3–C_8 branched alkenyl; (C_3–C_8 cycloalkyl)-C_p H_{2p}- wherein p is an integer from 0 to 4, and wherein the 3- to 8-membered ring portion optionally bears 1 to 4 C_1–C_4 straight or branched alkyl substituents; (C_3–C_8 cycloalkenyl)-C_pH_{2p}- wherein p is an integer from 0 to 4 and wherein the 3- to 8-membered ring portion optionally bears 1 to 4 C_1–C_4 straight or branched alkyl substituents; C_6H_5-C_qH_{2q}- wherein q is an integer from 1 to 4; or (C_6–C_{18} polycarbocyclic)-C_pH_{2p}- wherein p is an integer from 0 to 4, the 6- to 18-membered ring portion consisting of 2 to 4 rings which are bridged or fused, which are saturated or unsaturated and which optionally bear one or more C_1–C_8 straight or branched alkyl substituents, the total carbon atom content of all such optional alkyl substituents being from 1 to 10;

R^3 is 2-, 3-, or 4-pyridyl;

n is an integer from 0 to 4;

X is

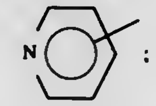


wherein R^8 is H or C_1–C_3 straight or branched alkyl;

m is an integer from 0 to 4;

and R^4 is a piperidinyl optionally bearing 1 or 2 substituents selected from the group consisting of methyl, phenyl and benzyl;

or R^4 is a radical of the formula



;

or a pharmaceutically acceptable acid addition salt of a compound of formula (I) with an acid of the formula HY wherein Y is a pharmaceutically acceptable anion;

or a pharmaceutically acceptable quaternary ammonium salt of a compound of formula (I) with a compound of the formula $R^{12}Y$ wherein Y is defined as above and R^{12} is C_1–C_4 straight or branched alkyl or benzyl.

5,618,827

SUBSTITUTED PHENYLCARBAMATES AND PHENYLUREAS, THEIR PREPARATION AND THEIR USE AS 5-HT ANTAGONISTS

Alexander W. Oxford, Ware, Great Britain, assignor to Glaxo Group Limited, London, England

PCT No. PCT/EP93/00799, § 371 Date Sep. 21, 1994, § 102(e) Date Sep. 21, 1994, PCT Pub. No. WO93/20071, PCT Pub. Date Oct. 14, 1993

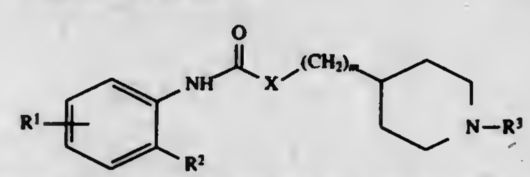
PCT Filed Mar. 26, 1993, Ser. No. 307,567

Claims priority, application United Kingdom, Mar. 31, 1992, 9206989

Int. Cl.[6] A61K *31/445;* C07D *413/10;417/10*

U.S. Cl. 514—326 12 Claims

1. A compound of formula (I)



(I)

wherein R^1 represents a hydrogen or a halogen atom, or a C_{1-6}alkyl, C_{1-6}alkoxy or hydroxy group;

R^2 represents an oxadiazole or thiadiazole ring substituted by a group selected from C_{1-6} alkyl, C_{3-7}cycloalkyl, —CH_2C_{2-5}alkenyl, —CH_2CH_{2-5}alkynyl, phenyl or benzyl;

X represents an oxygen atom;

m represents zero, 1 or 2;

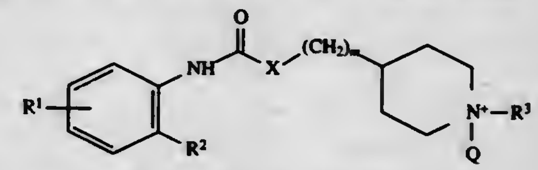
R^3 represents C_{1-6}alkyl, benzyl, —$(CH_2)_nR^4$ or

R^4 represents a group selected from cyano, hydroxyl, C_{1-6}alkoxy, phenoxy, $C(O)C_{1-6}$alkyl, $C(O)C_6H_5$, —$CONR^6R^7$, NR^6COR^7, —$SO_2NR^6R^7$ or —$NR^6SO_2R^7$ (wherein each of R^6 and R^7 independently represent a hydrogen atom, a C_{1-6}alkyl or phenyl group);

n represents 2 or 3;

R^5 represents COR^8 or SO_2R^8 (wherein R^8 represents a hydrogen atom, a C_{1-6}alkyl or phenyl group);

and quaternary ammonium derivatives having the formula



where Q represents C_{1-6}alkyl, piperidine N-oxides of said compound of formula (I) and pharmaceutically acceptable salts and solvates thereof.

5,618,828

METHODS FOR TREATING GASTRO-ESOPHAGEAL REFLUX DISEASE AND EMESIS WITH OPTICALLY PURE (-) CISAPRIDE

Nancy M. Gray, Marlborough, Mass., and James W. Young, Palo Alto, Calif., assignors to Sepracor, Inc., Marlborough, Mass.

Continuation-in-part of Ser. No. 909,840, Jul. 7, 1992, abandoned. This application Oct. 12, 1993, Ser. No. 135,776

Int. Cl.[6] A61K *31/445*

U.S. Cl. 514—327 20 Claims

1. A method of treating gastro-esophageal reflux disease in a human while substantially reducing the concomitant liability of adverse effects associated with racemic cisapride, comprising administering to said human a therapeutically effective amount of (-) cisapride, or a pharmaceutically acceptable salt thereof, substantially free of its (+) stereoisomer.

5,618,829

TYROSINE KINASE INHIBITORS AND BENZOYLACRYLAMIDE DERIVATIVES

Hisao Takayanagi, Machida; Yasunori Kitano, Yokohama; Tamaki Yano, Itabashi-ku; Hiroe Umeki, Yokohama, and Hiroto Hara, Machida, all of Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

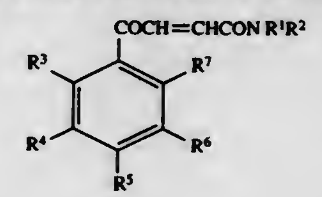
Filed Jan. 25, 1994, Ser. No. 186,130

Claims priority, application Japan, Jan. 28, 1993, 5-012618

Int. Cl.[6] A01N *43/40;* A61K *31/44;* C07D *213/60;213/75*

U.S. Cl. 514—332 5 Claims

1. A pharmaceutical composition which comprises a pharmaceutically effective amount of a compound of the formula



wherein

R^1 represents a hydrogen atom,

R^2 represents —$(CH_2)_m$-A

wherein m is an integer of 0 to 3, and

A represents pyridyl which is unsubstituted or is substituted by C_1–C_3 alkyl said alkyl being unsubstituted or substituted by phenyl, and R^3, R^4, R^5, R^6 and R^7 each independently represent a hydrogen atom, a halogen atom, C_1–C_5 alkyl which is unsubstituted or is substituted with a halogen atom or —OR^{13} wherein R^{13} represents a hydrogen atom or C_1–C_5 alkyl which is unsubstituted or is substituted with a halogen atom or phenyl, or when their adjacent substituents are taken together, they represent C_1–C_3 oxyalkylene having one or two oxygen atoms;

or a pharmaceutically acceptable salt thereof, and

a pharmaceutically acceptable carrier therefor.

5,618,830

DIOXOBUTANOIC ACID DERIVATIVES AS INHIBITORS OF INFLUENZA ENDONUCLEASE

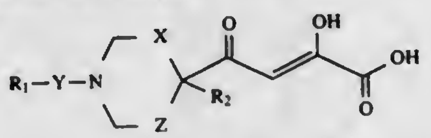
Harold G. Selnick, Ambler; John J. Baldwin, Gwynedd Valley; Gerald S. Ponticello, and Joanne E. Tomassini, both of Lansdale, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 324,190, Oct. 17, 1994, Pat. No. 5,475,109. This application Sep. 29, 1995, Ser. No. 536,294

Int. Cl.⁶ A61K *31/44;31/445*

U.S. Cl. 514—358 **24 Claims**

1. Pharmaceutical composition, for use in the treatment of influenza, in the prevention of infection by influenza virus, or in the inhibition of influenza cap-dependent endonuclease, comprising a pharmaceutically acceptable carrier and an effective amount of a compound of the formula



or pharmaceutically acceptable salt, hydrate or crystal form thereof,

wherein:

X is —CH_2—, CH_2—CH_2—, or a bond;

Z is —CH_2—, CH_2—CH_2—, or a bond;

Y is —CH_2—, CO, SO_2—, or a bond;

R_1 and R_2 are independently selected from the following: branched or unbranched C_{1-6} alkyl-, C_{1-6} alkyloxy-, —N—C_{1-6} alkyl-, C_{3-8} cycloalkyl-, phenyl, naphthyl, pyridyl, furanyl, thienyl, or quinolinyl, any of which may be substituted once or twice with C_{1-5} alkyl, C_{3-8} cycloalkyl, phenyl, quinolinyl, pyridyl, furanyl, thienyl, C_{1-6}-alkoxy, Br, F, or Cl.

5,618,831

COMPOSITION AND METHOD FOR TREATING CANCER

Tadao Shishido; Masayuki Kawakami; Akihiko Ikegawa; Toshinao Ukai, all of Kanagawa-ken, Japan; Keizo Koya, and Lan B. Chen, both of Lexington, Mass., assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan, and Dana Farber Cancer Institute, Boston, Mass.

Continuation-in-part of Ser. No. 138,061, Oct. 19, 1993, Pat. No. 5,476,945. This application May 16, 1994, Ser. No. 242,834

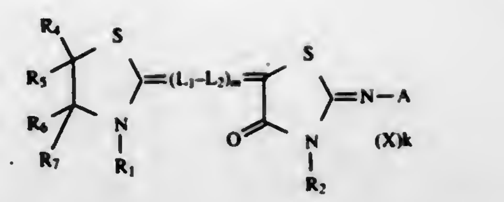
Claims priority, application Japan, Nov. 17, 1992, 4-305769

Int. Cl.⁶ A61K *31/425;31/505;31/44;31/47*

U.S. Cl. 514—366 **9 Claims**

1. A pharmaceutical composition comprising:

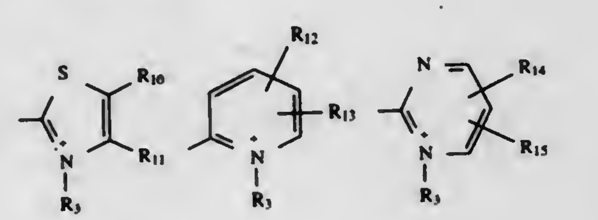
(A) a therapeutically effective amount of a methine compound represented by the following Formula (X):



(X)

wherein R_1 and R_2 each represent an alkyl group having 1 to 10 carbon atoms; R_4, R_5, R_6 and R_7 together form a benzene ring or a naphthalene ring; or R_5 and R_6 each represent a hydrogen atom or an alkyl group having 1 to 10 carbon atoms and R_4 and R_7 together form a single bond;

A represents



wherein

R_3 represents an alkyl group having 1 to 10 carbon atoms;

R_{10}, R_{11}, R_{12}, R_{13}, R_{14}, and R_{15}, which may be the same or different, each represent a hydrogen atom, or R_{10} and R_{11}, or R_{12} and R_{13} or R_{14} and R_{15} may be combined to form a benzene ring or a naphthalene ring;

L_1 and L_2 each represent a methine group or a substituted methine group where said substituent is an alkyl group having 1 to 5 carbon atoms, an aryl group having 6 to 10 carbon atoms, a halogen atom or an alkoxy group having 1 to 5 carbon atoms;

m is 0 or 1,

X represents a pharmaceutically acceptable anion, and

k represents a number necessary for adjusting the electric charge of the molecule to zero; and

(B) a pharmaceutically acceptable carrier or diluent.

5,618,832

PRESERVATION OF COLUMN MATERIALS IN AQUEOUS SOLUTIONS

Axel Schmidt, Munich, and Helmgard Gauhl, Tutzing, both of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

Filed Dec. 20, 1994, Ser. No. 370,579

Claims priority, application Germany, Dec. 24, 1993, 43 44 549.7

Int. Cl.⁶ A01N *43/32;43/80*

U.S. Cl. 514—372 **14 Claims**

1. A composition of matter comprising:

a separation column; and

a solution in contact with said separation column, said solution containing a combination of 2-methyl-4-isothiazolin-3-one hydrochloride and 5-bromo-5-nitro-1,3-dioxane, in amounts synergistic such that the solution is biocidally effective.

5,618,833

1-BENZYL-1,3-DIHYDROINDOL-2-ONE DERIVATIVES, THEIR PREPARATION AND THE PHARMACEUTICAL COMPOSITIONS IN WHICH THEY ARE PRESENT

Loïc Foulon, Pinsaguel; Georges Garcia, St Gely Du Fesc; Daniel Mettefeu, Grabels; Claudine Serradeil-Legal, Escalquens, and Gérard Valette, La Croix-Sagarde, all of France, assignors to Sanofi, France

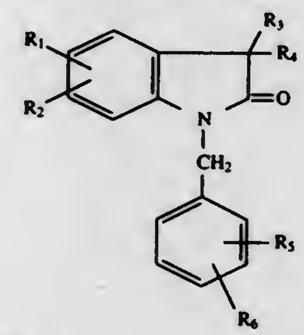
Filed Jul. 29, 1994, Ser. No. 282,644

Claims priority, application France, Jul. 30, 1993, 93 09405

Int. Cl.⁶ C07D *209/34;221/00;* **A61K** *31/44;31/40*

U.S. Cl. 514—409 **9 Claims**

1. A compound of the formula:



(I)

in which:

—R_1 and R_2 are independently a hydrogen; a halogeno or a (C_1–C_7) alkoxy, with the proviso that R_1 and R_2 are not simultaneously hydrogen;

—R_3 and R_4, together with the carbon to which they are bonded, form an optionally fused, saturated C_3–C_{12} hydrocarbon ring which is unsubstituted or substituted by one or more (C_1–C_7) alkyl groups, by a C_3–C_5-spirocycloalkyl, or by one or two hydroxyls which are substituted by a (C_1–C_4) alkyl group.

—R_5 is hydrogen or has one of the meanings designated for R_6,

—R_6 is a nitro; a group —OR_7; a group —$CONR_{17}R_{18}$; a (C_1–C_7) alkylsulfonamido; an aminosulfonamido in which the amino is free or substituted by R_{16} and R_{22}; or a group —NR_8R_9; with the proviso that R_5 and R_6 are not both a methoxy group and with the proviso that when R_5 is hydrogen then R_6 is not methoxy;

—R_7 is a (C_1–C_4) alkyl;

—R_8 and R_9 are each independently a hydrogen; a (C_1–C_7) alkylcarbonyl; an ω-amino-(C_2–C_7) alkylcarbonyl in which the amino is free or substituted by one or two (C_1–C_7 alkyls; a methylpyridylcarbonyl; a group —CO—Ar— or a group —$CONR_{14}R_{24}$;

—R_{14} and R_{24} are each independently hydrogen or a (C_1–C_7) alkyl;

—R_{16} and R_{22} are independently a hydrogen or a (C_1–C_7) alkyl;

—R_{17} and R_{18} are each independently hydrogen or a (C_1–C_8) alkyl;

and the pharmaceutically acceptable salts thereof.

5,618,834

INDOLE DERIVATIVES IN THE TREATMENT OF EMESIS

Paul Butler, Ramsgate, England, assignor to Pfizer Inc., New York, N.Y.

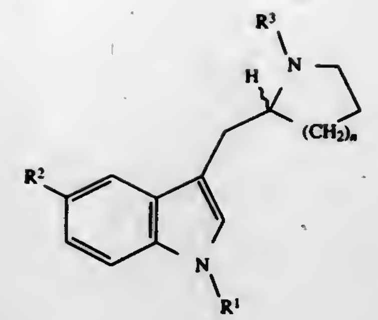
Filed Nov. 30, 1995, Ser. No. 565,425

Claims priority, application United Kingdom, Dec. 3, 1994, 9424471

Int. Cl.⁶ A61K *31/395;31/445;31/405*

U.S. Cl. 514—415 **7 Claims**

1. A method of treatment or prevention of emesis, which comprises administering a therapeutically effective amount of a compound of formula I,



I

wherein

R^1 represents hydrogen;

R^2 represents hydrogen, halogen, cyano, OR^4, —$(CH_2)_mCONR^5R^6$, —$(CH_{2m}SO_2NR^5R^6$, —$(CH_2)_mNR^7COR^8$, —$(CH_2)_mS(O)_xR^8$, —$(CH_2)_mNR^7CONR^5R^6$, —$(CH_2)_mNR^7COOR^9$ or —CH═CH$(CH_2)_yR^{10}$;

R^3 represents hydrogen or C_{1-6} alkyl;

R^4 represents hydrogen, C_{1-6} alkyl or aryl;

R^5 and R^6 are independently represent hydrogen, C_{1-6} alkyl, aryl or (C_{1-3} alkyl)aryl;

or

R^5 and R^6 taken together may form a 4-, 5- or 6-membered ring;

R^7 and R^8 independently represent hydrogen, C_{1-6} alkyl, aryl or (C_{1-3} alkyl)aryl;

R^9 represents hydrogen, C_{1-6} alkyl, aryl or (C_{1-3} alkyl)aryl;

R^{10} represents —$CONR^5R^6$, —$SO_2NR^5R^6$, —NR^7COR^8, —$NR^7SO_2R^8$, —$NR^7CONR^5R^6$, —$S(O)_xR^8$ or —NR^7COOR^9;

m is 0, 1, 2 or 3;

n is 0, 1 or 2;

y is 0, 1 or 2;

x is 1 or 2;

or a pharmaceutically acceptable salt thereof;

to a patient in need thereof;

characterized in that the emesis is not associated with migraine.

5,618,835

DIHYDROBENZOFURAN AND RELATED COMPOUNDS USEFUL AS ANTI-INFLAMMATORY AGENTS

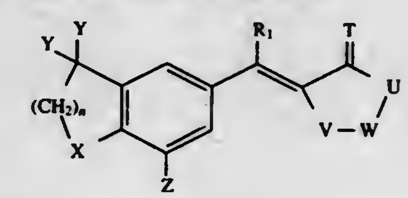
Laurence I. Wu, Cincinnati, and John M. Janusz, West Chester, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Feb. 1, 1996, Ser. No. 595,337

Int. Cl.⁶ A61K *31/40;31/34;* **C07D** *405/06;407/06*

U.S. Cl. 514—422 **20 Claims**

1. A compound having the structure:



wherein

(a) n is from 1 to about 3;

(b) X is selected from the group consisting of O, S, SO, or SO_2;

(c) Y is independently hydrogen or straight, branched or cyclic alkyl having from 1 to about 4 carbon atoms; or the Y's are bonded together to form a cycloalkanyl ring having from 3 to 7 atoms;

(d) Z is hydrogen or straight, branched or cyclic alkyl having from 3 to about 10 atoms;

(e) R_1 is hydrogen or straight, branched or cyclic alkyl, halo, carboxyl, carboxamido, alkoxycarbonyl or alkylcarbonyl;

(f) T is O or S;

(g) U is O, S, N or N—R_2;
(h) W is CR_3R_4, C=O, C=S, C=NR_5, C—O—R_6, C—S—R_6, C—NH_2, C—NH—R_7;
(i) V is $(CH_2)_n$, O, S, or N—R_2;
(j) R_2 is hydrogen, alkyl, hydroxy, alkoxy, alkoxycarbonyl, or alkylcarbonyl;
(k) R_3 and R_4 are independently selected from the group consisting of hydrogen, alkyl, halo, hydroxy, alkoxy, mercapto, alkylthio, or cyano;
(l) R_5 is hydrogen, alkyl, hydroxy or alkoxy;
(j) R_6 is hydrogen or alkyl; and
(k) R_7 is hydrogen, alkyl or C(=NH)N$(R_6)_2$ when X is O, one of U and V is S and the other is N or N—R_2, and T is O then W is not C=O.

5,618,836

[4-(1,2-EPOXYCYCLOHEXANYL)BUT-3-EN-1-YNYL]AROMATIC AND HETEROAROMATIC ACIDS AND DERIVATIVES HAVING RETINOID-LIKE BIOLOGICAL ACTIVITY

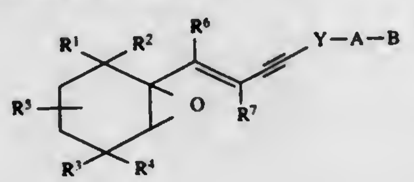
Roshantha A. Chandraratna, Mission Viejo, and Richard L. Beard, Santa Ana Heights, both of Calif., assignors to Allergan, Waco, Tex.

Division of Ser. No. 177,620, Dec. 30, 1993, Pat. No. 5,426,118. This application Apr. 10, 1995, Ser. No. 419,626

Int. Cl.[6] A61K *31/38;31/34*

U.S. Cl. 514—444 **36 Claims**

1. A compound of the formula



where

R_1–R_7 are hydrogen, lower alkyl of 1–6 carbons, or halogen;
Y is phenyl, furyl and thienyl;
A is $(CH_2)_n$ where n is 0–5, lower branched chain alkyl having 3–6 carbons, cycloalkyl having 3–6 carbons, alkenyl having 2–6 carbons and 1 or 2 double bonds, alkynyl having 2–6 carbons and 1 or 2 triple bonds;
B is hydrogen, COOH or a pharmaceutically acceptable salt thereof, $COOR_8$, $CONR_9R_{10}$, —CH_2OH, CH_2OR_{11}, CH_2OCOR_{11}, CHO, $CH(OR_{12})_2$, $CHOR_{13}O$, —COR_{14}, $CR_{14}(OR_{11})_2$, or $CR_{14}OR_{13}O$, where R_8 is an alkyl group of 1 to 10 carbons, or a cycloalkyl group of 5 to 10 carbons, or R_8 is phenyl or lower alkylphenyl, R_9 and R_{10} independently are hydrogen, an alkyl group of 1 to 10 carbons, or a cycloalkyl group of 5–10 carbons, or phenyl or lower alkylphenyl, R_{11} is lower alkyl, phenyl or lower alkylphenyl, R_{12} is lower alkyl, R_{13} is divalent alkyl radical of 2–5 carbons and R_{14} is an alkyl, cycloalkyl or alkenyl group containing 1 to 5 carbons, or a pharmaceutically acceptable salt thereof.

5,618,837

PDGF ANTAGONISTS III

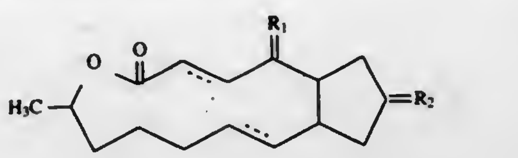
Charles E. Hart, Brier, Wash.; Oliver J. McConnell, Wayne, Pa.; Robert R. West, Seattle, and Theresa Martinez, Greenbank, both of Wash., assignors to ZymoGenetics, Inc., Seattle, Wash.

Filed Jun. 7, 1995, Ser. No. 483,216

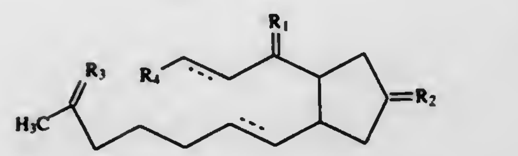
Int. Cl.[6] A61K *31/335;31/19;31/12;31/075*

U.S. Cl. 514—450 **20 Claims**

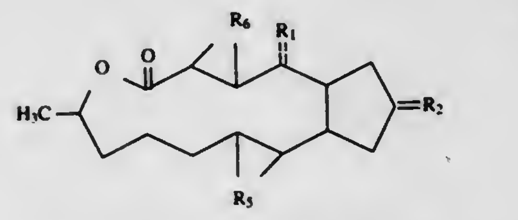
1. A method of inhibiting intimal hyperplasia in the vasculature of a mammal comprising administering to said mammal an antihyperplastically effective amount of a compound of formula I, II, or III:



I



II



III

wherein the dotted line indicates single or double bond;
R_1 and R_2 are the same and are the single group O, or H and OH, H and OR, or H and OCOR;
R_3 is the single group O, or H and OH, H and OR, or H and OCOR;
R4 is COOH, a pharmaceutically acceptable salt of COOH, or CH_2OR;
R_5 and R_6 are both oxygen or one of R_5 and R_6 is O and the other comprises a double bond; and R is C_{1-5} alkyl, phenyl or benzyl.

5,618,838

GALLIUM COMPLEXES FOR THE TREATMENT OF FREE RADICAL-INDUCED DISEASES

Mordechai Chevion, and Edward Berenshtein, both of Jerusalem, Israel, assignors to Yissum Research Development Company of the Hebrew University of Jerusalem, Jerusalem, Israel

PCT No. PCT/US94/06878, § 371 Date Feb. 29, 1996, § 102(e) Date Feb. 29, 1996, PCT Pub. No. WO95/00140, PCT Pub. Date Jan. 5, 1995

PCT Filed Jun. 17, 1994, Ser. No. 569,116

Claims priority, application Israel, Jun. 18, 1993, 106064

Int. Cl.[6] A61K *31/28;* **C07F** *7/24*

U.S. Cl. 514—492 **12 Claims**

1. A method for treatment of a disease selected from the group consisting of free radical induced pathological conditions, ischemic insult to the heart, eye, brain or kidney, tahallasemia, hemochromatosis, Wilson's disease and paraquat toxicity, comprising administering to a subject in need of such treatment a therapeutically effective amount of a pharmaceutical composition comprising a gallium desferrioxamine complex or a gallium penicillamine complex in combination with a pharmacologically acceptable carrier.

5,618,839

RETINOID-LIKE COMPOUNDS

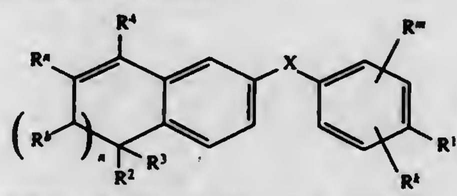
John E. Starrett, Jr., Middletown; Kuo-Long Yu, Hamden, both of Conn.; Muzammil M. Mansuri, Lexington, Mass.; David R. Tortolani, Princeton, N.J., and Peter R. Reczek, East Amherst, N.Y., assignors to Bristol-Myers Squibb Company, Princeton, N.J.

Division of Ser. No. 464,186, Jun. 5, 1995, which is a continuation-in-part of Ser. No. 306,092, Sep. 19, 1994, abandoned, which is a continuation-in-part of Ser. No. 216,740, Mar. 23, 1994, abandoned, which is a continuation-in-part of Ser. No. 176,746, Jan. 3, 1994, abandoned. This application May 2, 1996, Ser. No. 643,142

Int. Cl.[6] A61K *31/21;31/185;* **C07C** *229/34*

U.S. Cl. 514—513 **46 Claims**

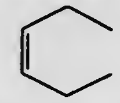
1. A compound of formula I



I

or a nontoxic pharmaceutically acceptable salt, physiologically hydrolyzable ester or solvate thereof, in which

X is —O—CO—, —NH—CO—, —CS—NH—, —CO—O—, —CO—NH—, —COS—, —SCO—, —SCH_2—, —CH_2—CH_2—, —C≡C—, —CH_2—NH—, —$COCH_2$—, —NHCS—, —CH_2S—, —CH_2O—, —OCH_2—, —$NHCH_2$— or —CR^5=CR^6—;
R^m and R^k are independently hydrogen, halogen, C_{1-6}alkyl, hydroxy, C_{1-6}alkyloxy or nitro;
n is zero or one;
R^4 is —$(CH_2)_t$—Y, C_{1-6}alkyl, or C_{3-6}cycloalkyl;
R^1 is —CO_2Z, C_{1-6}alkyl, CH_2OH, —$CONHR^y$, or CHO;
R^2 and R^3 are independently hydrogen or C_{1-6}alkyl;
R^a and R^b are independently hydrogen or C_{1-6}alkyl; but when n is one, R^a and R^b together can form a radical of the formula



;

Y is naphthyl or phenyl, both radicals can be optionally substituted with one to three same or different C_{1-6}alkyl or halogen;
Z is hydrogen or C_{1-6}alkyl;
R^5, R^6 and R^y are independently hydrogen or C_{1-6}alkyl; and
t is zero to six.

5,618,840

ANTIBACTERIAL OIL-IN-WATER EMULSIONS

D. Craig Wright, Gaithersburg, Md., assignor to Novavax, Inc., Columbia, Md.

Continuation-in-part of Ser. No. 329,730, Oct. 26, 1994, abandoned, which is a continuation-in-part of Ser. No. 322,827, Oct. 13, 1994, Pat. No. 5,549,901, which is a continuation-in-part of Ser. No. 246,868, May 20, 1994, Pat. No. 5,547,677. This application May 18, 1995, Ser. No. 443,937

Int. Cl.[6] A61K *7/40*

U.S. Cl. 514—549 **9 Claims**

1. A method of inhibiting the growth of *Helicobacter pylori* in an individual comprising the step of systemically administering to the individual an antibacterial oil-in-water emulsion, said antibacterial emulsion being in the form of droplets of an oily discontinuous phase dispersed in a continuous aqueous phase, the emulsion comprising:
a. an oil; and
b. glycerol monooleate.

5,618,841

COMPOSITION OF IODOPHOR TEAT DIP FOR THE PREVENTION OF MASTITIS AND A PROCESS FOR USING THE SAME

Robert Kross, 2506 Florin Ct., Bellmore, N.Y. 11710

Filed Jul. 6, 1994, Ser. No. 271,374

Int. Cl.[6] A61K *31/19*

U.S. Cl. 514—557 **2 Claims**

1. A composition for improving the anti-microbial activity of mammalian iodophor teat dips, comprising:
an iodophor concentrate; and,
an organic acid buffer having an antimicrobial acid within the pKa range of from approximately 2.0 to 6.0, said antimicrobial acid of said organic acid buffer being selected from the group consisting of malic acid, mandelic acid, formic acid, glycolic acid, benzoic acid and a combination thereof.

5,618,842

N-ACYL DERIVATIVES OF AMINOALCOHOLS WITH POLYCARBOXYLIC ACIDS ABLE TO MODULATE MAST CELLS IN INFLAMMATORY PROCESSES HAVING NEUROIMMUNOGENIC ORIGIN

Francesco Della Valle; Silvana Lorenzi, both of Padua, and Gabriele Marcolongo, Carrara San Giorgio, all of Italy, assignors to Lifegroup S.p.A., Rome, Italy

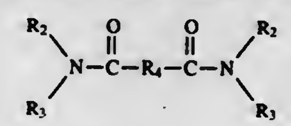
Continuation-in-part of Ser. No. 998,792, Dec. 30, 1992, abandoned. This application Jun. 24, 1994, Ser. No. 265,460

Claims priority, application Italy, Dec. 31, 1991, MI91A3509

Int. Cl.[6] A61K *31/155*

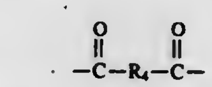
U.S. Cl. 514—566 **16 Claims**

1. A method for treating mammalian pathologies associated with mast cell degranulation as a consequence of neurogenic and/or immunogenic hyperstimulation, comprising administering a therapeutically effective amount of an amide of the formula (II):



(II)

wherein



is the acyl radical of:
a saturated or unsaturated, linear or branched, aliphatic dicarboxylic acid, containing from 2 to 14 carbon atoms, optionally substituted with at least a group selected from —OH and —NH_2; or
an aromatic dicarboxylic acid selected from the group consisting of phthalic, cromoglycholic, 1,4-dihydroxy-2,6-dimethyl-4-(2-nitrophenyl)-3,5-pyridin-dicarboxylic and 4,6-dioxo-1-ethyl-10-propyl-4H,6H-pyran-[3,2g]-quinolin-2,8-dicarboxylic acid; and where R_2 is an alcoholic residue selected from a C_1–C_{20} linear or branched hydroxyalkyl, optionally substituted in the aliphatic chain with one or more aryl groups, and a hydroxyaryl optionally substituted with one or more linear or branched alkyl radicals having from 1 to 20 carbon atoms; and R_3 is H or equal to R_2; said mammalian pathologies belonging to one of the following subclasses:
human dermatologic pathologies selected from the group consisting of psoriasis, atopical dermatitis, dermatomyositis, scleroderma, polymyositis, pemphigus, pemphigoid and epidermolysis bullosa;
human opthalmic and mucosal pathologies selected from the group consisting of Sjogren's syndrome sympathetic opthalmia, uveitis, uveoretinites and inflammation of the gastrointestinal mucous membranes;

human articular and connective pathologies selected from the group consisting of rheumatoid arthritis, psoriatic arthritis, lupus erythematosus arthritis, systemic and discoid lupus erythematosus;
human chronic inflammatory pathologies selected from the group consisting of chronic arthritis, chronic heliomdermatitis, asthma and interstitial pulmonary fibrosis;
human degenerative pathologies of PNS and CNS selected from the group consisting of Multiple Sclerosis, Parkinson's disease, senile dementia, bacterial meningitis, HIV infection and poliradiculopathy of inflammatory type;
human PNS and CNS pathologies having ischemic and traumatic origin selected from the group consisting of peripheral neuropathies, cerebral stroke and cranial trauma;
human cardiological pathologies deriving from reperfusion phenomena as a consequence of ischemic insults;
human allergic pathologies selected from the group consisting of allergic conjunctivitis, giant papillary conjunctivitis and dietetic allergies;
human cicatrizations disorders selected from the group consisting of hypertrophic scars, keloid scars and ocular cicatricial pemphigoid;
animal pathologies selected from the group consisting of spinal route compression, traumatic nerve lesion, laminitis, arthritis, keratoconjunctivitis, respiratory pathologies, inflammatory allergic manifestation and food allergy.

5,618,843

GLYCOPROTEIN IIB/IIIA ANTAGONISTS

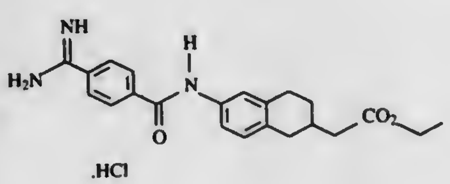
Matthew J. Fisher, Carmel; Anne M. Happ, Indianapolis; Joseph A. Jakubowski, Indianapolis; Michael D. Kinnick, Indianapolis; Allen D. Kline, Bargersville; John M. Morin, Jr., Brownsburg; Daniel J. Sall, Greenwood; Marshall A. Skelton, and Robert T. Vasileff, both of Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 96,220, Jul. 22, 1993, abandoned. This application Jul. 8, 1994, Ser. No. 255,821

Int. Cl.⁶ A61K *31/195; C07C 251/02*

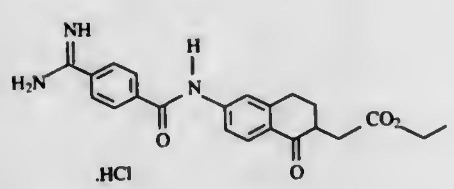
U.S. Cl. 514—567 **15 Claims**

1. A compound selected from the group represented by formulae XXXVIa and XLVIIIa shown below:



(XXXVIa)

and



(XLVIIIa)

or mixtures thereof.

5,618,844

HYDROXAMIC ACID AND CARBOXYLIC ACID DERIVATIVES, PROCESS FOR THEIR PREPARATION AND USE THEREOF

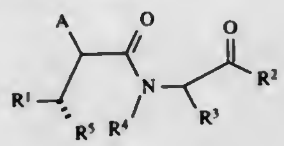
Madhusudhan R. Gowravaram, West Chester; Jeffrey Johnson, Phoenixville; Ewell R. Cook, Royersford; Robert C. Wahl, Collegeville; Alan M. Mathiowetz, Schwenksville; Bruce E. Tomczuk, Collegeville, and Ashis K. Saha, Harleysville, all of Pa., assignors to Sanofi S.A., Paris Cedex, France

Division of Ser. No. 201,837, Feb. 25, 1994, Pat. No. 5,514,716. This application Jun. 5, 1995, Ser. No. 461,079

Int. Cl.⁶ A61K *31/19; C07C 239/00*

U.S. Cl. 514—575 **15 Claims**

1. A compound of the formula



wherein
A is A^1-A^2-A^3
A^1 is C_{1-10} alkyl, C_{2-10} alkene, or C_{2-10} alkyne having C_{1-5} in the backbone;
A^2 is X - Y - Z; wherein
X is a chemical bond, —O—, or —S—;
Y is $—CHR^9—$;
Z is —O—, —NH—, or —S—;
A^3 is
hydrogen,
substituted C_{1-6} alkyl,
aryl selected from the group consisting of phenyl and naphthyl,
substituted phenyl or naphthyl,
heteroaryl, wherein said aryl is phenyl or naphthyl,
substituted heteroaryl wherein said aryl is phenyl or naphthyl,
aryl C_{1-6} alkyl, wherein said aryl is phenyl or naphthyl,
substituted aryl C_{1-6} alkyl, wherein said aryl is phenyl or naphthyl,
heteroaryl C_{1-6} alkyl, wherein said aryl is phenyl or naphthyl,
substituted heteroaryl C_{1-6} alkyl, wherein said aryl is phenyl or naphthyl,
with the proviso that
(a) at least of X, Y and Z must contain a heteroatom;
(b) when Y is $—CH_2—$ then only one of X and Z can be a heteroatom;
(c) when A^1 is alkyl, X is a chemical bond, Y is CHR^9 and Z is —O—or —S—, then A^3 cannot be C_{1-6} alkyl;
R^1 is
HN(OH)CO—;
R^2 is
$NR^{10}R^6$
wherein R^6 is
hydrogen,
C_{6-12} aryl, or
$(CH_2)_nR^7$,
wherein R^7 is
hydrogen
phenyl,
substituted phenyl,
hydroxy,
C_{1-6} alkoxy,
C_{2-7} acyloxy,
C_{1-6} alkylthio,
phenylthio,
sulfoxide of a thio,
sulfone of a thio,
(C_{1-6} alkyl) carbonyl,
(C_{1-6} alkoxy) carbonyl,
(C_{1-6} alkyl)aminocarbonyl,
arylaminocarbonyl, wherein aryl is phenyl or naphthyl,
amino,
substituted acyclic amino,
N-oxide of an amine, or

C_{2-7} acylamino, and
n is 2 to 6; or
R^3 and R^6 taken together are a group of the formula $—(CH_2)_m—$ where m is from 5 to 12, optionally interrupted by a NR^8 group
wherein R^8 is selected from
hydrogen
C_{1-6} alkyl,
C_{1-6} alkylcarbonyl,
C_{1-6} alkoxycarbonyl,
aryl,
aralkyl, or
aralkyloxycarbonyl,
in each of which the aryl moiety is phenyl or naphthyl and is optionally substituted;
R^3 is a characterizing group of an alpha amino acid
ethyl, butyl, pentyl or hexyl,
C_{3-10} cycloalkyl,
aryl methylene,
substituted aryl methylene,
C_{3-10} cycloalkyl methylene,
phenyl,
naphthyl,
substituted phenyl,
substituted naphthyl,
fused bicycloaryl methylene,
fused substituted bicycloaryl methylene,
conjugated bicycloaryl methylene, or
conjugated substituted bicycloaryl ethylene;
R^4 is C_{1-4} alkyl;
R^5 is
hydrogen
phenyl,
substituted phenyl,
amino,
hydroxy,
mercapto,
C_{1-4} alkoxy,
C_{1-6} alkylamino,
C_{1-6} alkylthio,
C_{1-6} alkyl or C_{2-6} alkenyl,
optionally substituted by
alkyl,
phenyl,
substituted phenyl,
amino,
acylated amino,
protected amino,
hydroxy,
protected hydroxy,
mercapto,
protected mercapto,
carboxy,
protected carboxy, or
amidated carboxy;
R^9 is hydrogen or C_{1-4} alkyl,
R^{10} is C_{1-4} alkyl;
and the salts, solvates and hydrates thereof.

5,618,845

ACETAMIDE DERIVATIVE HAVING DEFINED PARTICLE SIZE

Peter E. Grebow, Penllyn, Pa.; Vincent Corvari, Hockessin, Del., and David Stong, Coatsville, Pa., assignors to Cephalon, Inc., West Chester, Pa.

Filed Oct. 6, 1994, Ser. No. 319,124

Int. Cl.⁶ A61K *9/14;31/16*

U.S. Cl. 514—618 **6 Claims**

1. A pharmaceutical composition comprising a substantially homogeneous mixture of modafinil particles, wherein at least about 95% of the cumulative total of modafinil particles in said composition have a diameter of less than about 200 microns (μm).

5,618,846

TREATMENT METHOD FOR CANCER

Lorne J. Brandes, Winnipeg, Canada, assignor to University of Manitoba, Winnipeg, Canada

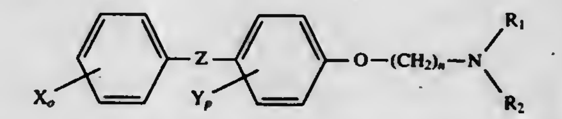
Division of Ser. No. 82,785, Jun. 28, 1993, which is a continuation-in-part of Ser. No. 711,975, Jun. 7, 1991, abandoned, which is a continuation-in-part of Ser. No. 627,863, Dec. 17, 1990, abandoned. This application Jun. 2, 1995, Ser. No. 458,847

Claims priority, application United Kingdom, Feb. 17, 1993, 9303210

Int. Cl.⁶ A61K *31/135*

U.S. Cl. 514—641 **6 Claims**

1. A method of protecting normal bone marrow cells in an animal from the adverse effects of chemotherapy, which comprises: administering to said animal at least one diphenyl compound of the formula:



wherein X and Y are each fluorine, chlorine or bromine, Z is an alkylene group of about 1 to 3 carbon atoms or =C=O, or the phenyl groups are joined to form a tricyclic ring, o and p are 0 or 1, R_1 and R_2 are each groups containing 1 to 3 carbon atoms or are joined together to form a hetero-ring with the nitrogen atom and n is 1, 2 or 3, in an amount of from about 8 to about 240 mg/M² of animal for about 60 to about 90 minutes prior to commencement of said chemotherapy.

5,618,847

MEDICINAL FEED FOR THE SYSTEMIC TREATMENT OF ECTOPARASITIC AND ECTOBACTERIAL DISEASES OF FISH

Hartmut Schmidt, Georgsmarienhütte, and Günter Ritter, Bünde, both of Germany, assignors to Tetra Werke Dr. rer. nat. U. Baensch GmbH, Melle, Germany

Continuation of Ser. No. 709,867, Jun. 4, 1991, abandoned. This application Sep. 22, 1992, Ser. No. 949,324

Claims priority, application Germany, Jun. 5, 1990, 40 17 964.8

Int. Cl.⁶ A61K *31/135;31/16;31/17;31/00*

U.S. Cl. 514—649 **1 Claim**

1. An enteral solid medicinal food preparation for fish comprising one active ingredient, malachite green, in a concentration of 0.005 to 10% by weight alone, wherein the active ingredient is very strongly absorptively bound in an amount of carriers and feed materials so no leaching out by water takes place.

5,618,848

BETA-AGONISTS AS AN AID TO MAINTAIN OR ENHANCE STRENGTH AND ENDURANCE

Paul Montner, Albuquerque, N.M., assignor to University of New Mexico, Albuquerque, N.M.

Filed May 5, 1995, Ser. No. 435,974

Int. Cl.⁶ A61K *31/135*

U.S. Cl. 514—653 **8 Claims**

1. A method of maintaining human muscle strength during inactivity or enhancing human muscle strength and endurance comprising the oral ingestion or inhalation of a beta-2 agonist.

5,618,849

ORALLY ACTIVE ANTIVIRAL COMPOUNDS

Viyyoor M. Girijavallabhan, Parsippany; Ashit K. Ganguly, Upper Montclair, and Richard W. Versace, Wanaque, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Division of Ser. No. 287,325, Aug. 8, 1994, Pat. No. 5,449,782, which is a division of Ser. No. 39,532, Mar. 26, 1993, Pat. No. 5,350,772, which is a continuation of Ser. No. 717,451, Jun. 19, 1991, abandoned. This application May 19, 1995, Ser. No. 444,583

Int. Cl.^{6} **C07C** *43/263;43/257;* **A61K** *31/09*

U.S. Cl. 514—721 **8 Claims**

1. A method of treating an enteroviral infection in a mammal afflicted with an enteroviral infection which comprises administering to such a mammal an anti-enterovirally effective amount of the compound, 2-chloro-1[[4-[(2,6-dichlorophenoxy)methyl]phenyl]methoxy]-4-methoxybenzene, or a pharmaceutical composition containing said compound.

5,618,850

HYDROXY-ACID COSMETICS

Arthur J. Coury, Boston; Luis Z. Avila, Arlington; Chandrashekhar P. Pathak, Waltham, and Shikha P. Barman, Lowell, all of Mass., assignors to Focal, Inc., Lexington, Mass.

Filed Mar. 9, 1995, Ser. No. 401,931

Int. Cl.^{6} **A61K** *31/765;31/77;31/78*

U.S. Cl. 514—772.2 **36 Claims**

1. A method for conditioning skin or alleviating the symptoms of a cosmetic or dermatologic skin condition, the method comprising topically applying an effective amount of a composition comprising a hydroxy acid copolymer in combination with a suitable carrier for topical application to skin in need of treatment thereof, wherein the hydroxy acid copolymer comprises polymerized hydroxy acids covalently joined to a polymer block, and wherein the hydroxy acid copolymer has the formula

P_aH_b,

wherein

P is a hydrophilic polymer block consisting predominantly of non-hydroxy acid subunits,

H is a polymer block consisting predominantly of hydroxy acid subunits,

a is the number of P blocks,

b is the number of H blocks,

a and b are integers of at least one, and

the copolymer is either a linear, brush, star or branched copolymer.

5,618,851

GRAFTED METHYLENEDIPHOSPHONATE ION EXCHANGE RESINS

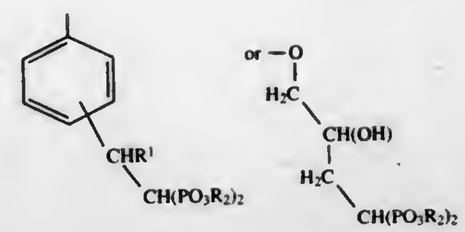
Andrzej W. Trochimcznk, Knoxbille, Tenn.; Ralph C. Gatrone, Plymouth, Pa.; Spiro Alexandratos, Knoxville, Tenn., and E. Philip Horwitz, Naperville, Ill., assignors to Arch Development Corp., Chicago, Ill., and The University of Tennessee Research Corp., Knoxville, Tenn.

Filed Feb. 6, 1995, Ser. No. 383,798

Int. Cl.^{6} **C08G** *79/04*

U.S. Cl. 521—34 **10 Claims**

1. An ion exchange resin that comprises an insoluble cross-linked copolymer having grafted pendent groups of the formula



wherein

R is selected from the group consisting of hydrogen, a C_1–C_8 alkyl group, a cation, and mixtures thereof; and

R^1 is hydrogen or a C_1–C_2 alkyl group, wherein phosphorous-containing pendent groups are present at 1.0 to about 10 mmol/g dry weight of said copolymer;

said resin also containing zero to about 5 mmol/g dry weight of pendent aromatic sulfonate groups, said mmol/g values based on said polymer where R is hydrogen.

5,618,852

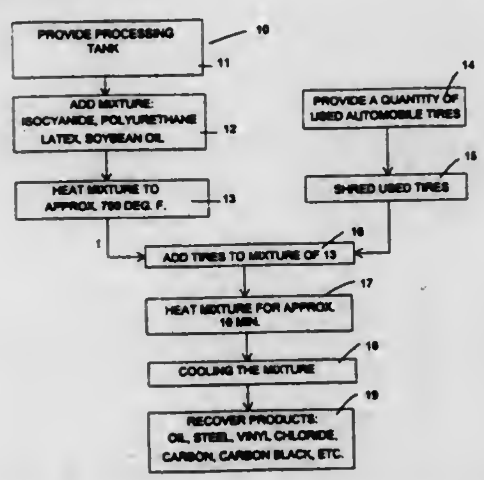
USED TIRE PROCESS

Lorato Adkins, 8601 S. Francisco, Chicago, Ill. 60652

Filed Jun. 19, 1995, Ser. No. 491,810

Int. Cl.^{6} **C08J** *11/00;11/26*

U.S. Cl. 521—43.5 **6 Claims**



1. The method of processing used tires and recovery of products thereof, comprising the steps of:

providing a suitable processing tank;

adding an appropriate amount of processing bath to said tank wherein said processing bath includes soybean oil, heating said processing bath to a temperature substantially within the range 400° F.–700° F.;

adding suitably ground used automotive tires to said bath;

processing said tires for a period of ten to thirty minutes; and

recovering useful raw material products wherein said products are comprised of one or more taken from the following group: oil, steel, vinyl chloride, and carbon.

5,618,853

MOLDED STRUCTURE COMPRISING A THERMOPLASTIC, PROCESS FOR ITS PRODUCTION AND ITS USE

Hub A. G. Vonken, Weert; Hendrik-Jan Muntendam; Jos van der Hoeven, both of Horn, all of Netherlands, and Udo Piqu´´, Bad Soden, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Continuation of Ser. No. 283,628, Aug. 1, 1994, abandoned. This application Oct. 27, 1995, Ser. No. 549,080

Claims priority, application Germany, Aug. 2, 1993, 43 25 879.4

Int. Cl.^{6} **C08J** *9/18*

U.S. Cl. 521—60 **36 Claims**

1. A molded structure, comprising;

a single layer plastic foam comprising;

one or more polymers;

two initially closed surfaces;

polyhedron shaped cells disposed within said molded structure between said two initially closed surfaces and occupying at least 10% of the volume of said foam, said cells having walls, at least two walls of each of said cells having openings therein to form an open cell;

webs formed by said cell walls being arranged next to each other, said cells and webs defining a space maxtrix within said plastic foam, wherein said space maxtrix maintains its form in an undamaged configuration and is neither mechanically nor thermally deformed, and wherein at least a part of one of the surfaces of said foam is mechanically opened or opened by cooling and simultaneous extension upon emergence from an extrusion die so that the cells adjacent to the surface and all the cells within the structure which have openings in their walls are accessible to fluids.

5,618,854

COMBUSTION-MODIFIED FLEXIBLE POLYURETHANE FOAMS

Richard G. Skorpenske, and Alan K. Schrock, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 304,991, Sep. 13, 1994, abandoned, which is a continuation of Ser. No. 30,748, Mar. 12, 1993, abandoned, which is a continuation-in-part of Ser. No. 646,140, Jan. 25, 1991, abandoned. This application Feb. 16, 1995, Ser. No. 390,391

Int. Cl.^{6} **C08G** *18/32*

U.S. Cl. 521—164 **16 Claims**

1. A flexible polyurethane foam prepared by reacting an aromatic polyisocyanate with an active hydrogen-containing composition, in the presence of a blowing agent, wherein the active hydrogen-containing composition comprises:

(a) a polyol having an average functionality of about 2.0 to about 4.0, and an equivalent weight in the range of from about 500 to about 5000;

(b) from about 0.5 to about 5 parts, per 100 parts by weight of component (a), of a crosslinker selected from the group consisting of monoethanolamine, diethanolamine, triethanolamine, monoisopropanolamine, diisopropanolamine, methylene bis(o-chloroaniline) and mixtures thereof; and

(c) a compound having at least 3 hydroxy groups, at least two of which are secondary hydroxyl groups and an equivalent weight of less than about 500, which is present in an amount which is (i) in the range of from about 0.3 to about 5 parts per 100 parts by weight of component (a) and (ii) at least about 15 meq. of compound per 100 grams of component (a).

5,618,855

BIODEGRADABLE COPOLYMERS AND PLASTIC ARTICLES COMPRISING BIODEGRADABLE COPOLYMERS

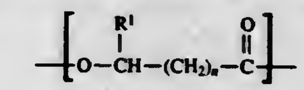
Isao Noda, Fairfield, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 370,738, Jan. 12, 1995, abandoned, which is a continuation of Ser. No. 247,539, May 23, 1994, abandoned, which is a continuation of Ser. No. 187,969, Jan. 28, 1994, abandoned. This application Jun. 6, 1995, Ser. No. 465,046

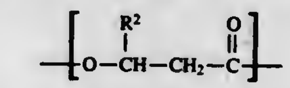
Int. Cl.^{6} **C08J** *9/00*

U.S. Cl. 521—189 **7 Claims**

1. A plastic article comprising a biodegradable copolymer, which has been processed to form the plastic article, wherein the plastic article is a foam wherein the biodegradable copolymer comprises at least two randomly repeating monomer units wherein the first randomly repeating monomer unit has the structure



wherein R^1 is H, or C_1 or C_2 alkyl, and n is 1 or 2; the second randomly repeating monomer unit has the structure



wherein R^2 is a C_4–C_{19} alkyl or alkenyl; and wherein at least 50% of the randomly repeating monomer units have the structure of the first randomly repeating monomer unit.

5,618,856

VISIBLE LIGHT SENSITIZER FOR PHOTOPOLYMERIZING INITIATOR AND/OR PHOTOCROSSLINKING AGENT, PHOTOSENSITIVE COMPOSITION, AND HOLOGRAM RECORDING MEDIUM

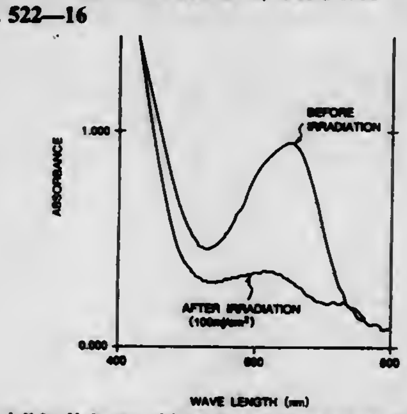
Yoko Yoshinaga, Kawasaki; Naosato Taniguchi, Urawa, and Shin Kobayashi, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 16, 1995, Ser. No. 491,259

Claims priority, application Japan, Jun. 20, 1994, 6-159611; Apr. 28, 1995, 7-127497

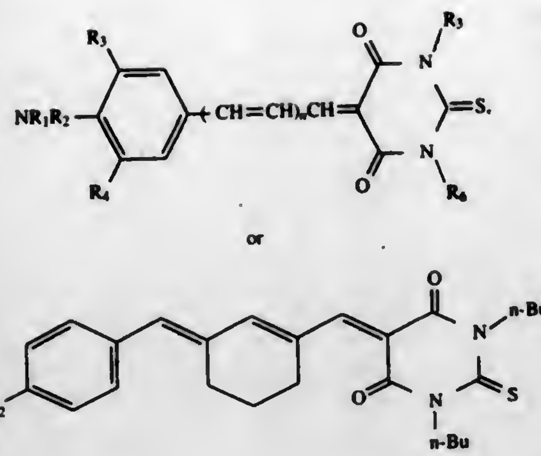
Int. Cl.^{6} **C08F** *2/46;* **G03C** *1/68*

U.S. Cl. 522—16 **15 Claims**



1. A visible light sensitizer for a photopolymerizing initiator and/or a photocrosslinking agent which comprises a thiobarbituric acid derivative compound of the general formula (A) or (B):

(A)



(B)

wherein each of R_1 and R_2 is alkyl having 1 to 6 carbon atoms; each of R_3 and R_4 is hydrogen or alkyl having 1 to 6 carbon atoms; and R_1 and R_3 or R_2 and R_4 may be bonded to each other to form a five-, six- or seven-membered heterocycle; each of R_5 and R_6 is independently a long-chain alkyl group having 2 or more carbon atoms; and n is an integer of 2 to 3.

5,618,857

IMPREGNATION SEALANT COMPOSITION OF SUPERIOR HIGH TEMPERATURE RESISTANCE, AND METHOD OF MAKING SAME

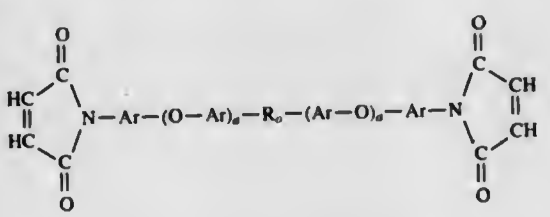
Frederick F. Newberth, III, West Hartford, Conn.; Martin S. Colton, Long Meadow, Mass., and Canh M. Tran, W. Hartford, Conn., assignors to Loctite Corporation, Hartford, Conn.

Continuation of Ser. No. 82,336, Jun. 24, 1993, abandoned. This application Jun. 14, 1994, Ser. No. 259,378

Int. Cl.[6] C09J *4/02*

U.S. Cl. 523—176 **17 Claims**

1. A curable impregnation sealant composition, comprising a curable monomer adapted for curing by heat and/or absence of oxygen, and a curable monomer-soluble reactive bismaleimide in a solubilized amount providing enhanced high temperature resistance in the impregnation sealant composition when cured, said curable monomer-soluble reactive bismaleimide having the formula:



wherein: a is an integer having a value of from 0 to 2; Ar is arylene; and R_O is C_1–C_4 alkylene, and wherein the concentration of the monomer-soluble reactive bismaleimide in the impregnation sealant composition is from 1% to about 25% by weight, based on the weight of the curable monomer,and wherein the bismaleimide is soluble at room temperature.

5,618,858

POLYMER MATERIAL

Hans-Georg Hauschildt; Wilfried Haas, both of Erlangen, and Heinz Hacker, Nürnberg, all of Germany, assignors to Siemens Aktiengesellschaft, München, Germany

PCT No. PCT/DE94/00711, § 371 Date Jan. 5, 1996, § 102(e) Date Jan. 5, 1996, PCT Pub. No. WO95/02013, PCT Pub. Date Jan. 19, 1995

PCT Filed Jun. 22, 1994, Ser. No. 571,945

Claims priority, application Germany, Jul. 5, 1993, 43 22 351.6

Int. Cl.[6] C08K *9/00*

U.S. Cl. 523—200 **10 Claims**

1. A polymeric material for manufacturing arcing chambers for low-voltage switching devices, comprising a thermoplastic polymer matrix of polyamide or polyolefin which contains a cellulose material sheathed by cured melamine-formaldehyde resin, wherein the polymer and melamine-formaldehyde resin/cellulose material are present in a ratio of 6:1 to 1:1.

5,618,859

AQUEOUS RESIN DISPERSION

Yoshihiro Maeyama; Shinobu Nakagawa, both of Sano, and Hiroshi Serizawa, Kazo, all of Japan, assignors to Nippon Carbide Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 25, 1995, Ser. No. 525,811

Claims priority, application Japan, Aug. 26, 1994, 6-223995

Int. Cl.[6] C08L *83/00*

U.S. Cl. 523—201 **24 Claims**

1. An aqueous resin dispersion comprising polymer fine particles dispersed in an aqueous medium, wherein the polymer fine particles comprising

(A) core-shell composite fine particles which comprise a core part comprising a carboxyl group-containing acrylic polymer (A-1) whose glass transition temperature (Tg_{A-1}) is in the range of −10° C. to 50° C. and a shell part covering the core part and comprising a polymer (A-2) whose glass transition temperature (Tg_{A-2}) is lower than −10° C., and wherein the core part occupies 50 to 90 weight % of the composite fine particles and the residual part is the shell part, and

(B) core-shell composite fine particles which comprise a core part comprising a carboxyl group-containing acrylic polymer (B-1) whose glass transition temperature (Tg_{B-1}) is in the range of −10° C. to 50° C. and lower by at least 10° C. than the glass transition temperature (Tg_{A-1}) of the polymer (A-1) of the core part of the composite fine particles (A), and a shell part covering the core part and comprising a polymer (B-2) whose glass transition temperature (Tg_{B-2}) is lower than −10° C., and wherein the core part occupies 50 to 90 weight % of the composite fine particles and the residual part is the shell part, and/or

(C) polymer fine particles whose glass transition temperature (Tg_C) is in the range of −30° C. to 50° C. and different by at least 10° C. from the glass transition temperature (Tg_{A-1}) of the polymer (A-1) of the core part of the composite fine particles (A), and, based on the total amount of the fine particles (A), (B) and (C), the composite fine particles (A) are contained in an amount of 30 to 90 weight %, and the composite fine particles (B) and the polymer fine particles (C) are contained in total in an amount of 70 to 10 weight %.

5,618,860

EPOXY POLYSILOXANE COATING AND FLOORING COMPOSITIONS

Norman R. Mowrer, La Habra; Raymond E. Foscante, Yorba Linda, and J. Luis Rojas, Anaheim Hills, all of Calif., assignors to Ameron International Corporation, Pasadena, Calif.

Continuation-in-part of Ser. No. 64,398, May 19, 1993, abandoned. This application Nov. 18, 1994, Ser. No. 342,414

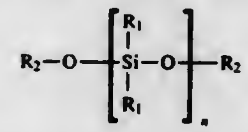
Int. Cl.[6] C08K *3/20*

U.S. Cl. 523—421 **20 Claims**

1. An epoxy-polysiloxane polymer coating composition prepared by combining:

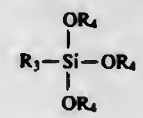
water;

a polysiloxane having the formula



where each R_1 is selected from the group consisting of the hydroxy group and alkyl, aryl and alkoxy groups having up to six carbon atoms, each R_2 is selected from the group consisting of hydrogen and alkyl and aryl groups having up to six carbon atoms and, wherein n is selected so that the molecular weight for the polysiloxane is in the range of from about 400 to 2,000;

an organooxysilane having the formula



where R_3 is selected from the group consisting of aryl, alkyl, and cycloalkyl groups containing up to six carbon atoms and where R_4 is independently selected from the group consisting of alkyl, hydroxyalkyl, alkoxyalkyl and hydroxyalkoxyalkyl groups containing up to six carbon atoms;

a difunctional aminosilane hardener component that condenses through its silane groups with the polysiloxane;

a non-aromatic epoxide resin having more than one 1,2-epoxy groups per molecule with an epoxide equivalent weight in the range of from 100 to about 2,000 that undergoes chain extension by reaction with the amine groups in the polysiloxane to form a fully cured non-interpenetrating polymer network epoxy-polysiloxane polymer; and

a pigment or aggregate component.

5,618,861

PITCH CONTROL COMPOSITION AND PROCESS FOR INHIBITING PITCH DEPOSITION

Linda M. Hlivka, Flemington, and George K. Wai, Mountain Lakes, both of N.J., assignors to Ashland Inc., Columbus, Ohio

Filed May 1, 1995, Ser. No. 432,077

Int. Cl.[6] C08L *5/02*

U.S. Cl. 524—55 **8 Claims**

1. A process for controlling the depositon of pitch in a hardwood or softwood pulp or papermaking process which comprises applying an effective pitch retarding amount of a liquid composition for the control of pitch deposition in pulp and paper making comprising in aqueous solution:

(a) a derivatized cationic guar, and

(b) polyethylene oxide to a feedpoint in the pulp or papermaking process.

5,618,862

PREPARATION OF BITUMEN/POLYMER COMPOSITIONS AND USE THEREOF

Laurent Germanaud, Heyrieux; Jean Pascal Planche, Gravetan-St Just Chaleyssin, and Patrick Turello, Francheville, all of France, assignors to Elf Antar France, Courbevoie, France

PCT No. PCT/FR95/00497, § 371 Date Mar. 11, 1996, § 102(e) Date Mar. 11, 1996, PCT Pub. No. WO95/28446, PCT Pub. Date Oct. 26, 1995

PCT Filed Apr. 14, 1995, Ser. No. 564,351

Claims priority, application France, Apr. 18, 1994, 94 04577

Int. Cl.[6] C08L *95/00*

U.S. Cl. 524—68 **29 Claims**

1. Process for the preparation of bitumen/polymer compositions with a reinforced multigrade character, in which, while operating at temperatures of between 100° C. and 230° C. and with agitation for a period of at least 10 minutes, a bitumen or mixture of bitumens is brought into contact with, calculated by weight of bitumen or mixture of bitumens, 0.5% to 20% of a sulphur-crosslinkable elastomer and a sulphur-donating coupling agent in a quantity such as to provide a quantity of free sulphur representing 0.1% to 20% of the weight of the sulphur-crosslinkable elastomer in the reaction mixture formed from the bitumen or mixture of bitumens, elastomer and coupling agent ingredients, in order to produce a sulphur-crosslinked composition, wherein in the said process the reaction mixture resulting from the sulphur vulcanization, is maintained at a temperature of between 100° C. and 230° C. and with agitation, there is incorporated 0.005% to 5%, by weight of the bitumen or mixture of bitumens, of an inorganic adjuvant consisting of at least one compound selected from the group consisting of phosphoric acids, boric acids, sulphuric acid, the anhydrides of the said acids and chlorosulphuric acid, and the reaction mixture containing the inorganic adjuvant is maintained at the temperature of between 100° C. and 230° C. and with agitation for a period of at least 20 minutes.

5,618,863

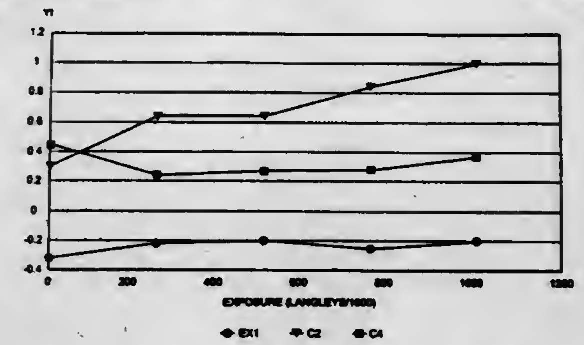
UV STABLE POLYVINYL BUTYRAL SHEET

John J. D'Errico, Glastonbury, Conn., and Mary S. Krach, Longmeadow, Mass., assignors to Monsanto Company, St. Louis, Mo.

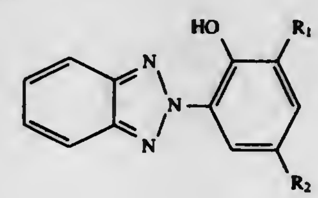
Filed Mar. 25, 1996, Ser. No. 621,856

Int. Cl.[6] C08K *5/34*

U.S. Cl. 524—91 **5 Claims**



1. Polyvinyl butyral sheet containing multivalent metal salt and a UV stabilizing amount of a benzotriazole-based compound having the formula:



wherein R_1 denotes CH_3, linear or branched C_5 alkyl or linear or branched C_{12} alkyl and R_2 denotes CH_3 or linear or branched C_5 alkyl.

5,618,864

FLAME RETARDANT POLYAMIDES

Trevor L. Court, Genoller, Switzerland, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 244,371, Dec. 14, 1992, Pat. No. 5,476,887. This application Oct. 5, 1995, Ser. No. 539,387
Claims priority, application Germany, Dec. 18, 1991, 41 41 861.1
Int. Cl.[6] C08K *5/34*
U.S. Cl. 524—100 **12 Claims**

1. A flame retardant polyamide composition consisting essentially of:

(a) a copolymer of polyamide 6.6 and at least one other monomer selected from the group consisting of a dicarboxylic acid of 7–14 carbon atoms, m-benzenedicarboxylic acid, o-benzenedicarboxylic acid, and p-benzenedicarboxylic acid; said copolymer having a melting point below 250° C.; and

(b) as the only flame retardant, 10–20% by weight of melamine, based on the weight of components (a) plus (b) only; and, optionally,

(c) at least one additive selected from the group consisting of glass fibers, organic fibers, mineral fillers, lubricants, mold-release agents, stabilizers, dyes, pigments, color concentrates, flow agents, chalk, and quartz.

5,618,865

FIRE RESISTANT RESIN COMPOSITIONS

Marvin M. Martens, Vienna, W. Va., and Robert V. Kasowski, West Chester, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 22, 1995, Ser. No. 577,357
Int. Cl.[6] C08K *5/34*
U.S. Cl. 524—100 **11 Claims**

1. A composition comprising:

(1) about 30 to about 70 weight percent of a polyester or a synthetic, aliphatic polyamide;

(2) about 15 to about 40 weight percent of a reinforcing agent; and

(3) a flame retardant selected from the group consisting of

(a) about 20 to about 30 weight percent of melamine phosphate and up to about 10 weight percent of a charring catalyst;

(b) about 15 to about 30 weight percent of melamine phosphate, up to about 10 weight percent of a charring catalyst and up to about 10 weight percent of a char former;

(c) about 25 to about 30 weight percent of melamine pyrophosphate;

(d) about 15 to about 30 weight percent of melamine pyrophosphate and up to about 10 weight percent of a charting catalyst; and

(e) about 15 to about 30 weight percent of melamine pyrophosphate, up to about 10 weight percent of a charring catalyst and up to about 10 weight percent of a char former,

wherein all percents by weight are based on the total weight of (1)+(2)+(3) only.

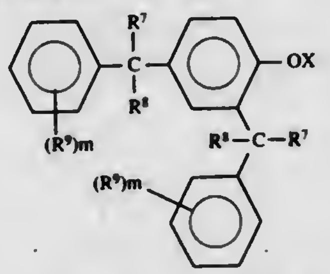
5,618,866

NEO DIOL PHOSPHITE ESTERS AND POLYMERIC COMPOSITIONS THEREOF

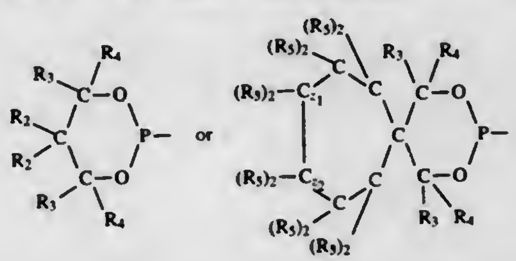
Vaikunth S. Prabhu, Vienna, W. Va., and Carloss L. Gray, Belpre, Ohio, assignors to General Electric Company, Pittsfield, Mass.

Filed Jan. 22, 1996, Ser. No. 589,832
Int. Cl.[6] C07F *9/6574;* **C08K** *5/527*
U.S. Cl. 524—117 **14 Claims**

1. A phosphite of the formula:

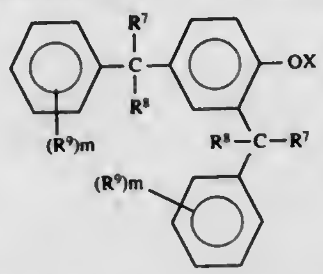


R^7 and R^8 are alkyl of from 1 to 6 carbon atoms, most preferably an unsubstituted alkyl group, R^9 is alkyl of 1 to 12 carbon atoms, m is from 0 to 5; and wherein X has the formula:

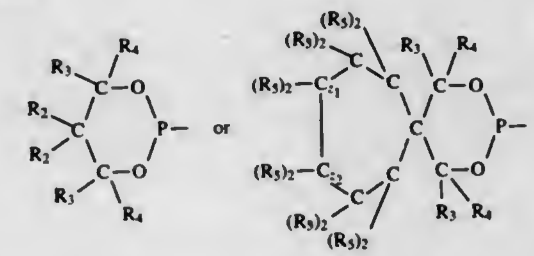


wherein R_2 is independently selected from the group consisting of alkyl groups having from 1 to 12 carbon atoms, and R_3, R_4 and R_5 are independently selected from the group consisiting of hydrogen, halogen, or alkyl of from 1 to 3 carbon atoms, and z is 0 or 1.

6. A themoplastic composition comprising a thermoplastic polymer and a stabilizing amount of a phosphite of the formula:



R^7 and R^8 are alkyl of from 1 to 6 carbon atoms, R^9 is alkyl of 1 to 12 carbon atoms, m is from 0 to 5; and wherein X has the formula:



wherein R_2 is independently selected from the group consisting of alkyl groups having from 1 to 12 carbon atoms, and R_3, R_4 and R_5 are independently selected from the group consisiting of hydrogen, halogen, or alkyl of from 1 to 3 carbon atoms, and z is 0 or 1.

5,618,867

HYDROXY-TERMINATED AROMATIC OLIGOMERIC PHOSPHATE AS ADDITIVE FLAME RETARDANT IN POLYCARBONATE RESIN COMPOSITION

Danielle A. Bright, New City, and Paul Y. Moy, Fishkill, both of N.Y., assignors to Akzo Nobel NV, Arnhem, Netherlands

Continuation-in-part of Ser. No. 350,597, Dec. 7, 1994, abandoned. This application Aug. 3, 1995, Ser. No. 510,685
Int. Cl.[6] C08K *5/523*
U.S. Cl. 524—127 **4 Claims**

1. A flame retarded polycarbonate resin composition which comprises a polycarbonate resin substrate containing an effective additive amount for flame retardancy of a hydroxy-terminated aromatic oligomeric phosphate composition of the formula:

$$HO-R-O-\left(\underset{\underset{OAr}{|}}{\overset{\overset{O}{\|}}{P}}-O-R-O\right)_n-\underset{\underset{OAr}{|}}{\overset{\overset{O}{\|}}{P}}-O-R-OH$$

where R is a hydrocathyl group derived from an aliphatic or aromatic diol, Ar is an alkyl-substituted or unsubstituted phenyl group, n is from about 0 to about 10, and the phosphate composition contains a predominant amount of phosphate where n ranges from 0 to 1.

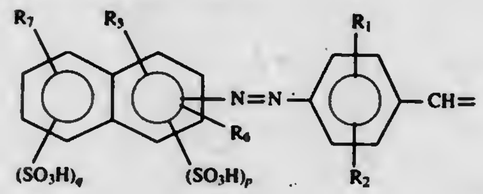
5,618,868

POLARIZING FILM OF A HYDROPHILIC POLYMER FILM CONTAINING A NOVEL AZO COMPOUND

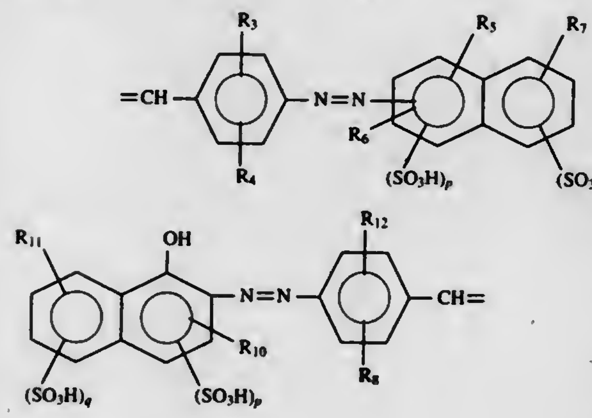
Tsutami Misawa, Kanagawa-ken; Akira Ogiso, Fukuoka-ken; Rihoko Imai, Tokyo, and Hisato Itoh, Kanagawa-ken, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Apr. 6, 1994, Ser. No. 223,740
Claims priority, application Japan, Apr. 21, 1993, 5-094057; Apr. 21, 1993, 5-094058
Int. Cl.[6] C08K *5/23*
U.S. Cl. 524—159 **6 Claims**

1. A polarizing film which comprises a hydrophilic polymer film containing an azo compound represented by formula (1), (2) or (3) which is oriented therein:

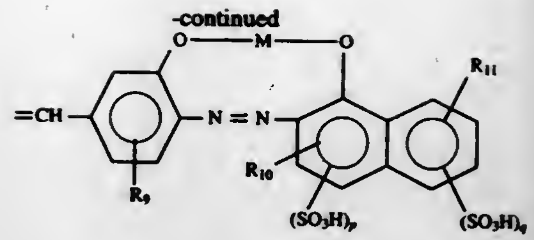


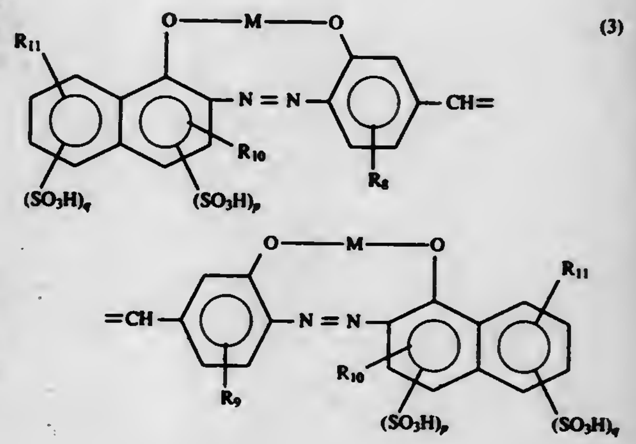
(1)



(2)

-continued





(3)

wherein each of R_1, R_3 and R_{12} is independently a hydrogen atom, halogen atom, hydroxy group, alkyl group having 1 or 2 atoms, or alkoxy group having 1 or 2 carbon atoms; each of R_2, R_4, R_8 and R_9 is independently a hydrogen atom, hydroxyl group, alkyl group having 1 or 2 carbon atoms, alkoxy group having 1 or 2 carbon atoms, or acetylamino group; R_5 is a hydroxyl group or amino group at the o-position or p-position to the azo group; each of R_6 and R_{10} is a carboxyl group, or an alkoxy group having 1 or 2 carbon atoms; each of R_7 and R_{11} is a hydrogen atom, hydroxyl group, amino group, methylamino group, β-hydroxyethylamino group, acetylamino group, phenylamino group unsubstituted or substituted with a nitro group, amino group, hydroxyl group, alkyl group having 1 or 2 carbon atoms, carboxyl group, sulfonic group or chlorine atom; or benzoylamino group unsubstituted or substituted with a nitro group, amino group, hydroxyl group, alkyl group having 1 or 2 carbon atoms, carboxyl group, sulfonic group or chlorine atom; p is 0 or 1; and q is 0, 1 or 2; and M is copper, nickel, zinc or iron.

5,618,869

RUBBER COMPOSITION FOR TREADS OF STUDLESS TIRES

Kazuo Kadomaru, Kobe, and Yoichi Mizuno, Akashi, both of Japan, assignors to Sumitomo Rubber Industries, Ltd., Hyogo, Japan

Filed Dec. 19, 1995, Ser. No. 575,170
Claims priority, application Japan, Dec. 19, 1994, 6-315186
Int. Cl.[6] C08K *5/24*
U.S. Cl. 524—261 **6 Claims**

1. A rubber composition for a tire tread comprising a diene rubber component, 3 to 30 parts of an ebonite powder having an average particle size of not more than 100 μm and 0.1 to 3 parts of a silylating agent, said parts all being parts by weight per 100 parts by weight of said diene rubber component.

5,618,870

POLYKETONE POLYMER BLEND

John E. Flood; John W. Kelley; Davis R. Roane, all of Houston, and John M. Clasby, Sugar Land, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 214,873, Mar. 16, 1994, abandoned. This application Mar. 23, 1995, Ser. No. 409,623

Int. Cl.[6] C08K *5/24;* **C08F** *283/12*

U.S. Cl. 524—269 **5 Claims**

1. A polymer blend comprising a major amount of a linear alternating polymer of carbon monoxide and one or more ethylenically unsaturated hydrocarbon, and between about 1 and 5 wt % of a silicone oil comprised of a linear chain of polydimethyl siloxane having a viscosity grater than about 30,000 centistokes and less than about 300;000 centistokes.

5,618,871

PHENYL PHOSPHITES FOR USE AS STABILIZERS FOR ORGANIC MATERIALS

Peter Nesvadba, Marly, Switzerland, assignor to Ciba-Geigy Corporation, Tarrytown, N.Y.

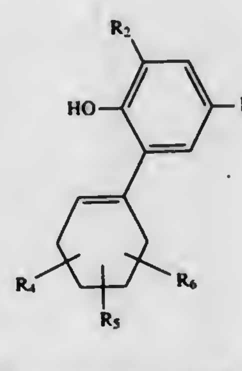
Division of Ser. No. 138,533, Oct. 15, 1993, Pat. No. 5,414,033. This application Feb. 3, 1995, Ser. No. 383,277

Claims priority, application Switzerland, Oct. 21, 1992, 3262/92

Int. Cl.[6] C08K *5/13;* **C07C** *39/23*

U.S. Cl. 524—326 **5 Claims**

1. A compound of the formula III

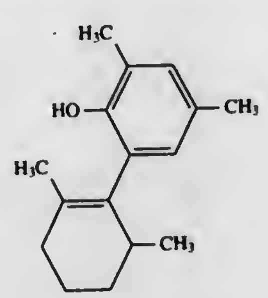


(III)

in which R_2 is hydrogen, C_1–C_8alkyl or C_5–C_6cycloalkyl,

R_3 is C_1–C_8 alkyl or C_5–C_6cycloalkyl,

R_4, R_5 and R_6, independently of one another, are hydrogen or C_1–C_4alkyl, R_4, R_5 and R_6 together containing up to 4 carbon atoms, provided that if R_2, R_4, R_5, and R_6 each represent hydrogen, then R_3 cannot be methyl, and also on condition that the compound of the formula VI is excluded.



(VI)

5,618,872

INORGANIC FILLERS AND ORGANIC MATRIX MATERIALS WITH REFRACTIVE INDEX ADAPTATION

Ludwig Pohl, Darmstadt; Kurt Marquard, Reinheim; Günter Waltl, Regensburg; Ulrike Reeh, and Ernst Wipfelder, both of München, all of Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, and Siemens AG, Munich, both of Germany

PCT No. PCT/EP93/01467, § 371 Date Dec. 9, 1994, § 102(e) Date Dec. 9, 1994, PCT Pub. No. WO93/25611, PCT Pub. Date Dec. 23, 1993

PCT Filed Jun. 9, 1993, Ser. No. 351,318

Claims priority, application Germany, Jun. 12, 1992, 42 19 287.0

Int. Cl.[6] C08K *3/22;* **G02B** *5/20*

U.S. Cl. 524—430 **15 Claims**

1. A method of matching the refractive index of a filler to that of an organic matrix in which it is contained comprising a) preparing monodisperse, non-poroos, spherical particles based on mixed oxides by combining two or more oxides selected from the group consisting of SiO_2, TiO_2, ZrO_2, Al_2O_3, V_2O_5 and Nb_2O_5 having a refractive index largely determined by the refractive indices of the oxides and their proportional ratio within said particles, b) optionally modifying the surfaces of said particles with covalently bonded organic groups, and c) incorporating said particles into organic polymeric or organic polymerizable systems, the refractive index of said particles based on mixed oxides being adapted to the refractive index of the organic matrix according to the desired characteristics of the intended use thereof.

5,618,873

SLIDING MEMBER

Tadashi Tanaka; Masaaki Sakamoto, and Nobutaka Hiramatsu, all of Nagoya, Japan, assignors to Daido Metal Company Ltd., Nagoya, Japan

Filed Jul. 20, 1995, Ser. No. 504,745

Claims priority, application Japan, Aug. 4, 1994, 6-204431

Int. Cl.[6] C08K *3/18*

U.S. Cl. 524—430 **14 Claims**

1. A sliding member obtained by molding a resin composition comprising an aromatic polyamide fiber, a polytetrafluoroethylene, lead monoxide and at least one other heat resistant synthetic resin, the aromatic polyamide fiber being in a proportion of 10 to 30% by volume based on the total volume of the aromatic polyamide fiber, the polytetrafluoroethylene, the lead monoxide and the other heat resistant synthetic resin, the polytetrafluoroethylene being in a proportion of 5 to 20% by volume based on the total volume, and the lead monoxide being in a proportion of 0.1 to 4% by volume based on the total volume.

5,618,874

STABLE PUMPABLE ZEOLITE/SILICONATE SUSPENSIONS

Daniel Jourbert, Chantilly, and Marc Malassis, Francoville, both of France, assignors to Rhone-Poulenc Chimie, Courbevoie Cedex, France

Division of Ser. No. 573, Jan. 4, 1993, Pat. No. 5,401,432, which is a contiouation of Ser. No. 593,961, Oct. 9, 1990, abandoned. This application Dec. 15, 1994, Ser. No. 357,374

Claims priority, application France, Oct. 9, 1989, 89 13138

Int. Cl.[6] C08K *3/34;* **C11D** *3/08*

U.S. Cl. 524—450 **23 Claims**

1. A stable zeolite suspension, in water, said zeolite suspension having a pumpable low viscosity and comprising a zeolite and an effective viscosity reducing amount of a siliconate, a siliconate derivative or mixtures thereof, wherein said siliconate, siliconate derivative or mixture thereof has the formula (1):

$$R—Si(OM)_m(OH)_{3-m} \quad (1),$$

a condensation product thereof or mixtures thereof, in which R is a non-substituted hydrocarbon radical having from 1 to 18 carbon atoms; m is an integer or fraction ranging from 0.1 to 3; and M is an alkali metal or an ammonium or phosphonium group.

5,618,875

HIGH PERFORMANCE CARBON FILAMENT STRUCTURES

R. Terry K. Baker, and Nelly M. Rodriguez, both of State College, Pa., assignors to Catalytic Materials Limited, Mansfield, Mass.

Continuation-in-part of Ser. No. 947,416, Sep. 18, 1992, Pat. No. 5,413,866, which is a continuation-in-part of Ser. No. 602,182, Oct. 23, 1990, Pat. No. 5,149,584. This application May 5, 1995, Ser. No. 435,335

Int. Cl.[6] C08K *3/04;* **D01F** *9/12*

U.S. Cl. 524—495 **10 Claims**

1. A composite structure comprised of carbon filaments in a matrix material, wherein the matrix material is selected from the group consisting of organic and inorganic polymeric materials, carbon, ceramic materials, metals, and mixtures thereof, and said carbon filaments are characterized as having; (i) a surface area from about 50 m^2/g to 800 m^2/g, (ii) an electrical resistivity from about 0.17 μohm·m to 0.8 μohm·m, (iii) a crystallinity from about 5% to about 100%, (iv) a length up to about 100 microns; and (v) composed of graphite platelets substantially perpendicular to the longitudinal axis of said filaments.

5,618,876

LATEX BINDERS AND COATINGS CONTAINING POLYMERS DERIVED FROM POLYMERIZABLE SACCHARIDE MONOMERS

Rajeev Farwaha, Brampton; William D. Currie, Elmira, both of Canada; Robert W. R. Humphreys, Annandale, and John S. Thomaides, Berkeley Heights, both of N.J., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Filed Jun. 5, 1995, Ser. No. 462,253

Int. Cl.[6] C08L *37/00*

U.S. Cl. 524—548 **29 Claims**

1. A latex binder for use in preparing latex coating compositions, said latex binder comprising:

(a) a polymer in amounts effective to function as a polymeric binder in a latex coating composition, said polymer comprising the polymerized residue of:

a polymerizable saccharide monomer which comprises the residue of a single, α,β-ethylenically unsaturated moiety covalently bonded to the residue of a saccharide moiety, said saccharide monomer being present in amounts effective to provide freeze-thaw-stability to the latex coating composition,

an acrylic monomer selected from the group consisting of a C_1–C_{10} alkyl ester of an α,β-ethylenically unsaturated monocarboxylic acid, a hydroxy C_1–C_4 alkyl ester of an α,β-ethylenically unsaturated monocarboxylic acid and a C_4–C_8 alkyl di-ester of an α,β-ethylenically unsaturated dicarboxylic acid,

0 to about 70 pphm of a styrenic monomer,

0 to about 2 pphm of an ionic monomer; and

0 to about 2 pphm of a wet adhesion monomer,

(b) water; and

(c) an emulsifying agent in amounts effective to provide an emulsion of the polymer in the water.

5,618,877

PROCESS FOR POLYMERIZATION OF WATER-SOLUBLE AND WATER-INSOLUBLE CARBOXYLIC ACID POLYMERS AND COPOLYMERS IN A SILICONE OIL SOLVENT

Anthony S. Tomlin, Island Lake, and Milan F. Sojka, Algonquin, both of Ill., assignors to AMCOL International Corporation, Arlington Heights, Ill.

Continuation-in-part of Ser. No. 327,580, Oct. 24, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 486,455

Int. Cl.[6] C08L *31/00*

U.S. Cl. 524—558 **25 Claims**

1. An improved process for viscosifying metal salt-containing aqueous media comprising the steps of:

copolymerizing a carboxylic acid monomer and a polyfunctional cross-linker monomer in a mole ratio of about 1:0.03 to 1:0.10, respectively, in a silicone solvent, under an inert atmosphere, in the presence of an effective amount of initiator to form a metal salt-containing water-viscosifying polymer; and

adding an effective amount of said polymer to said metal salt-containing water.

5,618,878

HYDROGEN SILSESQUIOXANE RESIN COATING COMPOSITION

Cecelia M. Syktich, Saginaw; Gary A. Vincent, Midland, and Kristen A. Scheibert, Sanford, all of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Apr. 7, 1995, Ser. No. 418,725

Int. Cl.[6] C08K *5/01*

U.S. Cl. 524—588 **10 Claims**

1. A coating composition comprising:

between about 10 and about 40 weight percent hydrogen silsesquioxane resin diluted in a solvent comprising up to about 25 weight percent decane, between about 10 and about 35 weight percent iso-octane and between about 65 and about 90 weight percent octane.

5,618,879

AQUEOUS DISPERSIONS OF FUNCTIONAL GRAFT POLYORGANOSILOXANES AND CURABLE SILICONE COMPOSITIONS COMPRISED THEREOF

Edith Cavivenc, Lyons, and Joel Richard, Chantilly, both of France, assignors to Rhone-Poulenc Chimie, Courbevoie, France

Continuation of Ser. No. 280,344, Jul. 25, 1994, abandoned. This application Mar. 25, 1996, Ser. No. 621,320

Claims priority, application France, Jul. 23, 1993, 93 09095

Int. Cl.[6] C08L *83/00*

U.S. Cl. 524—588 **24 Claims**

1. A stable reactive aqueous dispersion of a functional graft polyorganosiloxane, said functional graft polyorganosiloxane comprising the polymerizate of at least one ethylenically unsaturated monomer with a functional polyorganosiloxane which comprises identical or different recurring structural units of formula (I):

$$R_aY_bX_cSiO_{(4-a-b-c)/2} \quad (I)$$

in which the radicals R, which may be identical or different, are each a C_1–C_{18} alkyl radical, a C_2–C_{20} alkenyl radical, or a C_6–C_{12} aryl or aralkyl radical, or halogen-substituted such radical; the radicals X, which may be identical or different, are each a hydrogen atom or a reactive functional group bonded to a silicon atom via an Si-C or Si-O-C linkage; the radicals Y, which may be identical or different, are each an ethylenically unsaturated hydrocarbon radical optionally comprising one or more of the heteroelements O and/or N, and bonded to a silicon atom of the structural unit of formula (I) via an Si-C linkage and reactive with said at least one ethylenically unsaturated monomer; a, b and c are each

equal to 0, 1, 2 or 3; and a+b+c=0, 1, 2 or 3; with the proviso that the number of $SiO_{4/2}$ units is less than 30 mol % and the number of structural units of formula (I) in which the silicon atom is substituted by a functional group X and/or a radical Y is such that the polyorganosiloxane comprises (i) at least 5 milliequivalents of X functional groups per 100 grams of polyorganosiloxane of formula (I) and (ii) at least 5 milliequivalents of Y radicals per 100 grams of polyorganosiloxane of formula (I); wherein said stable reactive aqueous dispersion will form, with a reactant, a curable silicone composition.

5,618,880

SEALING COMPONENT FOR CONNECTOR WATERPROOFING

Kiyotaka Okazaki, and Masahiro Kanda, both of Shizuoka, Japan, assignors to Yazaki Corporation, and Shin-Etsu Chemical Co., Ltd., both of Tokyo, Japan

Filed Aug. 1, 1995, Ser. No. 509,096

Claims priority, application Japan, Aug. 2, 1994, 6-181126

Int. Cl.⁶ C08K *5/24*

U.S. Cl. 524—731 **9 Claims**

1. A sealing component for connector waterproofing, which comprises a vulcanized composition comprising at least (a) 100 parts by weight of an organopolysiloxane represented by the following average composition formula (I) containing at least two alkenyl groups per molecule and having a viscosity of at least 100,000 cs, (b) from 0.1 to 20 parts by weight of an organohydrogenpolysiloxane represented by the following average composition formula (II) containing at least two hydrogen atoms directly bonded to a silicon atom per molecule, (c) from 5 to 500 parts by weight of a finely divided silica filler, (d) a catalytic amount of a platinum catalyst, (e) from 0.005 to 5 parts by weight of a sulfide compound represented by the following general formula (III), and (f) from 0.005 to 5 parts by weight of a triazine compound represented by the following general formula (IV):

$$R^1_mSiO_{(4-m)/2} \quad (I)$$

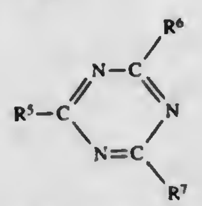
wherein R^1 represents a substituted or unsubstituted monovalent hydrocarbon group; and m represents a positive number of from 1.98 to 2.02;

$$R^2_pSiH_qO_{(4-p-q)/2} \quad (II)$$

wherein R^2 represents a substituted or unsubstituted monovalent hydrocarbon group; p represents a positive number of from 0 to 3; and q represents a positive number of from 0.005 to 1, with the proviso that the sum of p and q is from 0.8 to 3;

$$R^3\text{-}Sr\text{-}R^4 \quad (III)$$

wherein R^3 and R^4 may be the same or different and each represent a substituted or unsubstituted monovalent hydrocarbon group having 3 or more carbon atoms; and r represents a positive number of from 1 to 4;



(IV)

wherein R^5, R^6 and R^7 may be the same or different and each represents a group selected from the group consisting of a peroxy group, a substituted or unsubstituted monovalent hydrocarbon group, a hydroxyl group and a hydrogen atom, with the proviso that at least one of R^5, R^6 and R^7 is a peroxy group.

5,618,881

COMPATIBILIZER COMPOSITION

Sassan Hojabr, Kingston, Canada, assignor to Du Pont Canada Inc., Mississauga, Canada

Filed Jan. 9, 1995, Ser. No. 370,061

Int. Cl.⁶ C08L *23/04;67/02*

U.S. Cl. 525—64 **9 Claims**

1. A process for blending

(A) polyolefins selected from the group consisting of homopolymer of ethylene, and copolymer of ethylene with at least one monomer selected from the group consisting of butene-1, hexene-1, octene-1, vinyl acetate, alkyl acrylate and alkyl methacrylate, with

(B) polyesters consisting essentially of a linear saturated condensation product of at least one glycol selected from the group consisting of neopentyl glycol, cyclohexane dimethanol and aliphatic glycols of the formula $HO(CH_2)_nOH$ where n is an integer of 2 to 10 and at least one aromatic dicarboxylic acid having 8 to 14 carbon atoms, or reactive derivatives thereof, comprising:

melt blending 2 to 98 percent by weight of (A) the polyolefins with 98 to 2 weight percent of (B) the polyesters, based on the total weight of (A) and (B), with from about 2 to 35 parts by weight based on one hundred parts of the combined weight of(A) and (B) of a compatibilizer composition, the compatibilizer composition comprising

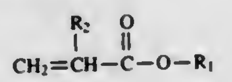
(C) a grafted polymer being selected from the group consisting of at least one of homopolymer of ethylene and copolymers of ethylene with at least one monomer selected from the group consisting of butene-1, hexene-1, and octene-1, vinyl acetate, alkyl acrylate or alkyl methacrylate that has been grafted with at least one monomer selected from ethylenically unsaturated dicarboxylic acids and anhydrides thereof, and derivatives thereof selected from the group consisting of salts, amides, imides and esters; and

(D) an ethylene terpolymer of the formula:

E/X/Y

where

E is the radical formed from ethylene and makes up 40–90 weight percent of the ethylene copolymer, X is a radical formed from



where R_1 is alkyl of 2–8 carbon atoms and R_2 is H, CH_3 or C_2H_5, and X makes up 10–40 weight percent of the ethylene copolymer, and Y is selected from the group consisting of glycidyl methacrylate and glycidyl acrylate, and Y makes up 0.5–20 weight percent of the ethylene copolymer.

5,618,882

GELS CONTAINING SEPS BLOCK POLYMERS

Philip J. Hammond, Wotton Bassett; John M. Hudson, Swindon, both of England, and Hendrik Graulus, Sunnyvale, Calif., assignors to Raychem Limited, Swindon, United Kingdom

PCT No. PCT/GB93/00953, § 371 Date Nov. 14, 1994, § 102(e) Date Nov. 14, 1994, PCT Pub. No. WO93/23472, PCT Pub. Date Nov. 25, 1993

PCT Filed May 10, 1993, Ser. No. 335,784

Claims priority, application United Kingdom, May 13, 1992, 9210291; Jul. 7, 1992, 9214425

Int. Cl.⁶ C08L *25/10;71/12*

U.S. Cl. 525—92 D **19 Claims**

1. A gel composition comprising a styrene-(ethylene/propylene)styrene block copolymer having Mw of at least 180,000 and a polystyrene block content of 25–45 weight percent and at least 300 parts by weight of substantially non-aromatic extender liquid per 100 parts by weight of the block copolymer, which liquid extends and softens the ethylene/propylene polymer blocks of the said copolymer.

5,618,883

STYRENE ETHYLENE-BUTYLENE AND ETHYLENE-PROPYLENE BLOCK COPOLYMER HOT MELT PRESSURE SENSITIVE ADHESIVES

Sebastian S. Plamthottam; Ramon Roman, both of Upland; John Landers, Duarte; Roger H. Mann, Corona Del Mar; Karl Josephy, Los Angeles, and Ronald Ugolick, San Dimas, all of Calif., assignors to Avery Dennison Corporation, Pasadena, Calif.

Filed Jun. 7, 1995, Ser. No. 478,102

Int. Cl.⁶ C08L *53/02;51/04;93/04*

U.S. Cl. 525—98 **19 Claims**

1. A pressure sensitive adhesive comprising a tackified ethylene-propylene rubber modified with a block copolymer modifier selected from the group consisting of styrene ethylene-propylene block copolymers, styrene ethylene-butylene block copolymers or mixtures thereof, said block copolymer modifier provided in an amount sufficient to cause the tackified ethylene-propylene rubber to be hot melt coatable, said pressure sensitive adhesive exhibiting high cohesive strength and adhesion to polar and apolar surfaces.

5,618,884

ANHYDRID-FUNCTIONAL MONOMERS AND POLYMERS AND REACTIVE COMPOSITIONS PREPARED FROM SAME

Rubing Cai, and Thomas W. Yokoyama, both of Chicago, Ill., assignors to The Sherwin-Williams Company, Cleveland, Ohio

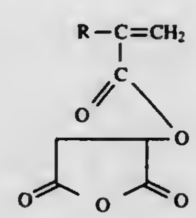
Division of Ser. No. 336,033, Nov. 8, 1994, which is a division of Ser. No. 176,732, Jan. 3, 1994, Pat. No. 5,364,945. This application Mar. 1, 1996, Ser. No. 609,808

Int. Cl.⁶ C08F *22/04*

U.S. Cl. 525—117 **41 Claims**

7. A curable composition which comprises:

(a) an anhydride-functional polymer which comprises the polymerization reaction product of: (i) an anhydride-functional monomer having the structure:



wherein R is hydrogen or methyl; and, optionally (ii) at least one other unsaturated monomer copolymerizable with the anhydride-functional monomer; and

(b) a compound having an average of at least two functional groups per molecule which are reactive with anhydride groups.

5,618,885

FIBER-FORMING MODIFIED POLYAMIDE BLENDS

Richard Kotek, Arden, N.C., and Hans-Georg Matthies, Ludwigshafen, Germany, assignors to BASF Corporation, Mt. Olive, N.J.

Division of Ser. No. 319,723, Oct. 7, 1994, Pat. No. 5,559,149, which is a continuation of Ser. No. 12,821, Feb. 3, 1993, abandoned. This application Jan. 25, 1996, Ser. No. 591,282

Int. Cl.⁶ C08L *77/00;77/10;71/12*

U.S. Cl. 525—179 **5 Claims**

1. A fiber-forming polymer blend, comprising:

a) from about 70 to about 99.85% by weight of a polyamide;

b) from about 1 to about 5% by weight of an amorphous copolymer derived from hexamethylenediamine, isophthalic acid (I), and terephthalic acid (T) miscible with the polyamide; and

c) from about 10 to about 25% by weight of an amorphous poly(phenylene oxide) polymer immiscible with the polyamide.

5,618,886

OLEFIN POLYMERIZATION CATALYST AND PROCESS FOR PREPARING POLYPROPYLENE AND PROPYLENE BLOCK COPOLYMERS

Tetsunori Shinozaki, and Mamoru Kioka, both of Waki-cho, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Continuation of Ser. No. 289,635, Aug. 12, 1994, abandoned. This application Jul. 31, 1996, Ser. No. 690,054

Claims priority, application Japan, Aug. 13, 1993, 5-201388; Aug. 13, 1993, 5-201389; Aug. 18, 1993, 5-204309; Aug. 18, 1993, 5-204310; Aug. 18, 1993, 5-204311

Int. Cl.⁶ C08F *4/651;4/654;8/00;10/06*

U.S. Cl. 525—270 **4 Claims**

1. A process for preparing a propylene block copolymer, comprising the steps of polymerizing propylene to form a polypropylene component and copolymerizing ethylene and an α-olefin of 3 to 20 carbon atoms to form an ethylene/α-olefin copolymer component, in an optional order, wherein the polymerizing and copolymerizing steps are carried out in the presence of an olefin polymerization catalyst (5a) formed from:

(Ia-5) a prepolymerized catalyst component obtained by prepolymerizing at least one olefin selected from the group consisting of propylene, 3-methyl-1-butene, vinylcyclohexane and allyltrimethylsilane, in the presence of

(A) a solid titanium catalyst component which comprises magnesium, titanium, halogen and a polycarboxylic acid ester as an electron donor, and is prepared using the polycarboxylic acid ester in an amount of 0.1 to 1 mol and the titanium compound in an amount of 0.1 to 200 mol, both based on 1 mol of the magnesium compound,

(B) an organoaluminum compound catalyst component represented by the following formula:

$$R^1_mAl(OR^2)_nH_pX_q$$

wherein

R^1 and R^2, which may be the same or different, are each a hydrocarbon group having 1 to 15 carbon atoms, X is a halogen atom, and m, n, p and q are numbers satisfying the conditions of $o<m\leqq 3, o\leqq n<$, $0\leqq p<3$, $0\leqq q<3$ and $m+n+p+q=3$, and

(E) an organosilicon compound represented by the following formula (c-iii)

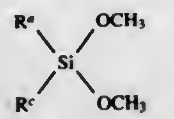
$$R_nSi(OR')_{4-n} \quad (c\text{-}iii)$$

wherein

R and R^1 are each a hydrocarbon group, and n is a number satisfying the condition of $0<n<4$, in such a way that the organoaluminum compound catalyst compound (B) is used in

an amount of 0.5 to 50 mol based on 1 mol of the titanium atom contained in the solid titanium catalyst component (A), the organosilicon compound catalyst component (E) is used in an amount of 0.5 to 30 mol based on 1 mol of the titanium atom contained in the solid titanium catalyst component (A), and the amount of the prepolymer formed is 0.01 to 2,000 q based on 1 g of the solid titanium catalyst component (A);

(II-5) (C) an organosilicon compound represented by the following formula (c-ii)



(c-ii)

wherein

R^a and R^c are each independently a cyclopentyl group, a substituted cyclopentyl group, a cyclopentenyl group, a substituted cyclopentenyl group, a cyclopentadienyl group, a substituted cyclopentadienyl group or a hydrocarbon group whose carbon adjacent to Si is secondary or tertiary carbon; and optionally

(III) an organoaluminum compound catalyst component represented by the following formula:

$$R^1_m Al(OR^2)_n H_p X_q$$

wherein

R^1, R^2, X m n, p and q have the meanings as defined above; and wherein

the polymerizing step to form the polypropylene component and the copolymerizing step to form the ethylene/α-olefin copolymer component are carried out using the prepolymerized catalyst component (Ia-5) in an amount of 0.001 to 1 mmol, in terms of titanium atom, based on 1 liter of the polymerization volume, and the organosilicon compound (II-5) in an amount of 0.01 to 1,000 mol and the organoaluminum compound catalyst component (III), when it is used, in an amount of 2 to 1,000 mol, both based on 1 mol of the titanium atom, at a temperature of 50° to 100° C. in the polymerizing step or 20° to 100° C. in the copolymerizing step and a pressure of 2 to 50 kg/cm^2, and the resulting polypropylene component may contain units derived from ethylene and/or an α-olefin of 4 to 20 carbon atoms in an amount of not more than 4% by mol; and

the propylene block copolymer thus obtained has the following properties:

(i) a pentad isotacticity (M_5) of the boiling heptane-insoluble component in said copolymer determined by the following formula (1) using a ^{13}C-NMR spectrum is not less than 0.97:

$$(M_5) = \frac{(Pmmmm)}{(PW) - 2((S\alpha\gamma) + (S\alpha\delta^+)) + 3(T\delta^+\delta^+)} \qquad (1)$$

wherein

(Pmmmm) is absorption intensity of methyl groups on a third propylene units in five propylene unit sequences where the five units are bonded isotactically to each other,

(Pw) is absorption intensity of all methyl groups in propylene units,

(Sαγ) is absorption intensity of secondary carbons in a main chain, with the proviso that one of two tertiary carbons nearest to each of said secondary carbons is situated at the α position and the other is situated at the γ position,

($S\alpha\delta^+$) is absorption intensity of secondary carbons in a main chain, with the proviso that one of two tertiary carbons nearest to each of said secondary carbons is situated at the α position and the other is situated at the δ or farther position, and

($T\delta^+\delta^+$) is absorption intensity of tertiary carbons in a main chain, with the proviso that one of two tertiary carbons nearest to each of said tertiary carbons is situated at the δ or farther position and the other is also situated at the δ or farther position;

a pentad tacticity (M_3) of the boiling heptane-insoluble component determined by the following formula (2) using a ^{13}C-NMR spectrum is in the range of 0.0020 to 0.0050:

$$(M_3) = \frac{(Pmmrm) + (Pmrmr) + (Pmrrr) + (Prmrr) + (Prmmr) + (Prrrr)}{(PW) - 2((S\alpha\gamma) + (S\alpha\delta^+)) + 3(T\delta^+\delta^+)} \qquad (2)$$

wherein (Pw), (Sαγ), ($S\alpha\delta^+$) and ($T\delta^+\delta^+$) have the meanings as defined in the formula (1),

(Pmmrm) is absorption intensity of methyl groups on third propylene units in five propylene unit sequences represented by in which ⌋ and ⌉ are each a propylene unit,

(Pmrmr) is absorption intensity of methyl groups on third propylene units in five propylene unit sequences represented by in which ⌋ and ⌉ are each a propylene unit,

(Pmrrr) is absorption intensity of methyl groups on third propylene units in five propylene unit sequences represented by in which ⌋ and ⌉ are each a propylene unit,

(Prmrr) is absorption intensity of methyl groups on third propylene units in five propylene unit sequences represented by in which ⌋ and ⌉ are each a propylene unit,

(Prmmr) is absorption intensity of methyl groups on third propylene units in five propylene unit sequences represented by in which ⌉ and ⌋ are each a propylene unit,

(Prrrr) is absorption intensity of methyl groups on third propylene units in five propylene unit sequences represented by in which ⌋ and ⌉ are each a propylene unit; and

(ii) a 23° C. n-decane-soluble component in said copolymer has an intrinsic viscosity (η), as measured in decahydronaphthalene at 135° C., of not less than 4 dl/g.

5,618,887

FUNCTIONALISATION OF POLYMERS

Clement H. Bamford, Prenton, and Kadem G. Al-Lamee, Childwall, both of Great Britain, assignors to The University of Liverpool, Liverpool, Great Britain

PCT No. PCT/GB93/01195, § 371 Date Feb. 3, 1995, § 102(e) Date Feb. 3, 1995, PCT Pub. No. WO93/25587, PCT Pub. Date Dec. 23, 1993

PCT Filed Jun. 4, 1993, Ser. No. 338,536

Claims priority, application United Kingdom, Jun. 5, 1992, 9211966

Int. Cl.[6] C08F *8/08*

U.S. Cl. 525—279 **19 Claims**

1. A method of producing a functionalized polymer, which method comprises reacting a polymer selected from the group consisting of olefin polymers, aliphatic polyesters, polymers that contain an aromatic ring, carbonate polymers, vinyl polymers, polyurethanes, nylons, polyglycols and polyaldehydes in an aqueous medium with a peroxidant to produce oxygen-centered radicals which are responsible for introducing hydroxyl groups into the polymer, the reaction being carried out in the absence of (a) any additive which is preferentially oxidized or is reactive towards the radicals produced by the peroxidant, (b) added oxygen and (c) a cationic surfactant.

5,618,888

PROCESS FOR PREPARING EMULSION POLYMERS HAVING A HOLLOW STRUCTURE

Su B. Choi, Seo-ku; Tae H. Jang, Youseong-ku; Jin N. Yoo, Youseong-ku, and Chan H. Lee, Youseong-ku, all of Rep. of Korea, assignors to LG Cehmical Ltd., Seoul, Rep. of Korea

PCT No. PCT/KR94/00141, § 371 Date Jun. 6, 1995, § 102(e) Date Jun. 6, 1995, PCT Pub. No. WO95/11265, PCT Pub. Date Apr. 27, 1995

PCT Filed Oct. 20, 1994, Ser. No. 446,688

Claims priority, application Rep. of Korea, Oct. 20, 1993, 1993-22081

Int. Cl.[6] C08F *285/00;2/22;* **C08J** *9/28*

U.S. Cl. 525—301 **12 Claims**

1. A process for preparing hollow polymer particles having a uniform hollow center and a uniform shell thickness, which comprises

(1) a seed-forming step in which a monomer mixture consisting of (i) an acid monomer having a carboxylic acid group, and (ii) a non-ionic hydrophilic monomer is polymerized in the presence of a polymerization initiator to form a seed latex;

(2) a core-forming step for preparing core particles in which a monomer mixture of (i) an acid monomer having a carboxylic acid group, (ii) a non-ionic hydrophilic monomer, and (iii) a cross-linking agent is emulsion polymerized on the seed latex to form a hydrophilic core;

(3) a shell-forming step in which a hydrophobic shell is formed on the hydrophilic core; and in the shell-forming step (I) an emulsion comprising an emulsifier, water, and a monomer mixture of (i) up to 10 wt % of at least one acid monomer having a carboxylic acid group, (ii) 85 to 100 wt % of at least one non-ionic hydrophilic monomer, and (iii) up to 5 wt % of a cross-linking agent, and (II) an emulsion comprising an emulsifier, water, and a monomer mixture of (i) 95 to 100 wt % of at least one hydrophobic monomer and (ii) up to 5 wt % of a cross-linking monomer, are used in a ratio of 1/1 to 1/10 (emulsion (I)/emulsion (II)), the total amount of the monomer mixture in emulsion (I) and emulsion (II) being at least two times the weight of the core particles,

carrying out the polymerization by continuously adding emulsion (II) dropwise to emulsion (I) and, at the same time, adding emulsion (I), partially containing emulsion (II), together with a water-soluble polymerization initiator to the core latex at the same rate as emulsion (II) is added to emulsion (I), to form a final latex, and

swelling the final latex with an alkaline solution.

5,618,889

POLY(ARYLETHER)/LIQUID CRYSTALLINE POLYESTER BLOCK COPOLYMERS AND A PROCESS FOR THEIR PRODUCTION

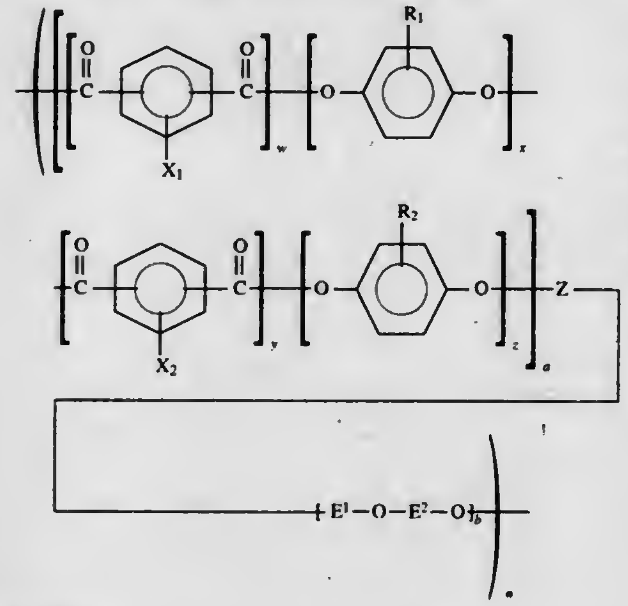
Robert J. Kumpf, Pittsburgh; Douglas A. Wicks, Mt. Lebanon, both of Pa.; Dittmar K. Nerger, Krefeld, Germany; Harald Pielartzik, Pittsburgh, Pa., and Rolf Wehrmann, Krefeld, Germany, assignors to Bayer Corporation, Pittsburgh, Pa.

Filed May 15, 1991, Ser. No. 701,425

Int. Cl.[6] C08G *81/00*

U.S. Cl. 525—437 **12 Claims**

1. A block copolymer represented by the formula:



in which

R_1 and R_2 each represents an alkyl group, aryl group, aralkyl group, alkoxy group, phenoxy group or a combination of these groups;

X_1 and X_2 each represents a hydrogen or halogen atom;

w, x, y, z each represents a mole fraction of the monomer residuum such that (w+y)=(x+z);

Z represents the linkage which results from the transesterification of a liquid crystalline polyester and an ester group containing aromatic polyether;

E^1 represents the residuum of a benzenoid compound having an electron withdrawing group in at least one of the positions ortho or para to the valence bonds having a sigma value sufficient to activate a halogen enough to promote reaction of the halogen with an alkali metal phenolate,

E^2 represents the residuum of a dihydric phenol which does not contain ester groups,

a represents the average number of repeated aryl ester units in the block copolymer;

b represents the average number of repeated aryl ether units in the block copolymer; and

n represents the degree of polymerization of the block copolymer.

5,618,890

ALLYLPHENOL-TERMINATED POLYCARBONATES GRAFTED WITH MALEIC ANHYDRIDE, THEIR USE FOR THE PRODUCTION OF BLENDS WITH POLYAMIDE AND THE CORRESPONDING BLENDS

Burkhard Köhler, Krefeld, and Klaus Horn, Dormagen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 17, 1995, Ser. No. 516,376

Claims priority, application Germany, Aug. 24, 1994, 44 29 979.6

Int. Cl.[6] C08F *283/02;283/04;* **C08L** *69/00;* **C08G** *64/00*

U.S. Cl. 525—468 **8 Claims**

1. Allylphenol-terminated aromatic polycarbonates grafted with 0.2 to 5% by weight, based on 100% by weight of polycarbonate, of maleic anhydride, the polycarbonates having a weight average molecular weight of 10,000 to 200,000 and being based on diphenols of the formula (I):

HO—D—OH

in which D is a C_{6-50} aromatic radical.

5,618,891

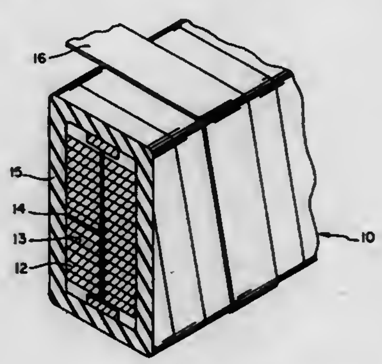
SOLVENTLESS RESIN COMPOSITION HAVING MINIMAL REACTIVITY AT ROOM TEMPERATURE

Mark Markovitz, Schenectady, N.Y., assignor to General Electric Co., Schenectady, N.Y.

Filed Mar. 29, 1995, Ser. No. 413,015

Int. Cl.[6] C08F *283/00;* **C08G** *8/28;* **B32B** *27/38*

U.S. Cl. 525—481 **18 Claims**



1. A solventless thermosetting resin composition consisting essentially of:

a resin comprising a solid or semi-solid epoxy resin having an epoxide functionality of at least 2.5 and up to about 50 weight percent of a liquid epoxy resin having an epoxide functionality of 2;

a metal acetylacetonate for catalyzing the resin; and

a substantially nonreactive accelerator of bisphenol A-formaldehyde novolac catalyzed by an acidic catalyst and having a hydroxyl equivalent weight of 120, the accelerator being present in the solventless thermosetting resin composition in an amount equal to about 5 to about 15 weight percent of the resin but in an amount less than the stoichiometric level in terms of the epoxy:novolac and epoxy equivalent:phenolic hydroxyl equivalent ratios;

wherein the solventless thermosetting resin composition is substantially unreactive at a temperature of up to at least about 120° C. and undergoes an epoxy-epoxy reaction at a temperature of about 165° C. to form a solid material having mechanical, thermal and electrical properties that are suitable to enable the solid material to serve as an electrical insulating material.

5,618,892

2,4-DIAMINO-S-TRIAZINYL GROUP-CONTAINING POLYMER AND NEGATIVE RADIATION-SENSITIVE RESIST COMPOSITION CONTAINING THE SAME

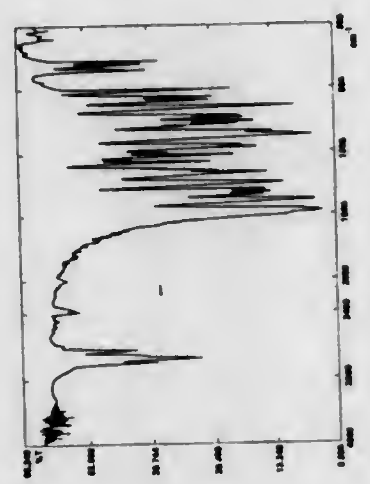
Tomoyoshi Furihata, and Motoyuki Yamada, both of Kawasaki, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Nov. 21, 1995, Ser. No. 561,625

Claims priority, application Japan, Nov. 22, 1994, 6-312434; Nov. 22, 1994, 6-312435; Jul. 25, 1995, 7-209075

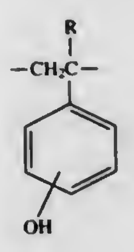
Int. Cl.[6] C08F *283/00;* **C08G** *8/28*

U.S. Cl. 525—483 **2 Claims**



1. A 2,4-diamino-s-triazinyl group-containing polymer consisting of 99 to 50 mol % of a unit of the following structural formula (1a) and 1 to 50 mol % of a unit of the following structural formula (1b):

(1a)



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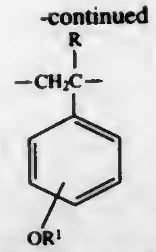
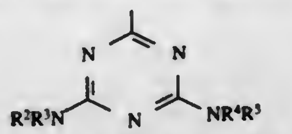
(1b)



wherein R is a hydrogen atom or methyl group, R^1 is a 2,4-diamino-s-triazinyl group of the following structural formula (2):

(2)



wherein at least one of R^2, R^3, R^4, and R^5 is an alkoxymethyl group of the structural formula: $—CH_2OR^6$ wherein R^6 is an alkyl group having 1 to 4 carbon atoms, and the remainder of R^2, R^3, R^4, and R^5 is a hydrogen atom, said polymer having a weight average molecular weight of 3,000 to 50,000.

5,618,893

PROCESS FOR THE PREPARATION OF CATIONIC BINDERS FOR COATINGS, THE BINDERS PRODUCED, AND THEIR USE

Rudolf Schipfer, and Gerhard Schmölzer, both of Graz, Austria, assignors to Vianova Kunstharz, AG, Werndorf, Austria

Filed Mar. 22, 1991, Ser. No. 673,690

Claims priority, application Austria, Mar. 22, 1990, 674/90

Int. Cl.[6] C08F *283/00*

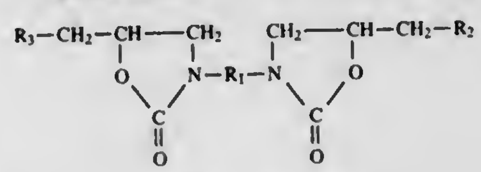
U.S. Cl. 525—526 **9 Claims**

1. Process for the preparation of cationic binders based on modified epoxy resin-amine adducts comprising reacting;

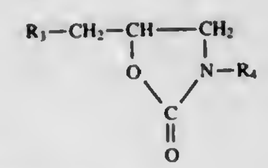
(A) 60 to 80% by weight of an epoxy resin component consisting of

(Aa) 60 to 98% by weight of at least one aromatic and/or aliphatic diepoxy resin having an epoxide equivalent weight of between 190 and 500, and

(Ab) 2 to 40% by weight of at least one epoxide compound which is modified by N-substituted mono- and/or bis-2-oxazolidone groupings, which are obtained by reaction of glycidyl groups with isocyanate groups, and having the general formula;



or (I)



(II)

wherein

R_1 represents the moiety of a (cyclo)aliphatic or an aromatic diisocyanate,

R_2 represents the moiety of an aliphatic monoglycidyl ether or an aliphatic monoglycidyl ester or a radical R_3,

R_3 represents the moiety of an (aromatic)-aliphatic or aromatic diglycidyl ether, and

R_4 represents the moiety of a (cyclo)aliphatic or an aromatic monoisocyanate,

with

(B) 20 to 40% by weight of an amine component consisting of

(Ba) 0 to 20% by amine equivalence of at least one primary alkylamine and/or alkanolamine,

(Bb) 25 to 55% by amine equivalence of at least one secondary alkylamine and/or alkanolamine,

(Bc) 20 to 50% by amine equivalence of at least one primary-tertiary alkyldiamine, and

(Bd) 5 to 25% by amine equivalence of a disecondary amine compound of 2 mol of a compound resulting from the reaction product of diprimary di- or polyamines with aliphatic monoglycidyl and/or monoepoxide compounds with one mol of a diepoxide compound,

wherein the totals of the percentage figures of components A and B equals 100 to give an adduct which is free from epoxide groups and has a molecular weight of from about 2000–18,000 (weight-average), a glass transition temperature of between +20° C. and +45° C., and a basicity corresponding to an amine number of at least 20 mg KOH/g, with the proviso that the epoxy resin components (Aa) and (Ab) of component A are reacted with the amine components (Ba), (Bb), (Bc) and (Bd) of component B at 60° C. to 80° C. in a 55–75% strength partial solution in glycol ethers, and that after the end of all the additions, the reaction temperature is increased to a maximum of 120° C. to bring the reaction to completion.

5,618,894

NONAQUEOUS POLYMERIZATION OF FLUOROMONOMERS

Joseph M. DeSimone, Chapel Hill, and Timothy Romack, Durham, both of N.C., assignors to The University of North Carolina, Chapel Hill, N.C.

Division of Ser. No. 402,202, Mar. 10, 1995, abandoned. This application Jun. 1, 1995, Ser. No. 457,401

Int. Cl.[6] C08F *4/34*

U.S. Cl. 526—89 **29 Claims**

1. A process for making fluorinated polymers having stable end groups comprising contacting a fluoromonomer, an initiator capable of producing said stable end groups on said polymer, and a polymerization medium comprising liquid or supercritical carbon dioxide and polymerizing said fluoromonomer.

5,618,895

PROCESS FOR PREPARING COPOLYMERS OF PROPYLENE WITH OTHER 1-ALKENES

Juergen Kerth, Carlsberg; Peter Koelle, Ludwigshafen; Ralf Zolk, Weisenheim, and Harald Schwager, Speyer, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Continuation-in-part of Ser. No. 943,152, Sep. 10, 1992, abandoned, which is a continuation of Ser. No. 672,283, Mar. 20, 1991, abandoned. This application Sep. 16, 1993, Ser. No. 121,465

Claims priority, application Germany, Apr. 6, 1990, 40 11 160.1

Int. Cl.[6] C08F *4/648;2/34;210/06*

U.S. Cl. 526—128 **5 Claims**

1. A process for preparing a copolymer of propylene with another 1-alkene in an agitated fixed bed, which comprises gas-phase polymerizing a mixture of propylene and another 1-alkene in the absence of a liquid reaction medium under a preset pressure of from 15 to 30 bar, at from 65° to 90° C. and with an average holdup time of the polymer of from 1 to 5 hours, with the aid of a Ziegler-Natta catalyst system which contains an aluminum component and an organosilicon compound in addition to a titanium-containing solid component applied to a very finely divided carrier selected from the group consisting of silicas, aluminas and aluminum silicates of the formula $SiO_2 . aAl_2O_3$, where a is from 0.01 to 2, wherein the temperature is chosen so that, under the preset pressure, no condensation of the monomer mixture takes place in the gas space and, wherein the ratio of the partial pressures of propylene and the other 1-alkene is adjusted to from 5:1 to 100:1.

5,618,896

ENERGY POLYMERIZABLE COMPOSITIONS, HOMOPOLYMERS AND COPOLYMERS OF OXAZOLINES

Stephen A. Ezzell, Woodbury, and Diana J. Gerbi, Mendota Heights, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 238,912, May 6, 1994. This application May 18, 1995, Ser. No. 444,043

Int. Cl.[6] C08F *4/80;26/06;8/00*

U.S. Cl. 526—171 **6 Claims**

1. A polymerized composition comprising the polymerization product of a polymerizable mixture comprising:

a) at least one cationically curable 1,3-oxazyl heterocyclic monomer or compound; and

b) a catalytically effective amount of an initiator comprising an organometallic compound.

5,618,897

PROCESS FOR PREPARING TETRAFLUOROETHYLENE COPOLYMERS WITH OTHER PERFLUORINATED MONOMERS

Pasqua Colaianna, Milan; Julio A. Abusleme, Saronno, and Natalino Del Fanti, Milan, all of Italy, assignors to Ausimont S.p.A., Milan, Italy

Continuation of Ser. No. 323,350, Oct. 14, 1994, abandoned. This application Jan. 22, 1996, Ser. No. 589,151

Claims priority, application Italy, Oct. 15, 1993, MI93A2197

Int. Cl.[6] C08F *2/38*

U.S. Cl. 526—206 **8 Claims**

1. A process for preparing tetrafluoroethylene copolymers with one or more perfluorinated monomers having ethylenic unsaturation, said copolymers having, as unstable end groups, only carboxylic groups or carboxylate groups, comprising polymerization in aqueous emulsion at a pH equal to or higher than 7 in the presence of dispersing agents, wherein asymmetric difluoroethane $CHF_2—CH_3$ is used as a chain transfer agent, in an amount comprised between 0.55 and 30% by moles with respect to the mixture of tetrafluoroethylene with the other perfluorinated monomer or monomers, and an inorganic peroxidic compound is used as an initiator.

5,618,898

WEATHER-RESISTANT SOLVENT-BASED COATING OBTAINED BY POLYMERIZATION WITH THIOETHER BOND CONVERTED TO SULFONE BOND

Mitsuru Nagasawa, Nagoya; Kazuyuki Kuwano; Takeshi Kawakami, both of Toyota; Mamoru Sugiura, Aichi-ken; Hiroshi Hibino, Nagoya; Shiro Kojima, Tokai, and Kishiro Azuma, Tokyo, all of Japan, assignors to Toagosei Chemical Industry Co., Ltd., Tokyo; Toyota Jidosha Kabushiki Kaisha, Toyota, and Toyota Technological Institute, Nagoya, all of Japan

Division of Ser. No. 15,162, Feb. 9, 1993, abandoned. This application Oct. 5, 1994, Ser. No. 318,523

Claims priority, application Japan, Feb. 10, 1992, 4-023973; Nov. 13, 1992, 4-303825; Dec. 21, 1992, 4-357201

Int. Cl.[6] C08F *20/24;20/26;8/06*

U.S. Cl. 526—245 **3 Claims**

1. A solvent-based coating composition containing a polymer of excellent weatherability obtained by the process of

polymerizing an ethylenically unsaturated monomer in the presence of a mercaptan having a thiol group and a reactive group in the molecule to obtain a polymer, wherein said mercaptan is selected from the group consisting of mercaptoacetic acid, 2-mercaptopropionic acid, 3-mercaptopropionic acid and 2-mercaptoethanol

reacting said polymer with a compound having a functional group which is addition-reactive with a reactive group present at one end of said polymer, and an ethylenically unsaturated

bond, to obtain a macromolecular monomer having an ethylenically unsaturated bond at one end wherein said compound having a functional group and an ethylenically unsaturated bond is selected from the group consisting of glycidyl methacrylate, glycidyl acrylate, methacrylic acid chloride, p-vinylbenzyl chloride and p-vinylaniline,

copolymerizing said macromolecular monomer with another monomer to synthesize a branched-chain polymer, said macromolecular monomer being present in said branched-chain polymer in an amount of 55–99.5% by weight based on the weight of said branched-chain polymer, wherein said another monomer is selected from the group consisting of alkyl (C_1–C_{18}) (meth)acrylates, perfluoroalkyl (C_1–C_{18}) (meth-)acrylates, styrene, (meth)acrylonitrile, (meth)acrylic acid, maleic anhydride, 2-hydroxyethyl (meth)acrylate, hydroxypropyl (meth)acrylate, glycidyl (meth)acrylate, N-methylolacrylamide, N,N-dimethylamino ethyl (meth)acrylate and (meth) acryloyloxypropyl-trimethoxysilane, and

reacting said branched-chain polymer with a peroxide to oxidize the sulfur atom in the thioether bond present in the branched-chain polymer to form a sulfone,

and wherein said polymer has a number-average molecular weight of 500–25,000.

5,618,899

CROSSLINKED PRESSURE-SENSITIVE ADHESIVES TOLERANT OF ALCOHOL-BASED EXCIPIENTS USED IN TRANSDERMAL DELIVERY DEVICES AND METHOD OF PREPARING SAME

Marian R. Appelt, and Sharon K. Grosh, both of P.O. Box 33427, St. Paul, Minn. 55133-3427

Division of Ser. No. 517,927, May 2, 1990. This application May 30, 1995, Ser. No. 454,496

Int. Cl.^{6} C08F *26/08;* **C08J** *3/28;* **A61F** *13/02*

U.S. Cl. 526—264 **22 Claims**

1. A method of preparing a pressure sensitive adhesive tolerant of exposure to an alcohol-based excipient used with an active agent for transdermal delivery, comprising:

(a) polymerizing at a temperature of at least about 30° C. in the absence of a therapeutic mixture at least one acrylate-based polymerizable monomer and at least one ethylenically unsaturated monomer in a weight fraction ratio of said acrylate-based polymerizable monomer to said ethylencially unsaturated monomer of from about 92:8 to about 98:2 to yield a pressure sensitive adhesive copolymer having an inherent viscosity of from about 1.2 dl/g to about 2.0 dl/g; and then separately

(b) irradiating with an electron beam radiation dose of about 5.0 kGy to about 200 kGy the previously polymerized pressure sensitive adhesive copolymer in the absence of photoinitiators needed for ultra-violet polymerization, activators or catalysts needed for chemical crosslinking, and further in the absence of the active agent or the alcohol-based excipient to yield a radiation crosslinked pressure sensitive adhesive useful in a transdermal delivery device having a creep compliance value of from about 1.1×10^{-5} cm^2/dyne to about 2.3×10^{-5} cm^2/dyne after exposure to the alcohol-based excipient.

5,618,900

FREE RADICAL POLYMERIZATION

Ray E. Drumright, Midland; Robert H. Terbrueggen, Sanford; Duane B. Priddy, and Robert A. Koster, both of Midland, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 16, 1996, Ser. No. 586,262

Int. Cl.^{6} C08F *120/14;112/06;120/10;120/06*

U.S. Cl. 526—329.7 **21 Claims**

1. A process of polymerizing a monomer capable of undergoing free radical polymerization, comprising contacting the monomer with a diradical initiator at a temperature sufficient to initiate free radical polymerization, wherein said diradical initiator contains sites of C—C unsaturation which cyclize to form a diradical.

5,618,901

PROCESS FOR MAKING A HIGH NITRILE MULTIPOLYMER PREPARED FROM ACRYLONITRILE AND OLEFINICALLY UNSATURATED MONOMERS

Richard C. Smierciak, Aurora; Eddie Wardlow, Jr., Shaker Hts., and Lawrence E. Ball, Akron, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 150,515, Nov. 10, 1993, abandoned. This application Feb. 27, 1995, Ser. No. 387,303

Int. Cl.^{6} C08F *220/48*

U.S. Cl. 526—342 **14 Claims**

1. A process for polymerizing an acrylonitrile monomer and one or more olefinically unsaturated monomers to make an acrylonitrile olefinically unsaturated multipolymer, said process comprising the steps of:

heating an initial multimonomer mixture comprising acrylonitrile monomer and one or more olefinically unsaturated monomer, under an inert atmosphere, in the range of about 30° C. to about 120° C.;

adding an initiator to the initial multimonomer mixture to start a polymerization reaction;

adding a multimonomer feed mixture comprising acrylonitrile monomer and olefinically unsaturated monomer(s) to the polymerization mixture wherein the multimonomer feed mixture contains about 50% by weight to about 95% by weight acrylonitrile monomer and about 5% by weight to about 50% by weight olefinically unsaturated monomer(s), wherein the multimonomer feed mixture has a fixed and constant molar ratio of acrylonitrile monomer to olefinically unsaturated monomer(s); and wherein the rate of addition of the multimonomer feed mixture is less than or equal to the rate of polymerization.

5,618,902

VAPOR PRECIPITATION OF POLYMERS FROM SOLVENT POLYMER BLENDS BY AZEOTROPIC SPRAY DRYING

Jeffrey H. Wengrovius, Scotia; Richard W. Green, Ballston Spa, and Clayton B. Quinn, Burnt Hills, all of N.Y., assignors to General Electric Company, Waterford, N.Y.

Filed Nov. 3, 1995, Ser. No. 552,685

Int. Cl.^{6} C08G *77/00*

U.S. Cl. 528—10 **9 Claims**

1. A process for removing a contaminating organic solvent from a solution containing a polymer solute comprising:

(a) contacting said solution with a co-solvent wherein said co-solvent is immiscible with said solute and wherein said co-solvent boils at a temperature different from the boiling temperature of said contaminating organic solvent wherein said co-solvent forms an azeotrope with said contaminating organic solvent; and

(b) spray drying said polymer contaminated with said contaminating organic solvent in the presence of said co-solvent wherein said organic solvent and said co-solvent distill azeotropically,

whereby said contaminating organic solvent is removed from said polymer.

5,618,903

ANIONICALLY POLYMERIZED BLOCK COPOLYMERS OF ETHYLENE AND CYCLIC SILOXANE MONOMERS

Ronald J. Hoxmeier; Donn A. DuBois, and Jeffrey G. Southwick, all of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 465,998, Jun. 6, 1995, abandoned. This application Apr. 17, 1996, Ser. No. 634,078

Int. Cl.^{6} C08G *77/442*

U.S. Cl. 528—14 **21 Claims**

1. A living anionically polymerized block copolymer for use in wax release coatings exhibiting a 180° peel force of less than 125 g/inch, said copolymer having an overall weight average molecular weight of 1500 to 100,000 and comprised of at least one anionically polymerized block of polyethylene having a weight average molecular weight of less than 4100 and at least one anionically polymerized block of a cyclic siloxane monomer or mixtures of such monomers, wherein the polyethylene content of the polymer is less than 55% by weight.

5,618,904

POLYURETHANE HOT MELT ADHESIVE

Brian Martin, and Julie A. Muehlfeld, both of Midland, Mich., assignors to Essex Specialty Products Inc., Clifton, N.J.

Filed Dec. 29, 1993, Ser. No. 174,968

Int. Cl.^{6} C09J *175/06;175/08;* **C08G** *18/32*

U.S. Cl. 528—73 **15 Claims**

1. A one-part hot melt adhesive comprising the reaction product of:

(a) a polyester polyol or a mixture of a polyester polyol and a polyether polyol, having equivalent weights in the range of from about 250 to about 3,000;

(b) a polyisocyanate; and

(c) at least about 1 weight percent hydroquinone bis (2-hydroxyethyl) ether based on the weight of the adhesive;

wherein the isocyanate content of the resulting product is at least about 0.5 percent based on the weight of the adhesive and component (a) comprises at least 50 percent by weight of the polyester polyol.

5,618,905

PARTIALLY METHYLATED POLYAMINES AS EPOXY CURING AGENTS

John A. Marsella, Allentown; William E. Starner, Nesquehoning, and Richard S. Myers, Kutztown, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation-in-part of Ser. No. 419,780, Apr. 11, 1995, abandoned. This application Jan. 16, 1996, Ser. No. 584,937

Int. Cl.^{6} C08G *59/44;* **C08L** *63/00*

U.S. Cl. 528—123 **25 Claims**

1. An amine curative composition for epoxy resins consisting essentially of a partially methylated polyalkylene polyamine which is 10 to 50% methylated, the polyalkylene polyamine having at least three amine nitrogens and at least two active amine hydrogens and at least one additional curing agent or hardener selected from the group consisting of diamines, amidoamines and polyamides.

5,618,906

PROCESS FOR THE PRODUCTION OF THERMOPLASTIC POLYCARBONATES

Steffen Kühling, Meerbusch, and Jürgen Stebani, Krefeld, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

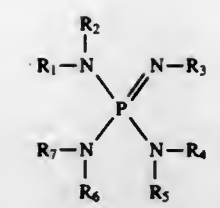
Continuation-in-part of Ser. No. 443,725, May 18, 1995, abandoned. This application Feb. 8, 1996, Ser. No. 598,503

Claims priority, application Germany, Jun. 1, 1994, 44 19 230.4; Japan, May 25, 1995, 7-149742; U.S., May 18, 1995, 443725; Belgium, May 19, 1995, 95107681.9; Germany, May 19, 1995, 95107681; European Pat. Off., May 19, 1995, 95107681; Spain, May 19, 1995, 95107681.9; United Kingdom, May 19, 1995, 95107681; Italy, May 19, 1995, 95107681.9; Netherlands, May 19, 1995, 95107681.9

Int. Cl.^{6} C08G *63/02*

U.S. Cl. 528—196 **6 Claims**

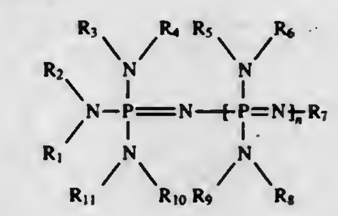
1. Transesterification process for the production of solvent-free polycarbonate starting from diphenols, carbonic acid diaryl esters and optionally branching agents and/or monophenols together with catalysts at temperatures of between 80° C. and 400° C. and pressures of 1000 mbar to 0.01 mbar, characterized in that phosphazenes catalysts of the formula (1)


(1)

in which

R_1, R_2, R_3, R_4, R_5, R_6, R_7=H, alkyl, alkenyl, cycloalkyl, aryl or cycloalkenyl and the residues R_1, R_2, R_3, R_4, R_5, R_6, R_7 are identical or different,

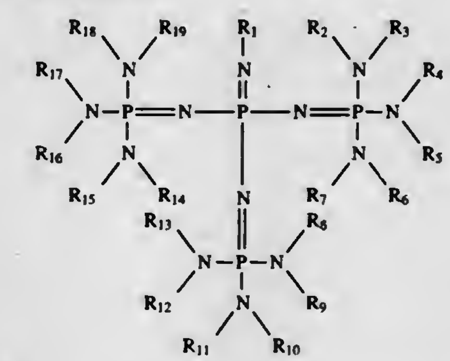
or of the formula (2)


(2)

in which

R_1 to R_{11}=H, alkyl, alkenyl, cycloalkyl, aryl or cycloalkenyl,

n=1 to 10 and the residues R_1 to R_1 are identical or different, or of the formula (3)


(3)

in which

R_1 to R_{19} =H, alkyl, alkenyl, cycloalkyl, aryl or cycloalkenyl, are used as catalysts in quantities of 10^{-2} to 10^{-8} mol relative to 1 mol of diphenol.

5,618,907

THALLIUM CATALYZED MULTIDIMENSIONAL ESTER OLIGOMERS

Hyman R. Lubowitz, Rolling Hills Estates, Calif.; Clyde H. Sheppard, Bellevue, and Ronald R. Stephenson, Kirkland, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Division of Ser. No. 176,518, Apr. 1, 1988, which is a continuation-in-part of Ser. No. 810,817, Dec. 17, 1985, abandoned, which is a continuation-in-part of Ser. No. 726,258, Apr. 23, 1985, abandoned. This application Jun. 5, 1995, Ser. No. 461,335

Int. Cl.^{6} C08G *63/00;63/68*

U.S. Cl. 528—282 **6 Claims**

1. A multidimensional polyester composition as produced prior to isolation of the polyester obtainable by reacting substantially stoichiometric amounts of a compound of the formula Ar—(—Q)$_w$ wherein

Ar=an aromatic radical of valency w;

w=a small integer greater than or equal to 3;

Q=—OH or —COX; and

X=halogen

with a compound of the formula ρ—P wherein

ρ = a hydrocarbon radical; and

P = —OH, if Q = —COX; and —COX, if Q = —OH

in a suitable solvent under an inert atmosphere in the presence of an effective amount of a thallium catalyst,

the polyester being Ar—{COO—ρ}$_n$ or Ar—{OOC—ρ}$_n$.

5,618,908

POLYESTER RESIN WITH IMPROVED COLOR CHARACTERISTICS

Renato Vosa, Casagiove, Italy, assignor to Sinco Engineering S.p.A., Italy

Filed Jul. 22, 1996, Ser. No. 681,323

Claims priority, application Italy, Jul. 27, 1995, MI95A1636

Int. Cl.⁶ C08G *63/46;* **C08K** *5/16*

U.S. Cl. 528—288 **10 Claims**

1. Aromatic polyester resins having Hunter color values comprised between −2.5 and 0,0 for color a and between −6 and 0.5 for color b, obtained by adding in the preparation phase of the resin by esterification or transesterification and successively polycondensation in the melt state, a violet toner having an absorption spectrum comparable to that of 9,10-anthraquinone-2-hydroxy-4-p-toluidine and thermally stable at 300° C. for more than 20 minutes in polystyrene crystal in concentration of 0.05% by weight.

5,618,909

LIGHT STABILIZED POLYAMIDE SUBSTRATE AND PROCESS FOR MAKING

Robert A. Lofquist, Richmond, and Yousef Mobajer, Midlothian, both of Va., assignors to AlliedSignal Inc., Morristown, N.J.

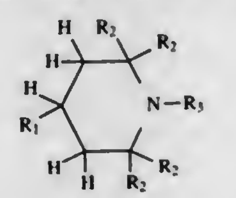
Filed Jul. 27, 1995, Ser. No. 508,194

Int. Cl.⁶ C08G *69/08;73/10*

U.S. Cl. 528—310 **37 Claims**

1. A process for preparing a light stabilized polyamide substrate, comprising the steps of:

a. mixing an effective amount of a hindered amine with a polyamide precursor, said hindered amine comprising a functional group which reacts with an end group of said polyamide precursor and being represented by the formula:



in which

R_1 comprises said functional group which is an amine or an amide-forming group; R_2 is alkyl; and

R_3 is selected from the group consisting of hydrogen; alkyl of 1 to 3 carbons; and —OR_4 in which R_4 is selected from the group consisting of hydrogen, methyl, and alkyl of 1 to 7 carbons; followed by

b. reacting said functional group with the end group of said polyamide precursor at a temperature sufficient for polymerization to occur, to thereby bind the hindered amine to the polyamide.

5,618,910

PROCESS FOR DECOLORIZING N-CONTAINING POLYMERS

Torsten Groth; Winfried Joentgen, both of Köln; Lutz Heuer, Krefeld, and Gerd Schmitz, Leverkusen, all of Germany, assignors to Bayer AG, Leverkusen, Germany

Filed Aug. 4, 1995, Ser. No. 511,416

Claims priority, application Germany, Apr. 11, 1995, 195 13 718.3

Int. Cl.⁶ C08G *69/10*

U.S. Cl. 528—328 **20 Claims**

1. A process for decolorizing N-containing polymers having repeating succinyl units, which comprises carrying out decolorization with activated hydrogen at elevated pressure, wherein the activated hydrogen is

a) nascent hydrogen, as formed in the dissolution in aqueous solutions of base metals whose redox potential is below that of hydrogen;

b) hydridic hydrogen from metal hydrides; or

c) molecular hydrogen in the presence of hydrogenation catalysts.

5,618,911

POLYMER CONTAINING LACTIC ACID AS ITS CONSTITUTING UNIT AND METHOD FOR PRODUCING THE SAME

Kunio Kimura; Takeshi Ito; Tomohiro Aoyama; Keiichi Uno; Kiyoshi Hotta, and Minako Arichi, all of Ohtsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Filed Aug. 3, 1994, Ser. No. 285,552

Claims priority, application Japan, Aug. 19, 1993, 5-205181; May 10, 1994, 6-096550; May 23, 1994, 6-108505; May 24, 1994, 6-109791; May 26, 1994, 6-113013; May 17, 1994, 6-102496; Jun. 1, 1994, 6-120380

Int. Cl.⁶ C08G *63/08;* **C08F** *6/00*

U.S. Cl. 528—361 **19 Claims**

1. A polymer having a blocked terminal group, represented by the following Formula (I):

$$X_1 \!+\! O-\underset{CH_3}{\overset{H}{C}}-\overset{O}{\overset{\|}{C}} \!+\!_m\!+\! O-R-\overset{O}{\overset{\|}{C}} \!+\!_{n_1} OY \qquad (I)$$

wherein R is an alkylene group containing 1 to 20 carbon atoms; X_1 is an acyl group containing 2 to 50 carbon atoms; Y is H, an alkyl group containing 1 to 50 carbon atoms or an alkenyl group containing 1 to 50 carbon atoms; m is a positive integer; and n_1 is 0.

5,618,912

TIRE SEALER AND INFLATOR COMPOSITIONS

Jiafu Fang, Conroe, Tex., assignor to Pennzoil Products Company, Houston, Tex.

Filed May 4, 1995, Ser. No. 434,821

Int. Cl.⁶ C08G *61/00*

U.S. Cl. 528—397 **13 Claims**

1. A non-aqueous tire sealer and inflator composition comprising: (a) a petroleum residual resin sealant, (b) a non-flammable propellant/inflator having an ozone depletion potential of zero.

5,618,913

INSULIN ANALOGUES

Jens J. V. Brange, Klampenborg; Kjeld Norris, Hellerup, and Mogens T. Hansen, Lynge, all of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

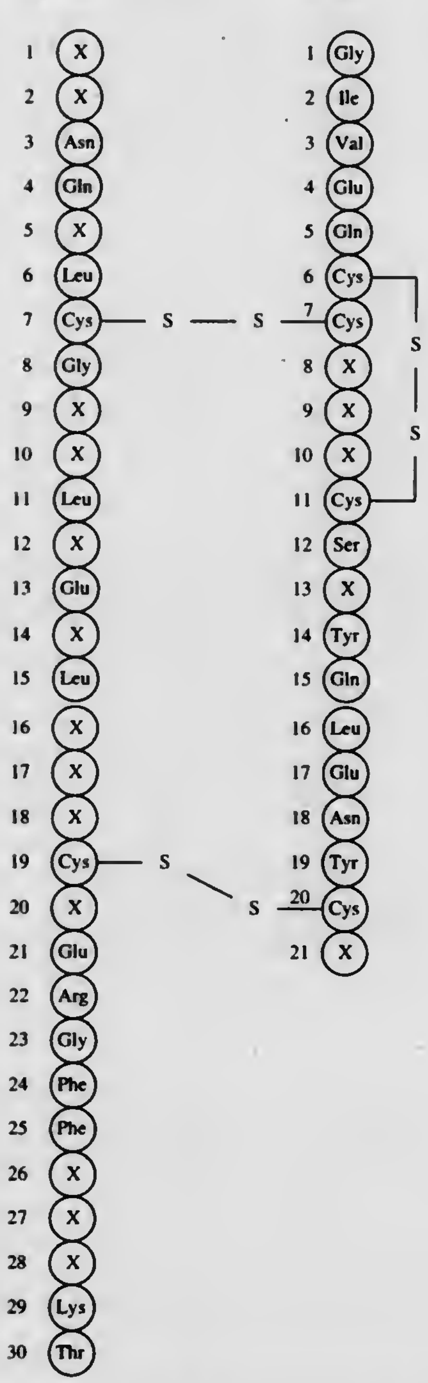
Filed Aug. 29, 1986, Ser. No. 901,821

Claims priority, application Denmark, Aug. 30, 1985, 3956/85; Oct. 14, 1985, 4677/85

Int. Cl.⁶ A61K *38/28;* **C07K** *14/62*

U.S. Cl. 530—303 **14 Claims**

1. Rapid acting human insulin analogues, characterized in that they have the formula I



I

wherein except as indicated hereinafter the X's are the amino acid residues of human insulin and at least one but not more than 4× is different from the amino acid residue of human insulin at the respective position in the insulin molecule the net function of which substitution(s) is to impart to the molecule the same charges or a greater negative charge at neutral pH than that of human insulin, with the proviso that when X in position B(5) is Ala, or when X in position B(9) is Leu; or when X in position B(10) is Asn or Leu; or when X in position B(12) is Asn; or when X in position B(26) is Ala, then at least one of the remaining X's is different from the amino acid residues of human insulin at the respective position in the insulin molecule and with the further proviso that at least one substitution is at an X in the B-chain but X in position B(10) is not Asp.

5,618,914

CONFORMATIONALLY RESTRICTED MIMETICS OF BETA TURNS AND BETA BULGES AND PEPTIDES CONTAINING THE SAME

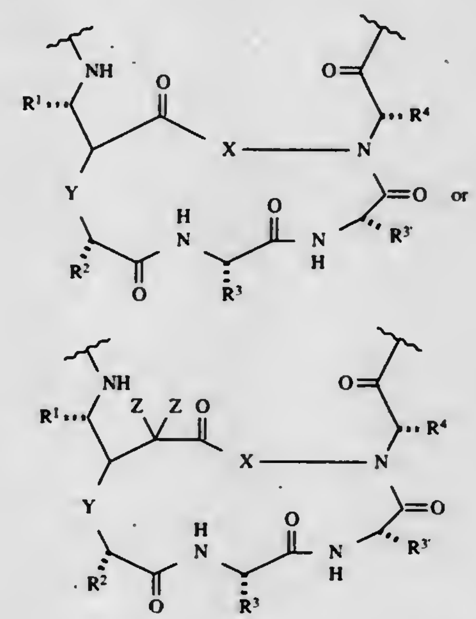
Michael Kahn, Chicago, Ill., assignor to Molecumetics, Ltd., Bellevue, Wash.

Division of Ser. No. 208,801, Mar. 9, 1994, Pat. No. 5,440,013, which is a continuation of Ser. No. 983,607, Nov. 30, 1992, which is a continuation of Ser. No. 651,800, Feb. 7, 1991. This application Jun. 6, 1995, Ser. No. 484,060

Int. Cl.⁶ A61K *38/12;* **C07K** *1/02*

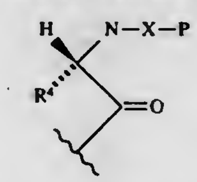
U.S. Cl. 530—317 **8 Claims**

1. A method for making a beta-hairpin mimetic having the structure:

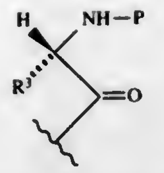


wherein Y is selected from CH_2— and —NH—, and R^1, R^2, R^3, $R^{3'}$, R^4, X and Z are identified below, comprising:

(a) coupling a first modular component piece to a second modular component piece to yield a pre-nascent beta-turn mimetic, wherein the first modular component piece has the structure;

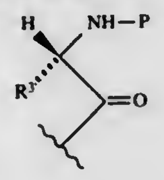


where R^4 is a naturally-occurring amino acid side chain substituent or analog thereof, P is a protective group suitable for use in peptide synthesis, and X is a linker moiety terminating in an amino or hydrazino group; and wherein the second modular component piece has the structure:



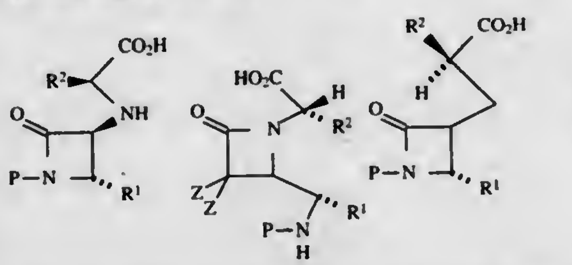
where R^3 is a naturally-occurring amino acid side chain substituent or analog thereof, and P is a protective group suitable for use in peptide synthesis;

(b) coupling an additional second modular component piece to the pre-nascent beta-hairpin mimetic to yield a nascent beta-hairpin mimetic, wherein the additional second modular component piece has the structure:



wherein $R^{3'}$ is a naturally occurring amino acid side chain substituent or analog thereof, and P is a protective group suitable for use in peptide synthesis.

(c) coupling a third modular component piece to the nascent beta-hairpin mimetic to yield a pre-cyclized beta-hairpin mimetic, wherein the third modular component piece is selected from the structures:



R^1 and R^2 are naturally occurring amino acid side chain substituents or analogs thereof, Z is hydrogen or —CH_3 and P is a protective group suitable for use in peptide synthesis; and

(d) cyclizing the pre-cyclized beta-hairpin mimetic to yield the beta-hairpin mimetic.

5,618,915

APROTININ ANALOGS

Soren E. Bjørn, Lyngby; Kjeld Norris, Hellerup; Viggo Diness, Charlottenlund; Leif Nørskov-Lauritsen, Køge; Niels D. Christensen, København; Claus Bregengaard; Fanny Norris, both of Hellerup, and Lars C. Petersen, Hørsholm, all of Denmark, assignors to Novo Nordisk, Bagsvaerd, Denmark

Division of Ser. No. 84,718, Jun. 23, 1993, which is a continuation-in-part of Ser. No. 24,925, Feb. 26, 1993, abandoned, which is a continuation of Ser. No. 466,408, Jun. 21, 1990, abandoned, said Ser. No. 84,718is a continuation-in-part of Ser. No. 598,737, Nov. 19, 1990, Pat. No. 5,373,090, and a continuation-in-part of Ser. No. 827,687, Jan. 29, 1992, abandoned. This application May 18, 1995, Ser. No. 443,976

Claims priority, application Denmark, Aug. 28, 1987, 4501/87; Apr. 26, 1988, 2254/88; Oct. 1, 1990, 2361/90; Jun. 21, 1991, 1118/91

Int. Cl.[6] A61K *38/00;38/28;* C07K *5/00;1/00*

U.S. Cl. 530—324 18 Claims

1. An aprotinin analog having an inhibitory effect against serine protease, and reduced nephrotoxicity, reduced positive net charge, and reduced stability compared to native aprotinin having the following formula and set forth in the Sequence Listing as SEQ ID NO: 16:

X_1 Asp Phe Cys Leu Glu Pro Pro X_2 Thr Gly Pro Cys Lys Ala Arg Ile Ile X_3 Tyr Phe Tyr X_4 Ala X_5 Ala Gly Leu Cys X_6 Thr Phe Val Tyr Gly Gly Cys Arg X_7 X_8 X_9 Asn X_{10} Phe X_{11} Ser Ala Glu Asp Cys Met X_{12} Thr Cys Gly Gly Ala

wherein

X_1 is a dipeptide selected from the group consisting of Arg-Pro, Glu-Pro, Asp-Pro, Ala-Pro, Ile-Pro, Thr-Pro, His-Pro, Leu-Pro, Gly-Pro and Ser-Pro, Pro or a hydrogen,

X_2 is an amino acid residue selected from the group consisting of Tyr, Glu, Asp, Ser, Thr, Ala and Val,

X_3 is an amino acid residue selected from the group consisting of Arg, Glu, Asp, Leu, Ser, Ala, Gln and Thr,

X_4 is an amino acid residue selected from the group consisting of Asn, Glu and Asp,

X_5 is an amino acid residue selected from the group consisting of Lys, Glu, Asp, Thr, Val, Ala, Ser, Phe, Gln and Gly,

X_6 is an amino acid residue selected from the group consisting of Gln, Glu, Asp, Val and Ala,

X_7 is an amino acid residue selected from the group consisting of Ala, Asp, Glu and Gly,

X_8 is an amino acid residue selected from the group consisting of Lys, Glu, Asp, Asn, Ser, Thr and Ala,

X_9 is an amino acid residue selected from the group consisting of Arg, Glu, Asp, Ser, Asn, Leu, Gly, Gln, Met and Thr,

X_{10} is an amino acid residue selected from the group consisting of Asn, Glu and Asp,

X_{11} is an amino acid residue selected from the group consisting of Lys, Glu, Asp, Leu, Tyr, Ala, Val, Thr, Ser, Pro, His and Ile, and

X_{12} is an amino acid residue selected from the group consisting of Arg, Glu, ASp, Gln, Ala, Asn, His, Gly, Ser and Thr,

with the proviso that at least one of the amino acid residues X_1–X_{12} is different from the corresponding amino acid residue of native aprotinin.

5,618,916

PURIFIED PROTEIN WHICH FUNCTIONS AS A MYCOBACTERIAL RECEPTOR FOR FIBRONECTIN

Timothy J. Ratliff, and Eric J. Brown, both of St. Louis, Mo., assignors to The Jewish Hospital of St. Louis, St. Louis, Mo.

Continuation of Ser. No. 1,028, Jan. 6, 1993, abandoned. This application Jun. 24, 1994, Ser. No. 265,450

Int. Cl.[6] C07K *1/00;* A61K *39/395*

U.S. Cl. 530—350 1 Claim

1. A purified protein which functions as a mycobacterial receptor for fibronectin, said protein:

(a) binding directly to fibronectin, said binding being inactivated by trypsin;

(b) being essential for attachment of bacillus Calmette-Guerin to fibronectin;

(c) binding directly to fibronectin-coated surfaces;

(d) having a primary protein band at 55 kDa as determined by sodium dodecyl sulfate-polyacrylamide gel electrophoresis analysis on pooled fractions containing said purified protein;

(e) inhibiting fibronectin attachment to bacillus Calmette-Guerin in a dose-dependent manner;

(f) having a monoclonal antibody thereto which blocks the attachment of bacillus Calmette-Guerin to fibronectin-coated surfaces; and

(g) having a polyclonal antibody that recognizes only the 55 kDa band in unfractionated bacterial extracts.

5,618,917

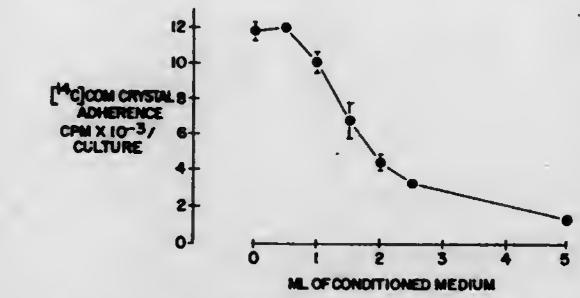
METHODS AND COMPOSITIONS FOR DETECTING AND TREATING KIDNEY DISEASES ASSOCIATED WITH ADHESION OF CRYSTALS TO KIDNEY CELLS

F. Gary Toback, Chicago, and John C. Lieske, Evanston, both of Ill., assignors to ARCH Development Corporation, Chicago, Ill.

Filed Feb. 15, 1995, Ser. No. 389,005

Int. Cl.[6] C07K *14/435;* A01K *38/17*

U.S. Cl. 530—350 3 Claims



1. A purified inhibitor of adhesion of calcium oxalate monohydrate crystals (COM) to kidney epithelial cells, said crystal adhesion inhibitor (CAI) having the following characteristics:

(a) an estimated molecular weight of 39,000 daltons based on SDS-polyacrylamide gel electrophoresis;

(b) an anionic glycoprotein containing sialic acid;

(c) having an activity sensitive to neuraminidase;

(d) exhibiting uronic acid in a carbazole reaction;

(e) testing positive in a DIG glycan assay;

(f) having an activity resistant to pH 2; and

(g) having an activity resistant to freezing and thawing.

5,618,918

HUMAN BRAIN SODIUM DEPENDENT INORGANIC PHOSPHATE COTRANSPORTER

Binhui Ni, and Steven M. Paul, both of Carmel, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 430,033, Apr. 27, 1995. This application May 14, 1996, Ser. No. 647,481

Int. Cl.[6] C07K *14/435;14/705*

U.S. Cl. 530—350 1 Claim

1. An isolated human brain Na^+-dependent inorganic phosphate cotransporter which comprises the amino acid sequence

Met	Glu	Phe	Arg	Gln	Glu	Glu	Phe	Arg	Lys	Leu	Ala	Gly	Arg
1				5					10				
Ala	Leu	Gly	Lys	Leu	His	Arg	Leu	Leu	Glu	Lys	Arg	Gln	Glu
15					20					25			
Gly	Ala	Glu	Thr	Leu	Glu	Leu	Ser	Ala	Asp	Gly	Arg	Pro	Val
	30					35					40		
Thr	Thr	Gln	Thr	Arg	Asp	Pro	Pro	Val	Val	Asp	Cys	Thr	Cys
		45					50					55	
Phe	Gly	Leu	Pro	Arg	Arg	Tyr	Ile	Ile	Ala	Ile	Met	Ser	Gly
			60					65					70
Leu	Gly	Phe	Cys	Ile	Ser	Phe	Gly	Ile	Arg	Cys	Asn	Leu	Gly
				75					80				
Val	Ala	Ile	Val	Ser	Met	Val	Asn	Asn	Ser	Thr	Thr	His	Arg
85					90					95			
Gly	Gly	His	Val	Val	Val	Gln	Lys	Ala	Gln	Phe	Ser	Trp	Asp
	100					105					110		
Pro	Glu	Thr	Val	Gly	Leu	Ile	His	Gly	Ser	Phe	Phe	Trp	Gly
		115					120					125	
Tyr	Ile	Val	Thr	Gln	Ile	Pro	Gly	Gly	Phe	Ile	Cys	Gln	Lys
			130					135					140

-continued

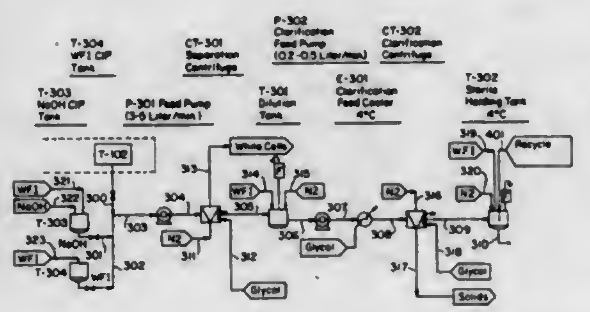
Phe	Ala	Ala	Asn	Arg	Val	Phe	Gly	Phe	Ala	Ile	Val	Ala	Thr
				145					150				
Ser	Thr	Leu	Asn	Met	Leu	Ile	Pro	Ser	Ala	Ala	Arg	Val	His
155					160					165			
Tyr	Gly	Cys	Val	Ile	Phe	Val	Arg	Ile	Leu	Gln	Gly	Leu	Val
	170					175					180		
Glu	Gly	Val	Thr	Tyr	Pro	Ala	Cys	His	Gly	Ile	Trp	Ser	Lys
		185					190					195	
Trp	Ala	Pro	Pro	Leu	Glu	Arg	Ser	Arg	Leu	Ala	Thr	Thr	Ala
			200					205					210
Phe	Cys	Gly	Ser	Tyr	Ala	Gly	Ala	Val	Val	Ala	Met	Pro	Leu
				215					220				
Ala	Gly	Val	Leu	Val	Gln	Tyr	Ser	Gly	Trp	Ser	Ser	Val	Phe
225					230					235			
Tyr	Val	Tyr	Gly	Ser	Phe	Gly	Ile	Phe	Trp	Tyr	Leu	Phe	Trp
	240					245					250		
Leu	Leu	Val	Ser	Tyr	Glu	Ser	Pro	Ala	Leu	His	Pro	Ser	Ile
		255					260					265	
Ser	Glu	Glu	Glu	Arg	Lys	Tyr	Ile	Glu	Asp	Ala	Ile	Gly	Glu
			270					275					280
Ser	Ala	Lys	Leu	Met	Asn	Pro	Leu	Thr	Lys	Phe	Ser	Thr	Pro
				285					290				
Trp	Arg	Arg	Phe	Phe	Thr	Ser	Met	Pro	Val	Tyr	Ala	Ile	Ile
295					300					305			
Val	Ala	Asn	Phe	Cys	Arg	Ser	Trp	Thr	Phe	Tyr	Leu	Leu	Leu
	310					315					320		
Ile	Ser	Gln	Pro	Asp	Tyr	Phe	Glu	Glu	Val	Phe	Gly	Phe	Glu
		325					330					335	
Ile	Ser	Lys	Val	Gly	Leu	Val	Ser	Ala	Leu	Pro	His	Leu	Val
			340					345					350
Met	Thr	Ile	Ile	Val	Pro	Ile	Gly	Gly	Gln	Ile	Ala	Asp	Phe
				355					360				
Leu	Arg	Ser	Arg	Arg	Ile	Met	Ser	Thr	Thr	Asn	Val	Arg	Lys
365					370					375			
Leu	Met	Asn	Cys	Gly	Gly	Phe	Gly	Met	Glu	Ala	Thr	Leu	Leu
	380					385					390		
Leu	Val	Val	Gly	Tyr	Ser	His	Ser	Lys	Gly	Val	Ala	Ile	Ser
		395					400					405	
Phe	Leu	Val	Leu	Ala	Val	Gly	Phe	Ser	Gly	Phe	Ala	Ile	Ser
			410					415					420
Gly	Phe	Asn	Val	Asn	His	Leu	Asp	Ile	Ala	Pro	Arg	Tyr	Ala
				425					430				
Ser	Ile	Leu	Met	Gly	Ile	Ser	Asn	Gly	Val	Gly	Thr	Leu	Ser
435					440					445			
Gly	Met	Val	Cys	Pro	Ile	Ile	Val	Gly	Ala	Met	Thr	Lys	His
	450					455					460		
Lys	Thr	Arg	Glu	Glu	Trp	Gln	Tyr	Val	Phe	Leu	Ile	Ala	Ser
		465					470					475	
Leu	Val	His	Tyr	Gly	Gly	Val	Ile	Phe	Tyr	Gly	Val	Phe	Ala
			480					485					490
Ser	Gly	Glu	Lys	Gln	Pro	Trp	Ala	Glu	Pro	Glu	Glu	Met	Ser
				495					500				
Glu	Glu	Lys	Cys	Gly	Phe	Val	Gly	His	Asp	Gln	Leu	Ala	Gly
505					510					515			

-continued

Ser	Asp	Asp	Ser	Glu	Met	Glu	Asp	Glu	Ala	Glu	Pro	Pro	Gly
	520					525					530		
Ala	Pro	Pro	Ala	Pro	Pro	Pro	Ser	Tyr	Gly	Ala	Thr	His	Ser
		535					540					545	
Thr	Phe	Gln	Pro	Pro	Arg	Pro	Pro	Pro	Pro	Val	Arg	Asp	Tyr
			550					555					560

which is SEQ ID NO:2, or a fragment of at least 6 continuous amino acids thereof.

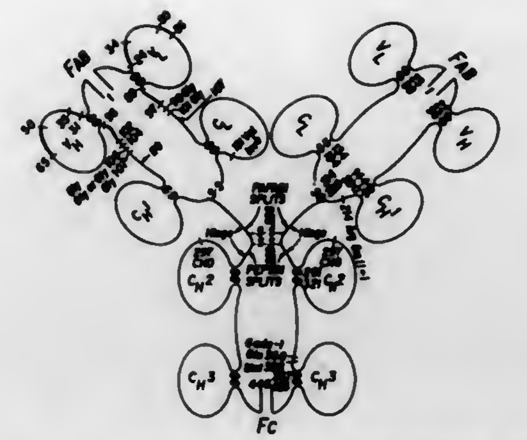
5,618,919
ULTRA PURE HEMOGLOBIN SOLUTIONS AND BLOOD-SUBSTITUTES
Carl W. Rausch, Providence, R.I., and Mario Feola, Lubbock, Tex., assignors to Biopure Corportion, Cambridge, Mass.
Continuation of Ser. No. 820,153, Jan. 13, 1992, Pat. No. 5,296,465, which is a continuation of Ser. No. 119,121, Nov. 10, 1987, Pat. No. 5,084,558, which is a continuation-in-part of Ser. No. 107,421, Oct. 13, 1987, abandoned, which is a continuation-in-part of Ser. No. 928,345, Nov. 10, 1986, abandoned. This application Mar. 11, 1994, Ser. No. 209,949
Int. Cl.[6] C07K *1/14;14/805*
U.S. Cl. 530—385 **1 Claim**



1. A method for forming a hemoglobin solution from whole blood, wherein the hemoglobin solution is suitable for use in producing a blood-substitute, comprising the step of centrifuging the whole blood in a bowl-type semi-continuous centrifuge, wherein red blood cells are separated from white blood cells and wherein the red blood cells, during centrifuging, impact an inner surface of a collection chamber of said centrifuge, thereby disrupting the red blood cells to form said hemoglobin solution.

5,618,920
MODULAR ASSEMBLY OF ANTIBODY GENES, ANTIBODIES PREPARED THEREBY AND USE
Randy R. Robinson, Los Angeles; Alvin Y. Liu, Oceanside; Arnold H. Horwitz; Marc Better, both of Los Angeles; Randolph Wall, Sherman Oaks; Shau-Ping Lei, Los Angeles, and Gary L. Wilcox, Malibu, all of Calif., assignors to Xoma Corporation, Berkeley, Calif.
Continuation of Ser. No. 870,404, Apr. 17, 1992, abandoned, which is a division of Ser. No. 501,092, Mar. 29, 1990, abandoned, which is a continuation-in-part of Ser. No. 77,528, Jul. 24, 1987, abandoned, which is a continuation-in-part of Ser. No. 793,980, Nov. 1, 1985, abandoned, said Ser. No. 501,092is a continuation-in-part of Ser. No. 142,039, Jan. 11, 1988, abandoned. This application Apr. 29, 1994, Ser. No. 235,225
Int. Cl.[6] A61K *39/395;* **C12N** *15/13;1/21*
U.S. Cl. 530—387.1 **45 Claims**

1. A secretable immunoglobulin heavy chain fragment comprising an entire variable region directly linked to a prokaryotic secretion signal peptide, wherein said secretable heavy chain fragment is capable of being secreted from a prokaryotic organism and



of providing an immunoglobulin heavy chain fragment that is capable of associating with an immunoglobulin light chain, or with an immunoglobulin light chain fragment that comprises an entire variable region, and, when so associated, of binding antigen.

5,618,921
ANTIBODIES FOR DETECTION OF HUMAN MDM2 PROTEIN
Marilee Burrell, Cambridge; David E. Hill, Arlington, both of Mass.; Kenneth W. Kinzler, and Bert Vogelstein, both of Baltimore, Md., assignors to The Johns Hopkins University, Baltimore, Md.
Division of Ser. No. 44,619, Apr. 7, 1993, Pat. No. 5,420,263, which is a continuation-in-part of Ser. No. 903,103, Jun. 23, 1992, Pat. No. 5,411,860, which is a continuation-in-part of Ser. No. 867,840, Apr. 7, 1992, abandoned. This application Feb. 17, 1995, Ser. No. 390,479
Int. Cl.[6] C07K *16/32;14/47;* **G01N** *33/53;* **C12N** *5/12*
U.S. Cl. 530—387.7 **15 Claims**

1. An isolated antibody which specifically binds to human MDM2 protein as shown in SEQ ID NO:3.

5,618,922
NM03 ANTIBODY MATERIALS AND METHODS
Tsuneya Ohno; Masaki Terada, both of Boston, Mass., and Yukio Yoneda, Ohtsu, Japan, assignors to Nissin Shokuhin Kabushiki Kaisha, Osaka, Japan
Filed Jul. 25, 1994, Ser. No. 279,906
Int. Cl.[6] C07K *16/08;16/10;* **C12P** *21/08*
U.S. Cl. 530—388.35 **5 Claims**

1. A monoclonal antibody characterized by the ability to specifically bind to a sequence of amino acids of HIV-1 gp120 or gp160 protein consisting of the sequence set out in SEQ ID NO:1 and the ability to neutralize, in vitro, the infection of H9 cells by live HIV-1 strain MN in p24 assays.

5,618,923

Patent Not Issued For This Number

5,618,924
BMP-2 PRODUCTS
Elizabeth A. Wang, Carlisle; John M. Wozney, Hudson, and Vicki Rosen, Brookline, all of Mass., assignors to Genetics Institute, Inc., Cambridge, Mass.
Division of Ser. No. 179,100, Jun. 30, 1987, Pat. No. 5,013,649, which is a continuation-in-part of Ser. No. 28,285, Mar. 20, 1987, abandoned, which is a continuation-in-part of Ser. No. 943,332, Dec. 17, 1986, abandoned, which is a continuation-in-part of Ser. No. 880,776, Jul. 1, 1986, abandoned. This application Mar. 18, 1991, Ser. No. 655,579
Int. Cl.[6] C07K *14/435;14/51;* **C12N** *15/00*
U.S. Cl. 530—399 **10 Claims**

1. A purified protein produced by the steps of
(a) culturing in a suitable culture medium a cell transformed with an expression vector comprising a DNA as shown in FIGS. 2A–C or a degenerative sequence thereof and which encodes a protein containing the amino acid sequence

His Pro Leu Tyr Val Asp Phe Ser Asp Val Gly Trp Asn Asp

Trp Ile Val Ala Pro Pro Gly Tyr His Ala Phe Tyr Cys His Gly

Glu Cys Pro Phe Pro Leu Ala Asp His Leu Asn Ser Thr Asn His

Ala Ile Val Gln Thr Leu Val Asn Ser Val Asn Ser Lys Ile Pro

Lys Ala Cys Cys Val Pro Thr Glu Leu Ser Ala Ile Ser MET Leu

Tyr Leu Asp Glu Asn Glu Lys Val Val Leu Lys Asn Tyr Gln Asp

MET Val Val Glu Gly Cys Gly Cys Arg;

and
(b) recovering said protein from said culture medium.

5,618,925
EXTRACTS OF SHARK CARTILAGE HAVING AN ANTI-ANGIOGENIC ACTIVITY AND AN EFFECT ON TUMOR REGRESSION; PROCESS OF MAKING THEREOF
Eric Dupont, St. Nicolas; Paul Brazeau, Montreal, and Christi Juneau, Ste. Foy, all of Canada, assignors to Les Laboratories Aeterna Inc., Quebec, Canada
Continuation-in-part of Ser. No. 234,019, Apr. 28, 1994. This application Feb. 3, 1995, Ser. No. 384,555
Int. Cl.[6] C07K *1/00;* **A23J** *1/00*
U.S. Cl. 530—400 **28 Claims**

1. A process for obtaining a solid extract of shark cartilage having anti-angiogenic, direct anti-tumoral and anti-tumor proliferating activities, which comprises the following steps:
a) homogenizing pieces of solid shark cartilage in a non-denaturing aqueous solution until said pieces of solid shark cartilage are reduced to solid particles whose size is lower than or equal to about 500 μm, resulting in a homogenous mixture of said solid particles and a crude liquid extract having said activities;
b) centrifuging said homogenous mixture to separate solid particles from the crude liquid extract; and
c) recovering and then lyophilizing said particles, whereby said solid extract is obtained.

5,618,926
IMMUNOASSAY REAGENTS
Salvatore J. Salamone, Rutherford, and Stephen Vitone, Upper Montclair, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.
Continuation of Ser. No. 2,519, Jan. 11, 1993, abandoned, which is a continuation of Ser. No. 321,946, Mar. 10, 1989, abandoned. This application May 26, 1994, Ser. No. 249,676
Int. Cl.[6] C07K *17/06;* **G01N** *33/547*
U.S. Cl. 530—403 **13 Claims**

1. A composition of the formula

$$P—[A—D]_n$$

where
D is a drug derivative antigenically selective for the determination of the presence of target drug or target drug metabolite,
A is an activating linker-spacer group having an N-hydroxysuccinimide or isothiocyanate derived linking moiety,
P is a poly(amino acid) covalently bonded to A, and
n is less than 1.

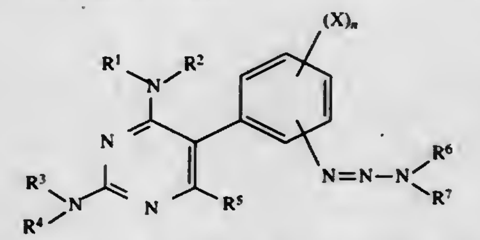
5,618,927
PROCESS FOR THE REACTIVATION OF DENATURED PROTEIN
Dorothea Ambrosius, Iffeldorf, and Rainer Rudolph, Weilheim, both of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Germany
PCT No. PCT/EP91/02190, § 371 Date Jul. 2, 1992, § 102(e) Date Jul. 2, 1992, PCT Pub. No. WO92/09622, PCT Pub. Date Jun. 11, 1992
PCT Filed Nov. 21, 1991, Ser. No. 867,679
Claims priority, application Germany, Nov. 22, 1990, 40 37 196.4
Int. Cl.[6] C07K *1/02*
U.S. Cl. 530—412 **12 Claims**

1. Process for reactivating a denatured protein comprising incubating said denatured protein with a solution of Tris base or a salt of Tris at a concentration of at least 400 mmol/l and at a pH at which said denatured protein can take up its native conformation, for a time sufficient to reactivate said denatured protein.

5,618,928
TRIAZENYL-SUBSTITUTED PHENYL PYRIMIDINES AND THEIR USE IN THERAPY
Malcolm F. G. Stevens, Moseley; Daniel L. Rathbone, Earlsdon, and Dennis M. O'Shea, Welwyn Garden City, all of England, assignors to British Technology Group Limited, London, England
PCT No. PCT/GB93/01381, § 371 Date Jan. 13, 1995, § 102(e) Date Jan. 13, 1995, PCT Pub. No. WO94/02469, PCT Pub. Date Feb. 3, 1994
PCT Filed Jul. 1, 1993, Ser. No. 374,508
Claims priority, application United Kingdom, Jul. 15, 1992, 9214994
Int. Cl.[6] C07C *245/24;* **A01N** *33/26*
U.S. Cl. 534—551 **14 Claims**

1. A compound of formula I:

(I)



wherein R^1, R^2, R^3 and R^4 are each independently hydrogen or alkyl, R^5 is alkyl, X represents halogen or alkoxy, and n is an integer from 1 to 3, and R^6 and R^7 each represent alkyl, cycloalkyl, or aralkyl, wherein at least one of R^6 and R^7 is substituted by a hydroxyl, alkoxy or acyloxy group, or R^6 and R^7 together with the nitrogen to which they are attached from a heterocyclic ring selected from the group consisting of:

a heterocyclic ring including at least one oxygen or sulfur atom, and

a heterocyclic ring not including an oxygen or sulfur atom but which optionally carries a hydroxyl group,

or a salt or N-oxide thereof.

14. A method for treatment of a parasitic infection in a patient in need of such treatment, said method comprising administering an effective amount of a compound as defined in claim 1 or a pharmaceutically acceptable salt or N-oxide thereof to said patient.

5,618,929

SUBSTITUTED PHTHALOCYANINES

Kenneth J. Harrison, Colwall; Michael J. Cook, Norwich, both of England; Andrew J. Thomson, Norwich, Norway; Neil B. McKeown, Perthshire, Scotland; Mervyn F. Daniel, Chester, and Adrian J. Dunn, Amersham, both of England, assignors to The Secretary of State for Defence in Her Brittanic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Continuation of Ser. No. 380,437, Jul. 17, 1989, Pat. No. 5,506,708. This application Jun. 7, 1995, Ser. No. 474,123

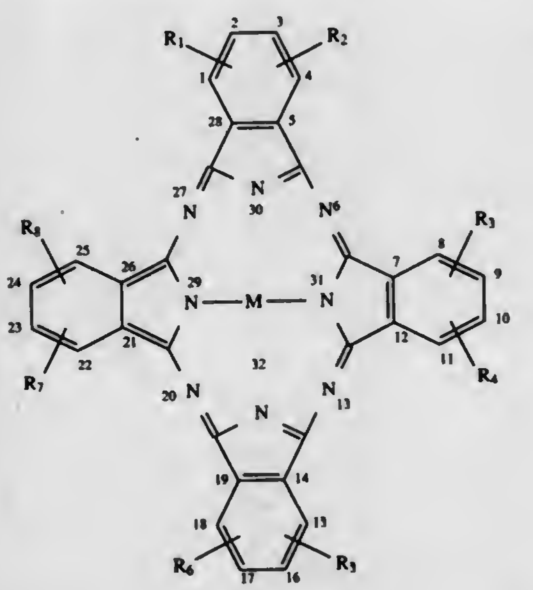
Claims priority, application United Kingdom, Feb. 13, 1987, 8703396; Dec. 30, 1987, 8730290; WIPO, Feb. 12, 1988, PCT/GB88/00089

Int. Cl.[6] C09B *47/04;* **C09K** *19/34;* **G03C** *1/00*

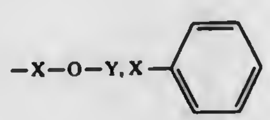
U.S. Cl. 540—139 **24 Claims**

1. A phthalocyanine of formula 1:

(I)



wherein M is a metal atom or a metal halide or oxide, or M is 2H, one H being bonded to each of the bonding N atoms (29 and 31 positions) shown, R_1 to R_8 are the same or different and are independently selected from C_1 to C_{20} alkyl, C_1–C_{20} alkenyl, —X—COO—X^1,



and —X—COZ where X is independently selected from a chemical bond, $(—CH_2)_n$ where n=0–20 or $(CH_2)_a$—CH=CH $(—CH_2)_b$ where a and b are independently selected from 0–20 and a+b is in the range 0–20, X^1 is independently selected from C_1–C_{20} alkyl or C_2–C_{20} alkenyl, Y is independently selected from C_1–C_{20} alkyl, C_2–C_{20} alkenyl or H and Z is selected from OH or NR^1NR^{11} where R^1 and R^{11} are independently selected from H, C_1–C_{20} alkyl and C_2–C_{20} alkenyl, provided that where Y is alkyl and X is a chemical bond at least one of the groups R_1–R_8 is selected from —X—COO—X^1 and —X—COZ, and further provided that if R_1–R_8 all contain more than 6 carbon atoms and are all selected from alkyl or —X—O—Y where X is $—(CH_2)—_n$ and Y is alkyl then R_1–R_8 are not all in the 2, 3, 9, 10, 16, 17, 23 and 24 positions indicated in formula I.

5,618,930

PHTHALOCYANINE COMPOUND AND METHOD FOR MAKING, NITRO-SUBSTITUTED PHTHALOCYANINE COMPOUND, AMINO-SUBSTITUTED PHTHALOCYANINE COMPOUND, PHTHALOCYANINE-CONTAINING POLYMER AND METHOD FOR MAKING, CATALYST, AND OPTICAL RECORDING MEDIUM

Mutsumi Kimura, Ueda; Hirofusa Shirai, 2496, Nagase, Maruko-cho, Chiisagata-gun, Nagano; Toshiki Koyama; Kenji Hanabusa, both of Ueda, and Yuichi Kubota, Chiba, all of Japan, assignors to Hirofusa Shirai, Nagano, and TDK Corporation, Tokyo, both of Japan

Division of Ser. No. 305,881, Sep. 14, 1994, Pat. No. 5,516,900. This application Mar. 1, 1996, Ser. No. 609,548

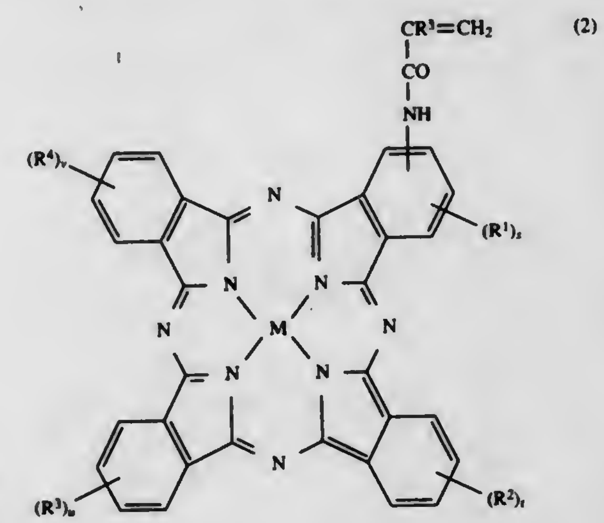
Claims priority, application Japan, Sep. 14, 1993, 5-252493

Int. Cl.[6] C09B *47/04*

U.S. Cl. 540—143 **7 Claims**

1. A phthalocyanine compound of the following formula:

(2)



wherein R^1, R^2, R^3, and R^4 are independently selected from the group consisting of an alkyl, alkoxy, alkylthio, and arylthio group,

letter s is equal to 0 or an integer of 1 to 3, and the R^1 groups may be identical or different when s is at least 2,

letters t, u and v each are equal to 0 or an integer of 1 to 4, and the R^2, R^3, and R^4 groups may be identical or different when t, u and v are at least 2, respectively,

with the proviso that all of s, t, u, and v are not equal to 0 at the same time, the sum of s+t+u+v being an integer of at least 1,

R^5 is a hydrogen atom or alkyl group, and

M is a metal atom.

5,618,931

ACETYLENES DISUBSTITUTED WITH A 5 SUBSTITUTED DIHYDRONAPHTHYL GROUP AND WITH AN ARYL OR HETEROARYL GROUP HAVING RETINOID-LIKE BIOLOGICAL ACTIVITY

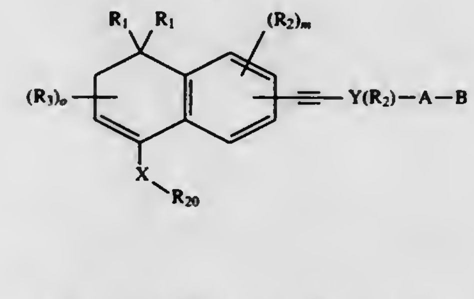
Richard L. Beard, Newport Beach; Min Teng, Aliso Viejo; Alan T. Johnson, Rancho Santa Margarita; Vidyasagar Vuligonda, Irvine, and Roshantha A. Chandraratna, Mission Viejo, all of Calif., assignors to Allergan

Filed Dec. 29, 1994, Ser. No. 366,183

Int. Cl.[6] C07D *237/00;277/04;333/02;* **C07C** *331/00*

U.S. Cl. 544—224 **43 Claims**

1. A compound of the formula



wherein R_1 is hydrogen or alkyl of 1 to 10 carbons;

R_2 and R_3 are hydrogen, or alkyl of 1 to 6 carbons and the substituted ethynyl group occupies either the 2 or the 3 position of the dihydronaphthalene nucleus;

m is an integer having the value of 0–3;

o is an integer having the value 0–3;

Y is a phenyl group, or heteroaryl selected from a group consisting of pyridyl, thienyl, furyl, pyridazinyl, pyrimidinyl, pyrazinyl, thiazolyl, oxazolyl, and imidazolyl, said groups being optionally substituted with one or two R_2 groups;

A is $(CH_2)_n$ where n is 0–5, lower branched chain alkyl having 3–6 carbons, cycloalkyl having 3–6 carbons, alkenyl having 2–6 carbons and 1 or 2 double bonds, alkynyl having 2–6 carbons and 1 or 2 triple bonds;

B is hydrogen, COOH or a pharmaceutically acceptable salt thereof, $COOR_8$, $CONR_9R_{10}$, $—CH_2OH$, CH_2OR_{11}, CH_2OCOR_{11}, CHO, $CH(OR_{12})_2$, $CHOR_{13}O$, $—COR_7$, $CR_7(OR_{12})_2$, $CR_7OR_{13}O$, or tri-lower alkylsilyl, where R_7 is an alkyl, cycloalkyl or alkenyl group containing 1 to 5 carbons, R_8 is an alkyl group of 1 to 10 carbons or trimethylsilylalkyl where the alkyl group has 1 to 10 carbons, or a cycloalkyl group of 5 to 10 carbons, or R_8 is phenyl or lower alkylphenyl, R_9 and R_{10} independently are hydrogen, an alkyl group of 1 to 10 carbons, or a cycloalkyl group of 5–10 carbons, or phenyl or lower alkylphenyl, R_{11} is lower alkyl, phenyl or lower alkylphenyl, R_{12} is lower alkyl, and R_{13} is divalent alkyl radical of 2–5 carbons where the formulas $—CHOR_{13}O—$ and $—CR_7OR_{13}O—$ represent cyclic acetals and ketals, respectively;

X is O, S, SO or SO_2 and

R_{20} is $Si(R_2)_3$, R_{14}, COR_{14}, SO_2R_{21}, where R_{14} is hydrogen, alkyl of 1 to 10 carbons, alkenyl of 2 to 10 carbons and having 1 to 3 double bond, alkynyl having 2 to 10 carbons and 1 to 3 triple bonds, carbocyclic aryl selected from the group consisting of phenyl, C_1–C_{10}-alkylphenyl, naphthyl, C_1–C_{10}-alkylnaphthyl, phenyl-C_1–C_{10}alkyl, napthyl-C_1–C_{10}alkyl, or R_{20} is hydroxyalkyl, aminoalkyl or thioalkyl having 1 to 10 carbons; and R_{21} is alkyl of 1 to 10 carbons, fluoroalkyl of 1 to 10 carbons, or carbocyclic aryl selected from the group consisting of phenyl, C_1–C_{10}-alkylphenyl and phenyl-C_1–C_{10}alkyl.

5,618,932

PHOTOACTIVE COMPOUNDS AND COMPOSITIONS

Anthony Zampini, Westborough, and Ashish Pandya, Natick, both of Mass., assignors to Shipley Company, L.L.C., Marlborough, Mass.

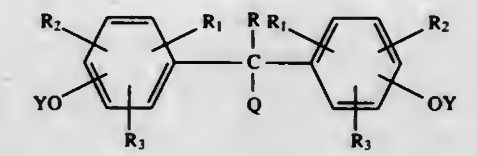
Filed May 24, 1995, Ser. No. 449,334

Int. Cl.[6] C07C *245/12;* **C07D** *307/36;333/10;333/28*

U.S. Cl. 534—557 **15 Claims**

1. A compound corresponding to the formula:

I



whereby each Y is independently selected from the group consisting of hydrogen, lower alkyl having from 1 to 5 carbon atoms, $R'SO_2$, acyl, $(R')_3Si$ and a naphthoquinone diazide sulfonyl group where each R' is independently selected from the group of lower alkyl having from 1 to 5 carbon atoms and aryl provided that at least one Y is a naphthoquinone diazide sulfonyl group; R is a member selected from the group consisting of hydrogen, lower alkyl having from 1 to 5 carbon atoms, cyclic alkyl, and aryl; R_1, R_2 and R_3 are each independently selected form the group consisting of hydrogen, hydroxyl, lower alkyl having from 1 to 5 carbon atoms, cyclic alkyl, aryl, alkoxy, alkenyl, alkynyl, nitro, alkanoyl, carboxyl, sulfonyl and halogen; and Q is a five member heterocyclic group.

5,618,933

SUGAR-BASED POLYMERS

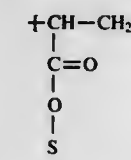
Jonathan S. Dordick; David G. Rethwisch, both of Iowa City, and Damodar R. Patil, Coralville, all of Iowa, assignors to University of Iowa Research Foundation, Oakdale, Iowa

Continuation of Ser. No. 706,929, May 28, 1991, abandoned, which is a continuation-in-part of Ser. No. 521,076, May 8, 1990, abandoned. This application May 31, 1994, Ser. No. 251,628

Int. Cl.[6] C07H *13/02*

U.S. Cl. 536—115 **7 Claims**

1. A poly(sugar acrylate) with the structure:



wherein S is a sugar selected from the group consisting of sucrose linked at the 1'- position, raffinose linked at the 1"-position, trehalose linked at the 6-position, α- or β- alkyl- or α- or β- halo-glucosides linked at the 6-position, or α- or β-alkyl or α- or β-halo-galactosides linked at the 6-position, α- or β-alkyl- or α- or β- halo-mannosides linked at the 6-position; and

n is a whole number greater than 1.

5,618,934

BORONIC ACID COMPOUND

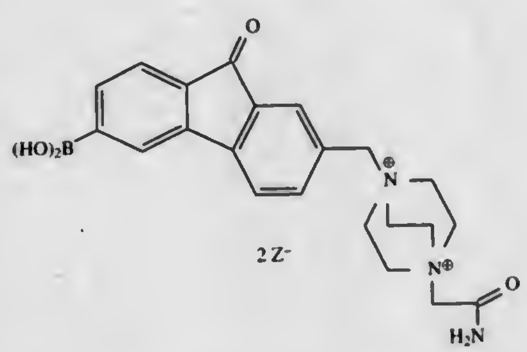
Ann E. DeCamp, Scotch Plains; Edward J. J. Grabowski, Westfield; Mark A. Huffman, Scotch Plains; Lyndon C. Xavier, Piscataway; Nobuyoshi Yasuda, Mountainside; Guo-Jie Ho, Rahway, and David J. Mathre, Skillman, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 245,101, May 17, 1994, Pat. No. 5,442,056. This application Feb. 27, 1995, Ser. No. 387,307

Int. Cl.[6] C07F *5/02*

U.S. Cl. 544—229 **1 Claim**

1. A compound represented by the structural formula:



wherein Z— represents a negatively charged counterion.

5,618,935

TRICYCLIC PYRAZINE COMPOUND AND ELECTROPHOTOGRAPHIC PHOTOCONDUCTOR COMPRISING THE SAME

Masayuki Shoshi; Yumi Ichikawa, both of Yokohama; Kaoru Teramura, Kawasaki; Masayuki Koyano, Sagamihara, and Megumi Kawahara, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

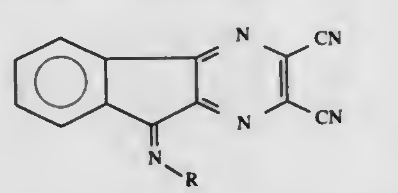
Division of Ser. No. 261,265, Jun. 15, 1994, Pat. No. 5,460,909. This application Mar. 24, 1995, Ser. No. 409,722

Claims priority, application Japan, Jun. 15, 1993, 5-168512

Int. Cl.[6] C07D *241/36;* G03G *5/047;5/09*

U.S. Cl. 544—344 **2 Claims**

1. A pyrazine compound of formula (II):



wherein R is a phenyl group which may have a substituent, or a naphthyl group which may have a substituent, wherein said substituent on each of the phenyl and naphthyl groups is selected from the group consisting of alkoxyl, alkyl, halogen, halogenated alkyl, alkoxycarbonyl, cyano and nitro.

5,618,936

PROCESS FOR PREPARING (S) (+)-4,4'-(1-METHYL-1,2-ETHANEDIYL)-BIS (2,6-PIPERAZINEDIONE)

Peter L. MacDonald, Arese; Riccardo Stradi, Milan; Pierluigi Rossetto, Lodi, all of Italy, and Joost J. M. Holthuis, AJ Leiden, Netherlands, assignors to Sicor SpA, Italy, and Chiron BV, Netherlands

PCT No. PCT/GB92/01942, § 371 Date Nov. 23, 1994, § 102(e) Date Nov. 23, 1994, PCT Pub. No. WO93/08172, PCT Pub. Date Apr. 29, 1993

PCT Filed Oct. 22, 1992, Ser. No. 211,876

Claims priority, application United Kingdom, Oct. 25, 1991, 9122677

Int. Cl.[6] C07D *241/04*

U.S. Cl. 544—357 **17 Claims**

1. A process for the preparation of (S)(+)-4,4'-(1-methyl-1,2-ethanediyl)-bis-(2,6-piperazinedione)(ICRF-187), comprising the steps of:

(a) synthesizing a crude mixture comprising a (S)-1,2-diaminopropane tetraacetic acid intermediate as a free acid or disodium salt and byproducts; and then

(b) subjecting the tetraacetic acid intermediate in the crude mixture to ring formation in the presence of said byproducts, thereby producing ICRF-187 in recoverable amounts,

wherein, when said ring formation is preformed using formamide, substantial amounts of formamide are not removed during ring formation.

5,618,937

PROCESS TO MAKE HIV PROTEASE INHIBITOR FROM (2S)-4-PICOLYL-2-PIPERAZINE-T-BUTYLCARBOXAMIDE

David Askin, Warren; Kan K. Eng, Jersey City; Paul Reider, Westfield, and Ralph P. Volante, Cranbury, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

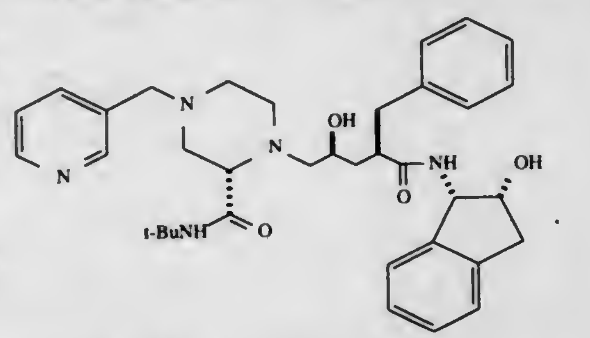
Filed Mar. 15, 1995, Ser. No. 404,798

Int. Cl.[6] C07D *401/06*

U.S. Cl. 544—360 **8 Claims**

1. A process for synthesis of a compound of the structure

J

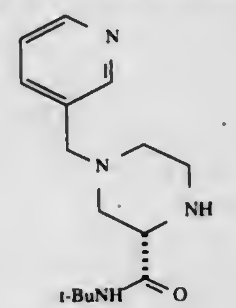


1

comprising the steps of:

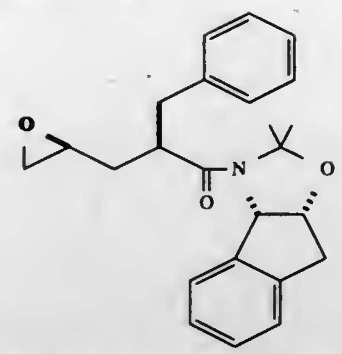
(a) heating for at least one hour a mixture of one equivalent of

I



with about one equivalent of

2



at a temperature range between about 25° C. and about 150° C., said mixture optionally containing suitable solvent;

(b) deblocking by treatment with strong acid, and

(c) neutralizing the strong acid, to give the desired compound.

5,618,938

PROCESS FOR PREPARING STEREO ISOMERS OF NEUROKININ RECEPTOR ANTAGONISTS

Xavier Emonds-Alt, Combaillaux; Pierre Goulaouic, Montpellier; Vincenzo Proietto, Saint Georges D'Orques, and Didier Van Broeck, Murviel les Montpellier, all of France, assignors to Sanofi, Paris, France

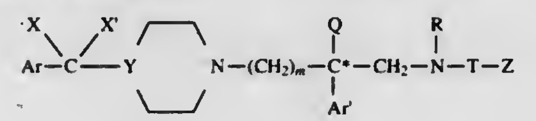
Division of Ser. No. 208,672, Mar. 11, 1994, which is a division of Ser. No. 610,093, Nov. 5, 1990, Pat. No. 5,317,020. This application Jun. 7, 1995, Ser. No. 479,634

Claims priority, application France, Nov. 6, 1989, 89 14517; Jun. 15, 1990, 90 07534

Int. Cl.[6] C07D *211/06;405/00*

U.S. Cl. 544—360 **1 Claim**

1. A stereoselective method of preparing optically pure compounds of formula (I*):



in which:

"*" means that the carbon atom denoted by this symbol has a defined (+) or (−) absolute configuration; and in which:

m is an integer from 1 to 3; Ar and Ar' independently are a thienyl group; a phenyl group which is unsubstituted or mono- or disubstituted by a halogen atom, by a C_1–C_3 alkyl, by a trifluoromethyl, by an alkoxy in which the alkyl is C_1–C_3, by a hydroxyl or by a methylenedioxy; or an imidazolyl group; it also being possible for Ar' to be a benzothienyl group which is unsubstituted or substituted by a halogen; a naphthyl group which is unsubstituted or substituted by a halogen; a biphenyl group; or an indolyl which is unsubstituted or substituted on the nitrogen by a benzyl group;

X is hydrogen;

X' is hydrogen or a hydroxyl group or is joined to X" below to form a carbon-carbon bond,

or X and X' together form an oxo group or a dialkylaminoalkoxyimino group of the formula $=N—O—(CH_2)_p—Am$, in which p is 2 or 3 and Am is a dialkylamino group, it being possible for each alkyl to contain from 1 to 4 carbon atoms;

Y is a nitrogen atom or a group C(X"), in which X" is hydrogen or forms a carbon-carbon bond with X';

Q is hydrogen, a C_1–C_4 alkyl group or an aminoalkyl group of the formula $—(CH_2)_q—Am'$, in which q is 2 or 3 and Am' is a piperidino, 4-benzylpiperidino or dialkylamino group, it being possible for each alkyl to contain from 1 to 4 carbon atoms;

R is hydrogen, a methyl group or a group $(CH_2)_n—L$, in which n is an integer from 2 to 6 and L is hydrogen or an amino group;

T is a group selected from

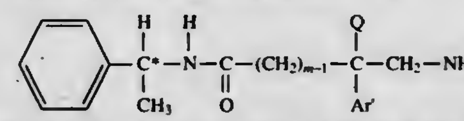
$$-\overset{\overset{\large O}{\|}}{C}- \text{ and } -\overset{\overset{\large W}{\|}}{C}-NH-,$$

W being an oxygen or sulfur atom; and

Z is either hydrogen, or M or OM when T is the group —C(=O)—, or M when T is the group —C(=W)—NH—, M being hydrogen; a linear or branched C_1–C_6 alkyl; a phenylalkyl in which the alkyl group contains from 1 to 3 carbon atoms and which is unsubstituted or mono- or poly-substituted on the aromatic ring by a halogen, a hydroxyl, an alkoxy having 1 to 4 carbon atoms or an alkyl having 1 to 4 carbon atoms; a pyridylalkyl in which the alkyl group contains from 1 to 3 carbon atoms; a naphthylalkyl in which the alkyl group contains from 1 to 3 carbon atoms; a pyridylthioalkyl in which the alkyl group contains from 1 to 3 carbon atoms; a styryl; a 1-methylimidazol-2-ylthioalkyl in which the alkyl group contains from 1 to 3 carbon atoms; a 1-oxophenyl-3-indan-2-yl; or an unsubstituted or mono- or poly-substituted aromatic or heteroaromatic group;

or a salt thereof with a mineral or organic acid, wherein said stereoselective method comprises the steps of:

(1) treating a compound of the formula (XVII*)



(XVII*)

in which Q, Ar' and m are as defined above, and R° is hydrogen, a methyl group or a group $(CH_2)_n—L°$, in which n is as defined above, and L° is hydrogen or an amino group protected by an N-protecting group in a solvent, in an acid medium, to give the amino acid of the formula (XVIII*)

$$HO-\underset{\underset{\large O}{\|}}{C}-(CH_2)_{m-1}-\underset{\underset{\large Ar'}{|}}{\overset{\overset{\large Q}{|}}{C^*}}-CH_2-NHR° \qquad (XVIII^*)$$

in which Q, Ar', m and R° are as defined above;

(2) esterifying said amino acid of the formula (XVIII*) in an alkanol, AlkOH, in which Alk is an alkyl having 1 to 4 carbon atoms, in an acid medium;

(3) treating the resultant ester of the formula

$$AlkO-\underset{\underset{\large O}{\|}}{C}-(CH_2)_{m-1}-\underset{\underset{\large Ar'}{|}}{\overset{\overset{\large Q}{|}}{C^*}}-CH_2-NHR° \qquad (XIX^*)$$

(XIX*) in which Alk, Q, m, Ar' and R° are as defined above, with either of

(i) a functional derivative of an acid of the formula (III); or

$$HO—CO—Z \qquad (III)$$

(ii) an iso(thio)cyanate of the formula (III')

$$W{=}C{=}N—Z \qquad (III')$$

Z and W being as defined above;

(4) subjecting the resultant ester of the formula (XX*)

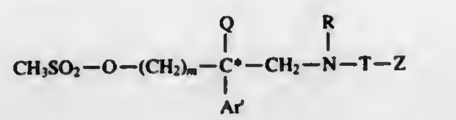
$$AlkO-\underset{\underset{\large O}{\|}}{C}-(CH_2)_{m-1}-\underset{\underset{\large Ar'}{|}}{\overset{\overset{\large Q}{|}}{C^*}}-CH_2-\overset{\overset{\large R°}{|}}{N}-T-Z \qquad (XX^*)$$

in which Alk, Ar', Q, m, T, Z and R° are as defined above, to the action of a reducing agent;

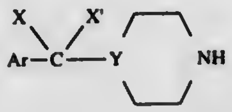
(5) converting the resultant alcohol of the formula (V*)

$$HO-(CH_2)_m-\underset{\underset{\large Ar'}{|}}{\overset{\overset{\large Q}{|}}{C^*}}-CH_2-\overset{\overset{\large R°}{|}}{N}-T-Z \qquad (V^*)$$

in which m, Ar', Q, R", T and Z are as defined above, into its methanesulfonate ester of the formula (VI*)


(VI*)

in which m, Ar', Q, R, T and Z are as defined above, and;
(6) treating said methanesulfonate ester with an amine of the formula (VII),


(VII)

in which Ar, X, X' and Y are as defined above, and deprotecting, if appropriate, to give said compound of formula (I*).

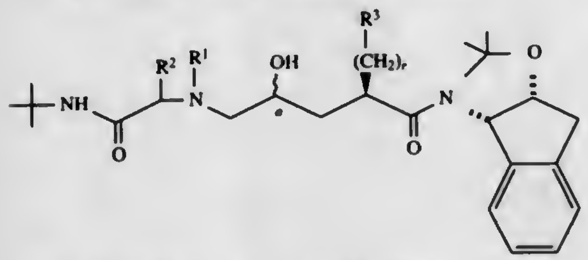
5,618,939

PROCESS FOR MAKING HIV PROTEASE INHIBITORS

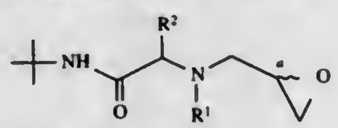
David Askin, Warren; Paul Reider; Kai Rossen, both of Westfield; Richard J. Varsolona, Scotch Plains; Ralph P. Volante, Cranbury, and Kenneth M. Wells, Somerville, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 341,334, Dec. 16, 1994, abandoned, which is a continuation of Ser. No. 92,627, Jul. 16, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 474,926
Int. Cl.[6] C07D *409/06;409/14;405/06;241/04*
U.S. Cl. 544—368 **11 Claims**

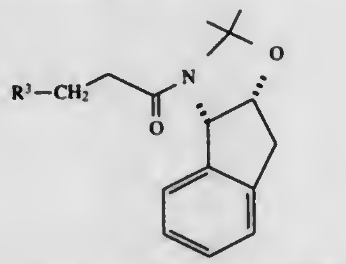
1. A process for making a compound of formula I


I

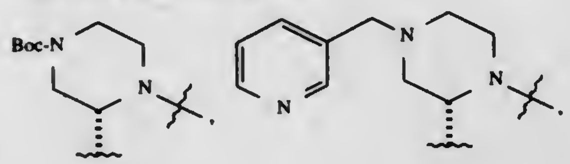
comprising reacting a compound of formula II

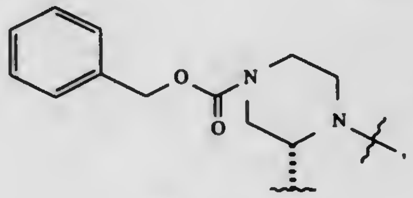

II

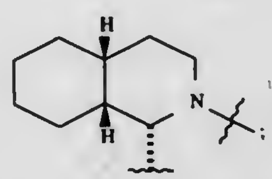
and an amide of formula VIII


VIII

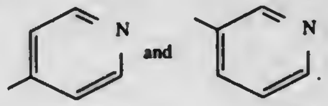
in the presence of a strong base at a low temperature; wherein:
stereocenter a is in either the R configuration,
the S configuration or is racemic;
the strong base is selected from the group consisting of n-butyllithium, s-butyllithium, t-butyllithium, lithium diisopropylamide, lithium isopropylcyclohexylamide, lithium pyrrolididе, lithium tetramethylpiperidide, phenyllithium, isopropylmagnesium chloride, and isobutylmagnesium chloride;
the low temperature is in the range of about −82° C. to −40° C. to effect metalation of the amide VIII, and the temperature is in the range of about −50° C. to −10° C. to effect reaction of the metalated derivative of VIII and II:
R^1 and R^2 are joined together to form a cyclic structure selected from the group consisting of:



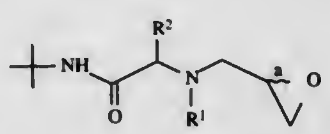

and


; and

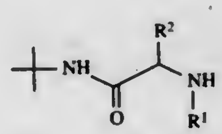
R^3 is selected from the group consisting of phenyl,



9. A process for making a compound of formula II


II

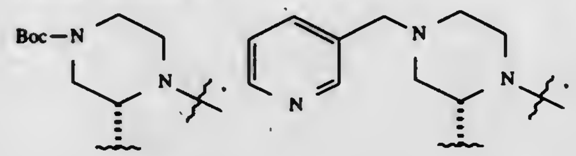
comprising reacting an amine of formula III

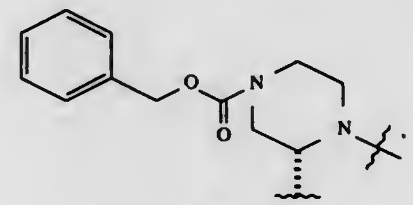

III

with a glycidol of formula IV

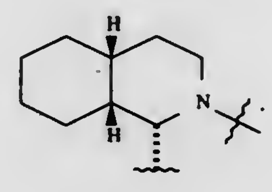

IV

in the presence of base, said base selected from the group consisting of diisopropylethylamine, potassium carbonate, sodium carbonate, sodium bicarbonate, triethylamine, pyridine and dimethylaniline;
said reaction performed in a solvent selected from the group consisting of dimethylformamide, N-methyl pyrrolidinone, acetone, butanone, acetonitrile, tert-butyl alcohol, tert-amyl alcohol, 2-propanol, N-ethyl pyrrolidinone, 1,1,3,3-tetramethylurea, dimethylsulfoxide, 1,3-dimethyl-3,4,5,6-tetrahydro-2(1H)-pyrimidinone, tetramethylsulfone, tetrahydrofuran, 1,4-dioxane, pyridine and water, or combinations thereof; wherein
stereocenter a is in either the R configuration, S configuration, or is racemic;
G is a protecting group and is 3-nitrobenzenesulfonyl; and R^2 are joined together to form a cyclic structure selected from the group consisting of:





and



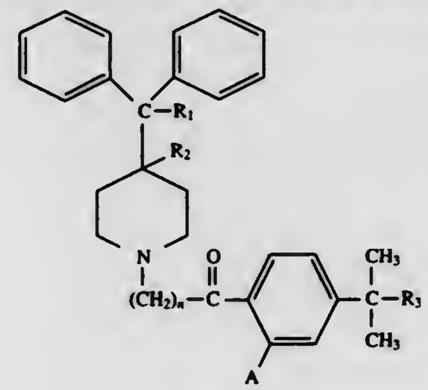
5,618,940

PROCESS FOR PIPERIDINE DERIVATIVES

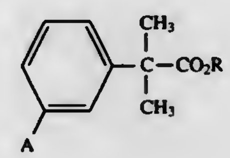
Chi-Hsin R. King, Cincinnati, and Michele A. Kaminski, Reading, both of Ohio, assignors to Merrell Pharmaceuticals Inc., Cincinnati, Ohio

Division of Ser. No. 369,234, Jan. 6, 1995, which is a continuation-in-part of Ser. No. 152,606, Nov. 15, 1993, abandoned, which is a continuation-in-part of Ser. No. 99,773, Jul. 30, 1993, abandoned, which is a continuation of Ser. No. 17,251, Feb. 25, 1993, abandoned, which is a continuation-in-part of Ser. No. 9,370, Jan. 26, 1993, abandoned, which is a continuation of Ser. No. 867,261, Apr. 10, 1992, abandoned.
This application May 2, 1995, Ser. No. 432,660
Int. Cl.[6] C07D *211/22;211/32*
U.S. Cl. 546—240 **1 Claim**

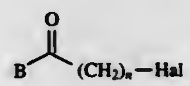
1. A process for preparing a compound of the formula



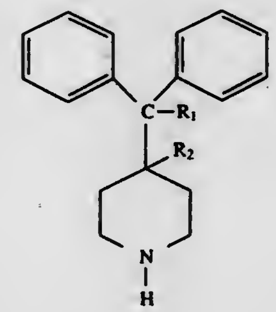
wherein
R_1 represents hydrogen or hydroxy;
R_2 represents hydrogen; or
R_1 and R_2 taken together form a second bond between the carbon atoms bearing R_1 and R_2;
n is an integer of from 1 to 5;
R_3 is —CH_2OH;
A is hydrogen or hydroxy;
and pharmaceutically acceptable salts, hydrates and individual optical isomers thereof comprising the steps of:
(a) reacting a benzeneacetic acid compound of the formula



wherein A is as defined above and R is hydrogen or C_1–C_6 alkyl with a suitable reducing agent to give a phenethyl alcohol;
(b) reacting the phenethyl alcohol with a ω-halo compound of the formula



wherein wherein B is halo or hydroxy, Hal represents Cl, Br or I and n is as defined above, in the presence of a suitable Lewis acid to produce a ω-halo hydroxyethylphenylketone;
(c) reacting the ω-halo hydroxyethylphenylketone with a piperidine compound of the formula



wherein R_1 and R_2 are as defined above in the presence of a suitable non-nucleophilic base to produce a piperidine hydroxyethylphenylketone; and
(d) optionally reacting the piperidine hydroxyethylphenylketone with an appropriate deprotecting reagent,
with the proviso that each of the hydroxy groups present in the compounds described in steps a–c are optionally protected or unprotected.

5,618,941
BENZENEALKANOIC ACIDS FOR CARDIOVASCULAR DISEASES

Roger P. Dickinson; Kevin N. Dack, and John Steele, all of Sandwich, United Kingdom, assignors to Pfizer Inc., New York, N.Y.

PCT No. PCT/EP93/02488, § 371 Date Mar. 15, 1995, § 102(e) Date Mar. 15, 1995, PCT Pub. No. WO94/06761, PCT Pub. Date Mar. 31, 1994

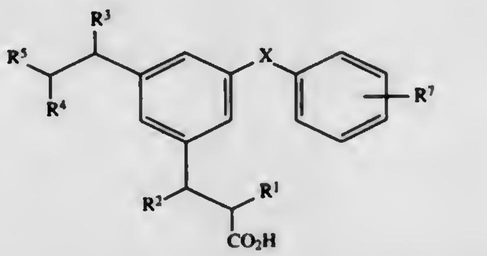
PCT Filed Sep. 14, 1993, Ser. No. 397,063

Claims priority, application United Kingdom, Sep. 23, 1992, 9220137

Int. Cl.[6] C07C *311/19;233/51;* **A61K** *31/19*

U.S. Cl. 546—249 **17 Claims**

1. A compound having the formula-:



(I)

and pharmaceutically acceptable salts and biolabile esters thereof, wherein R^1, R^2 R^3 and R^4 are each independently H or C_1–C_4 alkyl;

R^5 is $(CH_2)_m NHSO_2R^6$ or $(CH_2)_m NHCOR^6$;

R^6 is C_1–C_6 alkyl, C_3–C_6 cycloalkyl optionally substituted by aryl, aryl or heteroaryl; wherein aryl means phenyl or naphthyl and heteroaryl means furyl, thienyl, or pyridyl, any of which ring systems may optionally be substituted with from one to three substituents each independently chosen from C_1–C_4 alkyl, C_1–C_4 alkoxy, halo, CF_3, OCF_3 and CN;

R^7 represents from one to three substituents each independently selected from H, C_1–C_4 alkyl, C_1–C_4 alkoxy, halo, CF_3, OCF_3, CN, $CONH_2$, and $S(O)_n(C_1$–C_4 alkyl);

X is CH_2, $CHCH_3$, CH(OH), $CH(OH)CH_3$, C=CH_2, CO, or O;

m is 0 or 1; and

n is 0, 1 or 2.

5,618,942
PRODUCTION OF 2,3,5,6-TETRACHLOROPYRIDINE

Youval Shvo, Kfar Shemaryahu, Israel, assignor to Luxembourg Industries (Pamol) Ltd., Tel-Aviv, Israel

PCT No. PCT/US94/10010, § 371 Date Mar. 15, 1996, § 102(e) Date Mar. 15, 1996, PCT Pub. No. WO95/06639, PCT Pub. Date Mar. 9, 1995

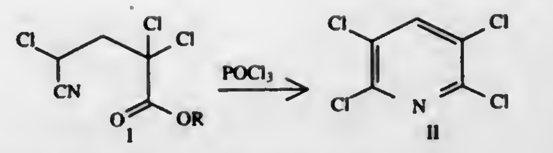
PCT Filed Sep. 2, 1994, Ser. No. 602,806

Claims priority, application Israel, Sep. 3, 1993, 106901

Int. Cl.[6] C07D *213/46;213/53*

U.S. Cl. 546—250 **14 Claims**

1. A process for the production of 2,3,5,6-tetrachloropyridine which comprises reacting, at a temperature at least 100° C., an ester of 2,2,4-trichloro-4-cyanobutyric acid of the general formula I with $POCl_3$ in the presence of a catalytic amount of hydrogen chloride to produce compound II according to the following reaction:



in which R is an alkyl, aryl or aralkyl group.

5,618,943
ACETYLENES DISUBSTITUTED WITH A 5 OXO SUBSTITUTED TETRAHYDRONAPHTHYL GROUP AND WITH AN ARYL OR HETEROARYL GROUP HAVING RETINOID-LIKE BIOLOGICAL ACTIVITY

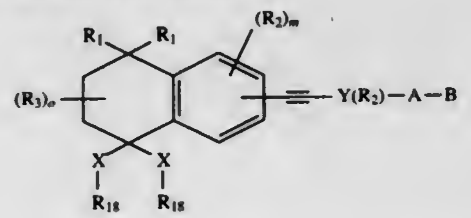
Vidyasagar Vuligonda, Irvine; Alan T. Johnson, Rancho Santa Margarita; Richard L. Beard, Newport Beach; Min Teng, Aliso Viejo; Tae K. Song, Long Beach; Harold N. Wong, Rancho Santa Margarita, and Roshantha A. Chandraratna, Mission Viejo, all of Calif., assignors to Allergan

Filed Dec. 29, 1994, Ser. No. 366,167

Int. Cl.[6] C07D *213/02;* **C07C** *233/81*

U.S. Cl. 546—342 **32 Claims**

1. A compound of the formula



wherein

R_1 is hydrogen or alkyl of 1 to 10 carbons;

R_2 and R_3 are hydrogen, or alkyl of 1 to 6 carbons and the substituted ethynyl group occupies either the 2 or the 3 position of the tetrahydronaphthalene nucleus;

m is an integer having the value of 0–3;

o is an integer having the value 0–4;

Y is a phenyl group, or heteroaryl selected from a group consisting of pyridyl, thienyl, furyl, pyridazinyl, pyrimidinyl, pyrazinyl, thiazolyl, oxazolyl, and imidazolyl, said groups being optionally substituted with one or two R_2 groups;

A is $(CH_2)_n$ where n is 0–5, lower branched chain alkyl having 3–6 carbons, cycloalkyl having 3–6 carbons, alkenyl having 2–6 carbons and 1 or 2 double bonds, alkynyl having 2–6 carbons and 1 or 2 triple bonds;

B is hydrogen, COOH or a pharmaceutically acceptable salt thereof, $COOR_8$, $CONR_9R_{10}$, CH_2OH, CH_2OR_{11}, CH_2OCOR_{11}, CHO, $CH(OR_{12})_2$, $CHOR_{13}O$, COR_7, $CR_7(OR_{12})_2$, $CR_7OR_{13}O$, or tri-lower alkylsilyl, where R_7 is an alkyl, cycloalkyl or alkenyl group containing 1 to 5 carbons, R_8 is an alkyl group of 1 to 10 carbons, a cycloalkyl group of 5 to 10 carbons or trimethylsilylalkyl where the alkyl group has 1 to 10 carbons, or R_8 is phenyl or lower alkylphenyl, R_9 and R_{10} independently are hydrogen, an alkyl group of 1 to 10 carbons, or a cycloalkyl group of 5–10 carbons, or phenyl or lower alkylphenyl, R_{11} is lower alkyl, phenyl or lower alkylphenyl, R_{12} is lower alkyl, and R_{13} is divalent alkyl radical of 2–5 carbons;

X is O or S;

R_{18} is alkyl of 1 to 10 carbons, fluoro-substituted alkyl of 1 to 10 carbons, or the two R_{18} groups jointly form a ring having a total of 3 to 6 carbons, or

the two XR_{18} groups jointly symbolize an oxo (=O) or a thio (=S) function.

5,618,944
METHOD FOR THE SYNTHESIS OF ANTHRAPYRAZOLONES

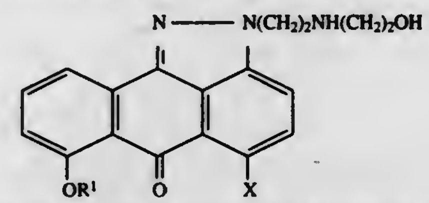
Lin-Hua Zhang, Wilmington, Del., and Joseph Auerbach, Brooklyn, N.Y., assignors to The DuPont Merck Pharmaceutical Company, Wilmington, Del.

Division of Ser. No. 142,635, Oct. 25, 1993, Pat. No. 5,393,886, which is a continuation-in-part of Ser. No. 57,035, May 9, 1993, abandoned. This application Jan. 10, 1995, Ser. No. 370,933

Int. Cl.[6] C07D *231/54*

U.S. Cl. 548—358.5 **7 Claims**

1. A process for preparing a compound of formula (V):



(V)

or a pharmaceutically acceptable salt form thereof, wherein:

x is selected from:

(a) F, Cl, Br, I,

(b) methanesulfonyloxy,

(c) toluenesulfonyloxy,

(d) trifluoromethanesulfonyloxy, or

(e) —OH;

R^1 is selected from:

(a) benzyl substituted with 0–3 R^5;

(b) naphthylmethyl substituted with 0–3 R^5;

(c) anthrylmethyl substituted with 0–3 R^5; or

(d) C_1–C_4 alkyl; or

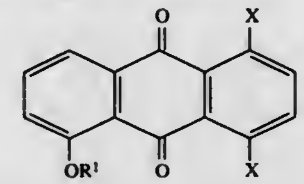
(e) H;

R^5 is independently selected from: C_1–C_4 alkyl, halogen, OR^6, NO_2; and

R^6 is independently selected from: H, C_1–C_8 alkyl, C_2–C_6 alkenyl, C_3–C_8 cycloalkyl, C_4–C_8 cycloalkylmethyl, C_6–C_{10} aryl, or C_7–C_{11} arylalkyl;

comprising the steps of:

(1) reacting a compound of formula (IV):

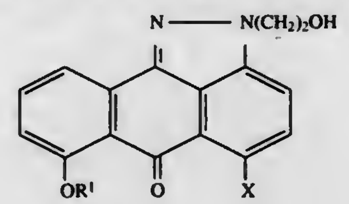


(IV)

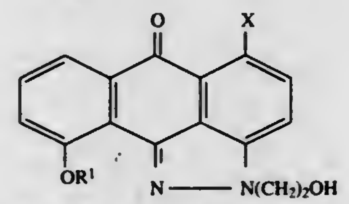
wherein:

R^1 and X are as defined above;

with 2-hydroxyethylhydrazine, in a suitable solvent, in the presence of a base, to form a mixture of regioisomers of formula (II) and formula (III) in which the ratio of (II) to (III) is about 4 to 1:



(II)



(III)

wherein R^1 and X are as defined above;

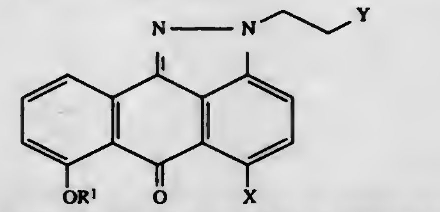
(2) reacting the mixture of regioisomers (II) and (III) with $ClSO_2R^2$, wherein:

R^2 is selected from:

(a) C_vF_{2v+1} where v is 1 to 4, or

(b) phenyl or phenyl optionally substituted with from 1 to 3 of the groups selected from Cl, F, Br, NO_2 or CH_3;

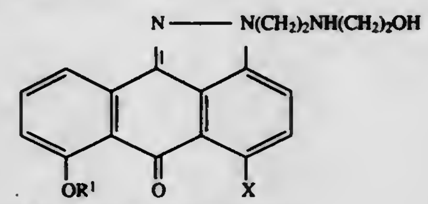
said reaction being carried out in a suitable solvent, in the presence of a suitable base, followed by precipitation with an alcohol or a mixture of methylene chloride and methanol to provide a single isomer of formula (I):



(I)

wherein Y is $—OSO_2R^2$ and R^1 and X are as defined above;

(3) reacting the compound of formula (I) with ethanolamine in a suitable solvent in the presence of a suitable base, to form a compound of formula (V):



(V)

wherein R^1 and X are as defined above.

5,618,945
PROCESS FOR THE SULFINYLATION OF HETEROCYCLIC COMPOUNDS

Michel Casado, St. Symphorien D'Ozon; Pierre Le Roy, and Virginie Pevfre, both of Lyons, all of France, assignors to Rhone-Poulenc Agrochimie, Lyon Cedex, France

Filed Feb. 22, 1995, Ser. No. 392,243

Claims priority, application France, Feb. 22, 1904, 94 02222

Int. Cl.[6] C07D *233/84;233/68;231/14;* **A01N** *43/50;43/36;43/56*

U.S. Cl. 548—367.4 **43 Claims**

1. A process for the sulfinylation of a beterocyclic compound comprising reacting a compound of the formula RS(O)X, wherein R is straight or branched alkyl having from 1 to 4 carbon atoms, which is substituted with one or more identical or different halogen atoms, and X is a halogen atom, a hydroxyl group or salt thereof, a radical of the formula $—NR_2R_3$ wherein R_2 and R_3 are alkyl or haloalkyl having from 1 to 4 carbon atoms, or an aryloxy or aralkoxy radical, the aryl portion of which is unsubstituted or is substituted with one or more halogen atoms or alkyl or haloalkyl radicals having from 1 to 4 carbon atoms, with a heterocyclic compound Het selected from the group consisting of pyrroles, pyrazoles, imidazoles, oxazoles, isoxazoles, thiazoles, isothiazoles and triazoles, said heterocyclic compound Het being unsubstituted or being substituted with one or more members selected from the group consisting of halogen, amino which is unsubstituted or is substituted with one or two alkyl having from 1 to 4 carbon atoms, nitrile, aryl, and aryl having one or more substituents selected from the group consisting of halogen, alkyl, haloalkyl and SF_5, in the presence of (a) a compound selected from the group consisting of the tosylates, hydrochlorides and mesylates of primary, secondary and tertiary amines, or (b) hydrochloric acid.

38. A compound of the formula

$RS(O)NH—Het_1$

wherein R is straight or branched alkyl having from 1 to 4 carbon atoms, which is substituted with one or more identical or different halogen atoms and $NH—Het_1$ is derived from a heterocycle $Het_1—NH_2$ which is selected from the group consisting of pyrroles,

pyrazoles, imidazoles, oxazoles, isoxazoles, thiazoles, isothiazoles and triazoles, said heterocycle Het_1—NH_2 being substituted with a NH_2 group and optionally being further substituted with one or more members selected from the group consisting of halogen, amino which is unsubstituted or is substituted with one or two alkyl having from 1 to 4 carbon atoms, nitrile, aryl and aryl having one or more substituents selected from the group consisting of halogen, alkyl, haloalkyl and SF_5.

5,618,946

7-OXABICYCLOHEPTANE CARBOXYLIC ACID PROSTAGLANDIN ANALOG INTERMEDIATES USEFUL IN THE PREPARATION OF ANTI-THROMBOTIC AND ANTI-VASOSPASTIC COMPOUNDS AND METHOD FOR PREPARING SAME

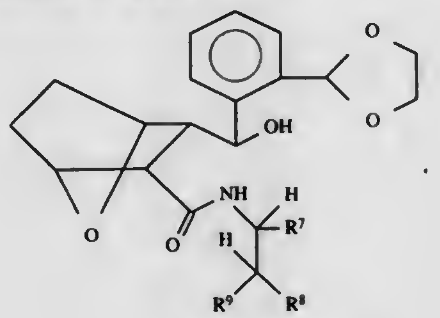
Michael A. Poss, Lawrenceville; Paul D. Pansegrau; Shaopeng Wang, both of E. Windsor; John K. Thottathil, Robbinsville; Janak Singh, Lawrenceville, and Richard H. Mueller, Ringoes, all of N.J., assignors to Bristol-Myers Squibb Company, Princeton, N.J.

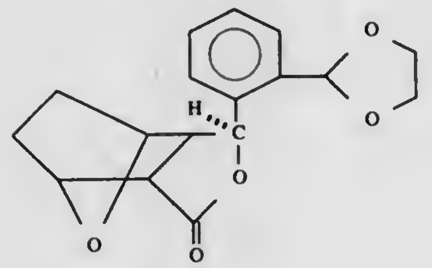
Division of Ser. No. 528,371, Sep. 14, 1995, Pat. No. 5,512,690, which is a division of Ser. No. 356,743, Dec. 15, 1994, Pat. No. 5,508,445, which is a division of Ser. No. 226,091, Apr. 20, 1994, Pat. No. 5,399,725, which is a continuation-in-part of Ser. No. 67,886, May 27, 1993, abandoned. This application Feb. 29, 1996, Ser. No. 609,153

Int. Cl.[6] C07D *491/02;407/14*

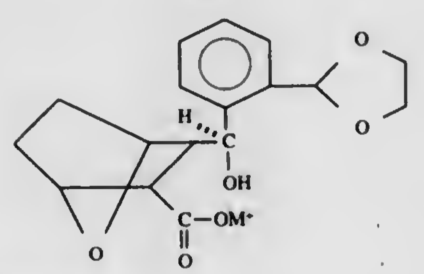
U.S. Cl. 548—431 **5 Claims**

1. A compound having the structure





or



including all stereoisomers thereof,
wherein
R^7 is aryl or lower alkyl,
R^8 is H, aryl or lower alkyl,
R^9 is H, OH or lower alkyl, and M^+ is a metal ion.

5,618,947

PROCESS OF PREPARING ENANTIOMERS OF CARBAZOLE DERIVATIVES

Gary T. Borrett, Stansted; John Kitteringham, Hertford; Roderick A. Porter, Ashwell; Mark R. Shipton, Bishop's Stortford; Mythily Vimal, Edmonton, and Rodney C. Young, Oxford, all of England, assignors to SmithKline Beecham, p.l.c., England

PCT No. PCT/EP93/03627, § 371 Date Jul. 18, 1995, § 102(e) Date Jul. 18, 1995, PCT Pub. No. WO94/14772, PCT Pub. Date Jul. 7, 1994

PCT Filed Dec. 16, 1993, Ser. No. 446,655

Claims priority, application United Kingdom, Dec. 21, 1992, 9226530

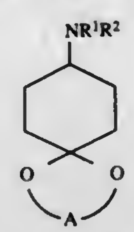
Int. Cl.[6] C07D *209/88*

U.S. Cl. 548—448 **5 Claims**

1. A process for preparing (+)-6-carboxamido-3-methylamino-1,2,3,4-tetrahydrocarbazole or a salt, solvate or hydrate thereof which comprises:

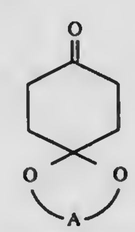
(a) Separation of an enantiomeric mixture of (±)-6-carboxamido-3-methylamino- 1,2,3,4-tetrahydrocarbazole or a derivative thereof by chromatography, wherein said enantiomeric mixture is prepared by reaction of 4-carboxamido-phenylhydrazine, or a salt thereof, with a ketal of formula (II):

Formula (II)



wherein R^1 is methyl, R^2 is hydrogen or an N-protecting group and A is an alkylene moiety, said compound of formula (II) being prepared from a protected 1,4-cyclohexane-dione of formula (III):

Formula (III)



by reaction with an appropriate alkylamine compound.

5,618,948

PROCESS FOR PREPARING AN ENANTIOMER OF A CARBAZOLE DERIVATIVE

Gary T. Borrett, Stansted; John Kitteringham, Hertford; Roderick A. Porter, Ashwell; Mark R. Shipton, Bishop's Stortford; Mythily Vimal, Edmonton, and Rodney C. Young, Oxford, all of England, assignors to SmithKline Beecham p.l.c., England

Filed May 26, 1995, Ser. No. 451,846

Int. Cl.[6] C07D *209/88*

U.S. Cl. 548—448 **1 Claim**

1. A process for preparing (+)-6-carboxamido-3-methylamino-1,2,3,4-tetrahydrocarbazole or a salt, solvate or hydrate thereof which comprises separation of diastereoisomers of a chiral derivative formed by reaction of (±)-6-carboxamido-3-methylamino-1,2,3,4-tetrahydrocarbazole with R-2-pyrrolidone-5-carboxylic acid, by crystallization, or by chromatography.

5,618,949

PROCESS FOR SYNTHESIS OF CHIRAL CIS- AND TRANS-3-AMINO-4-SUBSTITUTED PYRROLIDINE COMPOUNDS

Zhenkun Ma; Curt S. Cooper; Anthony K. L. Fung, all of Gurnee, Ill., and Daniel T. Chu, Santa Clara, Calif., assignors to Abbott Laboratories, Abbott Park, Ill.

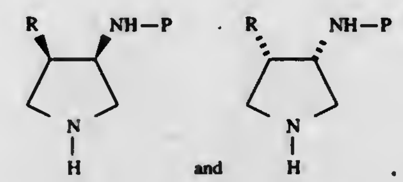
Filed Jul. 12, 1996, Ser. No. 679,043

Int. Cl.[6] C07D *207/09*

U.S. Cl. 548—557 **9 Claims**

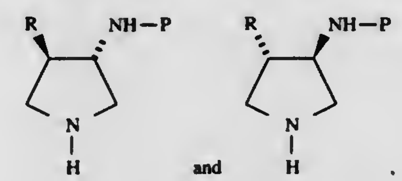
1. A process for the preparation of chiral 3,4-substituted pyrrolidine compounds selected from the group consisting of

(i) chiral cis-3,4-substituted pyrrolidine compounds having the formulas



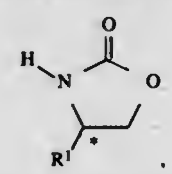
wherein P is a protecting moiety selected from the group consisting of t-butyloxycarbonyl (BOC), benzyloxcarbonyl (CBZ), p-methoxybenzyloxycarbonyl and p-chlorobenzyloxycarbonyl, and R is selected from the group consisting of C_1-C_6-alkyl, C_3-C_5-cycloalkyl, phenyl and phenyl-substituted-C_1-C_6-alkyl; and

(ii) chiral 3,4-trans-substituted pyrrolidine compounds having the formulas

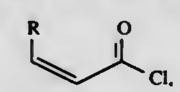


wherein P and R are as defined above; the method comprising:

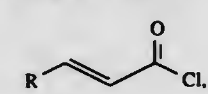
(a) reacting a chiral oxazolidinone having the formula



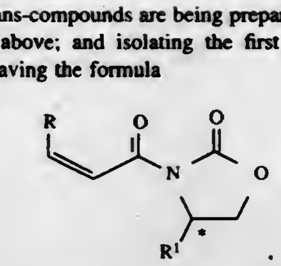
wherein * represents the chiral center and R^1 is a sterically controlling moiety selected from the group consisting of isopropyl, isobutyl, t-butyl, phenyl, benzyl, 1-phenylethyl, diphenylmethyl, naphthyl and adamantyl, with a strong base selected from the group consisting of an alkali metal, an alkali metal hydride and an alkali metal-alkyl compound in an aprotic solvent and at −78° C. to −50° C. under an inert atmosphere, followed immediately by addition of a cis-a,b-unsaturated acid chloride having the formula



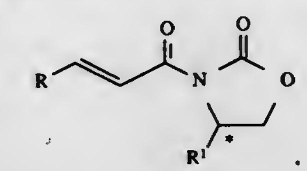
wherein R is as defined above, when cis-compounds are being prepared; or by addition of a trans-a,b-unsaturated acid chloride having the formula



when trans-compounds are being prepared, wherein R is as defined above; and isolating the first intermediate compound having the formula

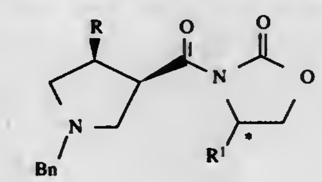


when cis-compounds are being prepared, wherein R^1 is as defined above; or isolating the first intermediate compound having the formula

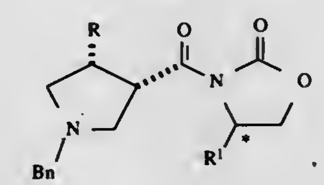


when trans-compounds are being prepared, wherein R^1 is as defined above;

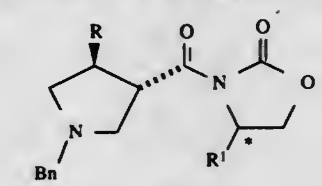
(b) condensing the first intermediate compound with N-benzyl-N-(methoxymethyl)trimethylsilylmethylamine in the presence of an acid catalyst, isolating a mixture of second intermediate compounds having the structures .



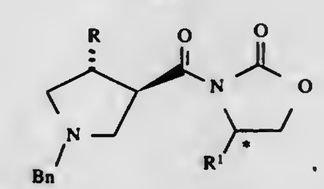
and



when cis-compounds are being prepared, or

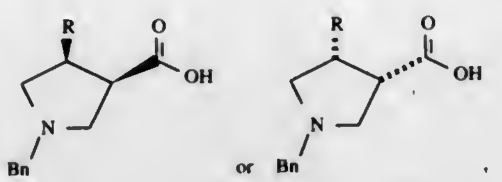


and

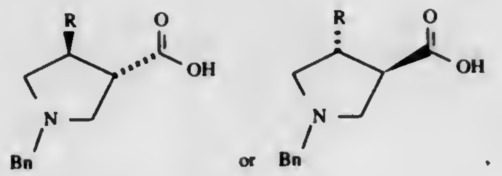


when trans-compounds are being prepared, which mixture of second intermediate compounds is enriched in one diastereomer over the other depending upon the chirality of the oxazolidinone chiral center, separating the major isomer from the minor isomer by chromatography or recrystallization, and isolating the desired chiral diastereomer of the second intermediate compound;

(c) hydrolytically removing the oxazolidine moiety from the second intermediate compound by treatment with LiOH and H_2O_2, and isolating the chiral third intermediate compound having the structure

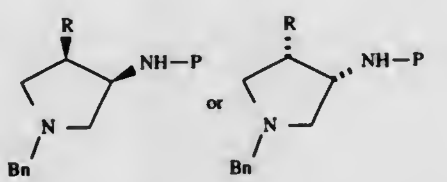


when cis-compounds are being prepared, or

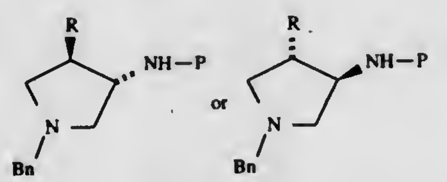


when trans-compounds are being prepared;

(d) replacing the carboxyl group of the third intermediate compound with a protected amino group by treatment with diphenylphosphoryl azide and triethylamine in the presence of an alcohol selected from the group consisting of t-butanol, benzyl alcohol, p-methoxybenzyl alcohol and p-chlorobenzyl alcohol to give the chirally appropriate fourth intermediate compound having the structure



when cis-compounds are being prepared, or



when trans-compounds are being prepared; and

(e) debenzylating the pyrrolidine amino group of the fourth intermediate compound by treatment with ammonium formate and Pd/C or $Pd(OH)_2$ catalyst in methanol or by hydrogenation over a Pd/C catalyst, and isolating the desired chiral 3,4-disubstituted product.

5,618,950

ELECTROPHOTOGRAPHIC ELEMENTS AND SOLUBLE CYCLIC SULFONE ELECTRON TRANSPORT AGENTS

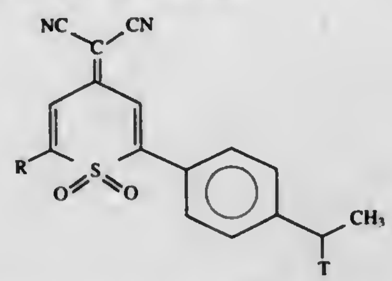
Michael R. Detty; John A. Sinicropi, both of Rochester; J. Robin Cowdery-Corvan, Webster, and Ralph H. Young, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 260,846, Jun. 16, 1994, Pat. No. 5,500,317. This application Sep. 27, 1995, Ser. No. 534,999

Int. Cl.[6] C07D *335/02;409/04*

U.S. Cl. 549—28 **14 Claims**

1. A compound having the structure



wherein R is selected from the group consisting of alkyl and cycloalkyl having from 1 to 10 carbons, aryl and heteroaryl groups having a total of carbons and heteroatoms of from 6 to 12, a furyl group, a selephene group, and a thienyl group; and T is alkyl having from 1 to 4 carbons.

5,618,951

PROCESS FOR PREPARING 2,2-DIFLUOROKETENE SILYL ACETALS AND α, α-DIFLUORO-βSILYLOXY-1,3-DIOXOLANE-4-PROPANOIC ACID ESTERS

Thomas C. Britton, Carmel, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

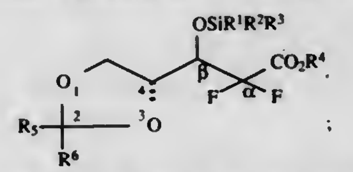
Continuation-in-part of Ser. No. 307,122, Sep. 16, 1994, abandoned, which is a continuation-in-part of Ser. No. 160,549, Nov. 30, 1993, abandoned. This application May 26, 1995, Ser. No. 451,284

Int. Cl.[6] C07F *7/18*

U.S. Cl. 549—214 **13 Claims**

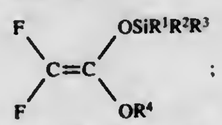
7. A process for preparing a α,α-difluoro-β-silyloxy-1,3-dioxolane-4-propanoic acid ester of the formula

(IV)



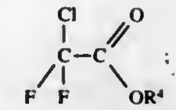
wherein R^1, R^2, R^3, and R^4 are each independently selected from alkyl and aryl groups or substituted alkyl or substituted aryl groups and R^5 and R^6 are independently selected from hydrogen and C_1–C_3 alkyl groups or together form part of a carbocyclic ring in which they comprise a —$(CH_2)_n$— moiety where n is an integer from 3 to 6; comprising contacting a 2,2-difluoroketene silyl acetal of the formula

(I)



wherein R^1, R^2, R^3, and R^4 are each independently selected from alkyl and aryl groups or substituted alkyl or substituted aryl groups prepared by contacting a chlorodifluoroacetate of the formula

(II)

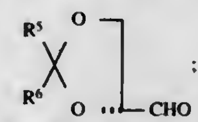


wherein R^4 is as defined above; with a halosilane of the formula

$XSiR^1R^2R^3$ (III);

wherein X is chloro or bromo, and R^1, R^2, and R^3 are as defined above; in a solvent selected from the group consisting of cyclic and acyclic tetraalkyl ureas, mixtures thereof, or a mixture consisting of the solvent and a co-solvent which is either acetonitrile or tetrahydrofuran or mixtures thereof; in the presence of a reducing agent; with a glyceraldehyde derivative of the formula

(V)



wherein R^5 and R^6 are as defined above.

5,618,952

SYNTHETIC PROCESS FOR THE PREPARATION OF TRICYCLIC AND TETRACYCLIC TAXANES

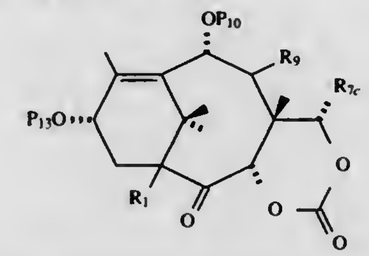
Robert A. Holton, Tallahassee, Fla.; Carmen Somoza, Corvallis, Oreg.; Hyeong B. Kim, Newark, Del.; Mitsuru Shindo, Tokyo, Japan; Ronald J. Biediger, Houston, Tex.; P. Douglas Boatman, Bellevue, Wash.; Chase Smith, Ada, Ohio; Feng Liang, Durham, N.C., and Krishna Murthi, Charlottesville, Va., assignors to Florida State University, Tallahassee, Fla.

Continuation-in-part of Ser. No. 189,058, Jan. 27, 1994, Pat. No. 5,405,972, which is a continuation-in-part of Ser. No. 138,229, Oct. 15, 1993, abandoned, which is a continuation-in-part of Ser. No. 95,161, Jul. 20, 1993, abandoned. This application Feb. 6, 1995, Ser. No. 383,956

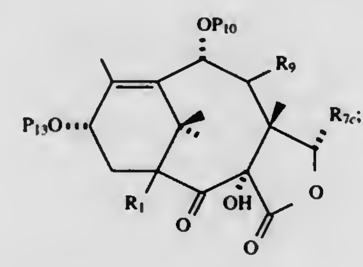
Int. Cl.[6] C07D *307/77;307/93*

U.S. Cl. 549—300 **11 Claims**

1. A process for the preparation of an intermediate useful in the synthesis of a tricyclic or tetracyclic taxane comprising reacting a compound having the formula



with lithium tetramethylpiperidide to form a compound having the formula:



wherein

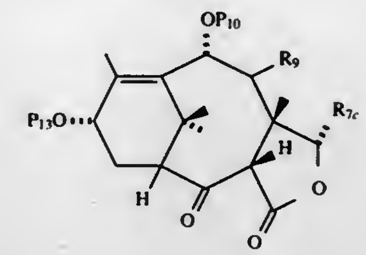
R_1 is hydrogen or protected hydroxy;

R_{7c} is hydrogen, alkyl, alkenyl, alkynyl, aryl or heteroaryl;

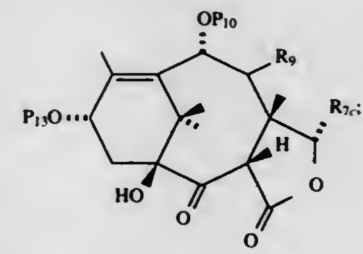
R_9 is hydrogen, protected hydroxy, or oxo; and

P_{10} and P_{13} are hydroxy protecting groups.

2. A process for the preparation of an intermediate useful in the synthesis of a tricyclic or tetracyclic taxane comprising reacting a compound having the formula:

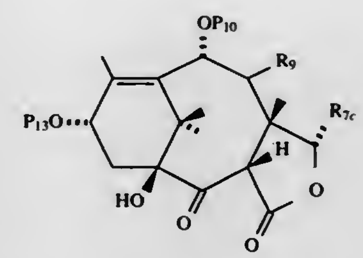


with lithium tetramethylpiperidide and camphosulfonyl oxaziridine to form a compound having the formula:

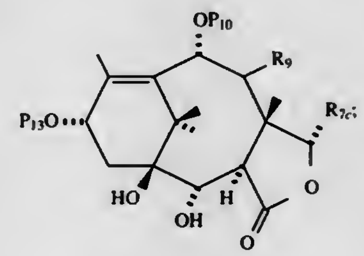


wherein R_9 is hydrogen, protected hydroxy, or oxo; R_{7c} is hydrogen, alkyl, alkenyl, alkynyl, aryl or heteroaryl; and P_{10} and P_{13} are hydroxy protecting groups.

3. A process for the preparation of an intermediate useful in the synthesis of a tricyclic or tetracyclic taxane comprising reacting a compound having the formula:



with an aluminum hydride reducing agent to form a compound having the formula:



wherein R_9 is hydrogen, protected hydroxy, or oxo; R_{7c} is hydrogen, alkyl, alkenyl, alkynyl, aryl or heteroaryl; and P_{10} and P_{13} are hydroxy protecting groups.

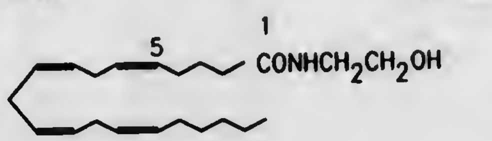
5,618,953
PROCESS FOR PRODUCING 3-METHYLTETRAHYDROFURAN
Takafumi Abe; Fumio Tanaka; Hiroyuki Nitobe, and Masaki Takemoto, all of Niigata, Japan, assignors to Mitsubishi Gas Chemical Co., Inc., Tokyo, Japan
Filed Feb. 1, 1996, Ser. No. 595,271
Claims priority, application Japan, Feb. 10, 1995, 7-022806; Feb. 10, 1995, 7-022807; Apr. 25, 1995, 7-101106
Int. Cl.⁶ C07D *307/02*
U.S. Cl. 549—508 **15 Claims**

1. A process for producing 3-methyltetrahydrofuran which comprises:
(a) producing methyl 3-cyanoisobutyrate from prussic acid and methyl methacrylate;
(b) reacting the methyl 3-cyanoisobutyrate from step (a) with water and sulfuric acid and subsequently reacting the resultant reaction product with an aliphatic alcohol having 1 to 8 carbon atoms to produce a methylsuccinic acid ester; and
(c) catalytically hydrogenating the methylsuccinic acid ester from step (b) to produce the 3-methyltetrahydrofuran.

5,618,954
PREPARATION OF 3,4-EPOXY-1-BUTENE
Stefan Boeck; Klaus Herzog, both of Ludwigshafen; Rolf Fischer, Heidelberg; Herbert Vogel, and Martin Fischer, both of Ludwigshafen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany
PCT No. PCT/EP93/03352, § 371 Date Mar. 17, 1995, § 102(e) Date Mar. 17, 1995, PCT Pub. No. WO94/13653, PCT Pub. Date Jun. 23, 1994
PCT Filed Nov. 30, 1993, Ser. No. 406,972
Claims priority, application Germany, Dec. 11, 1992, 42 41 942.5
Int. Cl.⁶ C07D *301/10;303/04*
U.S. Cl. 549—534 **13 Claims**

1. In a process for preparing 3,4-epoxy-1-butene by the gas phase epoxidation of 1,3-butadiene by means of oxygen or oxygen-containing gases over silver-containing catalysts and isolation of the 3,4-epoxy-1-butene from the reaction exit mixture, which the improvement comprises performing the gas phase epoxidation in the presence of from 6 to 80 mol % of water vapor, based on the gas mixture supplied to the reactor.

5,618,955
FATTY ACID DERIVATIVES AND PHARMACEUTICAL COMPOSITIONS CONTAINING SAME
Raphael Mechoulam; Aviva Beuer; Lemir Hanus, all of Jerusalem, Israel, and William A. Devane, Chevy Chase, Md., assignors to Yissum Research Development Company of the Hebrew University of Jerusalem, Jerusalem, Israel
PCT No. PCT/US93/11625, § 371 Date Jul. 26, 1995, § 102(e) Date Jul. 26, 1995, PCT Pub. No. WO94/12466, PCT Pub. Date Jun. 9, 1994
PCT Filed Nov. 30, 1993, Ser. No. 446,706
Claims priority, application Israel, Nov. 30, 1992, 103932
Int. Cl.⁶ C07C *233/00*
U.S. Cl. 554—66 **9 Claims**



ARACHIDONYLETHANOLAMIDE (ANANDAMIDE)

9. A composition for binding to the cannabinoid receptor in brain, comprising an effective quantity of a compound of the general formula

$$R-CO-\underset{\displaystyle R''}{\underset{|}{N}}-R'$$

wherein R is the alkenyl moiety of a polyunsaturated fatty acid of 16 to 28 carbon atoms, with 2 to 6 double bonds, with the first double bond at the C-3, C-6, or C-9 position, counting from the non-carboxyl part of the molecule, where R" is selected from —H, lower-alkyl, —OH and —$(CH_2)_n$—OH, where n is a small integer, and when R" is hydrogen, R' is selected form lower alkyl, and —$(CH_2)_m$OH, where m is a small integer, when R" is lower-alkyl, R' is —$(CH_2)_p$—OH, where p is a small integer, when R" is —OH, R' is —$(CH_2)_q$—OH where q is a small integer, or both R' and R" are each —$(CH_2)_n$—OH, where n is a small integer, and acid addition salts and complexes of these.

5,618,956
ASYMMETRICALLY SUBSTITUTED METALLOCENES WHICH ARE FUNCTIONALIZED ON ONE CYCLOPENTADIENYL RING, AND THEIR PREPARATION
Richard Lisowsky, Kamen, Germany, assignor to Witco GmbH, Bergkamen, Germany
Filed Jul. 25, 1996, Ser. No. 685,994
Claims priority, application European Pat. Off., Aug. 30, 1995, 95113595
Int. Cl.⁶ C07F *7/08;7/16;17/00*
U.S. Cl. 556—12 **8 Claims**

1. A process for the preparation of an asymmetrically substituted compound of the general formula (1)

$$(R^1R^2X^1Si((R^3)_aCp))((R^4)_aCp)M(X^2)_n \quad (1)$$

in which
R^1 and R^2 are independently of one another the same or different and each is an alkyl radical containing 1 to 7 carbon atoms or an aryl radical containing up to 7 carbon atoms,
X^1 is F, Cl, Br, I, p-tolylSO_3—, F_3CSO_3—, F_3CCO_2— or H_3CCO_2—,
R^3 and R^4 are independently of one another the same or different and each is an alkyl or alkyl ether group containing 1 to 9 carbon atoms or an aryl or aryl ether group, containing up to 9 carbon atoms, and $0 \leqq a \leqq 4$ in each occurrence of a,
Cp is a cyclopentadienyl, indenyl, tetrahydroindenyl or fluorenyl radical,
M is a transition metal from any of groups 3–6 (IUPAC notation) of the Periodic Table,
X^2 is F, Cl, Br or I, and
n is the oxidation number of the transition metal minus 2, comprising reacting a compound of the general formula (2)

$$R^1R^2Si(Cp(R^3{}_a))(Cp(R^4{}_a))M(X^2)_n \quad (2)$$

where R^1, R^2, Cp, R^3, R^4, a, M, X^2 and n are as defined above, with an inorganic or organic acid HX^1 in an inert solvent, to effect selective cleavage of the Cp—Si bond, as shown in the general equation II

$$R^1R^2Si(Cp(R^3)_a)(Cp(R^4)_a)M(X^2)_n+HX^1 \rightarrow (R^1R^2X^1Si((R^3{}_a)Cp))((R^4)_aCp)MX^2{}_n \quad (II).$$

5,618,957
METHOD OF PRODUCING SALCOMINE
Frank Hubner, Ober-Ramstadt; Ulrich Gora; Klaus Huthmacher, both of Gelnhausen, and Karlheinz Drauz, Freigericht, all of Germany, assignors to Degussa AG, Frankfurt, Germany
Filed Sep. 28, 1995, Ser. No. 535,634
Claims priority, application Germany, Sep. 30, 1994, 44 35 158.5
Int. Cl.⁶ C07F *15/06*
U.S. Cl. 556—32 **15 Claims**

1. A method of producing salcomine comprising reacting ethylene diamine with an approximately twice molar amount of salicylaldehyde and a cobalt salt in a liquid reaction medium containing solvent at a temperature between about 60° C. and 150° C.; wherein one or several aliphatic and/or cycloaliphatic alcohols R—OH, R representing a linear, branched or cyclic C_3–C_{12} alkyl group, and/or one or several aromatic hydrocarbons with 6–15 carbon atoms are used as solvent; and cobalt carbonate, basic cobalt carbonate $(CoCO_3.Co(OH)_2)$ and/or cobalt acetate are used as cobalt salt.

5,618,958
CHIRALRHENIUM CATALYSTS AND PROCESSES FOR PREPARING THE SAME
Charles E. Tucker, and Kenneth G. Davenport, both of Corpus Christi, Tex., assignors to Hoechst Celanese Corporation, Somerville, N.J.
Filed Aug. 8, 1996, Ser. No. 695,143
Int. Cl.⁶ C07F *13/00*
U.S. Cl. 556—45 **12 Claims**

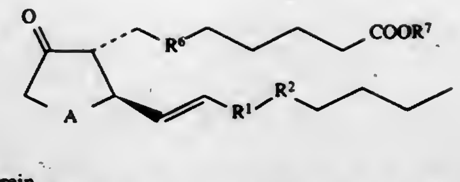
1. A composition of matter having the formula:

LRe(O)n

wherein
L is selected from the group consisting of
(a) (R_1)(AL)
wherein R_1 is an alkyl side chain containing at least one carbon-rhenium covalent bond, and
AL is a molecule having C_2 to C_{50}, and has at least one heteroatom selected from the group consisting of N, O, S, and P, wherein there is at least one hetero-rhenium atom-dative bond, and has at least one chiral center, and
(b) R_{AL} is a straight or branched chain alkyl or arylalkyl group containing C_2 to C_{50} and containing at least one heteroatom selected from the group consisting of N, O, S, and P, with the proviso that said alkyl group contains at least one carbon-rhenium covalent bond and at least one betero-rhenium atom-dative bond and has at least one chiral center; and
n is an integer which is 2, 3, 4, or 5.

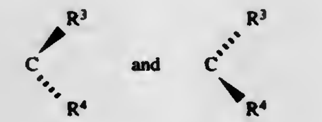
5,618,959
PROCESS FOR PREPARING PROSTAGLANDIN E1, E2 AND ANALOGS THEREOF USING FURYLCOPPER REAGENTS
Miroslav Trampota, West Orange, and Bohumil Zak, Mapplewood, both of N.J., assignors to Vivus Incorporated, Menlo Park, Calif.
Filed Mar. 10, 1995, Ser. No. 403,251
Int. Cl.⁶ C07F *7/18*
U.S. Cl. 556—437 **27 Claims**

1. A process for preparing prostaglandins having the structural formula (I)

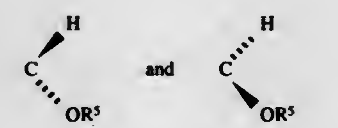


(I)

wherein
R^1 and R^2 may be the same or different and are selected from the group consisting of



in which R^3 and R^4 are independently selected from the group consisting of hydrogen, OR^5 and lower alkyl,
A is selected from the group consisting of

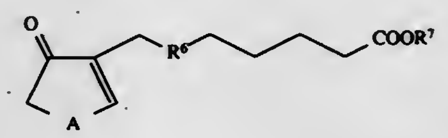


in which R^5 is selected from the group consisting of hydrogen, tetrahydropyranyl, tetrahydrofuranyl, triloweralkylsilyl, 1-methyl-1-methoxyethyl, 1-methyl-1-ethoxyethyl and —(CO)—R^8, wherein
R^8 is hydrogen, lower alkyl or halogen-substituted lower alkyl,
R^6 is ethylene or vinylene,
R^7 is R^5, lower alkyl or lower alkenyl, which process comprises:
(a) preparing a reaction mixture containing (i) a first reagent selected from the group consisting of 2-furyllithium, 2-furylmagnesium chloride and 2-furylmagnesium bromide, (ii) a second reagent comprising a lower alkyllithium compound, (iii) a third reagent comprising copper cyanide, and (iv) a fourth reagent comprising either halogenide (III) or (E)-alkenylstannane (IV)

$$B—CH{=}CH—R^1—R^2—R^{10} \quad (III)$$

$$M—CH{=}CH—R^1—R^2—R^{10} \quad ((IV)$$

in which B is halogenide, M is —$Sn(R^9)_3$ wherein R^9 is lower alkyl, R^{10} is lower alkyl, and R^1 and R^2 are as defined above;
(b) contacting cyclopentenone (II)



(II)

with the reaction mixture under conditions effective to give rise to one or more products having the structural formula (I).

5,618,960

FINE PARTICLE SILICON CONTAINING SURFACE-BOUND HALOGEN, A PROCESS FOR ITS PRODUCTION AND ITS USE

Manfred Schulze, Leichlingen; Hans Rinkes, Cologne; Elke Licht, Leverkusen; Alfred Börsting, Linz/Rhein; Bruno Degen, Much; Hans-Heinrich Moretto, Leverkusen, and Gebhard Wagner, Odenthal, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

PCT No. PCT/EP92/00943, § 371 Date Oct. 27, 1993, § 102(e) Date Oct. 27, 1993, PCT Pub. No. WO92/19626, PCT Pub. Date Nov. 12, 1992

PCT Filed Apr. 30, 1992, Ser. No. 140,108

Claims priority, application Germany, May 9, 1991, 41 15 183.6

Int. Cl.⁶ C07F *7/10*

U.S. Cl. 556—473 **11 Claims**

1. An improved process for the production of organochlorosilanes by the direct reaction of silicon particles, having particle sizes of from 20 to 500 μm, with an organochloride in the presence of a copper catalyst, wherein the improvement comprises binding a halogen to the surface of said silicon particles before said silicon particles are reacted with said organochloride in the presence of said copper catalyst by

a) making said silicon particles by grinding silicon to a particle size of 20 to 500 μm in the presence of silicon tetrachloride; or

b) heating said silicon particles to a temperature of at least 900° C. add then exposing said heated particles to an inert gas containing silicon tetrachloride; or

c) heating said silicon particles in a silicon tetrachloride atmosphere and then quenching said particles in liquid silicon tetrachloride; or

d) melting silicon and atomizing the resulting melt in an atmosphere of silicon tetrachloride; or

e) making said silicon particles by melting silicon and dispersing the resulting mell in a stream of gas containing at least partly of vaporous silicon tetrachloride.

5,618,961

DIPHOSPHITES

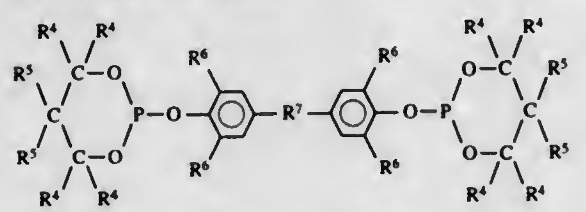
James A. Mahood, Parkersburg, W. Va., assignor to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 96,107, Jul. 22, 1993, Pat. No. 5,523,448. This application Oct. 5, 1995, Ser. No. 538,372

Int. Cl.⁶ C07F *9/02*

U.S. Cl. 558—78 **2 Claims**

1. A phosphite of the formula:



wherein each R^4 is hydrogen, each R^5 is independently selected from the group consisting of alkyl radicals of one to six carbon atoms, each R^6 is tertiary butyl radicals, R^7 is a divalent alkylidene radical having from 1 to 6 carbon atoms.

5,618,962

DIPHOSPHITES

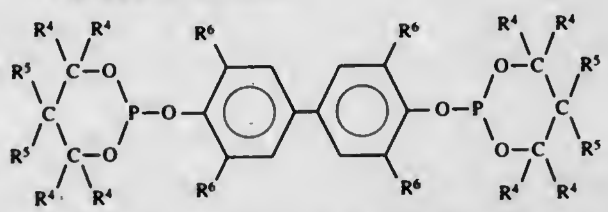
James A. Mahood, Parkersburg, W. Va., assignor to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 96,107, Jul. 22, 1993, Pat. No. 5,523,448. This application Oct. 5, 1995, Ser. No. 539,657

Int. Cl.⁶ C07F *9/02*

U.S. Cl. 558—78 **2 Claims**

1. A phosphite of the formula:



wherein each R^4 is hydrogen, each R^5 is independently selected from the group consisting of alkyl radicals of one to six carbon atoms, each R^6 is tertiary butyl radicals.

5,618,963

PROCESS FOR THE PREPARATION OF STERICALLY HINDERED HYDROXYBENZYLPHOSPHONATES

Thomas Engert, Gross-Rohrheim; Hans Stephan, and Walter Wolf, both of Bensheim, all of Germany, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Filed Jun. 22, 1995, Ser. No. 493,775

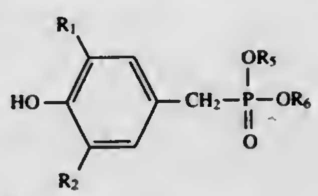
Claims priority, application Switzerland, Jun. 28, 1994, 2058/94

Int. Cl.⁶ C07F *9/40*

U.S. Cl. 558—122 **17 Claims**

1. A process for the preparation of a hydroxybenzylphosphonate of the formula (I)

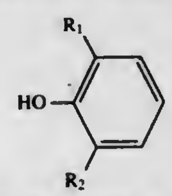
(I)



which comprises

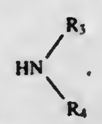
A) reacting a phenol of the formula II

(II)



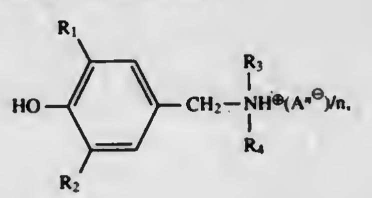
with an amine of the formula III

(III)



formaldehyde or paraformaldehyde and a protonic acid H_nA to give a salt of the formula IV

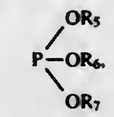
(IV)



B) distilling off the water of reaction which forms, and

C) reacting the reaction mixture, or the salt IV isolated therefrom, with a trialkyl phosphite of the formula

(V)



in which

H_nA is an organic or inorganic acid having n protons,

n is 1, 2, 3 or 4,

R_1 and R_2 independently of one another are C_1-C_{12}alkyl or C_5-C_7cycloalkyl,

R_3 and R_4 independently of one another are C_1-C_{12}alkyl or form, together with the nitrogen atom attached to them, a piperidyl or morpholinyl radical, and

R_5, R_6 and R_7 independently of one another are C_1-C_4alkyl.

5,618,964

PRODRUG ESTERS OF PHOSPHONOSULFONATE SQUALENE SYNTHETASE INHIBITORS AND METHOD

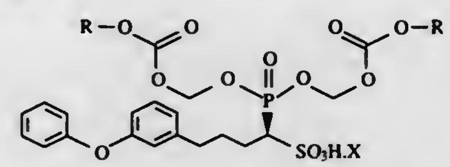
Peter T. W. Cheng, and Michael A. Poss, both of Lawrenceville, N.J., assignors to Bristol-Myers Squibb Company, Princeton, N.J.

Filed Jun. 7, 1995, Ser. No. 487,383

Int. Cl.⁶ C07F *9/40*

U.S. Cl. 558—180 **12 Claims**

1. A prodrug ester of a phosphonosulfonate salt having the structure



wherein R is acylthioalkyl and X represents a pharmaceutically acceptable salt, including all stereoisomers thereof.

5,618,965

PROCESS FOR PREPARING AROMATIC NITRILES

Martin Kudschus, Givisiez, Switzerland, assignor to CIBA-GEIGY Corporation, Tarrytown, N.Y.

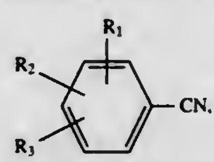
Filed Mar. 4, 1996, Ser. No. 610,315

Int. Cl.⁶ C07C *253/00*

U.S. Cl. 558—315 **16 Claims**

1. A process for preparing a nitrile of the formula (I)

(I)



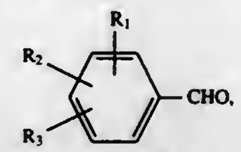
in which R_1, $R_2$and R_3 independently of one another are hydrogen, halogen, cyano, hydroxyl, carboxyl, C_1–C_{18}alkyl, C_1–C_{18}alkoxy, C_1–C_{18} alkylthio, C_1–C_{18}alkylsulfonyl, C_1–C_{18}alkylamino, di(C_1–C_{18}-alkyl)amino, R_4–C_6–C_{10}aryl, R_4-C_6–C_{10}aryloxy, R_4-C_6–C_{10}arylthio, R_4–C_6–C_{10} arylsulfonyl or R_4–C_6–C_{10}arylamino,

or, where R_2 and R_3 are ortho to one another, R_2 and R_3 together form a saturated or mono- or di-unsaturated, 4-membered carbon bridge which is substituted with a radical R_4,

and R_4 is hydrogen, halogen, cyano, hydroxyl, carboxyl, C_1-C_{18}alkyl, C_1-C_{18}alkoxy, C_1–C_{18}alkylthio, C_1–C_{18}alkylsulfonyl, C_1-C_{18}alkylamino or di(C_1-C_{18}alkyl)amino,

by reacting an aldehyde of the formula (II)

(II)



in which R_1, R_2 and R_3 are as defined above, with a hydroxylammonium salt followed by dehydration by heating to an elevated temperature, wherein the reaction takes place in the presence of an anhydrous inorganic sulfate and in the absence of diluents from the group consisting of carboxylic acids, strongly polar aprotic solvents, sulfur compounds and heteroaromatic basic nitrogen compounds.

5,618,966

METHOD FORMING PROTEASE INHIBITOR SYNTHETIC INTERMEDIATES

Biman Pal, Waltham; Siya Ram, Winchester; Bing Cai, Woburn; Yesh P. Sachdeva, Concord; Jaechul Shim, Cambridge; Salah A. Zahr, Acton; Emile Al-Farhan, W. Roxbury, and Richard Gabriel, Swampscott, all of Mass., assignors to Pharm-Eco Laboratories, Incorporated, Lexington, Mass.

Division of Ser. No. 271,619, Jul. 7, 1994, Pat. No. 5,475,138. This application May 16, 1995, Ser. No. 442,117

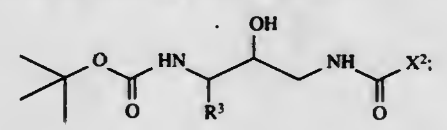
Int. Cl.⁶ C07C *229/34;215/28;213/00;227/02;* **C07D** *403/12*

U.S. Cl. 560—16 **4 Claims**

1. A method for producing a protease inhibitor synthetic intermediate from an N-(tert-butoxycarbonyl)-3-amino-3-substituted-2-oxo-1-nitropropane;

wherein:

said protease inhibitor synthetic intermediate is represented by the following structural formula:

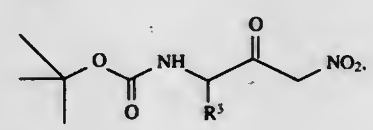


or salts thereof, wherein:

R^3 is a side-chain of an amino acid wherein said side-chain is located α to the amino group of the amino acid, and wherein said amino acid is selected from the group consisting of alanine, cysteine, 3,5-dibromotyrosine, 3,5-diiodotyrosine, glutamine, glycine, histidine, hydroxylysine, isoleucine, leucine, methionine, phenylalanine, serine, threonine, thyroxine, tryptophane, tyrosine, valine and α-aminobutyric acid; and

X^2 is an amino, imino or ester radical;

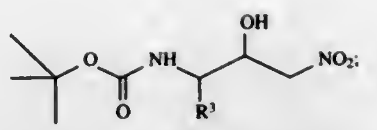
said N-(tert-butoxycarbonyl)-3-amino-3-substituted- 2-oxo-1-nitropropane is represented by the following structural formula:



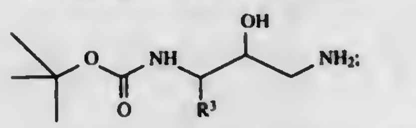
and

said method comprises the steps of:

a) reacting said N-(tert-butoxycarbonyl)- 3-amino-3-substituted-2-oxo-1-nitropropane with a carbonyl group reducing agent, thereby forming an N -(tert-butoxycarbonyl)-1-nitro-3-amino-3-substituted-2-propanol compound represented by the following structural formula:



reacting said N-(tert-butoxycarbonyl)-1-nitro-3-amino-3-substituted-2-propanol with a nitro reducing agent, thereby forming a first chemical intermediate represented by the following structural formula:

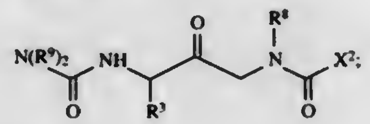


c) reacting said first chemical intermediate with Cl—C(O)—X^2 and with a base, thereby forming said protease inhibitor synthetic intermediate.

4. A method for producing a composition of matter from a N-(tert-butoxycarbonyl)-3-amino-3-substituted-2-oxo-1-nitropropane;

wherein:

said composition of matter is represented by the following structural formula:



wherein:

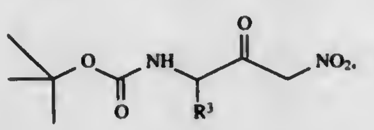
R^3 is a side-chain of an amino acid wherein said side-chain is located α to the amino group of the amino acid and wherein said amino acid is selected from the group consisting of alanine, cysteine, 3,5-dibromotyrosine, 3,5-diiodotyrosine, glutamine, glycine, histidine, hydroxylysine, isoleucine, leucine, methionine, phenylalanine, serine threonine, thyroxine, tryptophane, tyrosine, valine and α-aminobutyric acid;

R^8 is selected from the group consisting of alkyl, hydroxyalkyl, alkoxyalkyl, cycloalkylalkyl, heterocycloalkyl, heterocycloalkylalkyl, aryl, heteroaralkyl and aminoalkyl; and

R^9 is an alkyl or alkaryl; and

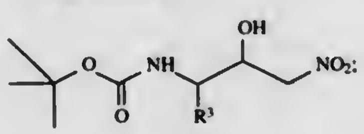
X^2 is an amino, imino acid or ester radical;

said N-(tert-butoxycarbonyl)-3-amino-3-substituted- 2-oxo-1-nitropropane is represented by the following structural formula:

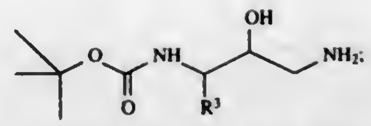
 and

said method comprises the steps of:

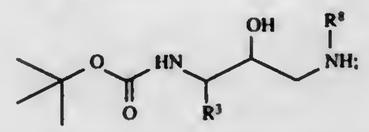
a) reacting said N-(tert-butoxycarbonyl)-3-amino-3-substituted- 2-oxo-1-nitropropane with an carbonyl reducing agent, thereby forming a N-(tert-butoxycarbonyl)-1-nitro-3-amino-3-substituted-2-propanol compound represented by the following structural formula:



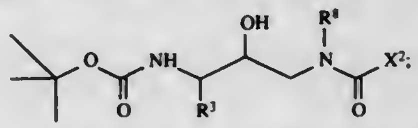
b) reacting said N-(tert-butoxycarbonyl)-1-nitro-3-amino-3-substituted-2-propanol with a nitro reducing agent, thereby forming a first chemical intermediate represented by the following structural formula:



c) reacting said first chemical intermediate with X^1—R^8 and a base, wherein Xis a halogen, thereby forming a compound represented by the following structural formula:

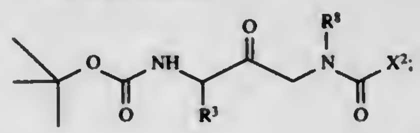


d) reacting the compound produced in C) with Cl—C(O)—X^2 and with a base to form a second chemical intermediate represented by the following structural formula:

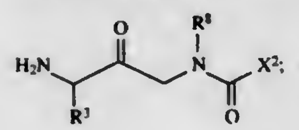


e) mixing said second chemical intermediate with dimethyl sulfoxide and oxalyl chloride to form a reaction mixture;

f) reacting said reaction mixture with a base to form a third chemical intermediate represented by the following structural formula:



g) reacting the third chemical intermediate with an acid to cleave the tert-butoxycarbonyl group from the third chemical intermediate, thereby forming a deprotected third chemical intermediate represented by the following structural formula:

 and

h) reacting the deprotected third chemical intermediate with a base and Cl—C(O)—$N(R^9)_2$ to form said composition.

5,618,967
ISOCYANATE COMPOSITION

Thirumurti Narayan, Grosse Ile, and Valeri L. Volopi, Riverview, both of Mich., assignors to BASF Corporation, Mt. Olive, N.J.

Filed Oct. 30, 1995, Ser. No. 551,193

Int. Cl.[6] C07C 261/00; C08J 9/34

U.S. Cl. 560—26 5 Claims

1. An isocyanate composition comprising the reaction product of

(a1) a polyoxypropylated propylene glycol having an OH number from 200 to 300;

(a2) a diol selected from the group consisting of dipropylene glycol and tripropylene glycol;

(a3) a polyoxypropylated/ethoxylated glycerin having an OH number from 20 to 50;

(a4) a polyoxypropylated/ethoxylated glycol having an OH number from 15 to 45; and

(a5) diphenylmethane diisocyanate.

5,618,968
N-SUBSTITUTED DERIVATIVES OF N-METHYL-3-(P-TRIFLUOROMETHYLPHENOXY)-3-PHENYLPROPYLAMINE AND THE PROCEDURE FOR THEIR PREPARATION

Zdravko Crnic, Gajnice, and Srecko I. Kirin, Zagrebacka, both of Croatia, assignors to PLIVA Farmaceutska kemijska, Prehrambena i kozmeticka industrija, dionicko drustvo, Zagreb, Croatia

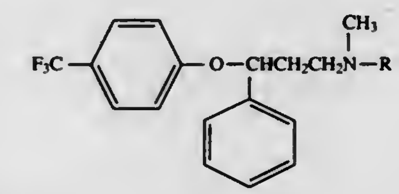
Filed Nov. 3, 1993, Ser. No. 145,141

Claims priority, application Croatia, Feb. 5, 1993, P930129A; Feb. 5, 1993, P930130A

Int. Cl.[6] C07C 269/06; 271/36

U.S. Cl. 560—27 18 Claims

1. N-methyl-3-(p-trifluoromethylphenoxy)-3-phenylpropylamine having the general formula (I),

 (I)

where R has the general formula (II),

$$—(CO_2)_nR_1 \quad (II)$$

in which R_1 is selected from the group consisting of aryl, arylalkyl and alkyl group with C_1 to C_4 atoms, and where n is 0 or 1.

5,618,969
INTERMEDIATES FOR IMIDAZOPYRIDINES

Yoshio Urawa; Ken Furukawa; Toshikazu Shimizu; Yoji Yamagishi, all of Ibaraki; Tomio Tsurugi, Chiba, and Tomio Ichino, Ibaraki, all of Japan, assignors to Eisai Co., Ltd., and Eisai Chemical, both of Tokyo, Japan

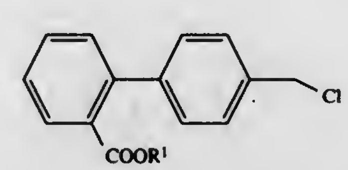
Division of Ser. No. 466,128, Jun. 6, 1995, Pat. No. 5,557,002, which is a division of Ser. No. 256,869, Aug. 5, 1994. This application Oct. 19, 1995, Ser. No. 547,666

Claims priority, application Japan, Dec. 7, 1992, 4-351139; Dec. 16, 1992, 4-353865; Jun. 17, 1993, 5-169805; Jun. 17, 1993, 5-169823; Jun. 17, 1993, 5-169824; Jun. 17, 1993, 5-169825

Int. Cl.[6] C07C 69/76

U.S. Cl. 560—102 1 Claim

1. A (4'-chloromethylphenyl)benzoic ester (X) represented by the following general formula:

 (X)

wherein R^1 is a lower alkyl group, an aryl group, an aralkyl group, a cycloether group, a triarylsilyl group, a vinyl group, a lower alkoxyalkyl group, an aryloxyalkyl group, an aralkyloxyalkyl group, a thioalkoxyalkyl group or a triphenylmethyl group.

5,618,970
HYDROGENATION

Stephen Challenger, Sandwich, United Kingdom, assignor to Pfizer Inc., New York, N.Y.

PCT No. PCT/EP94/03036, § 371 Date Mar. 7, 1996, § 102(e) Date Mar. 7, 1996, PCT Pub. No. WO95/08526, PCT Pub. Date Mar. 30, 1995

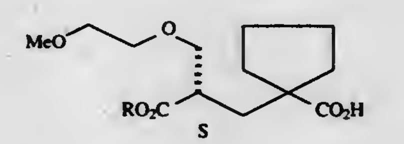
PCT Filed Sep. 9, 1994, Ser. No. 612,940

Claims priority, application European Pat. Off., Sep. 22, 1993, 93307517

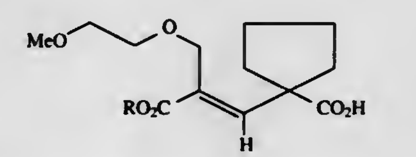
Int. Cl.[6] C07C 69/74

U.S. Cl. 560—121 22 Claims

1. A method of preparing a compound of formula (I):

 (I)

or an amine salt thereof wherein R is 5-indanyl or a carboxylic acid protecting group, which comprises hydrogenating an (E)-allylic ether of formula (II):

 (II)

or an amine salt thereof where R is as defined for formula (I), in the presence of a stereoselective chiral rhodium or ruthenium biphosphine catalyst capable of catalysing said hydrogenation and a protic solvent.

5,618,971
SEPARATION OF A MONO(METH)ACRYLATE OF A C_4-C_6 ALKANEDIOL FROM AN AQUEOUS SOLUTION CONTAINING A MONO(METHACRYLATE) OF A C_4-C_6 ALKANEDIOL AND THE SAID C_4-C_6 ALKANEDIOL

Toni Dockner, Meckenheim; Helmut Lermer, Ludwigshafen; Ulrich Rauh, Limburgerhof, and Gerhard Nestler, Ludwigshafen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Oct. 5, 1995, Ser. No. 539,771

Claims priority, application Germany, Oct. 11, 1994, 44 36 245.5

Int. Cl.[6] C07C 67/48

U.S. Cl. 560—218 10 Claims

1. A process for the separation of a mono(meth)acrylate of a C_4–C_6 alkanediol from an aqueous solution containing a mono(meth)acrylate of a C_4–C_6 alkanediol and the said C_4–C_6 alkanediol, by extraction with an organic solvent, wherein the extracting agent used is an organic solvent selected from the group comprising esters of C_1–C_4 alkanecarboxylic acids and C_1–C_5 alkanols, single and mixed dialkyl ethers having from 4 to 8 C atoms, and mixtures of such organic solvents.

5,618,972

PROCESS FOR CONTINUOUS REACTION AND SEPARATION USING FIXED CATALYST BED SERIALLY CONNECTED TO SIMULATED MOVING CATALYST AND ADSORBENT BED

Gregory A. Funk, Carol Stream; Hemant W. Dandekar, and Simon H. Hobbs, both of Chicago, all of Ill., assignors to UOP, Des Plaines, Ill.

Filed Feb. 27, 1995, Ser. No. 394,995

Int. Cl.^{6} C07C *67/08*

U.S. Cl. 560—239 **26 Claims**

1. A two-stage continuous process for effecting a chemical reaction and concurrently separating at least one product formed in said chemical reaction comprising:

a. introducing one or more reactants to a fixed catalyst bed effective to catalyze the chemical reaction and form an effluent containing unconverted reactants and at least one product;
b. introducing, at different locations of a simulated moving bed, a desorbent and said effluent to said simulated moving bed containing a catalyst effective to catalyze said chemical reaction and an adsorbent to selectively adsorb at least one component of the effluent; and
c. collecting at least one product-containing stream from the simulated moving bed.

5,618,973

ESTERIFICATION PROCESS

Anthony J. Papa, St. Albans, and Brian T. Keen, Charleston, both of W. Va., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Filed Nov. 10, 1994, Ser. No. 337,101

Int. Cl.^{6} C07C *67/08*

U.S. Cl. 560—263 **20 Claims**

1. An esterification process for producing a glycol ether ester having the formula

$$R-(OCH_2\underset{\underset{R^1}{|}}{CH})_x-O\overset{\overset{O}{\|}}{C}R^2$$

wherein R represents an alkyl radical having from 1 to 6 carbon atoms; wherein R^1 represents a radical selected from the groups consisting of hydrogen, methyl and ethyl radicals; wherein R^2 represents an alkyl radical having from 1 to 7 carbon atoms and wherein x is an integer of from 1 to 5; said process comprising reacting a glycol ether alcohol having the formula

$$R-(OCH_2\underset{\underset{R^1}{|}}{CH})_x-OH$$

wherein R,R^1 and x are the same as defined above, with a lower hydrocarbonyl carboxylic acid having the formula

$$R^2-COOH$$

wherein R^2 is the same as defined above, in the presence of a long chain alkyl substituted aryl sulfonic acid catalyst wherein said alkyl substituent is an alkyl radical having from 8 to 20 carbon atoms, and separating and recovering the desired glycol ether ester product from water generated by said esterification; said recovered glycol ether ester product having reduced by-product impurities.

5,618,974

CATALYST FOR PRODUCTION OF METHACRYLIC ACID AND METHOD FOR PRODUCTION OF METHACRYLIC ACID BY THE USE OF THE CATALYST

Ikuo Kurimoto; Hideo Onodera, and Yukio Aoki, all of Hyogo, Japan, assignors to Nippon Shokubai Co., Ltd., Osaka-fu, Japan

Filed May 31, 1995, Ser. No. 456,061

Claims priority, application Japan, May 31, 1994, 6-118227

Int. Cl.^{6} B01J *27/16*

U.S. Cl. 562—532 **12 Claims**

1. A catalyst for producing methacrylic acid by the oxidation and/or oxidative dehydrogenation of at least one compound selected from the group consisting of methacrolein, isobutyl aldehyde, and isobutyric acid in a vapor phase with either molecular oxygen or a molecular oxygen-containing gas, which catalyst comprises (A) a composite oxide having molybdenum and phosphorus as essential components and adapted for the production of methacrylic acid by the vapor-phase catalytic oxidation and/or oxidative dehydrogenation of methacrolein, isobutyl aldehyde, and/or isobutyric acid and (B) a solid acid having acid strength, designated Ho, of not more than −11.93 (Ho≦−11.93).

5,618,975

PROCESS FOR THE PREPARATION OF BIPHENYL DERIVATIVES

Adalbert Wagner, Hattersheim/Main, Germany; Neerja Bhatnagar, Savigny Sur Orge, France; Jean Buendia, Le Perreux Sur Marne, France, and Christine Griffoul, Rosny Sous Bois, France, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

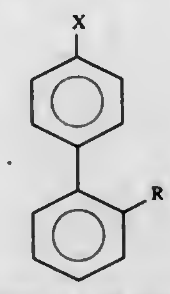
Division of Ser. No. 177,314, Jan. 4, 1994, abandoned. This application May 24, 1995, Ser. No. 449,396

Claims priority, application Germany, Jan. 6, 1993, 43 00 137.8

Int. Cl.^{6} C07C *311/21:47/546*

U.S. Cl. 564—88 **14 Claims**

1. A compound of the formula (I)



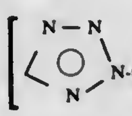
(I)

in which the substituents have the following meanings,

X is —CHO or —CH(OR^1)OR^2, where

R^1 and R^2 independently of one another are (C_1–C_6)-alkyl or R^1 and R^2 together are an alkylene group (—CH_2)$_n$—, where n is 2, 3, 4, or 5, and

R is —$(CH_2)_m$—$COOR^3$, —$(CH_2)_m$—$CONHR^3$, —$(CH_2)_m$—CN, —SO_2NH—$COOR^3$, —SO_2NH—CO—NHR^3, —SO_2NH—SO_2—R^3,

[ N-trityl, —PO_3R^3,]

—$NHSO_2R^3$, —NH—SO_2—CF_3, or —SO_2NR^4

where R^3 is hydrogen, (C_1—C_6)-alkyl, (C_3—C_6)cycloalkyl, or (C_1–C_6)-alkyl-(C_3–C_6)cycloalkyl and R^4 is a group =C—N$(CH_3)_2$, and m is 1, 2, 3, or 4.

2. A compound as claimed in claim 1, wherein formula (I)

R is SO_2—NR^4 or $SO_2NHCONHR^3$, where

R^3 is hydrogen or C_1–C_6-alkyl and

R^4 is a group =C—N $(CH_3)_2$.

5,618,976

ALKANESULFONAMIDES FROM AMMONIUM ALKANESULFONATES

Stanley R. Sandler, Springfield, Pa., assignor to Elf Atochem North America, Inc., Philadelphia, Pa.

Filed Mar. 6, 1996, Ser. No. 612,632

Int. Cl.^{6} C07C *303/36*

U.S. Cl. 564—98 **5 Claims**

1. A method of preparing alkanesulfonamides comprising heating at least to its melting point up to about 450° C. the ammonium or amine salt of an alkanesulfonic acid having the formula:

$$RSO_3{}^{-+}NH_2R'R''$$

where R is a C_1–C_{20} alkyl group, and R' and R" are the same or different substituents including hydrogen, C_1–C_{20} alkyl or C_6–C_{12} aryl groups, and continuing said heating for a time sufficient to remove the water of reaction and to obtain a reaction product which is an alkanesulfonamide corresponding to said salt.

5,618,977

POLYIODINATED COMPOUNDS, PROCESS OF PREPARATION AND CONTRAST AGENT CONTAINING THEM

Maryse Dugast-Zrihen, Paris, and Dominique Meyer, Saint-Maur, both of France, assignors to Guerbet S.A., Villepinte, France

PCT No. PCT/FR93/00824, § 371 Date Aug. 11, 1995, § 102(e) Date Aug. 11, 1995, PCT Pub. No. WO94/04488, PCT Pub. Date Mar. 3, 1994

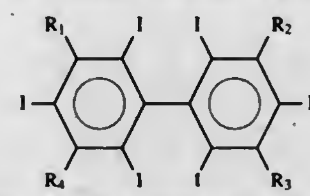
PCT Filed Aug. 24, 1993, Ser. No. 387,721

Claims priority, application France, Aug. 25, 1992, 92 10270

Int. Cl.^{6} C07C *237/46;237/42;235/16;* **A61K** *49/04*

U.S. Cl. 564—153 **9 Claims**

1. Polyiodinated compounds of general formula:



(I)

in which R_1 and R_2, which are identical to or different from each other, represent a group of formula:

$$-CON\begin{matrix} R_5 \\ \\ R_6\end{matrix}$$

and R_3 and R_4, which are identical to or different from each other, represent a group of formula

$$-\underset{\underset{R_7}{|}}{N}-CO-R_8$$

which R_5 and R_6, and R_7 and R_8, which are identical to or different from each other, represent a hydrogen atom, a linear or branched C_1–C_6 alkyl, a linear or branched C_1–C_6 hydroxy- or polyhydroxyalkyl, optionally additionally containing one or more C_1–C_6 alkoxys, a linear or branched (C_1–C_6) alkoxy(C_1–C_6)alkyl or a linear or branched (C_1–C_6) hydroxy-or polyhydroxyalkoxy(C_1–C_6)alkyl, said substituents R_1, R_2, R_3 and R_4 comprising in total at least ten hydroxyls.

5,618,978

METHOD OF PRODUCING CHOLINE OF A HIGH PURITY

Shunji Hyoda; Youichi Hasegawa, both of Marugame, and Fumio Toda, Shigenobu, all of Japan, assignors to Japan Hydrazine Co., Ltd., Tokyo, Japan

Filed Mar. 26, 1996, Ser. No. 622,082

Int. Cl.^{6} C07C *209/84*

U.S. Cl. 564—293 **5 Claims**

1. A method of producing a choline of a high purity, wherein a choline carbonate and/or a choline bicarbonate of a high purity obtained by reacting a molecule-inclusion complex of the chlorine with a carbon dioxide gas, is subjected to an electrolysis using a cation-exchange membrane as a diaphragm.

5,618,979

PROCESS FOR PREPARING SUBSTITUTED AROMATIC AMINES

Michael K. Stern, University City, and Brian K-M Cheng, St. Charles, both of Mo., assignors to Flexsys America L. P., Akron, Ohio

Division of Ser. No. 38,047, Apr. 6, 1993, Pat. No. 5,552,531, which is a continuation-in-part of Ser. No. 887,060, May 22, 1992, abandoned. This application May 18, 1995, Ser. No. 443,796

Int. Cl.^{6} C07C *209/22*

U.S. Cl. 564—415 **28 Claims**

1. A process for preparing substituted aromatic amines comprising:

(a) contacting a nucleophilic compound selected from the group consisting of aniline, substituted aniline derivatives, aliphatic amines, substituted aliphatic amine derivatives and amides with a substituted aromatic azo compound or azoxy or hydrazo derivatives thereof in the presence of a suitable solvent system, and

(b) reacting the nucleophilic compound and the substituted aromatic azo compound or azoxy or hydrazo derivatives thereof in the presence of a suitable base and a controlled amount of protic material at a reaction temperature of about 70° C. to about 200° C., wherein the molar ratio of protic material to base is 0:1 to about 5:1, wherein the substituted aromatic azo compound is selected from the group consisting of compounds represented by the formula

$$(R-NH+\underset{\underset{X}{|}}{R_1}-N{=}N-\underset{\underset{Y}{|}}{R_2}. \tag{I}$$

compounds represented by the formula

$$(R-NH+\underset{\underset{X}{|}}{R_1}-N{=}N-\underset{\underset{Y}{|}}{R_2}+NH-R), \tag{II}$$

compounds represented by the formula

$$X-R_1-N{=}N-\underset{\underset{Y}{|}}{R_2}+NH-R), \tag{III}$$

and mixtures thereof, wherein R—NH—represents a substituent derived from a compound selected from the group consisting of aniline, substituted aniline derivatives, aliphatic amines, substituted aliphatic amine derivatives and amides, R_1 is an aromatic group, R_2 is selected from the group consisting of aliphatic and aromatic groups, and X and Y are independently selected from the group consisting of hydrogen, halides, —NO_2, —NH_2, aryl groups, alkyl groups, alkoxy groups, sulfonate groups, —SO_3H, —OH, —COH, —COOH, and alkyl, aryl, arylalkyl or alkylaryl groups containing at least one —NH_2 group, wherein halides are selected from the group consisting of chlorine, bromine and fluorine and R_2 is an aromatic group in substituted aromatic azo compounds (II) and (III).

5,618,980

METHOD FOR PREPARING AROMATIC SECONDARY AMINO COMPOUND

Teruyuki Nagata, Ohmuta; Chiyuki Kusuda, Nagasumachi; Masaru Wada, Ohmuta; Kenichi Satou, Mobara, and Masae Uchida, Ohmuta, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

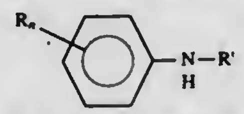
Division of Ser. No. 353,379, Dec. 2, 1994, Pat. No. 5,536,878, which is a continuation-in-part of Ser. No. 287,273, Aug. 8, 1994, abandoned, which is a division of Ser. No. 100,149, Aug. 2, 1993, Pat. No. 5,382,690. This application Apr. 30, 1996, Ser. No. 640,022

Claims priority, application Japan, Aug. 11, 1992, 4-214078; Sep. 30, 1992, 4-261505; Oct. 5, 1992, 4-265897; Oct. 5, 1992, 4-265898; Oct. 21, 1992, 4-282940; Oct. 28, 1992, 4-290133; Oct. 29, 1992, 4-291311; Nov. 6, 1992, 4-297096; May 21, 1993, 5-119975; May 24, 1993, 5-121423; May 26, 1993, 5-124062; May 28, 1993, 5-126826; May 28, 1993, 5-126827; Jun. 3, 1993, 5-133273; Dec. 3, 1993, 5-303707; Dec. 8, 1993, 5-307638; Apr. 11, 1994, 5-071734

Int. Cl.^{6} C07C *209/52*

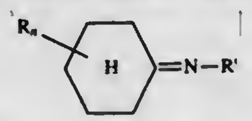
U.S. Cl. 564—415 **16 Claims**

1. A method for preparing an aromatic secondary amino compound represented by the formula (2)



(2)

wherein each R is a hydrogen atom, alkyl group, alkoxy group, amino group, hydroxyl group or fluorine; n is an integer of from 0 to 5; and R' is an alkyl group, phenyl group, benzyl group, naphthyl group, furyl group, furfuryl group or cyclohexyl group, and R' may be substituted by an alkyl group, alkoxy group, phenyl group, phenoxy group, cyclohexyl group, amino group, substituted amino group, carboxyl group, hydroxyl group or fluorine which comprises the step of subjecting, to a dehydrogenation reaction, an N-cyclohexylideneamino compound represented by the formula (1)



wherein R, R' and n are defined above in the presence of a hydrogen moving catalyst and a hydrogen acceptor, said method being characterized in that an alkaline metal compound and/or an alkaline earth metal compound is used as a cocatalyst at the time of the dehydrogenation reaction.

5,618,981

PROCESS FOR PRODUCING AROMATIC SULFIDES

James E. Shaw, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 19, 1995, Ser. No. 445,262

Int. Cl.^{6} C07C *319/14*

U.S. Cl. 568—44 **23 Claims**

1. A process for producing an aromatic sulfide comprising contacting, in the presence of a surfactant, a halo-substituted aromatic compound in an aqueous medium with a salt of mercaptan wherein:

said aromatic sulfide compound has the formula of

$(R_{4-n})(X_n)(W)Ar—S—R'$;

each R is independently selected from the group consisting of hydrogen, hydrocarbyl radicals each having 1 to about 30 carbon atoms, and combinations of any two or more thereof wherein said hydrocarbyl radical is selected from the group consisting of alkyl radicals, akenyl radicals, aryl radicals, alkaryl radicals, aralkyl radicals, cycloalkyl radicals, cycloalkenyl radicals, and combinations of any two or more thereof;

each X is a halogen;

n is an integer from 0 to 3;

W is a substituent selected from the group consisting of $—NO_2$, $—SO_3H$, —CHO, —COOH, ×NO, $—N^+_2$, —CN, —COR, —COO', SO_3^-, $—SO_2CH_3$, $—CF_3$, and $—N^+(CH_3)_3$;

Ar is selected from the group consisting of naphthyl group, phenyl group, and biphenyl group;

R' is selected from the group consisting of alkyl radicals, akenyl radicals, cycloalkyl radicals, and cycloalkenyl radicals;

said halo-substituted aromatic compound has the formula of

$(R_{4-n})(X_{n+1})WAr$;

said salt of mercaptan has the formula of MSR' wherein M is selected from the group consisting of alkali metal ions, alkaline earth metal ions, ammonium ions, and combinations of any two or more thereof; and

said surfactant is selected from the group consisting of alkoxylated compounds, quaternary ammonium salts, alkali metal alkyl sulfates, alkali metal salts of alkanoic acids, alkali metal salts of alkaryl sulfonic acids, 1-alkyl pyridinium salts, and combinations of any two or more thereof wherein said alkoxylated compound is selected from the group consisting of alkoxylated mercaptans, alkoxylated phenols, sulfates of alkoxylated phenols, and combinations of any two or more thereof.

5,618,982

CATALYTIC C-ALKYLATION OF KETONES

Laurent Gilbert, and Michel Spagnol, both of Lyons, France, assignors to Rhone-Poulenc Chimie, Courbevoie Cedex, France

Filed Nov. 22, 1994, Ser. No. 346,226

Claims priority, application France, Nov. 22, 1993, 93 13920

Int. Cl.^{6} C07C *45/45*

U.S. Cl. 568—346 **56 Claims**

1. An improved process for the preparation of a C- or α-alkylated ketone, comprising reacting a ketone having at least one hydrogen atom or ester group in the α-position with respect to a ketonic carbonyl group thereof, with an alkylating agent, in the presence of a catalyst, wherein the improvement comprises using as the catalyst a catalytically effective amount of a condensed or condensed catalyst which comprises a cationic moiety and an anionic moiety wherein the cationic moiety comprises a metal or ammonium and wherein the anionic moiety comprises an orthophosphate anion.

5,618,983

HYDROFORMYLATION PROCESS

Patrick M. Burke, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del., and DSM N. V., Galeen, Netherlands

Filed Aug. 25, 1995, Ser. No. 519,833

Int. Cl.^{6} C07C *45/50*

U.S. Cl. 568—454 **11 Claims**

1. A process for the preparation of linear aldehyde which comprises contacting a linear olefin, hydrogen, water, and carbon monoxide in a solvent containing a dissolved catalyst comprising: (a) a platinum or palladium compound free of anionic halide, (b) a bidentate diaryl phosphine ligand where each of the aryl groups contain up to 15 carbon atoms and where the bridging group contains 3 to 6 carbon atoms or is a ferrocenyl group, and (c) a promoter selected from the group consisting of (i) a metal perfluoroalkane sulfonate where the alkane has 1 to 10 carbon atoms, (ii) a metal perfluoro-betadiketonate of up to 11 carbon atoms, and (iii) a metal trifluoroacetate; where the metal in (i), (ii), and (iii) is selected from the group consisting of aluminum, scandium, nickel, zinc, yttrium, zirconium, tin, lanthanum, and lanthanide elements from praseodymium to lutetium; where the ratio of (c) to (a) is in the range of 0.5/1 to 20/1, and the ratio of (b) to (a) is in the range of 0.8/1 to 1.5/1.

5,618,984

PHENOL ARALKYL RESINS, PREPARATION PROCESS THEREOF AND EPOXY RESIN COMPOSITIONS

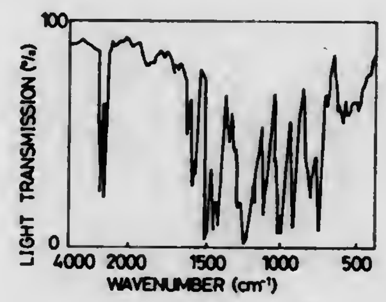
Tomoyuki Kawabata; Teruo Yuasa, both of Aichi-ken, and Shigeru Iimuro, Kanagawa-ken, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Jun. 14, 1995, Ser. No. 490,507

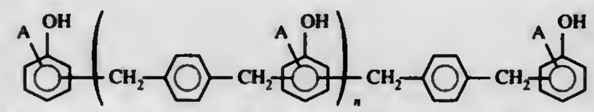
Claims priority, application Japan, Jun. 24, 1994, 6-142808

Int. Cl.^{6} C07C *39/21;37/055*

U.S. Cl. 569—720 **3 Claims**



1. An allylated phenol aralkyl resin represented by the general formula (2).



(2)

wherein n is an integer of from 0 to 10 and A is an allyl group.

5,618,985

PROCESS FOR THE PREPARATION OF 2-N-BUTYL-2-ETHYL-1,3-PROPANE DIOL

Kari Kulmala, Porvoo, Finland; Kjell Ankner, Mölnlycke, Sweden, and Lea Rintala, Porvoo, Finland, assignors to Neste Oy, Espoo, Finland

PCT No. PCT/FI94/00273, § 371 Date May 4, 1995, § 102(e) Date May 4, 1995, PCT Pub. No. WO95/00464, PCT Pub. Date Jan. 5, 1995

PCT Filed Jun. 20, 1994, Ser. No. 381,919

Claims priority, application Finland, Jun. 28, 1993, 932968

Int. Cl.^{6} C07C *27/00*

U.S. Cl. 568—853 **2 Claims**

1. A process for the preparation of 2-butyl-2-ethyl-1,3-propane diol, which comprises:

reacting 2-ethyl hexanal and formaldehyde in the presence of a basic alkali metal hydroxide or earth alkali metal hydroxide catalyst, wherein the formaldehyde source is solid paraformaldehyde, and a cationic phase transfer catalyst is used for promoting the reaction.

5,618,986

METHOD FOR PRODUCING A HYDROFLUOROCARBON

Kazuya Oharu; Ryuji Seki, and Seisaku Kumai, all of Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Continuation of Ser. No. 318,258, Oct. 5, 1994, Pat. No. 5,557,017. This application May 3, 1996, Ser. No. 642,615

Claims priority, application Japan, Oct. 5, 1993, 5-249312; Oct. 14, 1993, 5-257236; Nov. 5, 1993, 5-276815; Apr. 6, 1994, 6-068541

Int. Cl.^{6} C07C *19/08*

U.S. Cl. 570—176 **9 Claims**

1. A method for producing a hydrofluorocarbon of the formula H_nR_fH wherein n is 0 or 1, and when n is 0, R_f is a C_{2-12} linear or branched polyfluoroalkyl group, and when n is 1, R_f is a C_{2-12} linear or branched polyfluoroalkylene group, which comprises reacting an iodofluorocarbon of the formula I_nR_fI wherein n and R_f are as defined above, with an alkali metal alkoxide under action of a primary alcohol or a secondary alcohol.

5,618,987

INBRED MAIZE LINE PH42B

Loren J. Hoffbeck, Tipton, Ind., assignor to Pioneer Hi-Bred International, Inc., Des Moines, Iowa

Filed Sep. 1, 1995, Ser. No. 522,670

Int. Cl.^{6} A01H *1/02;4/00;5/00;* **C12N** *5/04*

U.S. Cl. 800—200 **14 Claims**

1. Seed of maize inbred line designated PH42B and having ATCC Accession No. 97647.

2. A maize plant and its parts produced by the seed of claim 1 and its plant parts.

5,618,988

ENHANCED CAROTENOID ACCUMULATION IN STORAGE ORGANS OF GENETICALLY ENGINEERED PLANTS

Randal Hauptmann, Woodland, Calif.; William H. Eschenfeldt, St. Charles, Ill.; Jami English, Aurora, Ill., and Friedhelm L. Brinkhaus, Lisle, Ill., assignors to Amoco Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 805,061, Dec. 9, 1991, abandoned, and Ser. No. 93,577, Jul. 19, 1993, which is a continuation of Ser. No. 785,569, Oct. 30, 1991, abandoned, and a continuation-in-part of Ser. No. 96,043, Jul. 22, 1993, Pat. No. 5,530,189, which is a continuation of Ser. No. 785,568, Oct. 30, 1991, abandoned, and a continuation-in-part of Ser. No. 95,726, Jul. 21, 1993, Pat. No. 5,530,188, which is a continuation of Ser. No. 785,566, Oct. 30, 1991, abandoned, and a continuation-in-part of Ser. No. 96,623, Jul. 22, 1993, abandoned, which is a continuation of Ser. No. 805,061, which is a continuation-in-part of Ser. No. 562,674, Aug. 3, 1990, abandoned, Ser. No. 785,569, Ser. No. 785,568, Ser. No. 785,566, and Ser. No. 662,921, Feb. 28, 1991, abandoned, said Ser. No. 562,674is a continuation-in-part of Ser. No. 562,551, May 18, 1990, abandoned, which is a continuation-in-part of Ser. No. 487,613, Mar. 2, 1990, abandoned. This application Oct. 28, 1994, Ser. No. 331,004

Int. Cl.^{6} A01H *4/00*

U.S. Cl. 800—205 **38 Claims**

27. A transgenic plant that (a) has a genomic structural gene that encodes a chimeric polypeptide conjugate and (b) overaccumulates a colored native carotenoid in a preselected storage organ relative to the accumulation of colored native carotenoid in said storage organ in a non-transgenic plant of the same type, said chimeric polypeptide conjugate having an N-terminal plastid transit peptide portion whose C-terminus is linked to the N-terminus of a non-higher plant phytoene synthase enzyme.

5,618,989

ACCELERATION SENSOR AND MEASUREMENT METHOD

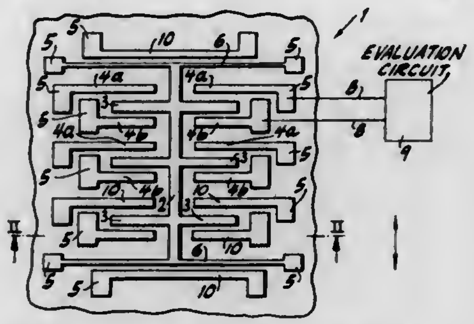
Jiri Marek, Reutlingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Sep. 11, 1995, Ser. No. 526,289

Claims priority, application Germany, Sep. 15, 1994, 44 32 837.0

Int. Cl.⁶ G01P *15/08*

U.S. Cl. 73—1.38 **10 Claims**



1. A capacitive acceleration sensor comprising:

at least one movable seismic mass adapted to be deflected by an acceleration, the seismic mass including at least one movable electrode;

at least one fixed electrode arranged opposite the movable electrode, the fixed electrode and the movable electrode forming at least one measuring capacitance; and

at least one further fixed electrode adapted to receive an electrical voltage, a force being exerted on the seismic mass in response to the electrical voltage.

5,618,990

INSPECTION SYSTEM FOR DETECTING A LEAKING LIQUID AND ENTERING AIR

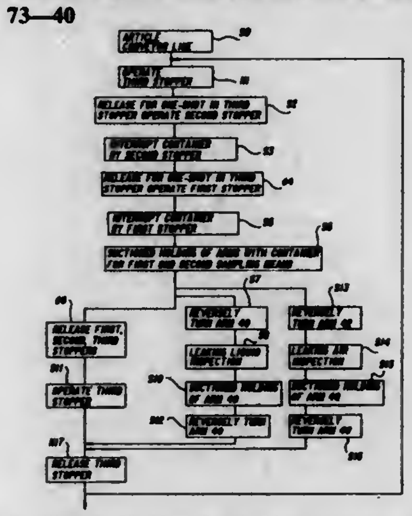
Kenji Iwao, Numazu, and Hiroshi Mochizuki, Susono, both of Japan, assignors to Kabushiki Kaisha Yakult Honsha, Tokyo, Japan

Filed Sep. 13, 1995, Ser. No. 527,599

Claims priority, application Japan, Sep. 14, 1994, 6-219778

Int. Cl.⁶ B07C *5/02;* **G01N** *33/02;* **G01M** *3/02*

U.S. Cl. 73—40 **7 Claims**



1. An inspection system that quality inspects a contents-filling operation for each of a plurality of containers in sequence by performing two different inspection tests at two separate testing positions disposed along a single automated conveyor line, comprising:

a leaking liquid inspection apparatus for inspecting a container made of flexible material, in order to detect leaking liquid;

an entering air inspection apparatus for inspecting said container, in order to detect air which enters with contents of the container when the container is filled with said contents;

a conveyor line for conveying a plurality of containers;

first sampling means for moving the container as an inspection subject to a position, at which position said leaking liquid inspection apparatus is provided;

second sampling means for moving the container as an inspection subject to a position, at which position said entering air inspection apparatus is provided;

first stopper means for interrupting the container which is to be the inspection subject at the position of said first sampling means while the container is moving on said conveyor line;

second stopper means for interrupting the container which is to be the inspection subject at the position of said second sampling means while the container is moving on said conveyor line; and

a third stopper located at the upstream position from said first and second stopper means.

5,618,991

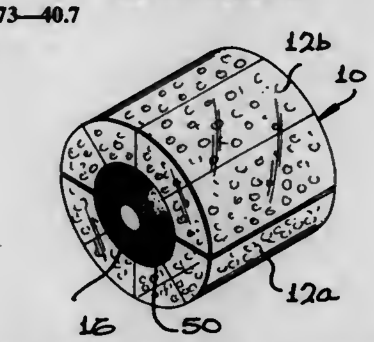
BICYCLE INNER TUBE LEAK DETECTOR DEVICE

Maxim D. Levinrad, Van Nuys, Calif., assignor to Moshe Young, Studio City, and Maxim Levinrad, Van Nuys, both of Calif.

Filed Jan. 16, 1996, Ser. No. 585,520

Int. Cl.⁶ G01M *3/02*

U.S. Cl. 73—40.7 **16 Claims**



1. An inner tube leak detection device comprising:

a sleeve member with an outer wall and an inner wall defining an interior chamber therein and defining an inner opening in a center thereof adapted to receive an inner tube, said inner wall having air openings formed therethrough; and

a plurality of lightweight particles contained within said interior chamber.

5,618,992

DEVICE AND METHOD FOR MONITORING DEPOSITS IN A PIPE OR VESSEL

Derek Bond, Lagness, and Raul A. Abreu, Horsham, both of England, assignors to The BOC Group plc, Windlesham Surrey, England

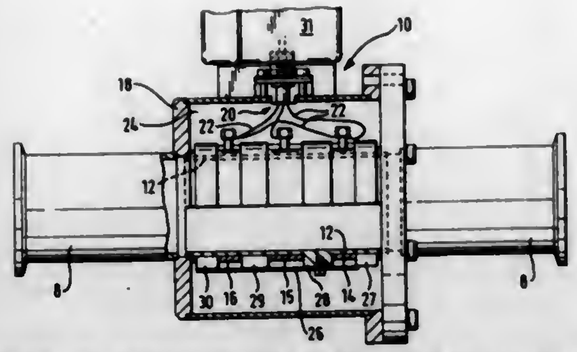
Filed Sep. 29, 1995, Ser. No. 537,197

Claims priority, application United Kingdom, Oct. 3, 1994, 9419886

Int. Cl.⁶ G01F *23/26*

U.S. Cl. 73—86 **6 Claims**

1. A non-intrusive device for attachment to a pipe or vessel through which a fluid flows for monitoring the accumulation of deposits on the interior surface of the pipe or vessel, said device comprising a tubular member having an internal cross-sectional configuration substantially matching that of the pipe or vessel, the tubular member being made from an electrically insulating material and having associated therewith three spaced electrodes for monitoring the change of dielectric constant within the pipe or vessel, the three electrodes comprising two outlying electrodes and a central electrode located between the two outlying electrodes, each of said two outlying and central electrodes formed by a



circular ring extending circumferentially around the outside surface of the tubular member and the central electrode having a greater width, as measured in an axial direction of said tubular member and said two outlying and central electrodes, than the two outlying electrodes.

6. A method for monitoring the accumulation of deposits on the interior surface of a pipe or vessel in which a fluid flows comprising:

attaching a device to the pipe or vessel, the device comprising: a tubular member having an internal cross-sectional configuration substantially matching that of the pipe or vessel and formed from an electrically insulating material, and three, spaced ring-like electrodes extending circumferentially around the outside surface of the tubular member and electrically insulated from one another;

applying an electrical potential to the three electrodes and measuring a dielectric constant; monitoring any change of the dielectric constant as indicative of the accumulation of the deposits on the interior surface of a pipe or vessel.

5,618,993

ULTRASONIC DETECTION APPARATUS AND METHOD FOR DETECTING ACOUSTIC EMISSION

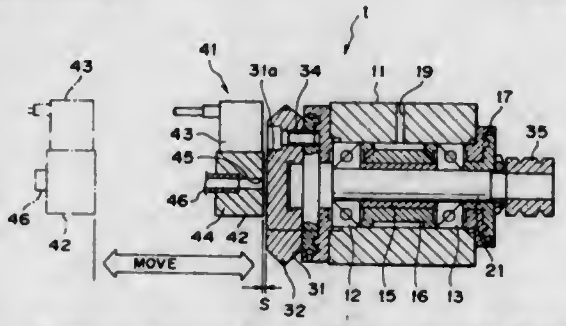
Kazuo Matsumoto; Haruhiko Ueno, and Kenji Shimada, all of Higashimatsuyama, Japan, assignors to Zexel Corporation, Tokyo, Japan

Continuation of Ser. No. 347,126, Nov. 23, 1994, abandoned. This application Dec. 20, 1995, Ser. No. 575,467

Claims priority, application Japan, Dec. 24, 1993, 5-347370

Int. Cl.[6] G01H *1/00*

U.S. Cl. 73—587 **7 Claims**



1. An ultrasonic detection apparatus (41) for detecting physical contact between a rotating member (21, 31) and a workpiece, comprising:

a) a detection liquid supply unit (42) having a planar end surface disposed closely adjacent a planar end face portion of said rotating member so as to form a small, planar, uniformly wide gap (S) there between, for supplying a detection liquid directly through a central portion of said planar end surface to a center of rotation of said rotating member to form a disc shaped detection liquid membrane locally in the gap, proximate to and including said center of rotation; and

b) an acoustic emission sensor (43) integrally affixed to said detection liquid supply unit for detecting ultrasonic vibrations or acoustic emissions transmitted through the detection liquid membrane formed in the gap, and vibrations or emissions generated by physical contact between the rotating member and the workpiece,

c) wherein Said rotating member comprises a dressing wheel of a dressing apparatus which has a cutting edge (32) on a periphery thereof for shaping a surface of a grinding wheel.

5,618,994

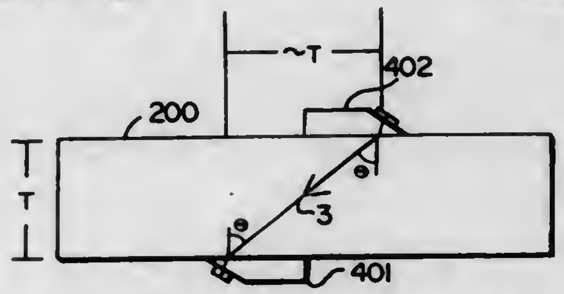
CALIBRATION METHOD USING A PITCH-CATCH ARRANGEMENT FOR ULTRASONIC INSPECTION OF ACOUSTICALLY NOISY MATERIALS

Robert V. Falsetti, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 149,208, Nov. 8, 1993, Pat. No. 5,445,029. This application Apr. 14, 1995, Ser. No. 421,929

Int. Cl.[6] G01N *29/08*

U.S. Cl. 73—602 **8 Claims**



1. In a nondestructive testing system for performing Pitch-Catch ultrasonic inspections, including a data acquisition system for acquiring and analyzing ultrasonic signal measurement data, a method for automatically calibrating said measurement data to compensate for variations in acoustic properties within a specimen under test, comprising the steps of:

(a) positioning at least one pair of ultrasonic transducers on opposing surfaces of said specimen under test in a configuration such that a non-reflecting through-transmitted ultrasonic wave is transmitted between said transducers;

(b) obtaining through-transmitted wave reference signal data for a plurality of reference locations on said specimen:

(c) positioning said pair of transducers on said opposing surfaces in relative positions such that Pitch-Catch diagnostics is performed and acquiring ultrasonic measurement data at a plurality of monitored locations on said specimen;

(d) normalizing the measurement data acquired in step (c) for each of said plurality of monitored locations by dividing the measurement data acquired at each of said plurality of monitored locations by corresponding through-transmitted wave reference signal data obtained at a reference location nearest to each of said plurality of monitored locations.

5,618,995

VEHICLE VIBRATION SIMULATOR

Norman C. Otto, Plymouth; William J. Pielemeier, Ypsilanti, and Raymond C. Meier, Jr., Canton, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jul. 5, 1995, Ser. No. 498,451

Int. Cl.[6] G01M *17/00;* **G09B** *9/04*

U.S. Cl. 73—669 **15 Claims**

1. A vehicle vibration simulator to simulate occupant exposure to vibration in a motor vehicle comprising:

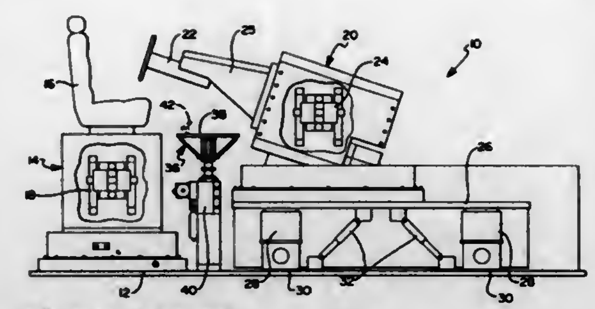
a reaction mass;

a seat portion;

a seat actuator between said reaction mass and said seat portion for providing at least one degree of vibration freedom;

a steering column portion;

a steering column actuator between said reaction mass and said steering column portion for providing at least one degree of vibration freedom;



a floorpan portion; and

a floorpan actuator between said reaction mass and said floorpan portion for providing one degree of vibration freedom, and means for controlling said seat actuator, steering column actuator and floorpan actuator to allow said seat actuator, steering column actuator and floorpan actuator to be individually actuated independently and simultaneously to simulate human exposure to vehicle vibration.

5,618,996

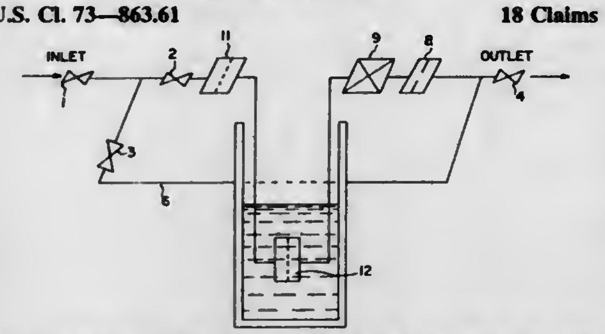
METAL SAMPLING METHOD AND SYSTEM FOR NON-HYDROLYZABLE GASES

Hwa-Chi Wang, Naperville, and Richard J. Udischas, Chicago, both of Ill., assignors to American Air Liquide Inc., Houston, Tex.

Filed Mar. 1, 1996, Ser. No. 609,836

Int. Cl.[6] G01N *1/22*

U.S. Cl. 73—863.61 **18 Claims**



1. A portable system useful for sampling both particulate and vapor phase metallic impurities from gases that cannot be hydrolyzed, which system comprises:

a sample conduit and a parallel conduit, said parallel conduit connected to said sample conduit at first and second locations, the second location downstream of the first location;

first valve means upstream of said first location for introducing gas into said sample and parallel conduits and fourth valve means downstream of the second location, for controlling the exhaust of a gas from the sampling system;

first and second filter means in said sample conduit in series to remove particulate and vapor phase metallic impurities, respectfully, from the gas being sampled;

second valve means upstream of the first and second filter means but downstream of the first valve means and first location, said second valve means for introducing the gas into the system;

third valve means in said parallel conduit, for allowing gas to be conducted in parallel with respect to the first and second filter means of the system from the first valve means to the fourth valve means; and

an orifice located in the sample conduit downstream of the first and second filters of the system, but upstream of the second location, through which orifice back-filling of the gas through the first and second filters in the system is permitted until pressure on both sides of the second valve means is equalized.

5,618,997

SAMPLING APPARATUS FOR A SOLIDIFIED BODY

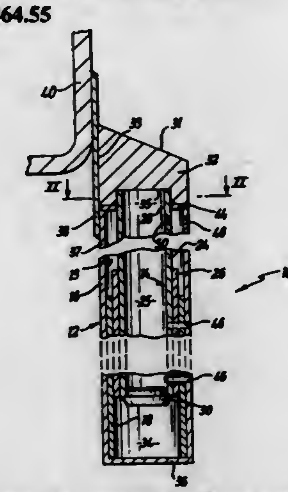
Ivan F. Owens, Egremont, and Dugald R. Sperry-Lamb, Haverigg, both of England, assignors to British Nuclear Fuels plc, Warrington, United Kingdom

Filed Jan. 21, 1993, Ser. No. 6,847

Claims priority, application United Kingdom, Jan. 22, 1992, 9201302

Int. Cl.[6] G01N *1/12*

U.S. Cl. 73—864.55 **9 Claims**



1. An apparatus for sampling a fluid material which subsequently solidifies into a solidified body in a vessel, the apparatus comprising:

a tubular outer member and a tubular inner member slidable one within the other along a longitudinal axis extending through the members in close telescopic relationship,

means for locating the inner member in an axial and radial datum location in the outer member, and

the outer member and the inner member in the datum location including a plurality of holes displaced along said longitudinal axis, each hole extending transversely through said outer and inner members for permitting flow of the body whilst in a fluid state from the outside of the outer member to the inside of the inner member, thereby to provide a solidified sample of the body in the inner member which is removed from the vessel at a time after the body has solidified.

5,618,998

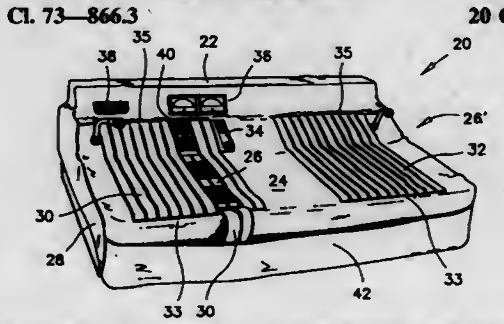
MASK FOR AN INSTRUMENT PANEL

Cora E. Ward, 16 Ramey Street, R.R. #8, Fredericton, N. B., Canada

Filed Dec. 18, 1995, Ser. No. 574,000

Int. Cl.[6] G01D *7/02*

U.S. Cl. 73—866.3 **20 Claims**



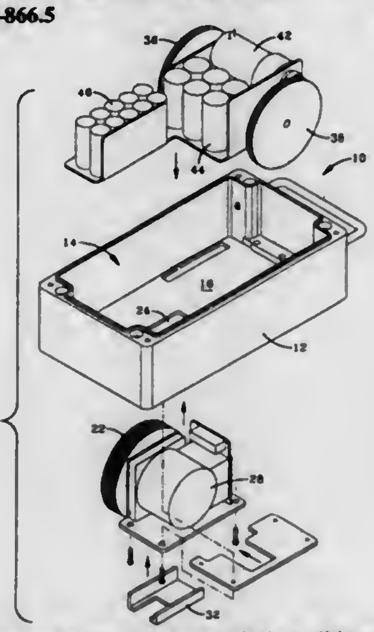
1. A mask for concealing a nonessential portion of an instrument panel, comprising:

an opaque overlay having at least one opening for revealing a selected group of instruments from said instrument panel; and

mounting means for retaining said opaque overlay over said instrument panel such that said at least one opening remains substantially stationary relative to said selected group of instruments;

whereby a user of said instrument panel can focus his (her) attention on said selected group of instruments without being overwhelmed by a complexity of said nonessential portion.

5,618,999
APPARATUS AND METHOD FOR MONITORING CONDITION OF OBJECTS
David P. Schweitzer, North Canton, and James A. Grimes, Sr., Akron, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Sep. 28, 1995, Ser. No. 536,504
Int. Cl.[6] G01M *19/00*
U.S. Cl. 73—866.5 **18 Claims**



1. An apparatus for observing a physical condition of an associated object at or near a surface of the object, the apparatus comprising:

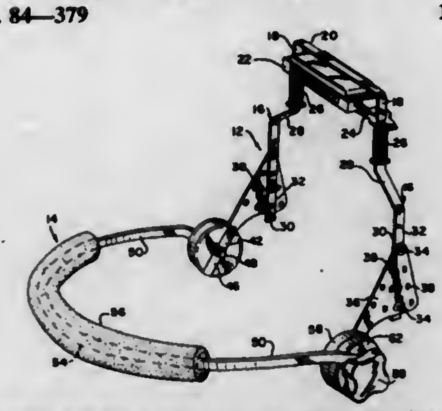
a vehicle including a housing, the housing having a bottom surface and an interior and locomotion means for locomoting the vehicle in a first direction across the surface of the object, the locomotion means comprising first, second and third wheels, the first wheel being toward a front end of the housing and being aligned with a centerline of the housing, the second and third wheels being near a rear end of the housing; and,

a sensor for sensing the physical condition of the object, the sensor being located in an interior of the first wheel closely spaced from a contact point of the first wheel.

5,619,000
METHOD OF MAKING CEMENTED CARBIDE ARTICLES AND THE RESULTING ARTICLES
Stefan Ederyd, Saltsjö-Boo; Jan Åkerman, Stockholm, both of Sweden; Robert Beaufoy, Coventry; Michael Carpenter, Nuneaton, both of England; Maxime Bonneau, Le Fontanil, and Jacques Pillot, La Tronche, both of France, assignors to Sandvik AB, Sandviken, Sweden, and Eurotungstene Poudres S.A., Grenoble, France
Division of Ser. No. 866,494, Apr. 10, 1992, Pat. No. 5,441,693. This application Jul. 6, 1995, Ser. No. 499,181
Claims priority, application Sweden, Apr. 10, 1991, 9101078; France, May 23, 1991, 91 06211
Int. Cl.[6] C22C *29/08*
U.S. Cl. 75—240 **7 Claims**

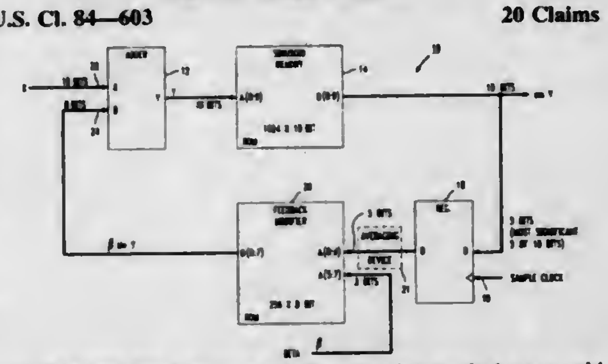
1. A sintered cemented carbide body comprising a WC matrix and a binder phase comprising cobalt and/or nickel, said body having a porosity better than A02 and B00, less than 0.5 binder phase lakes per cm^2 with a dimension of >25 μm and less than five carbide grains per cm^2 with a grain size of more than 5 times an average grain size of the matrix.

5,619,001
HARP HOLDER
Mark Pasin, Oak Park, and Fred Michelau, Des Plaines, both of Ill., assignors to Blues Tools, Inc., Oak Park, Ill.
Filed Nov. 14, 1995, Ser. No. 557,492
Int. Cl.[6] G01D *7/12;* **E05D** *11/10*
U.S. Cl. 84—379 **11 Claims**



1. A holder adapted to be worn by a musician having a face and a mouth, the holder being adapted for supporting a harp adjacent the musician's face to permit hands-free playing of the harp, said holder including a harp-supporting section comprising a pair of arms adapted for positioning in front of and at opposite sides of the musician's face, said arms each defining an outer end and an opposite end, a harp supporting member extending between the outer ends of the arms and adapted to support the harp adjacent the musician's mouth, and a shoulder-engaging section pivotally attached at the opposite ends of said arms, each of said outer ends and said opposite ends defining a position, first adjusting means enabling adjustment of the position of the outer end of each arm relative to the position of the opposite end of each arm for thereby adjusting the distance between the outer end and the opposite end of each arm and also adjusting the angular relationship of the outer end and the opposite end of each arm, said shoulder engaging section defining a position, and second adjusting means enabling adjustment of the position of said shoulder-engaging section relative to the position of said opposite ends of said arms.

5,619,002
TONE PRODUCTION METHOD AND APPARATUS FOR ELECTRONIC MUSIC
Jeffrey A. Walck, Lebanon, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.
Filed Jan. 5, 1996, Ser. No. 583,250
Int. Cl.[6] G10H *7/00;1/00*
U.S. Cl. 84—603 **20 Claims**



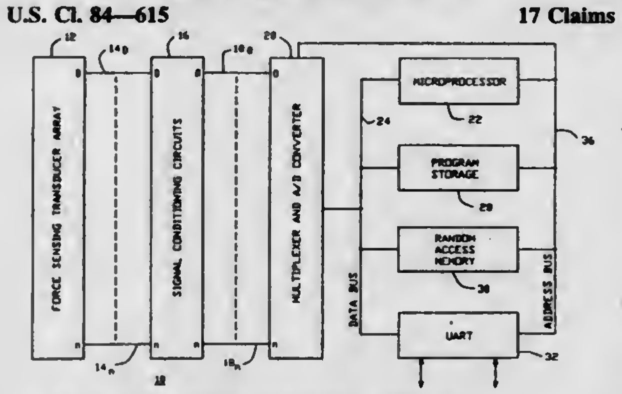
1. The apparatus for electronically producing musical tones, said apparatus comprising:

digital adding means for adding together data present at a first and second input thereof, said first input being coupled to an input device adapted to produce a sequence of digital samples;

a sinusoidal memory table coupled to an output of said digital adding means for storing predetermined waveforms of a selected repetition frequency according to an input address; and

a feedback modifier table coupled to an output of said sinusoidal memory table for storing modified versions of said predetermined waveforms having varying degrees and varying types of feedback introduced therein, said modified versions of said predetermined waveforms being selectable according to an input address, an output of said feedback modifier table being coupled to said second input of said digital adding means, wherein said feedback modifier table is coupled in a feedback path between said digital adding means and said memory table.

5,619,003
ELECTRONIC MUSICAL INSTRUMENT DYNAMICALLY RESPONDING TO VARYING CHORD AND SCALE INPUT INFORMATION
Jimmy C. Hotz, Thousand Oaks, Calif., assignor to The Hotz Corporation, Thousand Oaks, Calif.
Continuation of Ser. No. 254,447, Jun. 6, 1994, Pat. No. 5,502,274, which is a continuation of Ser. No. 84,745, Jun. 29, 1993, abandoned, which is a continuation of Ser. No. 820,761, Jan. 13, 1992, abandoned, which is a continuation of Ser. No. 447,381, Dec. 7, 1989, Pat. No. 5,099,738, which is a continuation of Ser. No. 292,966, Jan. 3, 1989, abandoned. This application Feb. 6, 1996, Ser. No. 597,340
Int. Cl.[6] G10H *1/053;1/18;1/38*
U.S. Cl. 84—615 **17 Claims**



1. An electronic musical instrument comprising:

a plurality of keys including a first set of keys for generating program commands in response to being depressed, and a second set of keys for generating input device signals in response to being played;

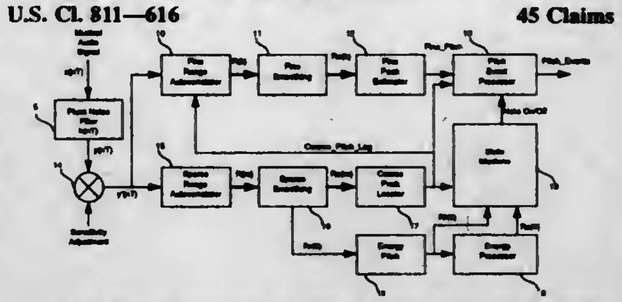
a memory adapted to store a plurality of translation tables, said translation tables adapted to translate said input device signals received from said second set of keys for generating input device signals into corresponding control signals;

a translator to said input device signals, said translation tables and said program commands, and adapted to generate said control signals;

an electronic signal generator responsive to said control signals; and

an interface for providing access between said translator and at least one external device.

5,619,004
METHOD AND DEVICE FOR DETERMINING THE PRIMARY PITCH OF A MUSIC SIGNAL
Stephen G. Dame, Everett, Wash., assignor to Virtual DSP Corporation, Everett, Wash.
Filed Jun. 7, 1995, Ser. No. 474,558
Int. Cl.[6] G10H *7/00*
U.S. Cl. 811—616 **45 Claims**



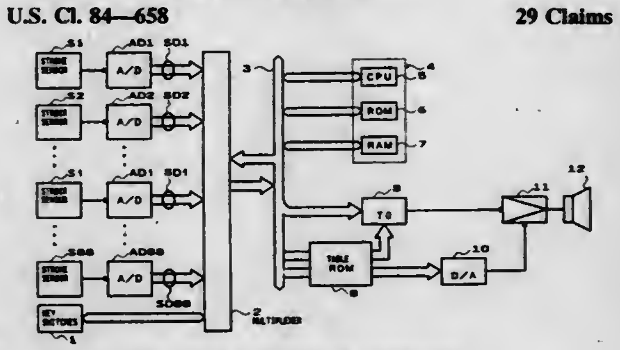
1. A method for receiving an electric signal including a primary pitch within the range of music for the human ear and generating data specifying the primary pitch, comprising:

(a) comparing a sample of the signal to each of a plurality of lag adjusted copies of the sample of the signal,

(b) selecting the lag adjusted copy which most closely matches the sample of the signal, and

(c) specifying the pitch which corresponds to the lag of the selected lag adjusted copy.

5,619,005
ELECTRONIC MUSICAL INSTRUMENT CAPABLE OF CONTROLLING TONE ON THE BASIS OF DETECTION OF KEY OPERATING STYLE
Takeo Shibukawa, and Junichi Mishima, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Japan
Filed Dec. 28, 1994, Ser. No. 365,291
Claims priority, application Japan, Dec. 28, 1993, 5-337311
Int. Cl.[6] G10H *1/053;1/18*
U.S. Cl. 84—658 **29 Claims**



1. An electronic musical instrument comprising:

a plurality of keys moveably supported by a support member;

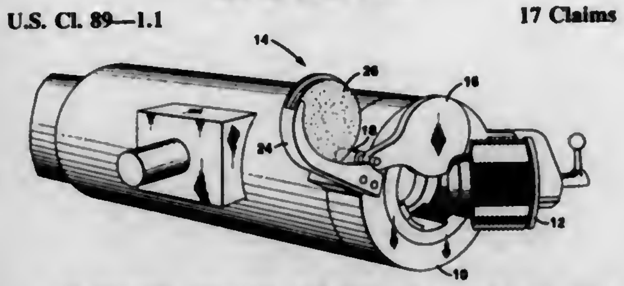
tone generation means for generating a tone corresponding to an operated one of said keys;

detection means for generating a detection signal indicating varying positions of said operated key as said operated key moves relative to said support member;

performance style determination means for determining a key operating style of said operated key by analyzing a degree of nonlinearity of time varying values of said detection signal; and

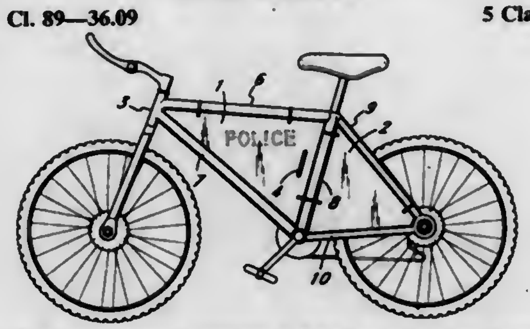
tone control means for controlling said tone generation means in accordance with said key operating style determined by said performance style determination means.

5,619,006
ARTILLERY TUBE RAM DEPTH AND OR BORE CLEAR SENSOR METHOD AND APPARATUS
Brian W. Maus, West Lakeland, Minn., assignor to FMC Corp., Chicago, Ill.
Filed Dec. 18, 1995, Ser. No. 573,793
Int. Cl.⁶ F41A *35/00*
U.S. Cl. 89—1.1 **17 Claims**



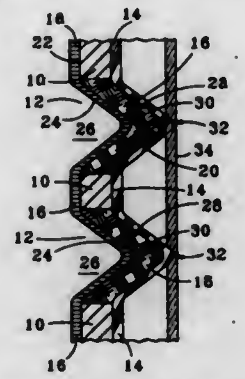
1. An automatic ram depth and bore clear sensing device in a gun system in which a sequence of firing is to be automatically operated, the device comprising:
- a sensing system to engage a gun tube and detect one of the presence and absence of particulate matter in the gun tube;
- means for moving in and out of position said sensing system relative to said gun tube; and
- means for stowing away and protecting from recoil shock and contamination;
- said sensing system, said means for moving, and said means for stowing being in electrical and mechanical communication and attached to the gun system in close proximity to said gun tube.

5,619,007
BICYCLE MOUNTED BULLETPROOF ARMOR SHIELD SYSTEM
Daniel Mena, 2042 A Villa Del Lago Dr., Chino Hills, Calif. 91709, and George Martinez, 6151 Riverside Ave., Huntington Park, Calif. 90255
Filed Jun. 24, 1996, Ser. No. 669,025
Int. Cl.⁶ F41H *5/14*
U.S. Cl. 89—36.09 **5 Claims**



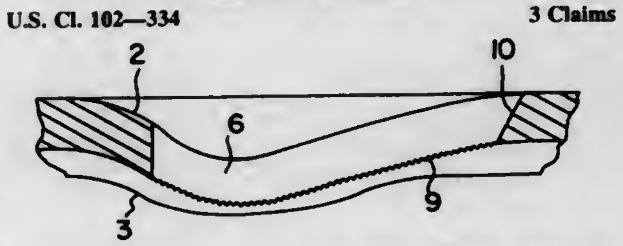
1. A bicycle mounted bulletproof armor shield system comprising:
- a bicycle, including a frame consisting of a top tube, a down tube, a seat tube, a seat stay, and a chain stay;
- a first triangularly shaped body structure, dimensioned to occupy the area of the frame defined by the top tube, the down tube, and the seat tube;
- a second triangularly shaped body structure, dimensioned to occupy the area of the frame defined by the seat tube, the seat stay, and the chain stay;
- at least one handle, located on the first triangularly shaped body structure whereby the bicycle mounted bulletproof armor shield system may be grasped and manipulated.

5,619,008
HIGH DENSITY PERFORATING SYSTEM
Manmohan S. Chawla, Houston, and James W. Reese, Sugar Land, both of Tex., assignors to Western Atlas International, Inc., Houston, Tex.
Filed Mar. 8, 1996, Ser. No. 613,065
Int. Cl.⁶ F42B *1/02;* **F42D** *3/00*
U.S. Cl. 102—310 **20 Claims**



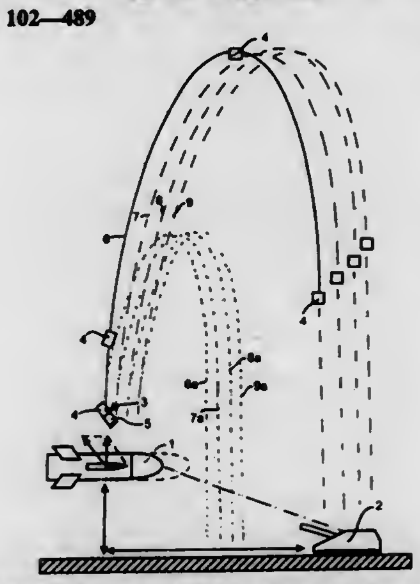
1. A perforating apparatus for generating a plurality of material perforating jets, comprising:
- a liner having a plurality of indentations which each define a cavity open to a first surface of said liner and which each define a protruding liner surface extending from an opposing second surface of said liner;
- an explosive charge proximate to each protruding liner surface on the second surface of said liner, wherein said explosive charge and each liner indentation combine to form a shaped charge oriented about the cavity within each liner indentation; and
- a detonator for igniting said explosive charge to collapse said liner indentations about each corresponding liner cavity to generate a plurality of material perforating jets.

5,619,009
SMOKE BOMB CASE
Andre Le Grouyellec, Grandchamp, France, assignor to Princhim S.A., France
Filed Jan. 31, 1996, Ser. No. 594,130
Claims priority, application France, Jan. 31, 1995, 95 01310
Int. Cl.⁶ F42B *12/48*
U.S. Cl. 102—334 **3 Claims**



1. An envelope of a smoke bomb case, consisting, on the one hand, of a traditional wall (1), resistant to the pressure of the smoke bomb constituents (4) when it is the object of the exothermic reaction of the smoke bomb powder, once it has been initiated by an adequate technique, and on the other hand, at least one area of reduced resistance (3), formed by a relatively fine layer, the said area being covered by a cover (2) of a resistance comparable to the remainder of the wall (1), and which is pierced by a large number of holes (6, 7, and 8), characterised by the fact that each hole (6 or 7 or 8) of said cover (2) has a warped form.

5,619,010
METHOD AND AN APPARATUS FOR SPREADING WARHEADS
Anders Holm, Karlskoga, and Jan Axinger, Storfors, both of Sweden, assignors to Bofors AB, Karlskoga, Sweden
PCT No. PCT/SE94/00233, § 371 Date Sep. 26, 1995, § 102(e) Date Sep. 26, 1995, PCT Pub. No. WO94/23266, PCT Pub. Date Oct. 13, 1994
PCT Filed Mar. 17, 1994, Ser. No. 530,110
Claims priority, application Sweden, Mar. 30, 1993, 9301039
Int. Cl.⁶ F42B *12/58*
U.S. Cl. 102—489 **8 Claims**



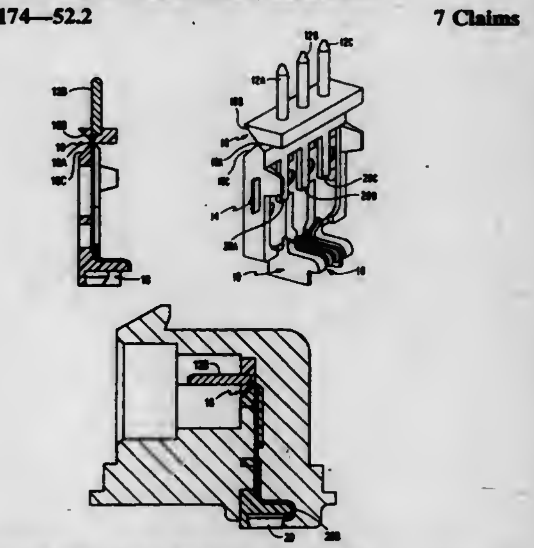
1. A method of separating a warhead to be delivered to a target from a carrier missile carrying warheads therein and flying at high speed in a first aerodynamic trajectory, said method comprising the steps of:
- ejecting said warhead from said carrier missile rearwardly and upwardly at an oblique angle to said first aerodynamic trajectory to a desired second aerodynamic trajectory by means of a rocket motor connected therewith, the ejection velocity of said rocket motor and said warhead being adjusted in relation to the flight speed of the carrier missile to achieve said desired second trajectory, said second aerodynamic trajectory having a substantially higher maximum flight altitude above ground level than that of said first trajectory; and
- separating said rocket motor, after it has burned out, from said warhead by aerodynamic forces acting on said motor and said warhead whereby said motor and said warhead each follow their own forward trajectories, said aerodynamic forces being created from the angle of ejection of said warhead from the carrier missile and the relative flight velocities of said warhead and the carrier missile.

5,619,011
PROCESS FOR PRODUCING A HYBRID ROCKET FUEL
David L. Dean, New Market, Ala., assignor to McDonnell Douglas Corporation, Md.
Division of Ser. No. 198,350, Feb. 18, 1994, Pat. No. 5,509,981. This application Nov. 1, 1995, Ser. No. 548,330
Int. Cl.⁶ C06B *45/10*
U.S. Cl. 149—19.4 **20 Claims**

1. A process for the production of a hybrid fuel for rocket propulsion, comprising
- adding hexamethylenetetramine to a liquid hydroxyl terminated prepolymer,
- adding an isocyanate cross-linking agent to the resulting mixture,
- pouring the resulting composition into a mold and
- curing said composition to form a shaped product,

employing sufficient hexamethylenetetramine so that said composition contains about 60 to about 83% hexamethylenetetramine based on the total weight of the fuel.

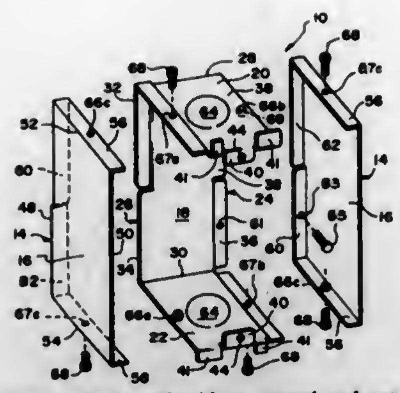
5,619,012
HINGED CIRCUIT ASSEMBLY WITH MULTI-CONDUCTOR FRAMEWORK
David C. Casali, Glastonbury; John E. Ople, Stony Creek, and Solomon Fridman, Farmington, all of Conn., assignors to Philips Electronics North America Corporation, New York, N.Y.
Filed Dec. 10, 1993, Ser. No. 165,218
Int. Cl.⁶ H01L *23/28;* **H01R** *9/22*
U.S. Cl. 174—52.2 **7 Claims**



1. An overmolded circuit assembly comprising:
- a. a framework of electrically conductive material comprising electrical conductors which are at least partially overmolded with an electrically insulating material to secure said conductors in predetermined positions relative to each other, said framework including a plurality of severed structural portions for connecting said conductors to each other when in an unsevered state before said conductors are in said overmolded state;
- b. at least one electrical component having terminals electrically connected to respective ones of said electrical conductors;
- an end of at least one of said electrical conductors comprising a terminal extending out of a hinge formed in said overmolded electrically insulating material, said hinge comprising a narrowed section of said material disposed between first and second relatively thick sections of said material, said narrowed section extending in a first direction and said at least one electrical conductor passing through said narrowed section in a second direction transverse to said first direction.

5,619,013
GANGABLE ELECTRICAL BOX
Robert W. Jorgensen, Niles, Mich., assignor to Hubbell Incorporated, Orange, Conn.
Filed Dec. 17, 1993, Ser. No. 168,377
Int. Cl.⁶ H02G *3/08*
U.S. Cl. 174—53 **20 Claims**

1. A gangable electrical box assembly, comprising:
- a first main body folded from a first sheet of material, and having at least a rectangular rear panel with first and second end edges and first and second side edges, a first rectangular end panel rigidly coupled to said first end edge of said rear panel and extending substantially perpendicular to said rear panel, and a second rectangular end panel rigidly coupled to



said second end edge of said rear panel and extending substantially perpendicular to said rear panel;

a first rectangular side panel coupled to said first main body and extending substantially perpendicular to said rear panel;

a second rectangular side panel formed from a second sheet of material coupled to said first main body and extending substantially perpendicular to said rear panel; and

first coupling means for removably coupling said second side panel to said first main body, said first coupling means including

a first coupling flange integrally formed with said main body and extending substantially perpendicular to said second side panel, said first coupling flange having a first portion parallel to said rear panel, a second portion parallel to said first end panel and a third portion parallel to said second end panel, each of said portions being inwardly offset from said rear panel and said end panels respectively,

a second coupling flange integrally formed with said first side panel by a fold line and extending substantially perpendicular to said first side panel for overlapping at least part of said first coupling flange, and

at least one fastening means for coupling said first coupling flange to said second coupling flange.

5,619,014

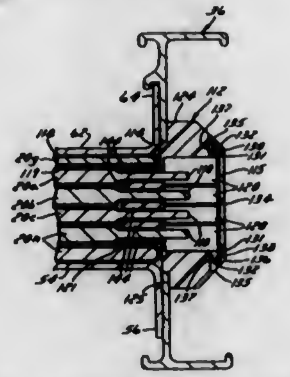
BUSWAY BUSBAR WITH PLUG-IN TAB

Nathan H. Faulkner, Pauline, S.C., assignor to Siemens Energy & Automation, Inc., Alpharetta, Ga.

Filed Mar. 25, 1993, Ser. No. 37,207

Int. Cl.^{6} H01R *25/16*

U.S. Cl. 174—68.2 **26 Claims**



1. An electrically conductive busbar, comprising:

an elongate bar of conductive material with a substantially rectangular cross-section having a width defined by a pair of edges, and a thickness defined by top and bottom sides;

at least one depression pressed into the bar at one edge at a location; and

a tab formed from the material displaced during pressing of the depression, the tab extending from the edge at the location, the tab providing an electrical connection to the busbar.

5,619,015

ELECTRICAL CABLE WITH A BEND RETAINING JACKET CAPABLE OF CONFORMING TO A SUBSTANTIAL INSTALLATION CURVE

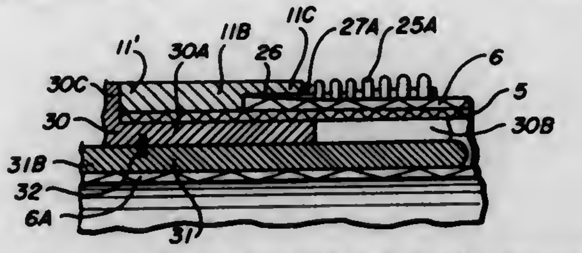
Safa Kirma, Wedel, Germany, assignor to Daimler-Benz Aerospace Airbus GmbH, Hamburg, Germany

Filed Jul. 21, 1995, Ser. No. 505,688

Claims priority, application Germany, Jul. 21, 1994, 44 25 867.4

Int. Cl.^{6} H01R *9/07*

U.S. Cl. 174—84 R **13 Claims**



1. An electrical cable for installation in an aircraft, comprising one or more electrical conductors (8), a connector (29) electrically connected to said conductors (8), a protective hose system (5, 6, 6A) enclosing said conductors (8), a bend maintaining jacket (25A) surrounding said protective hose system (5, 6, 6A) along at least part of said electrical cable, a support body (31) and at least one clamping device (11) cooperating in securing said protective hose system (5, 6, 6A) and said bend maintaining jacket (25A) to said connector (29), said support body (31) having a large diameter section (31A), a small diameter section (31B) and a shoulder (31C) interconnecting said large and small diameter sections (31A, 31B), said protective hose system comprising an electrical conducting hose (5) made of a metal-webbing having an end surrounding said small diameter section (31B) and an electrical insulating hose (6) made of a synthetic material webbing, said bend maintaining jacket (25A) having a first end formed as an end bushing (27) coaxially surrounding said insulating hose (6), said at least one clamping device (11) securing ends of said hoses (5, 6) and said end bushing (27) to said small diameter section (31B), whereby said jacket (25A) maintains any bend in said at least part of said electrical cable.

5,619,016

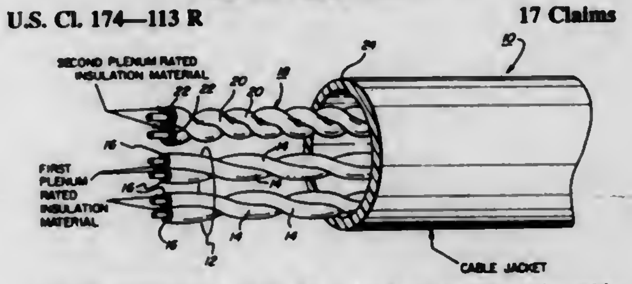
COMMUNICATION CABLE FOR USE IN A PLENUM

Kerry Newmoyer, Denver, Pa., assignor to Alcatel NA Cable Systems, Inc., Claremont, N.C.

Filed Jan. 31, 1995, Ser. No. 381,315

Int. Cl.^{6} H01B *11/02*

U.S. Cl. 174—113 R **17 Claims**



1. A communication cable for use in a plenum, said cable comprising:

one or more first twisted pairs of electrical conductors, each electrical conductor of said one or more first twisted pairs having a surrounding layer of electrical insulation formed from a first plenum rated insulating material;

one or more second twisted pairs of electrical conductor, each electrical conductor of said one or more second twisted pairs having a surrounding layer of electrical insulation formed from a second plenum rated insulating material selected from the group consisting of polyetherimide and polyethersulfone, said second plenum rated insulating material being different from said first material; and

a cable jacket, said cable jacket encasing said first and second twisted pairs of electrical conductors.

5,619,017

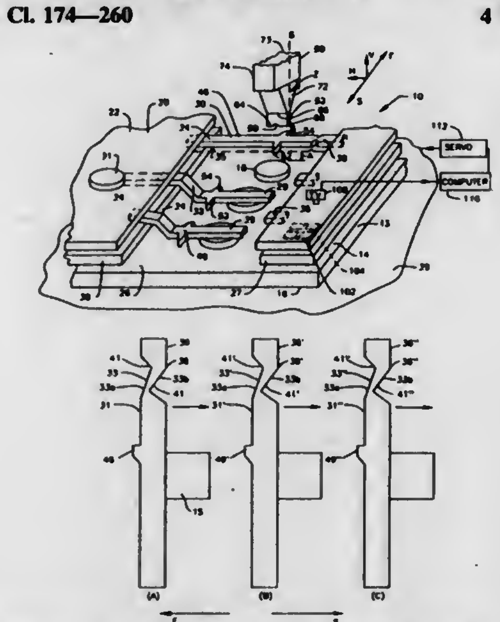
MICROELECTRONIC BONDING WITH LEAD MOTION

Thomas H. Distefano, Monte Sereno; Zlata Kovac, Los Gatos, and John Grange, Cupertino, all of Calif., assignors to Tessera, Inc., San Jose, Calif.

Continuation of Ser. No. 308,741, Sep. 19, 1994, Pat. No. 5,491,302. This application Nov. 1, 1995, Ser. No. 551,458

Int. Cl.^{6} H05K *1/14*

U.S. Cl. 174—260 **4 Claims**



1. A microelectronic connection component comprising:

(a) a support structure; and

(b) a plurality of electrically conductive leads, each such lead having an elongated connection section, each connection section having a first end secured to said support structure and a second end movable with respect to said support structure, each said lead extending across an edge of the support structure adjacent the first end of the connection section and extending in a lengthwise direction from said support structure, whereby each said connection section can be engaged by a tool and bent downwardly to engage a contact after the component has been positioned on a part of a microelectronic assembly, each said connection section having a tapered portion adjacent the edge, each such tapered portion having moment of inertia in bending about a horizontal neutral axis decreasing progressively in the lengthwise direction away from the first end of the lead and away from the edge of the support structure.

5,619,018

LOW WEIGHT MULTILAYER PRINTED CIRCUIT BOARD

Markku J. Rossi, Houston, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

Filed Apr. 3, 1995, Ser. No. 415,413

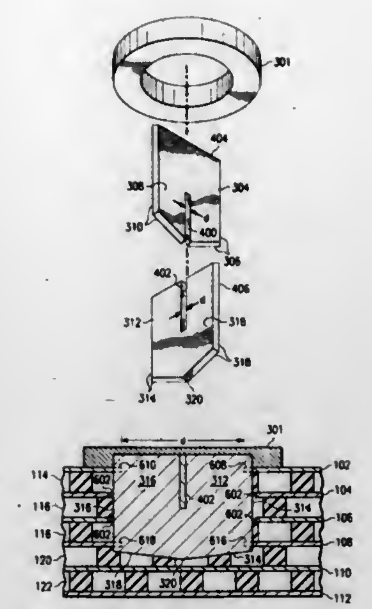
Int. Cl.^{6} H05K *1/02*

U.S. Cl. 174—261 **40 Claims**

1. A low weight multilayer printed circuit board comprising:

a first conducting layer comprising a first material;

a second conducting layer comprising a second material;



an insulating layer bonded to said conducting layers and disposed to separate said conducting layers from one another; and

a structure interconnecting said first and said second conducting layers, said structure having a first contact point formed of said first material and a second contact point formed of said second material, said structure forming an electrical connection between said first and said second conducting layers such that said first contact point contacts said first layer and said second contact point contacts said second layer.

5,619,019

DAMPER FOR LOUDSPEAKER

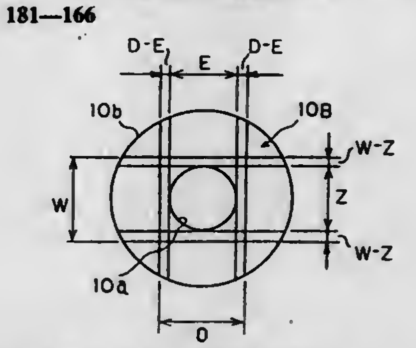
Takeshi Yoshimura, Tokyo; Koichi Morioka, and Teruho Yamada, both of Hyogo, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, and Foster Electric Co., Ltd., both of Tokyo, Japan

Filed Jun. 1, 1995, Ser. No. 458,108

Claims priority, application Japan, Oct. 7, 1994, 6-244279

Int. Cl.^{6} H04R *7/00*

U.S. Cl. 181—166 **5 Claims**



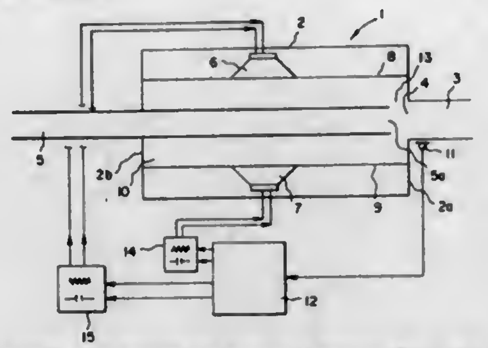
1. A damper for a loudspeaker, comprising:

a main body having an aperture, said main body having an outer periphery portion connectable to a speaker frame of said loudspeaker and an inner periphery portion connectable to a vibration system of said loudspeaker, said loudspeaker having a diaphragm, and said inner periphery portion defining said aperture;

at least one horizontal region being formed in a horizontal direction of said main body, said at least one horizontal region reinforcing said inner periphery portion; and

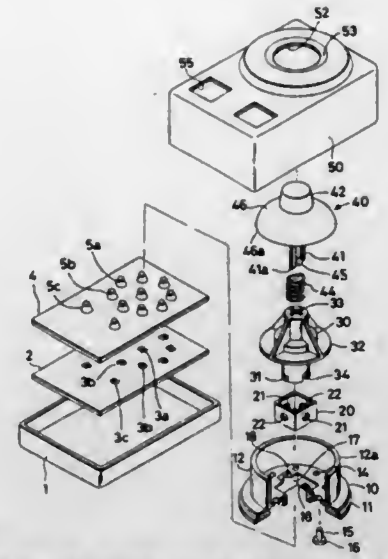
at least one vertical region being formed in a vertical direction of said main body, said at least one vertical region reinforcing said inner periphery portion.

5,619,020
MUFFLER
Owen Jones, and Michael C. J. Trinder, both of Colchester, Great Britain, assignors to Noise Cancellation Technologies, Inc., Linthicum, Md.
Continuation of Ser. No. 199,238, Jul. 8, 1994, abandoned. This application Feb. 9, 1996, Ser. No. 599,642
Claims priority, application United Kingdom, Aug. 29, 1991, 9118779; WIPO, Aug. 28, 1992, PCT/GB92/01594
Int. Cl.^{6} F01N *1/06*
U.S. Cl. 181—206 **18 Claims**



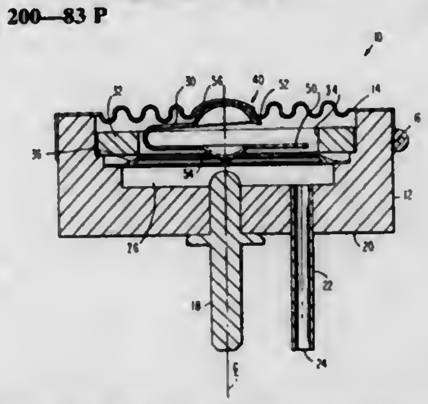
1. A muffler for attenuating noise in a gaseous flow, said muffler comprising:
a chamber means having a first end, and a second end with a receiving means, said first end having a first opening and said receiving means having a second opening;
a conduit means for conveying gaseous stream into said chamber, said conduit means having a front end and a rear end and surrounded by said chamber, said conduit means terminating short of said second opening, thereby defining a radial aperture; and
actuator means with a plurality of terminals, said actuator means positioned within said chamber for injecting anti-noise waves into said chamber so as to attenuate noise accompanying said gaseous flow, said actuator means being directed towards said conduit means, and wherein said terminals of said actuator means are terminated in a suitable electrical impedance;
an acoustic coupling means including said radial aperture between said rear end of said conduit means and said chamber for acoustically coupling said chamber to the gaseous stream, and wherein the coupling means is configured so that the chamber becomes pressurized while in use so as to restrict flow of gas from said gasesous stream through said chamber.

5,619,021
LEVER SWITCH DEVICE, METHOD FOR ACTIVATING SWITCHES IN A LEVER SWITCH DEVICE, AND METHOD FOR OUTPUTTING DATA SIGNALS
Tetsuo Yamamoto, and Yoshikazu Taniguchi, both of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Mie, Japan
Filed Nov. 15, 1994, Ser. No. 341,878
Claims priority, application Japan, Nov. 19, 1993, 5-066837; Nov. 19, 1993, 5-314568; Nov. 19, 1993, 5-314569; Nov. 19, 1993, 5-314572
Int. Cl.^{6} H01H *25/04*
U.S. Cl. 200—6 A **25 Claims**



1. A lever switch device, comprising:
an operation lever movable from a neutral position to one of a pressing position and one of a plurality of tilting positions;
first switch means for being activated when said operation lever is in the pressing position;
second switch means for being activated when said operation lever is in one of said plurality of tilting positions; and
operation restricting means for preventing movement of said operation lever into said pressing position when in said one of said plurality of tilting positions while allowing movement of said operation lever among said plurality of tilting positions without moving through said neutral position and for preventing movement of said operation lever into any one of said plurality of tilting positions when said operation lever is in the pressing position.

5,619,022
PNEUMATIC SNAP ACTION SWITCH
Eric Long, Coral Springs, Fla., assignor to Micro Pneumatic Logic, Inc., Fort Laurderdale, Fla.
Filed Jun. 21, 1995, Ser. No. 493,395
Int. Cl.^{6} H01H *35/34*
U.S. Cl. 200—83 P **16 Claims**



1. A pneumatic switch, comprising
a switch body formed of metallized ceramic and having a side wall, an open end, a closed end, and an open interior;
an electrical contact terminal sealingly passing through said closed end and extending from an exterior of said switch body into said interior;
a metal diaphragm arranged over said open end of said body in sealing contact with said side wall and including an electrical contact portion;
metal spring means arranged in said interior between one end of said electrical contract terminal and an inside surface of said diaphragm for performing a snap-action operation upon application of a predetermined force; and
tubular means sealingly formed in said switch body for providing fluid communication between said exterior and said interior in a first state and for sealing off said interior from said exterior in a second state,
whereby upon a pressure difference existing between said interior and said exterior of said switch body when said tubular means is in said second state, said diaphragm is deformed and exerts said predetermined force to cause said spring means to perform said snap-action operation and contact both said diaphragm and said electrical contact terminal, thereby making electrical continuity between said electrical contact portion of said diaphragm and said electrical contact terminal.

5,619,023
PROCESS FOR THE PREPARATION OF ALKYL HALODIFLUOROACETATES
Gilles Drivon, Saint Martin en Haut; Jean-Philippe Gillet, Brignais; Christophe Ruppin, Pierre-Benite, and Alain Wattier, Vernaison, all of France, assignors to Elf Atochem S.A., Puteaux, France
Filed Dec. 5, 1995, Ser. No. 567,334
Claims priority, application France, Dec. 5, 1994, 94 14589
Int. Cl.^{6} C07F *1/00;* **C07C** *51/00;69/63*
U.S. Cl. 204—157.6 **16 Claims**

1. A direct process for the preparation of alkyl halodifluoroacetates of formula:

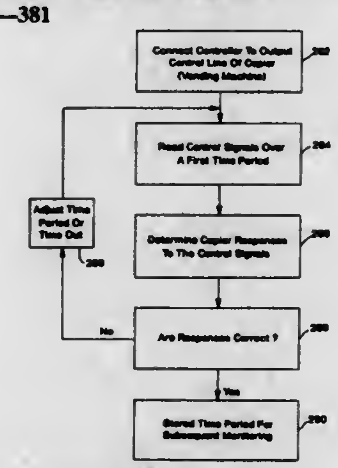
$$CF2X-\underset{\underset{O}{\|}}{C}-OR \qquad (I)$$

in which X represents a fluorine, chlorine, bromine or iodine atom, R represents a linear or branched aliphatic hydrocarbon radical having a carbon number ranging from 1 to 10, comprising reacting a 1,1-difluorotetrahaloethane of formula:

$$CF_2XCY_2Z \qquad (II)$$

in which X has the same meaning as in the formula (I) and Y and Z, which are identical or different, represent a bromine, chlorine or iodine atom, with an alcohol ROH (III), R having the same meaning as in the formula (I), in contact with oxygen and under free-radical generating conditions.

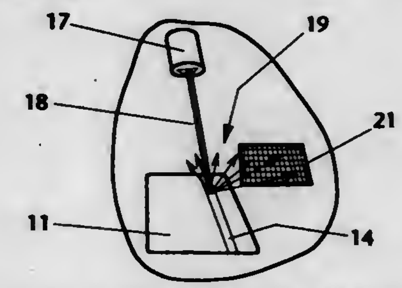
5,619,024
CREDIT CARD AND BANK ISSUED DEBIT CARD OPERATED SYSTEM AND METHOD FOR CONTROLLING AND MONITORING ACCESS OF COMPUTER AND COPY EQUIPMENT
Brock Kolls, Phoenixville, Pa., assignor to USA Technologies, Inc., Wayne, Pa.
Filed Dec. 12, 1994, Ser. No. 354,207
Int. Cl.^{6} G06F *7/08*
U.S. Cl. 235—381 **9 Claims**



280

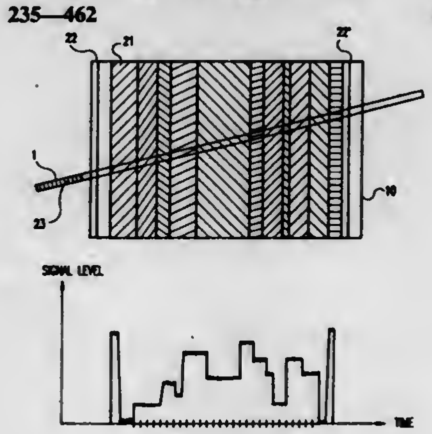
1. A system for initializing an interface between a control device and a vending machine, said vending machine having control lines along which are transmitted control signals in the form of pulses for controlling operation of said vending machine, said system comprising:
a) means for connecting said control device to said control lines;
b) means for reading, in response to vending machine actuation, said control signals transmitted over said control lines during a period of time;
c) means for processing said read control signals and determining operational responses of said vending machine which correspond to said read control signals; and
d) means, responsive to user input, for adjusting the time period by a predetermined amount if the operational responses determined by the means for processing and determining are incorrect and returning operation to the means for reading.

5,619,025
METHOD FOR TAMPER-PROOF IDENTIFICATION USING PHOTOREFRACTIVE CRYSTALS
Joel Hickman, Concord; Scott Phillips, Hercules, and Colin Brady, San Jose, all of Calif., assignors to Network Security Technologies, Berkeley, Calif.
Filed May 5, 1994, Ser. No. 238,429
Int. Cl.^{6} G06K *7/10*
U.S. Cl. 235—454 **23 Claims**



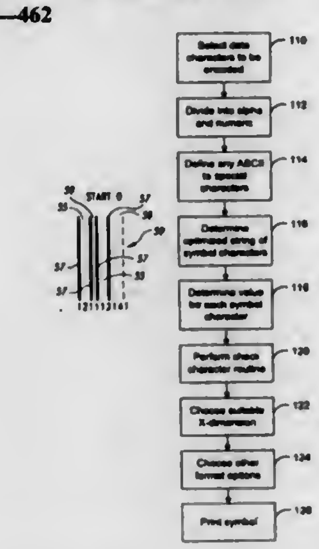
1. A method for identification of an object, including the steps of;
applying a labeling spot on the object, said labeling spot including at least one photorefractive crystal:
illuminating said labeling spot with coherent light to elicit photorefractive changes in said photorefractive crystal;
imaging the light scattered from said photorefractive crystal to create an image corresponding to said photorefractive crystals, and,
comparing said image to a database of image data to determine correspondence of said image with a valid identification image.

5,619,026
GRAYSCALE BARCODE READING APPARATUS SYSTEM INCLUDING TRANSLATING DEVICE FOR TRANSLATING A PATTERN IMAGE INTO A SEQUENCE OF BAR WIDTHS AND TRANSITION DIRECTIONS
Paul B. Chou, Montvale, N.J.; Frederick Y. Wu, Cos Cob, Conn., and Danny C. Wong, Ringwood, N.J., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 4, 1995, Ser. No. 368,187
Int. Cl.^{6} G06K *7/10*
U.S. Cl. 235—462 **20 Claims**



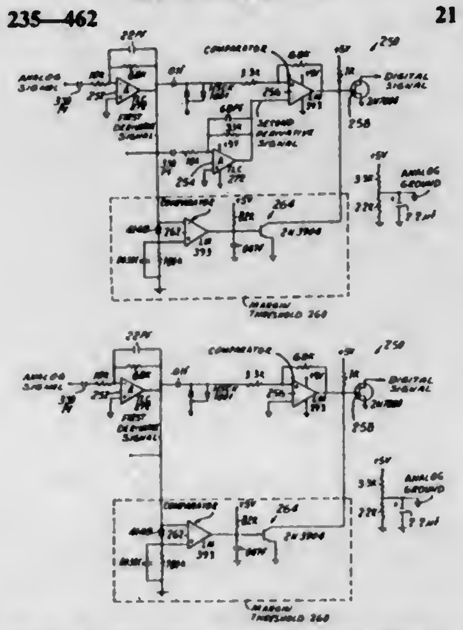
1. A system for verifying an object of interest, comprising:
a grayscale, one-dimensional bar pattern coupled to said object;
an illumination and imaging system including a one-dimensional imaging device for reading said pattern coupled to said object and for producing a pattern image;
means for translating the pattern image into a sequence of bar widths and transition directions representing a detected code;
means for comparing the detected code with a predetermined code; and
means for indicating one of the detected code, acceptance, and rejection of the detected code based on comparison of said detected code with said predetermined code.

5,619,027
SINGLE WIDTH BAR CODE SYMBOLOGY WITH FULL CHARACTER SET UTILIZING ROBUST START/STOP CHARACTERS AND ERROR DETECTION SCHEME
H. Sprague Ackley, Seattle, Wash., assignor to Intermec Corporation, Everett, Wash.
Filed May 4, 1995, Ser. No. 433,835
Int. Cl.⁶ G06K 7/10
U.S. Cl. 235—462 29 Claims



1. A method for printing a surface with a bar code symbol, the method comprising the step of:
providing adjacently positioned groups of sequential marks, the groups including four marks of a first width that are all substantially uniformly wide, at selectively spaced intervals within the groups, and including four blank intervals within each of the groups, each of the blank intervals having a plurality of different widths which are integer multiples of a second width, where each group has a total width substantially equal to a sum of four times the first width and nine times the second width.

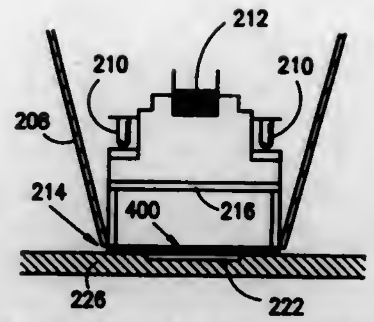
5,619,028
DIGITIZER FOR A BAR CODE READER UTILIZING A FIRST DERIVATIVE SIGNAL AND AN ANALOG GROUND COMPARISON SIGNAL
Edward Barkan, Miller Place, N.Y., assignor to Symbol Technologies, Inc., Holtsville, N.Y.
Division of Ser. No. 257,668, Jun. 8, 1994, Pat. No. 5,446,272, which is a continuation-in-part of Ser. No. 28,107, Mar. 8, 1993, Pat. No. 5,408,081, and Ser. No. 721,951, Jun. 27, 1991, abandoned, which is a division of Ser. No. 510,074, Apr. 13, 1990, Pat. No. 5,059,779, which is a continuation-in-part of Ser. No. 367,335, Jun. 16, 1989, Pat. No. 5,124,539. This application Jun. 5, 1995, Ser. No. 465,104
Int. Cl.⁶ G06K 7/10
U.S. Cl. 235—462 21 Claims



1. A circuit for digitizing an analog signal generated from a photoelectronic conversion of light reflected off scanning indicia having spatially-separated, light-reflected portions, comprising:
differentiating means for receiving the analog signal and for generating a first derivative signal of the analog signal;
means for adjusting the first derivative signal; means for generating an analog ground signal;
means for comparing the analog ground signal and the adjusted first derivative signal and for generating a digital signal representing the indicia being scanned; and
output means for outputting a digital output signal corresponding to the digital signal.

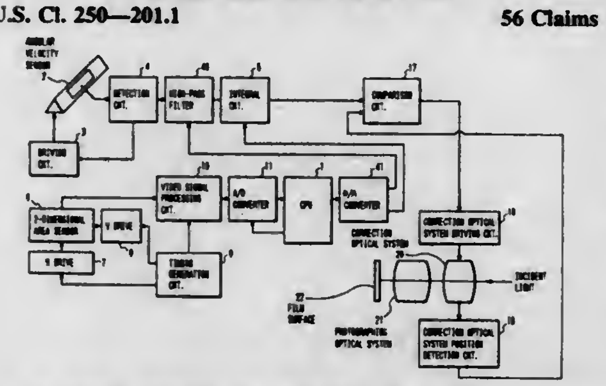
5,619,029
IMAGING ENHANCEMENT FOR TOUCH CAMERAS
Donald L. Roxby, and Lisa M. Johnson, both of Huntsville, Ala., assignors to Rockwell International Corporation, Seal Beach, Calif.
Filed Apr. 4, 1995, Ser. No. 416,241
Int. Cl.⁶ G06K 7/10
U.S. Cl. 235—472 21 Claims

1. A method of optically imaging information-containing symbols off a surface using a conventional optical touch camera, comprising the steps of:
positioning an imaging assembly of the touch camera atop an information containing coded symbol located on said surface,
positioning a diffuser element between said coded symbol and said imaging assembly,
moving said diffuser element into juxtaposition with said coded symbol, and



imaging said coded element, wherein said diffuser element diffuses light from said imaging assembly prior to the light being reflected back to the imaging assembly, thereby eliminating "blooming ".

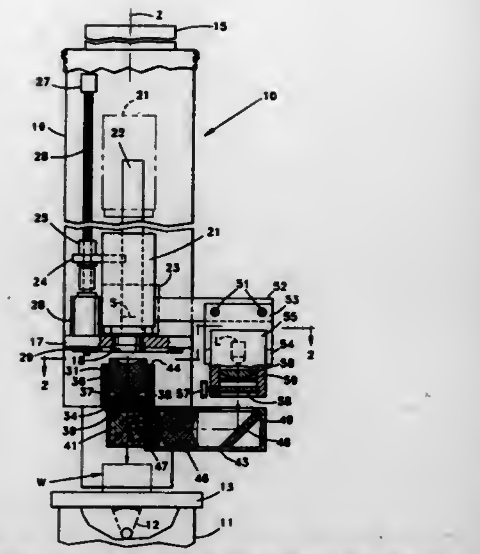
5,619,030
CONTROL APPARATUS FOR IMAGE BLUR PREVENTION EMPLOYING AN ANGULAR VELOCITY AND AN IMAGE FIELD SENSOR
Yasuhiko Shiomi, Kawaguchi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 183,839, Jan. 21, 1994, abandoned. This application May 13, 1996, Ser. No. 647,262
Claims priority, application Japan, Jan. 22, 1993, 5-009338
Int. Cl.⁶ G01J 1/20; G03B 13/00
U.S. Cl. 250—201.1 56 Claims



1. A control apparatus for controlling image blur prevention using at least one of a first image blur detection signal from a first image blur detection device that detects at least image blur in a first frequency range and a second image blur detection signal from a second image blur detection device that detects at least image blur in a second frequency range, said control apparatus comprising:
a control device that controls image blur prevention using at least one of the first and second image blur detection signals, said control device changing a manner of use of the first and the second detection signals in accordance with a frequency of the image blur.

5,619,031
VARIABLE MAGNIFICATION APPARATUS FOR RETICLE PROJECTION SYSTEM
Albert G. Choate, Rush, N.Y., assignor to Optical Gaging Products, Inc., Rochester, N.Y.
Filed Nov. 15, 1995, Ser. No. 558,793
Int. Cl.⁶ G02B 7/04
U.S. Cl. 250—201.2 13 Claims

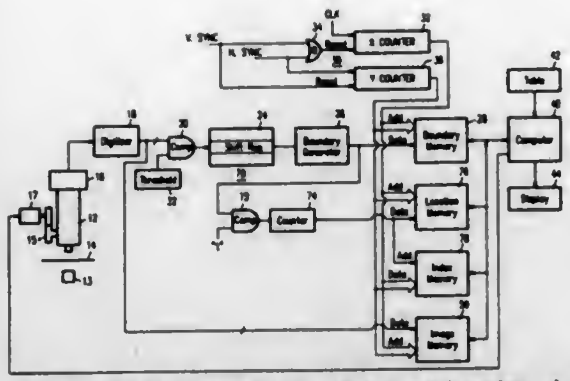
1. In metrological equipment of the type having a video camera, and a reticle projecting system for use in autofocusing an image sensor in the camera on a workpiece that is being inspected, apparatus for effecting variable magnification of the reticle image produced by said system, comprising



means mounting said camera for adjustment toward and away from a workpiece, and with the image sensor thereof facing the surface of the workpiece that is to be inspected,
optical means including a beamsplitter interposed between said camera and the workpiece, and operative to project an image of said surface of the workpiece to the image sensor of said camera,
said reticle projection system including a reticle operatively attached to said camera for movement therewith toward and away from the workpiece, and said system being operable to project an image of said reticle to said optical means for projection thereby onto said surface of the workpiece,
said optical means being operative, upon projecting an image of said reticle onto said surface of the workpiece to project the combined images of said surface and said reticle to said image sensor,
said optical means including magnification means for effecting variable magnification of said image of said surface of the workpiece, and said image of said reticle,
said camera mounting means comprising a support mounted for movement toward and away from said workpiece, and means movably mounting said camera on said support selectively for movement therewith, and for movement relative to said support toward and away from said workpiece, and
said optical means being mounted on said support for movement therewith.

5,619,032
METHOD AND APPARATUS FOR AUTOMATICALLY SELECTING THE BEST FOCAL POSITION FROM A PLURALITY OF FOCAL POSITIONS FOR A FOCUSING APPARATUS
Harvey L. Kasdan, Van Nuys, Calif., assignor to International Remote Imaging Systems, Inc., Chatsworth, Calif.
Filed Jan. 18, 1995, Ser. No. 374,227
Int. Cl.⁶ G01J 1/20; G03B 3/10
U.S. Cl. 250—201.3 28 Claims

1. A method of selecting the best focal position from a plurality of focal positions for a focusing means focusing on an object in a field of view, said method comprising the steps of:
forming an electrical image of said field of view;
segmenting and digitizing said electrical image to form a plurality of digitized signals, each digitized signal representative of a pixel in said electrical image;
processing said plurality of digitized signals to determine the values of pixels at locations defining an invariant optical property of said image, wherein said locations defining an



invariant optical property are locations of a boundary pixel and its neighbors, and wherein said processing step further comprising:

calculating a quotient of:

$$Q = M/N$$

for an object in each electrical image;

where N—total number of pixels on the boundary of said object; where M—total number of pixels (P_0) on the boundary whose associated pixels outside thereof (P_1, P_2 and P_3) satisfy the relationship

$$P_1 - P_0 \geqq 0$$

$$P_2 - P_1 \geqq 0$$

$$P_3 - P_2 \leqq 0$$

where

P_0 is the boundary pixel of said object;

P_1 is the first pixel, outside of P_0, immediately adjacent and contiguous thereto;

P_2 is the second pixel, outside of P_0, immediately adjacent and contiguous to P_1;

P_3 is the third pixel, outside of P_0, immediately adjacent and contiguous to P_2; and

adjusting said focusing means in response to said processing step to obtain the best focal position.

5,619,033

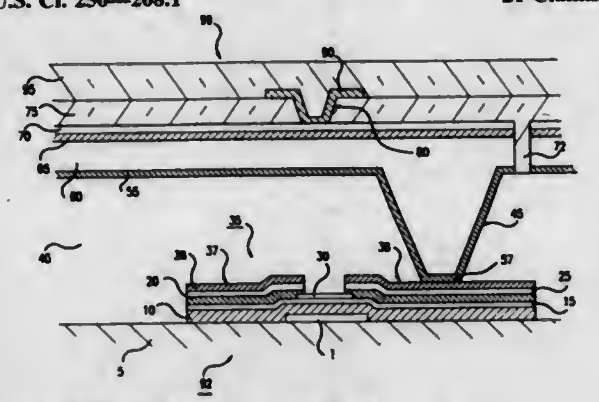
LAYERED SOLID STATE PHOTODIODE SENSOR ARRAY

Richard L. Weisfield, Los Altos, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 7, 1995, Ser. No. 483,406

Int. Cl.^{6} H01J *40/14*

U.S. Cl. 250—208.1 **21 Claims**



1. A photodetecting device, comprising:

a substrate;

at least one transistor formed over the substrate; and

at least one photodiode formed over the at least one transistor, wherein each of the at least one photodiode is coupled to one of the at least one transistor, and the coupling comprises an electrical connection between the photodiode and a drain electrode of the transistor.

5,619,034

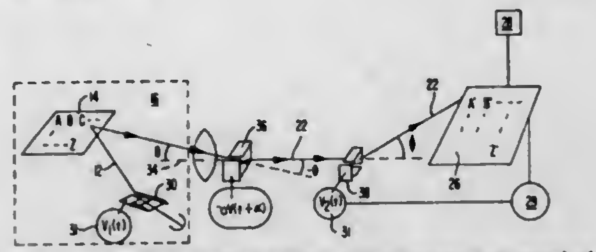
DIFFERENTIATING MASS SPECTROMETER

David A. Reed, 2743 St. James Rd., Belmont, Calif. 94002, and Paul W. Palmberg, 7424 Coventry Way, Edina, Minn. 55439

Filed Nov. 15, 1995, Ser. No. 559,489

Int. Cl.^{6} H01J *37/26*

U.S. Cl. 250—287 **31 Claims**



1. A mass spectrometer for analyzing concentration of chemical species in a sample which comprises:

generating means for generating a secondary beam of groups of ionized particles from said sample:

each said group containing substantially all said species of particles;

each said group ejected from said sample at a respective instant of ejection, each particle in each group having a kinetic energy common to each particle belonging to all said groups;

a position sensitive detector means having a detector surface for detecting said ionized particles incident on said detector surface located in a drift region;

means for directing said secondary beam into said drift region toward said detector surface;

a deflection plate means located in said drift region for deflecting said secondary beam such that each said group of particles strikes a respective detector location of a plurality of detector locations on said detector surface once during a cycle period;

means for generating a plurality of group signals, each group signal generated by one of said groups striking one of said locations respectively;

each said group signal being a succession of species signals, each species signal occurring at a time after said instant of ejection of said respective group that is proportional to a square root of a mass of a particle belonging to said respective species signal;

each said species signal having an amplitude that is responsive to a population of said species in said respective group.

5,619,035

SYSTEM FOR ANALYZING SURFACES OF SAMPLES

Paul S. Weiss, and Stephan J. Stranick, both of State College, Pa., assignors to Biotechnology Research & Development Corporation, Peoria, Ill., and Penn State Research Foundation, University Park, Pa.

Division of Ser. No. 120,560, Sep. 13, 1993, Pat. No. 5,504,366, which is a continuation-in-part of Ser. No. 916,165, Jul. 17, 1992, Pat. No. 5,268,573, and a continuation-in-part of Ser. No. 979,597, Nov. 20, 1992, Pat. No. 5,281,814. This application Dec. 22, 1995, Ser. No. 577,199

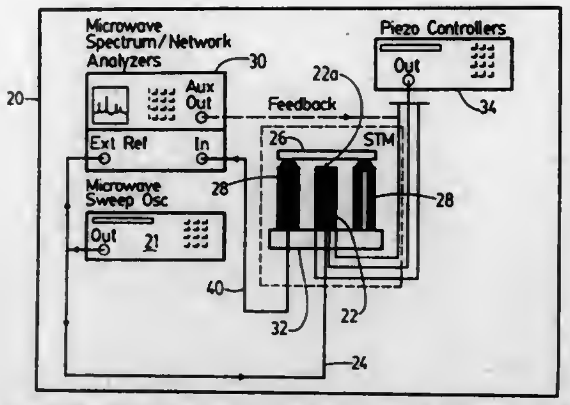
Int. Cl.^{6} H01J *37/28*

U.S. Cl. 250—306 **7 Claims**

1. An apparatus for analyzing surfaces of samples, comprising:

an AC scanning tunneling microscope having a tip terminal for supplying an AC signal to a surface of a sample;

at least one microwave signal source and at least one microwave analyzer;



a microwave coaxial cable connecting the tip terminal to the source.

5,619,036

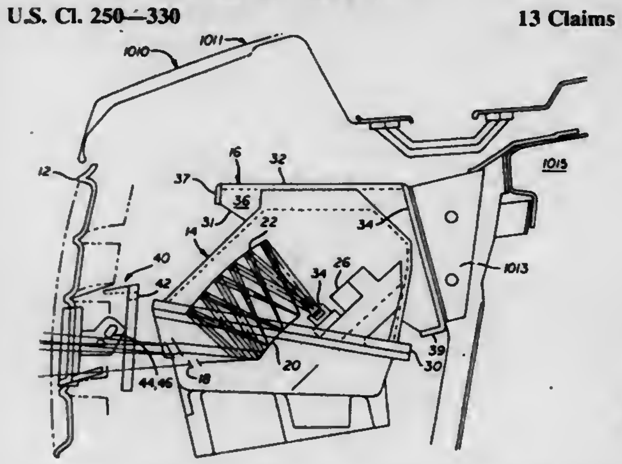
LOW COST NIGHT VISION CAMERA FOR VEHICLES AND MOUNTING THEREOF

Paul Salvio, Pue, and Kevin Walsh, El Segundo, both of Calif., assignors to Hughes Electronics, Los Angeles, Calif.

Continuation-in-part of Ser. No. 226,728, Apr. 12, 1994. This application Aug. 14, 1995, Ser. No. 514,550

Int. Cl.^{6} G09G *5/00*

U.S. Cl. 250—330 **13 Claims**



1. A night vision enhancement system for a vehicle, the night vision enhancement system comprising:

an infrared camera for providing output signals for use in displaying an image;

a display for displaying the signals provided by the camera in a first orientation when the camera is mounted in a first orientation;

mounting means for retaining said camera to said vehicle; and

shield means for protecting said camera, wherein said shield means includes a door disposed in the line of sight of said camera.

5,619,037

Patent Not Issued For This Number

5,619,038

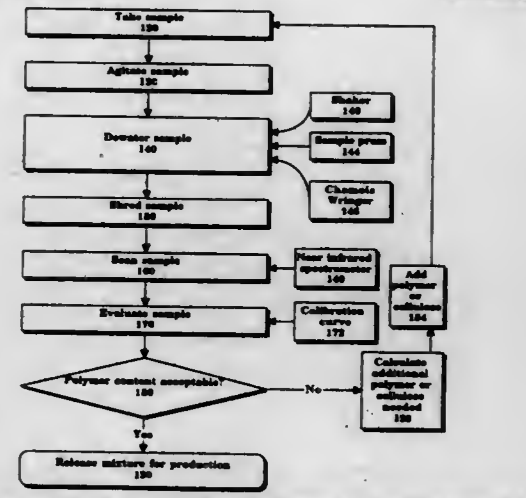
METHOD AND APPARATUS FOR DETERMINING THE POLYMER CONTENT OF A CELLULOSE/POLYMER MIXTURE AND ASSOCIATED CALIBRATION

John S. Parigi, and Fred D. Patterson, III, both of Beaumont, Tex., assignors to Temple-Inland Forest Products Corporation, Diboll, Tex.

Filed Feb. 21, 1995, Ser. No. 391,952

Int. Cl.^{6} G01N *21/35;21/31*

U.S. Cl. 250—339.12 **28 Claims**



1. A method for determining the concentration of a polymer in a cellulose/polymer mixture, the steps comprising:

(a) acquiring a sample for evaluation from the cellulose/polymer mixture,

(b) conditioning the sample to assure it is homogeneous,

(c) dewatering the sample to remove excessive liquid therefrom,

(d) shredding the sample to assure that the sample is in a fluffed state,

(e) scanning the sample to determine the absorption characteristics of the sample, and

(f) evaluating the sample absorption to determine the concentration of the polymer in the cellulose/polymer mixture.

5,619,039

DEVICE FOR THE DETECTION OF ELECTROMAGNETIC WAVES AND, IN PARTICULAR, OF INFRARED RADIATION

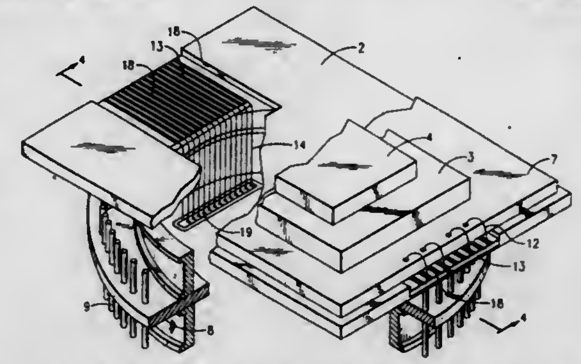
Jean-Louis Montanari, Herbeys, France, assignor to Societe Francaise de Detecteurs Infra-Rouges - Sofradir, France

Filed Dec. 15, 1995, Ser. No. 573,394

Claims priority, application France, Jan. 20, 1995, 95 00861

Int. Cl.^{6} G01J *5/02*

U.S. Cl. 250—352 **3 Claims**



1. A device for the detection of infrared radiation, which operates at low temperature and comprises:

a cryostat equipped with a cold finger (1) intended to exchange heat with a cold source;

a cold plane (2) arranged generally perpendicularly relative to the cold finger (1) and mechanically fixed to and in heat exchange with the latter;

a detection unit comprising at least one detection circuit proper (4), sensitive to the infrared radiation to be detected, and a read and analysis circuit (3) electrically connected to the detection circuit (4), said detection unit being fixed mechanically and thermally on a connection circuit (7), itself secured to the cold plane, said connection circuit (7) conducting heat between said cold plane (2) and the detection unit (3, 4) and being additionally intended to transfer the electrical signals output by the detection unit (3, 4) to the internal connection system of the cryostat at a connector (8, 19) which passes the electrical conductors out of the cryostat in leaktight fashion,

wherein the cold plane (2) is provided with at least one machined portion, each of said portions consisting of a recess (16) extending between one of its peripheral edges toward the center of said cold plane (2) in the region of a through-slot (15) opening outside the cold finger (1) when the cold plane (2) is in place at the end of the latter, and wherein each of said recesses (16) accommodates a first connection element (13) positioned by insertion into this recess and fixed by bonding, each of said first connection elements (13) being electrically connected to the connector (8, 19) of the cryostat by means of second connection elements (14) passing through said through-slot (15), said first connection element (13) being electrically connected to the connection circuit (7) at the peripheral free end of said first connection element (13).

5,619,040

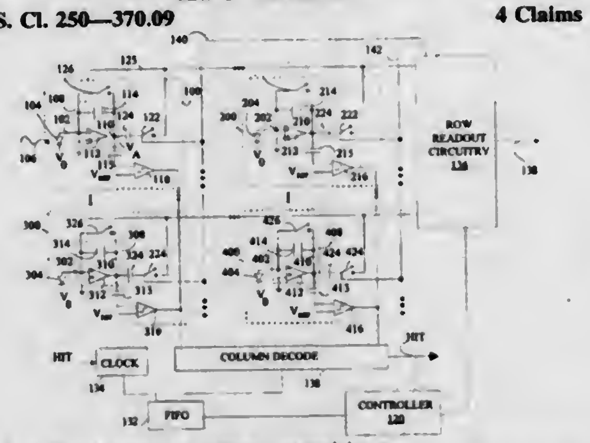
DATA ACQUISITION SYSTEM

Stephen L. Shapiro, 14228 Amherst Ct., Los Altos Hills, Calif. 94022; Sudhindra Mani, 1618 17th St., Sacramento, Calif. 95814; Eugene L. Atlas, 440 De Anza Ct., Oceanside, Calif. 92057; Dieter H. W. Cords, 526 Cuesta Real, La Honda, Calif. 94020, and Britt Holbrook, 4540 Varsity Ct., Sacramento, Calif. 95841

Filed Mar. 29, 1994, Ser. No. 219,182

Int. Cl.^{6} H01L *29/78*

U.S. Cl. 250—370.09 **4 Claims**



1. A data acquisition system, comprising:

a plurality of data acquisition pixels, said data acquisition pixels being arranged in a plurality of rows and columns, each said data acquisition pixel having an input port for receiving an input current, an amplifier means for generating an amplified signal that is related to the integral of said input current, a charge storage means for storing an amount of charge that is related to said generated amplified signal, a charge readout means for generating a signal indicative of the amount of stored charge, a reset means for discharging said stored charge on said charge storage means of each said data acquisition pixel in response to a reset signal, and a discriminator means for generating a hit signal if said voltage generated by said amplifier means exceeds a predetermined voltage; and

a control means having a plurality of column detection means for generating a column readout signal if any of said discriminator means in a column has generated a hit signal. the generation of said column readout signal causing all data acquisition pixels in said column to be readout.

5,619,041

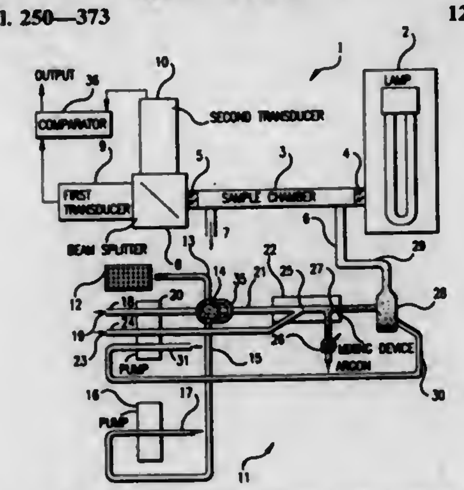
ATOMIC ABSORPTION SPECTROMETER FOR MEASURING THE MERCURY CONCENTRATION IN A SAMPLE

Erwin Hoffmann, Hohen Neuendorf, and Christian Lüdke, Berlin, both of Germany, assignors to Bodenseewerk Perkin-Elmer GmbH, Uberlingen, Germany

Continuation of Ser. No. 252,129, Jun. 1, 1994, abandoned. This application Aug. 30, 1995, Ser. No. 521,004

Int. Cl.^{6} G01N *21/33*

U.S. Cl. 250—373 **12 Claims**



1. An atomic absorption spectrometer for measuring mercury concentration in a sample comprising:

means for producing predetermined emission lines of the mercury at the same time,

a sample accommodating chamber which can be irradiated with radiation of the emission lines, two means for measuring the extinction of the radiation passing through the sample accommodating chamber,

each means for measuring the extinction having an electro-optical transducer which is responsive with a different sensitivity to radiation of the emission lines respectively, the transducers being arranged so that radiation passing through the sample accommodating chamber simultaneously impinges on said two electro-optical transducers and each extinction measuring means having a preselected extinction value range, and

means for switching between respective measurement ranges of said two extinction measuring means to determine the mercury concentration.

5,619,042

SYSTEM AND METHOD FOR REGULATING DELIVERED RADIATION IN A RADIATION-EMITTING DEVICE

John H. Hughes, Martinez, Calif., assignor to Siemens Medical Systems, Inc., Iselin, N.J.

Filed Jul. 20, 1995, Ser. No. 504,724

Int. Cl.^{6} H05G *1/44;* **G21K** *1/04;* **H01J** *37/244*

U.S. Cl. 250—492.3 **8 Claims**

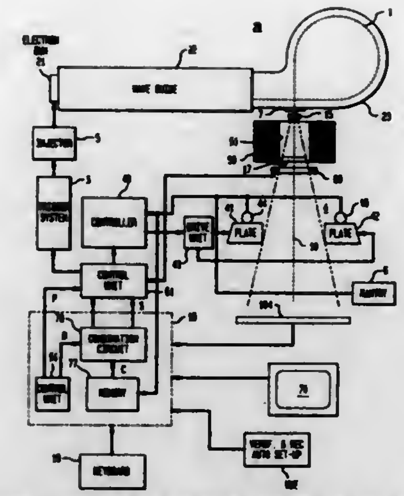
1. A method for regulating the radiation output delivered to an object from a radiation source, comprising the following steps:

generating a radiation beam having a variable radiation output;

defining an irradiated field of the object;

varying a degree of shielding of the beam, an output factor of the radiation output thereby varying according to the degree of shielding, in which the output factor is defined as the ratio between a reference radiation output of the beam when unshielded and an actual radiation output of the beam as shielded; and

varying the radiation output such that the output factor is constant regardless of the degree of shielding.



5,619,043

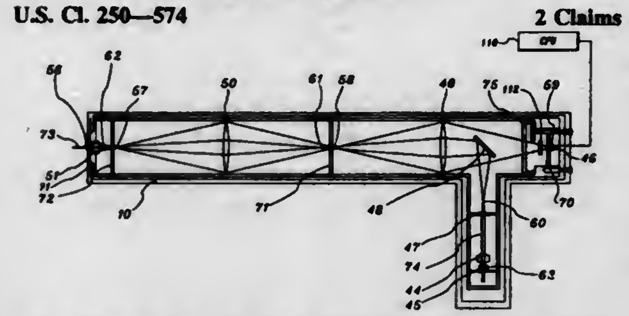
SYSTEM FOR ACQUIRING AN IMAGE OF A MULTI-PHASE FLUID BY MEASURING BACKSCATTERED LIGHT

Ekhard Preikschat, Bellevue; Jon V. Hokanson, Redmond, and Barry W. Reed, Auburn, all of Wash., assignors to Laser Sensor Technology, Inc., Redmond, Wash.

Filed Sep. 21, 1994, Ser. No. 310,630

Int. Cl.^{6} G01N *21/49*

U.S. Cl. 250—574 **2 Claims**



1. An apparatus for providing an image of a fluid medium, the apparatus comprising:

a probe for insertion into said fluid medium said probe including a window at the tip of said probe, and said probe placed in said fluid medium, such that said window is disposed at an insertion angle to a direction of flow of said fluid medium, said probe further positioned through a ball valve assembly to allow said probe to be extracted without disrupting the flow of said fluid medium, further wherein the ball valve assembly includes a fitting to allow a heated flow of suspension fluid into to be injected to said fluid medium;

a light source for generating an illuminating light;

a light transmission system for transmitting said illuminating light from said light source to said window and directing said illuminating light through the window into said fluid medium; and

a photodetector for detecting backscattered light from said fluid medium, said photodetector comprising an optical system for collecting said backscattered light over a collection angle to form an optical image of said fluid medium, said optical system using said light transmission system for relaying the optical image to a processor.

5,619,044

SEMICONDUCTOR DEVICE FORMED WITH SEED CRYSTALS ON A LAYER THEREOF

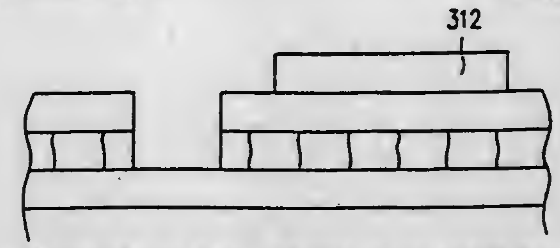
Naoki Makita, Nara, and Yoshitaka Yamamoto, Yamatokoriyama, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 14, 1995, Ser. No. 421,910

Claims priority, application Japan, Apr. 15, 1994, 6-077699

Int. Cl.^{6} H01L *29/04;31/036*

U.S. Cl. 257—64 **9 Claims**



1. A semiconductor device comprising an active region made of a crystalline silicon film on an insulating surface of a substrate,

wherein the active region is formed by introducing at least one kind of catalyst elements for promoting a crystallization into a first amorphous silicon film; heating the first amorphous silicon film so as to grow needle-like or column-like crystals; and crystallizing a second amorphous silicon film using the needle-like or column-like crystals as seed crystals that are removed after the second amorphous silicon film has crystallized;

wherein the first and second films crystallize to substantially the same extent such that the first film has a column-like structure and a grain boundary exists, and the second film has an almost single crystalline structure.

5,619,045

THIN FILM TRANSISTOR

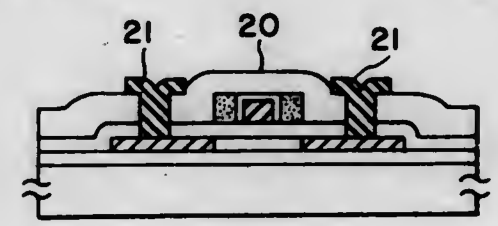
Toshimitsu Konuma; Akira Sugawara, and Takahiro Tsuji, all of Kanagawa, Japan, assignors to Semicondnctor Energy Laboratory Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 328,826, Oct. 25, 1994, abandoned. This application Jul. 9, 1996, Ser. No. 677,175

Claims priority, application Japan, Nov. 5, 1993, 5-301173

Int. Cl.^{6} H01L *29/04*

U.S. Cl. 257—72 **10 Claims**



1. A thin film transistor comprising:

an active region provided on a substrate and comprising a source and drain and a channel provided between said source and drain;

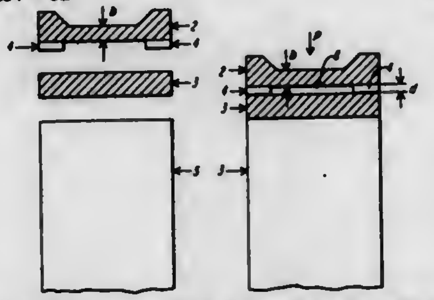
a gate electrode provided on said active region; and

an anodic oxide of the material constituting the gate electrode provided on the side and the upper face of said gate electrode,

wherein said anodic oxide comprises a non-porous anodic oxide provided on the side of the gate electrode and a porous anodic oxide provided on the outer side of said non-porous anodic oxide, and

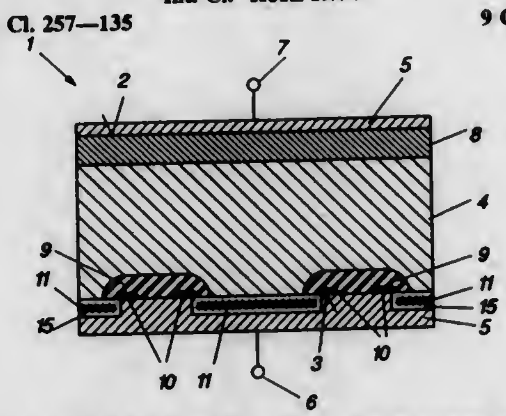
wherein said channel extends to an end of said porous anodic oxide.

5,619,046
METHOD OF MANUFACTURING A MEASURING DEVICE
Olof Engström, Hindås, and Hans Richert, Partille, both of Sweden, assignors to AB Volvo, Sweden
PCT No. PCT/SE93/00393, § 371 Date Mar. 6, 1995, § 102(e) Date Mar. 6, 1995, PCT Pub. No. WO93/22644, PCT Pub. Date Nov. 11, 1993
PCT Filed May 5, 1993, Ser. No. 331,520
Claims priority, application Sweden, May 5, 1992, 9201439
Int. Cl.⁶ H01L *29/182*
U.S. Cl. 257—82 **10 Claims**



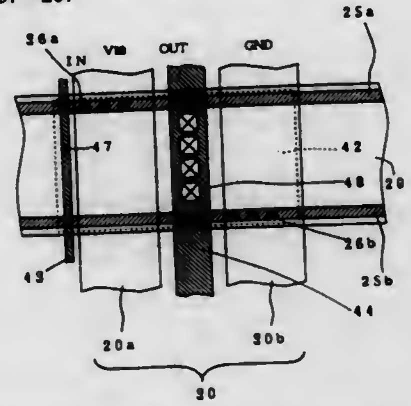
1. A method for manufacturing a device for measuring pressure comprising a cavity of the Fabry-Pérot resonator type and a first part and a second part, said parts sandwiching said cavity between them, in which at least said first part consists of silicon and a spacer portion is arranged between the parts, and in which the pressure around the cavity is measured by directing light towards the cavity, the light returning from the cavity thereafter being detected, wherein the cavity is formed by arranging the spacer portion on at least the first part, using a method of building up molecular layers, and removing a part of the spacer portion by an etching method, and that the spacer portion is joined to the second part using "direct bonding" (Silicon Direct Bonding, SDB).

5,619,047
SEMICONDUCTOR DIODE IN WHICH ELECTRONS ARE INJECTED INTO A REVERSE CURRENT
Friedhelm Bauer, Suhr, Switzerland, assignor to Asea Brown Boveri AG, Baden, Switzerland
Filed Sep. 12, 1995, Ser. No. 527,330
Claims priority, application Germany, Oct. 31, 1994, 44 38 896.9
Int. Cl.⁶ H01L *29/74*
U.S. Cl. 257—135 **9 Claims**



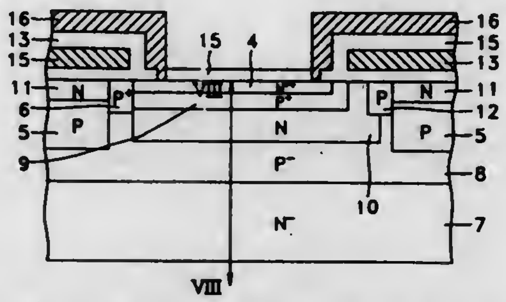
1. A semiconductor diode having a reverse-current when a current flowing through the diode is being turned off, comprising:
an n-doped semiconductor substrate between first and second principal surfaces,
a cathode which is formed by a metal layer covering the first principal surface,
an anode which is formed by a metal layer covering the second principal surface,
an n-doped cathode emitter which is diffused into the semiconductor substrate from the first principal surface and a p-doped anode emitter which is diffused into the semiconductor substrate from the second principal surface, and
electron injection means provided in the p-doped anode emitter and which inject electrons into the reverse-current during a commutation of the current flowing through the diode.

5,619,048
SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE
Miho Yokota, and Masatomi Okabe, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 165,944, Dec. 14, 1993, Pat. No. 5,444,276. This application Jun. 27, 1995, Ser. No. 495,022
Claims priority, application Japan, Dec. 18, 1992, 4-338615; Aug. 30, 1993, 5-214122
Int. Cl.⁶ H01L *27/02*
U.S. Cl. 257—207 **2 Claims**



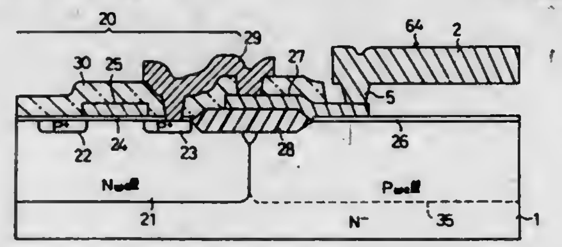
1. A semiconductor integrated circuit device, comprising:
a plurality of transistors regularly arranged on a semiconductor substrate;
at least a set of first and second source lines in a first wiring layer for supplying said plurality of transistors with voltages for driving said transistors, said at least a set of first and second source lines arranged along a line of a gate array of the semiconductor integrated circuit device;
third and fourth source lines, arranged in parallel, along different lines, along side of each other, larger in width than said first and second source lines, arranged in a second wiring layer which is different from said first wiring layer, in alignment with each other to intersect with said first and second source lines in a grade separation manner, said third and fourth source lines arranged in a line across a plurality of cell columns of the semiconductor integrated circuit device, and the third and fourth source lines intersect each cell column in three-dimensional space but are separated from the cell columns;
at least one macro cell utilizing those of said transistors, including a driver circuit which is located under at least one of a region between said third and fourth source lines, and both of said third and fourth source lines; and
an output signal line in a portion of said second wiring layer between said third and fourth source lines for transmitting an output signal of said at least one macro cell.

5,619,049
CCD-TYPE SOLID STATE IMAGE PICKUP WITH OVERFLOW DRAIN STRUCTURE
Bum-sik Kim, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea
Filed May 18, 1994, Ser. No. 246,232
Claims priority, application Rep. of Korea, May 18, 1993, 93-8468
Int. Cl.⁶ H01L *27/148;29/768;31/0232*
U.S. Cl. 257—223 **17 Claims**



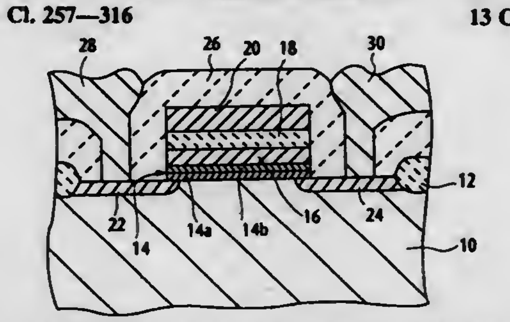
1. A CCD-type solid state image pickup for providing an output by way of a horizontal charge-coupled device, comprising:
a substrate of a first conductivity type;
a first well formed in said substrate, said first well being of a second conductivity type;
a photo-sensitive well of said first conductivity type formed in said first well, said photo-sensitive well accumulating a signal charge proportional to the intensity of incident light;
a dark current suppression layer formed in said photo-sensitive well, said dark current suppression layer being of said second conductivity type, said substrate, said first well, said photo-sensitive well, and said dark current suppression layer constituting a light receiving region;
an overflow drain formed on said dark current suppression layer, said overflow drain being of said first conductivity type, the impurity concentration of said overflow drain being higher than that of said dark current suppression layer, the impurity concentration of said dark current suppression layer being higher than that of said photo-sensitive well, the impurity concentration of said photo-sensitive well being higher than that of said first well, and the impurity concentration of said first well being higher than that of said substrate; and
a first transfer channel for transferring said accumulated signal charge from said photo-sensitive well to a second transfer channel, said second transfer channel transferring said accumulated signal to said horizontal charge coupled device.

5,619,050
SEMICONDUCTOR ACCELERATION SENSOR WITH BEAM STRUCTURE
Hirofumi Uenoyama, Anjo; Kenichi Ao, Tokai; Masakazu Kanosue, Nagoya; Yasutoshi Suzuki, Okazaki, and Yukihiro Takeuchi, Seto, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Filed Mar. 6, 1995, Ser. No. 399,345
Claims priority, application Japan, Mar. 7, 1994, 6-036140; Oct. 7, 1994, 6-244397
Int. Cl.⁶ H01L *29/82*
U.S. Cl. 257—254 **11 Claims**



1. A semiconductor acceleration sensor comprising:
a semiconductor substrate;
a beam structure having a movable section disposed and spaced at a predetermined distance above said semiconductor substrate;
a peripheral circuit formed in said semiconductor substrate, electrically connected to said beam structure, whereby an applied acceleration is detected from a displacement of a movable section; and
a connection member, for electrically connecting said beam structure and said peripheral circuit, consisting of at least one electroconductive thin film formed above said semiconductor substrate.

5,619,051
SEMICONDUCTOR NONVOLATILE MEMORY CELL
Nobuhiro Endo, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Jun. 23, 1995, Ser. No. 493,455
Claims priority, application Japan, Jun. 27, 1994, 6-144284
Int. Cl.⁶ H01L *29/788;29/792*
U.S. Cl. 257—316 **13 Claims**



1. In a semiconductor nonvolatile memory cell having a first dielectric film on a semiconductor substrate, a floating gate electrode which lies on the first dielectric film, a second dielectric film which lies on the floating gate electrode and a control gate electrode which lies on the second dielectric film,
the improvement comprising said first and second dielectric films being formed such that the relations (a) and (b) hold:

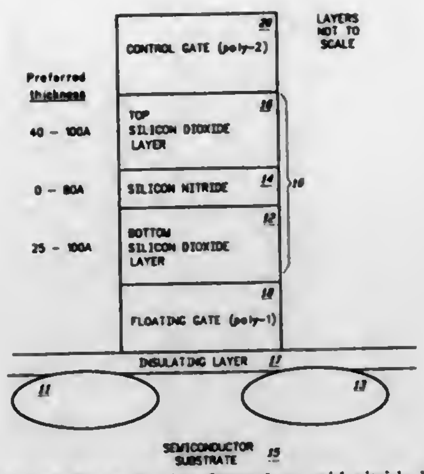
$$\epsilon_2/\epsilon_1 \geqq 13 \qquad (a)$$

$$t_2/t_1 \leqq \epsilon_2/\epsilon_1 \qquad (b)$$

where ϵ_1 is the relative permittivity of the first dielectric film, ϵ_2 is the relative permittivity of the second dielectric film, t_1 is the thickness of the first dielectric film and t_2 is the thickness of the second dielectric film.

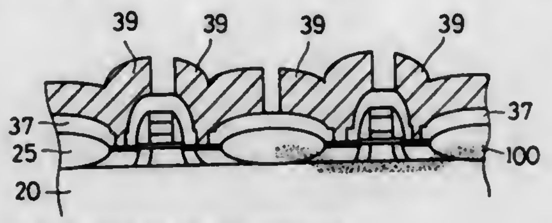
5,619,052
INTERPOLY DIELECTRIC STRUCTURE IN EEPROM DEVICE
Chang Y. Chang; Fuchia Shone; Chin-Yi Huang, and Nai C. Peng, all of Hsinchu, Taiwan, assignors to Macronix International Co., Ltd., Hsinchu, Taiwan
Filed Sep. 29, 1994, Ser. No. 315,209
Int. Cl.⁶ H01L *29/788*
U.S. Cl. 257—321 **23 Claims**

1. A dielectric insulating composite for insulating a floating gate from a control gate in a nonvolatile memory cell, the dielectric insulating composite comprising:
a bottom layer of silicon dioxide formed on said floating gate;
a layer of silicon nitride formed on said bottom silicon dioxide layer, said silicon nitride layer having a thickness which is less than said bottom silicon dioxide layer; and



a top layer of silicon dioxide formed on said nitride layer, said top silicon dioxide layer having a thickness which is greater than said silicon nitride layer.

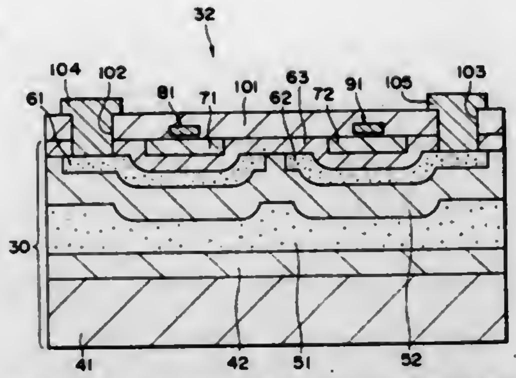
5,619,053
SEMICONDUCTOR DEVICE HAVING AN SOI STRUCTURE
Toshiaki Iwamatsu; Yasuo Inoue, and Tadashi Nishimura, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed May 31, 1995, Ser. No. 454,816
Int. Cl.[6] H01L *27/01*
U.S. Cl. 257—347 **2 Claims**



1. A semiconductor device comprising:
(a) a semiconductor layer;
(b) an insulating film formed beneath said semiconductor layer;
(c) a high impurity concentration region extending from said insulating film, said high impurity concentration region having a higher impurity concentration than an impurity concentration of said semiconductor layer; and
(d) a separating region for partitioning said semiconductor layer into activation regions;
wherein said high impurity concentration region extends through an intersection of said insulating film and said activation regions and through an intersection of said separating region and said activation regions into said separating region and said high impurity concentration region is directly above said insulating film in said separating region.

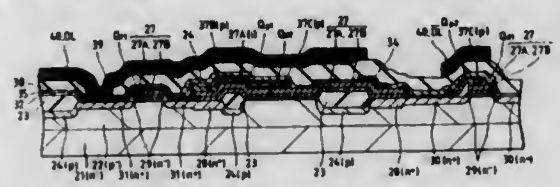
5,619,054
CMOS TRANSISTOR AND ISOLATED BACK GATE ELECTRODES ON AN SOI SUBSTRATE
Makoto Hashimoto, Kanagawa, Japan, assignor to Sony Corporation, Japan
Filed Jun. 6, 1995, Ser. No. 468,308
Claims priority, application Japan, Jun. 14, 1994, 6-156669
Int. Cl.[6] H01L *27/01*
U.S. Cl. 257—347 **19 Claims**

1. A CMOS transistor formed on an SOI substrate comprising:
an SOI substrate;
a polycrystalline silicon layer bonded with said SOI substrate;



a plurality of silicon regions formed on said SOI substrate;
an nMOS transistor formed on one of said silicon regions;
a pMOS transistor formed on another of said silicon regions of said SOI substrate;
a first back gate electrode formed under said nMOS transistor;
a second back gate electrode formed under said pMOS transistor; and
pickup electrodes respectively connected to said back gate electrodes and led out on a surface of said SOI substrate.

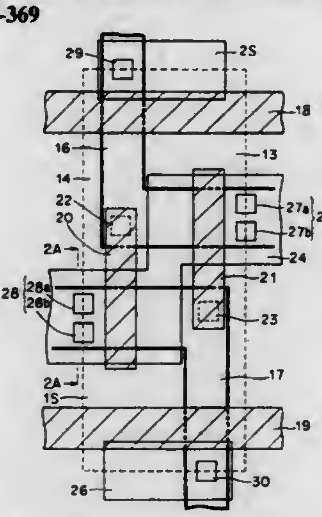
5,619,055
SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE
Satoshi Meguro, Hinode-machi; Kiyofumi Uchibori, Hachioji; Norio Suzuki, Koganei; Makoto Motoyoshi, Hachioji; Atsuyoshi Koike, Kokubunji; Toshiaki Yamanaka, Houya; Yoshio Sakai, Shiroyama-machi; Toru Kaga, Urawa; Naotaka Hashimoto; Takashi Hashimoto, both of Hachioji; Shigeru Honjou, Kodaira, and Osamu Minato, Hinode-machi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Division of Ser. No. 28,128, Mar. 9, 1993, Pat. No. 5,483,083, which is a division of Ser. No. 837,689, Feb. 14, 1992, Pat. No. 5,194,749, which is a continuation of Ser. No. 625,682, Dec. 12, 1990, abandoned, which is a continuation of Ser. No. 274,490, Nov. 22, 1988, abandoned. This application Apr. 27, 1995, Ser. No. 429,882
Claims priority, application Japan, Nov. 30, 1987, 62-305465; Dec. 23, 1987, 62-324094; Feb. 9, 1988, 63-26641
Int. Cl.[6] H01L *29/76;27/11*
U.S. Cl. 257—369 **18 Claims**



1. A semiconductor device comprising:
a semiconductor substrate;
a plurality of memory cells of a static random access memory, each of said memory cells including cross-coupled first and second inverter circuits, each of said first and second inverter circuits having an n-channel drive MISFET and a p-channel load MISFET coupled in series with each other, each said drive MISFET comprising a first insulating film formed over said semiconductor substrate, a gate electrode formed over said first insulating film, and source and drain regions formed in said semiconductor substrate;
a second insulating film formed over said drive MISFETs;
gate electrodes of said load MISFETs being formed over said second insulating film;
semiconductor strips formed over said second insulating film, wherein source and drain regions and a channel region of each of said load MISFETs are commonly formed in a corresponding one of said semiconductor strips; and
a third insulating film formed between said gate electrodes of said load MISFETs and said semiconductor strips,

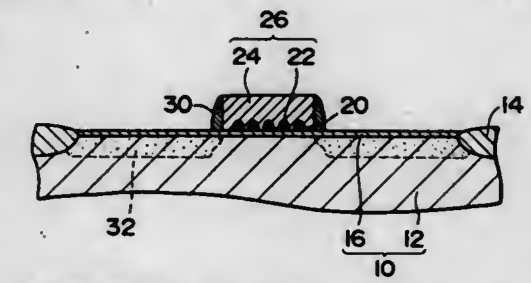
wherein said drain regions of said drive MISFETs of said first and second inverter circuits are electrically connected with said drain regions of said load MISFETs of said first and second inverter circuits, respectively, are electrically connected with said gate electrodes of said drive MISFETs of said second and first inverter circuits, respectively, are electrically connected with said gate electrodes of said load MISFETs of said second and first inverter circuits, respectively, and constitute information storage nodes of said memory cell, respectively, and
wherein said source region and said gate electrode associated with each of said load MISFETs are patterned to have, with respect to a plan view of a main surface of said semiconductor substrate, a widely overlapping relationship with each other to form a capacitor element, said widely overlapping relationship being effected to thereby increase capacitance associated with each of said information storage nodes of said memory cell so as to decrease occurrence of soft error in relation to that of memory cells not having such structured capacitor elements connected to information storages thereof.

5,619,056
SRAM SEMICONDUCTOR DEVICE
Hirotada Kuriyama; Masahiro Ishida, and Yoshiyuki Ishigaki, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 260,428, Jun. 15, 1994, abandoned. This application Aug. 7, 1996, Ser. No. 693,497
Claims priority, application Japan, Dec. 16, 1993, 5-316634
Int. Cl.[6] H01L *29/76;27/108;27/11*
U.S. Cl. 257—369 **11 Claims**



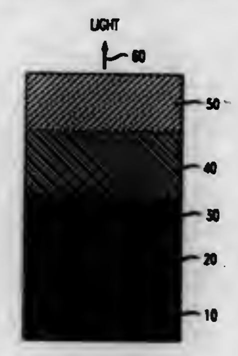
1. A semiconductor device, comprising:
a semiconductor substrate;
an active region provided in a main surface of said semiconductor substrate, and
a first memory cell and a second memory cell adjacent to the first memory cell provided on said semiconductor substrate with ground lines,
said first memory cell and said second memory cell including an access transistor and a driver transistor provided on said active region and a load transistor provided over said semiconductor substrate,
a plurality of direct contact portions connecting said active region and the ground lines of said first and second memory cells at a boundary between said first memory cell and said second memory cell,
each of said direct contact portions being divided into a plurality of portions.

5,619,057
COMPLEX FILM OVERLYING A SUBSTRATE WITH DEFINED WORK FUNCTION
Hiroshi Komatsu, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan
Continuation of Ser. No. 362,918, Dec. 23, 1994, abandoned. This application Apr. 19, 1996, Ser. No. 634,951
Claims priority, application Japan, Jan. 19, 1994, 6-018990; Jul. 13, 1994, 6-184087
Int. Cl.[6] H01L *29/76;29/94;31/119*
U.S. Cl. 257—382 **5 Claims**



1. A MOS transistor, comprising:
a semiconductor substrate having source and drain regions at a surface thereof;
an insulating layer on the surface of said substrate overlying said source and drain regions and a channel region between said source and drain regions;
a plurality of growth nuclei of a first conductive material in a defined region on said insulating layer overlying said channel region, a density of said growth nuclei being 40 pieces or more per 1 μm^2;
a first thin film of said first conductive material grown on each of said growth nuclei to form a plurality of island-like regions in said defined region, said island-like regions comprising silicon selectively doped with an impurity;
a second thin film of a second conductive material different than said first conductive material covering all of said island-like regions and also areas between said island-like regions, said second thin film comprising a silicide, and said second thin fill together with said island-like regions forming a complex film acting as a gate electrode; and
a work function between said complex film and said substrate being defined by a total area of said island-like regions compared to a total area of said defined region above said channel region, said total area of said island-like regions being less than said total area in said defined region.

5,619,058
LIGHT EMITTING DIODE DEVICE HAVING FOUR DISCRETE REGIONS
Helen H. Kim, Holmdel, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.
Filed Feb. 17, 1994, Ser. No. 197,895
Int. Cl.[6] H01L *27/14;31/00*
U.S. Cl. 257—431 **9 Claims**



1. A light-emitting device comprising:

a first device region comprising silicon doped with a suitable dopant;
a third device region comprising a luminescent organic material;
a second device region interposed between said first device region and said third device region which lowers the energy barrier between the first device region and the third device region, where said second device region has a thickness of about 20 Å to about 60 Å; and
a fourth device region comprising a conductive material that is at least semi-transparent overlying the third device region wherein the luminescent organic material emits light in response to the application of a bias voltage to the light emitting device.

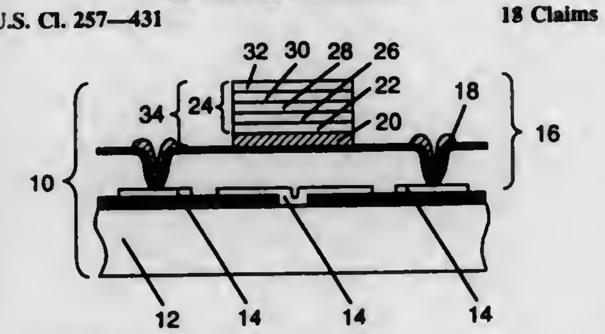
5,619,059
COLOR DEFORMABLE MIRROR DEVICE HAVING OPTICAL THIN FILM INTERFERENCE COLOR COATINGS

Li Li, Gloucester; Jerzy A. Dobrowolski, Ottawa; Peter D. Grant, Metcalfe, and Brian T. Sullivan, Gloucester, all of Canada, assignors to National Research Council of Canada, Ottawa, Canada

Filed Sep. 28, 1994, Ser. No. 314,003

Int. Cl.^{6} H01L *27/14;31/00*

U.S. Cl. 257—431 **18 Claims**



1. A semiconductor device comprising:
circuitry for accepting electronic signals;
a plurality of deformable mirrors selectably operable to reflect incident light, responsive to the electronic signals; and
a first group of said plurality of deformable mirrors being coated with an optical thin film interference colour coating having at least a layer that is substantially transparent with respect to the incident light, the optical thin film interference colour coating including at least one further layer that is partially absorbing with respect to the incident light, so that the spectral reflectance and absorptance of the deformable mirror is modified to produce a desired reflected colour by the process of optical interference enhanced absorption in the optical interference colour coating, the layers being of predetermined thicknesses and materials, wherein the thickness of the substantially transparent layer substantially determines the desired reflected colour.

5,619,060
THERMAL PICTURE SYNTHESIZER DEVICE FOR GENERATING A THERMAL IMAGE

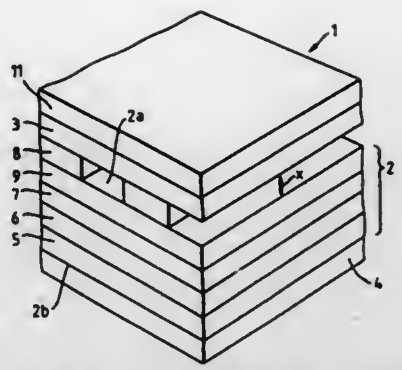
Alan P. Pritchard; Stephen P. Lake, and Ian M. Sturland, all of Filton, Great Britain, assignors to British Aerospace Public Limited Company, Farnborough, England

Filed Jun. 7, 1994, Ser. No. 257,326

Int. Cl.^{6} H01L *31/058*

U.S. Cl. 257—467 **15 Claims**

1. A thermal picture synthesis device having a multilayer construction incorporating a substrate layer, at least one resistor member extending across and facing a first surface of said substrate



layer at least partially at a spacing therefrom, and a drive element layer on a second surface of the substrate layer remote from said first surface,
wherein the substrate layer includes a silicon base layer, a first silicon dioxide insulating layer facing and in contact with the silicon base layer, a bus layer comprising one of aluminum-silicon-copper and copper, facing and in contact with the first silicon dioxide insulating layer, a layer of at least one of aluminum-silicon-copper and copper forming a capping layer on the surface of the at least one resistor member most remote from the substrate layer, and hollow post-like electrical connection passage members located one at each end of said at least one resistor member between the at least one resistor member and the substrate layer to provide at least partial support for the at least one resistor member and with the capping layer extending through the substrate layer into electrical contact with the drive element layer to provide electrical connection between the drive element layer and the at least one resistor member.

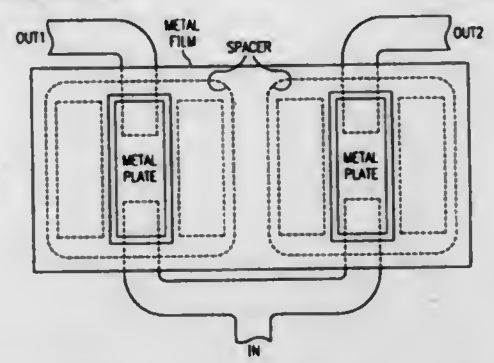
5,619,061
MICROMECHANICAL MICROWAVE SWITCHING

Charles Goldsmith, Plano; Bradley M. Kanack, Desoto; Tsen-Hwang Lin, Dallas; Bill R. Norvell, Richardson; Lily Y. Pang, McKinney; Billy Powers, Jr., Richardson; Charles Rhoads, McKinney, and David Seymour, Plano, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation-in-part of Ser. No. 97,824, Jul. 27, 1993, Pat. No. 5,526,172. This application Oct. 31, 1994, Ser. No. 332,282

Int. Cl.^{6} H01L *29/00*

U.S. Cl. 257—528 **19 Claims**



1. An integrated circuit switch, comprising:
(a) a membrane supported over a first conductor on a substrate;
(b) a conductive region on said membrane and connecting to a second conductor on said substrate; and
(c) a pulldown electrode on said substrate and under said membrane,
(d) wherein a voltage greater than a pulldown threshold and applied between said conductive region and said pulldown electrode will pull said membrane down to make a capacitive coupling to said first conductor.

5,619,062
PERSONALIZABLE GATE ARRAY DEVICES

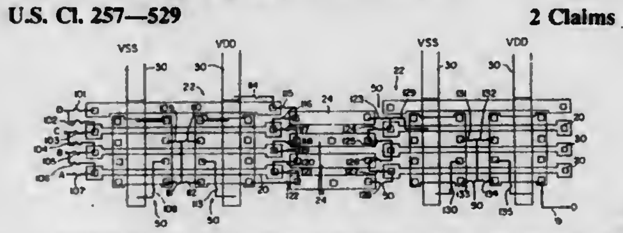
Meir I. Janai, Haifa, Israel, and Zvi Orbach, Sunnyvale, Calif., assignors to Chip Express (Israel) Ltd., Haifa, Israel

Continuation of Ser. No. 81,553, Jun. 23, 1993, Pat. No. 5,545,904, which is a continuation of Ser. No. 626,199, Dec. 7, 1990, abandoned, which is a continuation-in-part of Ser. No. 344,582, Apr. 28, 1989, Pat. No. 5,049,969, which is a continuation-in-part of Ser. No. 222,514, Jul. 21, 1988, Pat. No. 4,933,738, said Ser. No. 81,553is a continuation-in-part of Ser. No. 449,063, Dec. 18, 1989, Pat. No. 4,924,287, which is a continuation of Ser. No. 311,397, Feb. 16, 1989, abandoned, which is a continuation of Ser. No. 273,706, Nov. 15, 1988, abandoned, which is a continuation of Ser. No. 819,707, Jan. 17, 1986, abandoned. This application Mar. 14, 1995, Ser. No. 404,042

Claims priority, application Israel, Jan. 20, 1985, 74108; Apr. 25, 1988, 86162

Int. Cl.^{6} H01L *27/02;27/10;27/15*

U.S. Cl. 257—529 **2 Claims**



1. A device having a plurality of accessible input/output pins comprising:
a substrate;
a plurality of transistors provided on said substrate; and
a plurality of links connecting the transistors into an inoperable circuit, at least some of said plurality of links having designated fuse locations, said plurality of links and transistors being arranged such that, upon disconnecting of selected ones of said plurality of links at ones of said designated fuse locations, said plurality of links and transistors is interconnected into an operable CMOS gate array circuit,
wherein said fuse locations are not selectively fusible by current supplied at said accessible input/output pins of the device.

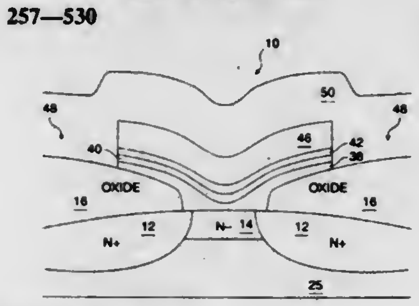
5,619,063
EDGELESS, SELF-ALIGNED, DIFFERENTIAL OXIDATION ENHANCED AND DIFUSION-CONTROLLED MINIMUM-GEOMETRY ANTIFUSE AND METHOD OF FABRICATION

Wenn-Jel Chen, Sunnyvale, and Huang-Chung Tseng, Santa Clara, both of Calif., assignors to Actel Corporation, Sunnyvale, Calif.

Continuation of Ser. No. 329,705, Oct. 25, 1994, abandoned, which is a continuation-in-part of Ser. No. 277,673, Jul. 19, 1994, Pat. No. 5,519,248, which is a continuation of Ser. No. 87,942, Jul. 7, 1993, Pat. No. 5,369,054, Ser. No. 290,029, Aug. 12, 1994, Pat. No. 5,498,895, and Ser. No. 289,678, Aug. 12, 1994, Pat. No. 5,572,061. This application Dec. 12, 1995, Ser. No. 646,382

Int. Cl.^{6} H01L *29/00*

U.S. Cl. 257—530 **27 Claims**



1. An antifuse comprising:
a lower antifuse electrode including an N− diffusion region disposed within, surround by and in contact with an N+ diffusion region disposed generally about a vertical axis of said N− diffusion region;
an isolation layer means;
an antifuse cell opening of a first area in and through said isolation layer means;
an upper electrode means;
an antifuse material layer disposed between said lower antifuse electrode and said upper electrode means and over and in contact with said lower antifuse electrode; and
means for rupturing said antifuse within a predetermined second area much smaller than said first area, said second area being at a predetermined location confined within said antifuse cell opening, said means including causing said antifuse material layer deposited over said lower antifuse electrode to be of a first minimum thickness in a region over said N+ diffusion region and of a second minimum thickness in a region over said N− diffusion region, said first minimum thickness being greater than said second minimum thickness.

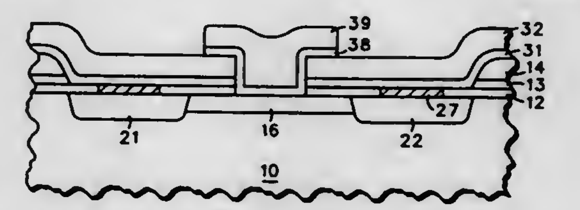
5,619,064
III-V SEMICONDUCTOR GATE STRUCTURE AND METHOD OF MANUFACTURE

Jaeshin Cho, Gilbert, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 254,206, Jun. 6, 1994, Pat. No. 5,484,740. This application Jan. 16, 1996, Ser. No. 587,045

Int. Cl.^{6} H01L *23/58*

U.S. Cl. 257—637 **5 Claims**



1. A semiconductor gate structure comprised of:
a III-V semiconductor material having a channel region, a source region, and a drain region formed therein and having a first silicon nitride layer over the channel region;
a first dielectric layer comprised of aluminum disposed over the first silicon nitride layer;
a first silicon dioxide layer disposed over the first dielectric layer;
an opening to the III-V semiconductor material in the first silicon dioxide layer, the first dielectric layer, and the first silicon nitride layer formed over a portion of the channel region, wherein the first silicon dioxide layer, the first dielectric layer and the first silicon nitride layer each have sidewalls after the opening is formed therein; and
a gate layer disposed on the III-V semiconductor material in the opening to the semiconductor material and extending over a portion of the first silicon dioxide layer.

5,619,065
SEMICONDUCTOR PACKAGE AND METHOD FOR ASSEMBLING THE SAME

Young S. Kim, Seoul, Rep. of Korea, assignor to Gold Star Electron Co., Ltd., Chungcheongbuk-do, Rep. of Korea

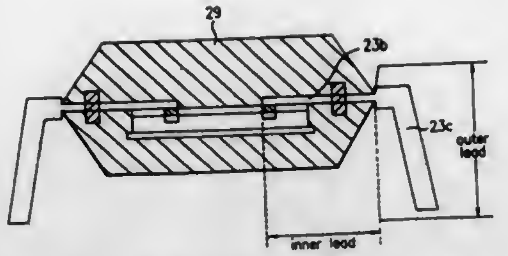
Continuation of Ser. No. 940,327, Sep. 3, 1992, abandoned. This application Sep. 19, 1994, Ser. No. 308,624

Claims priority, application Rep. of Korea, Sep. 11, 1991, 15864/1991

Int. Cl.^{6} H01L *23/495;23/48;23/52*

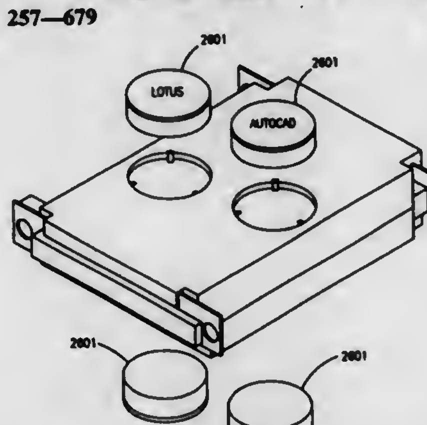
U.S. Cl. 257—673 **20 Claims**

1. A semiconductor package comprising:



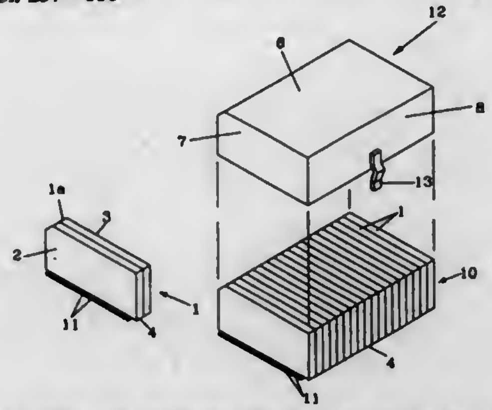
a semiconductor chip having at its upper surface a plurality of bonding pads;
an insulating layer formed over the upper surface of the semiconductor chip, the insulating layer having open portions corresponding to the bonding pads;
a plurality of inner leads, each having at a respective first end a bonding bumper for electrically connecting the inner lead with a respective bonding pad through the open portions of the insulating layer;
a plurality of outer leads, each extending immediately from a respective second end of a corresponding inner lead, each of the outer leads having a uniform thickness greater than that of the inner leads and a predetermined shaped portion;
a mold body molded substantially at center portions of the inner leads, the mold body surrounding substantially the center portions of the inner leads, excluding the semiconductor chip, to maintain space between the inner leads and space between the outer leads; and
a package body being molded and encapsulating the semiconductor chip, the inner leads and the mold body, excluding the outer leads.

5,619,066
MEMORY FOR AN ELECTRONIC TOKEN
Stephen M. Curry; Michael L. Bolan; Kevin E. Deierling, all of Dallas; William L. Payne, II, Garland; Hal Kurkowski, Dallas; Donald R. Dias, Carrollton; Gary V. Zanders, Dallas; Robert D. Lee, Denton, and Guenther H. Lehmann, The Colony, all of Tex., assignors to Dallas Semiconductor Corporation, Dallas, Tex.
Continuation of Ser. No. 725,793, Jul. 9, 1991, abandoned, which is a continuation-in-part of Ser. No. 615,606, Nov. 19, 1990, Pat. No. 5,206,905, Ser. No. 615,615, Nov. 19, 1990, abandoned, Ser. No. 615,608, Nov. 19, 1990, Pat. No. 5,226,137, Ser. No. 615,618, Nov. 19, 1990, abandoned, and Ser. No. 631,929, Dec. 19, 1990, Pat. No. 5,506,991. This application Aug. 31, 1994, Ser. No. 299,040
Int. Cl.⁶ G06K *19/06*
U.S. Cl. 257—679 **52 Claims**



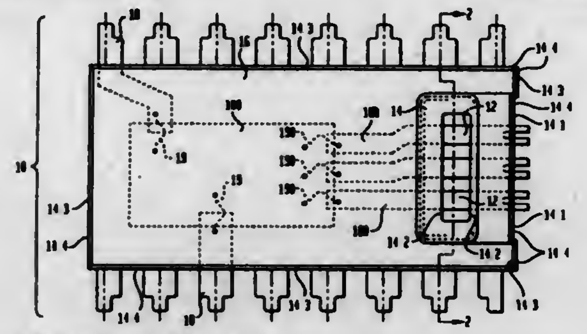
1. A serial-port memory positioned in a substantially token-shaped body, said substantially token-shaped body having a perimeter and a flange extending from a portion of said perimeter, said substantially token-shaped body comprising a plurality of electrically conductive surfaces physically insulated from one another, said plurality of electrically conductive surfaces forming said substantially token-shaped body and one electrically conductive surface of said plurality of electrically conductive surfaces forming said flange, said flange residing approximately in one geometric plane comprising:
(a) a serial port electrically coupled to said plurality of electrically conductive surfaces;
(b) a scratchpad memory electrically coupled to said serial port;
(c) a second memory electrically coupled to said scratchpad memory; and
(d) control logic electrically coupled to said serial port, said scratchpad memory and said second memory, said control logic transfering information from said scratchpad memory to said second memory as a block pursuant to a block transfer command received at said serial port via said plurality of electrically conductive surfaces,
wherein said plurality of electrically conductive surfaces of said substantially token-shaped body comprise a first electrically conductive surface and a second electrically conductive surface that combine to create a hollow cavity, said serial port, scratchpad memory, second memory, and control logic positioned inside said hollow cavity, said first electrically conductive surface and said second electrically conductive surface electrically coupled to said serial port to transmit electrical signals generated by said serial port, scratchpad memory, second memory, and control logic and to receive externally generated electrical signals; and
wherein said first electrically conductive surface and said second electrically conductive surface are planar surfaces, and further wherein a portion of said first electrically conductive surface and said second electrically conductive surface are parallel to one another.

5,619,067
SEMICONDUCTOR DEVICE PACKAGE SIDE-BY-SIDE STACKING AND MOUNTING SYSTEM
Goh J. Sua, and Chan M. Yu, both of Singapore, Singapore, assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed May 2, 1994, Ser. No. 236,768
Int. Cl.⁶ H01L *23/04;23/32*
U.S. Cl. 257—686 **26 Claims**



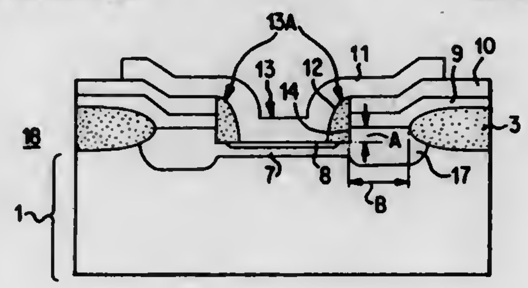
7. A system for mounting multiple packaged semiconductor devices on a circuit board, said system comprising:
a plurality of semiconductor devices, each device comprising an integrated circuit chip encapsulated into a discrete protective package and having contact leads extending out of an edge of said package, said device packages being positioned vertically in alignment in a side-by-side array;
a case having an internal cavity with an open bottom, enclosing said array of semiconductor device packages, leaving said contact leads exposed through said case open bottom;
a circuit board having contact pads thereon; and
means on said case, cooperative with said board, releasably securing said case and enclosed semiconductor device packages to said circuit board and pressing said leads respectively against said pad, establishing solderless electrical connection between said leads and said pads.

5,619,068
EXTERNALLY BONDABLE OVERMOLDED PACKAGE ARRANGEMENTS
Albert M. Benzoni, Lower Macungie Township, Lehigh County, Pa., assignor to Lucent Technologies Inc., Murray Hill, N.J.
Filed Apr. 28, 1995, Ser. No. 430,665
Int. Cl.⁶ H01L *23/48;23/52*
U.S. Cl. 257—690 **19 Claims**



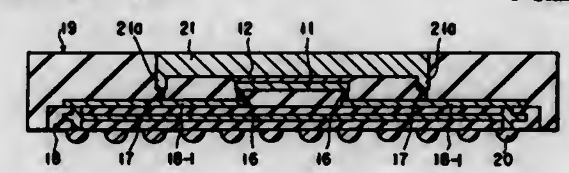
1. A combination comprising:
an overmolded package comprising a molding material having a localized window therein;
a first electronic device located completely inside the overmolded package;
first and second pluralities of leadframe-fingers connected to the first electronic device, each of the leadframe fingers of the first plurality of leadframe fingers having an externally bondable site located within the localized window, whereby each of the sites is exposed at the localized window, the second plurality of leadframe fingers emerging from the molding material of the overmolded package at separate localized locations of the overmolded package that are removed from the localized window, and the molding material completely surrounding the leadframe fingers of the second plurality at these localized locations;
contact material covering said plurality of externally bondable sites; and
removable protective material disposed to cover said contact material.

5,619,069
BIPOLAR DEVICE AND PRODUCTION THEREOF
Hiroyuki Ohta, Ibaraki-ken; Hideo Miura, Koshigaya; Hiroo Masuda, Tokyo; Yoichi Tamaki, Kokubunji; Takahide Ikeda, Tokorozawa; Asao Nishimura, Ushiku, and Takashi Hashimoto, Ome, all of Japan, assignors to Hitachi, Ltd., Japan
Division of Ser. No. 401,678, Mar. 10, 1995. This application Jun. 2, 1995, Ser. No. 458,655
Claims priority, application Japan, Mar. 18, 1994, 6-048271
Int. Cl.⁶ H01L *23/48*
U.S. Cl. 257—692 **14 Claims**



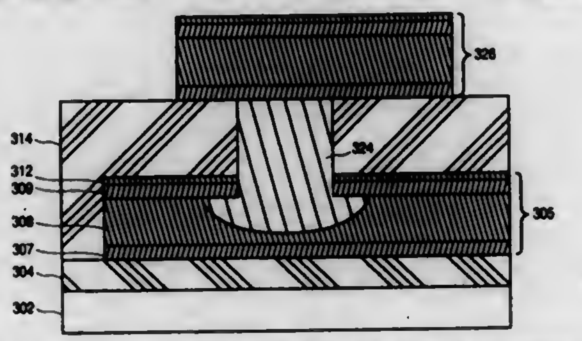
1. A bipolar device comprising
a silicon substrate including a collector region, a base region and an emitter region;
a base electrode which contains a high concentration of an impurity material, and electrically contacts the base region via a contact area arranged on a surface of said base region at a first contact level within said bipolar device;
an emitter electrode which electrically contacts the emitter region via a contact area arranged on a surface of said emitter region at a second contact level within said bipolar device and is separated from the base electrode by a side wall layer; and
a device isolation film formed between the base electrode and the silicon substrate and separated from the side wall layer by a distance B;
wherein said first contact level and said second contact level are separated vertically within said bipolar device by a level difference A which is in a range of from 0.03 μm to 0.10 μm.

5,619,070
SEMICONDUCTOR DEVICE WHICH RADIATES HEAT AND APPLIES SUBSTRATE POTENTIAL FROM REAR SURFACE OF SEMICONDUCTOR CHIP
Hiroyuki Kozono, Oomiya, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Continuation of Ser. No. 363,912, Dec. 27, 1994, abandoned. This application Jul. 31, 1996, Ser. No. 688,823
Claims priority, application Japan, Dec. 28, 1993, 5-337420
Int. Cl.⁶ H01L *23/48;23/52*
U.S. Cl. 257—692 **5 Claims**



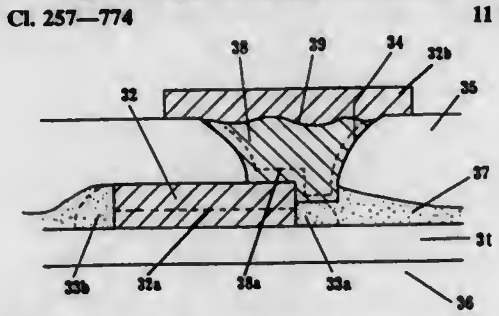
1. A semiconductor device comprising:
a semiconductor chip including a main surface region having a semiconductor element and a rear surface to which a substrate potential is applied;
a semiconductor chip mounting portion having a first layer to which said semiconductor chip is attached at said rear surface, said first layer being made of a metal and comprising a first main part and a first edge part protruding from the first main part, and a second layer on said first layer, said second layer being an insulator and comprising a second main part and a second edge part protruding from the second main part, the first and second edge parts forming a projection which includes a surface located in substantially the same plane as the main surface region of said semiconductor chip;
a conducting path forming member having a conducting path electrically connected to said semiconductor chip and said edge part of said first layer of said semiconductor chip mounting portion; and
a package for sealing said semiconductor chip;
wherein an outside potential is applied to the rear surface of said semiconductor chip through said first layer of said semiconductor chip mounting portion and said conducting path forming member.

5,619,071
ANCHORED VIA CONNECTION
Alan M. Myers, Hillsboro; Peter K. Charvat, Portland; Thomas A. Letson, Beaverton; Shi-ning Yang, Portland, and Peng Bai, Aloha, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.
Division of Ser. No. 324,763, Oct. 17, 1994, Pat. No. 5,470,790. This application Aug. 15, 1995, Ser. No. 515,318
Int. Cl.[6] H01L *23/522; 23/532; 29/41*
U.S. Cl. 257—753 **15 Claims**



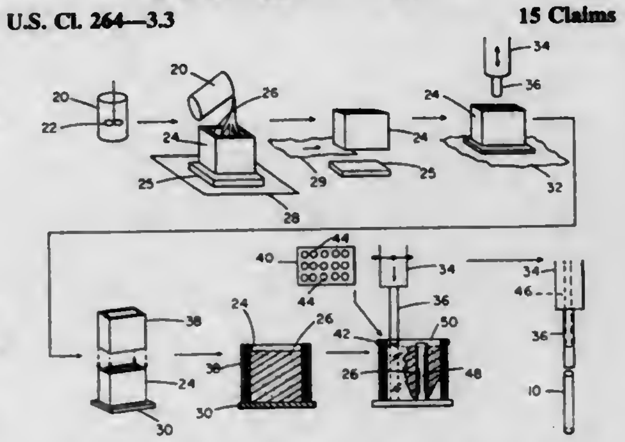
1. An interconnection structure for an integrated circuit comprising:
- a first conductive layer comprising a first metal;
- a second conductive layer on said first conductive layer, said second conductive layer comprising a second metal-first metal compound; and
- a via connection extending through said first conductive layer and into said second conductive layer, said via connection undercutting said first conductive layer.

5,619,072
HIGH DENSITY MULTI-LEVEL METALLIZATION AND INTERCONNECTION STRUCTURE
Sunil Mehta, San Jose, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.
Continuation of Ser. No. 387,044, Feb. 9, 1995, abandoned. This application Feb. 14, 1996, Ser. No. 601,541
Int. Cl.[6] H01L *23/48; 29/44; 29/52; 29/62*
U.S. Cl. 257—774 **11 Claims**



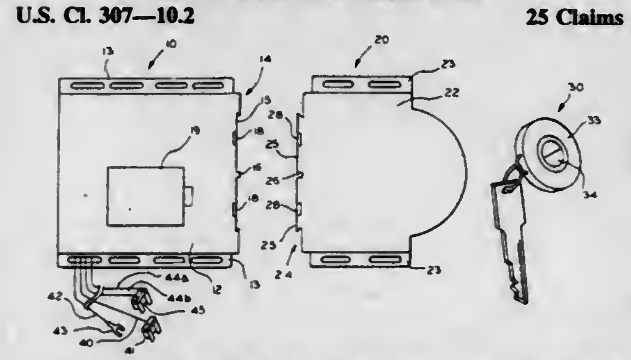
1. A multi-level semiconductor device, comprising:
- a substrate;
- a plurality of insulating layers forming levels on the substrate;
- an upper conductive wiring pattern on an upper level and a lower conductive wiring pattern on a lower level and on a first insulating layer having an upper surface, the lower conductive wiring pattern having sidewalls extending in a substantially vertical direction from the upper surface of the first insulating layer; and
- at least one conductive via comprising a through-hole filled with metal electrically connecting the upper conductive wiring pattern to the lower conductive wiring pattern, the conductive via comprising a bottom surface and extending through a second insulating layer to the lower conductive wiring pattern in direct contact with the second insulating layer; wherein the bottom surface of the conductive via is in direct contact with the lower conductive wiring pattern and with an etch stop insulating material different from the second insulating layer, and the etch stop insulating material extends from the upper surface of the first insulating layer in contact with the substantially vertical side surfaces of the lower conductive wiring pattern.

5,619,073
PROPELLANT GRAINS AND PROCESS FOR THE PRODUCTION THEREOF
B. Kelley Posey, St. Louis, Mo.; David M. Hurley, Alton, Ill.; R. David Seybert, Edwardsville, Ill., and M. Russel Phinney, Collinsville, Ill., assignors to Propellex Corporation, Edwardsville, Ill.
Filed Aug. 15, 1995, Ser. No. 515,386
Int. Cl.[6] C06B *21/00;* **F42B** *3/00*
U.S. Cl. 264—3.3 **15 Claims**



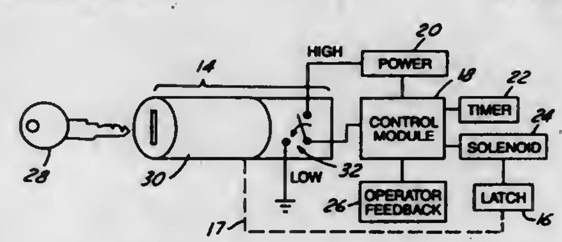
1. Process for the production of a batch of unitary grains of propellant or other ignitable material, comprising
- (a) preparing a constituent mixture of the material by mixing constituents of the material while heating the mixture to at least a predetermined pouring temperature within a permissible temperature range;
- (b) pouring the constituent mixture into a mold of selected configuration;
- (c) curing the constituent mixture for a predetermined period of time resulting in a cured, cast block of semirigid yet plasticly deformable material;
- (d) positioning the cutting die to a location relative to the cast block from which a grain of material may be cut;
- (e) forcing the cutting die into the cast block to cut therefrom a grain of material of the cast block; then
- (f) extracting the grain of material of the cast block therefrom for further use thereby leaving a void where the grain is extracted;
- (g) inserting stabilizing means within the void for maintaining dimensional stability of the plasticly deformable material during further cutting of grains from the block; and
- (h) repeating steps (d) through (g) until the cast block has yielded a satisfactory number of grains.

5,619,074
ELECTRONIC SECURITY SYSTEM FOR A MOTOR VEHICLE
Mark E. Berch, Riverwoods, Ill.; Robert S. Smith, Bonita, Calif.; Harvey Kinzelberg, Glencoe; Charles Bain, N. Dundee, both of Ill.; Frank Sheng, Taichung-Hsieng, Taiwan, and George Hanzawa, Tokyo, Japan, assignors to Sequel Security Systems, Inc., Deerfield, Ill.
PCT No. PCT/US94/09362, § 371 Date Feb. 15, 1995, § 102(e) Date Feb. 15, 1995, PCT Pub. No. WO96/05990, PCT Pub. Date Feb. 29, 1996
PCT Filed Aug. 18, 1994, Ser. No. 325,288
Int. Cl.[6] B60R *25/04;* **H01R** *13/26*
U.S. Cl. 307—10.2 **25 Claims**



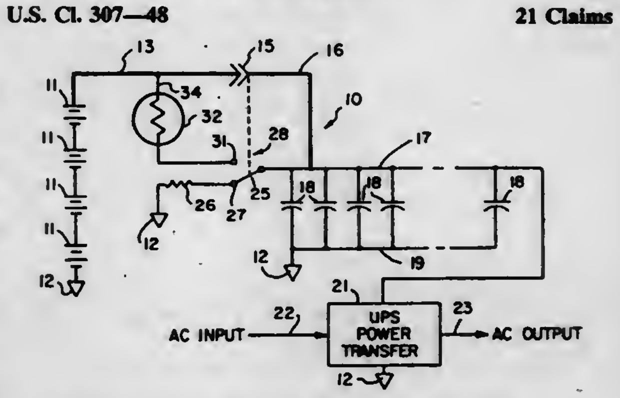
1. A security system for disabling a motor vehicle by disabling an interruptable circuit vital to the operation of the motor vehicle, the system comprising:
- a base circuit having an rely for automatically disabling the interruptable circuit when an ignition of the motor vehicle is turned off, thereby disabling the motor vehicle;
- a pair of electrical conductors for connecting the interruptable circuit to the base circuit;
- an electrical power conductor coupling a power circuit of the motor vehicle to the base circuit;
- means for enabling the disabled interruptable circuit and thereby enabling the disabled motor vehicle; and
- a dummy fuse having electrically isolated fuse contacts, each electrical conductor of the pair of electrical conductors being connected to one of the fuse contacts of the dummy fuse, wherein the dummy fuse is insertable into a fuse socket of the motor vehicle to connect the interruptable circuit of the motor vehicle to the base circuit.

5,619,075
TWO-STEP POWER DOOR LOCKING SYSTEM AND METHOD OF OPERATION
Thomas A. Spoto, Birmingham, and Sean M. Newell, Allen Park, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Aug. 23, 1995, Ser. No. 518,214
Int. Cl.[6] E05B *65/36*
U.S. Cl. 307—10.2 **20 Claims**



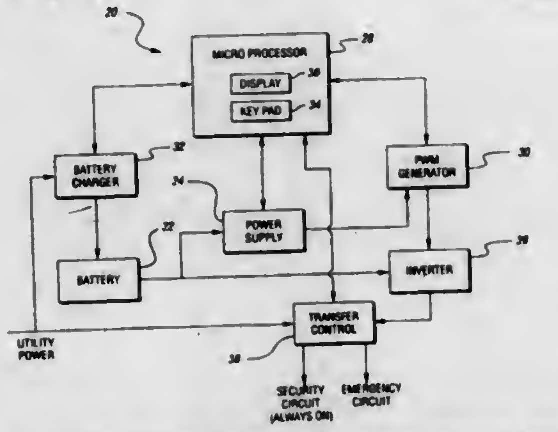
1. A lock system for an automotive vehicle comprising:
- an electrically controlled latch having a locked and unlocked position;
- a switch generating a signal having a first state and a second state;
- a timer;
- a controller connected to said switch, said latch and said timer, said controller electrically controlling said latch to move to said unlocked position if said switch signal changes from said first state to said second state for at least a first predetermined time and less than a second predetermined time and then changes to and remains in said first state for at least a third predetermined time.

5,619,076
METHOD AND APPARATUS FOR CONNECTION AND DISCONNECTION OF BATTERIES TO UNINTERRUPTIBLE POWER SYSTEMS AND THE LIKE
David L. Layden, New Lisbon; Michael J. Cane, Mauston, and Robert Bishop, Tomah, all of Wis., assignors to General Signal Power Systems, Inc., Waukesha, Wis.
Filed Dec. 19, 1994, Ser. No. 358,524
Int. Cl.[6] H01H *3/32*
U.S. Cl. 307—48 **21 Claims**



1. Electrical power connection apparatus comprising:
- (a) a battery;
- (b) a DC bus line, a common line connected to the battery, and a capacitor connected between the DC bus line and the common line;
- (c) a main connector connected in a power conduction path from the battery to the DC bus line, the main connector operable to be closed to provide conduction therethrough and to be opened to interrupt conduction; and
- (d) an auxiliary switch and a precharge resistor connected between the battery and the DC bus line, the auxiliary switch including a mechanically actuated switch having two positions, a first position in which current flow is blocked from the battery through the precharge resistor to the DC bus line and a second position in which current is passed from the battery through the precharge resistor, and a link arm having a portion extending upwardly from the switch and positioned to engage an actuator button of the switch to switch the same from the first position to the second position as the link arm is depressed downwardly, the link arm having a tab portion extending upwardly to be contacted by a movable section of the main connector as the movable section is engaged by a user to a fixed section of the main connector, to complete a circuit path from the battery to the capacitor through the precharge resistor as the main connector is being closed and for a period of time prior to electrical connection through the main connector from the battery to the capacitor, the resistance of the precharge resistor controlling the level of the peak charging current passing through the precharge resistor to the capacitor.

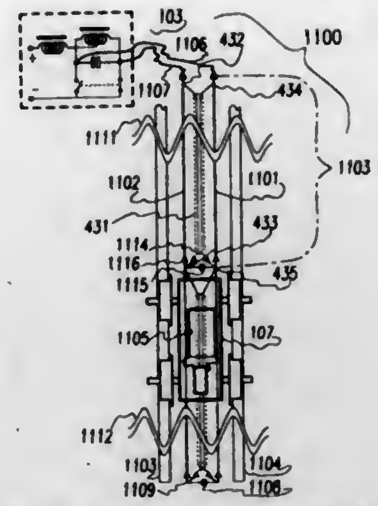
5,619,077
SYSTEM AND METHOD FOR PROVIDING ALTERNATE AC VOLTAGE
John D. Green, Granville; Gregory J. Sbeka; Michael L. Thompson, both of Newark; John B. Hissong, Fredericktown, and Ming D. Tan, Mt. Vernon, all of Ohio, assignors to Holophane Lighting, Inc., Newark, Ohio
Filed Mar. 18, 1994, Ser. No. 210,882
Int. Cl.⁶ H02J *7/00*
U.S. Cl. 307—64 **22 Claims**



1. A system for use with primary and secondary electrical loads having a main AC voltage source, the system providing an alternate AC voltage source to the primary electrical load in the event of a failure of the main AC voltage source, the system comprising:
means for selecting a delay time period based on the secondary electrical load;
means for generating a main AC voltage signal representing the voltage of the main AC voltage source;
means for processing the main AC voltage signal to determine a status of the main AC voltage, a main AC voltage failure time period, and a main AC voltage restoration time period;
means for generating a control signal in response to the main AC voltage status, the main AC voltage failure time period, the main AC voltage restoration time period, and the delay time period selected; and
means for switching the primary electrical load between the main AC voltage source and the alternate AC voltage source in response to the control signal such that the alternate AC voltage source is conserved.

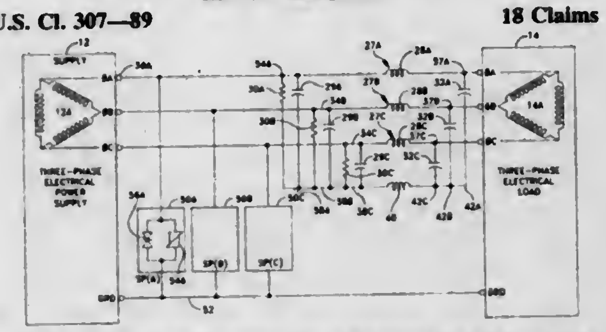
5,619,078
PRIMARY INDUCTIVE PATHWAY
John T. Boys, 15A Island Bay Road, Birkdale, Auckland 10, New Zealand, and Shuzo Nishino, 2-11, 3-Chome, Mitejima, Nishiyodogawa-Ku, Osaka 555, Japan
PCT No. PCT/NZ93/00032, § 371 Date Nov. 10, 1994, § 102(e) Date Nov. 10, 1994, PCT Pub. No. WO93/23909, PCT Pub. Date Nov. 25, 1993
PCT Filed May 5, 1993, Ser. No. 335,710
Claims priority, application New Zealand, May 10, 1992, 241380; Jun. 10, 1992, 243102; Feb. 22, 1993, 245956; Feb. 22, 1993, 245958; Mar. 26, 1993, 247268
Int. Cl.⁶ H02J *3/06*
U.S. Cl. 307—85 **13 Claims**

1. A primary inductive pathway for a resonant inductive power distribution system operating at a system resonant frequency, said pathway being connected to a power supply and having two spaced conductors terminated by a bridging element and forming with said power supply a closed loop, wherein said primary inductive pathway comprises at least two primary conductor modules, each primary conductor module having a resonant frequency compatible with the system resonant frequency, each said primary conductor module comprising a first conductor and a second conductor



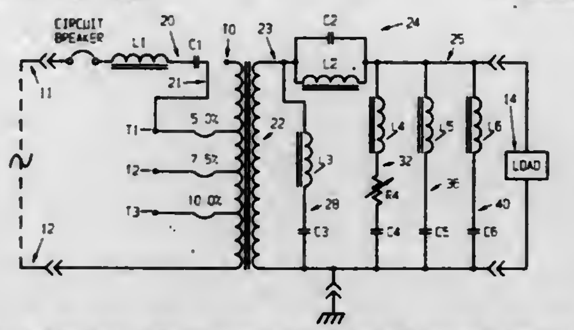
spaced apart from one another, each conductor having a first connector and a second connector, each module having at least one capacitor;
each module being capable of connection to adjoining conductors within adjacent modules or to a bridging element at one end of the pathway, so that a number of modules can be joined together to form a longer pathway, through the length of which an effective amount of inductive power can, during use, be propagated.

5,619,079
EMI LINE FILTER
Charles L. Wiggins, Newport News, Va., and David W. Stewart, Bonaire, Ga., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Jul. 28, 1995, Ser. No. 508,872
Int. Cl.⁶ H02J *1/02*
U.S. Cl. 307—89 **18 Claims**



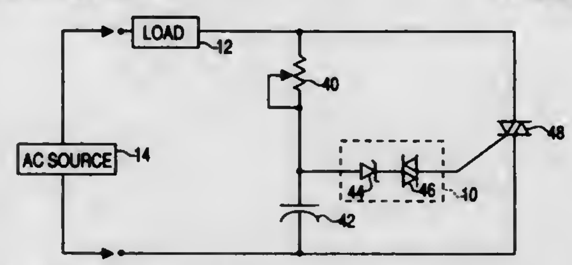
1. A filter circuit for reducing electromagnetic interference in an electrical system including a multiple-phase power supply and a multiple phase electrical load, each of which is isolated from a ground, said filter circuit comprising:
a plurality of four-terminal low-pass filters for connection between the electrical supply and the electrical load, each said low-pass filter having first and second input terminals and first and second output terminals, said first input terminal being for connection to a given phase conductor from the electrical supply, the second input terminal being electrically coupled to said first input terminal, said first output terminal being for connection to a corresponding phase conductor from the electrical load and said second output terminal being electrically coupled to said first output terminal, said second input terminal and said second output terminal of each of said low-pass filters being isolated from ground; and
a two-terminal inductive reactance having a first terminal connected to all said second input terminals and a second terminal connected to all of said second output terminals.

5,619,080
LINE FILTER FOR REDUCING AC HARMONICS
Donald G. Pennington, La Grange Park, and Paul Holzer, Schaumburg, both of Ill., assignors to Power & Ground Systems Corporation, Willowbrook, Ill.
Filed Nov. 2, 1995, Ser. No. 552,346
Int. Cl.⁶ H02J *3/01;* **H02M** *1/10*
U.S. Cl. 307—105 **17 Claims**



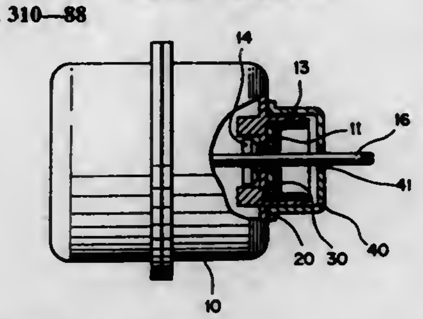
1. A harmonic filter circuit for connection between hot and neutral power lines of an AC power network and an electrical load, comprising the combination of
harmonic filter means separating the hot power line from both the load and the neutral power line, the harmonic filter means having: a band stop filter means of parallelly connected inductor and capacitor means in the hot power line in series with the load, and a pair of band pass filter means each of serially connected inductor and capacitor means connected between the hot power and neutral lines from respective connections with the hot power line on opposite sides of the band stop filter means;
network filter means of serially connected inductor and capacitor means in series in the hot power line with both the harmonic filter means and load; and
the band stop filter means and the band pass filter means of the harmonic filter means each having different resonance frequencies, and each of such frequencies being close to but yet several Hz away from any true harmonic of the AC power network, and the network filter means having a resonance frequency generally corresponding to the frequency of the AC power network.

5,619,081
ASYMMETRICAL AC TRIGGER SIMULATION
Bernard J. Gershen, Centerport; Alfred J. Lombardi, La Grangeville; Edward J. Krajci, Franklin Square, and Yevgeny Shafir, Jamaica Estates, all of N.Y., assignors to Leviton Manufacturing Co., Inc., Little Neck, N.Y.
Filed Jan. 18, 1994, Ser. No. 183,459
Int. Cl.⁶ H01H *47/00*
U.S. Cl. 307—125 **10 Claims**



6. A dimmer comprising:
switching means having first and second terminals and a gate terminal; said first terminal connected to one side of a load; said second terminal connected to a source of AC voltage; said switching means operable to change from a state of high impedance to a state of low impedance upon the application of sufficient current to said gate terminal whereby causing current to flow through said load;
potentiometer means connected to said first terminal of said switching means for limiting the flow of current from said source of AC voltage;
capacitor means connected between said potentiometer means and said source of AC voltage operable to receive charging current from said potentiometer means;
symmetrical trigger means connected to said gate terminal of said switching means for preventing said switching means from changing to said state of low impedance until sufficient charge accumulate on said capacitor means to cause breakover in said symmetrical trigger means; said symmetrical trigger means exhibiting negative impedance characteristics by having a maintenance voltage lower than said breakover voltage; said breakover and maintenance voltage of said symmetrical trigger means being nearly identical in both positive and negative half cycles of said source of AC voltage; and
asymmetrical trigger means connected between said symmetrical means and both potentiometer means and capacitor means for compensating for a drop in voltage across said capacitor means due to said negative resistance characteristics of said symmetrical trigger means; said asymmetrical trigger means causing said symmetrical trigger means to fire at different points in said positive and negative half cycles of said AC voltage.

5,619,082
ELECTRIC MOTOR WITH SEALING STRUCTURE RESISTING THE ENTRY OF SAND AND DUST
Jong-Han Choi, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea
Filed Sep. 15, 1995, Ser. No. 529,108
Claims priority, application Rep. of Korea, Sep. 16, 1994, 94-24063 U
Int. Cl.⁶ H02K *5/10*
U.S. Cl. 310—88 **3 Claims**

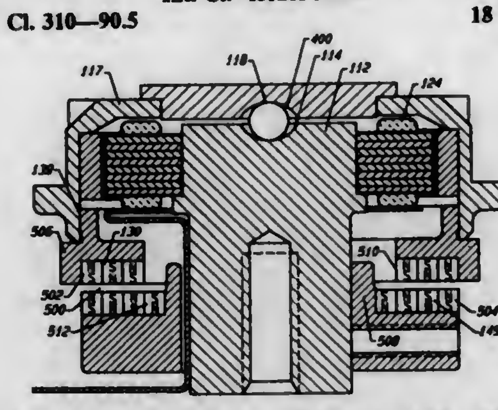


1. An electric motor comprising:
a case enclosing a rotor and stator;
a driven shaft protruding to the outside of the case through a shaft hole formed in the case;
a cylindrical flange projecting axially outwardly from an exterior surface of the case, the flange surrounding the shaft hole and spaced a predetermined radial distance therefrom, the flange being of integral one-piece construction with the case;
a first sealing member disposed within a cylindrical recess formed by the flange, the first sealing member including a sealing hole aligned with the shaft hole, with the driven shaft extending through the shaft hole and the sealing hole, the shaft being rotatably supported by the sealing hole with a close tolerance, so that the passage of sand and dust through the sealing hole is obstructed, the first sealing member being in the shape of a disk made of oily asbestos;
a fixing member secured within the cylindrical recess to the outside of the first sealing member to retain the first sealing member in place, the fixing member being in the shape of a cup having a cylindrical wall portion and a radial wall portion, the radial wall portion of the cup-shaped fixing member being in contact with an outer surface of the first sealing member in order to fix the first sealing member within the

flange, the cylindrical wall portion being secured to an inner cylindrical surface of the cylindrical flange by an interference fit therewith; and

a second sealing member mounted on the flange and including a wall extending across an outer end of the cylindrical recess to resist the entry of sand and dust into the cylindrical recess, the wall including a through-hole aligned with the shaft hole and sealing hole and through which the shaft extends, the second sealing member secured to the cylindrical flange by an interference fit therewith.

5,619,083
PASSIVE MAGNETIC BEARINGS FOR A SPINDLE MOTOR
John C. Dunfield, Santa Cruz; Kamran Oveyssi, and Gunter K. Heine, both of Aptos, all of Calif., assignors to Seagate Technology, Inc., Scotts Valley
Division of Ser. No. 201,676, Feb. 25, 1994, Pat. No. 5,541,460. This application Jun. 2, 1995, Ser. No. 458,570
Int. Cl.⁶ H02K *21/14*
U.S. Cl. 310—90.5 **18 Claims**



1. A magnetic bearing for journaling a rotor about a stator of a spindle motor comprising:

a pivot for pivotally supporting said rotor for rotation about said stator;

a first plurality of axially aligned magnetic poles supported from and radially extending along said stator; and

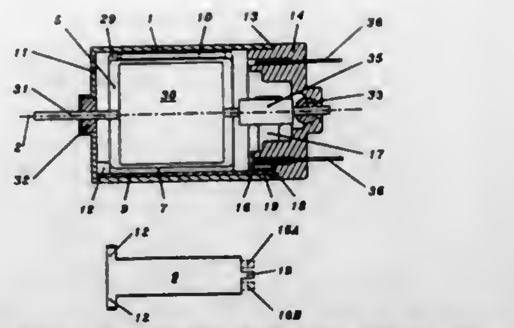
a second plurality of axially aligned magnetic poles, said poles are fixably attached to said rotor and opposing said first annular plurality of poles having each of said plurality of poles aligned exactly with each of said like plurality of poles, said first plurality of poles magnetically oriented oppositely from said second plurality of poles so that alignment of said rotor and said stator is maintained by attraction of said first and second plurality of poles, and stiffener means supported on said stator and establishing magnetic interaction with said magnetic poles on said rotor to provide directional stiffness substantially perpendicular to the axis of orientation of said magnetic poles.

5,619,084
PMDC ELECTRIC MOTOR WITH A MAGNET SPACER
James C.-S. Lau, North Point, Hong Kong, assignor to Johnson Electric S.A., Switzerland
Continuation of Ser. No. 226,457, Apr. 12, 1994, abandoned. This application Aug. 29, 1995, Ser. No. 520,472
Claims priority, application United Kingdom, Apr. 14, 1993, 9307671; Aug. 12, 1993, 9316744
Int. Cl.⁶ H02K *23/04;1/17*
U.S. Cl. 310—154 **33 Claims**

1. A permanent magnet direct current motor comprising:

a casing having a longitudinal axis which lies in a plane of symmetry;

a permanent magnet unit disposed within the casing on opposite sides of the plane of symmetry, the permanent magnet unit

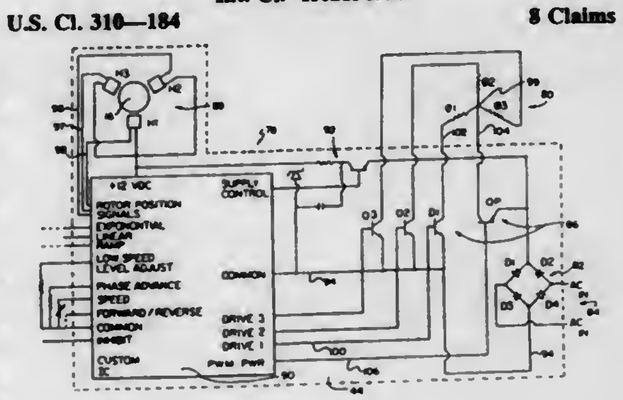


having at least two permanent magnets each having longitudinally extending edges, the at least two permanent magnets being arranged such that a first longitudinally extending edge of one of the at least two permanent magnets is disposed adjacent to a first longitudinally extending edge of the other of the at least two permanent magnets to form a first pair of adjacent longitudinally extending edges and a second longitudinally extending edge of one of the at least two permanent magnets is disposed adjacent to a second longitudinally extending edge of the other of the at least two permanent magnets to form a second pair of adjacent longitudinally extending edges, the at least two permanent magnet providing a magnetic field having an axis lying in a second plane which extends substantially perpendicular to the plane of symmetry; and

a spacer unit including first and second spacer members disposed on opposite sides of the second plane, for locating the permanent magnet unit angularly within the casing, each of the first and second spacer members having a shape and a structure that is different from the other of the first and second spacer members; wherein

the first spacer member comprises at least one rigid insert which extends, longitudinally, between and in engagement with the first pair of adjacent longitudinally extending edges of the at least two permanent magnets and, transversely, across the plane of symmetry, and the second spacer member comprises a resilient insert which extends longitudinally, between and in engagement with the second pair of adjacent longitudinally extending edges of the at least two permanent magnets, the first and second spacer members being formed separately from the casing.

5,619,085
SLOTLESS, BRUSHLESS, LARGE AIR-GAP ELECTRIC MOTOR
Daniel J. Shramo, 800 Brick Mill Run, Apt. 419, Westlake, Ohio 44145
Continuation-in-part of Ser. No. 42,119, Apr. 2, 1993, Pat. No. 5,425,165, which is a division of Ser. No. 776,724, Oct. 15, 1991, Pat. No. 5,200,611, which is a continuation of Ser. No. 451,810, Dec. 15, 1989, abandoned. This application Jun. 20, 1995, Ser. No. 496,851
Int. Cl.⁶ H02K *3/00*
U.S. Cl. 310—184 **8 Claims**



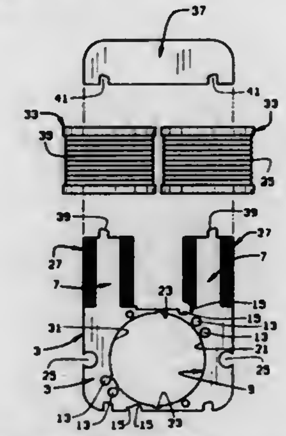
1. A polyphase electric motor, comprising:

a stator having a field winding and a field backiron; and,

a rotor disposed within the stator including a permanent magnet with a plurality of pole pairs;

wherein the field winding includes a plurality of coil segments, each coil segment having a plurality of electrically conductive turns of a polygonal shape, the turns in each coil segment having circumferentially opposite sides, the circumferentially opposite sides of relatively adjacent turns being circumferentially offset with respect to one another in the same circumferential direction so that each coil segment occupies a length generally equal to the arcuate length of two pole faces, each the coil segment including a subsegment of turns electrically commutated in accordance with a different one of a plurality of field phases.

5,619,086
TWIN BOBBIN C-FRAME MOTORS AND METHODS FOR MAKING SAME
Robert E. Steiner, 1760 Horseshoe Ridge, Chesterfield, Mo. 63005
Continuation-in-part of Ser. No. 129,336, Sep. 30, 1993, and Ser. No. 199,600, Feb. 22, 1994, abandoned. This application Jan. 31, 1995, Ser. No. 381,187
Int. Cl.⁶ H02K *17/10*
U.S. Cl. 310—259 **43 Claims**



1. A shaded pole motor comprising:

magnetically conductive stacked laminations each having a spaced pair of end legs extending generally transversely to a spaced pair of generally parallel side legs with an outer side margin of each spaced side leg being generally aligned with an outer end margin of each end leg, the combined stacked configuration of said laminations providing spaced and stacked end legs and spaced and stacked side legs;

one of said spaced and stacked end legs having aligned circumferentially continuous rotor openings for receiving a rotor;

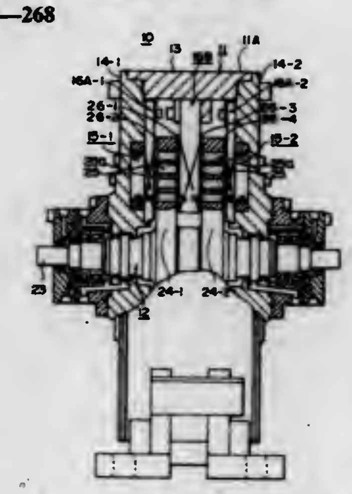
each spaced and stacked side leg at a first end extending generally transversely from one circumferentially spaced area adjacent to and surrounding the rotor openings of said one spaced and stacked end leg while being connected at a second end to the other of said spaced and stacked end legs, the first end of each of said spaced and stacked side legs at its circumferentially spaced area having a different polarity from the other spaced and stacked side leg to provide an alternating polarity of two poles around the rotor openings, the second end of each spaced and stacked leg having a different polarity than its first end;

pole shading elements for each of the two poles;

a coil winding area for each spaced and stacked side leg having a combined predetermined length and outer cross sectional configuration, the distance between the spaced and stacked side legs providing a joint winding window to accommodate electrically conductive coils on each coil winding area of predetermined length and winding diameter; and

an electrically conductive coil positioned about the coil winding area of at least one of said spaced and stacked side legs, each such electrically conductive coil having one coil end positioned in immediate proximity to the circumferentially spaced area associated with one of said spaced and stacked side legs as well as being adjacent said aligned rotor openings and rotor, and each such electrically conductive coil generating flux in one continuous path through the spaced and stacked side legs and spaced and stacked end legs including the rotor.

5,619,087
AXIAL-GAP ROTARY-ELECTRIC MACHINE
Kazuto Sakai, Yokosuka, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
PCT No. PCT/JP93/00312, § 371 Date Nov. 8, 1993, § 102(e) Date Nov. 8, 1993
PCT Filed Mar. 16, 1993, Ser. No. 140,130
Claims priority, application Japan, Mar. 18, 1992, 4-061886; Jul. 10, 1992, 4-183328
Int. Cl.⁶ H02K *1/27*
U.S. Cl. 310—268 **20 Claims**



1. An axial-gap rotary-electric machine comprising:

a stator member;

a shaft rotatably arranged on said stator member;

at least one disc member made of nonmagnetic material, rotatable together with said shaft, spaced from said stator member in an axial direction of said stator member, thereby forming a gap; and

a plurality of groups of permanent magnet members, each group located inside said disc member to form a plurality of magnetic poles along a circumference of said disc member and to form a magnetic path passing and extending through said disc member in the axial direction of said stator member, said permanent magnet members of each group distributed in the disc member to form one pole and deviated from a radial direction by predetermined angles,

wherein at least one group of the permanent magnet members comprises permanent magnets having different magnetic field intensities, including at least one permanent magnet having a small magnetic field intensity embedded in an outer peripheral portion of the disc member, and at least one permanent magnet having a large magnetic field intensity embedded in an inner peripheral portion of the disc member.

5,619,088

REVOLVING ARMATURE FOR ROTARY ELECTRIC MACHINERY

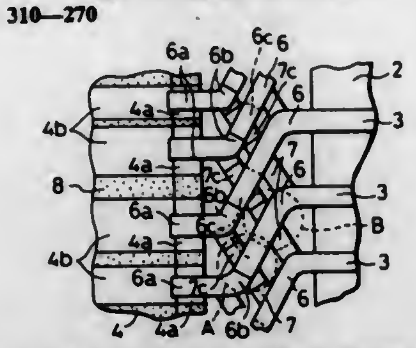
Shigeru Yumiyama, Hitachinaka, and Yoshimi Mori, Mito, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Jan. 29, 1996, Ser. No. 593,439

Claims priority, application Japan, Jan. 30, 1995, 7-012335

Int. Cl.^{6} H02K *13/04; 13/08*

U.S. Cl. 310—270 **9 Claims**



1. A revolving armature for rotary electric machinery comprising a magnetic core fixed to a shaft and having a plurality of slots formed in an outer periphery thereof, a plurality of insulator-coated coils wound in said slots of said magnetic core in multiple layers, and a commutator fixed to said shaft and provided with conductors including risers for connection to said insulator-coated coils, wherein said insulator-coated coils have end portions which include at least contact portions without insulator coatings and connected to said risers, and portions adjacent said contact portions, and stepped portions are formed in at least one of the adjacent portion of upper ones of said coils and the adjacent portion of lower ones of said coils wound in multiple layers at a location where said upper coils and said lower coils each cross-ingly face each other.

5,619,089

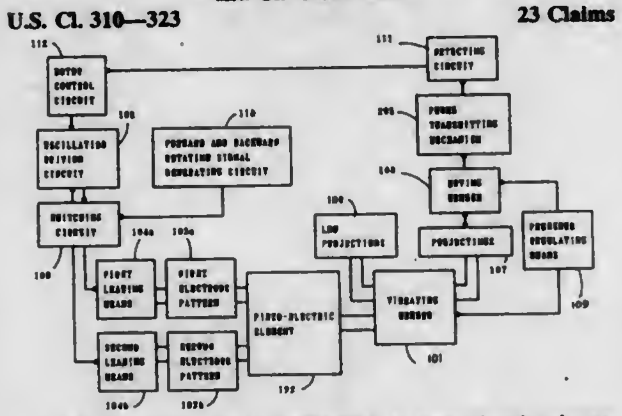
ULTRASONIC MOTOR AND ELECTRONIC APPARATUS PROVIDED WITH AN ULTRASONIC MOTOR

Kenji Suzuki; Makoto Suzuki; Masao Kasuga; Minako Suzuki, and Akihiro Iino, all of Chiba, Japan, assignors to Seiko Instruments Inc., Japan

Continuation of Ser. No. 574,577, Dec. 14, 1995, abandoned, which is a continuation of Ser. No. 332,123, Oct. 31, 1994, abandoned. This application Jun. 12, 1996, Ser. No. 662,902

Int. Cl.^{6} H02N *2/00*

U.S. Cl. 310—323 **23 Claims**



1. An ultrasonic motor comprising: a piezo-electric element having first and second surfaces; a plurality of electrode patterns divided into first and second electrode pattern groups disposed on the first surface of the piezo-electric element; first circuit means for short-circuiting every one of the electrode patterns in the first electrode pattern group; second circuit means for short-circuiting every one of the electrode patterns in the second electrode pattern group; a vibrating member disposed on the second surface of and electrically connected to the piezo-electric element; a moving member movably disposed on the vibrating member; first projections disposed on a surface of the vibrating member near some of the boundaries of the electrode patterns of the piezo-electric element for frictionally driving the moving member by expansion and contraction movement of the piezo-electric element; second projections provided at each intermediate position between the first projections for adjusting the vibrating conditions of the vibrating member, the second projections having a different height from the first projections, whereby the second projections do not frictionally drive the moving member; a pressure-regulating member for urging the moving member into pressure contact with the vibrating member at a predetermined pressure; and oscillation driving means for detecting oscillation data of the vibrating member and the piezo-electric element, performing phase adjustment and amplification of a vibrating wave generated by the piezo-electric element, and inputting a driving signal to either the electrode pattern short-circuited by the first circuit means or the electrode pattern short-circuited by the second circuit means for effecting vibration of the vibrating member and the piezo-electric element.

5,619,090

LOW-PRESSURE SODIUM DISCHARGE LAMP

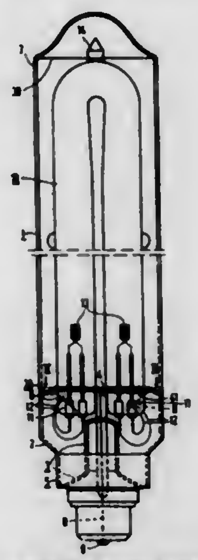
Karel R. Vervecken, Turnhout, Belgium, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 19, 1995, Ser. No. 491,752

Claims priority, application European Pat. Off., Jun. 22, 1994, 94201783

Int. Cl.^{6} H01J *61/74; 61/34*

U.S. Cl. 313—25 **20 Claims**



1. A low-pressure sodium discharge lamp provided with
an evacuated, tubular glass outer bulb which is closed in a gastight manner
with a first end potion where a glass stemtube enters the outer bulb, having a pinch seal inside the outer bulb, which end portion supports a lamp cap provided with contacts, and
with a second end portion having a dome shape;
a glass discharge tube bent into a U-shape with end portions which are each closed in a gastight manner and each have a pinch through which a respective current conductor is passed to an electrode arranged in the end portion in question, which discharge tube is filled with sodium and rare gas;
electrical conductors which extend each from a respective contact of the lamp cap through the pinch seal so as to be connected to a respective current conductor;
a substantially plane mica plate with openings through each of which a respective pinch is passed, acting as a first centring member which keeps the discharge tube centred in the outer bulb, and a second centring member for the discharge tube in the second end portion of the outer bulb,

characterized in that the mica plate has projecting teeth at its periphery which are bent towards the lamp cap and bear on the outer bulb with clamping action.

5,619,091

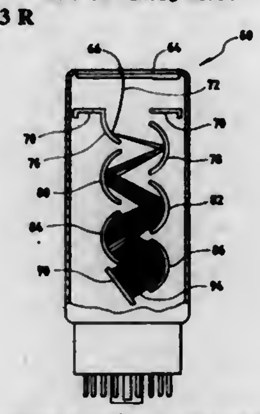
DIAMOND FILMS TREATED WITH ALKALI-HALIDES

David F. Anderson, Batavia, and Simon W. Kwan, Geneva, both of Ill., assignors to Universities Research Association, Inc., Washington, D.C.

Filed Oct. 3, 1994, Ser. No. 317,211

Int. Cl.^{6} H01J *43/00*

U.S. Cl. 313—103 R **11 Claims**



1. A secondary electron emitter comprising a substrate, a diamond film on the substrate, and an alkali halide film on the diamond film.

5,619,092

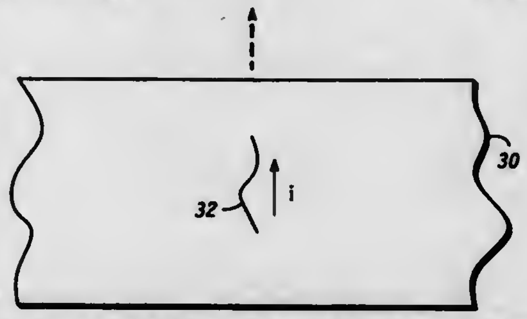
ENHANCED ELECTRON EMITTER

James E. Jaskie, Scottsdale, Ariz., assignor to Motorola, Schaumburg, Ill.

Filed Feb. 1, 1993, Ser. No. 11,595

Int. Cl.^{6} H01J *1/02*

U.S. Cl. 313—309 **5 Claims**



1. An electron emitter formed with a layer of material having a predetermined structure with an electrically active defect in the structure at an emission site wherein the layer of material has a surface containing the emission site and the surface is hydrogenated.

5,619,093

ELECTRON FIELD EMISSION

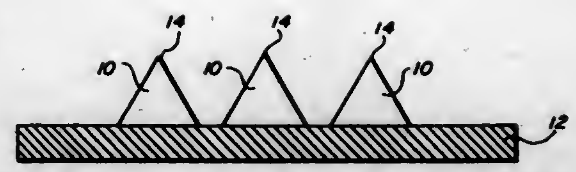
John W. Glesener, Crofton, and Arthur A. Morrish, LaPlata, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 31, 1995, Ser. No. 414,838

Int. Cl.^{6} H01J *1/14*

U.S. Cl. 313—309 **13 Claims**

1. An electron emitting device comprising a substrate and diamond powder disposed on and affixed to said substrate, said



diamond powder is composed of particles having tips which are adapted to emit electrons in response to an electrical force, wherein said device has about 10,000 tips/cm^2 of said diamond powder disposed on said substrate and an average tip radius at apex thereof is less than 1 micron, and wherein particle size distribution of said diamond powder is from about 10 nanometers to about 10 microns and average particle size of the powder is less than 1000 nanometers.

5,619,094

COLOR CATHODE RAY TUBE AND DISPLAY DEVICE WITH REDUCED MOIRE

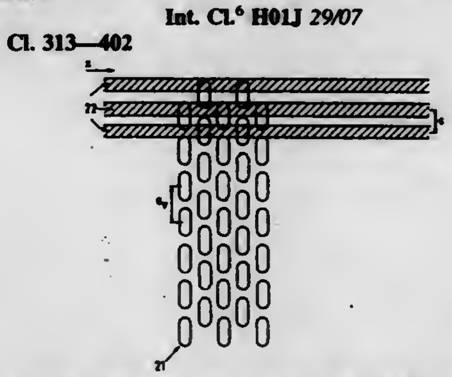
Leendert Vriens, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 26, 1995, Ser. No. 534,213

Claims priority, application Netherlands, Oct. 5, 1994, 94202881

Int. Cl.^{6} H01J *29/07*

U.S. Cl. 313—402 **4 Claims**



1. A colour cathode ray tube system comprising a colour cathode ray tube comprising an electron gun for generating at least one electron beam, a colour selection electrode having rows of apertures, a display screen and means for deflecting the electron beam across the colour selection electrode in a line deflection direction transverse to the row of apertures, characterized in that, the lines are scanned in a progressive manner and in that the so-called s/a$_v$ ratio, where s is the scan pitch for the entire frame and a$_v$ is the vertical mask pitch, is between 5.8/8 and 6.4/8 (5.8/8≦s/a$_v$≦6.4/8) or between 9.4/8 and 10.6/8.

5,619,095

PROJECTION CATHODE RAY TUBE HAVING TAPERED SHAFT SCREW TARGET ASSEMBLY

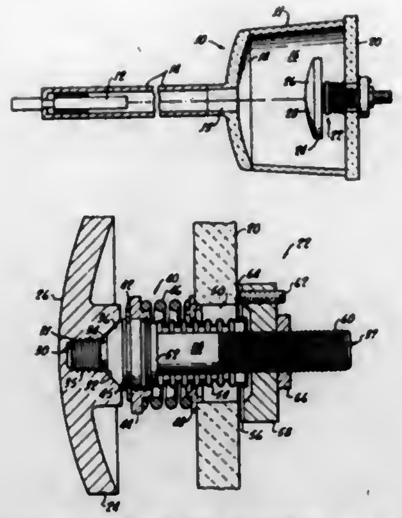
Kenneth S. Salyer, Lexington, Ky.; Stanley J. Tofield, Crawley, and Anthony B. Harrup, West Byfleet, both of United Kingdom, assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Feb. 21, 1995, Ser. No. 391,801

Int. Cl.^{6} H04N *5/74*

U.S. Cl. 313—477 R **12 Claims**

1. A projection cathode ray tube comprising:
a sealed evacuated envelope including a tubular portion, a mirror portion sealed to one end of the tubular portion, the mirror portion having an inner concave mirror surface with a mirror aperture therein, an electron gun portion sealed to the mirror aperture, and a transparent face plate sealed to the other end of the, tubular portion, the face plate having an aperture therein;
a target member disposed within said envelope having a center and an internally threaded mounting bore;



a shaft screw having a first end terminating in a threaded stud engaged in said target member mounting bore, a second end extending through said face plate aperture, and intermediate shank between said first and second shaft screw ends, said shaft screw having a tapered shoulder and said target member having a corresponding outwardly divergent tapered seat for receiving said tapered shoulder wherein said shaft screw tapered shoulder and said target member tapered seat have a common taper angle that achieves constant contact between said shoulder and said seat during thermal expansion and contraction of said target member and said shaft screw and said taper angle for said constant contact is defined by

$$\tan \theta = (D/2)/[L-(\tan (\alpha/2)\ (B/2))]$$

where

θ=said taper angle

α=thread angle of the threads of said stud and bore

B=shaft screw stud thread diameter

L=axial distance from a first thread on said stud to the point of widest intersection of said shoulder with said seat

D=diameter of said taper at said intersection;

securing means for securing said second end to said face plate; and

an electron gun within said electron gun portion positioned to project electrons onto said target member.

5,619,096

PRECOATED FLUORESCENT LAMP FOR DEFECT ELIMINATION

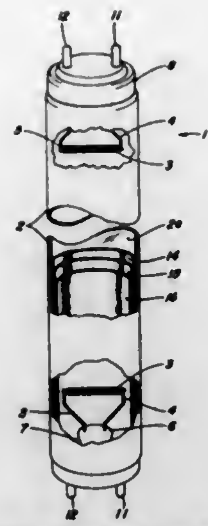
Mary S. Kaliszewski, Cleveland Heights, and William E. Ishler, Lyndhurst, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 996,988, Dec. 28, 1992, abandoned. This application Jan. 26, 1995, Ser. No. 378,763

Int. Cl.[6] H01J *63/04;1/62*

U.S. Cl. 313—489 **11 Claims**

1. A fluorescent lamp substantially lacking measles defects which are characterized by a dark spot surrounded by a concentric ring of discoloration of about 1 to 2 mm in diameter comprising a sealed glass envelope having an inner wall and containing an arc-sustaining fill, said envelope having a conductive layer on said inner wall and at least one phosphor layer, and a means of inhibiting formation of measles defects, said defect inhibiting means being disposed between said conductive layer and said at least one phosphor layer, and said defect inhibiting means comprising a protective layer of at least one metal oxide selected from the



group consisting essentially of yttria, ceria and mixtures thereof and having a uniform median particle size of greater than zero to less than or equal to 50 nm.

5,619,097

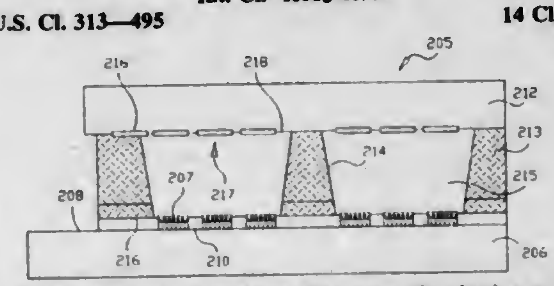
PANEL DISPLAY WITH DIELECTRIC SPACER STRUCTURE

Gary W. Jones, Raleigh, N.C., assignor to FED Corporation, Hopewell Junction, N.Y.

Division of Ser. No. 29,880, Mar. 11, 1993, abandoned. This application Jun. 5, 1995, Ser. No. 461,498

Int. Cl.[6] H01J *63/04*

U.S. Cl. 313—495 **14 Claims**



1. A panel display comprising a phosphor plate having an array of phosphor spots positioned thereon, an electron source plate comprising an array of field emitter devices, each of said field emitter devices comprising an emitter element constructed and arranged to emit a stream of electrons to activate respective ones of said phosphor spots, an individually addressable gate electrode operatively associated with each of said emitter elements and wherein each of said gate electrodes is constructed and arranged to control electron flow from a respective one of said emitter elements and a dielectric spacer frame between said phosphor plate and said electron source plate, wherein the spacer frame is sealed to the phosphor plate and the electron source plate to form an enclosed interior volume evacuatable to form a vacuum therein, and wherein said dielectric spacer frame comprises leaky dielectric surfaces for low secondary electron generating surfaces, to minimize secondary electron emission.

5,619,098

PHOSPHOR AND FLUORESCENT DISPLAY DEVICE

Hitoshi Toki; Shigeo Itoh, and Fumiaki Kataoka, all of Chiba-ken, Japan, assignors to Futaba Denshi Kogyo K.K., Japan

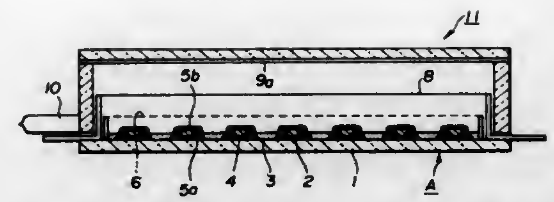
Filed Sep. 15, 1995, Ser. No. 529,058

Claims priority, application Japan, Sep. 16, 1994, 6-248589

Int. Cl.[6] H01J *1/62;* **C09K** *11/08*

U.S. Cl. 313—496 **11 Claims**

1. A phosphor comprising:



a phosphor matrix made of an oxide of alkaline earth metal and Ti; and

a rare earth element and an element of Group 13 of the periodic table which are added to the phosphor matrix.

7. A fluorescent display device comprising:

a vacuum envelope; and

an electron source and a phosphor layer which are arranged in said vacuum envelope;

said phosphor layer being made of a phosphor and emitting light upon impingement of electrons emitted from said electron source thereon;

said phosphor including a phosphor matrix made of an oxide of alkaline earth metal and Ti, and a rare earth element and an element of Group 13 of the periodic table which are added to said phosphor matrix.

5,619,099

ELECTRON TUBES USING INSULATION MATERIAL CONTAINING LITTLE ALKALI METAL

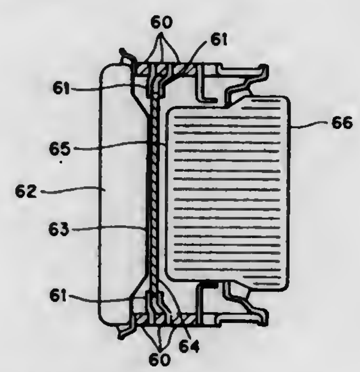
Kimitsugu Nakamura; Masayoshi Sahara; Atushi Ishikawa; Chiyoshi Okuyama, and Junichi Takeuchi, all of Hamamatsu, Japan, assignors to Hamamatsu Photonics K.K., Shizuoka-ken, Japan

Filed Jun. 20, 1995, Ser. No. 492,703

Claims priority, application Japan, Jun. 29, 1994, 6-148196

Int. Cl.[6] H01J *40/16*

U.S. Cl. 313—532 **15 Claims**



1. An electron tube comprising:

a vessel having an inner space;

a photocathode having a surface deposited with alkali metal;

a plurality of electrodes;

an insulation member disposed in the inner space of said vessel and electrically insulating said photocathode and said plurality of electrodes, said insulation member being made of a material which absorbs little said alkali metal.

5,619,100

PHOTOMULTIPLIER

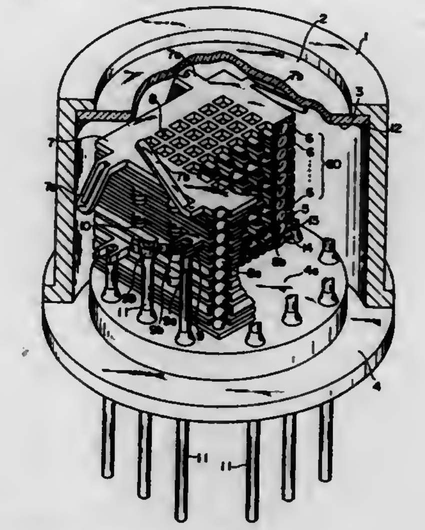
Hiroyuki Kyushima; Koji Nagura; Yutaka Hasegawa; Eiichiro Kawano; Tomihiko Kuroyanagi; Akira Atsumi, and Masuya Mizuide, all of Hamamatsu, Japan, assignors to Hamamatsu Photonics K.K., Shizuoka-ken, Japan

Filed Apr. 28, 1994, Ser. No. 234,158

Claims priority, application Japan, Apr. 28, 1993, 5-102898; Apr. 28, 1993, 5-102902; Apr. 28, 1993, 5-102910; Apr. 30, 1993, 5-104673

Int. Cl.[6] H01J *43/18*

U.S. Cl. 313—533 **15 Claims**



1. An electron multiplier comprising:

an anode having a plurality of openings:

a dynode unit for cascade-multiplying incident electrons, constituted by stacking a plurality of stages of dynodes, spaced apart from each other at predetermined intervals; and

an inverting dynode plate being arranged to oppose in parallel to said anode such that said anode is sandwiched between said dynode unit and said inverting dynode plate, and having a plurality of through holes for injecting a metal vapor to form at least a secondary electron emitting layer on a surface of an each-stage dynode of said dynode unit, each of said through holes being arranged at a region of said inverting dynode plate other than a region which the secondary electrons passing through said openings of said anode reach.

5,619,101

GAS DISCHARGE TUBE

Tomoyuki Ikedo; Yoshinobu Ito, and Ryotaro Matui, all of Hamamatsu, Japan, assignors to Hamamatsu Photonics K.K., Hamamatsu, Japan

Filed Nov. 2, 1995, Ser. No. 552,111

Claims priority, application Japan, Feb. 17, 1995, 7-029564

Int. Cl.[6] H01J *17/02;1/88*

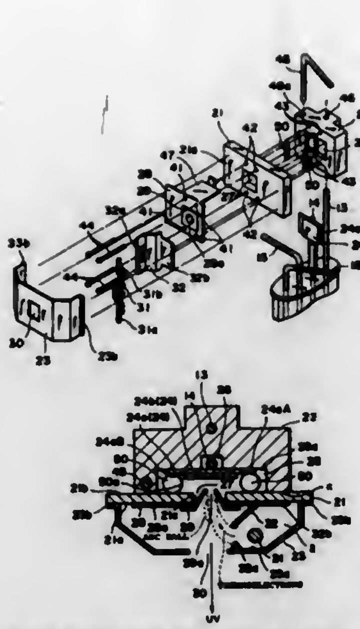
U.S. Cl. 313—581 **22 Claims**

1. A gas discharge tube comprising:

a focusing electrode support member of a conductive material, said focusing electrode support member having a front surface and a rear surface which is opposite to said front surface and which is communicated with the front surface by a through hole;

a hot cathode for emitting thermoelectrons, said hot cathode being located at the front surface side of said focusing electrode support member;

an anode for receiving the thermoelectrons emitted from said hot cathode, said anode being located at the rear surface side of said focusing electrode support member and facing an opening of the through hole;

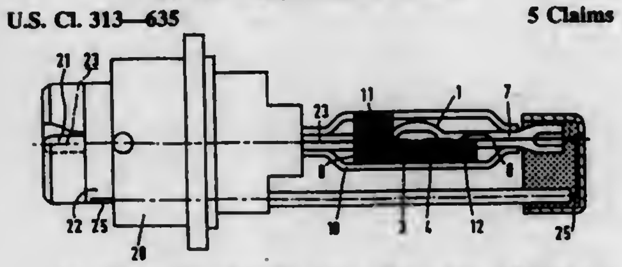


a focusing electrode being supported by said focusing electrode support member, said focusing electrode having a focusing opening which is located at a position of an opening of the through hole for converging paths of the thermoelectrons;

a spacer of an insulator, said spacer being arranged between said focusing electrode support member and said anode, and being in contact with both the rear surface of said focusing electrode support member and a front surface of said anode; and

an anode support member of an insulator, said anode support member being located on an opposite side to said focusing electrode support member through said anode, and having a surface which is in contact with a rear surface of said anode for pushing said anode onto the rear surface of said focusing electrode support member through said spacer, wherein an interval between said focusing electrode and said anode is defined by said focusing electrode support member and said spacer.

5,619,102
ELECTRIC LAMP
Klaus Scholler, Nideggen, Germany, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Nov. 6, 1995, Ser. No. 554,119
Claims priority, application European Pat. Off., Nov. 10, 1994, 94203276
Int. Cl.[6] H01J *17/16;61/30;61/35*
U.S. Cl. 313—635 **5 Claims**

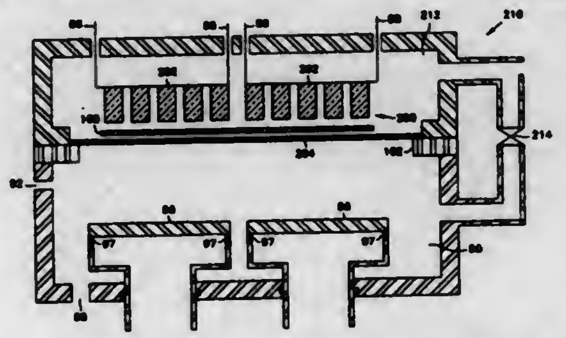


1. An electric lamp provided with a lamp vessel (**10**) which is made of glass with at least 96% SiO_2 by weight and in which an electric element (**3, 4**) is arranged to which current conductors are connected which issue from the lamp vessel to the exterior,

which lamp vessel is locally coated with a light-absorbing coating (**11, 12**) which comprises iron oxide and manganese oxide,

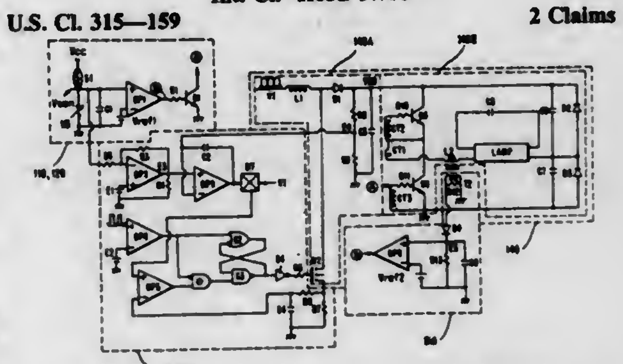
characterized in that the coating (**11, 12**) is substantially formed by 2 to 10% glass by weight with dispersed therein 30 to 65% iron by weight, mostly in metallic, and partly in oxidic form, and 30 to 65% manganese oxide by weight, the glass being substantially free from lead oxide and having a softening point between 600° and 700° C.

5,619,103
INDUCTIVELY COUPLED PLASMA GENERATING DEVICES
Jeffrey A. Tobin, Santa Fe, N.M., and Guifang Li, Rochester, N.Y., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.
Division of Ser. No. 146,703, Nov. 2, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 486,917
Int. Cl.[6] H01J *7/24*
U.S. Cl. 315—111.21 **6 Claims**



1. An inductive coupling device comprising a first inductive coupling structure, wherein the first inductive coupling structure comprises a plurality of separate conductors including a first and a second conductor, wherein the first conductor runs approximately parallel to the second conductor and within a first plane approximately parallel to a coupling plane, wherein the coupling device further comprises a second inductive coupling structure having a plurality of separate conductors including a first and a second conductor, wherein the first and second conductors of said second inductive coupling structure lie within a second plane approximately parallel to the coupling plane.

5,619,104
MULTIPLIER THAT MULTIPLIES THE OUTPUT VOLTAGE FROM THE CONTROL CIRCUIT WITH THE VOLTAGE FROM THE BOOST CIRCUIT
Lee Eunghwa, Anyang, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea
Filed Oct. 7, 1994, Ser. No. 319,513
Int. Cl.[6] H05B *37/00*
U.S. Cl. 315—159 **2 Claims**



1. An automatic illumination intensity control apparatus for a discharge lamp, comprising:

a chopper circuit for stepping up D.C. voltage obtained by rectifying commercially supplied A.C. voltage;

an inverter circuit for converting D.C. voltage output from the chopper circuit into A.C. voltage with a higher frequency than a frequency of the commercially supplied A.C. voltage to drive said discharge lamp;

a sensor for sensing a brightness level of an area to be illuminated;

a variable resistor connected in series to the brightness sensor for setting a desired brightness level;

means for stopping operation of said inverter circuit if a voltage across said variable resistor exceeds a set reference value in order to turn off said discharge lamp when the sensed brightness level is greater than a set brightness level;

means for automatically controlling a voltage output from said chopper circuit in accordance with a result of a comparison of a difference between the voltage across the variable resistor and a set reference voltage with the voltage output from the chopper circuit in order to maintain the sensed brightness level at a constant level;

means for detecting a current flowing through said discharge lamp;

means for stopping the operation of said inverter circuit according to a result of converting the detected current into a D.C. voltage and comparing the converted voltage with a reference voltage;

a multiplier for multiplying the output voltage value from the automatic voltage control means by an input voltage value of said chopper circuit;

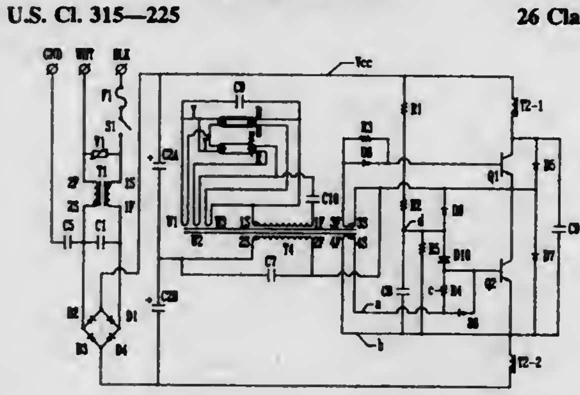
means for controlling the output current from the chopper circuit following the comparison of the voltage corresponding to a current flowing at an input terminal of said chopper circuit and the output voltage of the multiplier;

means for transferring the signal from the current control means to the chopper circuit according to an external signal by comparing the voltage value of an external pulse signal with a reference voltage value;

means for latching the output of the current control means according to the output of the transferring means and outputting the latched signal to the chopper circuit; and

means for removing a leading edge current spike.

5,619,105
ARC DETECTION AND CUT-OUT CIRCUIT
John C. Holmquest, El Paso, Tex., assignor to Valmont Industries, Inc., Valley, Nebr.
Filed Aug. 17, 1995, Ser. No. 516,051
Int. Cl.[6] H05B *37/02*
U.S. Cl. 315—225 **26 Claims**



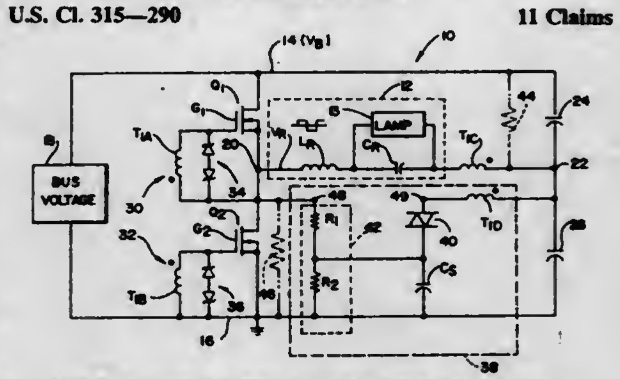
1. An arc detection and cut-out circuit for protecting an electronic ballast having an oscillating power inverter with at least one switching device and a startup circuit to initiate the oscillation of the oscillating power inverter, said circuit comprising:

a current detector electrically coupled to said ballast for detecting a current in said ballast;

a first shunt circuit operatively coupled to said current detector for shunting a portion of said power inverter to prevent said power inverter from oscillating when said current detector detects a current having certain characteristics; and

a second shunt circuit coupled to said current detector for shunting the start-up circuit when said current detector detects a current having certain characteristics.

5,619,106
DIODELESS START CIRCIUT FOR GAS DISCHARGE LAMP HAVING A VOLTAGE DIVIDER CONNECTED ACROSS THE SWITCHING ELEMENT OF THE INVERTER
Michael M. Secen, Mentor, Ohio, assignor to General Electric Company, Schenectady, N.Y.
Filed Jun. 24, 1996, Ser. No. 669,679
Int. Cl.[6] H05B *41/14*
U.S. Cl. 315—290 **11 Claims**



1. A ballast circuit for a gas discharge lamp, comprising:

(a) a resonant load circuit incorporating a gas discharge lamp and including first and second resonant impedances whose values determine the operating frequency of said resonant load circuit;

(b) a d.c.-to-a.c. converter circuit coupled to said resonant load circuit so as to induce an a.c. current in said resonant load circuit, and comprising first and second switches serially connected in the mentioned order between a bus conductor at a d.c. bus voltage and ground, and having a common switch node through which said a.c. current flows;

(c) a bridge capacitor having one end connected to said ground;

(d) first and second feedback circuits for regeneratively controlling said first and second switches, respectively, in response to a.c. current in said resonant load circuit; and

(e) a starting circuit for initiating operation of said first and second feedback circuits, comprising:

(I) a voltage-divider network comprising first and second serially connected impedances with a common impedance node, and being coupled between said common switch node and said ground;

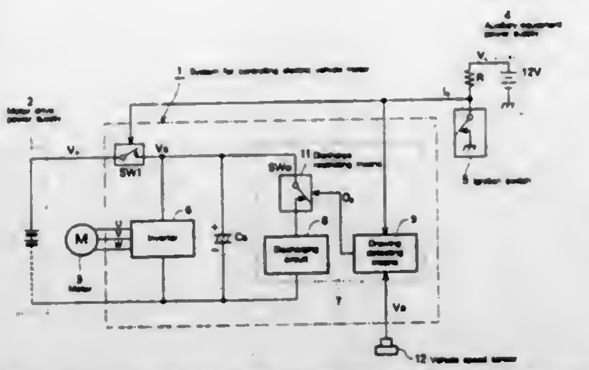
(ii) a starting capacitor coupled between said common impedance node and said ground;

(iii) a voltage-breakover switch coupled between a non-grounded end of said bridge capacitor and said starting capacitor; and

(iv) a transformer winding serially coupled to said voltage-breakover switch so as to conduct a pulse of current when said voltage-breakover switch fires; said winding being coupled to said first and second feedback circuits so as to result in a starting pulse of current in said circuits when said voltage-breakover switch fires.

5,619,107
SYSTEM FOR CONTROLLING ELECTRIC VEHICLE MOTOR
Sadao Shinohara, and Masaharu Hosoda, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 13, 1995, Ser. No. 501,962
Claims priority, application Japan, Jul. 13, 1994, 6-161535
Int. Cl.[6] H02P *3/00*
U.S. Cl. 318—139 **11 Claims**

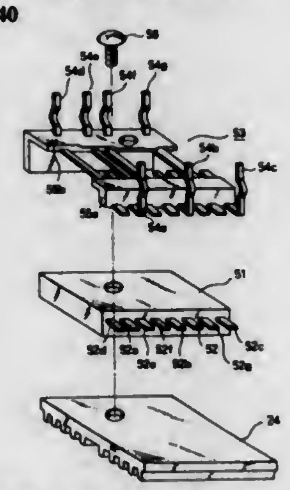
1. A system for controlling an electric vehicle motor in an electric vehicle, which system comprises motor drive means which includes a plurality of switching devices and drives the motor with power from a battery, a capacitor, connected in parallel with said motor drive means, which capacitor smoothes output from said



battery, and discharging means operating in connection with switching means operated by an operator of the electric vehicle for discharging said capacitor,

wherein, said discharging means comprises draw detecting means for detecting the electric vehicle being drawn and discharge restricting means for restricting the activation of said discharging means when said draw detecting means detects the electric vehicle being drawn.

5,619,108
VEHICLE ALTERNATING-CURRENT GENERATOR CONTROL DEVICE AND VEHICLE ALTERNATING-CURRENT GENERATOR
Keiichi Komurasaki, and Kyoko Kurusu, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 10, 1995, Ser. No. 500,129
Claims priority, application Japan, Jul. 13, 1994, 6-161499
Int. Cl.⁶ H02P *9/30*
U.S. Cl. 318—140 **4 Claims**



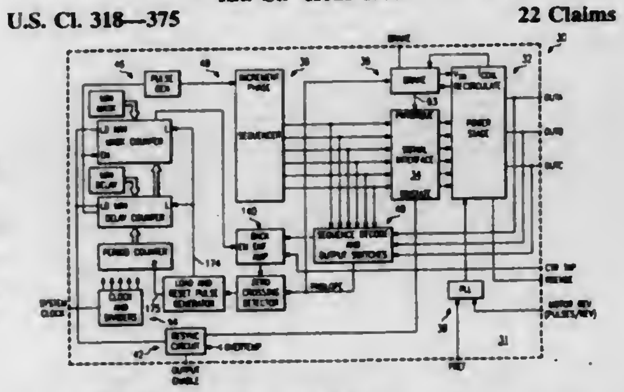
1. An alternating-current generator control device (50) for a motor vehicle, said device comprising:

a) a control component (51) having a voltage regulating section (59) that regulates a generated voltage by controlling a current flowing through an exciting coil (102) of an alternating-current generator, said control component (51) being encased in a single in-line molded package with leads (52) thereof arranged on a single side of said package,

b) a holder (12) housing said control component, and provided with a plurality of conductor links (70a, 70b) disposed in two spatially separated groups for external connection; and

c) an adapter (53) for establishing an electrical interface between said holder and said single in-line molded package, said adapter having a plurality of leads with first ends disposed along one side thereof for individual connection to said single in-line molded package leads, and second, opposite ends disposed in two spatially separated groups corresponding to said conductor link groups for individual connection thereto.

5,619,109
METHOD AND CIRCUITRY FOR DRAG BRAKING A POLYPHASE DC MOTOR
Scott W. Cameron, Milpitas, and Kari M. Schlager, Campbell, both of Calif., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.
Continuation of Ser. No. 85,762, Jul. 1, 1993, Pat. No. 5,451,832. This application Jun. 7, 1995, Ser. No. 477,458
Int. Cl.⁶ H02P *3/10*
U.S. Cl. 318—375 **22 Claims**



1. A data storage system, comprising:

a polyphase DC motor for rotating a data medium, having a rotor and a plurality of stator coils;

a sequencer for incrementally generating sets of commutation signals to select stator coils for energization to rotate said rotor according to a commutation sequence that increments in a forward direction and generates a flux vector that leads the rotor;

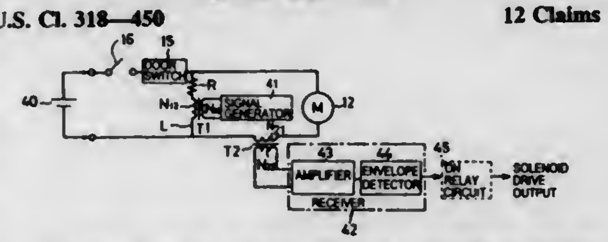
a power stage to which said commutation signals are applied to energize the selected coils in accordance with said commutation signals;

a circuit for interrupting the energization of the selected coil;

a circuit for producing an altered commutation sequence that increments in a forward direction and generates a flux vector that lags the rotor; and

a circuit for applying the altered commutation sequence to said power stage to brake the rotation of the rotor.

5,619,110
SAFETY ENSURING APPARATUS
Noboru Sugimoto, Tokyo; Masatoshi Suzuki, Yokohama; Koichi Futsuhara; Masayoshi Sakai, both of Urawa, and Ritsuo Mihira, Tokyo, all of Japan, assignors to KAO Corporation; The Nippon Signal Co., Ltd., and Yamatake & Co., Ltd., all of Tokyo, Japan
PCT No. PCT/JP93/00758, § 371 Date Mar. 27, 1995, § 102(e) Date Mar. 27, 1995, PCT Pub. No. WO94/29638, PCT Pub. Date Dec. 22, 1994
PCT Filed Jun. 4, 1993, Ser. No. 379,476
Int. Cl.⁶ E05C *3/06*
U.S. Cl. 318—450 **12 Claims**



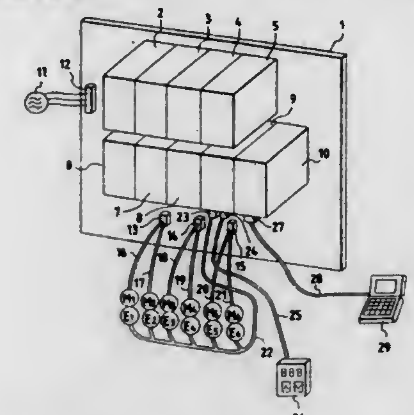
1. A safety ensuring apparatus wherein a mechanical moving part is surrounded by a safety enclosure, and a door lock means is provided in a door of the safety enclosure, said door lock means being constructed such that a lock is released when a current is supplied to excite a solenoid incorporated therein, the apparatus being constructed such that said door lock means releases a door lock when the mechanical moving part is stopped, characterized in that the construction incorporates:

a moving part monitoring sensor which monitors if the mechanical moving part is stopped, detects a stopped condition and generates a signal of logic value 1 corresponding to a high energy condition as a signal indicating a safe condition without carrying out a NOT operation, and

the solenoid of said door lock means is excited by the output of logic value 1 from said moving part monitoring sensor,

wherein said moving part monitoring sensor is a rotation stopped detection sensor which detects stopping of rotation of a motor, which constitutes a drive source for the mechanical moving part, as a non-conductive condition of the motor being logic value 1 corresponding to a high energy condition.

5,619,111
MOTOR CONTROL SYSTEM FOR CONTROLLING THE OPERATIONS OF A PLURALITY OF SERVO MOTORS
Takashi Katagiri, and Tetsuo Momose, both of Nagano, Japan, assignors to Kabushiki Kaisha Sankyo Seiki Seisakusho, Nagano, Japan
Filed Jan. 19, 1996, Ser. No. 587,712
Claims priority, application Japan, Jan. 20, 1995, 7-026228
Int. Cl.⁶ G05B *11/32*; H05K *7/02*
U.S. Cl. 318—625 **11 Claims**



7. A motor control system comprising:

main circuit power source means for converting AC power supplied from a power source into DC power;

motor drive means for converting said DC power into AC power, and supplying said AC power thus converted to a plurality of servomotors, said motor drive means being in correspondence in number to said servomotor;

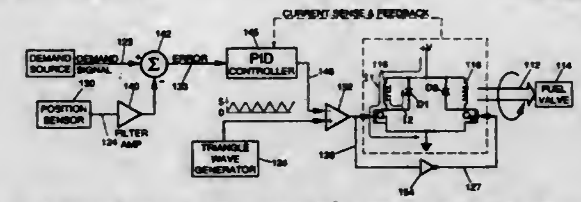
control means for controlling the operation of said motor drive means,

functional element units which are classified into a main circuit power unit including said main circuit power means, motor driving inverter units which include said motor drive means, and which are accommodated in one and the same casing for every at least two of said plurality of servomotors, and a control unit for generally controlling said motor drive means, said units being accommodated in respective casings, and having electrical wiring unit-side connectors; and

a circuit board on which a wiring circuit required for connecting said units to one another have been formed, and which has base-board side connectors which are engageable with said unit-side connectors,

wherein when said functional element units being fixedly mounted on said circuit board as required, said unit-side connectors are engaged with said base-board side connectors, so that said functional element units are electrically connected to one another through said circuit board, thus forming said motor control system.

5,619,112
BI-DIRECTIONAL ELECTRIC TORQUE MOTOR AND DRIVER
Ramin Younessi, Tigard, Oreg., and Brian Houghton, Fort Collins, Colo., assignors to Woodward Governor Company, Fort Collins, Colo.
Filed Feb. 9, 1995, Ser. No. 386,275
Int. Cl.⁶ H02P *7/06*
U.S. Cl. 318—689 **21 Claims**



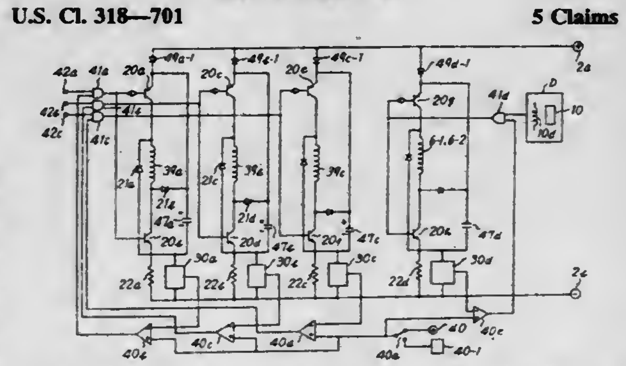
1. A limited angle torque motor and control circuit for converting an electrical demand signal of varying magnitude into a motor shaft position relating to the magnitude of the demand signal, comprising in combination:

a bidirectional motor having at least two stator coils wound in phase opposition so that torques produced by currents flowing in the opposedly wound coils are summed such that the coil having the greater current controls the direction of rotor rotation;

means for producing a shaft position signal having a magnitude indicative of motor shaft position; and

an electronic control circuit responsive to the demand signal and the shaft position signal and having two outputs for concurrently controlling the currents flowing in the respective stator coils, the control circuit including a modulator for producing a differential between the two outputs adequate to cause the motor shaft to rotate to the desired shaft position.

5,619,113
RELUCTANCE-TYPE MOTOR
Itsuki Bahn, Nerima-ku, Japan, assignor to Kabushikigaisha Sekogiken, Tokyo, Japan
PCT No. PCT/JP93/01879, § 371 Date Jun. 8, 1995, § 102(e) Date Jun. 8, 1995, PCT Pub. No. WO95/02922, PCT Pub. Date Jan. 26, 1995
PCT Filed Dec. 24, 1993, Ser. No. 403,692
Claims priority, application Japan, Jul. 16, 1993, 5-222877; Jul. 27, 1993, 5-226302
Int. Cl.⁶ H02P *7/00*
U.S. Cl. 318—701 **5 Claims**



1. A reluctance type motor in a three-phase full-wave reluctance type motor, comprising:

n first and second salient poles having the same width, equally spaced at regular angles and disposed at both ends of an outer peripheral surface of a magnetic rotor, where n is a positive integer not less than 2;

No. 1-, No. 2- and No. 3-phase armature coils wound around 6n slots, being successively offset with a phase difference of 120 degrees in terms of electric angle, said 6n slots being disposed on an inner peripheral surface of a cylindrical first fixed armature and equally spaced at regular angles;

a second fixed armature identical with said first fixed armature, having slots associated with No. 1-, No. 2- and No. 3-phase armature coils which are successively offset with a phase difference of 120 degrees in terms of electric angle;

means for offsetting position of the slots of said first and second fixed armatures, so that No. 1-, No. 2- and No. 3-phase armature coils are disposed with an offset electric angle of odd multiple of 30 degrees with respect to corresponding No. 1-, No. 2- and No. 3-phase armature coils, or said first and second salient poles opposing each other are disposed with a mutual offset electric angle of odd multiple of 30 degrees therebetween while said No. 1-, No. 2- and No. 3-phase armature coils and said No. 1-, No. 2- and No. 3-phase armature coils are in phase;

a position detecting device for detecting rotational position of said first salient pole and generating No. 1-phase position detecting signals having 120-degree width and mutually spaced at regular angles of 240 degrees in term of electric angle, No. 2-phase position detecting signals being delayed 120 degrees in terms of electric angle from said No. 1-phase position detecting signals, and No. 3-phase position detecting signals being delayed 120 degrees in terms of electric angle from said No. 2-phase position detecting signals, and further generating No. 1-, No. 2- and No. 3-phase position detecting signals delayed from said No. 1-, No. 2- and No. 3-phase position detecting signals by an electric angle of odd multiple of 30 degrees;

semiconductor switching elements connected in series with each of said No. 1-, No. 2-, No. 3-phase, No. 1-, No. 2- and No. 3-phase armature coils;

a DC electric power source supplying electric power to a serial joint unit consisting of said armature coil and said semiconductor switching element;

a current supply control circuit for supplying current to said No. 1-, No. 2-, No. 3-, No. 1-, No. 2- and No. 3-phase armature coils by turning on corresponding semiconductor switching elements connected in series with said No. 1-, No. 2-, No. 3-, No. 1-, No. 2- and No. 3-phase armature coils in response to said No. 1-, No. 2-, No. 3-, No. 1-, No. 2- and No. 3-phase position detecting signals by an amount of signal width of each position detecting signal;

a first electric circuit for transferring magnetic energy stored in the armature coil through a diode into a small-capacitance capacitor from a connecting point of said semiconductor switching element and said armature coil and holding it to quickly reduce exciting current of said armature coil when said semiconductor switching element is turned off at a terminal end of said position detecting signal; and

a second electric circuit for discharging electrostatic energy stored in said small-capacitance capacitor into an armature coil to be activated next upon activation of said next activated armature coil, when said magnetic rotor rotates a predetermined angle and said next activated armature coil is activated in response to the position detecting signal by an amount of signal width of said position detecting signal.

5,619,114
SIGNAL AVERAGER FOR USE WITH MOTOR CONTROLLER

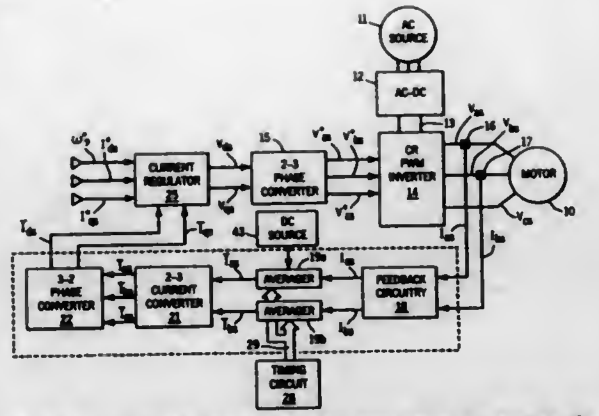
Vladimir Blasko, Grafton, Wis., assignor to Allen-Bradley Company, Inc., Milwaukee, Wis.

Filed Mar. 20, 1995, Ser. No. 407,443

Int. Cl.[6] H02P *3/18*

U.S. Cl. 318—812 21 Claims

1. A signal averager for use with a motor controller for determining the changing average value of a voltage signal, the averager comprising:



at least two analog integrators, the integrators integrating the voltage signal during consecutive and alternating integration periods to produce a series of integrated values, each integrated value being operated on to produce an average value which is maintained for a first part of a following period during which the other integrators are integrating;

a selector that samples each integrated value during the first part of the following period, each sampled value being proportional to a cumulative value of the voltage signal during the integration period the integrated value was produced; and

a discharger for setting each integrated value equal to zero after the value is sampled and during the period over which the other integrators are integrating.

5,619,115
CHARGING AND DISCHARGING INTEGRATION CIRCUIT FOR ALTERNATELY CHARGING AND DISCHARGING A CAPACITOR

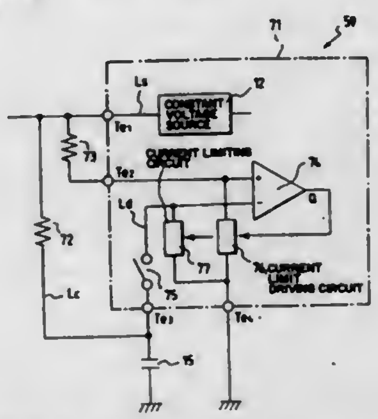
Yuji Kajita, Aichi-ken, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Jan. 23, 1995, Ser. No. 376,917

Claims priority, application Japan, Jan. 21, 1994, 6-022185

Int. Cl.[6] H01M *10/46*

U.S. Cl. 320—1 18 Claims



1. A charging and discharging integration circuit, comprising:

a capacitor element;

an electric source for charging said capacitor element;

a charging resistor arranged in a charging line between said electric source and said capacitor element;

a current limiting circuit, arranged in a discharging line from which an electric charge of said capacitor element is discharged, for adjusting a value of a passing current according to an external signal;

a switching circuit for exchanging said capacitor element between a discharging condition and a charging condition; and

a current limit controlling circuit for providing said external signal to said current limiting circuit to discharge said capacitor element in a curved voltage decreasing waveform corresponding to a voltage increasing waveform of said capacitor element when charging through said charging resistor.

5,619,116
UNIVERSAL BATTERY CHARGER CHARGEABLE WITH RELEVANT CURRENT DEPENDENT ON CELL NUMBER

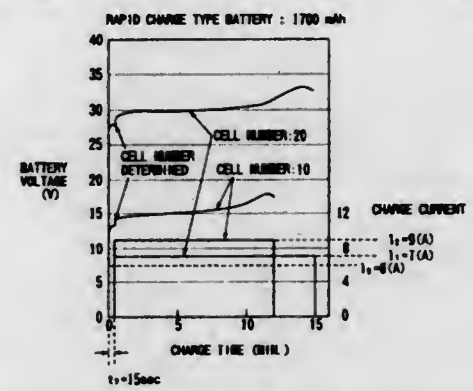
Nobuhiro Takano; Shigeru Shinohara, and Mitsuo Ogura, all of Hitachinaka, Japan, assignors to Hitachi Koki Co., Ltd., Tokyo, Japan

Filed Feb. 10, 1995, Ser. No. 386,672

Claims priority, application Japan, Feb. 10, 1994, 6-016370

Int. Cl.[6] H01M *10/44*

U.S. Cl. 320—17 18 Claims



1. A battery charger for charging a battery having a number of cells connected in series, comprising:

cell number determining means for determining the number of cells of the battery;

current level determining means for determining a current level based on the number of cells determined by said cell number determining means, the current level determined when the number of cells of the battery is greater than a reference number being lower than the current level determined when the number of cells of the battery is smaller than the reference number; and

charge current applying means for applying a charge current to the battery, the charge current having a level substantially equal to the current level determined by said current level determining means.

16. A method of charging a battery with a universal battery charger, comprising the steps of:

(a) connecting a battery to be charged to said universal battery charger;

(b) detecting a voltage of the battery connected to said universal battery charger;

(c) determining whether the voltage of the battery detected in step (b) is greater than a reference voltage or lower than the reference voltage;

(d) setting a charge current to selective one of a first level when the voltage of the battery determined in step (c) is greater than the reference voltage and a second level when the voltage of the battery determined in step (c) is smaller than the reference voltage wherein the first level is smaller than the second level; and

(e) charging the battery connected to said universal battery with the charge current determined in step (d).

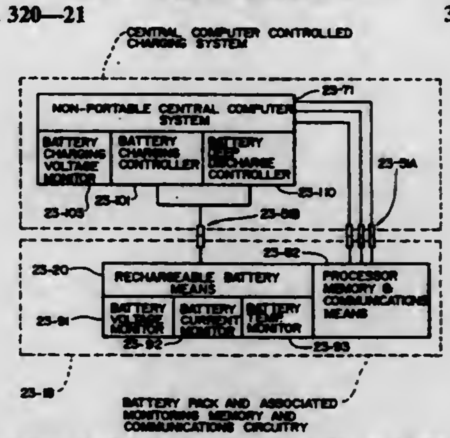
5,619,117
BATTERY PACK HAVING MEMORY

Steven E. Koenck, Cedar Rapids, Iowa, assignor to Norand Corporation, Cedar Rapids, Iowa

Continuation-in-part of Ser. No. 134,881, Oct. 12, 1993, Pat. No. 5,508,599, which is a continuation of Ser. No. 769,337, Oct. 1, 1991, Pat. No. 5,278,487, which is a continuation of Ser. No. 544,230, Jun. 26, 1990, abandoned, which is a division of Ser. No. 422,226, Oct. 16, 1989, Pat. No. 4,961,043, which is a division of Ser. No. 168,352, Mar. 15, 1988, Pat. No. 4,885,523, said Ser. No. 168,352is a continuation-in-part of Ser. No. 944,503, Dec. 18, 1986, Pat. No. 4,737,702, which is a continuation-in-part of Ser. No. 876,194, Jun. 19, 1986, Pat. No. 4,709,202, which is a division of Ser. No. 797,235, Nov. 12, 1985, Pat. No. 4,716,354, which is a continuation-in-part of Ser. No. 612,588, May 21, 1984, Pat. No. 4,553,081, which is a continuation-in-part of Ser. No. 385,830, Jun. 7, 1982, Pat. No. 4,455,523. This application Mar. 30, 1995, Ser. No. 415,075

Int. Cl.[6] H02J *7/00*; H01M *10/44*

U.S. Cl. 320—21 3 Claims



1. A method of providing operational power to a battery powered utilization device, said method comprising:

(a) monitoring operational battery pack characteristics;

(b) storing said characteristics in an electronic memory device contained within said battery pack as battery pack data;

(c) monitoring present battery pack conditions;

(d) retrieving said battery pack data;

(e) communicating said present battery pack conditions and said battery pack data to said battery powered utilization device; and

(f) controlling the utilization of said battery pack by said battery powered utilization device.

5,619,118
METHOD AND AN APPARATUS FOR CHARGING A RECHARGEABLE BATTERY

John Reipur, Klampenborg, and Ebbe Juul-Hansen, Stenløse, both of Denmark, assignors to Chartec Laboratories A/S, Denmark

PCT No. PCT/DK92/00047, § 371 Date Sep. 16, 1993, § 102(e) Date Sep. 16, 1993, PCT Pub. No. WO92/15142, PCT Pub. Date Sep. 3, 1992

PCT Filed Feb. 14, 1992, Ser. No. 104,123

Claims priority, application Denmark, Feb. 14, 1991, 253/91

Int. Cl.[6] H01M *10/44*

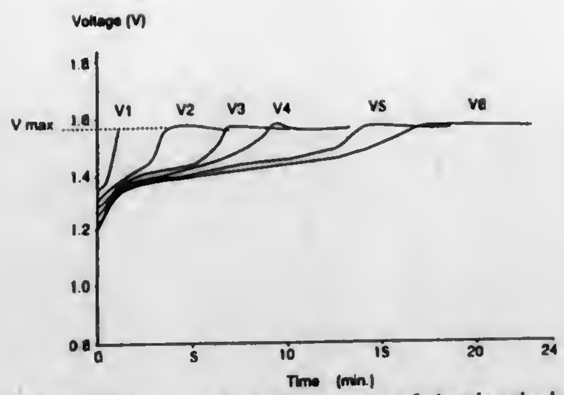
U.S. Cl. 320—31 52 Claims

26. The method of charging a rechargeable battery having a pair of terminals, said method comprising

connecting an electrical power source to the terminals of the battery,

monitoring at least one charging parameter during at least part of the process of charging of the battery,

comparing a sequence of values of said at least one charging parameter with stored reference parameter sequences repre-



senting idealistic or desirable processes of charging the battery for different starting states of charge of the battery,

selecting the reference sequence corresponding to the sequence of values of said at least one charging parameter, and

controlling the process of charging the battery so as to cause the sequence of subsequent values of said at least one parameter to approximate the selected reference parameter sequence;

wherein;

the monitoring step comprises measuring the current values of said at least one charging parameter at short time intervals during charging,

the comparing step comprises comparing the measured parameter values with corresponding reference values of the reference parameter sequences,

the selecting the reference sequence step comprising selecting the relevant reference parameter sequence on the basis of comparison of such measured values and reference values, and

the controlling step comprising determining a remaining period of charging time based on said comparison, and terminating the charging process when said remaining period of time has expired.

5,619,119

METHOD OF PHASE-SHIFTING VOLTAGES APPLIED TO SUSCEPTANCES INTERCONNECTING TWO SYNCHRONOUS POLYPHASE AC NETWORKS AND A PHASE-SHIFTING INTERCONNECTING APPARATUS THEREOF

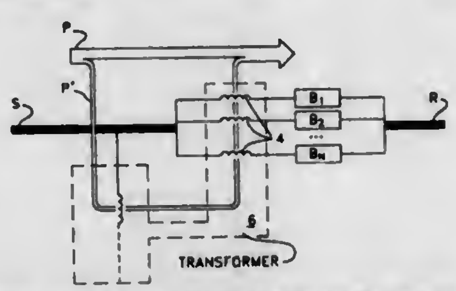
Pierre Pelletier; Jacques Brochu; François Beauregard, all of Boucherville, and Gaston Morin, Carignan, all of Canada, assignors to Citeo, Varennes, Canada

PCT No. PCT/CA94/00259, § 371 Date Nov. 1, 1995, § 102(e) Date Nov. 1, 1995, PCT Pub. No. WO94/27351, PCT Pub. Date Nov. 24, 1994

Continuation-in-part of Ser. No. 61,512, May 14, 1993, abandoned. This PCT application May 9, 1994, Ser. No. 535,060

Int. Cl.[6] G05F *1/00*

U.S. Cl. 323—215 **21 Claims**



1. A phase-shifting interconnecting apparatus for interconnecting respective phase lines of first and second synchronous polyphase AC networks, said apparatus comprising, for each pair of respective phase lines subjected to an interconnection:

a pair of circuit branches in parallel, having first and second common branch points provided with connecting means for connecting respectively said branch points to said respective phase lines, said circuit branches including respectively inductive and capacitive susceptances; and

series transformer means for phase-shifting a voltage applied to at least one of said susceptances, said series transformer means including at least one primary winding having at least a portion connected in series with said at least one of said susceptances, and at least one secondary winding having at least a portion adapted to receive an excitation voltage derived from said AC networks, said excitation voltage having a phase angle with respect to a phase voltage provided by one of said respective phase lines, whereby, in operation, said excitation voltage combines through said transformer with said phase voltage to cause phase-shifting of the voltage applied to said at least one of said susceptances.

5,619,120

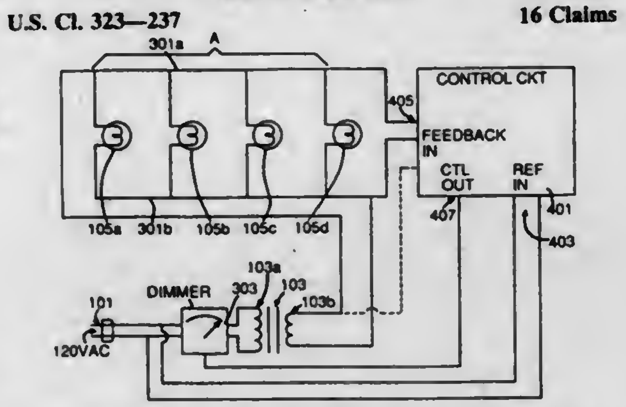
LOW VOLTAGE POWER CONTROL

Benjamin Barber, 23 Chandler St., Watertown, Mass. 02172

Continuation of Ser. No. 272,785, Jul. 8, 1994, abandoned. This application May 8, 1996, Ser. No. 646,482

Int. Cl.[6] G05F *1/45*

U.S. Cl. 323—237 **16 Claims**



1. In an electrical power control and distribution system supplied by a high voltage supply, the system including a voltage conversion circuit having a high voltage input connected to the high voltage supply and a low voltage output, and supplying current from the low voltage output to first and second terminals of a plurality of electrical loads, the improvement comprising:

a first supply wire having a resistance which produces a substantial voltage drop between each of the plurality of electrical loads relative to the low voltage output, and running directly from the low voltage output to the first terminal of a first of the plurality of electrical loads, and thence in sequence to the first terminal of a last of the plurality of electrical loads; and

a second supply wire having a resistance which produces a substantial voltage drop between each of the plurality of electrical loads relative to the low voltage output, and running parallel to the first supply wire directly from the low voltage output to the second terminal of the last of the plurality of electrical loads, and thence in reverse sequence to the second terminal of the first of the plurality of electrical loads; wherein

a total voltage drop in a portion of the first and second supply wires supplying any one electrical load is substantially equal to a total voltage drop in a portion of the first and second supply wires supplying each other electrical load.

5,619,121

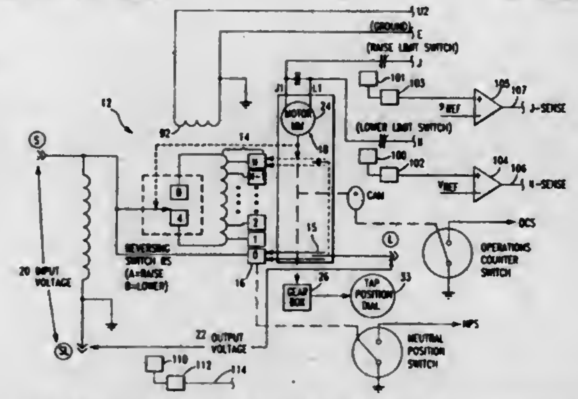
LOAD VOLTAGE BASED TAP CHANGER MONITORING SYSTEM

John J. Trainor, Wake Forest, N.C., assignor to Siemens Energy & Automation, Inc., Alpharetta, Ga.

Filed Jun. 29, 1995, Ser. No. 496,808

Int. Cl.[6] G05F *1/147*

U.S. Cl. 323—256 **18 Claims**



1. A transformer having a selectable winding ratio comprising:

at least one load terminal;

a plurality of windings including a tap assembly which is positionable to incrementally change the winding ratio of the transformer to vary the voltage at the load terminal;

an electric drive mechanically coupled to the tap assembly to selectively position the tap assembly to effect incremental changes of the winding ratio;

a count signal generator coupled to the tap assembly to generate a count signal in response to a tap change;

a monitoring circuit coupled to the load terminal to produce a load voltage signal representative of the load voltage at the load terminal; and

a digital processing circuit including an input port coupled to the monitoring circuit and count signal generator, and an output port coupled to the electric drive, the processing circuit being configured to periodically sample the load voltage signal applied to the input port, compare a first load voltage value sampled at a first time with a pre-defined load set value, apply control signals to the output port to activate the electric drive if the difference between the first and second voltage values exceeds a predetermined limit, compare a third load voltage value sampled at a third time prior to a count signal with a fourth load voltage value sampled at a time subsequent to the count signal, determine the direction of tap change based upon the comparison of the third and fourth load voltage values, and determine a new tap position value based upon the direction of tap change.

5,619,122

TEMPERATURE DEPENDENT VOLTAGE GENERATOR WITH BINARY ADJUSTABLE NULL VOLTAGE

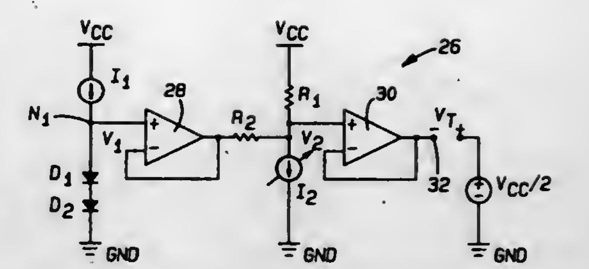
Mark B. Kearney, Kokomo, and Dennis M. Koglin, Carmel, both of Ind., assignors to Delco Electronics Corporation, Kokomo, Ind.

Filed Apr. 14, 1995, Ser. No. 422,341

Int. Cl.[6] G05F *3/08;* **H01L** *35/00;* **H03M** *1/06*

U.S. Cl. 323—312 **16 Claims**

1. A temperature dependent voltage generator circuit with adjustable null voltage capability at a first operating temperature, said voltage generator circuit generates an output voltage which is proportional to changes in operating temperature from said first operating temperature, said voltage generator circuit comprising:



temperature dependent voltage source means for producing a voltage that varies substantially linearly with the changes in operating temperature from said first operating temperature; and

binary weighted switched current source means for producing an adjustable binary weighted current, whereby said binary weighted switched current source means is adjustable at said first operating temperature so as to null said output voltage, and thereafter at other operating temperatures, said output voltage is proportional to the changes in the operating temperature from said first operating temperature.

5,619,123

POWER SUPPLY CIRCUIT FOR NON-THRESHOLD LOGIC CIRCUIT

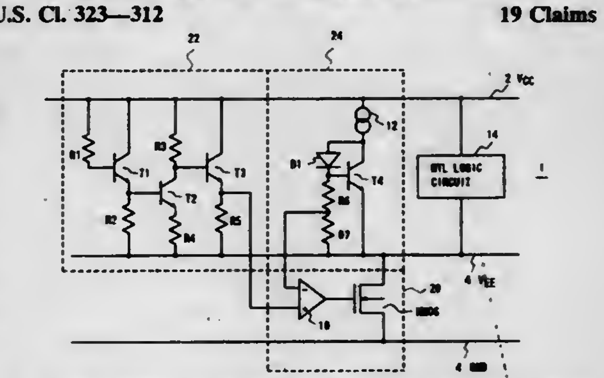
Hitoshi Okamura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 25, 1995, Ser. No. 533,835

Claims priority, application Japan, Oct. 3, 1994, 6-238801

Int. Cl.[6] G05F *3/08;3/02;* **H03K** *19/013;19/086*

U.S. Cl. 323—312 **19 Claims**



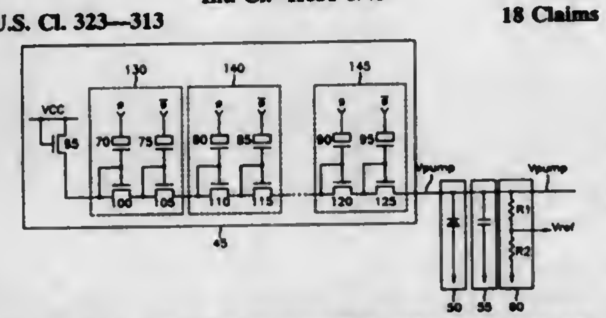
1. A power supply circuit for a non-threshold logic (NTL) circuit including a plurality of NTL gate circuits, comprising:

a monitoring circuit for outputting a monitor voltage substantially proportional with a first factor to a voltage variation between an NTL lower voltage on an NTL lower power supply line and an external higher voltage as an NTL higher voltage on an external higher power supply line as an NTL higher power supply line in relation to an external lower voltage on an external lower power supply line;

a reference circuit for outputting a reference voltage substantially proportional with a second factor to said voltage variation; and

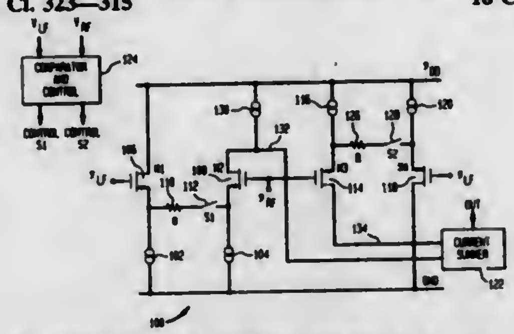
comparing and regulating means for comparing said monitor voltage from said monitoring circuit and said reference voltage from said reference circuit, and for regulating said NTL lower voltage in accordance with the comparing result such that said NTL lower voltage is equal to a predetermined voltage.

5,619,124
REFERENCE VOLTAGE GENERATOR IN A SEMICONDUCTOR INTEGRATED DEVICE
Young-Ho Lim, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea
Filed Nov. 28, 1994, Ser. No. 348,183
Claims priority, application Rep. of Korea, Nov. 26, 1993, 25325/1993
Int. Cl.⁶ H03F *3/45*
U.S. Cl. 323—313 **18 Claims**



1. An integrated circuit reference voltage generator for generating a reference voltage having a constant voltage level in response to input of a power voltage having a power voltage level that is externally inputted, comprising:
high voltage generating means for generating a boost voltage boosted over said power voltage level;
clamping means for clamping said boost voltage to a constant voltage;
ripple preventing means for preventing ripple of said boost voltage clamped to said constant voltage by said clamping means; and
voltage dividing means for outputting a reference voltage having said constant voltage level which is below said power voltage level by lowering said boost voltage outputted through said ripple preventing means.

5,619,125
VOLTAGE-TO-CURRENT CONVERTER
Kadaba R. Lakshmikumar, Wescosville, Pa., assignor to Lucent Technologies Inc., Murray Hill, N.J.
Filed Jul. 31, 1995, Ser. No. 509,072
Int. Cl.⁶ G05F *3/16;3/20;* **H02M** *7/00*
U.S. Cl. 323—315 **18 Claims**

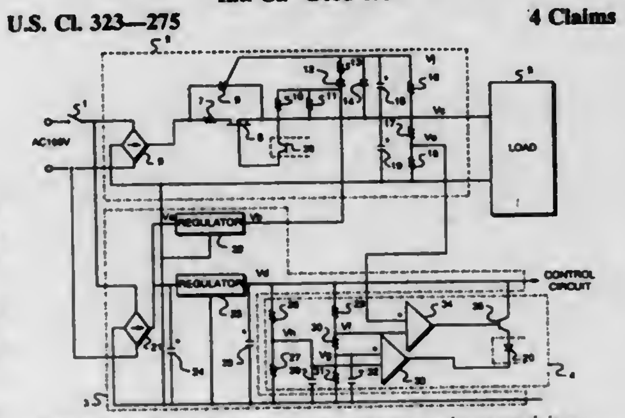


1. A voltage-to-current converter operated by a power supply generating a predetermined voltage signal supply ranging between a high and a low voltage level, for converting an input voltage signal to an output current signal, comprising:
a first voltage-to-current converter having a substantially linear voltage/current characteristic for voltage input signals smaller than a first reference voltage signal level and up to voltage signal levels substantially equal to said low voltage level;
a second voltage-to-current converter having a substantially linear voltage/current characteristic for voltage input signals larger than a second reference voltage signal level and up to voltage levels substantially equal to said high voltage level; and
a control circuit coupled to said first and second voltage-to-current converters, said control circuit being adapted to activate said first voltage-to-current converter and deactivate said second voltage-to-current converter when said input voltage signal is smaller than said first reference voltage signal level, said control circuit being further adapted to activate said second voltage-to-current converter and deactivate said first voltage to current converter when said input voltage signal is larger than said second reference voltage signal level.

5,619,126
CIRCUIT ARRANGEMENT FOR AUTOMATICALLY DECREASING THE LOAD CURRENT
Gerhard Lang, Altwellnau, Germany, assignor to Braun Aktiengesellschaft, Kronberg, Germany
PCT No. PCT/EP93/03137, § 371 Date May 17, 1995, § 102(e) Date May 17, 1995, PCT Pub. No. WO94/14229, PCT Pub. Date Jun. 23, 1994
PCT Filed Nov. 9, 1993, Ser. No. 256,873
Claims priority, application Germany, Dec. 5, 1992, 42 41 066.5
Int. Cl.⁶ G05F *5/00*
U.S. Cl. 323—273 **16 Claims**

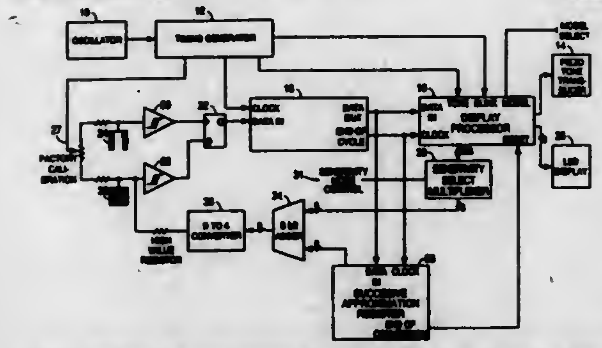
1. A circuit arrangement for automatically decreasing a load current, comprising a series arrangement formed by a load and a first electronic switching device adapted to be connected to a DC source of power, and further comprising a driver driving said first switching device; a capacitor; a first resistor; a transistor; a feedback resistor; a control circuit controlling said driver; and a second electronic switching device initiating said control circuit, so that said second electronic switching device connects a first terminal of said capacitor and a first terminal of said first resistor as well as the base of said transistor to one pole of the DC source of power, with a main current path of the transistor being between an input of the driver and another pole of the DC source, wherein a second terminal of the capacitor and a second terminal of the first resistor is coupled to the other pole of the DC source, and wherein the end of the first electronic switching device connected to the load is coupled to the second terminal of the capacitor through said feedback resistor.

5,619,127
INRUSH CURRENT SUPPRESSING POWER SUPPLY
Kanji Warizaya, Tokyo, Japan, assignor to NEC Corporation, Japan
Filed Nov. 3, 1995, Ser. No. 552,752
Claims priority, application Japan, Nov. 10, 1994, 6-276186
Int. Cl.⁶ G05F *5/00*
U.S. Cl. 323—275 **4 Claims**



1. An inrush current suppressing power supply comprising:
a main power supply circuit which rectifies an alternating-current input and supplies direct-current output to a load and which is provided with an inrush current suppressing circuit connected in series between a rectifying circuit and a smoothing capacitor;
an auxiliary power supply circuit which rectifies the alternating-current input and supplies direct-current power for a control circuit of said main power supply circuit; and
a delay circuit that monitors voltage of said smoothing capacitor that rises due to charging current supplied from said auxiliary power supply circuit after closing the alternating-current input to said main power supply circuit and said auxiliary power supply circuit, and then closes said inrush current suppressing circuit after the elapse of a delay time which is established within said delay circuit.

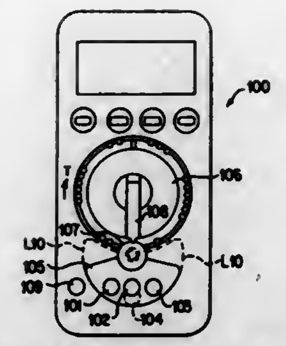
5,619,128
STUD SENSOR WITH OVER-STUD MISCALIBRATION VIA CIRCUIT WHICH STORES AN INITIAL CALIBRATION DENSITY, COMPARES THAT TO A CURRENT TEST DENSITY AND OUTPUTS RESULT VIA INDICATOR
Charles E. Heger, Saratoga, Calif., assignor to Zircon Corporation, Campbell, Calif.
Division of Ser. No. 931,189, Aug. 14, 1992, Pat. No. 5,352,974. This application Sep. 8, 1994, Ser. No. 303,268
Int. Cl.⁶ G01R *19/06;35/02*
U.S. Cl. 324—67 **7 Claims**



1. A method for determining miscalibration of a stud sensing device for finding a location of a stud positioned behind a surface, comprising the steps of:
placing the stud sensing device in a calibration mode;
attempting to calibrate the stud sensing device by holding it at a first location on the surface in the calibration mode;
moving the stud sensing device to a second location on the surface;
placing the stud sensing device in an operating mode;
determining in the stud sensing device if said calibration attempt has occurred when the stud sensing device was located over a stud by comparing a density sensed at the first location in the calibration mode to a density sensed at the second location in the operating mode; and
indicating that the calibration attempt has occurred over a stud when the sensed density at the second location in the operating mode is less than that sensed at the first location in the calibration mode.

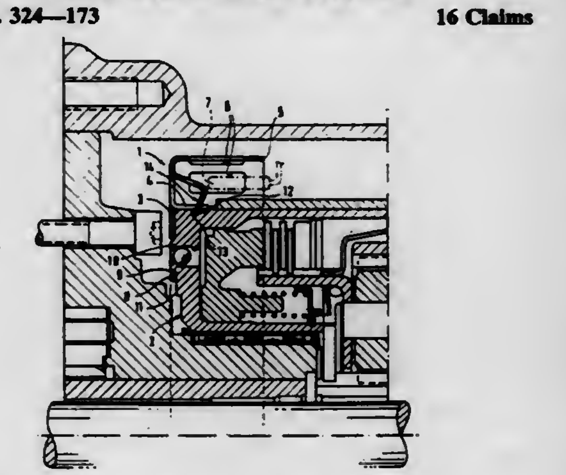
5,619,129
MULTIMETER HAVING AN ERRONEOUS INPUT PREVENTION MECHANISM
Manabu Kamiya, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan
Filed Jan. 18, 1996, Ser. No. 588,377
Claims priority, application Japan, Jan. 19, 1995, 7-006672; Dec. 18, 1995, 7-329347
Int. Cl.⁶ G08B *21/00;* **G01R** *23/16;15/12;1/00*
U.S. Cl. 324—115 **20 Claims**

1. A multimeter having an erroneous input prevention mechanism comprising:
a rotary switch to select measuring functions,
a common terminal hole that receives a test lead pin plug,



a plurality of selection holes separate from the common terminal holes,
a shutter board that rotates based on operation of the rotary switch to maintain the common terminal hole in an open state and open one of the selection holes while interrupting the other selection holes, and
a shutter board driving mechanism that rotates the shutter board by transmitting rotational motion from the rotary switch to the shutter board, the shutter board driving mechanism including at least two connection positions within a range of rotation of the rotary switch to mechanically connect the shutter board and the rotary switch and thereby cause the shutter board to rotate based on rotation for the rotary switch, the shutter board driving mechanism further including interrupting positions between the connection positions to interrupt the mechanical connection of the shutter board and rotary switch and prevent movement of the shutter board regardless of the rotation of the rotary switch.

5,619,130
FASTENING A RING MEMBER ON A HUB MEMBER
Vladimir Premiski, Zuelpich-Buervenich; Friedel Lauscher, Kreuzau-Drove, and Wilhelm Wehren, Kerpen-Blatzheim, all of Germany, assignors to Ford Motor Company, Dearborn, Mich.
Filed Jul. 28, 1995, Ser. No. 508,498
Claims priority, application Germany, Jul. 30, 1994, 44 27 098.4
Int. Cl.⁶ G01P *3/44;3/488;* **B60B** *27/00*
U.S. Cl. 324—173 **16 Claims**



1. An annular member for axial and rotational retention to a hub member having an outer surface with an annular groove and an end face, comprising:
an annular member having an annular inner surface positioned adjacent the outer surface of the hub and a means for releasably engaging the annular groove of the hub to prevent axial movement therebetween; and
a tab means cooperating with said hub member for preventing rotation between the annular member and the hub.

5,619,131

PARALLEL ANALOG-DIGITAL MONITORING SYSTEM

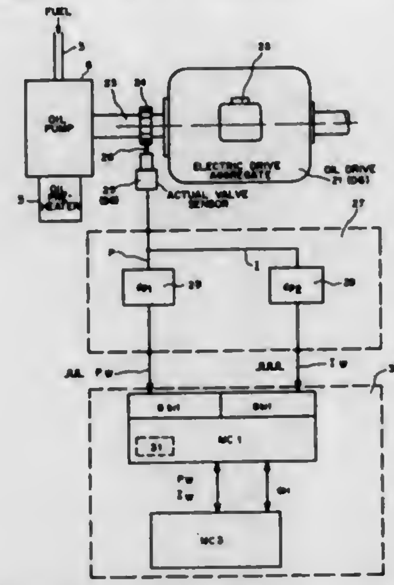
Josef Lelle, Baden-Baden, Germany, and Gerhard H. Ulrich, Sins, Switzerland, assignors to Landis & Gyr Business Support AG, Zug, Switzerland

Filed Feb. 25, 1994, Ser. No. 201,620

Claims priority, application Switzerland, Mar. 8, 1993, 693/93

Int. Cl.⁶ G01P *3/48*

U.S. Cl. 324—174 **15 Claims**



1. A monitoring system, comprising

an actual value sensor which detects an actual value of a physical parameter of a component of an arrangement to be monitored and emits a signal in response thereto,

a signal path connected to said actual value sensor which is divided into at least first and second parallel signal paths along which said signal emitted by said actual value sensor is processed simultaneously into first and second actual value signals, wherein said first signal path uses a first processing technique to generate said first actual value signal, and wherein said second signal path uses a second processing technique which is different from said first processing technique to generate said second actual value signal, and

an evaluating unit connected to said first and second signal paths which receives and evaluates said first and second actual value signals, wherein said first and second actual value signals are compared with each other, to ascertain deviations between said first and second actual value signals.

5,619,132

POSITION MEASURING DEVICE EMPLOYING PRIMARY AND AUXILIARY MAGNETIC FIELDS

Alfons Spies, Seebruck, Germany, assignor to Johannes Heidenhain GmbH, Traunreut, Germany

Filed Apr. 7, 1994, Ser. No. 224,647

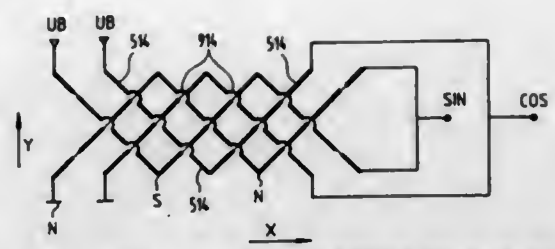
Claims priority, application European Pat. Off., Apr. 10, 1993, 93105911

Int. Cl.⁶ G01B *7/14;* **H01L** *43/02*

U.S. Cl. 324—207.21 **26 Claims**

1. A position measuring device for measuring the relative position of two objects which are movable with respect to each other wherein a periodic graduation formed by magnetizing a pattern on a scale is scanned in the measuring direction by a scanning unit, comprising:

at least two magneto-resistive elements for generating position dependent output signals from which position measurement values can be determined in an evaluation device, the magneto-resistive element disposed in the scanning unit in a



plane parallel to the periodic graduation and at an angle β which ranges from about 0° to about 90° with respect to the measuring direction; and

said at least two magneto-resistive elements disposed in the scanning unit in a plane parallel to the graduation wherein the magneto-resistive elements are separated from each other by a fraction of a graduation period along the measuring direction, the plurality of magneto-resistive elements being interconnected to form an electrical bridge;

wherein each of the at least two magneto-resistive elements have a length measured in the measuring direction which is a fraction of the graduation period, wherein the fraction is determined by the reciprocal value of a harmonic to be eliminated;

means for generating an auxiliary magnetic field to magnetically bias the at least two magneto-resistive elements, said auxiliary magnetic field directed perpendicular with respect to a stray field generated by the magnetization of the scale.

5,619,133

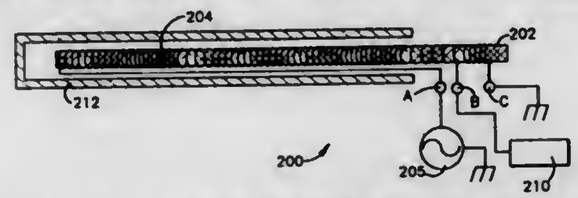
SINGLE COIL POSITION AND MOVEMENT SENSOR HAVING ENHANCED DYNAMIC RANGE

David Shank, Big Rapids, and Stephen R. W. Cooper, Tustin, both of Mich., assignors to Nartron Corporation, Reed City, Mich.

Continuation-in-part of Ser. No. 69,127, May 28, 1993, abandoned, which is a continuation of Ser. No. 296,183, Jan. 11, 1989, Pat. No. 5,216,364, and a continuation-in-part of Ser. No. 169,771, Dec. 17, 1993. This application Jun. 6, 1995, Ser. No. 468,122

Int. Cl.⁶ G01B *7/14;* **G01R** *33/00*

U.S. Cl. 324—207.24 **12 Claims**



1. Sensing apparatus for monitoring movement between two relatively moveable members comprising:

a) an electronic sensor positioned in proximity to the two relatively moveable members having a radially-wound electrically conductive coil having a signal input terminal for receiving a time varying signal input and an output terminal for providing a signal output based on relative movement of the two relatively moveable members; and

b) a control circuit electrically coupled to the electronic sensor including:

i) energization circuitry for coupling a time varying signal to the signal input terminal of the electronic sensor;

ii) monitoring circuitry for monitoring a return signal from the output terminal of the electronic sensor as the time varying signal is applied to the sensor to provide an output signal related to the relative positions of the moveable members; and

iii) positive feedback control circuitry for adjusting the time varying signal coupled to the sensor based on the monitored signal from the monitoring circuitry to enchance a dynamic range of the output signal from the monitoring circuitry.

5,619,134

PHYSICAL QUANTITY DETECTING DEVICE USING INTERPOLATION TO PROVIDE HIGHLY PRECISE AND ACCURATE MEASUREMENTS

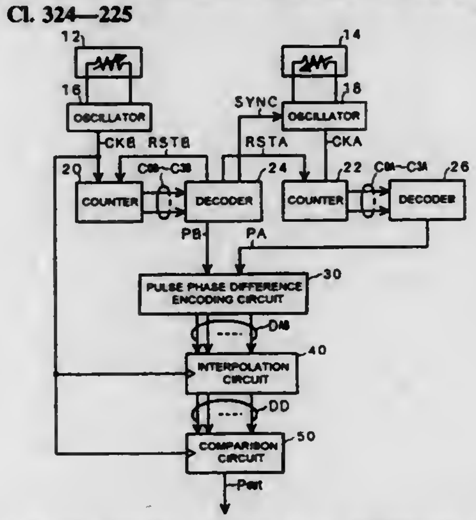
Takamoto Watanabe, Nagoya, and Yasuaki Makino, Okazaki, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Feb. 23, 1995, Ser. No. 393,563

Claims priority, application Japan, Feb. 25, 1994, 6-028358

Int. Cl.⁶ G01R *33/00;33/02;* **H01L** *43/08;* **G01B** *7/00*

U.S. Cl. 324—225 **7 Claims**



1. A physical quantity detecting device for detecting a physical quantity to be detected and for outputting a detection output signal representing the physical quantity, comprising:

a detection element whose characteristics change depending on said physical quantity to be detected;

a physical quantity-to-time base conversion circuit for generating a detection signal in a cycle in accordance with the characteristics of said detection element;

a time base amplifier circuit for multiplying the cycle of said detection signal for said physical quantity-to-time base conversion circuit by a predetermined value and for generating a pulse signal in said cycle obtained by the predetermined multiplication;

a time A-D conversion circuit for converting the cycle of said pulse signal output by said time base amplifier circuit into digital data and for outputting said converted digital data; and

an interpolation circuit to which a sampling signal and said digital data output by said time A-D conversion circuit are input for interpolating said digital data in a sampling cycle and for sequentially outputting interpolated data, said interpolated data output by said interpolation circuit being output as said detection output signal representing said physical quantity;

wherein said detection signal output by said physical quantity-to-time base conversion circuit is input to said interpolation circuit as said sampling signal.

5,619,135

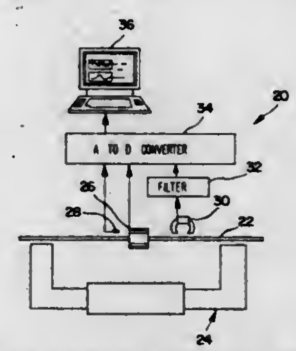
STEEL CHARACTERISTICS MEASUREMENT SYSTEM USING BARKHAUSEN JUMP SUM RATE AND MAGNETIC FIELD INTENSITY AND METHOD OF USING SAME

Gabriel Kohn, Omer, Israel; George Hicho, Derwood, and Lydon Swartzendruber, New Carrollton, both of Md., assignors to American Iron and Steel Institute, Washington, D.C.

Filed Jul. 17, 1995, Ser. No. 503,263

Int. Cl.⁶ G01B *7/24;* **G01N** *27/72;* **G01R** *33/00*

U.S. Cl. 324—239 **19 Claims**



1. An apparatus for measuring at least one mechanical or magnetic characteristic of a ferromagnetic sample as a function of at least one magnetic characteristic of the sample, the apparatus comprising:

magnetic field generating means for subjecting the sample to a variable external magnetic field;

means for measuring the magnetic field intensity of the magnetic field generated by said magnetic field generating means;

a signal sensor for measuring Barkhausen signals from the sample when the sample is subjected to the external magnetic field; and

signal processing means responsive to the magnetic field intensity measured by the magnetic field intensity measuring means and the Barkhausen signals measured by the signal sensor for forming a jump sum rate first moment signal corresponding to a center of gravity of a jump sum rate of the Barkhausen signals with respect to the magnetic field intensity, and for determining the at least one mechanical or magnetic characteristic responsive to the jump sum rate first moment signal.

5,619,136

DETECTION OF DISCONTINUITIES BELOW THE SURFACE OF MAGNETIZABLE MATERIAL USING DIFFERENTIALLY COUPLED SENSORS TO DETECT MAGNETIC FLUX LEAKAGE

John C. Drury, Swansea, United Kingdom, assignor to Silverwing, Limited, United Kingdom

Continuation-in-part of Ser. No. 30,442, Mar. 24, 1993, abandoned. This application Apr. 25, 1995, Ser. No. 428,659

Claims priority, application United Kingdom, Feb. 11, 1992, 9202846

Int. Cl.⁶ G01N *27/82;* **G01R** *33/54*

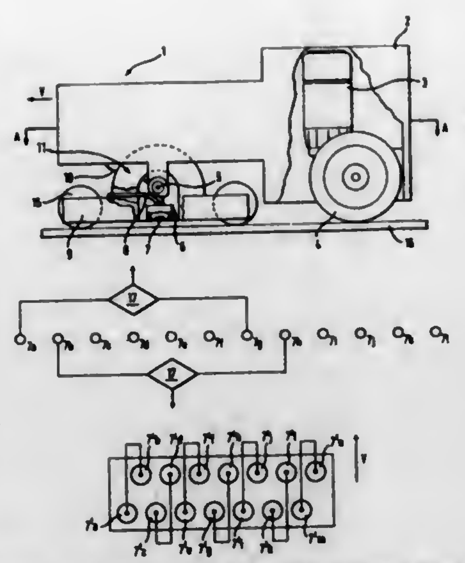
U.S. Cl. 324—242 **21 Claims**

1. Apparatus for detecting discontinuities below a surface of a magnetisable material, which apparatus comprises:

(a) a carriage movable in a predetermined direction of travel over the surface of the material;

(b) inducing means being movable with said carriage and for inducing a magnetic field in the material;

(c) an elongate array of sensors being movable with said carriage and extending transversely to the direction of travel of said carriage, each sensor being arranged to detect a flux leakage at or near the surface of the material and produce an output signal indicative thereof, said sensors being coupled in respective pairs each comprising a first partner and a second



partner, each respective pair being arranged to produce a differential output signal dependent on a difference between said output signals produced by first and second partners comprising each pair, said first and second partners of said respective pairs of sensors being spaced relative to one another both in the direction of travel of said carriage and in a direction transverse to the direction of travel of said carriage; and

(d) warning means arranged to be actuated in response to said differential output signals produced by said pairs of sensors.

5,619,137

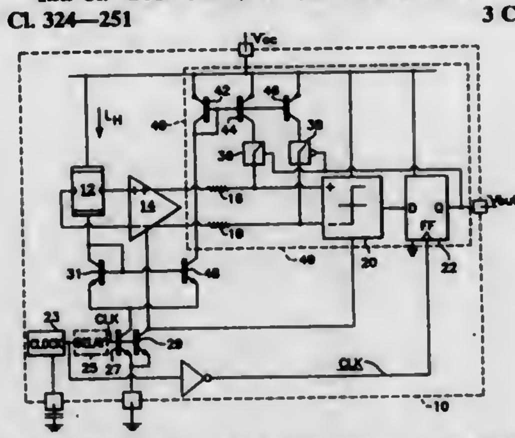
CHOPPED LOW POWER MAGNETIC-FIELD DETECTOR WITH HYSTERESIS MEMORY

Ravi Vig; Teri Tu, both of Bow, and Paul W. Latham, II, Lee, all of N.H., assignors to Allegro Microsystems, Inc.

Filed Feb. 12, 1996, Ser. No. 600,380

Int. Cl.⁶ G01R *33/06;33/07;33/025;* **H03K** *3/38*

U.S. Cl. 324—251 **3 Claims**



1. A magnetic-field detector for detecting an ambient magnetic field that is greater than a predetermined field strength comprises:

a magnetic-field-to-voltage transducer;

a transducer-voltage amplifier having an input connected to said transducer;

a zero-crossing comparator of the kind for producing a binary signal of one voltage level when the comparator input signal is of one polarity;

a clockable flip flop having an input connected to the output of said comparator;

a free running clock means connected to said transducer for chopping the energizing current to said transducer, said clock means connected to said flip flop for enabling said flip flop to acquire and remember the comparator binary output signal at an instant at the end of each period of energizing said transducer; and

a summer circuit means having an output connected to the input of said comparator, having a first input connected to the output of said amplifier, and having a second: input;

a positive-feedback means, connected from said flip flop output to said second input of said summer circuit, for producing at said second summer-circuit input a predetermined bias voltage of the one polarity only when the remembered comparator binary output signal is at the one voltage level, said summer circuit means being for producing a voltage sum of the amplified transducer voltage and the predetermined bias voltage, and for applying said voltage sum to the input of said comparator to transform said comparator into a Schmitt comparator having a hysteresis with memory to cover the clock-period portions when said Hall element is not energized.

5,619,138

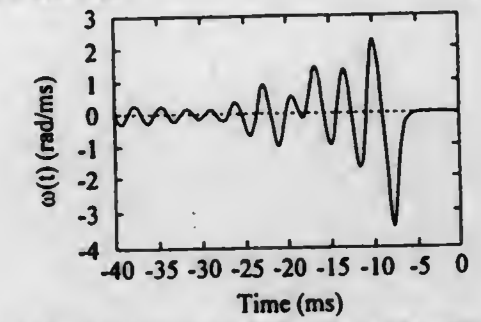
METHOD OF PROVIDING AN RF PULSE FOR USE IN NMR

David E. Rourke, Winnipeg, Canada, assignor to National Research Council of Canada, Ottawa, Canada

Filed Aug. 21, 1995, Ser. No. 517,439

Int. Cl.⁶ G01R *33/20*

U.S. Cl. 324—309 **18 Claims**



1. A method of providing an RF pulse for use in MRI comprising the steps of:

(a) selecting a reflection coefficient related to a predetermined magnetization response;

(b) iteratively altering the reflection coefficient and evaluating a corresponding magnetization response and RF pulse until the corresponding magnetization response and RF pulse are within predetermined parameters; and

(c) providing a representation of an RF pulse based on the reflection coefficient.

5,619,139

MAGNETIC RESONANCE METHOD AND APPARATUS FOR DETECTING AN ATOMIC STRUCTURE OF A SAMPLE ALONG A SURFACE THEREOF

Karoly Holczer, Los Angeles, Calif.; Dieter Schmalbein, Marxzell, and Peter Hoefer, Karlsruhe, both of Germany, assignors to Bruker Analytische Messtechnik GmbH, Rheinstetten-Forchheim, Germany

Filed Feb. 21, 1995, Ser. No. 393,121

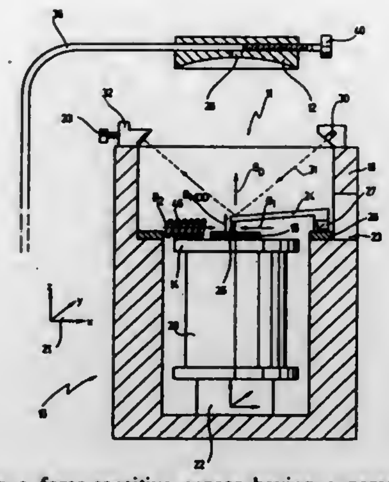
Int. Cl.⁶ G01R *33/20*

U.S. Cl. 324—318 **57 Claims**

1. A method for detecting an atomic structure of a sample along a surface thereof, said method comprising the steps of:

arranging said sample in a constant magnetic field (B_0) of predetermined field strength and high homogeneity, said constant magnetic field (B_0) having a first direction;

irradiating a first high-frequency magnetic field (B_1) of a first predetermined frequency on said sample, said first high-frequency magnetic field (B_1) having a second direction perpendicular to said first direction;



providing a force-sensitive sensor having a paramagnetic tip comprising a paramagnetic spin at a terminal end of said paramagnetic tip, said spin being accessible for electron paramagnetic resonance (EPR) excitation;

placing said sensor in close vicinity to said sample such that said sensor tip is in atomic interaction with said sample surface;

setting said predetermined field strength and said first predetermined frequency such that EPR is excited within said paramagnetic tip;

displacing said paramagnetic tip parallel to said sample surface for mapping predetermined points on said sample surface; and

during said step of displacing measuring a force exerted on said paramagnetic tip by a local inhomogeneous magnetic field (B_{loc}) caused by atomic magnetic moments ($m_{e,k}$) of said sample.

5,619,140

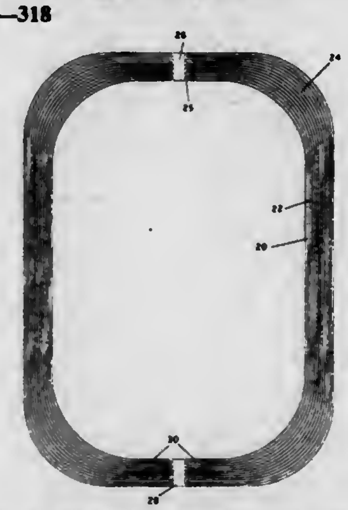
METHOD OF MAKING NUCLEAR MAGNETIC RESONANCE PROBE COIL

William W. Brey, Sunnyvale; Marie E. Johansson, Palo Alto, and Richard S. Withers, Sunnyvale, all of Calif., assignors to Conductus, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 409,506, Mar. 23, 1995, Pat. No. 5,585,723, and a continuation-in-part of Ser. No. 313,624, Sep. 27, 1994, abandoned, which is a continuation-in-part of Ser. No. 891,591, Jun. 1, 1992, Pat. No. 5,351,007. This application Jun. 5, 1995, Ser. No. 461,558

Int. Cl.⁶ G01V *3/00*

U.S. Cl. 324—318 **7 Claims**



1. A method for making an NMR probe coil comprising:

(a) Depositing a film comprising an oxide superconductor on a substrate;

(b) Patterning the film to form a coil having an inductive element and a capacitive element wherein the coil has an expected resonant frequency less than a desired resonant frequency of the coil;

(c) Coupling RF power to the coil at or near the expected resonant frequency;

(d) Measuring a first observed resonant frequency of the coil;

(e) Increasing the RF power to the coil at or near its observed resonant frequency;

(f) Observing the coil for a change in the resonant frequency to a new observed resonant frequency;

(g) Repeating the increasing the RF power to the coil at or near the observed resonant frequency until a desired power to the coil is reached;

(h) Tuning the coil by removing a portion of the capacitive element.

5,619,141

THERMOPOWER MAPPING OF SUPERCONDUCTING CUPRATES

Jeffery L. Tallon, 3 Marine Drive York Bay, Eastbourne 6008, New Zealand; John R. Cooper, 43 North Street Castlethorpe, Milton Keynes MK19 7EW, Great Britain, and Sandro D. Obertelli, 11 View Road, London N6 4DJ, Great Britain

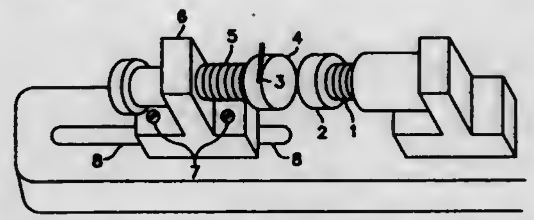
PCT No. PCT/NZ93/00022, § 371 Date Dec. 30, 1994, § 102(e) Date Dec. 30, 1994, PCT Pub. No. WO93/20591, PCT Pub. Date Oct. 14, 1993

PCT Filed Apr. 5, 1993, Ser. No. 313,260

Claims priority, application New Zealand, Apr. 3, 1992, 242238

Int. Cl.⁶ G01N *27/00;* **G01R** *27/14*

U.S. Cl. 324—537 **7 Claims**



1. A method for determining the hole or electron concentration, transition temperature, ratio T_c/T_c(max), or state of doping of a material capable of exhibiting superconductivity when cooled below its critical temperature, comprising measuring the thermopower of a sample of the material at a temperature above the critical temperature of the material and determining from the thermopower the hole or electron concentration, transition temperature, ratio T_c/T_c(max), or state of doping of the material as to whether it is underdoped, overdoped or optimally doped for maximum T_c or critical current.

5,619,142

TECHNIQUE FOR CALIBRATING A TRANSFORMER ELEMENT

G. Carl Schweer, Peterborough, and Ross M. Pilkey, Omemee, both of Canada, assignors to Carma Industries, Peterborough, Canada

Continuation of Ser. No. 118,880, Sep. 9, 1993, Pat. No. 5,453,697. This application Jul. 17, 1995, Ser. No. 503,402

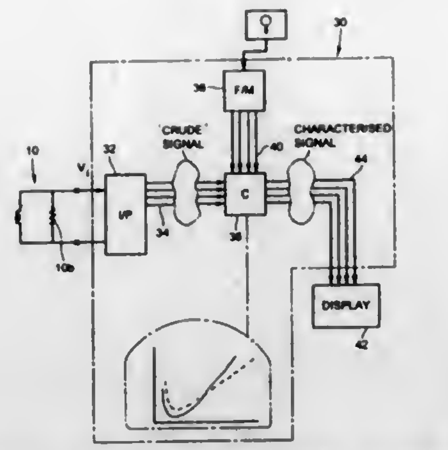
Int. Cl.⁶ G01R *27/26*

U.S. Cl. 324—601 **4 Claims**

1. A calibrated transformer unit for use in a metering device, comprising:

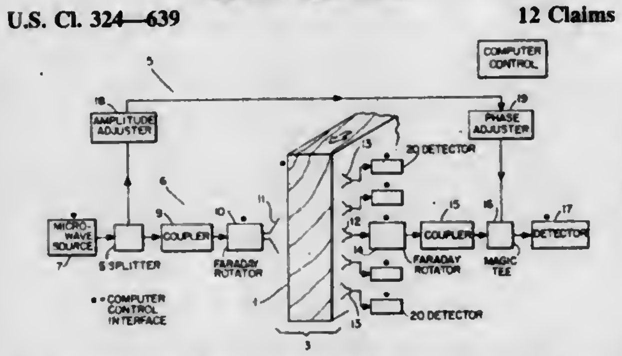
a crude toroidal transformer element including a ring and a secondary winding wound around said ring; said ring being arranged to receive a main therethrough to form a primary winding; and

a recording medium containing a set of successive incremental factors, said set of factors being dedicated to said crude toroidal transformer element and each of said factors relating



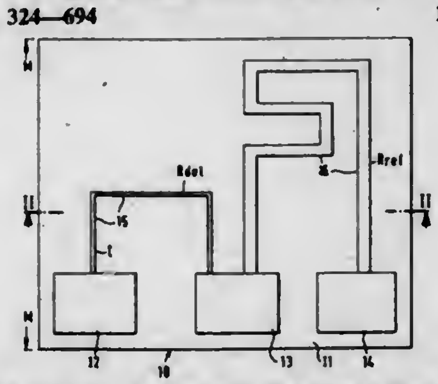
a measurement of a power component for one increment of power flowing through said secondary winding with an expected value of said power component for said increment of power flowing through said secondary winding, both said measurement and said expected value corresponding to a flow of power through said primary winding, wherein said crude transformer element, together with said set of factors, is capable of generating measurements of power with improved accuracy when corrected by said factors.

5,619,143
MICROWAVE SCANNING APPARATUS
Thomas J. Stevens, Highett, and Robert H. Leicester, Beaumaris, both of Australia, assignors to Commonwealth Scientific and Industrial Research Organisation, Campbell, Australia
Continuation of Ser. No. 741,450, Aug. 13, 1991, abandoned. This application Nov. 30, 1992, Ser. No. 999,732
Claims priority, application Australia, Feb. 14, 1989, PJ2736
Int. Cl.^{6} G01N *22/02*
U.S. Cl. 324—639 **12 Claims**



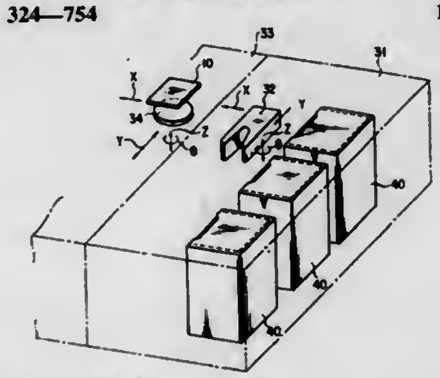
1. A method of determining the grain direction in a sample of timber comprising:
supplying plane polarised microwave radiation to the sample from a first polarisation rotating means and detecting plane polarised radiation received from the sample after passage through a second polarisation rotating means, characterised by the steps of
i) locking the planes of polarisation of the first and second polarisation rotating means at a set angle of 0° or 90° with respect to each other,
ii) rotatably adjusting the locked together planes of polarisation of the first and second polarisation rotating means as a pair until
a) the detector indicates a minimum signal for the case where the planes of polarisation are set at 90° with respect to each other, or
b) the detector indicates a maximum signal for the case where the planes of polarisation are set at 0° with respect to each other,
iii) determining the grain direction of the timber sample from the angle of adjustment of the first or second polarisation rotating means at the point which provides the said minimum or maximum signal.

5,619,144
DETECTOR AND METHOD FOR OBSERVATION OF THE PRESENCE OF A LIQUID AND/OR OF A CHANGE OF PHASE IN SAME
Lars Stormbom, Vantaa, Finland, assignor to Vaisala Oy, Vantaa, Finland
Filed Aug. 23, 1994, Ser. No. 294,565
Claims priority, application Finland, Aug. 23, 1993, 933701
Int. Cl.^{6} G01N *27/06;* **G01R** *27/22*
U.S. Cl. 324—694 **14 Claims**



8. Method based on observation of a change in the electrical resistance for detecting the presence of water in the form of dew or of ice, comprising the steps of placing in the area of observation a detector resistor (R_{det}) whose resistance changes as a function of the temperature, heating the detector resistor by flowing an electric current (I) through the detector resistor in short-time periods (t_0), and detecting the presence of water as a function of the change in resistance of the detector resistor taking place during said periods (t_0).

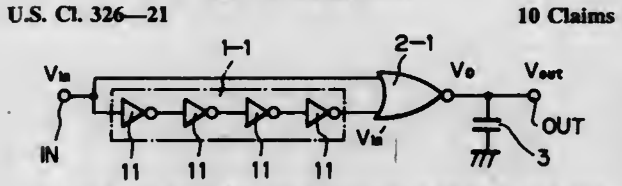
5,619,145
PROBE APPARATUS AND METHOD FOR INSPECTING OBJECT USING THE PROBE APPARATUS
Kaoru Matsuda, Osaka, Japan, assignor to Tokyo Electron Limited, Japan
Continuation of Ser. No. 260,012, Jun. 15, 1994, abandoned. This application Jan. 16, 1996, Ser. No. 587,341
Claims priority, application Japan, Jun. 19, 1993, 5-172747
Int. Cl.^{6} G01R *31/06*
U.S. Cl. 324—754 **19 Claims**



1. A probe apparatus comprising:
a plurality of trays each having a plurality of receiving portions for accommodating bare chips to be inspected, the bare chips pected having been cut from a wafer;
a cassette for containing the trays;

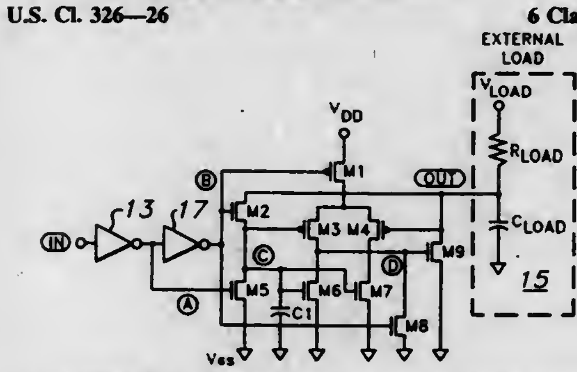
a table on which each of the trays is to be placed, the table being movable in X, Y, and Z directions and rotatable in a θ direction;
transfer means for transferring each of the trays between the table and the cassette; and
a detecting section having a plurality of probe needles, for electrically inspecting the bare chips one by one which are accommodated in one of the trays placed on the table, wherein each of the receiving portions has suction holes formed in an inner bottom surface thereof and used to suck one of the bare chips, and also has a depth of less than a thickness of a bare chip.

5,619,146
SWITCHING SPEED FLUCTUATION DETECTING APPARATUS FOR LOGIC CIRCUIT ARRANGEMENT
Masahiro Fujii; Yasuo Ohno; Tadashi Maeda; Takao Atsumo; Noriaki Matsuno; Keiichi Numata, and Nobuhide Yoshida, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan
Filed Feb. 21, 1996, Ser. No. 604,621
Claims priority, application Japan, Feb. 21, 1995, 7-56695
Int. Cl.^{6} H03K *17/14*
U.S. Cl. 326—21 **10 Claims**



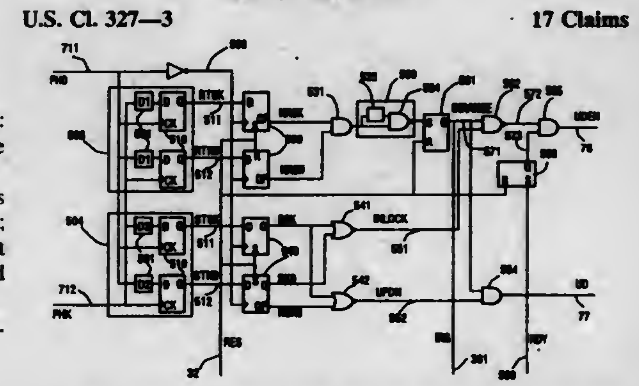
1. A switching speed fluctuation detecting apparatus comprising:
an input terminal for receiving a signal having a definite time period;
a series arrangement of at least one first logic circuit, said series arrangement having an input connected to said input terminal;
a second logic circuit having a first input connected to said input terminal and a second input connected to an output of said series arrangement; and
an integrator connected to an output of said second logic circuit.

5,619,147
CMOS BUFFER WITH CONTROLLED SLEW RATE
Steven A. Hunley, Arlington, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Continuation of Ser. No. 52,213, Apr. 23, 1993, which is a continuation of Ser. No. 776,141, Oct. 15, 1991, abandoned. This application Jun. 5, 1995, Ser. No. 465,153
Int. Cl.^{6} H03K *17/16;19/0948*
U.S. Cl. 326—26 **6 Claims**



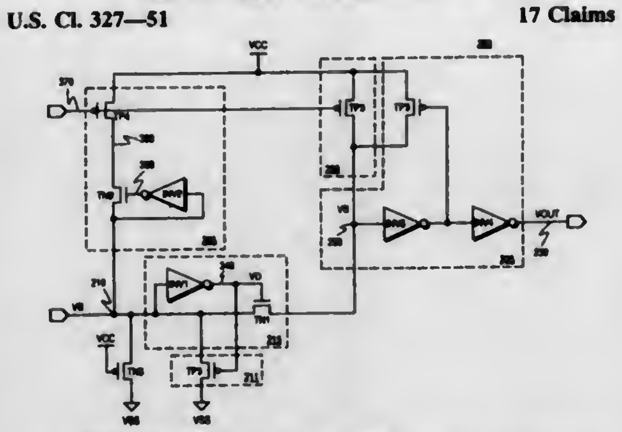
1. A method of controlling slew rate on an output terminal, comprising the steps of:
activating an output transistor;
comparing a voltage on the output terminal to an internal node voltage during output transistor activation; and
decreasing the rate of a voltage transition at the output terminal in response to the comparison of the output terminal to the internal node voltage;
wherein comparing the output voltage to the internal node voltage during out put transistor activation comprises the steps of:
establishing the internal node voltage and its rate of transition;
monitoring the voltage transition at the output terminal; and
detecting, a condition of excessive output terminal voltage transition speed by comparing the relative position in time of the output terminal voltage transition to the internal node voltage transition; and
wherein establishing the internal node voltage and its rate of transition comprises charging a capacitor to a predetermined voltage level and causing the capacitor to discharge through a resistive path.

5,619,148
DIGITAL VARIABLE IN-LOCK RANGE PHASE COMPARATOR
Bin Guo, Fremont, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.
Continuation of Ser. No. 21,710, Feb. 24, 1993, abandoned. This application Oct. 10, 1995, Ser. No. 541,386
Int. Cl.^{6} H03K *5/22*
U.S. Cl. 327—3 **17 Claims**



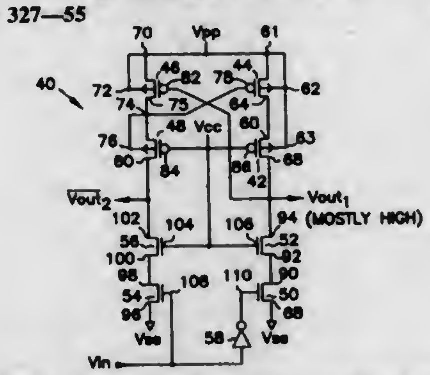
1. A new method for using a flip flop circuit including a first pair of D type flip flops including first DFF and second DFF DFF as a digital phase comparator for indicating the phase angle relationship between a first binary signal PHO and a second binary signal PHK wherein said first and second binary signals exhibit a duty cycle distortion TDCD and wherein said first DFF has a clock input, a D input and an RTOK output and said second DFF has a clock input, a D input and an RTKO output comprising,
connecting said PHO signal to said clock input of said first DFF and delaying said PHO signal by a first delay time TWSM, where TWSM is greater than said duty cycle distortion TDCD, and feeding said delayed PHO signal to said D input of said second DFF;
connecting said PHK signal to the clock input of said second DFF and delaying said PHK signal by a second delay time where said second delay time is greater than said duty cycle distortion and feeding said PHK signal to the D input of said first DFF;
simultaneously sampling and latching the levels of said RTOK output and RTKO output;
analyzing the logic levels of said latched RTOK output and RTKO output in combinatorial logic and providing a plurality of unique phase range indications including a smallest phase range indication, which range indications are indicative of whether PHK needs to be delayed more or less or whether the phase angle is within the smallest indicator phase range of said first pair of flip flops with respect to a phase angle between PHO and PHK of 360 degrees.

5,619,149
SINGLE ENDED DYNAMIC SENSE AMPLIFIER
Lavi A. Lev, San Jose, and Michael Allen, San Francisco, both of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.
Continuation-in-part of Ser. No. 218,230, Mar. 25, 1994, Pat. No. 5,495,191. This application Feb. 15, 1995, Ser. No. 389,152
Int. Cl.⁶ H03K *19/094;* **G11C** *7/06*
U.S. Cl. 327—51 **17 Claims**



1. A sense amplifier circuit comprising:
an output circuit that senses and indicates a state of a first node;
a precharge circuit coupled to an input of the output circuit, the precharge circuit is capable of charging the input of the output circuit to a first voltage level;
a discharge circuit coupled to the first node and to the input of the output circuit, the discharge circuit is capable of discharging the input of the output circuit from the first voltage level to a voltage level of the first node by coupling the input of the output circuit to the first node when a discharge input voltage level, derived from said voltage level of the first node, exceeds a threshold voltage level; and
a noise margin circuit coupled to the first node, the noise margin circuit charges the first node to a second voltage level when the input of the output circuit is electrically decoupled from the first node, the second voltage level being less than the first voltage level such that the discharge input voltage level is less than the threshold voltage level by a predetermined noise margin voltage.

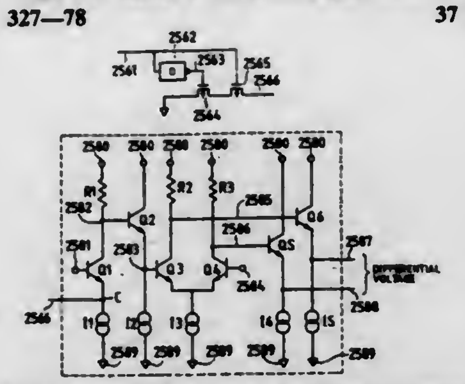
5,619,150
SWITCH FOR MINIMIZING TRANSISTOR EXPOSURE TO HIGH VOLTAGE
Michael S. Briner, San Jose, Calif., assignor to Micron Quantum Devices, Inc., Santa Clara, Calif.
Filed Jul. 7, 1995, Ser. No. 499,304
Int. Cl.⁶ H03K *3/356;19/0185*
U.S. Cl. 327—55 **18 Claims**



1. A switch for minimizing transistor exposure to high voltage, comprising:

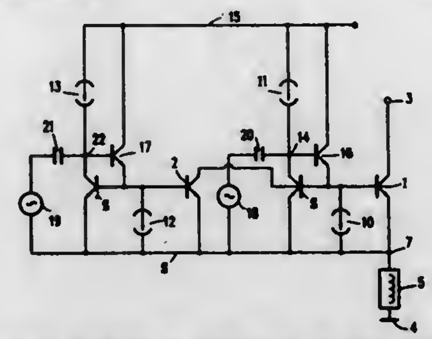
first and second P-channel MOSFETs in serial connection with the first P-channel MOSFET source being coupled to a first voltage;
third and fourth P-channel MOSFETs couple together in a cascode configuration, with the third P-channel MOSFET source being coupled to the first voltage, and the gates of the second and fourth P-channel MOSFETs being coupled to a second voltage, the third P-channel MOSFET gate being coupled to the second P-channel MOSFET source, and the first P-channel MOSFET gate being coupled to the fourth P-channel MOSFET drain forming a first output; and
first, second, third, and fourth N-channel MOSFETs, the first and second N-channel MOSFETs being in serial connection with the second P-channel MOSFET drain wherein the second P-channel MOSFET drain forms a second output, the third and fourth N-channel MOSFETs being in serial connection with the four the P-channel MOSFET drain, the gates of the second and fourth N-channel MOSFETs being coupled to the second voltage, and the gates of the first and third N-channel MOSFETs being coupled to receive complementary input signals.

5,619,151
SEMICONDUCTOR DEVICE
Takashi Akioka; Masahiro Iwamura; Atsushi Hiraishi; Yuji Yokoyama; Nozomu Matsuzaki; Tatsumi Yamauchi, all of Hitachi; Yutaka Kobayashi, Katsuta; Nobuyuki Gotou, Takasaki; Akira Ide, Takasaki; Masahiro Yamamura, Takasaki, and Hideaki Uchida, Takasaki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Division of Ser. No. 182,699, Jan. 13, 1994, which is a continuation of Ser. No. 820,084, Jan. 13, 1992, abandoned, which is a continuation of Ser. No. 490,070, Mar. 7, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 473,742
Claims priority, application Japan, Mar. 9, 1989, 1-57066; Mar. 10, 1989, 1-58453; Mar. 13, 1989, 1-59934; Mar. 13, 1989, 1-60094; Mar. 17, 1989, 1-63749
Int. Cl.⁶ H03K *5/153;3/033;* **G01R** *29/02*
U.S. Cl. 327—78 **37 Claims**



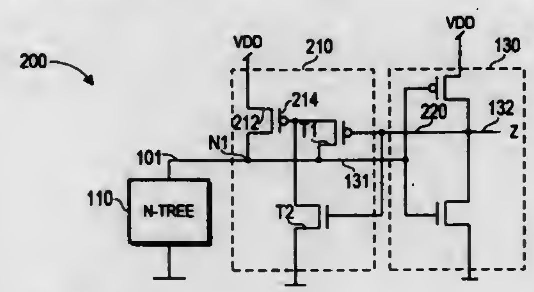
1. A digital memory apparatus which is characterized by:
at least one first converter circuit each of which converting a change in level of an address signal applied thereto to a current pulse;
means for adding the current pulse of each of said at least one first converter circuit to a node which is maintained at a substantially constant electric potential;
a second converter circuit comprising a cascode amplifier having an input node corresponding to the node which has added thereto the current pulse from said at least one first converter circuit, said cascode amplifier converting the current pulse at the input node thereof to a voltage change, the voltage change being provided at an output of said second converter circuit; and
a synchronizing signal generating means which generates an internal synchronizing signal of the memory apparatus in response to the voltage change at an output of said second converter circuit.

5,619,152
CIRCUIT ARRANGEMENT FOR SUPPLYING AN ALTERNATING SIGNAL CURRENT
Knud Holtvoeth, and Andreas Wichern, both of Hamburg, Germany, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Mar. 14, 1995, Ser. No. 404,078
Claims priority, application Germany, Mar. 26, 1994, 44 10 560.6
Int. Cl.⁶ H03K *3/00*
U.S. Cl. 327—110 **14 Claims**



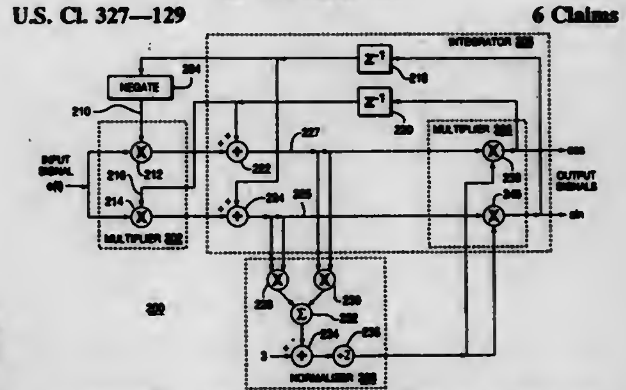
1. A circuit arrangement comprising: an output current path having one end coupled to a reference potential and another end coupled to an output for supplying an alternating signal current, wherein a parasitic inductance is present in a coupling between the output current path and the reference potential, and a compensation circuit for applying an alternating compensation current to a first node between the output current path and the parasitic inductance, which compensation current is in phase opposition to and of a magnitude at least substantially the same as that of the alternating signal current so as to compensate for the influence of the parasitic inductance.

5,619,153
FAST SWING-LIMITED PULLUP CIRCUIT
Michael A. Shenoy, San Jose; Ted Williams, and Robert K. Montoye, both of Los Gatos, all of Calif., assignors to HAL Computer Systems, Inc., Campbell, Calif.
Filed Jun. 28, 1995, Ser. No. 496,275
Int. Cl.⁶ H03K *19/094;19/0948*
U.S. Cl. 327—112 **7 Claims**



1. A pullup circuit comprising:
an internal node;
an inverter having an input lead coupled to said internal node; and
a pullup structure comprising:
a first transistor having a first current handling terminal coupled to a first voltage source and a second current handling terminal coupled to said internal node;
a second transistor having a gate coupled to an output lead of said inverter and a first current handling terminal coupled to a gate of said first transistor and a second current handling terminal coupled to said internal node; and
a third transistor having a gate coupled to said output lead of said inverter, a first current handling terminal coupled to said gate of said first transistor and a second current handling terminal coupled to a second voltage source.

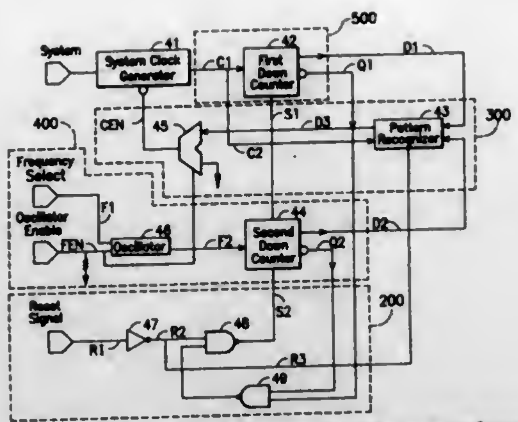
5,619,154
NUMERICAL VOLTAGE CONTROLLED OSCILLATOR
Christopher H. Strolle, Glenside, Pa., and Steven T. Jaffe, Freehold, N.J., assignors to David Sarnoff Research Center, Inc., Princeton, N.J.
Filed Oct. 10, 1995, Ser. No. 541,911
Int. Cl.⁶ H03D *3/24*
U.S. Cl. 327—129 **6 Claims**



1. A numerical voltage controlled oscillator for synthesizing a sine waveform having frequency and phase values in response to a variable control signal, where the frequency and phase values of the sine waveform are controlled by said variable control signal, the numerical voltage controlled oscillator (VCO) comprising:
an integrator for generating an estimated sine waveform and an estimated cosine waveform from said variable control signal;
a normalizer, connected to said integrator, for generating a normalization factor from said estimated sine waveform and said estimated cosine waveform; and
a multiplier, connected to said normalizer, for multiplying said normalization factor with said estimated sine waveform and said estimated cosine waveform, where said multiplication of said estimated sine waveform and said normalization factor produces said sine waveform; and multiplication of said estimated cosine waveform with said normalization factor produces a cosine waveform wherein, said integrator further comprises:
a first delay for delaying said sine waveform;.
a second delay for delaying said cosine waveform;
a first adder connected to said first delay, for adding said delayed sine waveform with a first integrator input signal to produce said estimated sine waveform; and
a second adder connected to said second delay for adding said delayed cosine waveform with a second integrator input signal to produce said estimated cosine waveform.

5,619,155
IC-CHIP OPERATION INHIBITOR
Song-Tine Wang, Hsinchu Hsien, Taiwan, assignor to United Microelectronics Corporation, Hsinchu, Taiwan
Filed Jun. 2, 1995, Ser. No. 460,225
Int. Cl.⁶ H03K *17/20;7/00*
U.S. Cl. 327—142 **25 Claims**

1. A frequency detector for an integrated circuit chip, comprising:
an actuating device for generating a compare enable signal;
a system oscillating frequency circuit for generating a system frequency for operating the chip;
a reference frequency circuit for generating a reference frequency;
a comparing circuit for comparing the system frequency and the reference frequency when actuated by the compare enable



signal then shutting down the chip when the system frequency is higher than the reference frequency; and

a reset circuit for setting the system oscillating frequency circuit and reference frequency circuit, and resetting the comparing circuit.

5,619,156

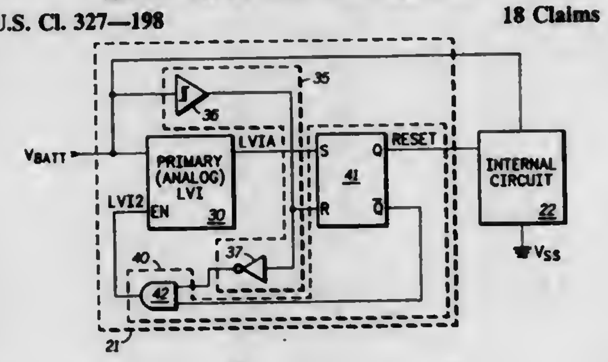
LOW VOLTAGE INHIBIT CIRCUIT AND INTEGRATED CIRCUIT USING SAME

Jaswinder S. Jandu, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 29, 1995, Ser. No. 520,450

Int. Cl.[6] H03K *17/22;17/30;* **H02H** *3/24*

U.S. Cl. 327—198 **18 Claims**



1. A low voltage inhibit circuit comprising:

a primary low voltage inhibit circuit having a sense input terminal for receiving a power supply voltage, an enable input terminal, and an output terminal for providing a first low voltage inhibit output signal indicative of whether a voltage at said sense input terminal exceeds a first predetermined voltage, when an enable signal received at said enable input terminal is active; and

a secondary low voltage inhibit circuit having a sense input terminal for receiving said power supply voltage, and an output terminal for providing a second low voltage inhibit output signal, said secondary low voltage inhibit circuit activating said second low voltage inhibit output signal to indicate that said power supply voltage is less than a second predetermined voltage;

said enable input terminal of said primary low voltage inhibit circuit is coupled to said output terminal of said secondary low voltage inhibit circuit such that said enable signal corresponds to said second low voltage inhibit output signal;

said second predetermined voltage exceeding said first predetermined voltage.

5,619,157

SYNCHRONIZING CIRCUIT WITH DYNAMIC AND STATIC LATCH CIRCUITRY

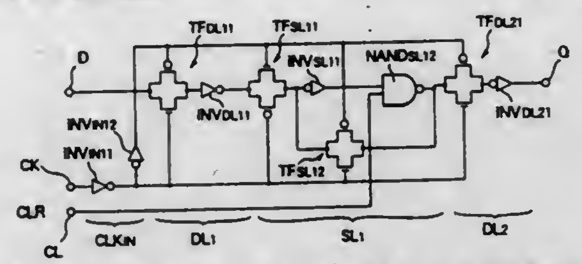
Ichiro Kumata; Takeshi Onodera, and Takenori Sugawara, all of Kanagawa, Japan, assignors to Sony Corporation, Japan

Filed Dec. 2, 1994, Ser. No. 352,840

Claims priority, application Japan, Dec. 14, 1993, 5-313706; Jan. 18, 1994, 6-003636; Mar. 31, 1994, 6-063807

Int. Cl.[6] H03K *3/355;* **G11C** *19/28*

U.S. Cl. 327—203 **9 Claims**



8. A synchronizing circuit, having a data input terminal and a data output terminal, which operates in synchronization with a clock signal, comprising:

a latch circuit means for receiving from said data input terminal input data at a point of change from a first level of said clock signal to a second level of said clock signal and outputting data through said data output terminal at a point of change from the second level to the first level,

wherein said latch circuit means consists of a first dynamic type latch circuit, a second dynamic type latch circuit, and a static type latch circuit,

wherein said static type latch circuit is sandwiched between said first dynamic type latch circuit and said second dynamic type latch circuit,

wherein said latch circuits are connected in cascade,

wherein an input of said first dynamic type latch circuit is coupled to said data input terminal and an output of said second dynamic type latch circuit is coupled to said data output terminal, and

wherein said static type latch circuit is provided with a clear signal input terminal and clears data held in said static type latch when a clear signal is applied to said clear signal input terminal.

5,619,158

HIERARCHICAL CLOCKING SYSTEM USING ADAPTIVE FEEDBACK

Humberto F. Casal; Joel R. Davidson; Hehching H. Li; Yuan C. Lo, all of Austin; Trong D. Nguyen, Webster; Campbell H. Snyder, Austin, and Nandor G. Thoma, Plano, all of Tex., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Aug. 18, 1995, Ser. No. 516,704

Int. Cl.[6] H03K *5/13*

U.S. Cl. 327—292 **8 Claims**

1. A method of synchronizing operations of components of an electronic system comprising the steps of:

a) converting an oscillator output signal to a master clock signal;

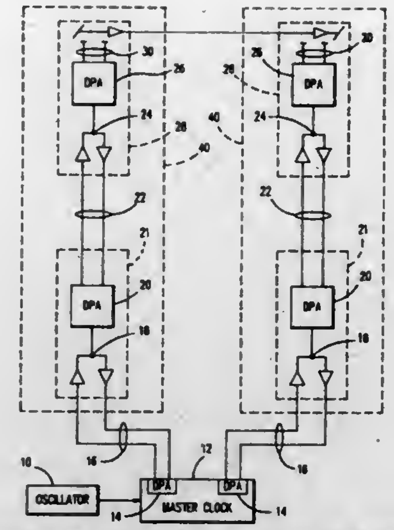
b) providing a first generation clock signal to a plurality of subsystems;

c) digitally aligning pulse phases of said first generation clock signal received at each subsystem with pulse phases of said master clock signal to produce an aligned first generation clock signal;

d) propagating said aligned first generation clock signal as received at each subsystem as second generation clock signals;

e) providing each said second generation clock signal to a plurality of electronic chips;

f) digitally aligning pulse phases of said second generation clock signal as received at each of said plurality of electronic chips



with pulse phases of said first generation click signal received by each said subsystem to produce an aligned second generation clock signal;

g) further propagating said aligned second generation clock signals as received at a plurality of electronic chips as third generation clock signals;

h) distributing said third generation clock signals to a plurality of utilizing circuits;

i) digitally aligning each said third generation clock signal as received by at least one utilizing circuit with pulses of said second generation clock signal as received by each chip to produce an aligned third generation clock signal.

5,619,159

SIGNAL PROCESSING DEVICE AND A METHOD FOR TRANSMITTING SIGNAL

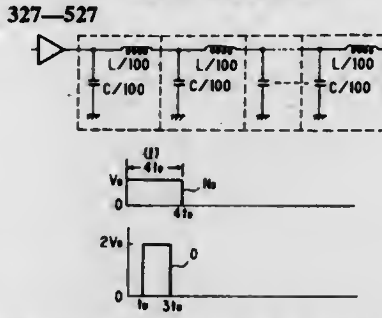
Nobuo Sasaki, and Toru Ishigaki, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 352,458, Dec. 9, 1994, abandoned, which is a continuation of Ser. No. 198,393, Feb. 18, 1994, abandoned, which is a continuation of Ser. No. 818,890, Jan. 10, 1992, abandoned. This application Aug. 9, 1995, Ser. No. 513,031

Claims priority, application Japan, Jan. 10, 1991, 3-012377

Int. Cl.[6] H03K *17/92*

U.S. Cl. 327—527 **10 Claims**



1. A superconductive transmission line capable of transmitting a pulse from an input end to an output end comprising:

an output end which is open or in high-impedance; and

said superconductive transmission line has a length approximately 20% to 30% of a product of a pulse width of the pulse and a phase velocity of said superconductive transmission line.

5,619,160

CONTROL CIRCUIT FOR SETTING A BIAS SOURCE AT PARTIAL STAND-BY

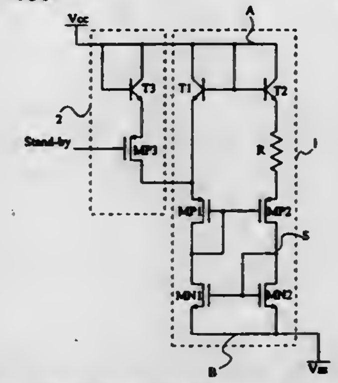
Philippe Sirito-Olivier, Grenoble, and Bernard Majoux, Meylan, both of France, assignors to SGS-Thomson Microelectronics S.A., Saint Genis Pouilly, France

Filed Jun. 22, 1995, Ser. No. 493,753

Claims priority, application France, Jun. 27, 1994, 94 08120

Int. Cl.[6] G05F *1/10*

U.S. Cl. 327—530 **20 Claims**



1. A stand-by control circuit, for a ΔVbe/R bias source including two bipolar transistors each defining a branch of the bias source and, in each branch, an upper p-channel and a lower n-channel MOS transistor serial connected with the bipolar transistor of the branch, the stand-by control circuit comprising:

a partial stand-by device to connect an additional bipolar transistor in parallel to one of the two bias source bipolar transistors; and

a logic device to receive a two-state stand-by control signal including an active load inverter which includes an n-channel MOS transistor constituting an active load having a gate and a source respectively connected to gates and sources of the bias source lower n-channel MOS transistors whereby the bias source controls the active load, and an output of the logic device controlling, as a function of the stand-by control signal state, the parallel connection of the partial stand-by device additional bipolar transistor.

5,619,161

DIFFRENTIAL CHARGE PUMP WITH INTEGRATED COMMON MODE CONTROL

Ilya I. Novof, Essex Junction, Vt., and Donald E. Strayer, Owego, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 298,696, Aug. 31, 1994. This application Mar. 5, 1996, Ser. No. 611,313

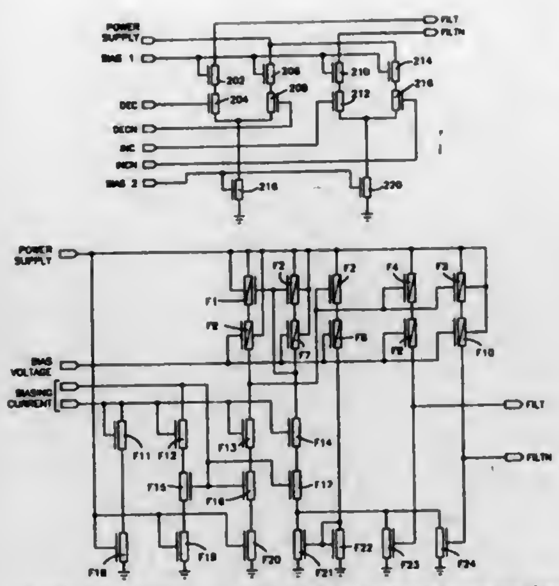
Int. Cl.[6] H03L *7/08*

U.S. Cl. 327—535 **7 Claims**

1. A differential charge pump for use in a phase locked loop circuit, and which pump is powered by a power supply, comprising, a pulse generating circuit connected to receive increment and decrement pulses from a pulse generating source and to output said increment and decrement pulses as a differential output voltage at a differential output;

a common mode circuit having a gain, in circuit connection with said differential output for regulating a common mode voltage on said differential output without changing the differential output voltage at said differential output;

said common mode circuit comprising a feedback loop circuit for controlling the gain of said common mode circuit; said feedback loop circuit comprising:



a cascode current source circuit for supplying current based on said differential output voltage.

5,619,162
DRAM USING WORD LINE POTENTIAL CIRCUIT CONTROL

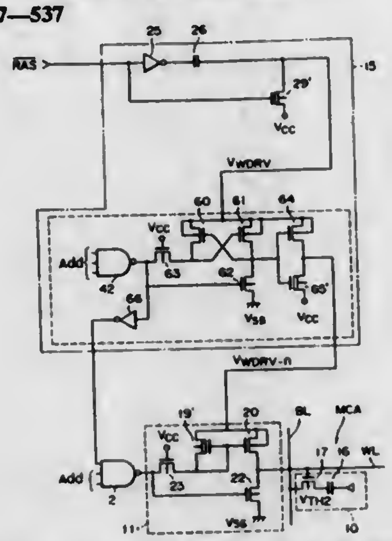
Masaki Ogihara, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 240,368, May 10, 1994, Pat. No. 5,550,504, which is a division of Ser. No. 757,632, Sep. 11, 1991, Pat. No. 5,335,205. This application Jun. 5, 1996, Ser. No. 658,572

Claims priority, application Japan, Sep. 12, 1990, 2-239893

Int. Cl.⁶ G05F *3/16*; G11C *7/00*

U.S. Cl. 327—537 **4 Claims**



3. A signal control circuit for generating an output potential comprising:
a signal line for receiving a first potential and a second potential obtained by boosting the first potential;
a depletion MOS transistor having a control gate for receiving a first input signal, a first current terminal connected to a first potential supplying source for supplying a third potential, and a second current terminal connected to said signal line; and
a capacitor having a first electrode for receiving a second input signal and a second electrode connected to said signal line.

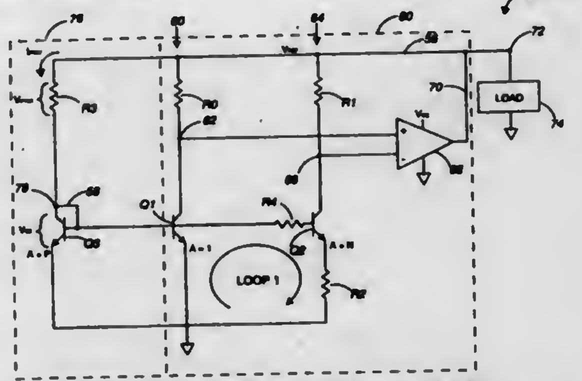
5,619,163
BANDGAP VOLTAGE REFERENCE AND METHOD FOR PROVIDING SAME

Ronald B. Koo, Mountain View, Calif., assignor to Maxim Integrated Products, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 406,309, Mar. 17, 1995. This application May 9, 1996, Ser. No. 644,563

Int. Cl.⁶ G05F *1/10*

U.S. Cl. 327—539 **28 Claims**



1. A bandgap voltage reference circuit, comprising:
a series connection of a PTAT voltage drop resistor with a V_{BE} voltage drop transistor, such that a bandgap voltage $V_{REF}=V_{PTAT}+V_{BE}$ can be developed across said series connection, said V_{PTAT} equals a voltage drop across said PTAT voltage drop resistor and said V_{BE} equals a voltage drop across said V_{BE} voltage drop transistor; and
a PTAT current generator including a pair of bipolar transistors which derive their base currents from a base current node between said PTAT voltage drop resistor and said V_{BE} voltage drop transistor, a first bipolar transistor of said pair of bipolar transistor having an emitter coupled directly to an emitter of said V_{BE} voltage drop transistor, said PTAT current generator being coupled to said series connection to provide a PTAT current to flow through said series connection, said PTAT current being compensated by said PTAT current generator to counteract an effect of said base currents flowing through said PTAT voltage drop resistor.

5,619,164
PSEUDO GROUND LINE VOLTAGE REGULATOR

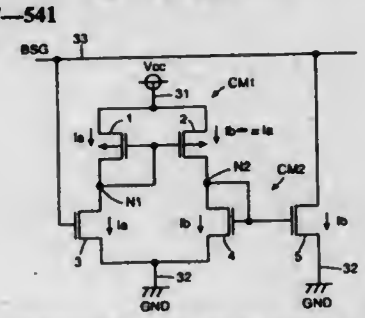
Shigeki Tomishima, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 8, 1995, Ser. No. 524,928

Claims priority, application Japan, Nov. 25, 1994, 6-291078

Int. Cl.⁶ G05F *1/10*

U.S. Cl. 327—541 **7 Claims**



1. A semiconductor device having an internal ground potential boosted from an external ground potential comprising:
an internal circuit connected between a line of a power supply potential and a line of said internal ground potential for performing a predetermined operation;
a first transistor having its input electrode connected to the line of said internal ground potential, and rendered conductive when the voltage at its input electrode exceeds its threshold voltage;

a first current mirror circuit for supplying a current which is α times a current flowing through said first transistor, wherein α is a constant; and
a second current mirror circuit for letting a current dependent upon the output current from said first current mirror circuit flow out from the line of said internal ground potential to a line of said external ground potential.

5,619,165
VOLTAGE THRESHOLD DETECTION CIRCUIT WITH VERY LOW CONSUMPTION

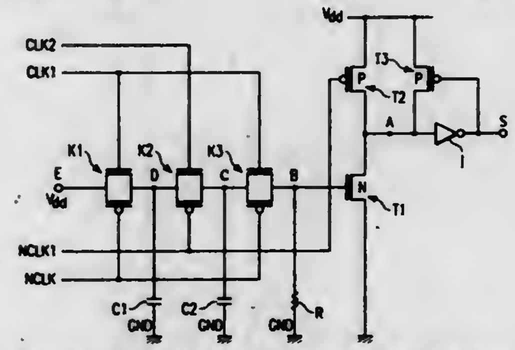
Richard P. Fournel, Trets, and Laurent Sourgen, Aix-en-Provence, both of France, assignors to SGS-Thomson Microelectronics, S.A., Gentilly Cedex, France

Continuation of Ser. No. 53,892, Apr. 27, 1993, Pat. No. 5,440,263. This application Apr. 6, 1995, Ser. No. 417,852

Claims priority, application France, Apr. 30, 1992, 92 05425

Int. Cl.⁶ G05F *11/00*

U.S. Cl. 327—546 **34 Claims**



1. A circuit for the detection of the overrunning of the level of an input voltage at an input, said circuit comprising:
at least one first capacitor and one second capacitor and a set of switches actuated successively and interconnected with said capacitors and a detection transistor so that:
in a first clock phase, said switches connect the input voltage to a terminal of said first capacitor and transfer the voltage present at a terminal of said second capacitor to the gate of said detection transistor, said first and second capacitors being isolated from each other; and
in a second clock phase, said switches connect said first and second capacitors so that said second capacitor is charged by said first capacitor, said capacitors being isolated from said input and from the gate of said detection transistor;
means for precharging the drain of said detection transistor during said second clock phase;
means for discharging said second capacitor during said first clock phase, and
latch circuitry connected to latch a logic level of the drain of said detection transistor to an output of said circuit;
wherein said detection transistor is connected to be powered during some, but not all, portions of said first and second clock phases.

5,619,166
ACTIVE FILTERING METHOD AND APPARATUS

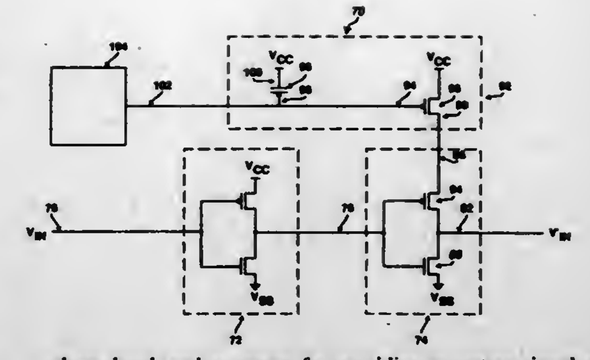
Eric Gross, Colorado Springs, Colo., assignor to Cypress Semiconductor Corporation, San Jose, Calif.

Division of Ser. No. 151,415, Nov. 12, 1993, Pat. No. 5,399,960. This application Dec. 2, 1994, Ser. No. 348,589

Int. Cl.⁶ H03K *5/00;17/16*

U.S. Cl. 327—552 **10 Claims**

1. An active filter, used to attenuate noise presented at an input terminal of said active filter, comprising:
(a) a level-shifting inverter having an input coupled to said input of said active filter for receiving an input signal at a first



voltage level, and an output for providing an output signal at a second voltage level, said level-shifting inverter converting the input signal at the first voltage level into the output signal at the second voltage level;
(b) a driver inverter having an input coupled to said output of said level-shifting inverter, an output, and an adjustable switching speed, said driver inverter providing drive to the input signal and generating a signal indicative of noise conditions;
(c) means for detecting changes in said noise conditions; and
(d) voltage controlled means, coupled to the detecting means to receive the signal indicative of noise conditions and coupled to said driver inverter, said voltage controlled means decreasing said switching speed of said driver inverter as noise conditions worsen;
(e) wherein said output of said driver inverter is an output of said active filter.

5,619,167
MAXIMUM LIKELIHOOD DECODING COHERENT DETECTION METHOD

Fumiyuki Adachi, Yokohama, Japan, assignor to NTT Mobile Communications Network, Inc., Tokyo, Japan

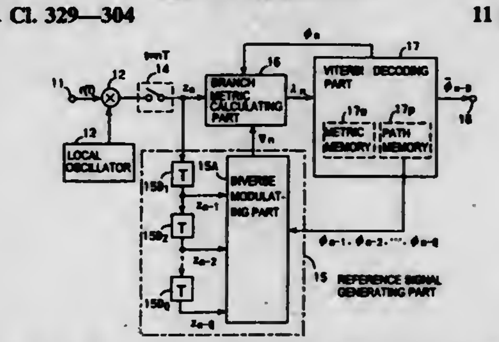
PCT No. PCT/JP95/01262, § 371 Date Dec. 22, 1995, § 102(e) Date Dec. 22, 1995, PCT Pub. No. WO96/00475, PCT Pub. Date Jan. 4, 1996

PCT Filed Jun. 23, 1995, Ser. No. 569,261

Claims priority, application Japan, Jun. 23, 1994, 6-141834

Int. Cl.⁶ H04L *27/227*

U.S. Cl. 329—304 **11 Claims**



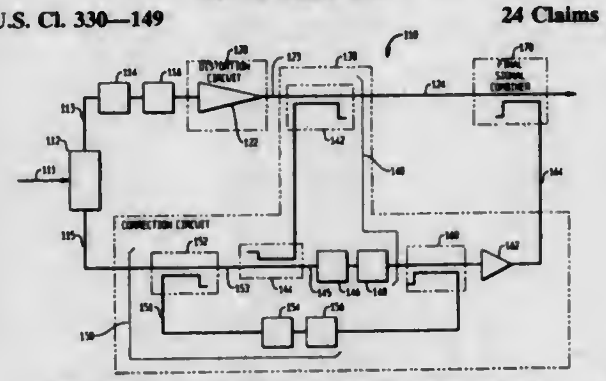
4. A maximum likelihood decoding coherent detection method for an M-phase modulated signal, comprising the steps of:
(a) sampling a received signal with a transmitted symbol period to obtain a received signal sample z_n at time n;
(b) calculating a reference signal η_n at time n−1 by the following equation using a decoded sequence {fheightϕ_{n-q};q=1,2, . . . , Q−1, Q}

$$\eta_n = \sum_{q=1}^{Q} z_{n-1}\exp(-j\bar{\phi}_{n-q});$$

(c) calculating a branch metric $\lambda(S_{n-1}\rightarrow S_n)$ that represents the likelihood of transition from a state S_{n-1} at time n−1 to a state S_n at time n, using the inner product of said reference signal η_n phase-rotated by ϕ_n and said received signal sample z_n; and

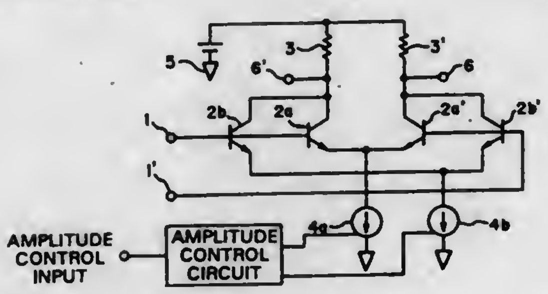
(d) repeating said step (c) for all of M states S_n to obtain branch metrics, then comparing them in terms of magnitude to obtain the state S_n of the maximum branch metric, and outputting it as a decoded phase fheightϕ_n corresponding to a decoded symbol.

5,619,168
DISTORTION CREATION AND REDUCTION CIRCUIT
Robert E. Myer, Denville, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.
Filed Aug. 7, 1995, Ser. No. 512,002
Int. Cl.^{6} H03F *1/26*
U.S. Cl. 330—149 **24 Claims**



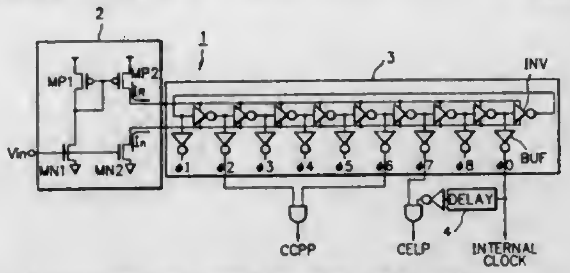
1. A distortion creation and reduction circuit comprising:
a distortion circuit having an input and an output, which receives a first carrier signal at its input and adds a first distortion signal to form a first distorted carrier signal comprised of a first carrier signal component and a first distortion signal component at its output,
a correction circuit having an input and an output, which receives a second carrier signal at its input and adds a second distortion signal to form a second distorted carrier signal comprised of a second carrier signal component and a second distortion signal component at its output, and
a final signal combiner having two inputs and an output, which combines the first and the second distorted carrier signals,
wherein the first and second distorted carrier signals are formed and combined so that the first and second distortion signal components destructively combine and the first and second carrier signal components constructively combine.

5,619,169
VARIABLE GAIN DIFFERENTIAL AMPLIFIER
Satoshi Matsuura, Tokyo, Japan, assignor to Ando Electric Co., Ltd., Tokyo, Japan
Filed Sep. 12, 1995, Ser. No. 526,884
Claims priority, application Japan, Sep. 30, 1994, 6-261735
Int. Cl.^{6} H03F *3/45*
U.S. Cl. 330—254 **13 Claims**



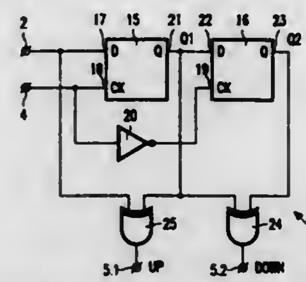
1. A differential amplifier comprising:
a first switching element having an input terminal, an output terminal and a control terminal;
a second switching element having an input terminal, an output terminal and a control terminal;
a first constant current source connected to output terminals of said first and second switching elements;
a third switching element having an input terminal, an output terminal and a control terminal, wherein said control terminal is connected to said control terminal of said first switching element and said input terminal is connected to said input terminal of said first switching element;
a fourth switching element having an input terminal, an output terminal and a control terminal, wherein said control terminal is connected to said control terminal of said second switching element and said input terminal is connected to said input terminal of said second switching element;
resistors connected between said input terminals of said first and second switching elements and a voltage source;
a second constant current source connected to output terminals of said third and fourth switching elements; and
an amplitude control circuit connected to said first and second constant current sources for asymmetrically varying the current of said first and second constant current sources in response to an amplitude control input signal so as to control the gain of the differential amplifier.

5,619,170
PLL TIMING GENERATOR WITH VOLTAGE CONTROLLED OSCILLATOR
Kazuyuki Nakamura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Feb. 16, 1995, Ser. No. 390,222
Claims priority, application Japan, Apr. 19, 1994, 6-079085
Int. Cl.^{6} H03K *3/017;5/04*
U.S. Cl. 331—1 A **3 Claims**



1. A phase lock loop timing generator, comprising:
a phase comparator, a charging pump, a low-pass filter, and a voltage controlled oscillator (VCO), the phase comparator, the charging pump and the low-pass filter connected in a series arrangement and configured to detect a phase difference between an external clock signal and an internal clock signal and based on the detected phase difference, and to generate an input voltage Vin for the VCO,
the VCO including a voltage-current converter and a current-limited ring oscillator, in the voltage-current converter, a variation of the input voltage Vin being converted into control currents Ip and In, the current-limited ring oscillator having a plurality of inverters connected in series in a ring arrangement,
wherein phase-shifted signals output from nodes of the inverters are logically calculated to produce clock cycle proportional pulses (CCPP) proportional to a clock cycle of the external clock signal cycle,
buffers, connected on a one-to-one basis to the nodes of the inverters, for making loads of the inverters uniform to equalize delay times, and
a delay circuit connected to the buffers for providing a clock edge lookahead pulse (CELP) which is equal to a minimum pulse width of the internal clock signal,
wherein by using the phase-shifted signals output from the nodes of first and second predetermined stages of the inverters from which the internal clock signal is output, a timing prior to a reference clock edge is generated.

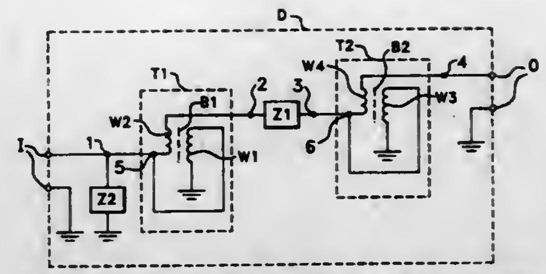
5,619,171
PHASE-LOCKED LOOP, PHASE COMPARATOR FOR USE IN THE PHASE-LOCKED LOOP, AND REPRODUCING DEVICE INCLUDING THE PHASE-LOCKED LOOP
Albert M. A. Rijckaert, and Johannes J. L. M. Van Vlerken, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Sep. 26, 1995, Ser. No. 534,092
Claims priority, application European Pat. Off., Sep. 28, 1994, 94202806
Int. Cl.^{6} H03D *13/00;* **H03L** *7/085*
U.S. Cl. 331—1 A **24 Claims**



20. A phase comparator having a first input coupled to an input terminal, a second input, and output means, characterized in that the phase comparator is adapted to derive a first pulse and a second pulse in response to a signal transition from a first value to a second value in a binary signal applied to the first input and an oscillation signal applied to the second input, said first pulse having a pulse width which is a measure of a phase difference between the binary signal and the oscillation signal, and said second pulse having a pulse width proportional to ½ f_0, where f_o is a frequency of the oscillation signal, wherein the phase comparator comprises a first flip-flop and a second flip-flop, each of said first and second flip-flops having a first inputs, a second input and an output, the first input and the second input of the phase comparator being coupled to the first input and the second input respectively, of the first flip-flop, the output of the first flip-flop being coupled to both the first input of the second flip-flop and the first output of the phase comparator, the second input of the phase comparator also being coupled to the second input of the second flip-flop, and the output of the second flip-flop being coupled to the second output of the phase comparator, the phase comparator further comprising a first gate circuit having a first input and a second input coupled to the outputs of the first and the second flip-flop, respectively, and having an output coupled to the second output of the phase comparator, a second gate circuit having a first input and a second input coupled to the first input and the output, respectively, of the first flip-flop, and having an output coupled to the first output of the phase comparator, and a third gate circuit having a first input and a second input coupled to the second input of the phase comparator and the output of the first gate circuit, respectively, and having an output coupled to the second output of the phase comparator.

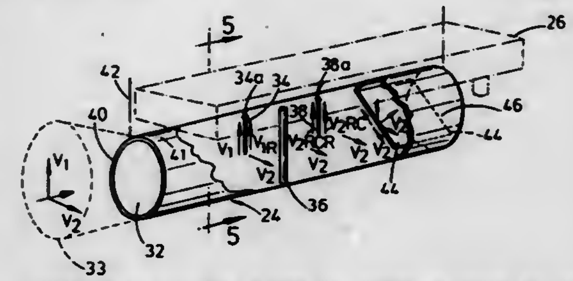
5,619,172
HIGH IMPEDANCE RATIO WIDEBAND TRANSFORMER CIRCUIT
Robert L. Reynolds, Platteville, Colo., assignor to Vari-L Company, Inc., Denver, Colo.
Filed Sep. 14, 1995, Ser. No. 527,861
Int. Cl.^{6} H03H *7/42;7/38*
U.S. Cl. 333—25 **26 Claims**

1. A high impedance ratio wideband transformer circuit comprising:
transmission line transformer means having a first port and a second port, said transmission line transformer means including first and second transmission line transformers connected in series so that the impedance ratio of said first transmission line transformer is multiplied by the impedance ratio of said



second transmission line transformer to reduce the length of said secondary windings of said transmission line transformers thereby increasing the range of frequency,
a first reactive impedance connected between said first and second transmission line transformers, and
a second reactive impedance connected at said first port with the values of said first and second reactive impedances being selected to optimize an impedance match from said first port to said second port for a selected turns ratio of said transmission line transformer means and a desired transformation ratio and frequency response to provide a transformation ratios of above about 4:1 over a range of frequencies of about 5 MHz to 1.2 MHz.

5,619,173
DUAL POLARIZATION WAVEGUIDE INCLUDING MEANS FOR REFLECTING AND ROTATING DUAL POLARIZED SIGNALS
Gerard King; Andrew P. Baird, both of Troon, and Stephen J. Flynn, Dunure, all of Scotland, assignors to Cambridge Computer Limited, United Kingdom
PCT No. PCT/GB92/01065, § 371 Date May 2, 1994, § 102(e) Date May 2, 1994, PCT Pub. No. WO92/22938, PCT Pub. Date Dec. 23, 1992
PCT Filed Jun. 15, 1992, Ser. No. 167,893
Claims priority, application United Kingdom, Jun. 18, 1991, 9113090
Int. Cl.^{6} H01P *1/161;1/165*
U.S. Cl. 333—125 **12 Claims**



1. Apparatus for receiving at least two signals including first and second signals which are orthogonally polarized with respect to each other, said apparatus comprising a waveguide including an interior having a width into which said at least two orthogonally polarized signals are received for transmission therealong, said orthogonally polarized signals propagating along a downstream direction in said waveguide, said waveguide having;
a first probe extending from a wall of the waveguide into the interior of the waveguide,
a second probe located downstream of said first probe and extending from said wall of said housing into the interior of said waveguide, said first and second probes being oriented to define a longitudinal plane, said first probe being adapted to receive said first orthogonally polarized signal traveling in said longitudinal plane,
reflector means including a cylindrical post extending from the wall of the waveguide, said post having a length slightly less than the interior width of the waveguide, said reflector means located between said first and second probes and lying in said longitudinal plane for reflecting said first signal in a first plane

orthogonal to said longitudinal plane back to said first probe means and for allowing said second signal in a second plane orthogonal to said longitudinal plane to pass downstream along the waveguide,

reflecting and rotating means located downstream of said second probe for receiving, rotating and reflecting said second orthogonally polarized signal back along said waveguide such that said rotated and reflected signal is received by said second probe,

the first and second probes having respective first and second outputs located on an outside of the waveguide, the first and second outputs substantially lying in said longitudinal plane.

5,619,174

NOISE FILTER COMPRISING A SOFT MAGNETIC ALLOY RIBBON CORE

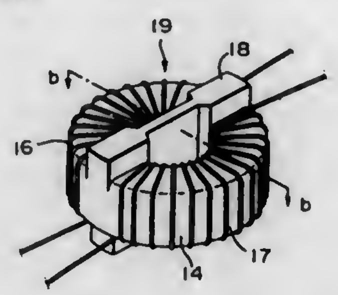
Youichi Kimura; Akihiro Makino, both of Niigata; Tsuyoshi Masumoto, and Akihisa Inoue, both of Miyagi, all of Japan, assignors to Alps Electric Co., Ltd.; Research Development Corp. of Japan, both of Tokyo, and Tsuyoshi Masumoto, Sendai, all of Japan

Filed Jul. 29, 1994, Ser. No. 283,133

Claims priority, application Japan, Jul. 30, 1993, 5-190673

Int. Cl.⁶ H03H *7/09;* **H01F** *27/02*

U.S. Cl. 333—181 **53 Claims**



1. A noise filter comprising:

an annular magnetic core made of a soft magnetic alloy ribbon consisting of Fe, B and at least one element selected from a group consisting of Ti, Zr, Hf, V, Nb, Ta, Mo, W, Cr, Ru, Rh, Ir, Co and Ni, wherein at least 50% of said soft magnetic alloy ribbon is composed of fine grains of body-centered cubic structure having an average grain size of 30 nm or below;

a casing for accommodating said magnetic core;

a pair of coils separated from each other; and

an electrical circuit connecting to a core element made up of said magnetic core, said casing and said coils.

5,619,175

SURFACE ACOUSTIC WAVE FILTER WITH REFLECTORS AND RESISTORS

Josef Bauregger, Aying, Germany, assignor to Siemens Matsushita Components GmbH & Co. KG, Munich, Germany

Filed Apr. 24, 1995, Ser. No. 427,152

Claims priority, application Germany, Apr. 22, 1994, 44 14 160.2

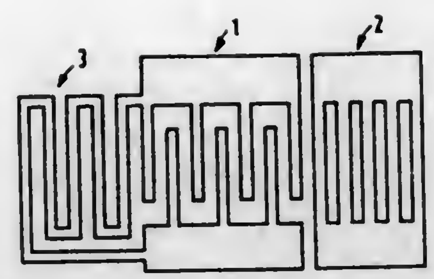
Int. Cl.⁶ H03H *9/64*

U.S. Cl. 333—195 **3 Claims**

1. A filter operating with acoustical harmonic waves, comprising:

at least one resonator formed of an interdigital converter component and reflector components; and

an electrical resistor connected in parallel to said interdigital converter component for protecting against electrostatic discharge from contact with electrostatically charged parts, said



electrical resistor being integrated with at least one of said reflectors of said resonator.

5,619,176

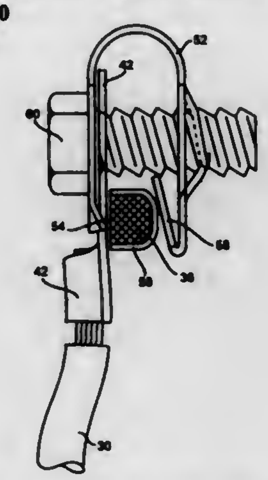
SYSTEM FOR COUPLING EXTERNAL LEADS TO A MULTITAP TRANSFORMER

Eric L. Hays, Oshkosh, Wis., assignor to Square D Company, Palatine, Ill.

Filed Dec. 21, 1995, Ser. No. 576,652

Int. Cl.⁶ H01F *15/10;21/12*

U.S. Cl. 336—150 **6 Claims**



1. A system of coupling an external conductor to an inductive apparatus having a coil formed from a continuous conductor, said system comprising:

A. a plurality of taps formed from said continuous conductor during winding of said coil, said taps formed as an external bump on an outer winding of said coil, each of said taps having an exterior edge devoid of insulation functional as a point of coupling said external conductor;

B. a lug coupled to an end of said external conductor;

C. a fastener having threads;

D. an elongated C-clamp having a top, a side, and a bottom portion, said top portion have a clearance opening, said bottom portion having a tapered opening in line with and extending away from said clearance opening, said tapered opening functional as a threaded hole for receiving said fastener; and

E. wherein said C-clamp is inserted over one of said formed taps and said lug is inserted between said top portion of said C-clamp and said exterior edge devoid of insulation of said one tap, and wherein said fastener is inserted through said clearance opening in said top portion of said C-clamp, though said lug, and into said tapered opening of said C-clamp, said fastener rotated to compress said C-clamp to secure said lug to said one tap to couple said external conductor to said formed tap.

5,619,177

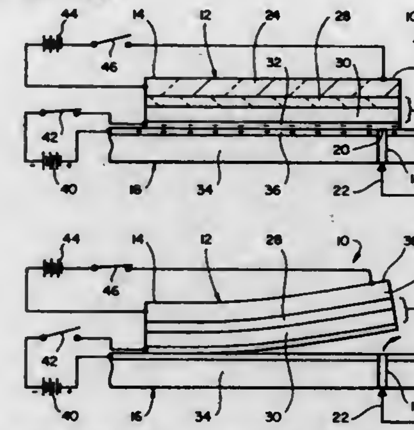
SHAPE MEMORY ALLOY MICROACTUATOR HAVING AN ELECTROSTATIC FORCE AND HEATING MEANS

A. David Johnson, San Leandro; Barry Block, Los Altos, and Philip Mauger, Santa Clara, all of Calif., assignors to MJB Company, San Leandro, Calif.

Filed Jan. 27, 1995, Ser. No. 381,681

Int. Cl.⁶ H01H *61/06*

U.S. Cl. 337—140 **21 Claims**



1. A microactuator for controlling an element between different actuation modes, the microactuator comprising the combination of (a) a base; (b) an actuator member which extends along a longitudinal axis and has a proximal end carried by the base and a distal end, said actuator member comprising an elastic substrate, a shape change layer comprised of a shape memory alloy material having a phase change transition temperature, said material deforming the shape change layer by change in volume from a low temperature shape toward a memory shape responsive to the material being heated through said phase change transition temperature, and means for mounting the shape change layer onto the substrate so that said change in volume causes the actuator member to bend along said longitudinal axis in a first direction for moving said distal end relative to the base, said mounting of the substrate onto the shape change layer establishing a stress force in the substrate which is applied against the shape change layer in a second direction which opposes said first direction of bending of the actuator member and with the stress force moving the distal end in the second direction when the shape memory alloy material is below its phase change transition temperature, and with said element being changed between said actuation modes responsive to movement of the distal end to either of its first or second positions; (c) clamping means for applying an electrostatic force between the distal end and base for selectively clamping the distal end to the base; and (d) heating means for heating the shape memory alloy material through the phase change transition temperature.

5,619,178

Patent Not Issued For This Number

5,619,179

METHOD AND APPARATUS FOR ENHANCING ELECTRONICALLY GENERATED SOUND

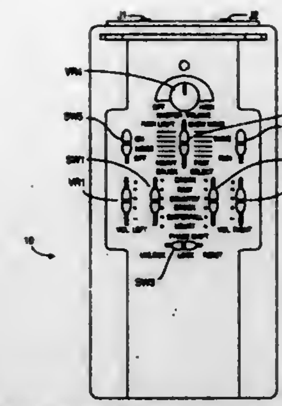
Blaine Smith, Lincoln City, Oreg., assignor to Sharper Image Corporation, San Francisco, Calif.

Filed Oct. 31, 1994, Ser. No. 332,567

Int. Cl.⁶ G08B *3/10*

U.S. Cl. 340—384.72 **20 Claims**

1. An electronic system for generating sound on a first sound channel and on a second sound channel, comprising:



a resettable first generator outputting, when not in a reset mode, a first loop of stored sound at a first clock rate to said first sound channel;

a resettable second generator outputting, when not in a reset mode, a continuous second loop of stored sound at a second clock rate to said second sound channel;

said second generator being configured to exit reset mode and thus begin to output said second loop a ΔRESET time sooner than said first generator exits reset mode and begins to output said first loop; and

a mode switch coupled to said first generator and to said second generator;

said mode switch providing at least one mode configuration selected from the group consisting of (i) a lock configuration in which said first clock rate and said second clock rate are equal, and (ii) an unlock configuration in which said first clock rate and said second clock rate differ;

wherein user-perceived spatial separation of sound generated by said system may be changed with said mode switch.

5,619,180

APPARATUS FOR PROVIDING VIBROTACTILE SENSORY SUBSTITUTION OF FORCE FEEDBACK

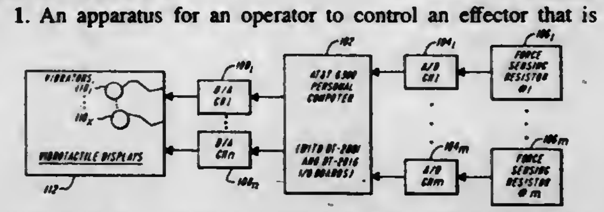
Michael J. Massimino, 15930 Manor Sq. Dr., Houston, Tex. 77062; Thomas B. Sheridan, 32 Sewall St., Newton, Mass. 02165, and Nicholas J. M. Patrick, 13031 123rd La. NE., Apt. D-301, Kirkland, Wash. 98034

Continuation of Ser. No. 4,761, Jan. 14, 1993, Pat. No. 5,451,924. This application Nov. 3, 1993, Ser. No. 147,213

Int. Cl.⁶ G08B *3/00*

U.S. Cl. 340—407.1 **24 Claims**

1. An apparatus for an operator to control an effector that is



remote from the operator to interact with an environment that is also remote from the operator by operator manipulation of an input device in an environment local to the operator, said apparatus comprising:

a. at least one means for sensing an amplitude of at least one force arising between the remote effector and the remote environment;

b. means for generating a force feedback signal that corresponds to the amplitude of said sensed force;

c. means for transmitting said force feedback signal from said remote environment to the location of said operator;

d. means for transducing said force feedback signal into a vibrotactile sensory substitution signal to which the operator is sensitive; and

e. means for presenting said transduced sensory substitution signal to a vibrotactile system of the operator that is receptive

to said vibrotactile sensory substitution signal such that a full range of force amplitude may be represented by said means for presenting said transduced vibrotactile sensory substitution signal.

5,619,181

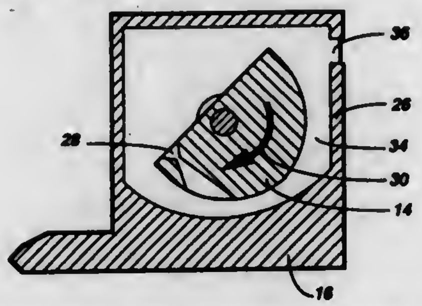
VIBRATORY ALERTING DEVICE WITH AUDIBLE SOUND GENERATOR

Bradley A. Murray, West Palm Beach, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 21, 1994, Ser. No. 342,469

Int. Cl.⁶ H04B *3/36*

U.S. Cl. 340—407.1 **5 Claims**



1. An alerting device enclosed in a housing, for use in vibrating a communication device having a decoder for generating an alert signal in response to detecting received information, said alerting device comprising:

means for rotating a shaft about a first axis of rotation, the means for rotating being responsive to the alert signal for rotating said shaft;

an eccentric weight coupled to said shaft and capable of being rotated about said first axis to generate tactile vibration in the housing; and

said eccentric weight coupled to an orifice for generating an audible alert by air movement produced in response to said eccentric weight being rotated about said first axis.

5,619,182

CONFIGURABLE COLOR SELECTION CIRCUIT FOR CHOOSING COLORS OF MULTI-COLORED LEDS IN TOYS AND SECONDARY AUTOMOTIVE FLASHER/ BRAKE INDICATORS

Charles L. R. Robb, 976 S. 900 East, Salt Lake City, Utah 84105

Filed Jan. 18, 1996, Ser. No. 588,323

Int. Cl.⁶ B60Q *1/34*

U.S. Cl. 340—479 **14 Claims**

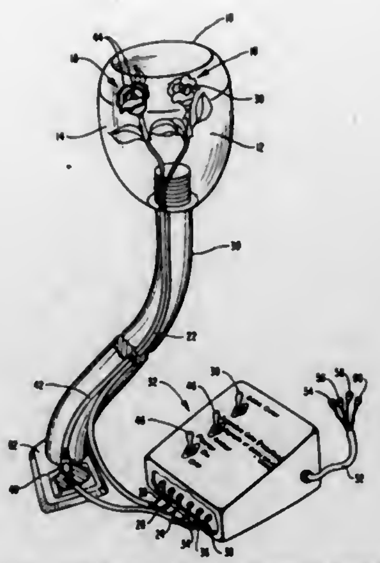
1. An automotive flasher/brake indicator accessory for secondary indication of the status of an automobile flasher operation and brake operation in an automobile having a braking means and associated signal, left flashing means and associated signal, and right flashing means and associated signal, the automotive flasher/ brake indicator accessory comprising:

an ornamental housing having at least two indication areas;

at least two current driven tri-color LED indicators each capable of emitting a first, second, and third color and mounted within the housing for illuminating the respective indication areas, at least one of the tri-color LED indicator means corresponding to left flasher operation and brake operation and at least another tri-color LED indicator means corresponding to right flasher operation and brake operation;

means for receiving electronic signal information representing the automobile right flasher operation, left flasher operation, and brake operation;

tri-color LED driving circuitry, electrically connected to the respective tri-color LED indicators and electrically connected and responsive to the means for receiving the signal information, the tri-color LED driving circuitry causing respective tri-color LED indicators to emit a base color for normal operation and a secondary color for brake operation and/or respective flasher operation;



a base color switching means for selecting a base color from a first or second color; and

secondary color switching means for selecting a secondary color from the previously non-selected first or second color and a third color.

5,619,183

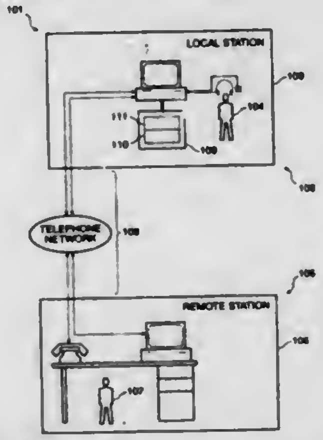
VIDEO AUDIO DATA REMOTE SYSTEM

Richard C. Ziegra, 1511 Coronach Ave., Sunnyvale, Calif. 94087, and Steven C. Hurtado, Cupertino, Calif., assignors to Richard C. Ziegra, Sunnyvale, Calif.

Filed Sep. 12, 1994, Ser. No. 304,679

Int. Cl.⁶ G08B *26/00*

U.S. Cl. 340—505 **20 Claims**



7. A system, comprising

a local station coupled to a local apparatus disposed to be operated by a local operator, said local station comprising an audio sensor, a video sensor, a control signal feed and a data signal feed coupled to said local apparatus, and an audio receiver;

an intermediate station disposed to be operated by an intermediate advisor, said intermediate station comprising an audio sensor, a video sensor, and an audio receiver;

a remote station disposed to be operated by a remote advisor, said remote station comprising an audio sensor, a monitor, a processor, and an audio receiver;

a first communication link coupled to said local station and said intermediate station; and

a second communication link coupled to said intermediate station and said remote station;

wherein said local station audio sensor and said remote station audio receiver are disposed to recover local sound and deliver said local sound to said intermediate advisor, said local station video sensor and said remote station monitor are disposed to recover local images and deliver said local images to said intermediate advisor, and said intermediate station audio sensor and said local station audio receiver are disposed to recover intermediate sound and deliver said intermediate sound to said local operator;

wherein said intermediate station audio sensor and said remote station audio receiver are disposed to recover intermediate sound and deliver said intermediate sound to said remote advisor, said intermediate station video sensor and said remote station monitor are disposed to recover intermediate images and deliver said intermediate images to said remote advisor, and said remote station audio sensor and said intermediate station audio receiver are disposed to recover remote sound and deliver said remote sound to said intermediate operator; and

wherein said local station control signal feed and data signal feed and said intermediate station monitor are disposed to recover control signals and data signals from said local apparatus and deliver said control signals and data signals to said intermediate station monitor;

wherein said local station control signal feed and data signal feed and said remote station monitor are disposed to recover control signals and data signals from said local apparatus and deliver said control signals and data signals to said remote station monitor;

whereby said intermediate advisor and said remote advisor may view and hear stimuli available to said local operator, said local operator and said intermediate advisor are capable of communicating, said intermediate advisor and said remote advisor are capable of communicating, and said intermediate advisor and said remote advisor may view and control said local apparatus.

5,619,184

SYSTEM FOR MONITORING DISASTER PREVENTION

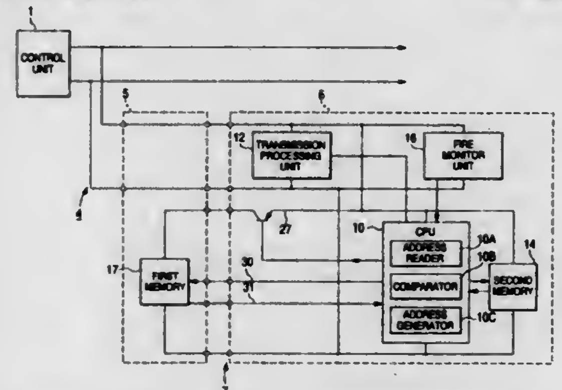
Yasuo Torikoshi, and Naoki Kosugi, both of Tokyo, Japan, assignors to Hochiki Corporation, Tokyo, Japan

Filed Oct. 6, 1995, Ser. No. 540,185

Claims priority, application Japan, Oct. 7, 1994, 6-243595

Int. Cl.⁶ G08B *26/00*

U.S. Cl. 340—506 **14 Claims**



1. A disaster prevention monitoring system comprising a control unit for controlling said disaster prevention monitoring system, and a fire sensor including a sensor base connected to said control unit via a sensor line and a sensor body which is fitted to said sensor base;

said sensor base including:

first storing means for storing first address information of said sensor base;

said sensor body including:

a transmission processing unit which controls data transmission between said control unit and said fire sensor;

a fire monitoring unit for monitoring an occurrence of fire;

second storing means for storing second address information of said sensor body;

reading means for reading the first address information in said first storing means when a power is turned on, and reading the second address information in said second storing means;

comparing means for comparing the read pieces of first and second address information with each other; and

address generating means for, when a comparison result by said comparing means indicates agreement, leaving the second address information as valid data, and for, when the comparison result indicates disagreement, writing the first address information into said second storing means.

5,619,185

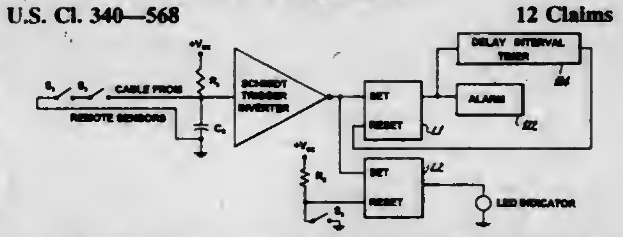
FLOOD LIGHT LAMP REMOVAL ALARM

Joseph C. Ferraro, 123 Toledo St., East Farmingdale, N.Y. 11735

Filed Sep. 29, 1995, Ser. No. 537,262

Int. Cl.⁶ G08B *13/14*

U.S. Cl. 340—568 **12 Claims**



1. A flood light lamp removal alarm assembly for home security flood light fixtures having at least one socket accommodating at least one flood light lamp, said socket connected to a power supply for the lamp, the fixture having a low ambient light detector and a motion detector, wherein the assembly detects unwarranted unscrewing of the flood light lamp therefrom, comprising:

a housing containing a perceptible alarm; a means for detecting removal of the lamp, said means comprising the lamp socket having a physical condition sensor therein, which physical condition sensor is inactivated when said lamp is properly screwed in said socket, said physical condition sensor being activated when said lamp is loosened or removed from said socket;

said sensor comprising a switch mounted in the bottom of said socket positioned in such a manner that when said lamp is properly screwed into said socket said switch is depressed in the closed position;

electrical circuit means connected to said switch for triggering said alarm when said switch is released as a result of loosening or removal of said lamp, said alarm remaining inactivated as long as said switch remains depressed by said lamp, and said electrical circuit means including latch means for maintaining said alarm in the triggered state when said lamp is screwed back into said socket alter said alarm is triggered and said switch is depressed;

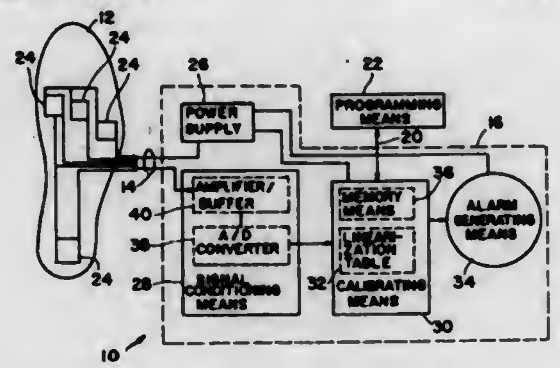
means for slowing down the triggering of said alarm to immunize said electrical circuit from minor power disturbances and lightning; and

reset means for permitting said electrical circuit to be reset after an alarm is triggered; wherein said slowing down means comprises a resistor, a capacitor and an inverter; said resistor biasing the input to said inverter to a "HIGH" condition except when said switch is closed, thereby shorting the input to ground, wherein said capacitor makes said electrical circuit immune to said minor disturbances, and if said lamp is loosed, said switch opens, thereby causing said resistor to pull up the input of said inverter, and said inverter responsive to said pull up for setting said latch means; said latch means responsive to said setting for activating said alarm in said housing until reset by said reset means.

5,619,186
FOOT WEIGHT ALARM

Robert N. Schmidt, Cleveland, Ohio, and Richard S. Diefes, Doylestown, Pa., assignors to Cleveland Medical Devices Inc., Cleveland, Ohio

Filed Apr. 3, 1995, Ser. No. 415,630
Int. Cl.[6] G08B *23/00*
U.S. Cl. 340—573 **21 Claims**



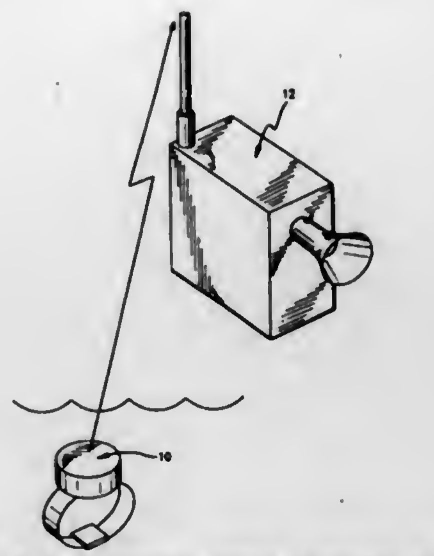
1. A foot weight alarm device, comprising:
a) a power supply which provides a regulated voltage;
b) at least one resistive force sensor, said resistive force sensor connected to said power supply and said resistive force sensor having a resistance which varies with the amount of weight applied to said resistive force sensor;
c) signal conditioning means connected to said resistive force sensor whereby said signal conditioning means produces a voltage-corresponding digital value which varies with the resistance of said resistive force sensor;
d) calibrating means connected to said signal conditioning means such that said calibrating means converts said voltage-corresponding digital value into a force-corresponding digital value whereby said force-corresponding digital value corresponds to the amount of weight to which said resistive force sensor is subjected;
e) programming means connected to said calibrating means whereby said programming means sets at least one weight limit in said calibrating means such that said calibrating means can compare said force-corresponding digital value to said weight limit;
f) alarm generating means which generates an alarm in response to said force-corresponding digital value; and
g) a housing wherein said signal conditioning means, said calibrating means, and said alarm generating means are housed but with said programming means being external thereto.

5,619,187
ALARM TO PREVENT DROWNING

Marius P. Serfontein, P.O. Box 21233, Richards Bay 3900, South Africa

Filed Sep. 25, 1995, Ser. No. 533,284
Int. Cl.[6] G08B *23/00*
U.S. Cl. 340—573 **3 Claims**

1. A warning device comprising a transmitter adapted to be attached to the body of a subject, and having a frequency receivable by a receiver strategically locatable, said transmitter including two or more contacts separated by a plate located between the contacts, said plate projecting outwardly of said contacts, thereby to prevent actuation thereof by splashing, wherein actuation activates a warning at said receiver, and said contacts being positioned

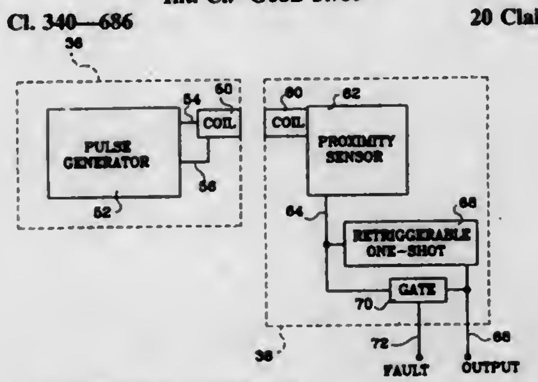


peripherally at a predetermined angular orientation along the perimeter of the transmitter.

5,619,188
PROXIMITY SENSOR WHICH IS SENSITIVE TO A PULSATING MAGNETIC FIELD

Wayne L. Ehlers, Lanark, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 20, 1995, Ser. No. 545,992
Int. Cl.[6] G08B *21/00*
U.S. Cl. 340—686 **20 Claims**

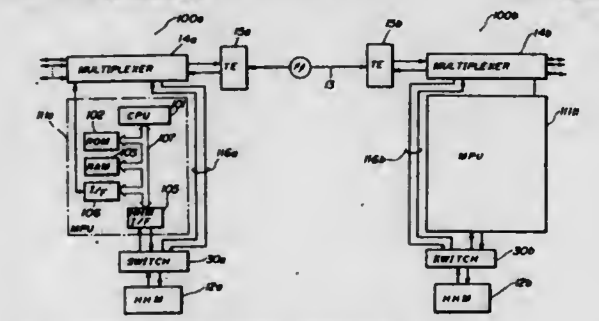


1. A proximity sensor, comprising:
a first device comprising a first means for providing a first magnetic field within a first predefined zone;
means, connected in signal communication with said first providing means, for periodically energizing and deenergizing said first magnetic field at a predetermined frequency;
a second device comprising a second means for providing a second magnetic field within a second predefined zone;
means, connected in signal communication with said second providing means, for sensing a change in a predefined characteristic of said second magnetic field corresponding to said predetermined frequency;
third means, connected in signal communication with said sensing means, for providing a first output signal in response to said change in said predefined characteristic;
means, connected in signal communication with said third providing means, for determining if said second predefined zone is coincident with said first predefined zone based on said sensed change; and
fourth means, connected in signal communication with said third providing means, for providing a second output signal when said first and second predefined zones are coincident with each other, said first device and said second device being movable relative to each other to cause or not to cause the coinidence of said first and second predefined zones.

5,619,189
COMMUNICATION SYSTEM HAVING TWO OPPOSED DATA PROCESSING UNITS EACH HAVING FUNCTION OF MONITORING THE OTHER DATA PROCESSING UNIT

Eiji Sugawara, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 371,582, Jan. 12, 1995, abandoned, which is a continuation of Ser. No. 95,998, Jul. 23, 1993, abandoned, which is a continuation of Ser. No. 734,122, Jul. 25, 1991, abandoned, which is a continuation of Ser. No. 490,919, Mar. 9, 1990, abandoned. This application Oct. 17, 1995, Ser. No. 544,254
Claims priority, application Japan, Mar. 16, 1989, 1-64589
Int. Cl.[6] H04Q *1/00*
U.S. Cl. 340—825.06 **11 Claims**

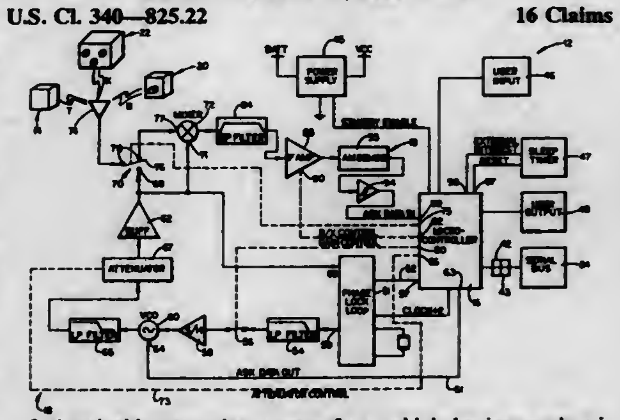


1. A communication system, comprising:
a data link line;
a first communication control device connected to a first end of said data link line;
a second communication control device connected to a second end of said data link line
a first data processing unit controlling and monitoring a status of said first communication control device;
a second data processing unit controlling and monitoring a status of said second communication control device;
first monitor terminal means for controlling said first data processing unit and for monitoring the status of said first and second communication control devices;
second monitor terminal means for controlling said second data processing unit and for monitoring the status of said first and second communication control devices;
first switching means coupled to said first data processing unit, said first monitor terminal means and said data link line, for selectively connecting two of said first data processing unit, said first monitor terminal means and said data link line for establishing bidirectional communication between two of said first data processing unit, said first monitor terminal means and said data link line, and allowing the status of said second communication control device to be provided directly to said first monitor terminal bypassing said first data processing unit, said first switching means comprising:
a first switching circuit having a control terminal and connecting said first data processing unit and said data link line when a first control signal is applied to said control terminal thereof;
a second switching circuit having a control terminal and connecting said first data processing unit and said first monitor terminal means when a second control signal is applied to said control terminal thereof;
a third switching circuit having a control terminal and connecting said first monitor terminal means and said data link line when a third control signal is applied to said control terminal thereof; and
first manual changing means coupled to said control terminals of said first, second and third switching circuits, for manually generating first, second and third control signals respectively supplied to said control terminals of said first, second and third switching circuits so that any one of said first, second and third control signals is applied to a corresponding one of said terminals of said first, second and third switching circuits; and
second switching means coupled to said data processing unit, said second monitor terminal means and said data link line, for selectively connecting two of said second data processing unit, said second monitor terminal means and said data link line, for establishing a bidirectional communication between two of said second data processing unit, said second monitor terminal means and said data link line, said data link line being provided between said first switching means and said second switching means, and allowing the status of said first communication control device to be provided directly to said second monitor terminal bypassing said second data processing unit, said second switching means comprising:
a fourth switching circuit having a control terminal and connecting said second data processing unit and said data link line only when a first control signal is applied to said control terminal thereof;
a fifth switching circuit having a control terminal and connecting said second data processing unit and said second monitor terminal means only when a second control signal is applied to said control terminal thereof; and
a sixth switching circuit having a control terminal and connecting said second monitor terminal means and said data link line only when a third control signal is applied to said control terminal thereof; and
second manual changing means, coupled to said control terminals of said fourth through sixth switching circuits for manually generating fourth, fifth and sixth control signals, respectively supplied to said control terminals of said fourth, fifth and sixth switching circuits so that one of said fourth, fifth, and sixth control signals is applied to a corresponding one of said terminals of said fourth, fifth and sixth switching circuits,
said first switching means has a mode in which said first monitor terminal means is connected to said data link line and said second switching means has a mode in which said second data processing unit is connected to said data link line so that said first monitor terminal means monitors said second data processing unit.

5,619,190
TRAINABLE TRANSMITTER WITH INTERRUPT SIGNAL GENERATOR

Paul C. Duckworth; Kurt A. Dykema, and Mark L. Zeinstra, all of Holland, Mich., assignors to Prince Corporation, Holland, Mich.

Division of Ser. No. 209,947, Mar. 11, 1994. This application Apr. 21, 1995, Ser. No. 427,112
Int. Cl.[6] G05B *19/02;* G08C *19/00*
U.S. Cl. 340—825.22 **16 Claims**



1. A trainable transceiver system for a vehicle having an electrical system, comprising:
a transceiver including an input circuit for receiving radio frequency signals and an output circuit for selectively generating radio frequency signals;
a connector coupled to the vehicle electrical system;

a user interface including actuators for inputting first and second control signals;

an interrupt signal generator for generating a third control signal; and

a controller coupled to said input circuit, said output circuit, said connector, said user interface, and said interrupt signal generator, wherein said controller controls said transceiver to operate in a transmit mode responsive to said first signal from said user interface, said controller controls the transceiver to operate in a training mode responsive to said second control signal from said user interface, and said controller controls the transceiver to enter a transmitter signal detection mode responsive to said third control signal,

wherein said input circuit includes an amplitude control circuit having an amplitude control input coupled to said controller, said controller providing an amplitude control signal for selectively varying the gain of said amplitude control circuit to decrease the sensitivity of said input circuit when said transceiver is operating in the training mode for receiving remote control signals from a remote control.

5,619,191

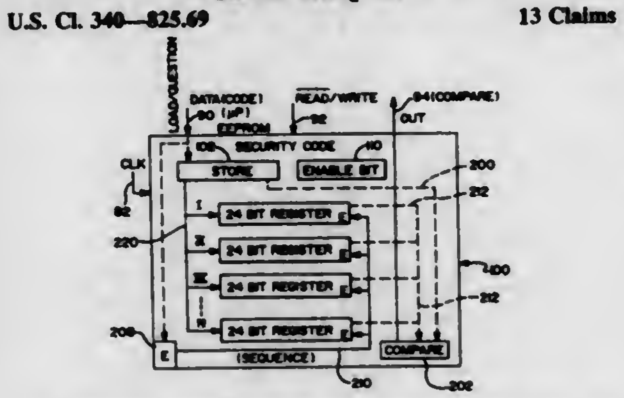
REMOTE CONTROL SYSTEM FOR DOOR LOCKS

George Lambropoulos, Grosse Pointe Woods; Kenneth R. Pitera, Warren, and Robert A. Hair, Pontiac, all of Mich., assignors to TRW Inc., Lyndhurst, Ohio

Continuation of Ser. No. 133,744, Oct. 7, 1993, Pat. No. 5,406,274, which is a continuation of Ser. No. 767,034, Sep. 26, 1991, Pat. No. 5,252,966, which is a continuation of Ser. No. 336,841, Apr. 12, 1989, Pat. No. 5,109,221, which is a division of Ser. No. 262,206, Oct. 19, 1988, Pat. No. 4,881,148, which is a continuation of Ser. No. 52,469, May 21, 1987, abandoned. This application Apr. 10, 1995, Ser. No. 419,447

Int. Cl.⁶ H04Q *7/00*

U.S. Cl. 340—825.69 **13 Claims**



1. Apparatus operative to control access to an enclosure, said apparatus comprising:

receiver means for receiving access request signals,

memory means for storing one or more access authorization codes representative of access request signals, the receipt of which is used to control access to said enclosure, said memory means having therein adequate storage for storing at least two different access authorization codes at the same time,

means for evaluating said access request signals in accordance with said access authorization codes and for controlling access to said enclosure in accordance with said evaluation, and

field programming means for providing programming periods for storing new access authorization codes in said memory means only during a said programming period, said field programming means being operative to automatically clear all of the old access authorization codes from said memory means during said programming period when a new access authorization code is stored, whereby, at the conclusion of said programming period, said memory means contains only those said access authorization codes which were presented during said programming period.

5,619,192

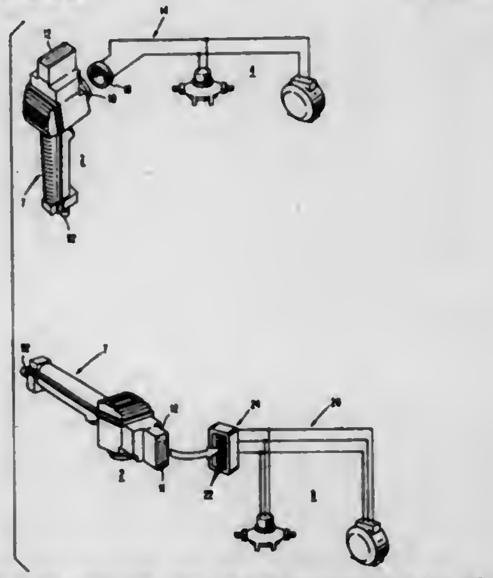
APPARATUS AND METHOD FOR READING UTILITY METERS

Raymond F. Ayala, San Diego, Calif., assignor to Logicon, Inc., Torrence, Calif.

Filed Jun. 14, 1994, Ser. No. 259,723

Int. Cl.⁶ G08B *23/08*

U.S. Cl. 340—870.02 **25 Claims**



1. A reader for receiving data indicative of the reading of a utility meter, comprising:

means for inductively transmitting power to the meter at a frequency to which the utility meter will respond, said means being able to transmit power at a plurality of frequencies since different types of utility meters respond to different frequencies; and

means for inductively receiving data from the meter represented by load modulation of the transmitted frequency, the transmitted frequency thereby having a modulation envelope.

5,619,193

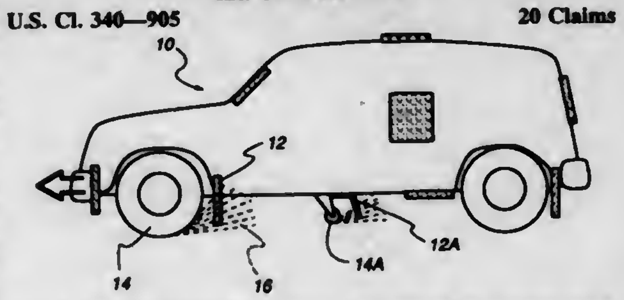
SURFACE MATERIAL AND CONDITION SENSING SYSTEM

John A. Doherty, 829 St. Andrews La., Louisville, Colo. 80027; Charles A. Kalbfleisch, Boulder, both of Colo.; Donald P. Keathley, Middlefield, Conn., and William J. Collins, Denver, Colo., assignors to John A. Doherty, Louisville, Colo.

Filed Jun. 7, 1996, Ser. No. 660,232

Int. Cl.⁶ G08G *1/09*

U.S. Cl. 340—905 **20 Claims**



1. A system carried by a vehicle for sensing and displaying at least one characteristic of a material deposited on a vehicle travel surface comprising:

a platform on said vehicle for collecting and temporarily holding a portion of a material obtained from said vehicle travel surface;

a sensing means mounted to said platform for detecting at least one characteristic of said collected material on said platform and for producing a signal corresponding to said characteristic;

a microprocessor carried on said vehicle for processing and converting said signal into a form suitable for display and control; and

a conduit means connected between said sensing means and said processor for carrying said signal to said processor.

5,619,194

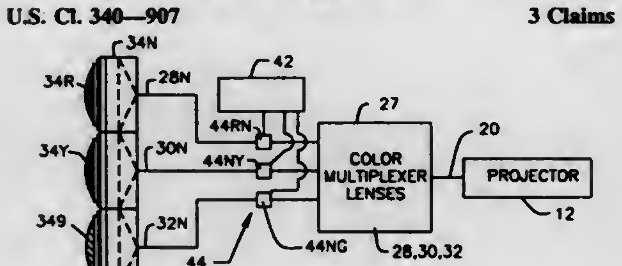
FIBER OPTIC TRAFFIC SIGNAL LIGHT SYSTEM HAVING A SHUTTER CONTROL

Bruce D. Belfer, 6 Barbara La., Ocean, N.J. 07712

Continuation-in-part of Ser. No. 284,932, Aug. 2, 1994, Pat. No. 5,563,588. This application Feb. 28, 1996, Ser. No. 608,180

Int. Cl.⁶ G08G *1/095*

U.S. Cl. 340—907 **3 Claims**



1. A fiber optic traffic signal light control system, comprising:

a) a light source including at least one high-intensity lamp;

b) movable red, yellow, and green lenses;

c) fiber optic cables for receiving light from said light source and connected to said red, yellow, and green lenses, respectively, to provide sources of red, yellow and green signal lights;

d) at least one traffic signal light connected to said lenses, each having a single display for displaying said red, yellow, and green signal lights; and

e) switching control means connected to said lenses for moving said lenses in a predetermined sequence for predetermined time periods to control the supply of red, green, and yellow light to each of said single displays in said traffic signal lights.

5,619,195

MULTI-AXIAL POSITION SENSING APPARATUS

Clay D. Allen, Elk Grove, and Andrew Martwick, Roseville, both of Calif., assignors to Charles D. Hayes, Grass Valley, Calif.

Filed Dec. 29, 1995, Ser. No. 580,689

Int. Cl.⁶ H03K *17/94*

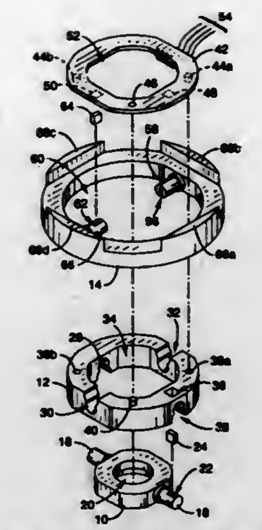
U.S. Cl. 341—20 **15 Claims**

1. A multi-dimensional position sensing apparatus, comprising:

(a) concentric inner, intermediate and outer gimbal rings;

(b) means for pivotally coupling said gimbal rings;

(c) first and second magnets;



(d) first and second magnetic sensors, said first sensor opposing said first magnet, said second sensor opposing said second magnet; and

(e) means for coupling said magnets and said sensors to said gimbal rings wherein said first sensor and said first magnet pivot in relation to each other and wherein said second sensor and said second magnet pivot in relation to each other.

5,619,196

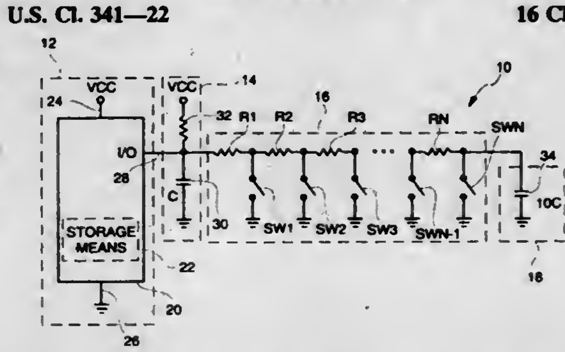
SINGLE WIRE KEYBOARD ENCODE AND DECODE CIRCUIT

Marcus Escobosa, Anaheim, Calif., assignor to Universal Electronics Inc., Twinsburg, Ohio

Filed Dec. 28, 1995, Ser. No. 580,162

Int. Cl.⁶ H03K *17/94*

U.S. Cl. 341—22 **16 Claims**



15. A method for encoding and decoding key input data in a remote control having a single transmission wire circuit comprising a control circuit, a charge circuit coupled to said control circuit, and a keyboard matrix coupled to said charge circuit, the method comprising the steps of:

detecting an actuation of a switch in said keyboard matrix;

causing said control circuit to charge said charge circuit in response to said actuation of said switch; and

discharging said charge circuit through said keyboard matrix;

wherein said control circuit times discharge of said charge circuit through said keyboard matrix to determine which switch in said keyboard matrix was activated.

5,619,197

SIGNAL ENCODING AND DECODING SYSTEM ALLOWING ADDING OF SIGNALS IN A FORM OF FREQUENCY SAMPLE SEQUENCE UPON DECODING

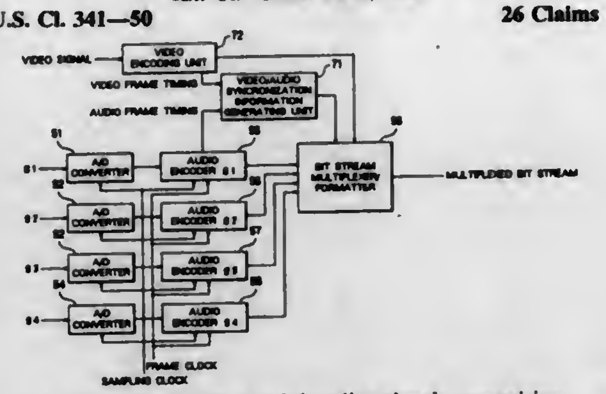
Shin-ichi Nakamura, Sagamihara, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

Filed Nov. 29, 1994, Ser. No. 348,827

Claims priority, application Japan, Mar. 16, 1994, 6-046008

Int. Cl.⁶ G11B *20/00;7/00*

U.S. Cl. 341—50 **26 Claims**



1. A system for encoding and decoding signals, comprising:

(a) a signal compressing and encoding apparatus comprising:

a plurality of A/D converters, each of the converters receiving an audio input signal on an input line and converting the audio input signal into a time sample sequence;

a plurality of audio encoders, each of the audio encoders transforming one of the time sample sequences, respectively, into a frequency sample sequence, the plurality of audio encoders operating with respect to a common frame clock to synchronize the compressed and encoded frequency sample sequences processed by the plurality of audio encoders; and

multiplexing means for multiplexing the compressed and encoded frequency sample sequences and outputting a multiplexed bit stream, and

(b) a compressed signal decoding apparatus comprising:

separating means for separating selected first bit streams from the multiplexed bit stream;

decoding means for decoding the first bit streams separated by the separating means into decoded frequency sample sequences;

adding means for mixing the decoded frequency sample sequences decoded by the decoding means to produce a sum signal; and

transforming means for transforming the sum signal into decoded time sample sequences, and outputting the decoded time sample sequences.

5,619,198

NUMBER FORMAT CONVERSION APPARATUS FOR SIGNAL PROCESSING

Raymond C. Blackham, Penn Valley; David A. Ohmann, and Jeffrey J. Walker, both of Grass Valley, all of Calif., assignors to Tektronix, Inc., Wilsonville, Oreg.

Filed Dec. 29, 1994, Ser. No. 366,274

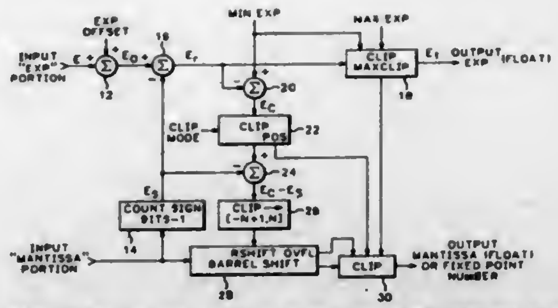
Int. Cl.⁶ H03M *7/00*

U.S. Cl. 341—50 **9 Claims**

1. An apparatus for converting an input digital signal having a first numerical format to an output digital signal having a second numerical format comprising:

means for generating a digital exponent signal from the input digital signal, an exponent range and an exponent offset, the exponent range and the exponent offset being determined by the first and second numerical formats; and

means for generating a digital mantissa signal from the input digital signal, the exponent range and the exponent offset, the digital exponent and digital mantissa signals providing the output digital signal when the second numerical format is a



floating point numerical format and the digital mantissa signal providing the output digital signal when the second numerical format is a fixed point numerical format.

5,619,199

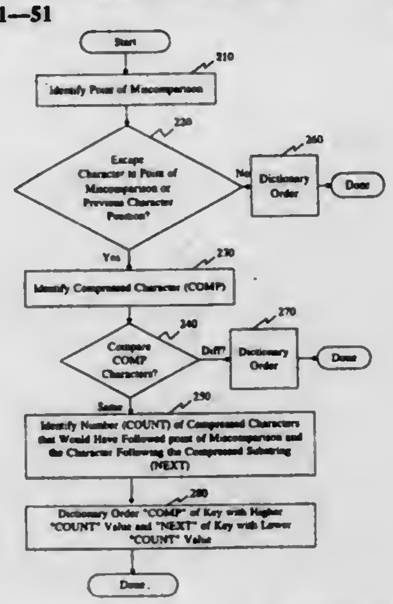
ORDER PRESERVING RUN LENGTH ENCODING WITH COMPRESSION CODEWORD EXTRACTION FOR COMPARISONS

Steven J. Watts, and Balakrishna R. Iyer, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 4, 1995, Ser. No. 434,775

Int. Cl.⁶ G06F *17/30*

U.S. Cl. 341—51 **35 Claims**



1. A method of finding a search key in a database index, wherein each key within the database index comprises a plurality of key parts of varying length and each of the plurality of key parts comprises a plurality of characters, the method comprising the steps of:

(a) concatenating the key parts of the search key that are compressed through run-length encoding to produce a compressed search key;

(b) comparing said compressed search key to a key from the database index to identify a point of miscomparison; and

(c) ordering said compressed search key and the key from the database index based on characters at the point of miscomparison, characters at the two character positions prior to said point of miscomparison and characters at the two character positions after said point of miscomparison.

5,619,200

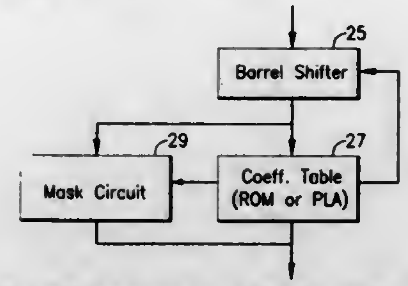
CODE TABLE REDUCTION APPARATUS FOR VARIABLE LENGTH DECODER

Po-Chuan Huang, Hsinchu, China, assignor to United Microelectronics Corporation, Taipei, Taiwan

Filed Sep. 12, 1995, Ser. No. 527,211

Int. Cl.⁶ H03M *7/40*

U.S. Cl. 341—67 **9 Claims**



1. A code table apparatus for a variable length decoder for decoding an input code including a code word portion and a sign bit, the code table apparatus comprising:

a coefficient table for generating a level code and a length code from the code word portion of the input code; and

a mask circuit for extracting the sign bit by logic operations of the input code and the length code.

5,619,201

ANALOG/DIGITAL CONVERTER

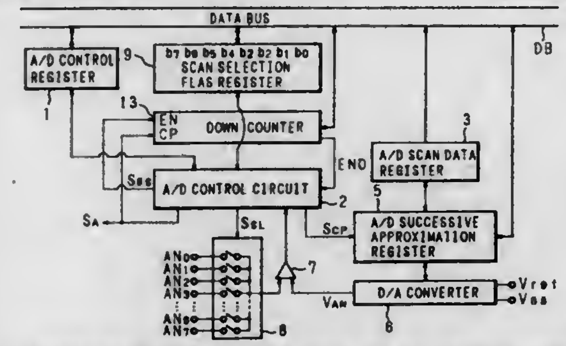
Tatsuya Imakura, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 18, 1994, Ser. No. 324,632

Claims priority, application Japan, Nov. 2, 1993, 5-274393

Int. Cl.⁶ H03M *1/12*

U.S. Cl. 341—141 **6 Claims**



1. An analog/digital converter in which analog voltages of plural channels are cyclically scanned and given to a comparator, and each of the analog voltages is converted into a digital value, comprising:

a first register which stores data relating to a scan operation for each of the channels corresponding to said plural channels, and which indicates the channel of analog voltage to be scanned;

a second register which stores data relating to a scan operation for each of the channels corresponding to said plural channels, and which indicates the channel of analog voltage to be temporarily converted;

a selector to which said analog voltages of said plural channels are supplied, and which selects an analog voltage in accordance with instruction from said first and second registers and sequentially outputs said selected analog voltage to said comparator; and

an analog/digital control circuit which controls said selector to repeatedly output the analog voltage indicated by said first register, and which, when data is written into the second register, controls said selector to add the analog voltage indicated by said second register to the analog voltage indicated by said first register upon completion of a scanning cycle controlled by said first register and at the beginning of the next scanning cycle.

5,619,202

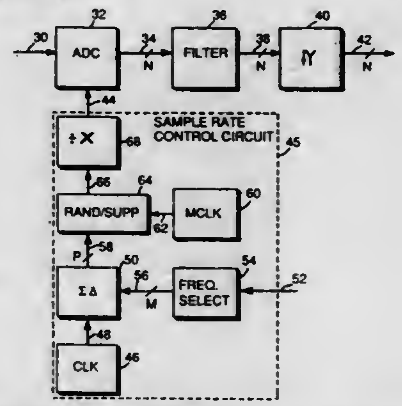
VARIABLE SAMPLE RATE ADC

James Wilson, Sharon; Ronald A. Cellini, Newton, and James M. Sobol, Norfolk, all of Mass., assignors to Analog Devices, Inc., Norwood, Mass.

Filed Nov. 22, 1994, Ser. No. 343,713

Int. Cl.⁶ H03M *1/00*

U.S. Cl. 341—143 **8 Claims**



1. An ADC system comprising:

an ADC, receiving an analog input signal and, responsive to a noise-shaped clock signal, converting the analog input signal to digital samples at an oversampling rate;

a decimator, coupled to the ADC, receiving the digital samples and decimating the digital samples to produce the digital samples at a preselected output sample rate, less than or equal to the oversampling rate; and

an ADC sample rate control circuit, coupled to the ADC, receiving a frequency select signal representing the output sample rate, and producing the noise-shaped clock signal for controlling operation of the ADC at the oversampling rate, the control circuit including a sigma-delta modulator for sigma-delta modulating the frequency select signal.

5,619,203

CURRENT SOURCE DRIVEN CONVERTER

George F. Gross, Jr., Reading, and Thayamkulangara R. Viswanathan, Albany Township, Berks County, both of Pa., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Oct. 21, 1994, Ser. No. 327,162

Int. Cl.⁶ H03M *1/68;* **H03K** *13/00*

U.S. Cl. 341—144 **16 Claims**

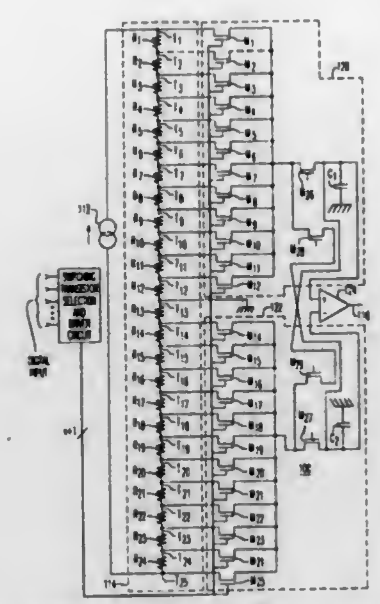
1. An integrated circuit for providing an analog output, comprising:

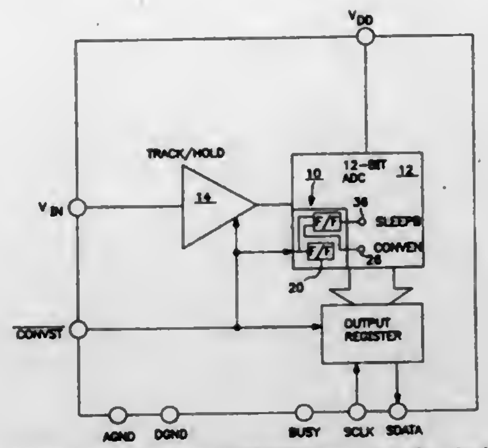
a current source having a positive terminal and a negative terminal;

a resistor string coupled across the positive and negative terminals of the current source, the resistor string comprising a plurality of serially coupled resistors and providing a current path;

intermediate taps defined at the junctions of resistors in the resistor string, one of the intermediate taps coupled to a reference potential, said one intermediate tap dividing the other intermediate taps into a first group of intermediate taps between said one intermediate tap and the positive terminal of the current source and a second group of intermediate taps between said one intermediate tap and the negative terminal of the current source;

a first plurality of switching transistors coupled between a first node and a respective intermediate tap of the first group;





a second plurality of switching transistors coupled between a second output node and a respective intermediate tap of the second group;

a selection circuit coupled to a terminal of each switching transistor in the first and second plurality of switching transistors, the selection circuit for switching the state of selected ones of the transistors to a predetermined state in response to a digitally encoded signal, the selection circuit capable of switching at least two switching transistors to be in the predetermined state simultaneously; and

a differential amplifier having first and second input ports and an output port, the first input port of the differential amplifier coupled to the first output node to receive a signal therefrom, the second input port of the differential amplifier coupled to the second output node to receive a signal therefrom, the differential amplifier providing a signal at its output port that is the difference between the signals received at its first and second input ports, whereby common mode noise is rejected from an analog signal produced at the output of the differential amplifier.

5,619,204
ANALOG-TO-DIGITAL CONVERTER WITH OPTIONAL LOW-POWER MODE

Michael Byrne, Limerick, Ireland; Colin Price, Newbury, England; John Reidy, Limerick, Ireland, and Simon Smith, Manchester, United Kingdom, assignors to Analog Devices, Incorporated, Norwood, Mass.

Filed Feb. 27, 1995, Ser. No. 394,709

Int. Cl.^{6} H03M *1/00*

U.S. Cl. 341—155 **9 Claims**

1. An IC chip having A/D converter circuitry for converting an applied analog signal to a corresponding digital signal; said chip including one pin to which a conversion start signal (CONVST) can be applied from associated apparatus; means to transmit an end-of-conversion signal (EOC); said A/D circuitry including first terminal means to receive a convert-enable signal (CONVEN) for initiating a conversion and second terminal means to transmit a mode switchover signal (SLEEP) to place the A/D circuitry either in a normal-power mode or in a low-power mode in which the power consumed between conversions is substantially less than that consumed during a conversion operation;

control circuitry for developing said CONVEN signal and said mode switchover signal, comprising:

a first D-type flip-flop with reset;

means applying a fixed signal to the D-terminal of said first D-type flip-flop;

means connecting said CONVST signal to the clock input of said first D-type flip-flop;

means connecting said EOC signal to the reset (R) terminal of said first D-type flip-flop;

means connecting the Q output of said first D-type flip-flop to said first terminal means to initiate an analog-to-digital conversion in response to an output signal of said first D-type flip-flop;

a second D-type flip-flop with set;

means connecting the clock input of said second D-type flip-flop to the output of said first D-type flip-flop;

means connecting said CONVST signal to the D input of said second D-type flip-flop;

means connecting the complement of said CONVST signal to the set (S) terminal of said second D-type flip-flop; and

means connecting the Q output of said second D-type flip-flop to said second terminal means to provide for low-power operation upon receipt of said Q output from said second D-type flip-flop.

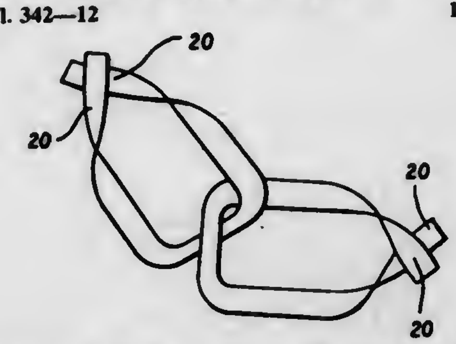
5,619,205
MICROARC CHAFF

Richard N. Johnson, Adelphi, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 25, 1985, Ser. No. 797,390

Int. Cl.^{6} H04K *3/00;* G01S *7/38*

U.S. Cl. 342—12 **11 Claims**



1. Microarc chaff for interference with electronic wave-form information devices comprising:

a plurality of strip-like elements of electroconductive materials that are responsive to radio frequency energy, said elements being joined as chain links, the major dimension of which said elements is substantially that of the wave length of the radio frequency of operation.

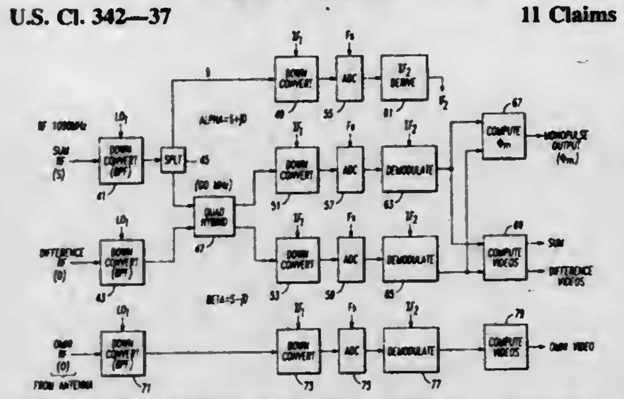
5,619,206
SECONDARY RADAR DIGITAL MONOPULSE RECEIVING APPARATUS AND METHOD

Elbert L. Cole, Jr., Catonsville; Richard A. Enstrom, Ellicott City, and Terence E. Olver, Baltimore, all of Md., assignors to Northrop Grumman Corp., Los Angeles, Calif.

Filed Nov. 20, 1995, Ser. No. 560,186

Int. Cl.^{6} G01S *13/91*

U.S. Cl. 342—37 **11 Claims**



1. A digital monopulse radar receiving apparatus, comprising:

first means for generating complex phasor components from radar frequency (RF) sum (Σ) and difference (Δ) signals received by an antenna from an aircraft including,

first down conversion means for down converting the received sum and difference RF signals to a first relatively lower intermediate frequency,

second down conversion means for down converting the received sum and difference RF signals at the first relatively lower intermediate frequency, to a second relatively lower intermediate frequency to permit conversion to digital form, and

analog to digital conversion (ADC) means for sampling the twice down converted sum and difference RF signals to generate digital signals; and

second means for determining an azimuth angle, indicating an angle of the detected aircraft in relation to a boresight of the antenna, from the digital signals including,

demodulating means for demodulating the digital signals at an intermediate frequency derive from the twice down converted sum RF signal, to generate complex inphase and quadrature components at baseband, and

means for generating the azimuth angle from the generated complex inphase and quadrature components.

5,619,207
HIGHLY ACCURATE RE-ID POSITIONING SYSTEM

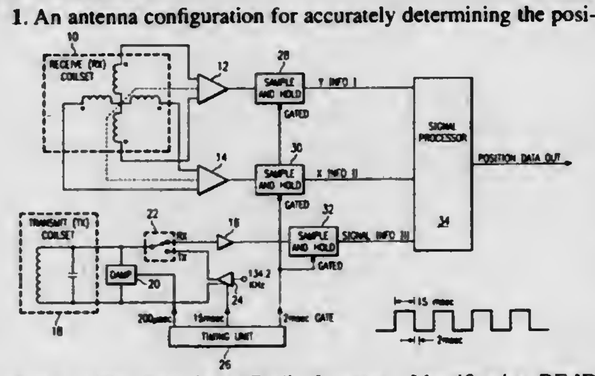
Loek d'Hont, Almelo, Netherlands, assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 141,444, Oct. 22, 1993, abandoned. This application Jun. 6, 1996, Ser. No. 659,753

Int. Cl.^{6} G01S *13/74*

U.S. Cl. 342—42 **11 Claims**

1. An antenna configuration for accurately determining the position of a transponder in an Radio-frequency Identification RF-ID system comprising:



a first and a second balanced receive antenna for receiving a fieldstrength voltage of a response telegram, whrein said response telegram comprises identification data, and has at least the same frequency as the interrogation signal wherein said first and second receive antennas are physically rotated 90 degrees relative to one another;

a transmitter antenna for transmitting a charge-up signal to said transponder wherein said transponder is charged to a maximum allowable voltage;

a first and a second receiver for narrow band fitting said receive fieldstrength voltages;

a first and a second sample and hold circuit for sampling said filtered signals for a first portion of said response telegram; and

a processing circuit for generating a position coordinate relating to a position of said transponder from said sampled signals.

5,619,208
FM-CW RADAR SYSTEM

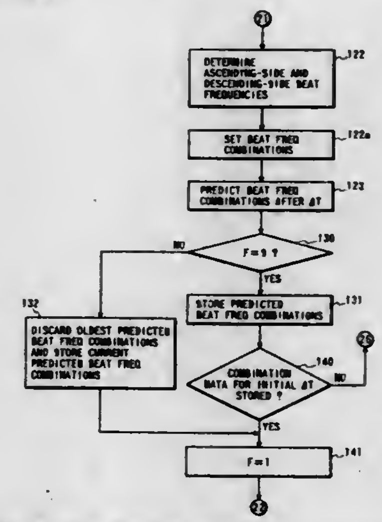
Yukimasa Tamatsu; Hiroshi Hazumi, and Hiroto Nakatani, all of Kariya, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jan. 24, 1996, Ser. No. 590,829

Claims priority, application Japan, Jan. 24, 1995, 7-009059; Oct. 26, 1995, 7-279129

Int. Cl.^{6} G01S *13/536;13/93*

U.S. Cl. 342—70 **10 Claims**



1. An FM-CW radar system comprising:

transmission signal generating means for generating a transmission signal which is frequency-modulated by a modulating signal having a waveform including an ascending portion and a descending portion;

transmitter-receiver means for transmitting said transmission signal as a radio wave and receiving said radio wave reflected back thereto so as to produce a received signal;

mixing means for mixing said transmission signal and said received signal to produce a beat signal;

beat frequency selecting means for selecting ascending-side and descending-side beat frequencies at regions of said beat signal corresponding to said ascending portion and said descending portion of said modulating signal;

beat frequency predicting means for pairing said ascending-side and descending-side beat frequencies one by one from each side so as to provide first beat frequency combinations and predicting second beat frequency combinations indicative of said first beat frequency combinations after a given time based on said first beat frequency combinations, respectively, said ascending-side and descending-side beat frequencies rep-

resenting a plurality of targets which reflect back said radio wave to said transmitter-receiver means;

setting means for setting such second beat frequency combinations as correct beat frequency combinations, said second beat frequency combinations, set by said setting means, each having the ascending-side beat frequency and the descending-side beat frequency which fall in a given range of one of ascending-side beat frequencies and a given range of one of descending-side beat frequencies, respectively, of a beat signal selected by said beat frequency selecting means after said given time; and

deriving means for deriving information about the corresponding targets based on said correct beat frequency combinations set by said setting means.

5,619,209

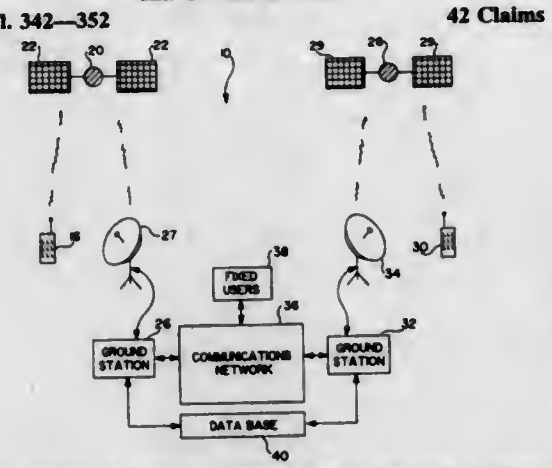
USER PAGING FOR MOBILE SATELLITE COMMUNICATIONS

Michael Horstein, Los Angeles, and Hau H. Ho, Huntington Beach, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Jan. 14, 1994, Ser. No. 181,932

Int. Cl.^{6} H04B 7/185

U.S. Cl. 342—352 **42 Claims**



1. A method of initiating communication between a ground station and a mobile handset through a satellite beam, comprising the steps of:

(a) transmitting a forward signal indicative of a fixed geographic area as at least one of a plurality of coverage satellite beams passes over said fixed geographic area on at least a periodic basis;

(b) registering the location of said mobile handset by storing, at said mobile handset, at least one variable geographic value,indicative of at least a portion of said fixed geographic area, based on said forward control signal received by said mobile handset, transmitting a reverse signal from said mobile handset to said ground station which is indicative of a portion of said fixed geographic area where said mobile handset was located during registration, and storing at least one variable geographic value associated with said reverse signal in a database accessible to said ground station;

(c) determining at said mobile handset whether a currently transmitted forward signal matches said variable geographic value stored, and if a match is not found, then repeating said step of registering to re-register the current location of said mobile handset; and

(d) determining which of said satellites beams should initiate a call signal from said ground station to said mobile handset based upon said variable geographic value stored in said database for said mobile handset.

5,619,210

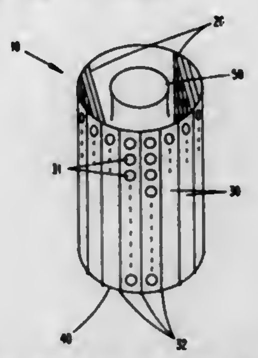
LARGE PHASED-ARRAY COMMUNICATIONS SATELLITE

Paul W. Dent, Stehag, Sweden, assignor to Ericsson Inc., Research Triangle Park, N.C.

Filed Apr. 8, 1994, Ser. No. 225,389

Int. Cl.^{6} H04B 7/185

U.S. Cl. 342—352 **7 Claims**



1. A satellite relay station for communicating between at least one first station and a plurality of second stations comprising:

a first number of hinged active antenna panels said active antenna panels further comprising at least:

time-multiplexer signal distribution means for distributing signals to a second number of active antenna elements means, said second number of active antenna element means each comprising:

a radiating element connected to a transmit power amplifier;

a modulator circuit with an input for modulating waveforms; and

a sample and hold circuit to sample signals on said signal distribution line and to filter said sampled signal to form said modulation waveforms.

5,619,211

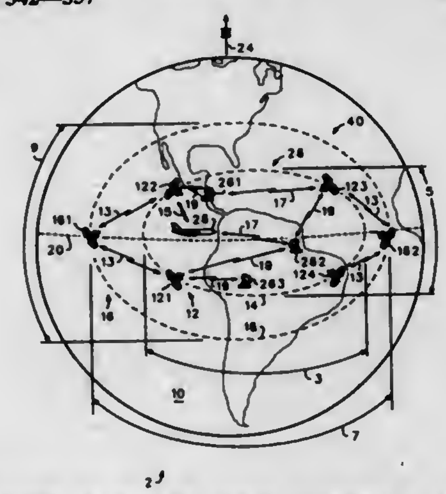
POSITION LOCATING AND COMMUNICATION SYSTEM USING MULTIPLE SATELLITE CONSTELLATIONS

Philip R. Horkin, Phoenix; Stephen C. Ma, Mesa; Isaac N. Durboraw, III, Scottsdale, and George W. Muncaster, Phoenix, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 17, 1994, Ser. No. 341,244

Int. Cl.^{6} G01S 5/02; H04B 7/185

U.S. Cl. 342—357 **11 Claims**



1. A system for providing location information to users, comprising:

a first group of at least three geolocation information transmitting satellites in substantially geosynchronous independent elliptical first orbits around the Earth, wherein said first orbits are inclined to earth's equatorial plane by at least ten degrees and with orbital parameters providing first closed ground tracks having longitudinal extent greater than zero and less than one hundred and eighty degrees, and each of said first closed ground tracks of said satellites of said first group being substantially common, and said first closed ground tracks defining a predetermined area of coverage wherein said user is located; and

a second group of one or more geolocation transmitting satellites in substantially geosynchronous second orbits around the earth, wherein said second orbits provide ground tracks lying substantially outside the first ground tracks and wherein said user obtains non-indeterminate positional fixes from said first group of at least three geolocation information transmitting satellites and from said second group of one or more geolocation transmitting satellites.

5,619,212

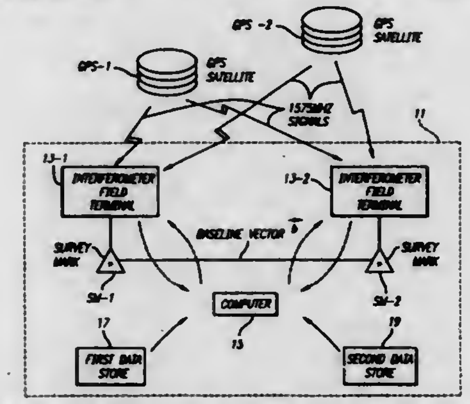
SYSTEM FOR DETERMINING POSITION FROM SUPPRESSED CARRIER RADIO WAVES

Charles C. Counselman, III, Belmont, Mass., assignor to Western Atlas International, Inc., Houston, Tex.

Continuation of Ser. No. 289,965, Aug. 12, 1994, abandoned, which is a continuation of Ser. No. 31,649, Mar. 15, 1993, Pat. No. 5,384,574, which is a continuation of Ser. No. 643,771, Jan. 22, 1991, Pat. No. 5,194,871, which is a continuation of Ser. No. 382,291, Jul. 20, 1989, Pat. No. 5,014,066, which is a continuation of Ser. No. 895,148, Aug. 11, 1986, Pat. No. 4,870,422, which is a continuation of Ser. No. 353,331, Mar. 1, 1982, Pat. No. 4,667,203. This application Oct. 13, 1995, Ser. No. 542,565

Int. Cl.^{6} G01S 5/08; H04B 7/185

U.S. Cl. 342—357 **137 Claims**



1. A method of determining position information from orbiting satellites, comprising the steps of:

forming a digital representation of a composite of overlapping spread spectrum signals received at a first position from a plurality of orbiting satellites;

distributing said digital representation to a plurality of parallel circuits operating synchronously in response to a common clock; and

observing each of a plurality of satellite specific signals in a different one of said parallel circuits to determine position information related to said first position.

5,619,213

ANTENNA COUPLER FOR A PORTABLE RADIO

William W. Hays, III, 1255 Timber Lake Dr., Lynchburg, Va. 24502

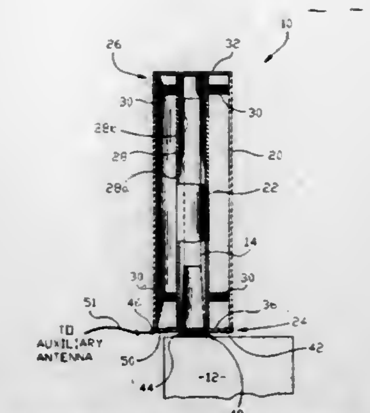
Filed Mar. 7, 1995, Ser. No. 399,860

Int. Cl.^{6} H01Q 1/24

U.S. Cl. 343—703 **23 Claims**

1. An antenna coupler for coupling an on-board antenna of a portable radio to an RF device, comprising:

a. an outer tubular conductor having an insertion end and a remote end;



b. an inner tubular conductor disposed within the outer tubular conductor with the inner and outer tubular conductors spaced from one another, the inner tubular conductor having an insertion end and a remote end, wherein the inner tubular conductor is sized to receive the on-board antenna so as to position the on-board antenna and antenna coupler in a coupled position, and wherein said inner tubular conductor and said outer tubular conductor are substantially coextensive at said insertion ends;

c. a ground connector conductively connected to the outer tubular conductor, the ground connector conductively connecting with a radio ground so as to ground the outer tubular conductor when the antenna coupler and on-board antenna are in the coupled position;

d. an RF connector conductively connected to the inner tubular conductor for coupling with an interconnecting transmission line leading to the RF device; and

e. an impedance matching circuit conductively connected between the RF connector and the inner tubular conductor for providing impedance matching between the antenna coupler and the RF device; and

f. wherein when in the coupled position the on-board antenna is coupled with the antenna coupler and the portable radio transmits and receives RF energy to or from the RF device; and

g. wherein when in the coupled position, said on-board antenna, said inner tubular conductor, and said outer tubular conductor form a transmission line extending from said insertion ends along the length of said on board antenna.

5,619,214

RADIO ANTENNA ARRANGEMENT ON THE WINDOW PANE OF A MOTOR VEHICLE

Heinz Lindenmeier, Planegg; Jochen Hopf, Haar; Leopold Reiter, Gilching, and Rainer Kronberger, Ottobrunn, all of Germany, assignors to FUBA Hans Kolbe & Co., Bad Salzdetfurth, Germany

PCT No. PCT/DE94/00625, § 371 Date Feb. 7, 1995, § 102(e) Date Feb. 7, 1995, PCT Pub. No. WO94/29926, PCT Pub. Date Dec. 22, 1994

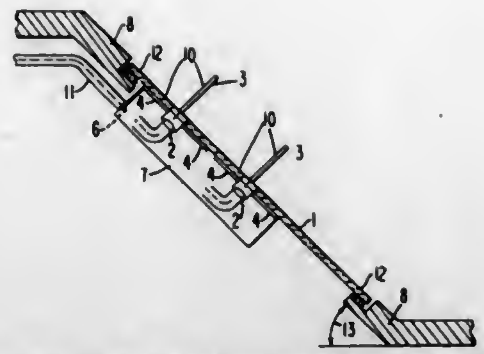
PCT Filed Jun. 6, 1994, Ser. No. 381,996

Claims priority, application Germany, Jun. 7, 1993, 43 18 869.9

Int. Cl.^{6} H01Q 1/32

U.S. Cl. 343—713 **26 Claims**

1. A radio antenna arrangement for establishing a radio link with terrestrial radio stations for decimetric or centimetric waves, said radio arrangement comprising a plurality of antennas (**10**) mounted on an inclined window pane (**1**) of a particular electrically conductive motor vehicle body (**8**), each of the antennas (**10**) comprising an antenna element (**3**) mounted outside of an interior of the vehicle body (**8**) and substantially perpendicular to said inclined



window pane (1); an antenna counterweight (4) mounted on the inclined window pane, said antennas (10) together forming a group antenna with a group antenna connection point (6); and a network (7) containing the group antenna connection point (6), said antennas being radiatively coupled to each other by high-frequency radiation and at least one of said antennas (10) having an antenna element connection point (2) connecting said at least one antenna (10) with the network (7), and said network (7) including means for providing a permanently set phase and amplitude relationship of base point feed currents to the respective antenna elements (3) depending on the particular electrically conductive motor vehicle body, the values of said phase and amplitudes of the base point feed currents being set in such a way that contractions in the horizontal emission density are minimized for said particular motor vehicle body.

5,619,215

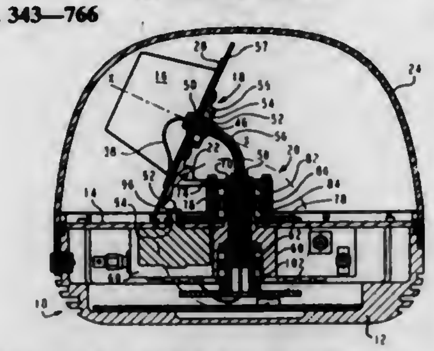
COMPACT ANTENNA STEERABLE IN AZIMUTH AND ELEVATION

John T. Sydor, Ottawa, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of Communications, Ottawa, Canada

Filed Jul. 10, 1995, Ser. No. 500,243

Int. Cl.[6] H01Q *3/08*

U.S. Cl. 343—766 **6 Claims**



1. A mechanically-steerable antenna comprising:
a base member;
an active antenna element;
a first support and a second support, the second support mounted upon the base member and the first support supported by, and connected hingedly to, the second support, the first support supporting the active antenna element, the second support being rotatable relative to the base member about a first axis of rotation and the antenna element being rotatable relative to the first support about a second axis of rotation inclined relative to the first axis, the first and second supports being adjustable one relative to the other to vary the angle of inclination between the first axis and second axis;
drive means for rotating the second support relative to the base member;
flexible coupling means interconnecting the base member and the active antenna element;
the flexible coupling means being connected non-rotatably to the active antenna element and to the base member, respectively, the arrangement being such that, upon rotation of the second support relative to the base member about said first axis, the flexible coupling means causes rotation of the active antenna element relative to the first support about said second axis, and
elevation adjusting means for displacing the flexible coupling means so as to adjust the position of one of the first and second supports relative to the other and vary said predetermined angle.

5,619,216

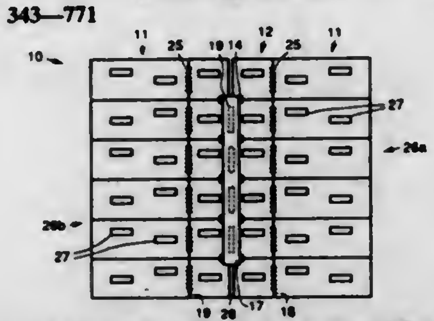
DUAL POLARIZATION COMMON APERTURE ARRAY FORMED BY WAVEGUIDE-FED, PLANAR SLOT ARRAY AND LINEAR SHORT BACKFIRE ARRAY

Pyong K. Park, Agoura Hills, Calif., assignor to Hughes Missile Systems Company, Los Angeles, Calif.

Filed Jun. 6, 1995, Ser. No. 469,831

Int. Cl.[6] H01Q *13/12*

U.S. Cl. 343—771 **5 Claims**



1. A common aperture dual polarization array (10) comprising:
vertical polarization antenna array (11) comprising a flat plate shunt slot standing wave array that comprises a plurality of sets (*26a*, *26b*) of radiating slots (27) configured in a staggered pattern and that are laterally separated by an air gap (28);
a horizontal polarization antenna array (12) comprising centered longitudinal radiating slots (19) that are disposed orthogonal to the radiating slots (27) of the vertical polarization antenna array (11), a strip reflector (17) and a plurality of baffles (18); and
a feed network (16) coupled to the vertical polarization and horizontal polarization antenna arrays (11, 12) that comprises a centered collinear standing wave array of longitudinally aligned feed slots (25) coupled to the vertical polarization antenna array (11), and a collinear array of feed slots (29) coupled to the horizontal polarization antenna array (12).

5,619,217

CELLULAR AND PCS ANTENNA MOUNTING ASSEMBLY

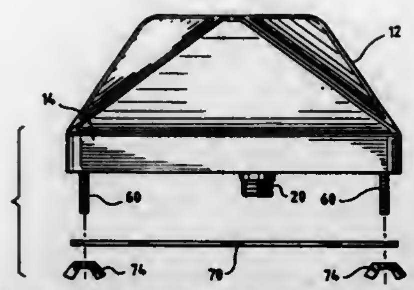
Peter Mailandt, Dallas, and Ricardo Vazquez, Plano, both of Tex., assignors to Allen Telecom Group, Inc., Dallas, Tex.

Filed May 19, 1995, Ser. No. 444,959

Int. Cl.[6] H01Q *1/42*

U.S. Cl. 343—872 **5 Claims**

1. An antenna assembly for flush mounting to a ceiling or wall surface of a building construction comprising
an antenna housing comprising a cover and a base plate and an RF antenna housed within a cavity defined by said cover and said base plate, and a connector for connecting said antenna to a transceiver,
said base plate defining a plate defining a plurality of openings,
a bracket defining a plurality of openings,
a plurality of pins, each having a pair of ends, each of said ends defining a plurality of spaced elements and a stop, one of said ends being disposed in a said base plate opening and the other of said ends being disposed in a said bracket opening, and wherein spaced elements at one end of each of said pins define a first outer zone smaller than the size of said base plate openings, a first intermediate zone larger than the size of said base plate openings, and a first inner zone smaller than said first intermediate zone, said stop being adjacent said first inner zone, and said stop and said first intermediate zone cooperating to retain said one end of the pin in said base plate opening in said inner zone,
and wherein the spaced elements at the other ends of said pins define a second outer zone smaller than the size of said bracket openings, a second intermediate zone larger than the size of said bracket openings, and a second inner zone smaller than said intermediate zone, said stop being adjacent said second inner zone, and said stop and said second intermediate zone cooperating to retain said other end in said bracket opening in said second inner zone,
whereby said antenna assembly may be securely and attractively flush mounted to an internal wall or ceiling of a building construction.



5,619,218

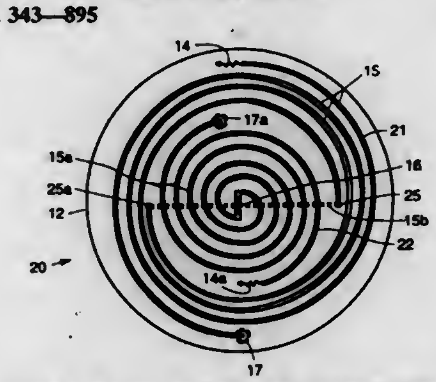
COMMON APERTURE ISOLATED DUAL FREQUENCY BAND ANTENNA

Gary Salvail, and I-Ping Yu, both of Tucson, Ariz., assignors to Hughes Missile Systems Company, Los Angeles, Calif.

Filed Jun. 6, 1995, Ser. No. 468,213

Int. Cl.[6] H01Q *1/36*

U.S. Cl. 343—895 **11 Claims**



1. A common aperture isolated dual frequency band antenna comprising:
a substrate having first and second surfaces;
a low band spiral antenna formed on the substrate that comprises:
a first termination disposed adjacent the periphery of the substrate;
first conductive metallization disposed on the first surface of the substrate and coupled to the first termination that spirals in a first direction from the first termination a predetermined distance towards the center of the substrate;
a first via disposed through the substrate for coupling the first conductive metallization to the second surface of the substrate;
a second vias disposed through the substrate;
second surface metallization disposed on the second surface of the substrate connected between the first and second vias;
second conductive metallization disposed on the first surface of the substrate and coupled to the second via that spirals in a second direction increasing in diameter as it progresses toward the periphery of the substrate; and
a first feed that is coupled to the second conductive metallization; and
a high band spiral antenna formed on the substrate that comprises:
a second termination disposed adjacent an innermost spiral of metallization of the low band antenna;
third conductive metallization disposed on the first surface of the substrate that spirals in the second direction from the second termination toward the center of the substrate;
fourth conductive metallization disposed on the first surface of the substrate that spirals in the first direction from the center of the substrate toward the innermost spiral of metallization of the low band antenna;
a conductive jumper coupled between the third and fourth conductive metallizations; and
a second feed coupled to the fourth conductive metallization.

5,619,219

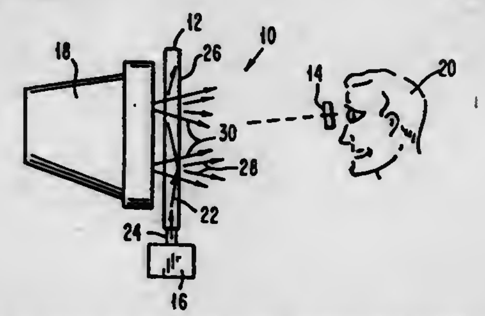
SECURE VIEWING OF DISPLAY UNITS USING A WAVELENGTH FILTER

Paul W. Coteus, Yorktown Heights, N.Y., and Douglas S. Goodman, Sudbury, Mass., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 21, 1994, Ser. No. 342,950

Int. Cl.[6] G09G *5/00*

U.S. Cl. 345—7 **9 Claims**



1. An apparatus for providing secure viewing of a primary image on a display by a viewer comprising:
means for generating a mask of light of a single wavelength band between said display and said viewer that mixes with said primary image to obscure viewing of said primary image; and
viewing means for use by the viewer for separating said mask of light from said primary image to allow only the primary image to be viewed through the viewing means, so that the viewer only sees the primary image.

5,619,220

SOUND IMAGE DISPLAY METHOD AND APPARATUS

Hiroyuki Tomita; Tōru Furuse; Masakatu Mizukami, and Akihiro Masukawa, all of Kanagawa-ken, Japan, assignors to Leader Electronics Corporation, Kanagawa-ken, Japan

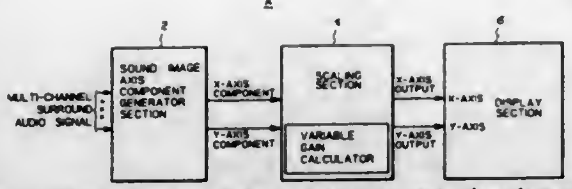
Filed Oct. 11, 1994, Ser. No. 320,392

Claims priority, application Japan, Oct. 8, 1993, 5-252977

Int. Cl.[6] G09G *1/08*

U.S. Cl. 345—14 **8 Claims**

1. A sound image display method for visually displaying a sound image formed by a multi-channel surround audio signal in a reproduced sound field on a two-dimensional plane, said two-



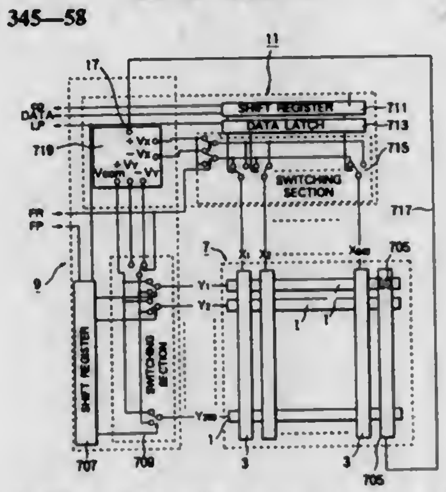
dimensional plane having a first axis and a second axis orthogonal to each other, said method comprising the steps of:

(a) generating a first signal representing a first axis component and a second signal representing a second axis component from said multi-channel surround audio signal for displaying a sound image;

(b) scaling the first and second signals by generating third and fourth signals, said third signal being generated by multiplying said first signal by a variable gain, the fourth signal being generated by multiplying said second signal by said variable gain, said variable gain being determined from a length of a vector and a reference value of the vector length, said vector having said first and second signals or said third and fourth signals as said first and second axis components, respectively, said variable gain being decreased when said vector length is larger than said reference value and increased when said vector length is not larger than said reference value; and

(c) displaying a two-dimensional representation having said third and fourth signals as said first and second axis components, respectively.

5,619,221
LIQUID CRYSTAL DISPLAY DEVICE
Hoko Hirai, and Susumu Kondo, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan
Division of Ser. No. 60,554, May 13, 1993, Pat. No. 5,434,599. This application Dec. 1, 1994, Ser. No. 352,158
Claims priority, application Japan, May 21, 1992, 4-128554; May 14, 1992, 4-121574; Oct. 12, 1992, 4-272733
Int. Cl.[6] **G09G** *3/36*
U.S. Cl. 345—58 **4 Claims**



1. In a liquid crystal display device, comprising a scanning electrode substrate formed of a plurality of scanning electrodes, a data electrode substrate formed thereon with a plurality of signal electrodes arranged opposing to and intersecting with a plurality of the scanning electrodes having gaps therebetween, a liquid crystal display panel maintaining a liquid crystal layer sealed and held between the scanning electrode and the signal electrode, a driving voltage supply circuit for outputting a plurality of voltage levels of producing a scanning voltage and a scanning non-selected voltage, a scanning driver circuit which has a switching circuit for applying to the scanning electrode one voltage selected from among a plurality of levels of voltages output from the driving voltage supply circuit and which applies to each of a plurality of scanning electrodes a scanning signal formed by a combination of the scanning selected voltage and the scanning non-selected voltage, and a data driver circuit for applying to each of a plurality of signal electrodes a data signal,

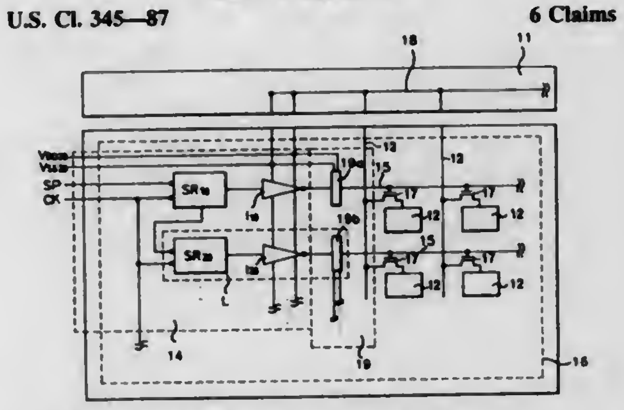
a liquid crystal display device characterized in that;

a voltage detecting electrode opposing to a plurality of the scanning electrodes through the liquid crystal layer is formed on the data electrode substrate substantially in parallel with the signal electrode and a plurality of the electric capacitances are formed of the voltage detecting electrode and the liquid crystal layer and the scanning electrode;

by connecting the voltage detecting electrode as an other terminal of the electric capacitance to the operational amplifier, the voltage detecting electrode takes out a voltage distortion component from the voltage on the scanning electrode by a capacitive coupling of the electric capacitance and put the voltage distortion components in the operational amplifier to synthesize with a voltage for producing a non-selected voltage from among a plurality of levels of voltages being output from the driving voltage supply circuit, and a negative feedback loop for executing a negative feedback control of a scanning non-selected voltage of a plurality of the scanning electrodes is formed to suppress generation of distortion of the scanning non-selected voltage of the scanning electrode;

a dull waveform generating circuit for making dull (delay) of at least either of a waveform at rise or a waveform at fall of the scanning selected voltage being output from the driving voltage supply circuit is provided on the driving voltage supply circuit to reduce an influence of fluctuation of an effective voltage due to distortion of the scanning selected voltage.

5,619,222
LIQUID CRYSTAL DISPLAY DEVICE HAVING STATIC ELECTRICITY REMOVING CIRCUITS
Hoe S. So, Kyungki-do, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea
Continuation of Ser. No. 215,188, Mar. 21, 1994, abandoned. This application Sep. 1, 1995, Ser. No. 522,860
Claims priority, application Rep. of Korea, Mar. 24, 1993, 4622/1993
Int. Cl.[6] **G09G** *3/36*
U.S. Cl. 345—87 **6 Claims**



1. A liquid crystal display device comprising:

a plurality of gate lines and a plurality of data lines arranged in a matrix;

a short-circuit line connected to the data lines;

voltage supplying means for supplying a voltage, the voltage supplying means including a high level voltage source and a low level voltage source;

a plurality of gate driving circuits, each gate driving circuit being connected to a corresponding gate line and the voltage supplying means; and

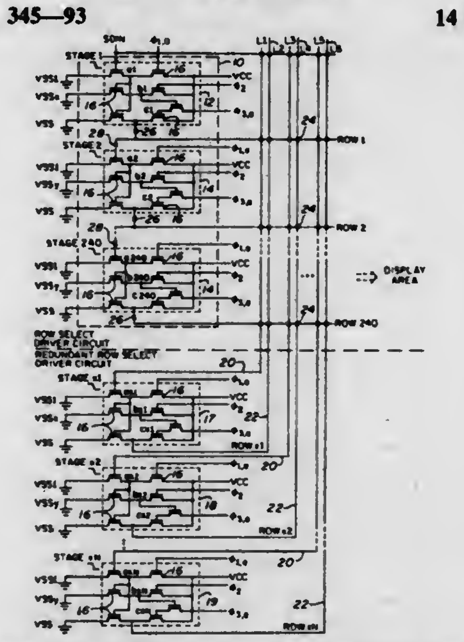
a plurality of static electricity removing circuits being connected to a corresponding gate driving circuit, the short-circuit line, the corresponding gate line, and directly connected to the voltage supplying means,

wherein each of the static electricity removing circuits comprises

a NMOS transistor, including a source connected to the short-circuit line and the high level voltage source, a gate connected to the corresponding gate line and a drain connected to the corresponding gate line, and

a PMOS transistor, including a source connected to the short-circuit line and the low level voltage source, a gate connected to the corresponding gate line and a drain connected to the corresponding gate line.

5,619,223
APPARATUS FOR INCREASING THE EFFECTIVE YIELD OF DISPLAYS WITH INTEGREGATED ROW SELECT DRIVER CIRCUIT
Sywe N. Lee, Taipei; Dyi-Chung Hu, and Huann-Min Tang, both of Shinchu, all of Taiwan, assignors to Prime View HK Limited, Hong Kong, Hong Kong
Filed Apr. 14, 1994, Ser. No. 227,716
Int. Cl.[6] **G09G** *5/00;3/36*
U.S. Cl. 345—93 **14 Claims**



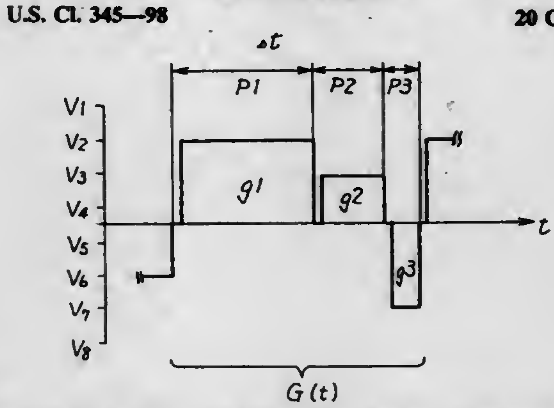
1. A row select driver circuit system for correcting defects in a display formed on a substrate, the display having a plurality of pixel elements formed in a plurality of rows and columns, the row select driver circuit system comprising:

a first row select driver circuit on a substrate having a plurality of subcircuits, each of which is coupled to a row of the display for selectively activating a corresponding row of pixel elements, any of the subcircuits having the possibility of being defective;

at least a first redundant subcircuit on the substrate corresponding to at least more than one of said plurality of subcircuits; and

connecting means on the substrate electrically connected to the at least first redundant subcircuit and associated with each corresponding subcircuit such that the connecting means is selectively electrically connectable to the row select driver circuit for replacing any defective corresponding subcircuit therein with the redundant subcircuit.

5,619,224
LIQUID CRYSTAL DISPLAY PANEL DRIVING DEVICE
Masafumi Hoshino; Shuhei Yamamoto; Hiroyuki Fujita; Hirotomo Oniwa; Teruo Ebihara, and Fujio Matsu, all of Chiba, Japan, assignors to Seiko Instruments Inc., Japan
Filed Dec. 27, 1994, Ser. No. 366,419
Claims priority, application Japan, Dec. 28, 1993, 5-335426
Int. Cl.[6] **G09G** *3/36*
U.S. Cl. 345—98 **20 Claims**



1. A driving device for driving, according to predetermined pixel data, a liquid crystal display panel having a plurality of pixels arranged in a matrix, the display panel comprising a liquid crystal layer interposed between a group of row electrodes and a group of column electrodes, the driving device comprising: first means for applying a plurality of row signals represented by a set of orthonormal functions to the group of row electrodes by set sequential scanning for each of a plurality of selecting periods; and second means for sequentially performing a dot product computation between the set of orthonormal functions and a set of pixel data, generating a column signal having a voltage level corresponding to a result of the computation, and applying the column signal to each of the group of column electrodes in synchronization with the set sequential scanning for each of the selecting periods; wherein the second means comprises a frame memory for storing pixel data with gray shading represented by a plurality of data bits, dot product computing means for dividing the set of pixel data into the respective data bits and performing the computation to generate a column signal having a plurality of components each component corresponding to a respective bit, and driving means for arranging column signal components in a descending order from a column signal component of a most significant bit, having a first pulse width, to column signal component of a least significant bit, having a pulse width smaller than the first and all intermediate pulse widths during each of the selecting periods to form the column signal and for applying the column signal to the group of column electrodes.

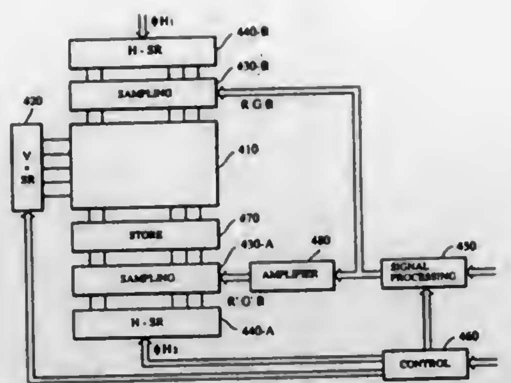
5,619,225
LIQUID CRYSTAL DISPLAY APPARATUS AND METHOD OF DRIVING THE SAME
Seiji Hashimoto, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 281,005, Jul. 27, 1994, abandoned. This application Jun. 19, 1996, Ser. No. 666,919
Claims priority, application Japan, Jul. 30, 1993, 5-190092; Feb. 7, 1994, 6-033217; May 12, 1994, 6-098677; Jul. 1, 1994, 6-171555
Int. Cl.[6] **G09G** *3/36*
U.S. Cl. 345—98 **8 Claims**

1. A liquid-crystal display apparatus, comprising:

a plurality of pixels, arranged in a matrix form having a plurality of pixel rows, each pixel having a switching element;

a plurality of data lines coupled to the pixel rows by the switching elements;

a vertical scanning circuit for selecting a row of said pixels;



first writing means, including a first horizontal scanning circuit for generating a first signal used to sample an image signal to be supplied to said pixels, connected to a side of the plurality of data lines;

a second horizontal scanning circuit for generating a second signal used to sample an image signal to be supplied to said pixels, connected to an opposite side of the plurality of data lines; and

second writing means having storing means for storing image signals sampled by said second horizontal scanning circuit,

wherein said first writing means consecutively supplies the image signals directly to the data lines without intermediate storage of the image signals in a T_2 period of every horizontal scanning period (1H period), and said second writing means consecutively supplies the image signals to said storing means in said T_2 period so that the image signals are stored by said storing means and then supplied to the data lines when said T_2 period is terminated.

5,619,226

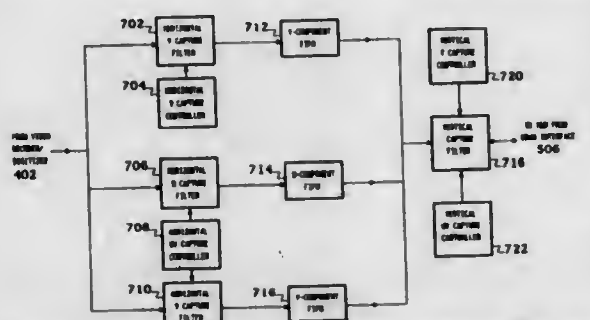
SCALING IMAGE SIGNALS USING HORIZONTAL AND VERTICAL SCALING

Benjamin M. Cahill, III, Ringoes, N.J., assignor to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 86,636, Jul. 1, 1993, abandoned. This application Jun. 3, 1994, Ser. No. 254,053

Int. Cl.⁶ G09G *5/00*

U.S. Cl. 345—132 **18 Claims**



1. An interface for scaling three-component images, comprising:

(a) a horizontal first-component filter;

(b) an internal first-component memory device, connected to the horizontal first-component filter;

(c) a horizontal second-component filter;

(d) an internal second-component memory device, connected to the horizontal second-component filter;

(e) a horizontal third-component filter;

(f) an internal third-component memory device, connected to the horizontal third-component filter; and

(g) a vertical filter, connected to the internal first-component, second component, and third-component memory devices, wherein:

the horizontal first-component filter horizontally scales first-component image signals and selectively stores the resulting horizontally scaled first-component image signals in one of an external memory device and the internal first-component memory device;

the horizontal second-component filter horizontally scales second-component image signals and selectively stores the resulting horizontally scaled second-component image signals in one of the external memory device and the internal second-component memory device;

the horizontal third-component filter horizontally scales third-component image signals and selectively stores the resulting horizontally scaled third-component image signals in one of the external memory device and the internal third-component memory device; and

the vertical filter:

receives horizontally scaled image signals from the external memory device;

selectively receives horizontally scaled image signals from one of the internal first-component, second-component, and third-component memory devices; and

vertically scales the horizontally scaled image signals to selectively generate one of partially vertically scaled image signals and fully scaled image signals of a scaled three-component image.

5,619,227

PICTURE DATA PROCESSING DEVICE WITH PREFERENTIAL SELECTION AMONG A PLURALITY OF SOURCES

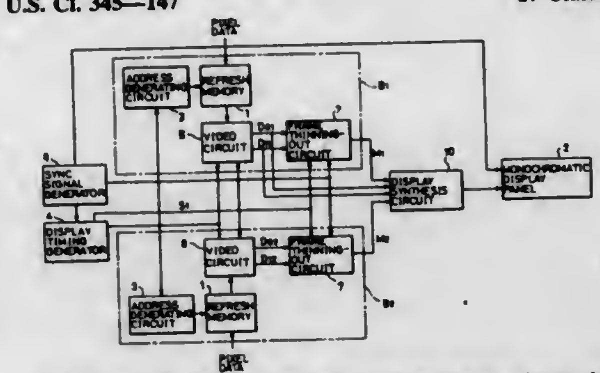
Hideharu Takebe, Hyogo-ken, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 837,688, Feb. 19, 1992, Pat. No. 5,450,097, which is a continuation of Ser. No. 530,578, May 30, 1990, abandoned. This application Sep. 14, 1994, Ser. No. 305,621

Claims priority, application Japan, Jun. 7, 1989, 1-146020

Int. Cl.⁶ G04G *5/10*

U.S. Cl. 345—147 **17 Claims**



1. A picture data processing device for processing picture data for display driving a display unit having 2^n display colors where n is an integer, comprising

a plurality of sets of converting means each operating for converting m-bit color picture data into an n-bit color picture signal, where m is an integer greater than n,

synthesizing means for selectively outputting only one of a plurality of picture signals, received from said plurality of sets of converting means, in accordance with a preference signal exclusive of said picture signals and representing different degrees of preference for the picture signals, and

means for providing said preference signal to said synthesizing means for selecting only one of said plurality of picture signals for output thereby,

wherein said synthesizing means comprises a plurality of logic means, each of said logic means responsive to presence of corresponding m-bit color picture data, converted by a corresponding one of said converting means to a respectively corresponding one of said plurality of n-bit color picture

signals, for suppressing display of a non-corresponding one of said plurality of n-bit color picture signals converted by a non-corresponding converting means, and

switching means for selecting a preferred one of said converted n-bit color picture signals as said only one picture signal to be outputted by said synthesizing means,

said switching means comprising preference means responsive to said preference signal for changing degrees of preference associated with said plurality of n-bit color picture signals, thereby switchably changing the n-bit color picture signal selected as said only one picture signal to be outputted by said synthesizing means.

5,619,228

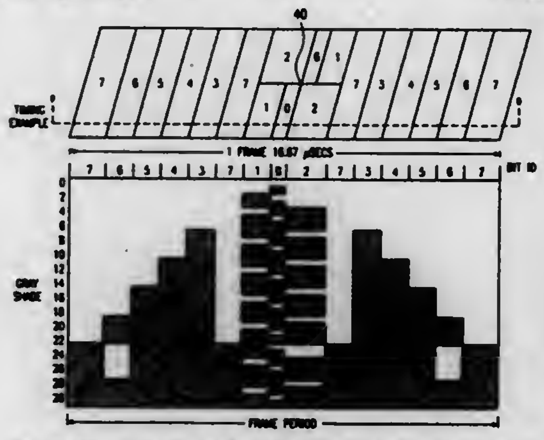
METHOD FOR REDUCING TEMPORAL ARTIFACTS IN DIGITAL VIDEO SYSTEMS

Donald B. Doherty, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation-in-part of Ser. No. 517,201, Aug. 18, 1995, abandoned, which is a continuation of Ser. No. 280,032, Jul. 25, 1994, abandoned. This application Jun. 5, 1996, Ser. No. 658,783

Int. Cl.⁶ G09G *5/10*

U.S. Cl. 345—148 **5 Claims**



1. An improved method for displaying digital video data comprising:

a. determining the time available for one frame of said data;

b. arranging the bits of said data into binary weighted bit planes, such that all bit of equal weight from all data words are stored in one bit plane;

c. translating said binary weighted bit planes into non-binary weighted bit planes such that gray level transitions occur with fewest possible changes in lit patterns within system bit-width and timing limitations; and

d. transmitting said non-binary bit planes to the activation circuitry of a spatial light modulator such that data for any given non-binary bit plane is displayed for time period proportional to said bit plane's weight.

5,619,229

DISPLAY APPARATUS WITH COLOR TEMPERATURE CONTROL

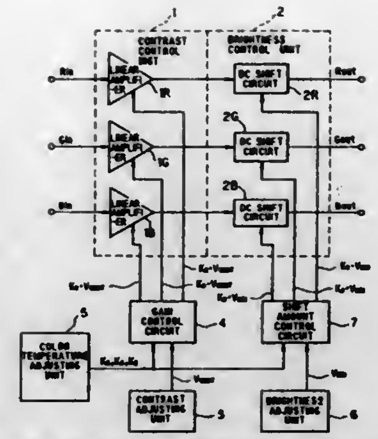
Shingo Kumaki, Osaka, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 779,328, Oct. 15, 1991, abandoned. This application May 2, 1994, Ser. No. 237,241

Claims priority, application Japan, Oct. 15, 1990, 2-275714

Int. Cl.⁶ G09G *5/02*

U.S. Cl. 345—150 **7 Claims**



1. A display apparatus comprising a first input terminal for receiving a first input signal indicative of a primary red color; a second input terminal for receiving a second input signal indicative of a primary green color; a third input terminal for receiving a third input signal indicative of a primary blue color, each of said first, second and third input signals having a primary black level which represents primary brightness information based upon a voltage difference thereof from a reference voltage level; a first output terminal for outputting a first output signal indicative of an output red color; a second output terminal for outputting a second output signal indicative of an output green color; a third output terminal for outputting a third output signal indicative of an output blue color, each of said first, second and third output signals having a controlled black level which represents output brightness information based upon a voltage difference thereof from said reference voltage level; a brightness adjusting unit for generating red, green and blue brightness control information; a control circuit coupled to said brightness adjusting unit and responding to said brightness control information to produce first, second and third brightness control signals for respectively controlling black levels of said first, second and third input signals; a color temperature adjusting unit for generating a red color temperature coefficient, a green color temperature coefficient and a blue color temperature coefficient; means for supplying said red, green and blue color temperature coefficients to said control circuit to cause said control circuit, in response to said color temperature coefficients, to modify said first, second and third brightness control signals, respectively, said control circuit thereby producing a first modified brightness control signal, a second modified brightness control signal and a third modified brightness control signal; and a brightness control unit coupled between said first, second and third input terminals and said first, second and third output terminals, for controlling the respective primary black levels of said first, second and third input signals in response to said first, second and third modified brightness control signals, respectively, to thereby produce said first, second and third output signals having the respective black levels.

5,619,230

SYSTEM AND METHOD FOR REAL-TIME IMAGE DISPLAY PALETTE MAPPING

Albert D. Edgar, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 147,513, Nov. 5, 1993, abandoned. This application May 17, 1995, Ser. No. 442,599

Int. Cl.⁶ G09G *5/02*

U.S. Cl. 345—150 **14 Claims**

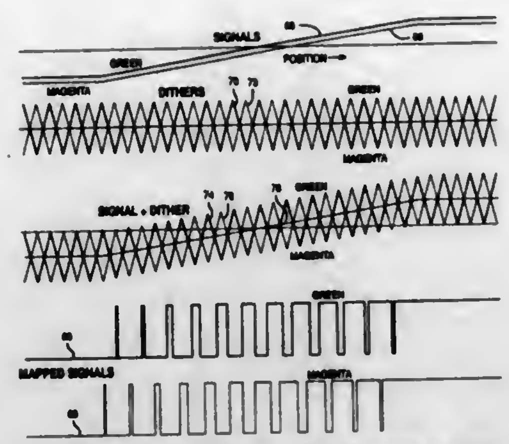
1. A computerized method for color mapping a digitized image defined by at least a first and second color component, comprising

selecting a dither pattern;

selecting complementary dither pattern wherein said dither pattern and said complementary dither pattern define a plurality of pixel pairs, each of said pairs comprised of:

a pixel from said dither pattern defining a pixel value and located at a respective location in said dither pattern; and

a complimentary pixel from said complementary dither pattern defining a complementary pixel value and located at a respective location in said complementary dither pattern



corresponding to said respective location in said dither pattern; and further wherein

the sum of said pixel value and said complementary pixel value for each of said pixel pairs is a constant;

generating an altered first color component from said first color component and said dither pattern; and

generating an altered second color component from said second color component and said complementary dither pattern.

5,619,231

MULTI-DIMENSIONAL COORDINATE INPUT APPARATUS ADAPTED FOR SIMPLE INPUT OPERATION, AND SYSTEM USING THE SAME

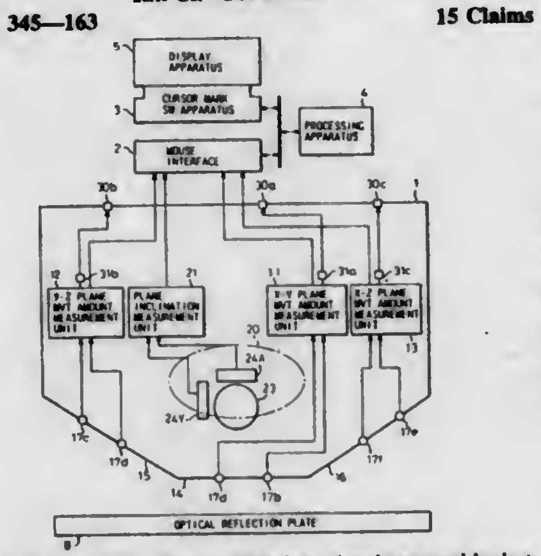
Akihisa Shouen, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 202,566, Feb. 28, 1994, abandoned. This application Jun. 5, 1995, Ser. No. 462,560

Claims priority, application Japan, Apr. 28, 1993, 5-102658

Int. Cl.[6] G09G *5/08*

U.S. Cl. 345—163 **15 Claims**



1. A coordinate input apparatus having a hand-operated body to input coordinate information of a work plane, the body comprising:

a bottom portion having first, second, third and fourth input planes which are not all located in the same plane, where

the first, second and third input planes correspond, respectively, to an X-Y coordinate plane, a Y-Z coordinate plane and an X-Z coordinate plane of a three-dimensional coordinate space,

the X-Y coordinate plane, the Y-Z coordinate plane and the X-Z coordinate plane are individually selectable by selecting the corresponding input plane, coordinate information of a work plane being input in a respective coordinate plane by selecting the coordinate plane, and

the fourth input plane includes a plane inclination detection unit for inputting an inclination of a work plane with respect to a selected coordinate plane; and

detecting means, provided on at least one of the first, second and third input planes, for detecting movement of the body corresponding to coordinate information to be input.

5,619,232

MAINTENANCE STATION OF INK JET PRINTER AND CAP AND PUMP INCLUDED THEREIN

Fumio Maeno, Saitama-ken, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

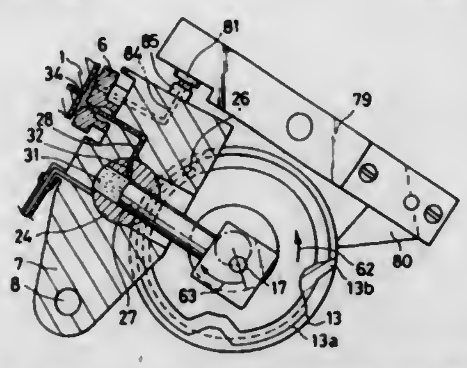
PCT No. PCT/JP93/01820, § 371 Date Sep. 20, 1994, § 102(e) Date Sep. 20, 1994, PCT Pub. No. WO94/13488, PCT Pub. Date Jun. 23, 1994

PCT Filed Dec. 15, 1993, Ser. No. 307,628

Claims priority, application Japan, Dec. 16, 1992, 4-354453; Jul. 2, 1993, 5-190898; Sep. 1, 1993, 5-239239; Sep. 28, 1993, 5-263033

Int. Cl.[6] B41J *2/165*

U.S. Cl. 347—30 **66 Claims**



1. In an ink jet printer including a paper delivery mechanism, an ink jet head mounted on a carriage and movable thereby along recording paper at said paper delivery mechanism to jet ink through at least one nozzle hole to perform printing and movable to a stop home position, and a maintenance station at said home position to perform a maintenance recovery operation on said ink jet head, the improvement wherein said maintenance station comprises:

a cap to achieve capping of said at least one nozzle hole when said ink jet head is in said home position;

a pump including a casing having therein a cylindrical guide opening, a cylinder comprising a cylindrical member mounted in said cylindrical guide opening, said cylindrical member having therethrough a cylindrical passage, and a piston slidable in opposite directions in said cylindrical passage for suction and compression strokes;

separate suction and discharge holes in said pump;

a power source; and

a piston drive operably connected to said power source and to said piston to move said piston in said opposite directions in said cylindrical passage, to connect a pressure chamber in said pump via said suction hole to said cap during said suction stroke, and to connect said pressure chamber via said discharge hole to the exterior during said compression stroke.

5,619,233

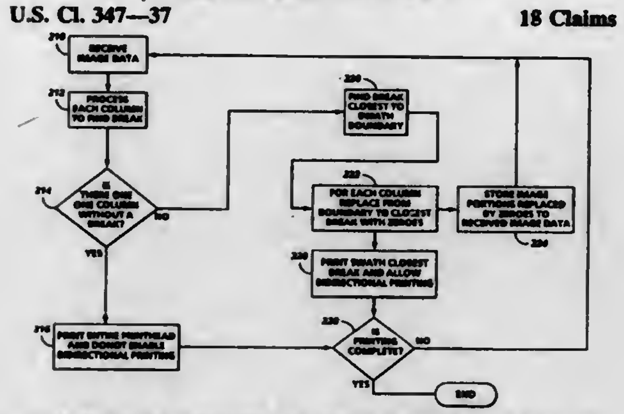
BIDIRECTIONAL INK JET PRINTING WITH HEAD SIGNATURE REDUCTION

Steven J. Harrington, Holley, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 27, 1994, Ser. No. 329,760

Int. Cl.[6] B41J *23/00; 19/30*

U.S. Cl. 347—37 **18 Claims**



7. A device for controlling an ink jet printer having a reciprocable printhead to print swaths of an image with either unidirectional or bidirectional transits across a sheet, optimizing reproduction of images with vertical structures bridging successive swaths on a background, including:

a) means for receiving at an image input a set of signals representing pixels in plural scan lines forming a first swath of the image, wherein pixels at corresponding locations in each of the plural scan lines form columns of pixels;

b) means for locating breaks in vertical image structures in each column of pixels within a relevant portion of the swath, wherein the relevant portion of the swath includes those scan lines a predetermined distance from a boundary of the received swath with a next swath;

c) means for replacing pixels in said swath with pixels forming background, from the located break in each column of pixels to the swath boundary, to form a print image;

d) means for storing the replaced portion of the swath, complementary to a portion used to form the print image, for subsequent combination with the next swath;

e) means for controlling the reciprocable printhead to print a first swath of the image with the said print image during a forward bidirectional transit of the printhead across the sheet and to print a second swath of the image including said data stored for subsequent combination with a return bidirectional reverse transit of the printhead across the sheet, said return swath at least partially overlapping the printed forward bidirectional swath.

5,619,234

INK-JET RECORDING APPARATUS WHICH ALLOWS SHIFTING OR CHANGING OF INK POSITION OR DIRECTION

Hitoshi Nagato, Tokyo; Tsutomu Saito, Yokohama; Shuzo Hirahara, Yokohama; Tetuo Okuyama, Yokohama; Satoshi Takayama, Kawasaki; Sakae Tamura, Chiba; Shunsuke Hattori, Kawasaki, and Hideki Nukada, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 15, 1994, Ser. No. 213,026

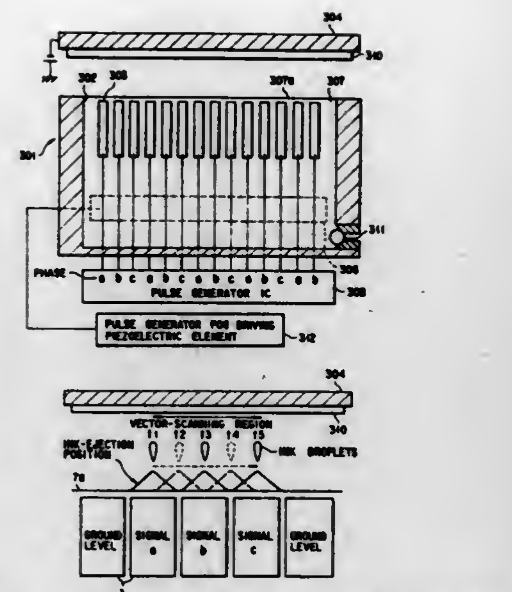
Claims priority, application Japan, Mar. 15, 1993, 5-080159; Mar. 15, 1993, 5-080162

Int. Cl.[6] B41J *2/065*

U.S. Cl. 347—55 **23 Claims**

1. A recording apparatus comprising:

an ink-holding section, having a common opening section for ejecting ink;



a plurality of pixel electrodes located in said ink-holding section and juxtaposed along said common opening section, for ejecting ink;

at least one common electrode opposing said common opening section, for imparting a potential difference to said pixel electrodes; and

control means for controlling the potential of each of said pixel electrodes to shift an ink-ejection position along said common opening section or to change an ink-ejection direction along said common opening section.

5,619,235

ENERGY EFFICIENT INK JET PRINT HEAD

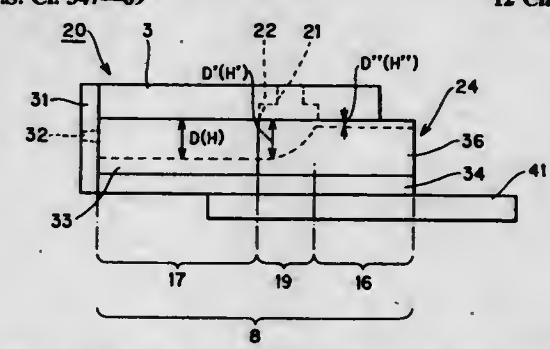
Masahiko Suzuki, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Aichi-ken, Japan

Filed Sep. 28, 1994, Ser. No. 313,816

Claims priority, application Japan, Sep. 30, 1993, 5-244903

Int. Cl.[6] B41J *2/045*

U.S. Cl. 347—69 **12 Claims**



4. An ink jet print head for ejecting droplets of ink, comprising:

an actuator constructed from a piezoelectric member made of a piezoelectric material and a capacitance lowering member made of a material having a relative dielectric constant lower than that of the piezoelectric material, the piezoelectric member having a first end and a second end opposite said first end in a predetermined direction and capacitance lowering member having a first end and a second end opposite said first end in the predetermined direction, the second end of the piezoelectric member being connected with the first end of the capacitance lowering member along the predetermined direction, the actuator being formed with a plurality of grooves extending in the predetermined direction from the first end of the piezoelectric member to a predetermined position located between the first end and the second end of the capacitance

lowering member, a depth of each groove having a predetermined constant value in the piezoelectric member from the first end of the piezoelectric member to the second end of the piezoelectric member and being decreased in the capacitance lowering member from the predetermined value from the first end of the capacitance lowering member to the predetermined position of the capacitance lowering member;

a plurality of electrodes provided on both side surfaces of the plurality of grooves provided in the actuator for forming electric field through the piezoelectric material and the capacitance lowering material located between the electrodes thereby deform the piezoelectric material; and

a cover member for covering the plurality of grooves provided in the actuator to thereby form a plurality of ink chambers for being filled with ink and a plurality of nozzles connected with the plurality of ink chambers for jetting droplets of ink filled in the ink chambers.

5,619,236

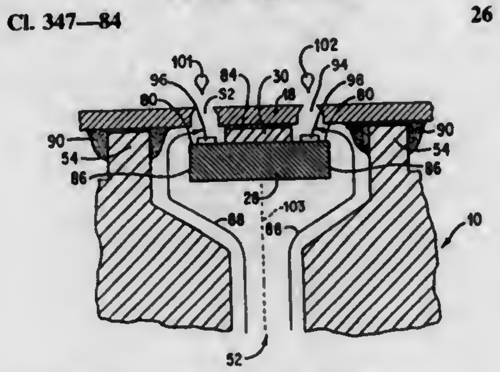
SELF-COOLING PRINTHEAD STRUCTURE FOR INKJET PRINTER WITH HIGH DENSITY HIGH FREQUENCY FIRING CHAMBERS

Brian J. Keefe, La Jolla; May F. Ho, La Mesa; Kenneth J. Courian, San Diego; Steven W. Steinfield, San Diego; Winthrop D. Childers, San Diego, all of Calif.; Ellen R. Tappon; Kenneth E. Trueba, both of Corvallis, Oreg.; Terri I. Chapman, Escondido, Calif.; William R. Knight, and Jules G. Moritz, III, both of Corvallis, Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 320,084, Oct. 6, 1994, which is a continuation-in-part of Ser. No. 179,866, Jan. 11, 1994, which is a continuation of Ser. No. 862,086, Apr. 2, 1992, Pat. No. 5,278,584. This application May 15, 1996, Ser. No. 648,471

Int. Cl.⁶ G01D *15/18*

U.S. Cl. 347—84 **26 Claims**



1. An inkjet printing system comprising:

an ink reservoir;

a substrate having a plurality of ink firing chambers with an ink firing element in each ink firing chamber along a top surface of said substrate, said substrate having a bottom surface, said substrate having a first outer edge along a periphery of said substrate, said first outer edge being in close proximity to the ink firing elements and substantially parallel to said ink firing elements;

an ink channel connecting said reservoir with said ink firing chambers, said ink channel including a primary channel connected at a first end with said reservoir and at a second end to a secondary channel, said primary channel allowing ink to flow from said ink reservoir, across at least a portion of said bottom surface of said substrate such that said ink withdraws heat from said substrate, around said first outer edge of said substrate, and to said secondary channel along said top surface of said substrate; and

a separate inlet passage for each firing chamber, said separate inlet passage being completely defined within the outer boundaries of said substrate, said separate inlet passage for each ink firing chamber connecting said secondary channel with said ink firing chamber for allowing refill of said ink firing chamber.

5,619,237

REPLACEABLE INK TANK

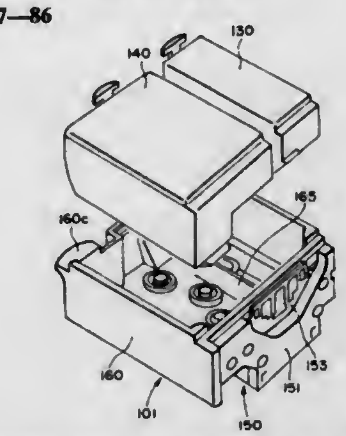
Hiroyuki Inoue, Yokohama; Sadayuki Sugama, Tsukuba; Soichi Hiramatsu, Hachiohji; Hideki Yamaguchi; Toshihiko Ujita, both of Yokohama; Akihiro Yamanaka, Kawasaki; Takashi Nojima, Tokyo; Yasuo Kotaki, Yokohama; Keiichiro Tsukuda, Kawasaki; Hitoshi Nakamura, Sanjo; Akira Kida, Yokohama; Hideaki Kawakami, Yokohama, and Takeshi Iwasaki, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 24, 1995, Ser. No. 518,730

Claims priority, application Japan, Aug. 24, 1994, 6-199809; Feb. 21, 1995, 7-032347; Feb. 28, 1995, 7-040814; Feb. 28, 1995, 7-041107

Int. Cl.⁶ B41J *2/175*

U.S. Cl. 347—86 **31 Claims**



1. A replaceable single-color ink tank for an ink cartridge used in a bubble jet printer, the cartridge comprising side walls and a bottom wall connected to the side walls, said side and bottom walls forming an ink tank holder having an open top through which said ink tank is inserted into and removed from the cartridge, an ink jet print head for printing with at least one ink, at least one ink tapping pipe upstanding from the inside of the bottom wall for introducing ink to the ink jet print head, and a guide groove in a side wall of the cartridge, said single-color ink tank comprising:

a container formed by side walls, and top and bottom walls connected to the side walls;

an ink supply port in said bottom wall of said container, said ink supply port being disposed for supplying ink from said container to the ink tapping pipe in the ink cartridge;

a locking member on one of said side walls of said container for engaging the guide groove in the cartridge; and

said container being configured for insertion into the open top of the ink tank holder with said bottom wall of said container facing downward and said side walls of said container aligned with the side walls of the ink cartridge, and said locking member being constructed for engaging the guide groove and securing said container in place in said ink tank holder with said ink supply port connecting with the ink tapping pipe.

5,619,238

METHOD OF MAKING REPLACEABLE INK CARTRIDGE

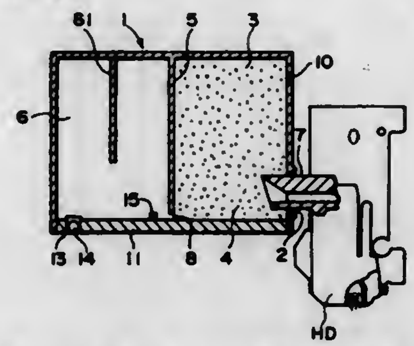
Masahiko Higuma, Tohgane; Masami Ikeda; Naohito Asai, both of Yokohama; Tsutomu Abe, Isehara; Toshio Kashino, Chigasaki, and Seiichiro Karita, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 21, 1993, Ser. No. 94,313

Claims priority, application Japan, Jul. 24, 1992, 4-198474; May 25, 1993, 5-122620

Int. Cl.⁶ B41J *2/175*

U.S. Cl. 347—86 **45 Claims**



1. A method of making a container for a replaceable ink cartridge for a bubble jet printer, the method comprising the steps of:

molding a one-piece container body comprising a front wall, a back wall and a top wall, each of which is elongated, and two side walls which provide major surfaces of said replaceable ink cartridge, said one-piece container body having an open bottom and a partition attached to said side walls, said partition extending from said top wall to a position proximate to said open bottom to divide said one-piece open container body into a first compartment formed by said partition and said back wall, said top wall and said two side walls and a second compartment defined by said partition and said front wall, said top wall and said two side walls;

inserting a sponge-like absorbent material into said second compartment through said open bottom; and

sealing a bottom wall to said one-piece container body to form a first chamber for an ink reservoir and comprising said first compartment and said bottom wall, a second chamber containing said absorbent material and comprising said second compartment and said bottom wall, and a gap between said bottom wall and said partition which provides an opening of between 0.1 mm and 20 mm between said first chamber and said second chamber.

5,619,239

REPLACEABLE INK TANK

Yasuo Kotaki, Machida; Masanori Takenouchi, Yokohama; Hideo Saikawa, Machida; Minoru Nozawa, Yokohama; Osamu Sato, Kawasaki; Toshihiko Ujita, Yamato; Masashi Miyagawa, Yokohama; Hisashi Yamamoto, Machida; Yuji Hamasaki, Sagamihara, and Jun Hinami, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

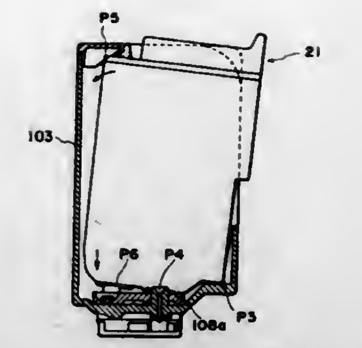
Filed Nov. 25, 1994, Ser. No. 348,939

Claims priority, application Japan, Nov. 29, 1993, 5-298194; Nov. 29, 1993, 5-298195; Jul. 29, 1994, 6-178877; Aug. 4, 1994, 6-183681

Int. Cl.⁶ B41J *2/175*

U.S. Cl. 347—86 **26 Claims**

1. A replaceable multi-ink tank for an ink cartridge used in a bubble jet printer, the ink cartridge comprising a back wall, a bottom wall and two side walls providing major surfaces of the ink cartridge, a front wall and a top wall providing an opening in the top and front of the ink cartridge for insertion and removal of said ink tank, an ink jet print head located on the outside of the bottom wall for printing with at least three different inks, at least three ink tapping pipes upstanding from the inside of the bottom wall for



introducing at least three different inks to the ink jet print head, and a camming shoe located on the inside of the top wall substantially near the back wall of the ink cartridge, said replaceable multi-ink tank comprising:

a container formed by two substantially rectangular side walls providing major surfaces of said container, and a back wall, a front wall, a top wall and a bottom wall;

a substantially T-shaped partition member inside said container extending from aid bottom wall to said top wall and having a cross portion attached to said two side walls and an elongated portion attached to said front wall to divide said container into three separate ink chambers;

three ink supply ports in said bottom wall of said container, each of said three ink supply ports being disposed for supplying ink from one of said three ink chambers to a corresponding one of the three ink tapping pipes in the ink cartridge;

an ink absorbent member in each of said three separate ink chambers; and

said container being configured for insertion into the opening in the top and front of the ink cartridge with said bottom wall of said container facing downward and said back wall facing the back wall of the ink cartridge, and said container being constructed for engaging the camming shoe and securing said container in place in the ink cartridge with each of said ink supply ports connecting with the corresponding ink tapping pipe.

5,619,240

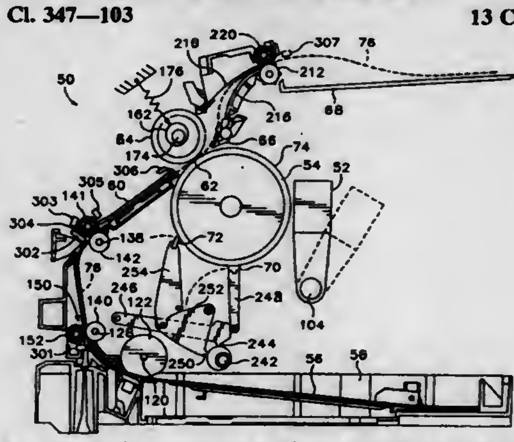
PRINTER MEDIA PATH SENSING APPARATUS

William Y. Pong, Tualatin; Richard G. Chambers, Portland, and James D. Rise, Lake Oswego, all of Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.

Filed Jan. 31, 1995, Ser. No. 382,460

Int. Cl.⁶ B41J *2/385;* **G03G** *9/08*

U.S. Cl. 347—103 **13 Claims**



1. A media sensing system for a printer applying a printed image by way of an indirect transfer imaging process from an intermediate transfer surface to a print medium of a desired size, comprising in combination:

a print media motive force drive train for transporting media along a media pathway through a printer; and

a plurality of sensors positioned along the media pathway for detecting travel of the print medium along the pathway through the printer, the plurality of sensors sequentially detecting the size of the print medium, pausing the print medium for a period of time along the media pathway after the print medium has begun to travel along the media pathway to synchronize movement of the print medium with the imaging process to enable the print medium to receive the printed image from an intermediate transfer surface at an image transfer point, feeding the print medium into a media preheater to heat the print medium prior to and synchronized with the indirect transfer imaging process so that the print medium arrives at an image transfer point simultaneously with completion of the imaging process on the intermediate transfer surface to receive the printed image from an image transfer drum, activating the indirect transfer imaging process from the image transfer drum to the print medium, and detecting exit of the print medium from the printer.

5,619,241

INK-JET PRINTING PAPER AND INK-JET PRINTING METHOD USING THE SAME

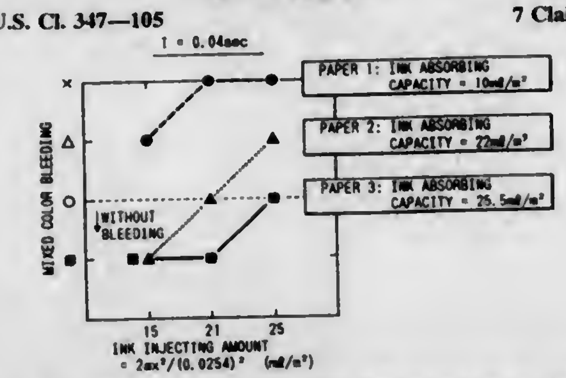
Kiyoshi Hosoi, and Tsukasa Matsuda, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 84,179, Jul. 1, 1993, abandoned. This application May 23, 1995, Ser. No. 447,958

Claims priority, application Japan, Jul. 2, 1992, 4-197462

Int. Cl.⁶ B41J *2/01*

U.S. Cl. 347—105 **7 Claims**



1. Printing paper for a multi-color, multi-nozzle ink-jet printer which includes movable printing heads with a nozzle for different ink colors, each said head having a nozzle jet-out capacity, a, measured in amount of ink drop (ml), a print definition, x, and an inter-nozzle distance, L (mm), to ink of different colors and a printing paper/head relative moving speed, S (mm/s), said paper comprising:

base paper having an apparent density of 0.60 to 0.80 g/cm^3 and a stöckigt sizing degree of 2 to 18 sec; and

a paint including a white pigment having a BET specific surface area of 200 to 400 m^2/g, said paint being applied to at least one surface of said base paper in such a manner that the amount of said paint when dried is in the range from 2 to 10 g/m^2, said paper having an ink absorbing capacity such that in a time T (sec) to be determined by the shortest inter-nozzle distance L (mm) of different ink colors of a multi-color ink-jet printer and a printing paper/head relative moving speed S (mm/s), by the formula T=L/S, the ink absorbing capacity V (ml/m^2) per unit area of said printing paper according to a blister method satisfies the following equation (1):

$$V \geqq 2ax^2/(0.0254)^2 \qquad (1)$$

where a represents the amount of ink drop (ml) jetted out from one nozzle and x represents definition (dpi).

5,619,242

IMAGE FORMING APPARATUS WITH EDGE POINT DETECTOR BASED ON IMAGE DENSITY CHARGE

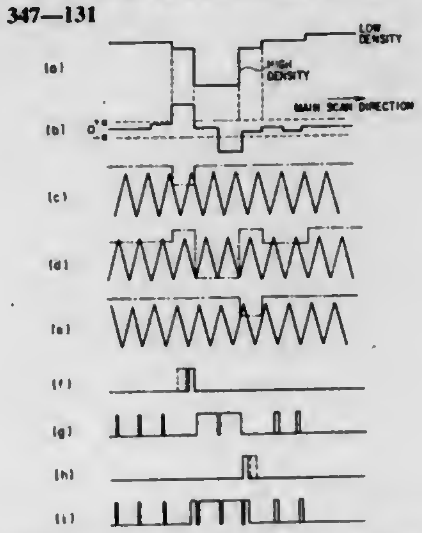
Satoshi Haneda; Masakazu Fukuchi, and Tadashi Miwa, all of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Continuation of Ser. No. 720,617, Jun. 25, 1991, abandoned. This application Jan. 11, 1994, Ser. No. 179,818

Claims priority, application Japan, Jun. 27, 1990, 2-169273; Jul. 16, 1990, 2-187487

Int. Cl.⁶ B41J *2/435;* **H04N** *1/409*

U.S. Cl. 347—131 **10 Claims**



1. An apparatus for forming an image as a two dimensional array of dot images arranged in horizontal and vertical directions, the image forming apparatus comprising:

means for sequentially inputting image density data of pixels into the apparatus, each image density data representing an image density level in a pixel of the image;

edge detecting means for detecting an edge point in the image by obtaining a value of an image density change from a pixel to a succeeding pixel in the horizontal direction by comparing corresponding image density level from the image density data, and by classifying each pixel, based on the image density change value, into one of a predetermined number of classes, the predetermined number of classes including at least an edge-starting pixel where the value of the image density change is larger than a predetermined positive threshold value, an edge-ending pixel where the value of the image density change is smaller than a predetermined negative threshold value and a non-edge pixel where the value of the image density change lies between the predetermined positive threshold value and the predetermined negative threshold value;

modulated light beam generating means for generating a modulated light beam pulse based on both the image density level and the class of each pixel, wherein a duration width of the modulated light beam pulse corresponds to the image density level of the pixel, and a timing shift of the modulated light beam pulse generation corresponds to the class of the pixel so that the modulated light beam pulse lags in phase for the edge-starting pixel and leads in phase for the edge-ending pixel;

a photoreceptor member; and

scanning means for forming an electrostatic latent image as the array of dot images on a surfaces of the photo-receptor by scanning the surface with the modulated light beam pulses, wherein a dot image at an edge shifts in the horizontal direction by lead and lag of phase of the modulated light beam pulse.

5,619,243

IMAGE RECORDING AND ERASING METHOD

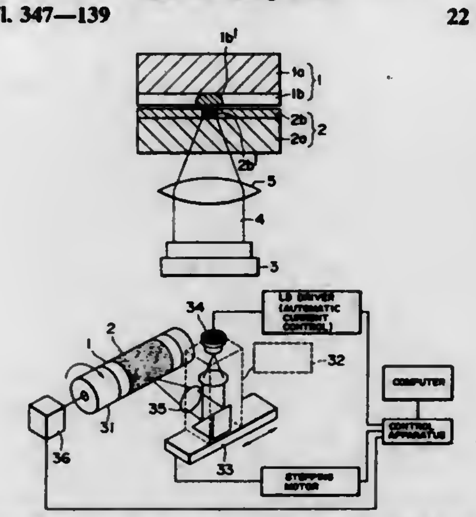
Yoshihiko Hotta; Akira Suzuki, both of Mishima; Makoto Obu, Yokohama, and Takashi Kitamura, Ichikawa, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Nov. 18, 1994, Ser. No. 344,574

Claims priority, application Japan, Nov. 18, 1993, 5-312557

Int. Cl.⁶ B41J *2/385*

U.S. Cl. 347—139 **22 Claims**



1. An image recording and erasing method for recording images and erasing the same repeatedly by use of a reversible thermosensitive recording medium which is capable of reversibly changing the transparency and color tone thereof depending upon the temperature thereof, comprising the steps:

disposing a light-to-heat conversion sheet over said reversible thermosensitive recording medium;

applying a laser beam to said light-to-heat conversion sheet to heat said reversible thermosensitive recording medium by the heat generated by said light-to-heat conversion sheet upon the application of said laser beam thereto, thereby forming images on said reversible thermosensitive recording medium and/or erasing images therefrom; and

removing said light-to-heat conversion sheet away from said reversible thermosensitive recording medium.

5,619,244

THERMAL INK CASSETTE FOR A THERMAL PRINTING DEVICE

Robert E. Manna, Newtown, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 27, 1994, Ser. No. 363,781

Int. Cl.⁶ B41J *31/00;33/14*

U.S. Cl. 347—214 **3 Claims**

1. An improved thermal ribbon cassette for attachment to a thermal printing apparatus having a housing formed by a forward section attached to a rear wall to define a chamber, wherein the improvement comprises:

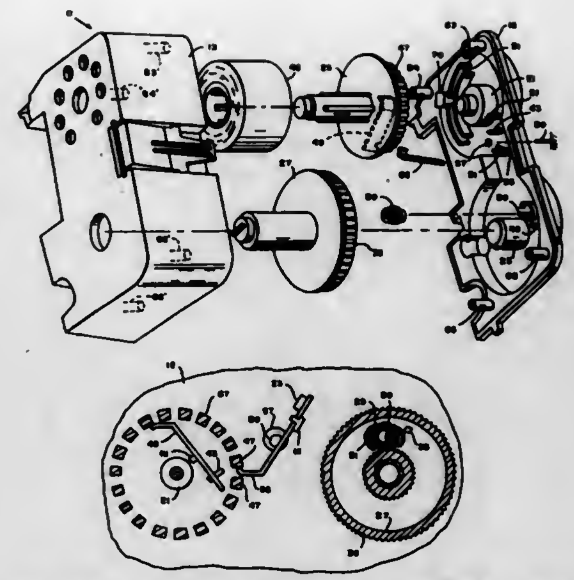
a supply spool rotatably mounted to said forward section and said rear wall and located in said chamber, said supply spool having an ink transfer ribbon continuously wrapped therearound and a plurality of interrupters continuously formed thereasound;

a drag spring mounted to said rear wall and biased against said interrupters for providing a rotational drag force on said supply spool;

a take-up spool rotatably mounted to said forward section and said rear wall located in said chamber;

said ink transfer ribbon having one end fixedly mounted to said take-up spool and having a portion extending through slots in said housing such that a portion of said ink transfer ribbon extends external to said chamber; and

means for preventing rotation of said take-up spool except in a forward direction, said rotation preventing means comprising



said rear wall having a locking pin in said chamber, a first gear rotatably and transversely mounted in said chamber, said take-up spool having a second gear formed thereon in constant mesh with said first gear such that rotation of said take-up spool in the forward direction causes said first gear to transversely displace away from said locking pin and such that rotation of said take-up spool in a reverse direction causes said first gear to engage said locking pin.

5,619,245

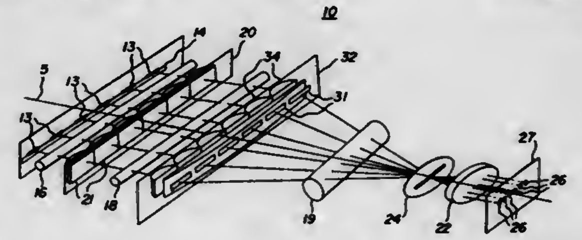
MULTI-BEAM OPTICAL SYSTEM USING LENSLET ARRAYS IN LASER MULTI-BEAM PRINTERS AND RECORDERS

David Kessler, Rochester, and John M. Simpson, Jr., Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 29, 1994, Ser. No. 283,003

Int. Cl.⁶ B41J *2/47;2/435*

U.S. Cl. 347—241 **11 Claims**



1. A multi-beam laser printer for printing onto a light-sensitive medium comprising:

a plurality of diode lasers formed in a linear direction, each diode laser being modulated to generate a separately intensity-modulated diverging light beam;

a printing lens having an entrance pupil for forming the light beams from the linear direction which enter through the entrance pupil onto a light-sensitive medium as an array of spots;

optical means for reducing the divergence of the light beams from the plurality of diode lasers by a predetermined amount in a direction perpendicular to the linear direction, wherein the optical means comprises;

a first cylindrical lens having a first numerical aperture for collecting the diverging light beams from the linear direction, and for reducing the divergence of the beams from the linear direction by a predetermined amount; and

a second cylindrical lens system comprised of at least one cylindrical lens to further shape the beam and for collecting the light beam from the first cylindrical lens, for additional

shaping of the light beams, and for continuing the direction of the light beams into the entrance pupil of the printing lens;

a first lenslet array having a separate lenslet associated with each light beam for directing the associated light beams in the linear direction towards an object plane of the printing lens to form a more uniform distribution of light in the linear direction; and

a second lenslet array spaced from the first lenslet array for imaging the first lenslet array into the entrance pupil of the printing lens in the linear direction.

5,619,246

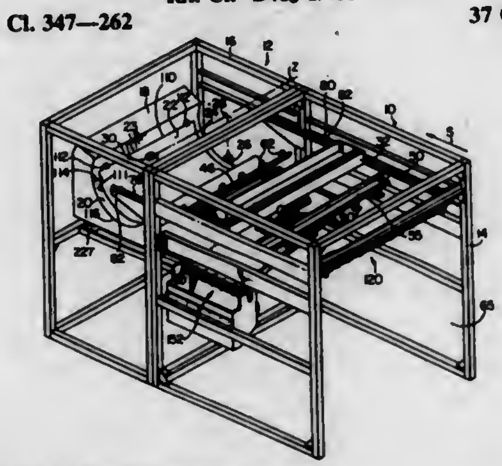
APPARATUS AND METHOD OF POSITIONING PHOTOSENSITIVE MEDIA ON AN EXPOSURE PLATEN

Ronald J. Straayer, S. Windsor; Bruce L. Davidson, East Hartford; Alan W. Menard, Bolton; Thomas J. Suhr, Manchester, all of Conn.; Uri Bin-Nun, Keene, N.H., and Timothy P. MacDonald, South Windsor, Conn., assignors to Gerber Systems Corporation, South Windsor, Conn.

Filed Sep. 7, 1993, Ser. No. 117,612

Int. Cl.⁶ B41J *2/435*

U.S. Cl. 347—262 **37 Claims**



1. An apparatus comprising;

a frame;

a drum supported on said frame and having a partially cylindric internal support surface extending along and facing toward a central axis and having a given radius of curvature taken from the central axis;

a scanning means supported by said frame and juxtaposed relative to said internal support surface so as to cause a light beam to sweep a path across the support surface;

means for holding a media sheet on said support surface during a scanning operation in registration with at least one reference axis;

a supply means defined by said frame for receiving a supply of media sheets and maintaining said supply of media sheets in a given orientation with respect to said at least one reference axis; and

transport means extending between said drum and said supply means for lifting a media sheet from said supply means and for advancing it toward and placing it onto said support surface where a scanning operation is conducted and for removing said media sheet from the support surface after a scanning operation is completed on the involved media sheet;

said supply means being so constructed as to maintain said sheets of media in a substantially flat condition and said transport means including sheet gripping means which travels with the transported media sheet from said supply means to said drum for lifting the transported media sheet from said supply in a substantially flat condition, for then bending said transported media sheet to a partially cylindric configuration conforming generally to said internal support surface of said drum, and for thereafter placing said transported media sheet onto said support surface while said transported media sheet is held in said partially cylindric configuration and is moved in a direction generally normal to and toward said support surface.

5,619,247

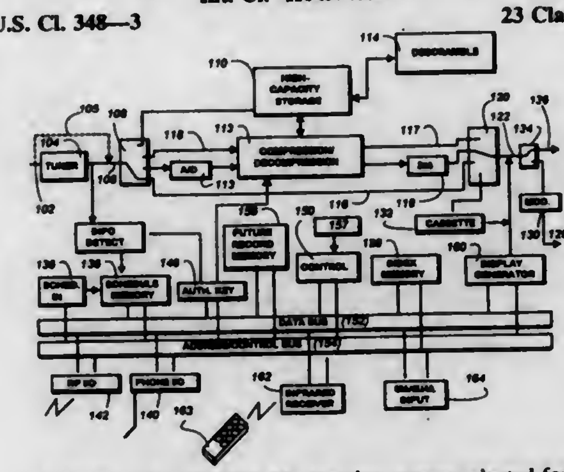
STORED PROGRAM PAY-PER-PLAY

James Russo, Ann Arbor, Mich., assignor to Smart VCR Limited Partnership, Birmingham, Mich.

Filed Feb. 24, 1995, Ser. No. 394,380

Int. Cl.⁶ H04N *7/00*

U.S. Cl. 348—3 **23 Claims**



1. A stored video program pay-per-view system adapted for use with an associated display device, comprising:

means for selecting a video program to be received at a subscriber's location, the viewing of the program having associated therewith a payment to a provider;

means for locally storing one or more such programs at the subscriber's without the subscriber incurring a viewing charge;

means for receiving, locally storing and reviewing information representative of a previously stored program, and for selecting a program to be viewed on the display device; and

means, in communication with the means for selecting a program to be viewed, for ensuring payment to the provider, such payment not being due until a particular program has been selected for viewing.

5,619,248

VIDEO SIGNAL DISTRIBUTION SYSTEM MICROWAVE RADIO LINK FOR TRANSMITTING DOUBLE SIDEBAND PHASE MODULATED CARRIER SIGNAL

Mervyn K. Hobden; David G. Spencer, both of Lincoln; John G. L. Rhodes, deceased, late of Cornwall, and Ronald Turner, executor, Wiltshire, all of United Kingdom, assignors to Plessey Semiconductors Limited, and MCEL p.l.c., both of United Kingdom

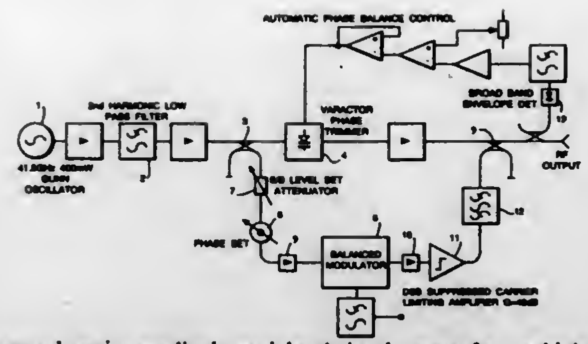
Filed Jun. 17, 1994, Ser. No. 261,401

Claims priority, application United Kingdom, Jul. 6, 1993, 9313969; Mar. 29, 1994, 9406185

Int. Cl.⁶ H04N *7/10*

U.S. Cl. 348—6 **5 Claims**

1. A video signal distribution system for transmitting a wide-band composite signal having a plurality of video signals modulated on respective sub-carriers of respective different frequencies spaced over a band of frequencies, said distribution system comprising: a microwave point-to-point radio link having a transmitter arrangement including means for amplitude modulating said composite signal onto a microwave carrier frequency signal having a relative phase and amplitude to provide a double-sideband sup-



pressed carrier amplitude modulated signal, means for combining said modulated signal with a carrier frequency reference signal, and means for adjusting the relative phase and amplitude of said microwave career frequency signal and said reference signal to provide a double side-band phase modulated carrier signal for transmission over said microwave radio link.

5,619,249

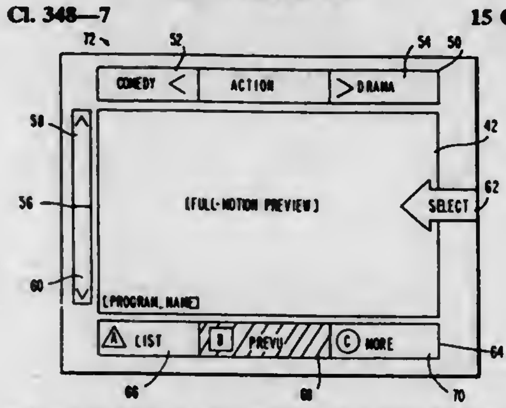
TELECASTING SERVICE FOR PROVIDING VIDEO PROGRAMS ON DEMAND WITH AN INTERACTIVE INTERFACE FOR FACILITATING VIEWER SELECTION OF VIDEO PROGRAMS

John K. Billock, Greenwich; Craig D. Cuttner, Norwalk, both of Conn.; Kevin C. Dowdell, New York, N.Y.; Elizabeth B. Flanagan, Westfield, N.J.; James E. Granger, Corte Madera, Calif.; Henry C. Hsu, Port Washington; Robert I. M. Martin, New York, both of N.Y.; Robert May, San Francisco, Calif.; Nicolas Peck, Millvalley, Calif.; Michael S. Pontecorvo, San Francisco, Calif.; Bruce E. Probst, Croton On Hudson, N.Y.; Marc D. Rosenberg; Debra R. Smul, both of New York, N.Y.; Dennis P. Wilkinson, Old Greenwich, and Robert M. Zitter, Stamford, both of Conn., assignors to Time Warner Entertainment Company, L.P., New York, N.Y.

Filed Sep. 14, 1994, Ser. No. 305,847

Int. Cl.⁶ H04N *5/44*

U.S. Cl. 348—7 **15 Claims**



6. For use in an interactive telecasting system for telecasting programing to a plurality of viewers, wherein:

the interactive telecasting system includes a telecasting facility capable of providing immediate response to program selections from viewers,

each of said viewers is identified by an identifier, and

a subscribing viewer can, without resubscribing, select from among a plurality of programs for viewing on a display, a program selection system comprising:

memory for storing (1) a list of programs available for selection, (2) a respective segment of each of said programs in said list, and (3) a list of identifiers corresponding to subscribing viewers;

a display generator for displaying on said display (1) said list of programs and (2) representations of viewer actuators for manipulating said list and selecting a program from said list;

a viewer control unit for engaging at viewer command a desired one of said actuators and for transmitting an identifier corresponding to a viewer using said control unit; and

a validator for comparing said transmitted identifier to said list of identifiers identifying said subscribing viewers and for preventing display of said selected one of said programs when said transmitted identifier fails to match any identifier on said list of identifiers; wherein:

at least a first one of said actuators selects one of said programs from said list,

a second one of said actuators causes said selected one of said programs to be displayed when said validator determines that said transmitted identifier matches an identifier on said list of identifiers, and

a third one of said actuators causes one of said segments, corresponding to said selected one of said programs, to be displayed; whereby:

after selecting one of said programs from said list using said first actuator, any viewer can preview said selected one of said programs by initiating display of said one of said segments corresponding to said selected one of said programs using said third actuator, but only a subscribing viewer can initiate display of said selected one of said programs using said second actuator.

5,619,250

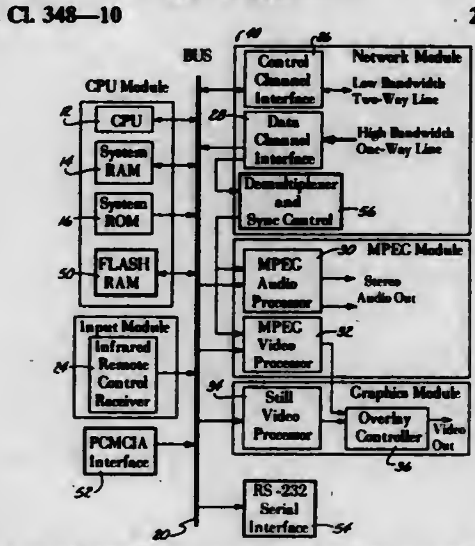
OPERATING SYSTEM FOR INTERACTIVE TELEVISION SYSTEM SET TOP BOX UTILIZING DYNAMIC SYSTEM UPGRADES

Stephen R. McClellan, Clive, and Eric B. Miller, Grimes, both of Iowa, assignors to Microware Systems Corporation, Clive, Iowa

Continuation-in-part of Ser. No. 389,899, Feb. 19, 1995, abandoned. This application Jun. 7, 1995, Ser. No. 480,930

Int. Cl.⁶ H04N *7/173*

U.S. Cl. 348—10 **20 Claims**



1. A digital audio/video interactive decoding system for use in interactive television system connected to a wide area network, comprising:

a CPU;

a RAM memory;

a ROM memory;

an operating system, said operating system comprising modules of code wherein each module of code performs a particular function;

wherein each module includes a corresponding description record;

a configuration description block;

means for storing said description record for each module in said configuration description block;

means for downloading system modules and corresponding description records from said network; and

means for adding said description record for each of said downloaded system module to said configuration description block.

5,619,251
TWO-WAY CATV SYSTEM AND REMOTE CONTROL SYSTEM

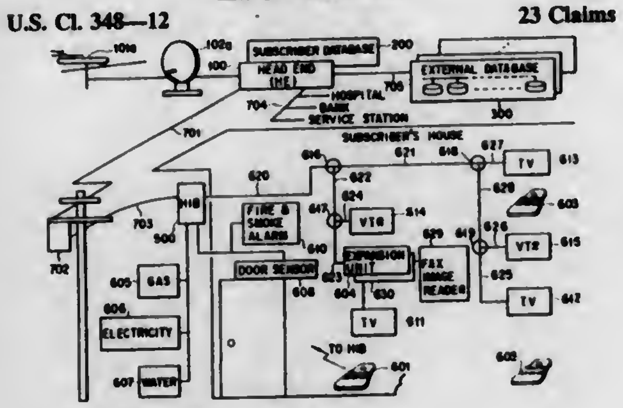
Wataru Kuroiwa, Yokohama; Isao Miyazaki, Kawasaki; Shinichi Ooi, Yokohama; Yasushi Odagiri, Yokohama, and Masahiro Takahashi, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 12, 1994, Ser. No. 290,303

Claims priority, application Japan, Aug. 13, 1993, 5-201545; Aug. 13, 1993, 5-201546

Int. Cl.⁶ H04N *7/14*

U.S. Cl. 348—12 **23 Claims**



1. A CATV system comprising:
center facilities comprising,
program information transmission means for transmitting program information including a plurality of television signals, and
center-side two-way communication means for exchanging data with a subscriber database unit and also for transmitting and receiving data to and from external systems, comprising a transmitting and receiving section;
a two-way transmission line, one end of which is connected to an output end of said program information transmission means and the transmitting and receiving section of said center-side two-way communication means; and
a subscriber terminal unit connected to the other end of said two-way transmission line, comprising,
a common bus having physical addresses and logical addresses assigned at predetermined periods of time for each block connected thereto,
a receiving block having a receiving channel and an external terminal connected to said two-way transmission line and which receives and digitizes the program information from said program information transmission means, and outputs the digitized signal to at least one of said logical addresses assigned to said common bus,
a terminal-side two-way communication block connected to said two-way transmission line, having an internal terminal connected to said common bus, exchanging data with said center-side two-way communication means, and also transmitting and receiving data with a subscriber remote control unit,
a plurality of program information processing blocks for processing the program information received by said receiving block and outputted to at least one of said logical addresses assigned to said common bus,
a management block connected to said common bus and storing management data for blocks connecting to said common bus, and providing at least timing setting data, which designates the logical addresses, to each of the blocks connecting to said common bus in order to manage,
(1) the logical addresses of the receiving block on said common bus;
(2) the receiving channel of the receiving block;
(3) an output timing at which reception program information is output from the receiving channel to said common bus;
(4) a logical address of said terminal-side two-way communication block on said common bus;
(5) an input and output timing at which input and output data of the terminal-side two-way communication block are output to said common bus, and
(6) respective logical addresses of said program information processing blocks on said common bus, reception of timing information corresponding to program information on said common bus and contents of processes hosted on said program information processing blocks;
a switch section to which the program information processed in said program information processing blocks is supplied, and
a basic block which,
(1) grasps the physical address of each block connected to the physical addresses assigned to the respective blocks on said common bus,
(2) communicates data with said terminal-side two-way communication block via said common bus,
(3) provides said management block with tuning information, specifying information and the grasped physical address of each block, said tuning information being obtained from said subscriber remote control unit, and said specifying information specifying a content of a process at one of said program information processing block and the output destination, said tuning information and said specifying information being provided as said management data, and
(4) controls a select state of said switch section based on the specifying information.

5,619,252
VIDEO TELEPHONE SYSTEM AND METHOD FOR TRANSMITTING AND RECEIVING SIGNALS WHEN THERE IS A FAILURE IN THE SYSTEM

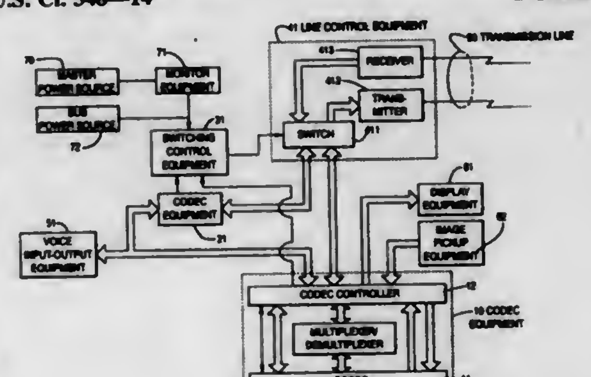
Misao Nakano, Hachinohe, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 522,534, Sep. 1, 1995, abandoned, which is a continuation of Ser. No. 225,354, Apr. 8, 1994, abandoned, which is a continuation of Ser. No. 931,447, Aug. 20, 1992, abandoned, which is a continuation of Ser. No. 550,685, Jul. 10, 1990, abandoned. This application Apr. 24, 1996, Ser. No. 636,890

Claims priority, application Japan, Jul. 20, 1989, 1-188131

Int. Cl.⁶ H04M *11/00*

U.S. Cl. 348—14 **2 Claims**



1. A video telephone system transmitting and receiving voice and image signals at a bit transmission rate M over a transmission line connected thereto, said video telephone system comprising:
a master power source;
voice input-output means for generating a first voice signal and for receiving a second voice signal;
image pickup means for detecting a first image and for outputting a first image signal in dependence upon the first image;

display means for receiving a second image signal and for displaying a second image in dependence upon the second image signal;
first CODEC means for receiving a transmitted signal, for decoding the transmitted signal to produce the second voice signal, and for encoding the first voice signal to produce a first output signal at the bit transmission rate M;
second CODEC means for receiving the transmitted signal, for demultiplexing the transmitted signal to obtain a demultiplexed signal, for decoding the demultiplexed signal to obtain the second voice signal and the second image signal, for encoding the first voice signal to produce an encoded first voice signal at a bit rate N, for encoding the first image signal to produce an encoded first image signal at a bit rate L, where M=L+N, and for multiplexing the encoded first voice and image signals to obtain a second output signal; and
switching control means for monitoring said master power source, for receiving the transmitted signal from the transmission line, for receiving the first output signal from said first CODEC means, for receiving the second output signal from said second CODEC means, for supplying the transmitted signal to said second CODEC means and the second output signal to the transmission line when said master power source is normal, and for supplying the transmitted signal to said first CODEC means and the first output signal to the transmission line when said master power source has failed.

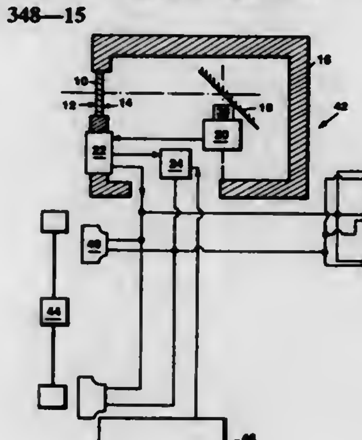
5,619,253
VIDEO DISPLAY OF INDICIA

Henry A. Miranda, Jr., 74 Loomis St., and Joseph Palmieri, 36 Old Stagecoach Rd., both of Bedford, Mass. 01730

Continuation of Ser. No. 82,620, Jun. 25, 1993, abandoned. This application Apr. 28, 1995, Ser. No. 430,246

Int. Cl.⁶ H04N *7/14*

U.S. Cl. 348—15 **19 Claims**



1. Video communication apparatus comprising:
a first diffusing screen comprising a layer of a transparent material in contact with a layer of a diffusing material,
said diffusing material having a first surface in contact with said transparent material and a second surface spaced from said transparent material by the thickness of said diffusing material,
said second surface forming a receiving surface that is substantially smooth and of a quality for accepting indicia thereupon,
said first surface of said diffusing material in contact with said transparent material forming a transmitting surface; and
a video camera positioned to provide a first video signal representative of images on said transmitting surface,
said video camera separated from said second surface by said transparent material and said diffusing material,
wherein said diffusing material is thin diffusing material bonded to one side of said transparent material,
the thickness of said diffusing material being great enough to approximate the decoupling of a lambertian diffuser, but not so thick as to degrade the spatial resolution of the indicia.

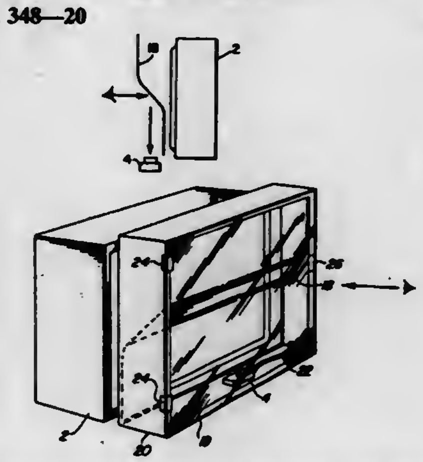
5,619,254
COMPACT TELECONFERENCING EYE CONTACT TERMINAL

Steve H. McNelley, 29677 Woodlake Ct., San Juan Capistrano, Calif. 92675

Continuation of Ser. No. 420,201, Apr. 11, 1995, abandoned. This application Jan. 25, 1996, Ser. No. 591,115

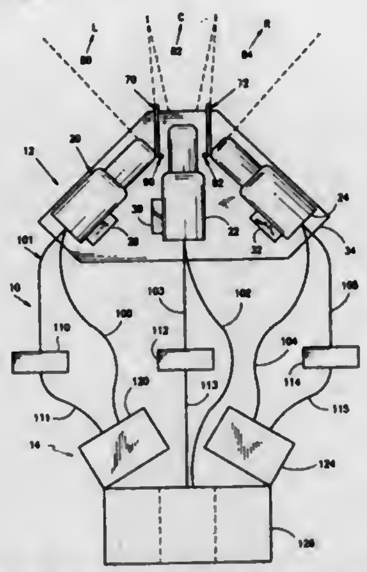
Int. Cl.⁶ H04N *7/14*

U.S. Cl. 348—20 **29 Claims**



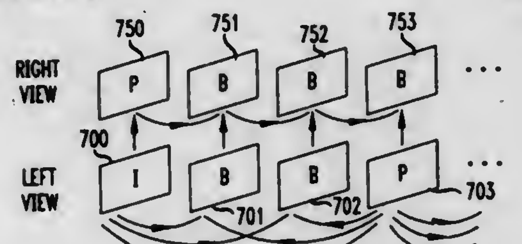
1. An improved teleconferencing terminal to facilitate eye contact between a first conferee using the teleconferencing terminal and a second conferee, at a remote location, imaged on the teleconferencing terminal, the teleconferencing terminal comprising:
a housing;
image display means enclosed in the housing for displaying an image of the second conferee;
sound reproducing means for converting an audio signal from the second conferee to audible sound;
means for placing an image capture means in relation to the housing for capturing an image of the first conferee and for producing a video signal representative of that image for transmission to the second conferee;
sound capture means for capturing sounds from the first conferee and for producing an audio signal representative of those sounds for transmission to the second conferee;
a front mounted transparent substrate member attached to the housing, a first region of said transparent substrate member substantially parallel to a front surface of the image display means at one edge thereof and covering a portion of the image display means; and
a substantially flat beam-splitter formed integrally as a reflective-transparent region of the transparent substrate member, angled in relation to a front surface of the image display means and seamlessly continuous with the first region of said transparent substrate member, the integral beam-splitter disposed to allow the image capture means unobtrusively to capture an image of the first conferee reflected by said integral beam-splitter while the first conferee gazes through said integral beam-splitter to make eye contact with the second conferee imaged on the image display means.

5,619,255
WIDE-SCREEN VIDEO SYSTEM
Daniel A. Booth, Ithaca, N.Y., assignor to Cornell Research Foundation, Inc., Ithaca, N.Y.
Filed Aug. 19, 1994, Ser. No. 293,204
Int. Cl.⁶ H04N *7/00*
U.S. Cl. 348—36 **12 Claims**



1. A composite video signal generation and display system for capturing and displaying a wide-angle image, comprising:
a first video camera, for generating a first video image signal which represents a first segment of the image, said first video camera positioned such that scan lines of the first video image signal run vertically, with respect to a horizontal platform reference plane;
a second video camera, for generating a second video image signal which represents a second segment of the image which is juxtaposed to said first segment of the image, said second video camera positioned such that scan lines of the second video image signal run vertically, with respect to the horizontal platform reference plane;
a third video camera, for generating a third video image signal which represents a third segment of the image which is juxtaposed to said second segment of the image, said third video camera positioned such that scan lines of the third video image signal run vertically, with respect to the horizontal platform reference plane, said first, second and third video cameras being arrayed with a selected angular displacement between said first and second image segments and said second and third image segments;
a first adjustable mirror for aligning said first and second image segments;
a second adjustable mirror for aligning said second and third image segments;
a first video signal display, responsive to said first video image signal, and rotated 90 degrees from a first horizontal reference plane, such that video scan lines displayed run vertically, to produce a first display image segment;
a second video signal display, responsive to said second video image signal, and rotated 90 degrees from a second horizontal reference plane, such that video scan lines displayed run vertically, to produce a second display image segment;
a third video signal display, responsive to said third video image signal, and rotated 90 degrees from said first horizontal reference plane, such that video scan lines displayed run vertically, to produce a third display image segment; and
a composite image display surface, which includes:
a structure for supporting said first video signal display, said second video signal display and said third video signal display, said structure supporting said first and third video signal displays at an angle which corresponds to said selected angular displacements between said first and second image segments and said second and third image segments, as generated by said video cameras;
a half-silvered mirror which reflects said first and third image segments from said first and third video signal displays toward a viewing position,
wherein said half-silvered mirror transmits said second image segment toward the viewing position, and
whereby said first, second and third image segments are juxtaposed into a representation of the wide-angle image upon said half silvered mirror, as viewed from the viewing position.

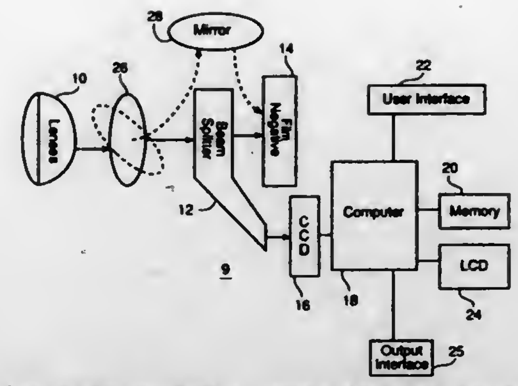
5,619,256
DIGITAL 3D/STEREOSCOPIC VIDEO COMPRESSION TECHNIQUE UTILIZING DISPARITY AND MOTION COMPENSATED PREDICTIONS
Barin G. Haskell, Tinton Falls; Richard V. Kollarits, Colts Neck, both of N.J., and Atul Puri, Riverdale, N.Y., assignors to Lucent Technologies Inc., Murray Hill, N.J.
Filed May 26, 1995, Ser. No. 452,463
Int. Cl.⁶ H04N *13/00*
U.S. Cl. 348—43 **1 Claim**



1. A method for encoding a three-dimensional stereoscopic video signal, the method comprising the steps of:
receiving a first digital video signal representative of a first succession of frames containing left views of a scene, said first succession of frames including a left current frame, a left forward frame, and a left backward frame;
receiving a second digital video signal representative of a second succession of frames containing right views of a scene, said second succession of frames including a right current frame, a right forward frame, and a right backward frame;
selecting a current frame from either said first or second succession of frames as a reference frame;
producing a disparity estimate signal representing a prediction between said reference frame and either said left or said right forward frame;
producing a motion compensated estimate signal representing a prediction between said reference frame and another frame said other frame being in either said first or second succession of frames;
employing said disparity estimate signal and said motion compensated estimate signals to encode said first and said second video signals to produce an encoded three-dimensional stereoscopic video signal.

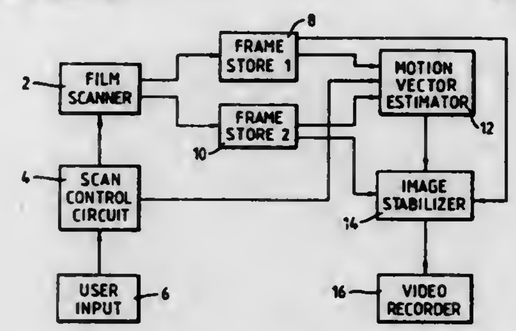
5,619,257
COMBINED FILM AND ELECTRONIC CAMERA WITH STORAGE DENSITY SELECTION, SEGMENT IMAGE STACKING, INSTANT VIEW AND HIGH RESOLUTION FILM MODE
Samuel Reele, Rochester, and Alan L. Korus, Fairport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Dec. 13, 1994, Ser. No. 355,381
Int. Cl.⁶ H04N *7/18;5/30*
U.S. Cl. 348—64 **4 Claims**

1. A camera for capturing images of different quality levels, said camera comprising:



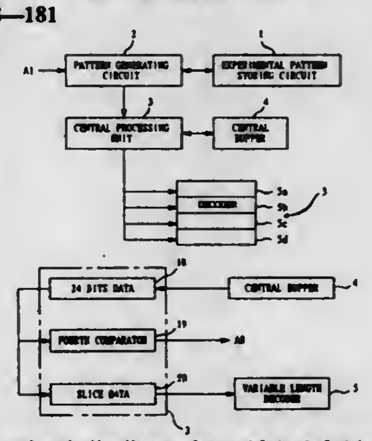
a lens section providing a common source for generating a source image;
a beam splitter for splitting the source image into a first image and a second image; and
capture means for providing two quality levels of film capture and a further level of electronic capture for the source image from the common source, said capture means including:
a film optically coupled to said beam splitter so as to capture only the first image;
an electronic sensor optically coupled to said beam splitter for capturing the second image;
a light routing mechanism for optically decoupling the film from the beam splitter and routing the source image to said film and capturing a third image while bypassing said beam splitter; and
a user interface for selecting one of two levels of image storage quality for film capture, said two levels including a first level for obtaining a lower quality of film capture from the first image when the film is optically coupled to said beam splitter and a second level for obtaining an improved quality o film capture from the third image by optimum utilization of the source image when the light routing mechanism optically decouples the film from said beam splitter.

5,619,258
IMAGE STABILITY IN TELECINES
John D. Gillespie, London, United Kingdom, assignor to Rank Cintel Limited, United Kingdom
Filed Feb. 26, 1993, Ser. No. 23,615
Claims priority, application United Kingdom, Feb. 28, 1992, 9204336
Int. Cl.⁶ H04N *3/36;5/253;9/11;9/47*
U.S. Cl. 348—97 **14 Claims**



1. A system for stabilizing video images produced from an unsteady source of a sequence of images comprising:
means for producing a sequence of video images from said source;
means for receiving two successive ones of said video images from said video image producing means;
means for estimating a shift signal connected to said means for receiving images, said shift signal representing an error between said two successive images, said error resulting from unsteadiness in said unsteady source;
means for controlling said image producing means whereby special effects are introduced in said sequence of video images;
means, responsive to a signal from said controlling means and to said shift signal, for producing a corrected Shift signal compensated to take account of any special effect introduced in said sequence of video images by said controlling means; and
means for receiving said corrected shift signal and said sequence of video images and for shifting one of said two successive ones of said video images in accordance with said corrected shift signal.

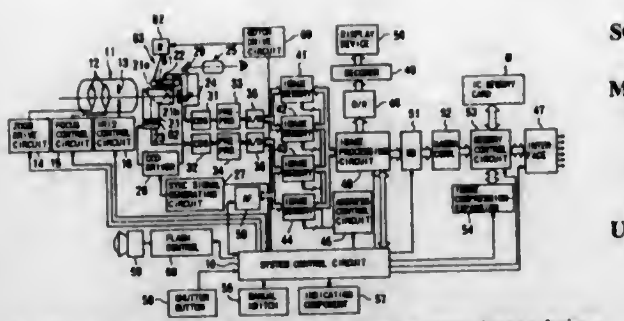
5,619,259
DISTRIBUTOR OF HIGH-DEFINITION TELEVISION
Jin-Wook Song, and Geum-Ock Lee, both of Seoul, Rep. of Korea, assignors to Hyundai Electronics Industries Co., Ltd., Rep. of Korea
Filed Dec. 28, 1994, Ser. No. 364,703
Claims priority, application Rep. of Korea, Dec. 29, 1993, 93-30560
Int. Cl.⁶ H04N *17/00*
U.S. Cl. 348—181 **5 Claims**



1. A video signal distributor for a high definition television, comprising:
experimental pattern storing means for storing an experimental pattern for self-testing the distributor;
pattern generating means for selecting an experimental pattern stored in said experimental pattern storing means and for selecting a serial data compressed digital video signal comprising header data, said digital video signal being separated by a video/audio separator;
a central processing unit for converting the serial data selected by said pattern generating means into 24 bit parallel data after removing the header data;
central buffer means for storing the 24 bit parallel data in accordance with a control of said central processing unit and for controlling a processing speed of data; and
variable length decoding means for decoding the 24 bit parallel data outputted from the central processing unit.

5,619,260
STILL VIDEO CAMERA PERFORMING WHITE-BALANCE AND AUTO-FOCUS ADJUSTMENT CONCURRENTLY
Shunichi Miyadera, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 294,360, Aug. 23, 1994, abandoned. This application Jun. 18, 1996, Ser. No. 668,370
Claims priority, application Japan, Sep. 6, 1993, 5-245979
Int. Cl.⁶ H04N *9/73*
U.S. Cl. 348—223 **14 Claims**

11. A still-video camera, comprising:



at least first and second imaging devices, a same image being formed on each of said first and second imaging devices;

a filter movable to cover a light receiving surface of said first imaging device and to move away from said light receiving surface;

means for carrying out a white balance adjustment in accordance with an output signal of said first imaging device when said filter covers said light receiving surface;

means for moving a taking lens in accordance with an output signal of said second imaging device so that said taking lens moves to an in-focus state, at least a part of said lens moving operation being carried out while said white balance adjustment is carried out; and

means for combining said same images formed on each of said at least first and second imaging devices to form a frame color image.

5,619,261

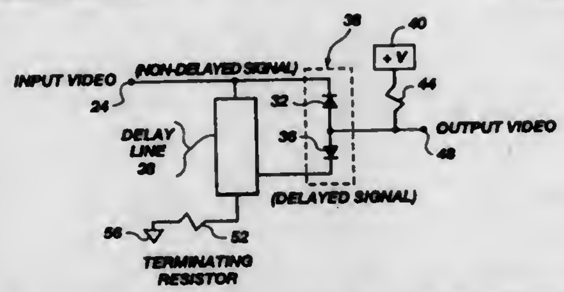
PIXEL ARTIFACT/BLEMISH FILTER FOR USE IN CCD VIDEO CAMERA

R. Larry Anderton, West Jordan, Utah, assignor to OEC Medical Systems, Inc., Salt Lake City, Utah

Filed Jul. 25, 1994, Ser. No. 279,972

Int. Cl.[6] H04N *9/64*

U.S. Cl. 348—246 **13 Claims**



9. A blemish suppression circuit for suppressing pixel blemishes which may occur in video images represented in a video image signal composed of a series of electrical pulses, with each pulse representing a pixel in the image, each pixel blemish characterized by an increase in magnitude of the pulse representing said each pixel blemish, said suppression circuit comprising:

input means for receiving the video image signal pulses,

delaying means for successively delaying the received pulses by approximately a one pulse width duration,

output means for outputting the pulses,

means for receiving and pairing a non-delayed pulse unmodified and direct from the input means and a delayed pulse from the delaying means, and for suppressing an artifact pulse of each pair which is significantly greater in magnitude than a non-artifact pulse of each pair, and

means for passing said non-artifact pulse to the output means.

5,619,262

SOLID-STATE IMAGE PICKUP APPARATUS INCLUDING A UNIT CELL ARRAY

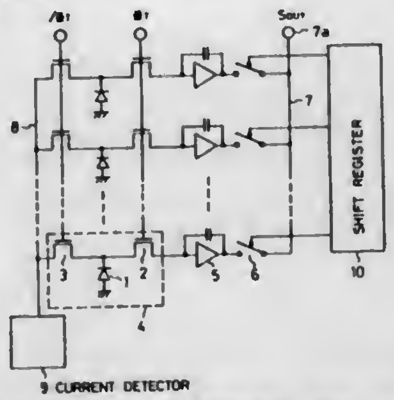
Masayuki Uno, Ina, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 9, 1995, Ser. No. 552,477

Claims priority, application Japan, Nov. 18, 1994, 6-308435

Int. Cl.[6] H04N *3/14*

U.S. Cl. 348—297 **26 Claims**



1. A solid-state image pickup apparatus comprising a unit cell array formed of unit cells arranged one-dimensionally, each unit cell having a photodiode, and first and second switches, a first terminal of each switch connected to the photodiode, integrators connected to second terminals of the first switches of the unit cells for detecting the integrated value of the charge generated by the incident light into the photodiodes, a common signal line connected commonly to second terminals of the second switches of the unit cells, and a single current detector connected to the common signal line for detecting, as a current value, the charge generated by light incident to the unit cell array.

5,619,263

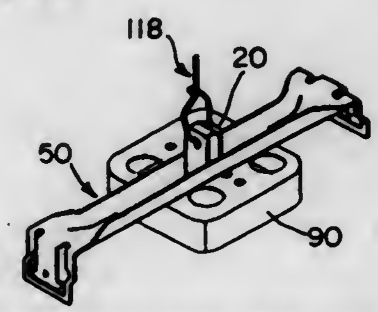
BOX HANGER AND METHOD

Raymond S. Laughlin, Cuyahoga Falls; Robert Smigel, North Royalton, and Richard Lees, Stow, all of Ohio, assignors to Erico International Corporation, Solon, Ohio

Filed Mar. 21, 1995, Ser. No. 407,765

Int. Cl.[6] B42F *13/00*

U.S. Cl. 248—343 **74 Claims**



1. A box supporting strut adapted to span between two structural members, said strut comprising a linear longitudinally slotted body, at least two longitudinally spaced aligned box supporting slot openings in said body, said box supporting slot openings being separated by a transverse bridge and said slot openings and bridge being asymmetrically located longitudinally of said body whereby a box may be supported from a slot opening anywhere between the structural members, a portion of a slot opening being available for any position of the box in one or an end-for-end position of the strut.

5,619,264

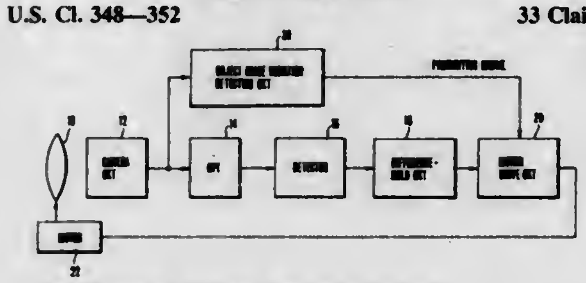
AUTOMATIC FOCUSING DEVICE

Katsuji Yoshimura; Masamichi Toyama; Akihiro Fujiwara, all of Kanagawa-ken; Kunihiko Yamada, Tokyo, and Hirofumi Suda, Kananawa-ken, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 81,864, Jun. 23, 1993, abandoned, which is a continuation of Ser. No. 815,904, Dec. 31, 1991, abandoned, which is a continuation of Ser. No. 451,754, Dec. 18, 1989, abandoned, which is a continuation of Ser. No. 154,078, Feb. 9, 1988, abandoned. This application Feb. 23, 1994, Ser. No. 202,709

Int. Cl.[6] H04N *5/232*

U.S. Cl. 348—352 **33 Claims**



1. An automatic focusing device comprising:

(A) image pickup means for converting an object image formed on an image pickup plan to an electrical signal;

(B) gate means for passing only a part of a picked-up image signal produced from said image pickup means, said part corresponding to a focus detecting area defined on said image pickup plane;

(C) object image variation detecting means for detecting an amount of a variation of the object image on said image pickup plane including

a coding circuit for converting a predetermined component of the image signal in each of a plurality of areas defined on said image pickup plane to a digital value with respect to a predetermined threshold level and

a discrimination circuit for comparing an output of said coding circuit with an output produced a predetermined period before to discriminate the presence of a variation of the object image in each of said areas and to output an information relative to the amount of a variation of the object image; and

(D) gate control means for controlling said gate means to change the size of said focus detecting area in response to an output of said object image variation detecting means.

5,619,265

CAMERA CAPABLE OF SELECTING COMPRESSION RATIO EFFICIENCY

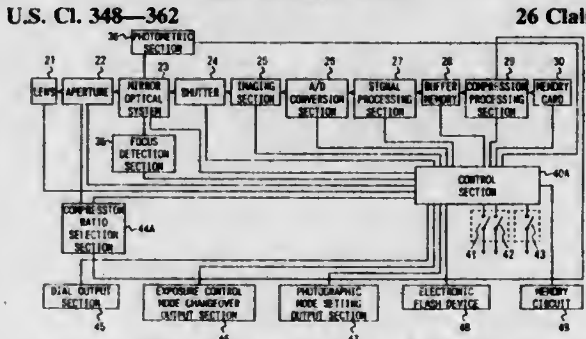
Masahiro Suzuki, Kawasaki, and Koichiro Minamino, Machida, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Dec. 21, 1994, Ser. No. 360,442

Claims priority, application Japan, Dec. 21, 1993, 5-322824

Int. Cl.[6] H04N *5/225*

U.S. Cl. 348—362 **26 Claims**



21. An electronic camera which stores compressed image data upon a recording medium, comprising:

an imaging device which forms an image of an object to be photographed and outputs digital image data;

a factor detecting section which detects a factor which causes changing of depth of field on said image which is formed by said imaging device;

a data compression circuit which compresses said image data from said imaging device according to a predetermined compression ratio; and

a compression ratio control circuit which controls said compression ratio for said compression circuit, based upon an output of said factor detecting section.

5,619,266

LIQUID CRYSTAL SHUTTER CONTROL CIRCUIT FOR A VIDEO CAMERA HAVING A SYNCHRONIZED STROBE FLASH

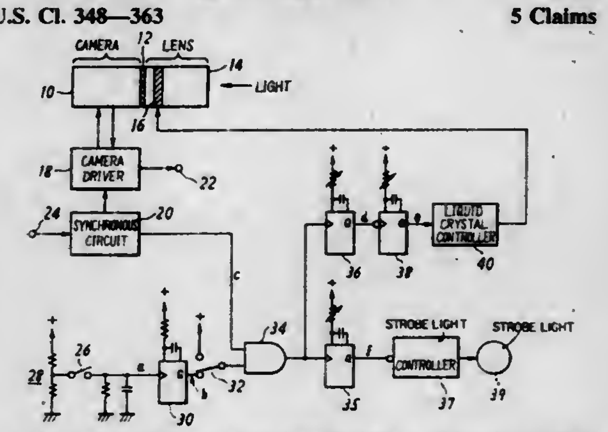
Seijiro Tomita, and Takashige Nabeshima, both of Tokyo, Japan, assignors to Sony Corporation, and Sony/Tektronix Corporation, both of Tokyo, Japan

Filed Jan. 23, 1995, Ser. No. 377,044

Claims priority, application Japan, Jan. 25, 1994, 6-006659

Int. Cl.[6] H04N *5/238*

U.S. Cl. 348—363 **5 Claims**



1. An electric shutter control apparatus for a video camera with an image pick-up device, for controlling the exposure time of light from an object onto said image pick-up device, said apparatus comprising:

a lens system for said video camera arranged in front of said image pick-up device;

first and second polarizing filter means with different respective polarizing angles arranged between said lens system and said image pick-up device;

a liquid crystal device having a control terminal, arranged between said first and second polarized filter means;

a synchronous circuit receiving an external synchronizing signal and producing therefrom a vertical synchronizing signal;

first pulse generating means receiving said vertical synchronizing signal for generating a first pulse synchronized with said vertical synchronizing signal, said first pulse having a predetermined length of time;

liquid crystal device control means receiving said first pulse for generating a signal for controlling an electrical field of said liquid crystal device to place said device in an ON state and allow the light from the object to be transmitted through said first and second polarizing filter means and said liquid crystal device for said predetermined length of time of said first pulse;

second pulse generating means having an input connected to be triggered by said first pulse for generating a second pulse synchronized with said first pulse and with said vertical synchronizing signal; and

external apparatus means receiving said second pulse for producing a light flash in response to said second pulse;

wherein said first pulse generating means comprises:

first multivibrator means for generating a shutter pulse in response to an operation of a shutter switch; and

gate means for gating said vertical synchronizing signal during the time said shutter pulse is generated and producing said first pulse; and
said liquid crystal device control means comprises:
second multivibrator means for generating an output pulse having a predetermined length of time in response to said first pulse from said gate means; and
third multivibrator means for generating said signal for controlling an electric field of said liquid crystal device in response to said output pulse from said second multivibrator means.

5,619,267

VIDEO DECODER INCLUDING A CONTROL UNIT

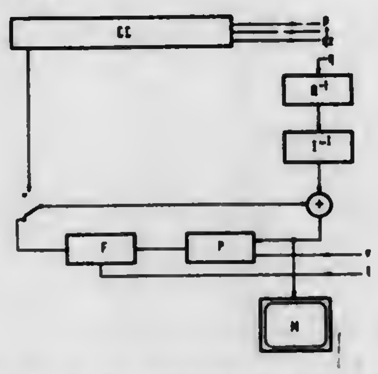
Maximilian Riegel, Nürnberg, and Ulrich Stenzel, Leinburg, both of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 196,915, Feb. 15, 1994, abandoned. This application Jan. 29, 1996, Ser. No. 599,517

Claims priority, application Germany, Feb. 26, 1993, 43 05 911.2

Int. Cl.⁶ H04N *7/50*

U.S. Cl. 348—400 **12 Claims**



1. A video decoder for performing blockwise decoding operations of coded video pictures using decoding blocks of pixel data having block edges, and for post-processing a blockwise decoded video picture, comprising:
a picture memory for storing the pixel data of the blockwise decoded video picture;
a control unit for blockwise selecting addresses of the picture memory which addresses define the decoding blocks;
a loop filter for filtering the blockwise selected pixel data within the decoding blocks but not the block edge blockwise selected pixel data; and
wherein the control unit controls said loop filter and comprises means for, in the interval between the blockwise decoding operations of two coded video pictures,
addressing the picture memory again to select the block edge pixel data of the blockwise decoded video picture wherein the addressing is performed such that new redefined blocks are created which include the previously unfiltered block edge pixel data within the redefined block edges of the redefined blocks;
applying the previously unfiltered block edge pixel data to said loop filter for filtering, such that the same loop filter filters the previously unfiltered block edges.

5,619,268

MOTION ESTIMATION METHOD AND APPARATUS FOR CALCULATING A MOTION VECTOR

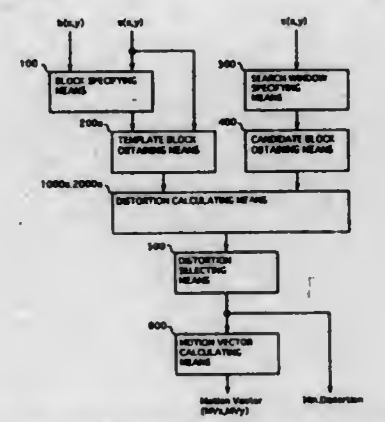
Takayuki Kobayashi; David Wuertele, and Yutaka Okada, all of Tokyo, Japan, assignors to Graphics Communication Laboratories, Tokyo, Japan

Filed Dec. 28, 1995, Ser. No. 579,760

Claims priority, application Japan, Jan. 17, 1995, 7-004758; May 26, 1995, 7-127632

Int. Cl.⁶ H04N *7/36*

U.S. Cl. 348—416 **42 Claims**



1. A motion estimation method for calculating a motion vector to estimate a current picture partially forming a video sequence on the basis of first and second reference pictures partially forming said video sequence, said current picture being partially formed by a current block including a plurality of pels represented by pel data sets, respectively, said first reference picture being formed by reference blocks each equal in size to said current block, each of the reference blocks of said first reference picture including a plurality of pels represented by pel data sets, respectively, said second reference picture being formed by reference blocks each equal in size to said current block, each of the reference blocks of said second reference picture including a plurality of pels represented by pel data sets, respectively, and said motion vector being indicative of a displacement between said current block and one of the reference blocks of said second reference picture, comprising the steps of:
(a) specifying a reference block similar to said current block from among the reference blocks of said first reference picture;
(b) multiplying each pel data set of the specified reference block by a first coefficient;
(c) obtaining a template block by calculating pel data sets each indicative of a difference between each multiplied pel data set of the specified reference block and each pel data set of the current block corresponding in position to each other;
(d) specifying part or the whole of said second reference picture as a search window;
(e) obtaining candidate blocks by multiplying, by a second coefficient, each of the pel data sets of the reference blocks included in said search window;
(f) calculating, on the basis of the pel data sets of each of candidate blocks and the pel data sets of said template block, distortion values each indicative of a difference between each of interpolated blocks and said current block, each of the interpolated blocks being indicative of a mean between the specified reference block of said first reference picture and each of the reference blocks of said search window;
(g) selecting a minimum distortion value from among the distortion values; and
(h) specifying a reference block of said second reference picture bringing the minimum distortion value to obtain said motion vector.

5,619,269

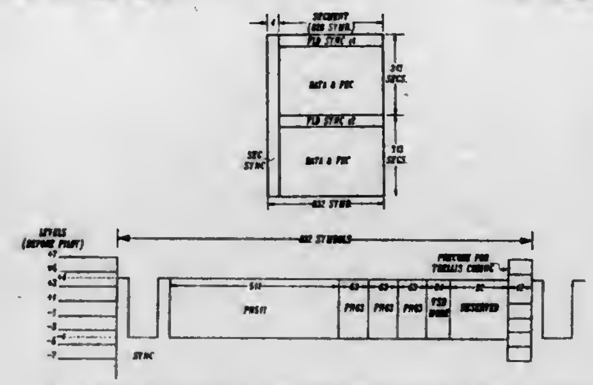
FRAME SYNC SIGNAL FOR DIGITAL TRANSMISSION SYSTEM

Ronald B. Lee, Northbrook, and Larry E. Nielsen, Chicago, both of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Filed Jun. 7, 1995, Ser. No. 481,664

Int. Cl.⁶ H04N *7/24*

U.S. Cl. 348—432 **15 Claims**



1. A method of operating a digital transmission system comprising:
formatting a signal having a plurality of segments of multilevel symbols arranged in frames of two fields with each field having a field sync segment and each segment having a segment sync;
generating a first symbol sequence;
generating a second symbol sequence that is shorter than the first symbol sequence;
multiplexing the segment sync and the first and the second symbol sequences to form a field sync segment; and
alternating the polarity of the second symbol sequence in successive fields of the frames.

5,619,270

SAMPLE RATE CONVERTER AND SAMPLE RATE CONVERSION METHOD

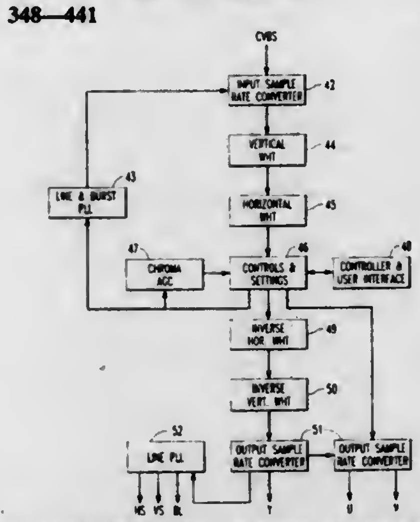
Walter Demmer, Dormitzer Strasse 3, 90411 Nuremberg, Germany

Filed Jun. 30, 1995, Ser. No. 497,181

Claims priority, application Germany, Jul. 1, 1994, 44 23 224.1

Int. Cl.⁶ H04N *7/01*

U.S. Cl. 348—441 **28 Claims**



1. A method for sample rate conversion, in which input sample values of a signal digitized at a first predetermined clock frequency are converted into desired sample values at a second virtual sample frequency, comprising the steps of:
performing an equally weighted interpolation between each of two adjacent sample values,
correcting the amplitude of the interpolation result obtained in the interpolation,
performing an equally weighted interpolation of the corrected interpolation result is in each case with its neighboring values, wherein the neighboring values being neighboring sample values or neighboring interpolation results,
correcting the amplitude of the interpolation result obtained in the weighted interpolation of the corrected interpolation; and
repeating the interpolation and correction until a desired resolution necessary for the virtual sample frequency is obtained.

5,619,271

FUZZY LOGIC BASED SCANNING RATE CONVERTER

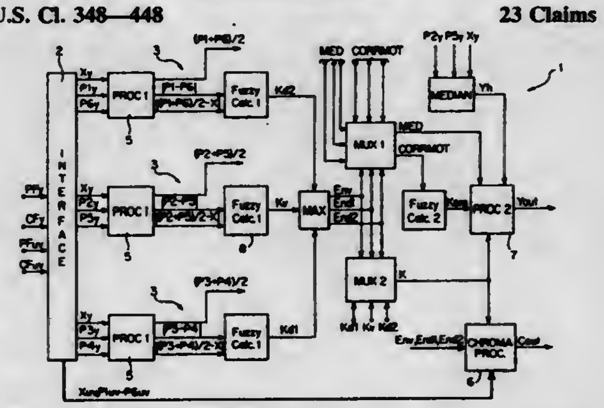
Massimo Mancuso, Monza; Rinaldo Poluzzi, Milan, and Gianguido Rizzotto, Civate, all of Italy, assignors to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, and Consorzio per la Ricerca sulla Microelettronica nel Mezzogiorno, Catania, both of Italy

Filed Apr. 21, 1995, Ser. No. 427,082

Claims priority, application European Pat. Off., Apr. 27, 1994, 94830197

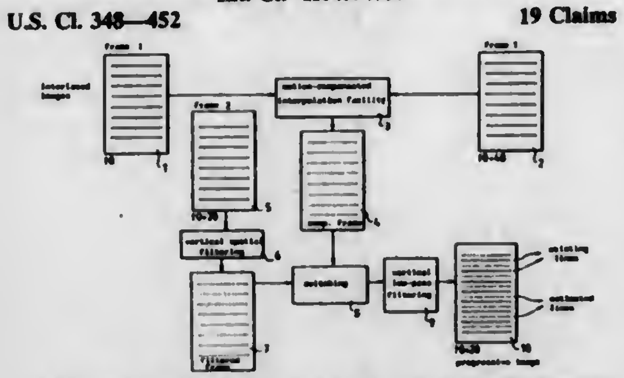
Int. Cl.⁶ H04N *7/01*

U.S. Cl. 348—448 **23 Claims**



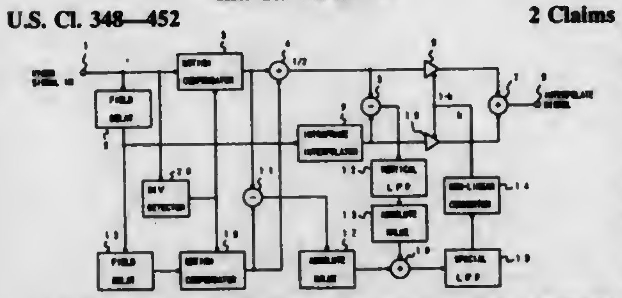
1. A television signal scanning conversion device comprising:
a filter having a plurality of digital inputs for receiving components of an interlaced television signal, an input for receiving a control signal and an output providing filtered components of the television interlaced signal according to at least one of different interpolation functions selected according to the control signal; and
a fuzzy logic calculation block having inputs connected to the digital inputs of a filter and for receiving the components of the interlaced television signal and operating with fuzzy logic procedures applied to the received components to provide an output indicative of a direction of highest correlation of edges and motion detected in two consecutive image fields in the interlaced television signal, and wherein the output is connected to the control signal input of the filter to control the filter.

5,619,272
PROCESS FOR DEINTERLACING THE FRAMES OF A MOVING IMAGE SEQUENCE
Philippe Salmon, D'Aubigne, and Bertrand Chupeau, Rennes, both of France, assignors to Thomson-CSF, Paris, France
PCT No. PCT/FR93/01243, § 371 Date Jun. 30, 1995, § 102(e) Date Jun. 30, 1995, PCT Pub. No. WO94/16522, PCT Pub. Date Jul. 21, 1994
PCT Filed Dec. 14, 1993, Ser. No. 464,822
Claims priority, application France, Dec. 30, 1992, 92 15918
Int. Cl.[6] H04N *7/01*
U.S. Cl. 348—452 19 Claims



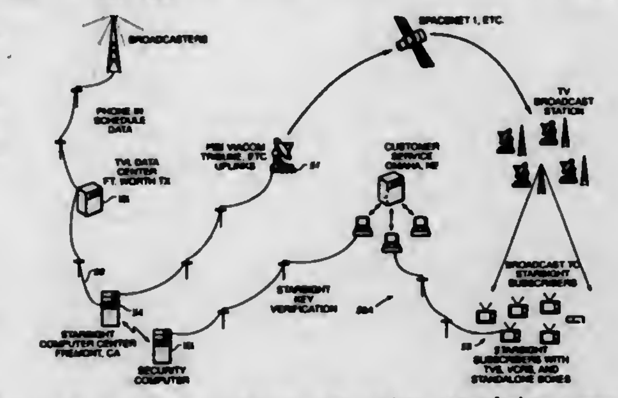
1. Process for deinterlacing a sequence of moving images composed of frames with parity of a first type interlaced with frees with parity of a second type, carrying out motion estimation between the preceding frame (to) and the current frame of like parity (to+40 ms) in order to allocate a motion vector field to the preceding frame (to), carrying out a projection in their direction, onto an intermediate frame (to+20 ms) to be constructed or pseudo-frame, of the motion vectors of the preceding frame (to), characterized in that it consists:
in determining for each pixel to be created of the intermediate pseudo-frame, on the basis of the projection of the vectors onto this pseudo-frame, a validity indicator corresponding to the allocation or non-allocation of a motion vector to this pixel and, in the case of non-allocation, to the absence of a vector or to an unreliable vector calculation and in calculating this allocated motion vector at the same time;
in generating the pixels to be created of the intermediate pseudo-frame by vertical filtering of the true intermediate frame of the moving image sequence or by interpolation of the allocated motion vectors, according to the value of the validity indicator assigned to the pixels to be created.

5,619,273
SCANNING LINE INTERPOLATING APPARATUS AND MOTION VECTOR DETECTING APPARATUS FOR SCANNING LINE INTERPOLATION
Kenji Sugiyama, Yokosuka, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan
Filed Oct. 31, 1995, Ser. No. 550,625
Claims priority, application Japan, Oct. 31, 1994, 6-290650
Int. Cl.[6] H04N *7/01*
U.S. Cl. 348—452 2 Claims



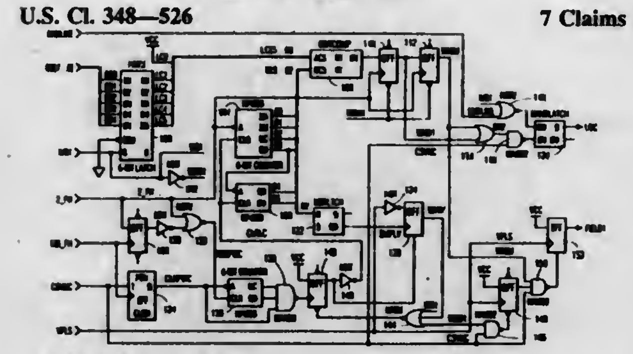
1. A scanning line interpolating apparatus for, when scanning lines not included in input video signals are formed by interpolation, obtaining interpolation signals by adaptively mixing intra-picture interpolation signals formed on the basis of upper and lower scanning lines spatially apart from scanning lines to be interpolated and inter-picture interpolation signals formed on the basis of before and after pictures different with respect to time from the scanning lines to be interpolated, the scanning line interpolating apparatus comprising:
means for obtaining inter-picture matching signals between the before and after pictures different with respect to time and used to generate the inter-picture interpolation signals;
means for obtaining low frequency component difference signals of a picture between the intra-picture interpolation signals and the inter-picture interpolation signals;
means for obtaining in-and-out matching signals with respect to the intra-picture interpolation signals and the inter-picture interpolation signals by obtaining an absolute value of or by squaring the obtained low frequency component difference signals; and
means for varying an adaptive mixture ratio between the intra-picture interpolation signals and the inter-picture interpolation signals on the basis of a signal obtained by adding the inter-picture matching signals and the in-and-out matching signals.

5,619,274
TELEVISION SCHEDULE INFORMATION TRANSMISSION AND UTILIZATION SYSTEM AND PROCESS
John H. Roop, Palo Alto; Alan R. Ebright, Los Gatos; Jeffrey J. Kochy, San Jose; David P. Warden; Konstantine Sokolik, both of Redwood City, and Giambattista A. Alegiani, San Francisco, all of Calif., assignors to StarSight Telecast, Inc., Fremont, Calif.
Continuation-in-part of Ser. No. 239,225, May 4, 1994, and Ser. No. 198,538, Feb. 18, 1994, Pat. No. 5,479,268, which is a continuation of Ser. No. 579,555, Sep. 10, 1990, abandoned.
This application May 13, 1994, Ser. No. 243,598
Int. Cl.[6] H04N *7/08; 7/087*
U.S. Cl. 348—461 32 Claims



1. In a television schedule information transmission system including a direct broadcast satellite, a central data processing system having means for transmitting television schedule data for the direct broadcast satellite to the direct broadcast satellite, and subscriber data processing systems having means for receiving the television schedule data for the direct broadcast satellite from the direct broadcast satellite, the improvement which comprises a plurality of regional data processing systems, each located in a region of a predetermined territory, a means for transmitting television schedule data for the predetermined territory to said plurality of regional data processing systems, said plurality of regional data processing systems each including means for receiving the television schedule data for the predetermined territory, means, coupled to said means for receiving the television schedule data for the territory, for selecting the television schedule data for the region in which each of said plurality of regional data processing system is located and means, coupled to said means for selecting the television schedule data for the region, for transmitting the television schedule data for the region to a plurality of said subscriber data processing systems in each of the regions.

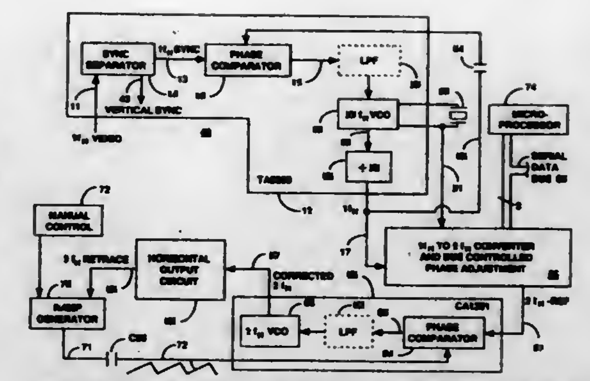
5,619,275
TV LINE AND FIELD DETECTION APPARATUS WITH GOOD NOISE IMMUNITY
Juri Tults, Indianapolis, Ind., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.
PCT No. PCT/US93/07142, § 371 Date Feb. 9, 1995, § 102(e) Date Feb. 9, 1995, PCT Pub. No. WO94/06243, PCT Pub. Date Mar. 17, 1994
PCT Filed Jul. 29, 1993, Ser. No. 382,023
Claims priority, application United Kingdom, Sep. 1, 1992, 9218476
Int. Cl.[6] H04N *7/087*
U.S. Cl. 348—526 7 Claims



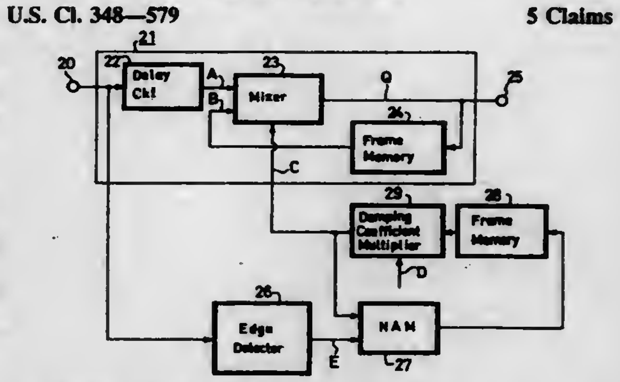
1. Apparatus comprising:
first detecting means for detecting a first pulse included in a synchronization component of a video signal for indicating the beginning of a vertical display interval of said video signal;
a counter responsive to a clock signal having a period representative of a horizontal display interval of said video signal for generating a count representing the number of said horizontal display intervals within said vertical display interval after said first detecting means detects said first pulse;
means responsive to said clock signal for generating an enable signal defining an enable interval beginning in response to said count being a predetermined count and ending after a time interval greater than a phase difference between said synchronization component and said clock signal; and
second detecting means responsive to said enable signal for detecting during said enable interval a second pulse included in said synchronization component for indicating the start of a predetermined horizontal display interval in said vertical display interval, said second pulse being substantially centered within said enable interval when said phase difference is a predetermined value.

5,619,276
ADJUSTABLE VIDEO/RASTER PHASING FOR HORIZONTAL DEFLECTION SYSTEM
Todd J. Christopher, and Ronald T. Keen, both of Indianapolis, Ind., assignors to Thomson Consumer Electronics, Inc., Indianapolis, Ind.
Continuation of Ser. No. 499,226, Mar. 26, 1990, abandoned.
This application Mar. 29, 1993, Ser. No. 41,291
Int. Cl.[6] H04N *5/04*
U.S. Cl. 348—541 33 Claims

1. A horizontal deflection system for adjusting and maintaining a phase relationship between a video signal and a scan synchronizing signal, comprising:
means for generating a first timing signal at a first frequency corresponding to a horizontal synchronizing component in a video signal and synchronously with said horizontal synchronizing component;
counting means operating synchronously with said first timing signal for generating a second timing signal at a second frequency greater than said first frequency;
means for supplying different numbers to said counting means for incrementally adjusting the relative phase between said first and second timing signals to control horizontal picture centering in different modes of operation; and,
means responsive to said second timing signal for generating a scan synchronizing signal at said second frequency.

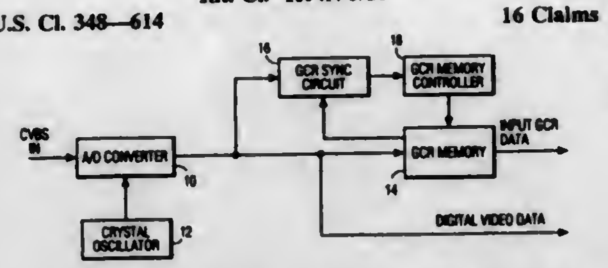


5,619,277
VIDEO SPECIAL EFFECT GENERATOR
Seiji Kobayashi, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Aug. 3, 1995, Ser. No. 510,767
Claims priority, application Japan, Aug. 4, 1994, 6-183675
Int. Cl.[6] H04N *9/74*
U.S. Cl. 348—579 5 Claims



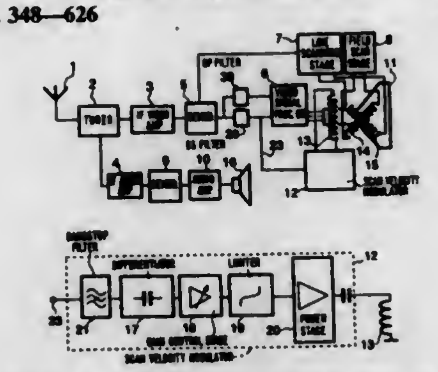
1. A video special effect generator, comprising:
a first mixer supplied with an input video signal indicative of an input image;
first delay means for delaying an output video signal supplied thereto from said first mixer and supplying a delayed output video signal to said first mixer; and
control means including edge detecting means for detecting an edge of said input image indicated by said input video signal supplied thereto and outputting an edge signal indicative of said detected edge, said control means further including a second mixer to which said edge signal from said edge detecting means is input and a second delay means for delaying an output signal from said second mixer by a delay time equal to that of said first delay means, wherein said second mixer generates a mixing ratio control signal by mixing an output signal of said second delay means and said edge signal on the basis of said output signal from said second delays means,
and wherein said first mixer mixes said input video signal and said delayed output video signal supplied thereto from said first delay means with a mixing ratio based on said mixing ratio control signal.

5,619,278
METHOD AND APPARATUS FOR PROCESSING A GHOST CANCELLATION REFERENCE SIGNAL
Rae L. Hill, Jefferson City, Tenn., assignor to U.S. Philips Corporation, New York, N.Y.
Filed Oct. 25, 1995, Ser. No. 548,112
Int. Cl.[6] H04N *5/21*
U.S. Cl. 348—614 **16 Claims**



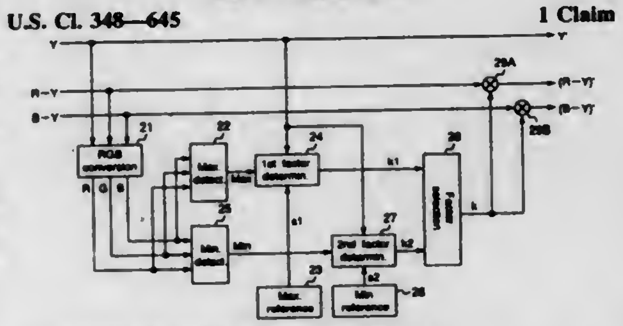
1. A method for maintaining a zero phase difference coherence between a sampled GCR signal and a stored reference GCR signal, comprising the steps:
sampling an input video signal containing a GCR signal with a free-running clock having a predetermined frequency constancy;
comparing the sampled GCR signal to the stored reference GCR signal, said comparison including calculating an error function involving the GCR signal in the input video signal, using the reference GCR signal;
determining a phase difference between the GCR signal in the input video signal and the stored reference GCR signal using the error function;
calculating a phase-corrected reference GCR signal using the calculated phase difference;
storing the phase-corrected reference GCR signal;
calculating a new error function involving the GCR signal in the input video signal, using the phase-corrected reference GCR signal, whereby the new error function will have the phase difference removed; and
storing the new error function for sequential field calculations.

5,619,279
VIDEO CIRCUIT USING SCAN VELOCITY MODULATION
Pierre Vacher, Suresnes, and Phillippe Vilard, Houilles, both of France, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Oct. 23, 1995, Ser. No. 546,860
Claims priority, application France, Oct. 26, 1994, 94 12824
Int. Cl.[6] H04N *5/208;5/68*
U.S. Cl. 348—626 **6 Claims**



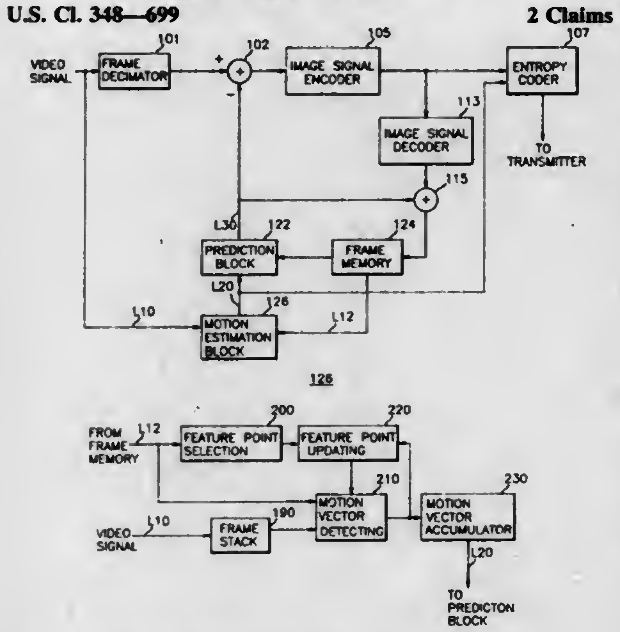
1. A device for displaying color pictures based on an analog television type video signal, comprising inter alia a luminance signal and a chrominance subcarrier, said device being provided with a first bandstop filter centered on a frequency of the chrominance subcarrier, said first bandstop filter receiving the analog television type video signal and providing the luminance signal, a video signal processing circuit to which the luminance signal from the first bandstop filter is applied, and a scan velocity modulation arrangement to which the luminance signal from the first bandstop filter is also applied, said arrangement comprising a circuit for differentiating the luminance signal, followed by an amplifier which feeds a current into a coil for horizontally deflecting a spot formed on a display screen by an electron beam, characterized in that said arrangement also comprises a second bandstop filter, having an input coupled to an input of said arrangement and an output coupled to an input of said differentiating circuit, which is centered on the frequency of the chrominance subcarrier, said second bandstop filter having a limited maximum attenuation.

5,619,280
COLOR CONVERSION APPARATUS THAT RESTRICTS THE COLOR REPRODUCTION RANGE OF PRIMARY COLOR SIGNALS
Haruo Yamashita, Ibaraki, and Tsumoru Fukushima, Kyoto, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Apr. 14, 1995, Ser. No. 421,930
Claims priority, application Japan, Apr. 14, 1994, 6-075848
Int. Cl.[6] H04N *9/68*
U.S. Cl. 348—645 **1 Claim**



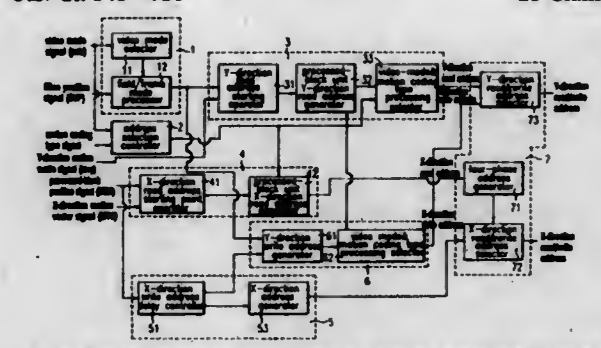
1. A color conversion apparatus comprising:
a primary color conversion means that converts a video signal consisting of a luminance signal and two color difference signals into primary color signals,
a maximum value detecting means that selects and outputs the maximum value of the outputs of said primary color conversion means for each pixel,
a minimum value detecting means that selects and outputs the minimum value of the outputs of said primary color conversion means for each pixel,
a first reference value setting means that sets an admissible maximum level of said primary color signals,
a second reference value setting means that sets an admissible minimum level of said primary color signals,
a first factor determining means that determines, depending on said luminance signal, a first correction factor that restricts the output of said maximum value detecting means to a value not greater than the output of said first reference value setting means,
a second factor determining means that determines, depending on said luminance signal, a second correction factor that restricts the output of said minimum value detecting means to a value not less than the output of said second reference value setting means,
a third factor determining means that outputs the minimum value of said first correction factor and said second correction factor, and
a multiplying means that multiplies said two color difference signals by the output of said third factor determining means,
said color conversion apparatus outputting the outputs of said multiplying means as new color difference signals.

5,619,281
METHOD AND APPARATUS FOR DETECTING MOTION VECTORS IN A FRAME DECIMATING VIDEO ENCODER
Hae-Mook Jung, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd, Seoul, Rep. of Korea
Filed Dec. 30, 1994, Ser. No. 367,365
Int. Cl.[6] H04N *7/46;7/50;7/36*
U.S. Cl. 348—699 **2 Claims**



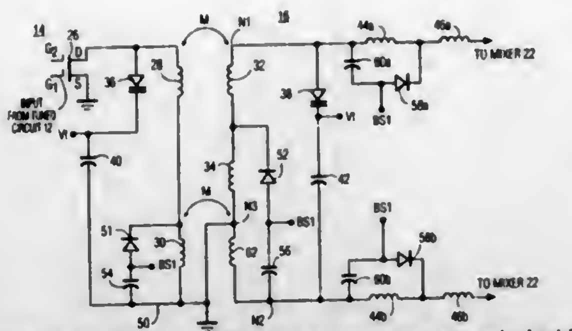
1. A method for determining target motion vectors between a current frame and its previous selected frame for a set of feature points, wherein N number of frames are skipped between the current frame and the previous selected frame, said N being a positive integer inclusive of 1, and the set of feature points included in the previous selected frame is predetermined, which comprises the steps of:
(a) storing the N skipped frames;
(b) setting one of the feature points as a reference search point;
(c) determining, for the reference feature point, a best matching point included in a corresponding feature region in an ith skipped frame, thereby generating an ith motion vector representing the displacement between the reference search point and the best matching point and setting the best matching point as the reference feature point, wherein i is a number selected in the ascending order from 1 to N, a smaller value of i being related to a temporally closer frame to the previous selected frame;
(d) storing the ith motion vector;
(e) repeating said steps (c) through (d) above until the first to the Nth motion vectors are obtained;
(f) determining, for the reference feature point, a best matching point included in a corresponding region in the current frame, thereby generating an (N+1)st motion vector representing the displacement between the reference search point and the best matching point;
(g) summing up the (N+1) motion vectors so as to provide a target motion vector representing the displacement between said one of the feature points and the corresponding best matching point in the current frame; and
(h) repeating said steps (b) through (g) above until the set of target motion vectors for all of the feature points is detected.

5,619,282
IMAGE MOTION COMPENSATING ADDRESS GENERATOR
Gi H. Song, Seoul, Rep. of Korea, assignor to LG Electronics Inc., Seoul, Rep. of Korea
Filed Jun. 13, 1995, Ser. No. 489,970
Claims priority, application Rep. of Korea, Jun. 13, 1994, 13255/1994
Int. Cl.[6] H04N *7/36*
U.S. Cl. 348—716 **28 Claims**



1. An image motion compensating address generator comprising:
mode selector means for selecting a field mode or frame mode according to a video mode signal indicative of whether an input video signal is a frame unit or field unit and a slice position signal indicative of the position of slice, to thereby control the video signal to be processed;
address selection controller means for controlling the generation of addresses according to the video mode signal and a motion coding type signal indicative of the video processing mode of a block to be processed;
Y-direction read address generator means for producing a Y-direction read address in units of processed block by using the signal output from the mode selector means according to the address selection controller means, a Y-direction motion vector signal, and a vertical field selection signal;
X-direction read address generator means for dividing the processed block into four phases in the X direction and generating an X-direction read address by using a processed-block position signal indicative of the position of the processed block and an X-direction motion vector signal according to the address selection controller means;
X-direction write address generator means for delaying the processed-block position signal and a field processed-block clock signal, and generating the X-direction write address of four phases, to thereby write read-out video data;
Y-direction write address generator means for producing a Y-direction write address by using the signal output from of the mode selector means according to the address selection controller means and the X-direction write address generator means, to thereby write read-out video data; and
read & write controller means for selectively outputting the X-direction and Y-direction read and write addresses according to a read/write selection toggle signal and an X-direction motion vector signal among the X-direction and Y-direction read and write addresses output from the Y-direction read address generator means, X-direction read address generator means, X-direction write address generator means and Y-direction write address generator means.

5,619,283
DOUBLE TUNED RF CIRCUIT WITH BALANCED SECONDARY
Michael A. Pugel, Nobelsville, Ind., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.
Filed Aug. 8, 1994, Ser. No. 287,003
Int. Cl.[6] H04N *5/50*
U.S. Cl. 348—731 **4 Claims**
1. An RF signal receiver comprising:

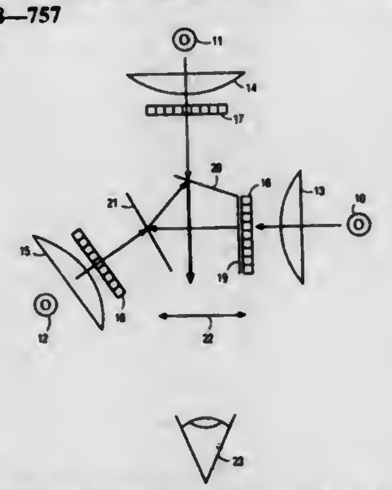


means for receiving an RF signal at a signal input terminal with respect to a signal reference potential and a DC reference potential;

a primary tank circuit comprising a first capacitor coupled in parallel with a first series circuit of a first and a second primary inductances for resonating at a first frequency, the primary tank circuit being coupled for receiving the RF signal in an unbalanced configuration;

a secondary tank circuit inductively coupled to the primary tank circuit and comprising a second capacitor coupled in parallel with a second series circuit of a first and second secondary inductances for resonating at a second frequency, the DC reference potential being coupled to a junction of the first and second secondary inductances so that the first and second secondary inductances operate together to provide a balanced output signal at a pair of balanced signal output terminals of the secondary tank circuit.

5,619,284
BEAM COMBINER FOR LCD PROJECTOR UTILIZING A PENTA-PRISM
Stephen Magocs, Knoxville, Tenn., assignor to Philips Electronics North America Corporation, New York, N.Y.
Filed Jan. 17, 1995, Ser. No. 375,333
Int. Cl.⁶ H04N *5/74;9/31*
U.S. Cl. 348—757 **10 Claims**



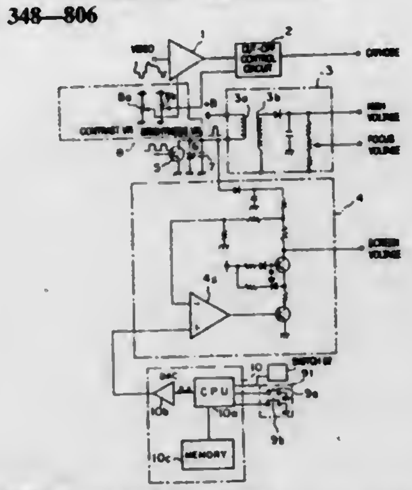
1. Apparatus for projecting on a display screen a composite color video image, comprising:

a plurality of liquid crystal display (LCD) devices, each of said LCD devices having a plurality of pixels arranged in a matrix for framing an image;

a plurality of light sources, each light source directing collimated light through a respective one of said LCD devices; and,

a dichroic combiner arranged in the form of a penta-prism for receiving and combining said collimated light which passes through each of said LCD devices, and for directing the combined light to a display screen.

5,619,285
CRT DRIVE CIRCUIT
Masaki Kobayashi, Nagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Chiyoda-ku, Japan
Filed May 31, 1995, Ser. No. 454,860
Claims priority, application Japan, Jul. 13, 1994, 6-161394
Int. Cl.⁶ H04N *3/22;3/26*
U.S. Cl. 348—806 **8 Claims**



1. A CRT drive circuit comprising:

a cut-off control circuit for adjusting a video signal amplified by means of a video amplifier and supplying the amplified video signal to respective cathodes of a CRT;

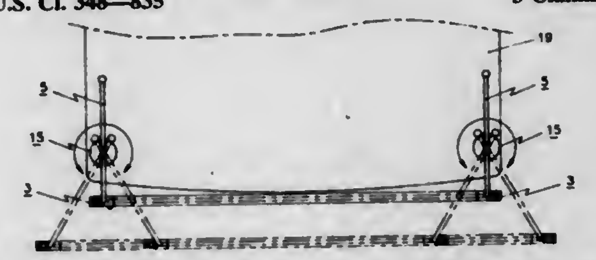
a fly-back transformer for supplying a high voltage to an anode of said CRT and supplying a focus voltage to a focus electrode;

a screen voltage generating circuit for supplying screen voltage to a screen electrode of said CRT;

a screen voltage switching means to be operated by a user; and

a screen voltage control section for outputting a control voltage for adjusting the screen voltage output from said screen voltage generating circuit in response to the operation of said screen voltage switching means to a desired voltage, the desired voltage being one of a screen voltage for optimal focus when raster moire is negligible or absent and a screen voltage for optimal raster moire improvement when raster moire is present.

5,619,286
EYE PROTECTIVE GLASS WITH ITS POSITION ADJUSTABLE IN ALL DIRECTIONS
Chien-Charn Ho, 9F3R, No. 210, chung hsueh Rd., Tainan, Taiwan
Filed Aug. 18, 1995, Ser. No. 516,911
Int. Cl.⁶ H04N *5/72*
U.S. Cl. 348—835 **3 Claims**



1. An eye protective glass with its position adjustable in all directions, comprising:

a glass body;

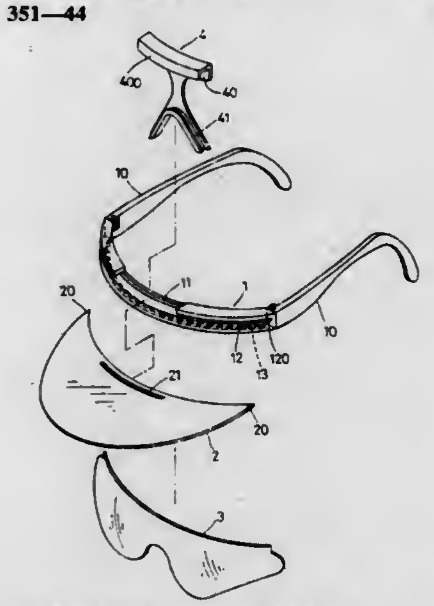
a frame fixed around said glass body and having a hole respectively in two opposite vertical sides for placing therein an adjusting unit described below;

two adjusting units respectively having a support rod consisting of a vertical portion and a horizontal portion extending from an upper end of said vertical portion, a position block having

sloping down teeth on a right side and a sloping-down outward surface at a left side, a push bar on said position block, a coil spring being fixed around said push bar, another coil spring located under said position block, said push bar being pushed down to move down said position block in a normal position wherein said position block tightly press with its toothed side against an outer surface of said vertical portion of said support rod to a releasing position, guided by said sloping-down outward surface, wherein said position block moves outward to separate from said vertical portion of said support rod, enabling said vertical portion of said support rod move up or down so as to move and keep said frame with said glass body adjusted in its position in a vertical direction; and

a support rod base provided to have an upper curved-up cap and a base disc placed under said cap, said upper portion having a support rod groove for fitting therein said horizontal portion of said support rod, said upper curved-up cap further having a curved wall defining said support rod groove and an annular vertical wall extending down from said curved wall said annular vertical wall having a projecting inward annular ridge on its inner surface, said base disc having an annular upright wall standing up from an upper flat surface, and a cavity surrounded by said round upright wall for receiving said curved wall of said upper cap, said annular upright wall having an annular projecting-outward ridge to engage with said annular projecting-inward ridge of said upper cap, said horizontal portion of said support rod being movable forward and backward in said support rod groove of said upper cap of said support rod base, said frame with said glass body able to be adjusted to move to the left and to the right if said upper cap of said support rod base is rotated relative to said base disc of said support rod base.

5,619,287
EYEGLASSES WITH A REPLACEABLE SUNSHADE
Liang-Chin Tseng, 1-3, Shih-Fen Tsun, Chi-Ku Hsiang, Tainan Shien, Taiwan
Filed Jan. 23, 1995, Ser. No. 377,058
Int. Cl.⁶ G02C *7/10*
U.S. Cl. 351—44 **3 Claims**



1. An eyeglasses with a sunshade comprising:

a frame having a lengthwise aperture in an upper surface of an intermediate portion, and a lengthwise fitting groove respectively in a lower portion extending from under two ends of said lengthwise aperture to the right and the left side;

a sunshade combined with the frame, with its inner curved side having the same curvature of said frame and fitting in said two lengthwise fitting grooves of said frame, having a slot parallel to and near the inner curved side edge;

a plate glass made as one piece and combined with said frame, fitting in a lower side of said frame;

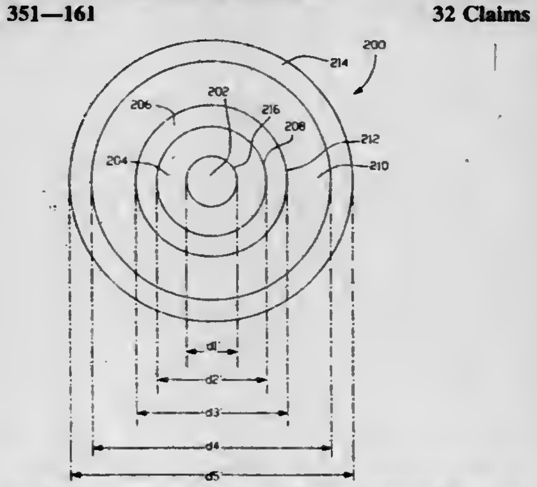
a bridge having an upper horizontal portion and a lower forked portion extending down from the upper horizontal portion, said horizontal portion having an inverted U-shaped aperture facing down and defined by a front wall;

said sunshade being replaceable, with its inner curved side releasably fitting in said two lengthwise fitting grooves of said frame, for easy and fast collapsing.

5,619,288
IMPACT RESISTANT PLASTIC OPHTHALMIC LENS
Sidney S. White, Jr., Seminole; Julie S. Berzon, St. Petersburg; Hoa T. Dang, Tampa; Sheila M. Tatman, Seminole; Robert A. Valeri, Tampa, and Kelly Benjamin, Pinellas Park, all of Fla., assignors to Essilor of America, Inc., St. Petersburg, Fla.
Filed Jan. 23, 1995, Ser. No. 376,827
Int. Cl.⁶ G02C *7/02*
U.S. Cl. 351—159 **13 Claims**

1. A plastic ophthalmic lens having a back surface and a front surface, wherein only the back surface is covered by an impact resistance imparting coat comprising a cured multifunctional acrylate at least about 40%, by weight of said multifunctional acrylate, being a difunctional acrylate.

5,619,289
MULTIFOCAL CONTACT LENS
Leonard Seidner, Manalapan, N.J., and Maurice Poster, Jericho, N.Y., assignors to Permeable Technologies, Inc., Morganville, N.J.
Continuation-in-part of Ser. No. 40,422, Mar. 31, 1993, Pat. No. 5,404,183, Ser. No. 111,845, Aug. 25, 1993, Pat. No. 5,493,350, and Ser. No. 201,699, Feb. 25, 1994, Pat. No. 5,526,071, which is a continuation-in-part of Ser. No. 40,422, and Ser. No. 111,845, which is a continuation-in-part of Ser. No. 40,422. This application Sep. 16, 1994, Ser. No. 308,065
Int. Cl.⁶ G02C *7/04*
U.S. Cl. 351—161 **32 Claims**



1. A multifocal contact lens customized for a patient, having an anterior side with a power curve defined in part by a (i) central aspheric surface, (ii) an aspheric inner annular surface contiguous with said central aspheric surface, (iii) a second annular surface contiguous along a radially inner periphery with said aspheric

inner annular surface, and (iv) an outer annular surface contiguous along a radially inner periphery with said second annular surface, each of the annular surfaces being concentric or coaxial with said central aspheric surface, said central aspheric surface corresponding to a distance vision correction zone, said aspheric inner annular surface corresponding to a progressive add zone with a standard eccentricity between approximately −1.5 and approximately −5.0, said second annular surface corresponding to a near vision correction zone, and said outer annular surface corresponding to a distant vision correction zone.

5,619,290

PHASE-CONTRAST HAPLOSCOPE AND ROTARY DISC FOR USE THEREWITH

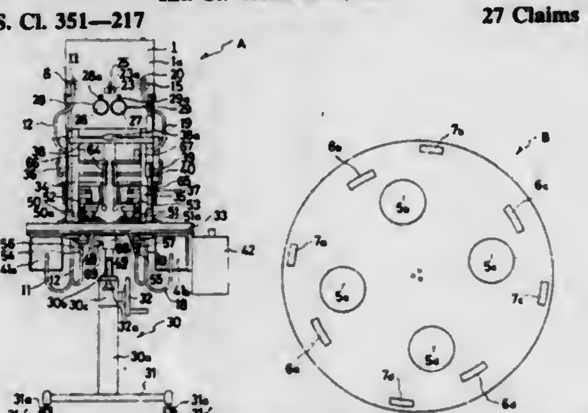
Shigekatsu Nakayama, Houya, and Seiji Ishimaru, Wakou, both of Japan, assignors to Tagawa Denki Kenkyusyo Company, Bunkyou-ku, Japan

Filed Jan. 31, 1995, Ser. No. 381,781

Claims priority, application Japan, Feb. 10, 1994, 6-016072; Oct. 3, 1994, 6-238901

Int. Cl.⁶ A61B *3/10;3/00*

U.S. Cl. 351—217 **27 Claims**



1. A rotary disc for a phase-contrast haploscope having a rotary disc motor for rotating said rotary disc and a stationary front plate defining first and second light projection path apertures and left- and right-hand look-through holes which are shaped in a circle and which are formed therein at positions corresponding to a subject's left and right eyes, the stationary front plate rotatably supporting said rotary disc and leaving a predetermined clearance between the rotary disc and the stationary front plate, said rotary disk comprising:

a plate member having a substantially circular shape:

said plate member defining through holes which are shaped in a circle having substantially the same size as said left- and right-hand look-through holes and which are formed on a first circular path concentric with a center of said plate member, said through holes being disposed to pass in front of said left- and right-hand look-through holes in sequence at a high rotational speed to instantaneously coincide with one of said left- and right-hand look-through holes at a time:

said plate member defining first project-through holes which are shaped in a rectangular arc and which are formed on a second circular path concentric with said center of said plate member having a different diameter from that of first circular path, said first project-through holes being disposed to pass in front of said first light projection path aperture coincident with alignment of respective ones of said through holes with the left-hand look-through hole: and

second project-through holes which are shaped in a rectangular arc and which are formed on a third circular path concentric with the center of said plate member having a different diameter from those of said first and second circular paths, said second project-through holes being disposed to pass in front of said second light projection path aperture coincident with alignment of respective ones of said through holes with the right-hand look-through hole.

5,619,291

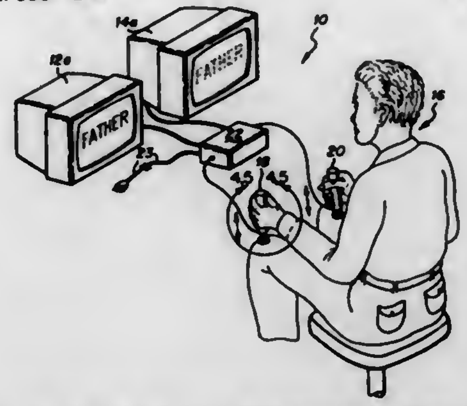
PATIENT-USER INTERACTIVE PSYCHOTHERAPY APPARATUS AND METHOD

Mark D. Putnam, 50 Mission Trail, Woodside, Calif. 94062

Filed Sep. 1, 1995, Ser. No. 522,545

Int. Cl.⁶ A61B *3/02*

U.S. Cl. 351—240 **14 Claims**



1. A patient-user interactive psychotherapy apparatus comprising:

a) a pair of separate and mutually distinct visual display means, each for displaying an image having an emotional impact on a particular patient-user, said pair of visual display means being positioned horizontally spaced from one another in the patient-user's field of view at a distance sufficiently far apart from one another to induce saccadic eye movement in the patient user as the patient-user alternately views each of said visual display means, each of said visual display means being operable between two operational states including:

i) a first operational state wherein the image is highly, visually perceptible by the patient-user;

ii) a second operational state wherein the image is less visually perceptible by the patient-user; and

b) left and fight switch input means actuable by left and right hands of the patient user for alternatingly actuating said pair of visual display means between said first and second operational states to permit the patient-user to self-induce a comfortable rate and duration of saccadic eye movement as the patient visually tracks the image as it is alternatingly displayed as a highly visually perceptible image on the two visual display means.

5,619,292

CAMERA

Minoru Matsuzaki, Hachioji; Yuta Sato, Hino; Sumio Kawai, Hachioji; Hiroyuki Takizawa, Hachioji; Masaharu Hamada, Hachioji, and Tomoki Funakubo, Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 22, 1995, Ser. No. 445,879

Claims priority, application Japan, May 24, 1994, 6-109835; May 25, 1994, 6-111293

Int. Cl.⁶ G03B *17/50*

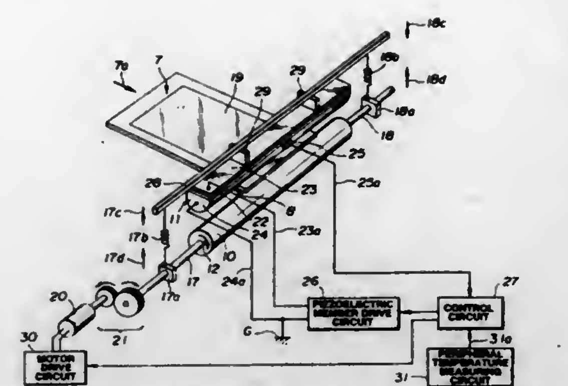
U.S. Cl. 396—32 **30 Claims**

1. A camera using films each including a development processing solution, comprising:

film feed means for feeding an exposed film to an outside of said camera or into an accommodating chamber;

press means for pressing said exposed film and spreading the development processing solution included in said film over the entire image region of said film; and

an electro-mechanical energy converter comprising a piezoelectric element and provided with said press means to reduce a



friction force to a pressed surface of said film by vibration of said press means.

5,619,293

IMAGE BLUR SUPPRESSION DEVICE OF A CAMERA WHICH ALIGNS AN IMAGE BLUR SUPPRESSION LENS AND ACTUATOR BASED ON ANTICIPATED SAG OF SUPPORTING MEMBERS

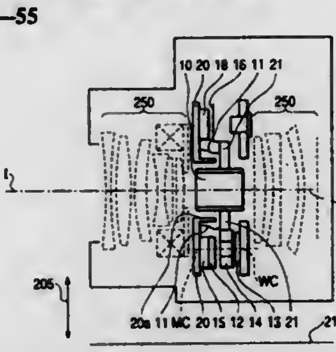
Kazutoshi Usui, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Jun. 16, 1995, Ser. No. 491,580

Claims priority, application Japan, Jun. 16, 1994, 6-134054; Jun. 16, 1994, 6-134076

Int. Cl.⁶ G03B *39/00*

U.S. Cl. 396—55 **20 Claims**



1. An image blur suppression device comprising:

a main optical system having an optical axis;

an image blur suppression lens having an optical center, the image blur suppression lens being moveable to compensate for image blur; and

a supporting member supporting the image blur suppression lens and experiencing sag due to weight of the image blur suppression lens and the supporting member, the image blur suppression lens being positioned to approximately align the optical center of the image blur suppression lens with the optical axis of the main optical system in accordance with the amount of sag of the supporting member;

wherein the main optical system is positionable at a first position where the supporting member experiences approximately no sag, and at a second position where the supporting member experiences sag, the optical center of the image blur suppression lens being offset from the optical axis of the main optical system when the main optical system is positioned at the first position.

5,619,294

CAMERA WITH A VISUAL LINE POSITION DETECTION DEVICE AND METHOD

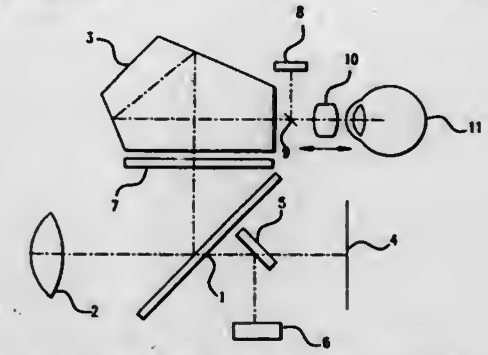
Kazuharu Imafuji; Shigemasa Sato; Toru Kosaka, and Hidehiro Ogawa, all of Kanagawa-ken, Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Mar. 31, 1995, Ser. No. 414,993

Claims priority, application Japan, Apr. 21, 1994, 6-083301

Int. Cl.⁶ G03B *13/02;13/10*

U.S. Cl. 396—51 **13 Claims**



1. A camera, comprising:

a diopter adjustment lens movable along an optical axis;

means for detecting a position of said diopter adjustment lens along said optical axis;

means for determining a distance between a first position and a second position of said diopter adjustment lens;

means for making visual line position determinations with said lens at said first position; and

means for determining a visual line position at said second position based on (1) said visual line position determinations, and (2) the distance between said first position and said second position of said diopter adjustment lens;

means for determining a lens position coefficient from said distance, wherein, when said lens is at said second position, said means for determining a visual line at said second position determines said visual line position based on said lens position coefficient;

means for determining correction coefficients for correcting determinations of visual line positions perpendicular to the optical axis, wherein values of said correction coefficients depend on characteristics of a photographer eye in said first position;

means for adjusting at least one of said correction coefficients when said diopter adjustment lens is at said second position based on said lens position coefficient;

means for reflecting light from a photographer eye; and

means for detecting a position of light reflected from the photographer eye and for providing an output based on said position wherein said means for determining said visual line position determines said visual line position as a function of said output and said correction coefficients wherein said means for determining said visual line position determines said visual line position, Y', at said second position according to the following equation:

$$Y' = (A \cdot m) \cdot X + (A \cdot n)$$

where A is said lens position coefficient at said second position of said lens, m and n are said correction coefficients determined at said first position of said diopter adjustment lens, and X is said position of reflected light at said second position of said diopter adjustment lens.

5. A method of determining a visual line position in a camera to determine a photographer's visual line, the camera including a diopter adjustment lens movable along an optical axis, wherein said method comprises the steps of:

detecting a first position of said diopter adjustment lens;

making visual line position determinations at said first position of said diopter adjustment lens;

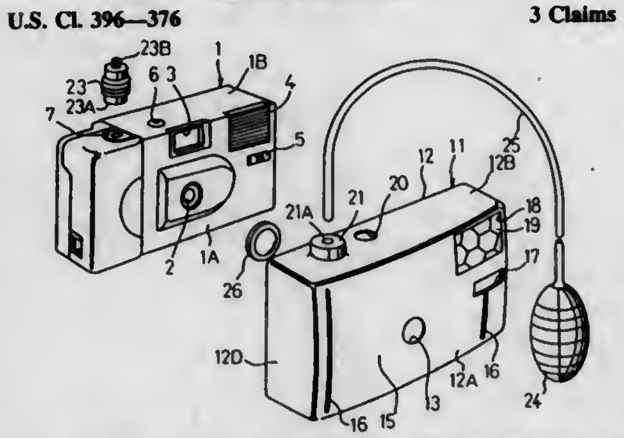
moving said diopter adjustment lens to a second position along said optical axis;

detecting said second position;
determining a distance between said first position and said second position; and
determining a visual line position at said second position based on (1) said visual line position determinations made at said first position, and (2) said distance;
determining, with said diopter adjustment lens at said second position, a lens position coefficient from said distance;
determining said visual line position based on said lens position coefficient;
determining correction coefficients for correcting determinations of visual line positions perpendicular to the optical axis, wherein values of said correction coefficients depend on characteristics of a photographer eye in said first position;
adjusting at least one of said correction coefficients when said diopter adjustment lens is at said second position based on said lens position coefficient;
reflecting light from the photographer eye;
detecting a position of light reflected from the photographer eye and providing an output based on said position of reflected light;
determining said visual line position as a function of said output and said correction coefficients; and
with said diopter adjustment lens at said second position, the step of determining said visual line position, Y', at said second position according to the following equation:

$$Y'=(A\cdot m)\cdot X+(A\cdot n)$$

where A is said lens position coefficient at said second position, m and n are said correction coefficients determined at said first position, and X is said position of reflected light.

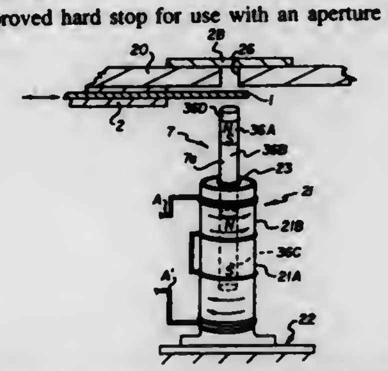
5,619,295
CAMERA COVER FOR TAKING A SELF-PORTRAIT AND A METHOD OF MAKING THE SAME
Tadayoshi Seya, Tokyo, and Mamoru Sato, Matudo, both of Japan, assignors to Sanyo Harz Co., Tokyo, Japan
Filed Nov. 8, 1995, Ser. No. 555,327
Int. Cl.⁶ G03B *13/02*
U.S. Cl. 396—376 **3 Claims**



1. A camera cover to be removably attached to a camera for taking a self-portrait comprising:
a front portion covering a front side of the camera, said front portion being formed in a shape of a convex spherical surface and having an aperture in a position corresponding to a lens of the camera;
peripheral portions each protruding from corresponding peripheral edges of said front portion and covering an upper side, a lower side, a left side and a right side of the camera, respectively, so that the camera fits therein;
wherein a whole surface of said front portion forms a convex mirror; and wherein said front portion is provided with reference lines for providing a reference frame showing a scope of picture when taking the self-portrait.

5,619,296
ELECTROMAGNETIC MECHANISM FOR PROVIDING A HARD STOP FOR MOVING BLADE APERTURE SYSTEMS
Edward P. Furlani, Lancaster; Paul L. Taillie, Rochester, and Thomas M. Stephany, Churchville, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed May 30, 1996, Ser. No. 655,366
Int. Cl.⁶ G03B *9/02; 9/08*
U.S. Cl. 396—463 **8 Claims**

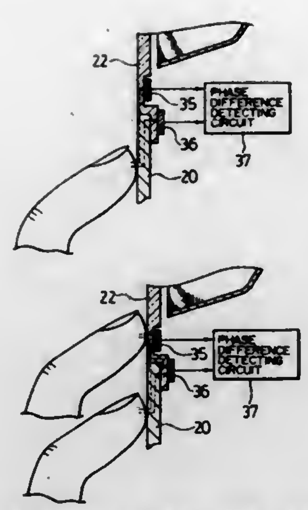
1. An improved hard stop for use with an aperture mechanism



that is comprised of at least one blade moveable along a path between a closed position and at least one open position, and at least one hard stop piston that is moveable between a first position, out of the blade path, and a second position, in the blade path, to position the blade in the open position when an edge of the blade contacts the hard stop piston, wherein said improved hard stop is comprised of:
a magnetic piston;
an electromagnet means proximate said magnetic piston for causing the magnetic piston to move to the first position when current is applied to said electromagnet means in a first direction and for causing said magnetic piston to move to the second position when current is applied to said electromagnet means in a second direction;
a first ferromagnetic means positioned at the first position to maintain said magnetic piston at the first position when current ceases to be applied to said electromagnet means in the first direction; and
a second ferromagnetic means positioned at the second position to maintain said magnetic piston at the second position when current ceases to be applied to said electromagnet means in the second direction.

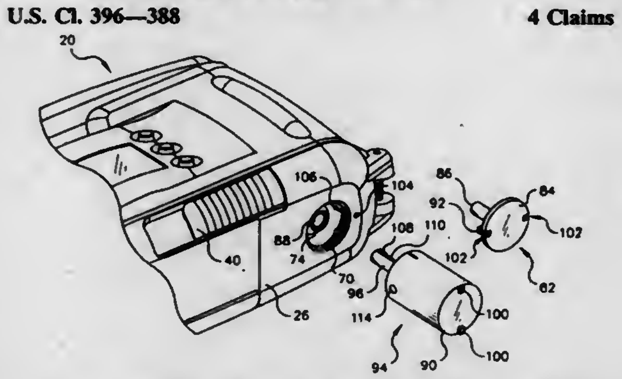
5,619,297
CAMERA
Yukio Noguchi, Omiya, Japan, assignor to Fuji Photo Optical Ltd., Saitama, Japan
Filed Aug. 25, 1995, Ser. No. 519,421
Claims priority, application Japan, Aug. 29, 1994, 6-203628
Int. Cl.⁶ G03B *17/38*
U.S. Cl. 396—201 **13 Claims**

1. A camera having a camera body being made of an electroconductive material and at least one window for light-projection and/or a light intake thereon, comprising:
a first electrode which is attached to a first insulating member being provided in said window or in a vicinity of said window in such a manner that said first electrode is located inside said camera body;
a second electrode which is attached to a second insulating member being provided on an inner surface of said camera body in such a manner that said second electrode is located in a vicinity of said first electrode;
detecting means for detecting a finger obstruction by comparing electrostatic capacity at said first electrode with an electrostatic capacity at said second electrode relatively; and



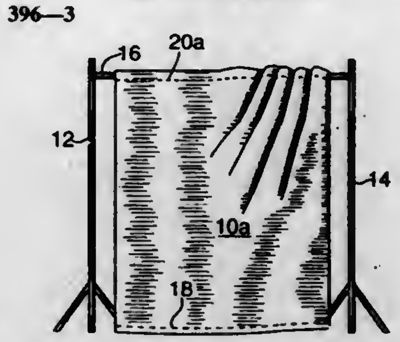
warning generating means for generating a warning when said detecting means detects a finger obstruction.

5,619,298
FILM REWINDING APPARATUS FOR USE IN CASE OF CAMERA MALFUNCTION
Wayne E. Stiehler, Spencerport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Feb. 13, 1996, Ser. No. 600,723
Int. Cl.⁶ G03B *17/02; 1/00*
U.S. Cl. 396—388 **4 Claims**



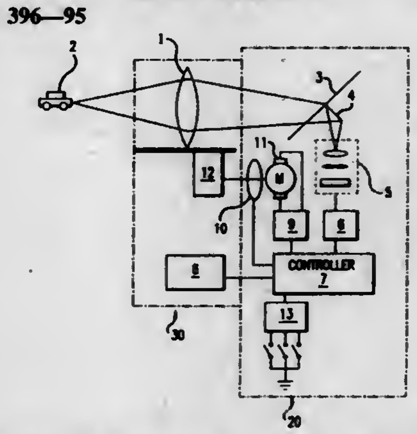
1. A camera comprising a chamber for receiving a film cartridge that contains a film spool having a spool end which is exposed to allow the spool end to be engaged for rotation to wind a filmstrip into the cartridge, and a door for said chamber that covers the spool end, is characterized in that:
said door has an access opening arranged to be located over the spool end to permit a spool driver to be inserted through said access opening to engage the spool end for rotation to wind the filmstrip into the cartridge without having to open the door; and
a datum bushing spring-urged against the spool end has a through opening for the spool driver which is located to be simultaneously aligned with said access opening and a coaxial hole in the spool end and which has a diameter sufficiently less than the diameter of the coaxial hole in the spool end to cause said datum bushing to compress a resilient part of the spool driver to allow the resilient part to expand into a key way extension from the coaxial hole in the spool end to thereby engage the spool end.

5,619,299
PHOTOGRAPHER'S BACKDROPS AND METHODS FOR MAKING SAME
Diane Fleming-Schaub, 15 St. Paul's Pl., Garden City, N.Y. 11530
Filed May 2, 1995, Ser. No. 433,922
Int. Cl.⁶ G03B *15/00*
U.S. Cl. 396—3 **9 Claims**



1. A method of making a lightweight, painted, opaque, easily transportable photographer's backdrop, comprising the steps of:
a) obtaining a sheet of opaque spunbonded olefin material;
b) mechanically manipulating said sheet to break down fibers in said material until it is supple and drapable;
c) providing acrylic paint;
d) providing water;
e) mixing said acrylic paint and said water; and
f) applying said mixture to said sheet wherein said painted sheet remains supple and drapable, and is compactable and re-crushable to remain supple and drapable.

5,619,300
AUTOFOCUS ADJUSTMENT DEVICE AND METHOD
Toshimi Watanabe, Kanagawa-ken, and Seiichi Yasukawa, Chiba-ken, both of Japan, assignors to Nikon Corporation, Tokyo, Japan
Filed Aug. 14, 1995, Ser. No. 514,728
Claims priority, application Japan, Sep. 7, 1994, 6-214079
Int. Cl.⁶ G03B *13/36*
U.S. Cl. 396—95 **34 Claims**



1. An autofocus adjustment device for a camera comprising:
a focus detection assembly that repeatedly performs focus detection operations on a photographic subject and focus adjustment operations on a photographic lens assembly of the camera;
a movement direction determination assembly coupled to said focus detection assembly that determines when a movement direction of the photographic subject has changed based on results of the focus detection operations performed by said focus detection assembly;
an exposure control assembly coupled to said focus detection assembly that controls a photographic operation of the camera; and

a photographic operation prohibiting control assembly that prohibits the photographic operation of the camera until a specified number of focus detection operations is executed after said movement direction determination assembly determines that the movement direction of the photographic subject has changed.

5,619,301

DETECTOR FOR DETECTING FOCUSING STATE OR DISTANCE OF PHOTOGRAPHED OBJECT

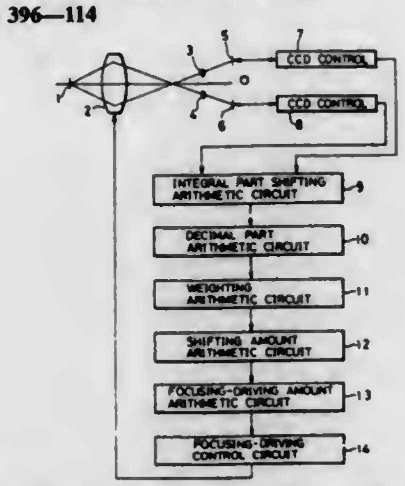
Akira Suzuki, Kawasaki, and Takao Saito, Yokohama, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 174,704, Dec. 29, 1993, abandoned. This application Apr. 15, 1996, Ser. No. 632,093

Claims priority, application Japan, Dec. 31, 1992, 4-361035; Sep. 10, 1993, 5-248592

Int. Cl.⁶ G03B *13/36*

U.S. Cl. 396—114 **9 Claims**



1. A device for detecting a focusing state and a photographed object distance, said device comprising:

a pair of light receiving element arrays each offset from an optical axis and each configured to receive a light beam from a photographed object and output a respective image information waveform in accordance with a photographed object distance, each array of said pair comprising,

a plurality of light receiving elements,

said image information waveform comprising a series of image data generated from said plurality of light receiving elements, and having a deformation error component;

a first circuit which determines a degree of conformity between said image data from both arrays of said pair of element arrays;

a second circuit which weights each of said series of image data of said respective image information waveforms in accordance with said degree of conformity determined by said first circuit so as to produce respective corrected image data waveforms, said second circuit weighing a first subset of said image data having a high conformity degree determined by said first circuit greater than a second subset of said image data having a low conformity degree determined by said first circuit, so that said respective corrected image data waveforms have reduced amounts of said deformation error contained therein;

a third circuit which detects said focusing state and said photographed object distance by determining an image shifting amount between said respective corrected image information waveforms; and

a fourth circuit which adjusts a focus in accordance with an output of said third circuit.

5,619,302

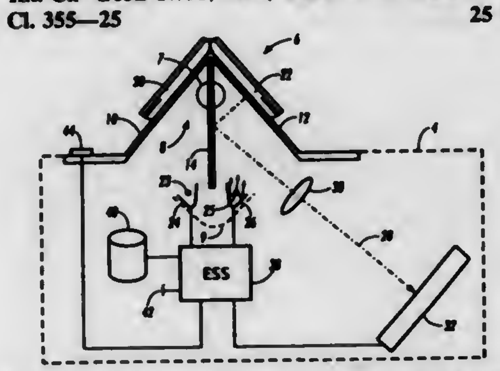
APPARATUS AND METHOD FOR SCANNING A BOUND DOCUMENT USING A WEDGE SHAPED PLATEN

Xiaodong Wu, Atherton, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 17, 1996, Ser. No. 635,095

Int. Cl.⁶ G03B *27/32;27/62;* **G03G** *21/00;* **H04N** *1/46*

U.S. Cl. 355—25 **25 Claims**



1. An apparatus for scanning a bound document having a first opposing page and a second opposing page, comprising:

a wedge shaped platen having a first transparent surface and a second transparent surface for supporting the bound document in an open condition with the first and the second opposing pages being adjacent the first and the second transparent surfaces;

a light source for illuminating the first transparent surface of said wedge shaped platen with light having a first wavelength, and the second transparent surface of said wedge shaped platen with light having a second wavelength;

an imager for sequentially capturing light reflected thereon from the first and the second transparent surfaces of said wedge shaped platen; and

an optical element positioned in a first optical path extending between the first transparent surface and said imager, and positioned in a second optical path extending between the second transparent surface and said imager, said optical element transmitting light in the first optical path having the first wavelength and reflecting light in the second optical path having the second wavelength.

5,619,303

PHOTOGRAPHING APPARATUS USABLE IN FIRST AND SECOND POSTURES WITH A FILM AMOUNT DISPLAY FEATURE FOR EACH POSTURE

Masashi Yahara, and Tsutomu Murayama, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

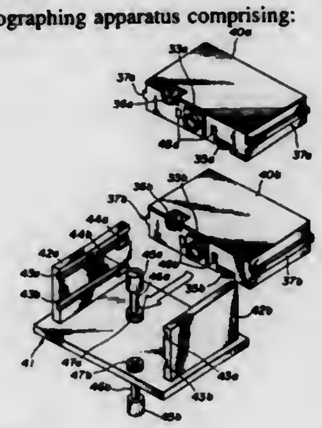
Filed Mar. 2, 1995, Ser. No. 397,353

Claims priority, application Japan, Mar. 7, 1994, 6-062102; Mar. 24, 1994, 6-076301

Int. Cl.⁶ G03B *27/44*

U.S. Cl. 355—54 **21 Claims**

1. A photographing apparatus comprising:



a main body;

optical means for projecting an image of an original onto a film;

a camera unit detachably mountable to the body of said apparatus, said camera unit including a case comprising film supply means and film winding means;

holding means disposed on the body of said apparatus for detachably holding said camera unit in a first posture or in a second posture opposite to the first posture; and

display means for separately displaying a photographable amount of film within said camera unit when said camera unit is held in the first posture and a photographable amount of film within said camera unit when said camera unit is held in the second posture.

5,619,304

REDUCTION EXPOSURE APPARATUS WITH IMPROVED RESOLUTION CHARACTERISTIC AND RAISED LIGHT INTENSITY

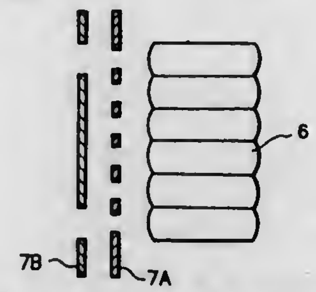
Tadao Yasuzato, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Nov. 29, 1994, Ser. No. 346,522

Claims priority, application Japan, Nov. 30, 1993, 5-323338

Int. Cl.⁶ G03B *27/72;* **G03F** *7/20*

U.S. Cl. 355—71 **9 Claims**



1. A reduction exposure apparatus for illuminating a reticle with a desired resolution characteristic, comprising:

a fly-eye lens having a plurality of individual lens units arranged in parallel for passing light from a light source;

and

an aperture stop placed after the fly-eye lens in an optical path of the light and having at least one light-transmissive area for limiting passage of the light, wherein:

edges of said at least one-light-transmissive area are positioned along a boundary between adjacent lens units; and

said at least one light-transmissive area substantially comprises selected unit areas each overlapping with one of the lens units so as to provide the exposure system with said desired resolution characteristic.

5,619,305

NEGATIVE FILM MASKING APPARATUS FOR PHOTOGRAPHIC PRINTER

Akihito Yamamoto, and Mitsuhiko Itojima, both of Wakayama, Japan, assignors to Noritsu Koki Co., Ltd., Wakayama, Japan

Filed Oct. 18, 1994, Ser. No. 324,661

Claims priority, application Japan, Oct. 19, 1993, 5-261140; Oct. 22, 1993, 5-264888

Int. Cl.⁶ G03B *27/58*

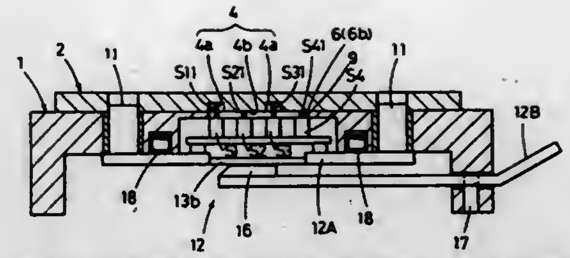
U.S. Cl. 355—75 **17 Claims**

1. A negative film masking apparatus for use in a photographic printer, said apparatus comprising:

a mask base having an upper surface having formed therein pin holes and a switch slot;

positioning pins mounted in said pin holes for movement therein between a projected position, whereat said pins project upwardly from said upper surface, to a retracted position, whereat said pins do not project from said upper surface;

detector switches mounted in said switch slot for movement therein between a projected position, whereat said switches



project upwardly from said upper surface, to a retracted position, whereat said switches do not project from said upper surface;

a plurality of negative film masks, each said mask having therein a masking window of a discrete size corresponding to a respective size of a negative film to be printed, and each said mask having a lower side having detecting pattern regions in the form of recesses and a land of an arrangement representative of said size of said masking window;

each said mask being positionable on said mask base with said lower side of said mask being mounted on said upper surface of said mask base; and

lifting means for moving said pins and said switches from said respective retracted positions thereof to said respective projected positions thereof, such that said pins locate said each mask at a given position with respect to said mask base, and such that each said switch is pressed against said land or is received in a respective said recess, thereby resulting in a combination of on/off switching conditions of said switches indicative of said size of said masking window and generating a detection signal representative thereof.

5,619,306

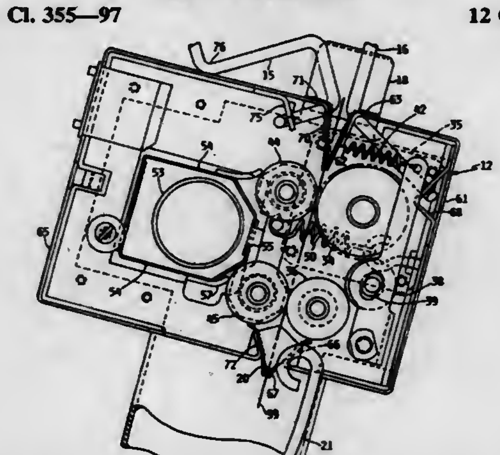
APPARATUS FOR DUPLICATING X-RAY TYPE PHOTOGRAPHIC FILMS

Duane W. Baxter, 2212 5th Ave. SW., Rochester, Minn. 55902; Donald J. Wanek, 1843 26th St., and Arthur Hamburgen, 1330 20th St. NW., both of Rochester, Minn. 55901

Filed Dec. 19, 1994, Ser. No. 359,043

Int. Cl.⁶ G03B *27/04*

U.S. Cl. 355—97 **12 Claims**



1. An apparatus for making copies of developed X-ray films by exposing a pair of contacting films including a developed X-ray film to be copied and an unexposed copy film comprising

an exposure station for exposing said film pair;

a first pair of confronting rollers forming an entry pair for driving a pair of contacting films entering said exposure station;

a second pair of confronting rollers forming a departure pair for driving a pair of contacting films leaving said exposure station; and

means for driving said roller pairs and said pair of contacting films at the same tangential velocity;

said first and second roller pairs providing the sole support and guidance of said pair of contacting films between said roller pairs and through said exposure station.

5,619,307

METHOD OF PRINTING TEST PATTERN AND APPARATUS FOR OUTPUTTING TEST PATTERN

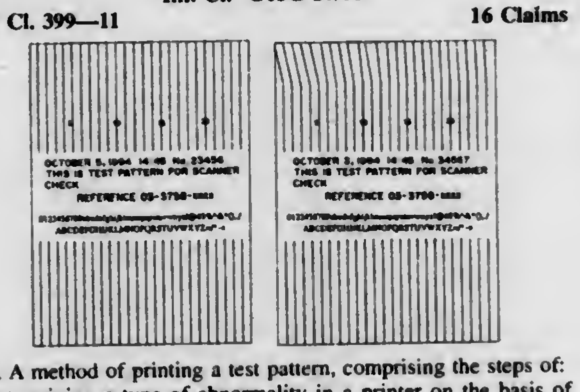
Hitoshi Machino, Tokyo; Koichi Ohtaka, Kawasaki; Masako Takahashi; Atsuya Takahashi, both of Yokohama, and Nobuyuki Kinoshita, Yamato, all of Japan, assignors to Cannon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 6, 1995, Ser. No. 498,873

Claims priority, application Japan, Jul. 7, 1994, 6-155788; Mar. 29, 1995, 7-071677

Int. Cl.[6] G03G *21/00*

U.S. Cl. 399—11 **16 Claims**



1. A method of printing a test pattern, comprising the steps of:
determining a type of abnormality in a printer on the basis of status information of said printer; and
causing said printer to print out a test pattern corresponding to the determined type of abnormality.

5,619,308

ELECTROPHOTOGRAPHIC IMAGE FORMING APPARATUS ADJUSTING IMAGE FORMING MEANS BASED ON SURFACE VOLTAGE OF PHOTOCONDUCTOR

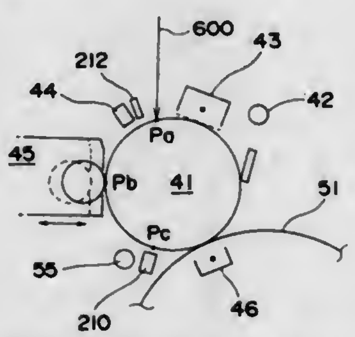
Naoyoshi Kinoshita, Aichi-ken; Takeru Kinoshita, Toyokawa, and Hideaki Kodama, Okazaki, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed May 18, 1993, Ser. No. 63,082

Claims priority, application Japan, May 19, 1992, 4-126480; May 19, 1992, 4-126481; May 19, 1992, 4-126485; May 19, 1992, 4-126492; May 19, 1992, 4-126493

Int. Cl.[6] G03G *21/00*

U.S. Cl. 399—48 **19 Claims**



1. An electrophotographic image forming apparatus comprising:
a photoconductor;
charging means for electrically charging said photoconductor;
exposure means for projecting light corresponding to an image onto said photoconductor and forming an electrostatic latent image on said photoconductor;
developing means for developing the electrostatic latent image formed on said photoconductor with toner and forming a toner image on said photoconductor;
transfer means for transferring the toner image formed on said photoconductor onto a sheet of paper;
control means for controlling said charging means, said exposure means, said developing means and said transfer means to form the toner image on a sheet of paper;
detecting means for detecting a surface voltage of at least one position on said photoconductor;
first adjusting means for adjusting an operation value of at least one of said charging means, said exposure means and said developing means based on the surface voltage detected by said detecting means at a timing between respective image forming processes when an image forming process is continuously repeated a plurality of times; and
second adjusting means for adjusting the operation value of at least one of said charging means, said exposure means and said developing means with a preciseness higher than that of said first adjusting means, based on the surface voltage detected by said detecting means, prior to a start timing when an image forming process is continuously repeated a plurality of times.

5,619,309

PROCESS CARTRIDGE, METHOD FOR ASSEMBLING PROCESS CARTRIDGE AND IMAGE FORMING APPARATUS

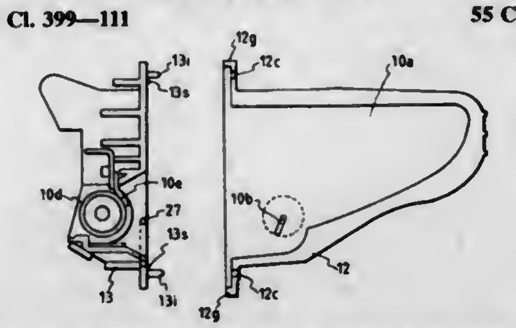
Masahiko Yashiro, Yokohama; Toshiyuki Karakama, Tokyo, and Atsushi Numagami, Hadano, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 447,837, May 23, 1995, abandoned, which is a continuation of Ser. No. 70,735, Jun. 2, 1993, abandoned. This application Jul. 11, 1996, Ser. No. 678,783

Claims priority, application Japan, Sep. 4, 1992, 4-260613; Oct. 15, 1992, 4-301588

Int. Cl.[6] G03G *21/16*

U.S. Cl. 399—111 **55 Claims**



1. A process cartridge removably mountable to an image forming apparatus, said cartridge comprising:
a photosensitive member;
a first frame having a toner containing portion for containing a toner to be used for development; and
a second frame having developing means for developing a latent image formed on said photosensitive member;
wherein protruding portions are provided along abutment areas of one of said first and second frames, an abutment portion is provided on the other frame, and the abutment portion is fitted between the protruding portions and abutted onto the abutment areas upon connecting said first and second frames to each other.

5,619,310

SYSTEM FOR SUPPRESSING ONE-SIDED MOVEMENT AND ZIGZAG RUNNING OF A CONVEYOR BELT IN AN IMAGE FORMING APPARATUS

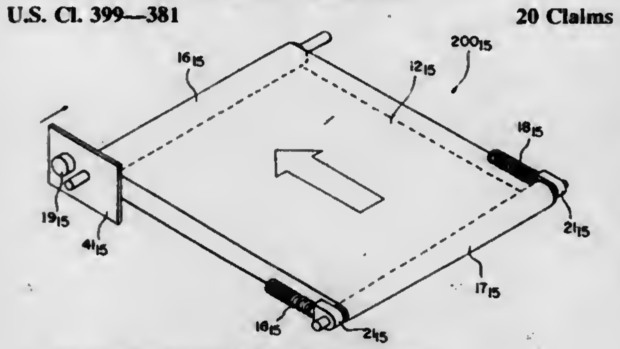
Tuyoshi Todome, Kanagawa-ken, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation-in-part of Ser. No. 205,851, Mar. 4, 1994, Pat. No. 5,481,338. This application Jun. 6, 1995, Ser. No. 466,872

Claims priority, application Japan, Mar. 5, 1993, 5-045014; Mar. 25, 1993, 5-066304; Mar. 25, 1993, 5-067097

Int. Cl.[6] G03G *5/00*

U.S. Cl. 399—381 **20 Claims**



1. An image forming apparatus, comprising:
means for forming an image on an image carrier means;
a conveyor belt for conveying an image receiving medium to the image carrier means;
means, having a first roller which has a diameter that is different at both ends and a taper size T expressed by T=(D− d)/L, wherein D is the diameter at the large diameter side, d is the diameter at the small diameter side and L is the length of the first roller, wherein T is more than 2.31×10^{-3} and a coefficient of static friction is less than 0.26, and a second roller which is opposing to the first roller, for moving the conveyor belt in a prescribed direction by rotating the first and the second rollers in a state where the conveyor belt is put over the first and the second rollers; and
means for transferring the image formed on the image carrier means onto the image receiving medium.

5,619,311

ROLLER CHARGING APPARATUS AND IMAGE FORMING APPARATUS USING THE SAME

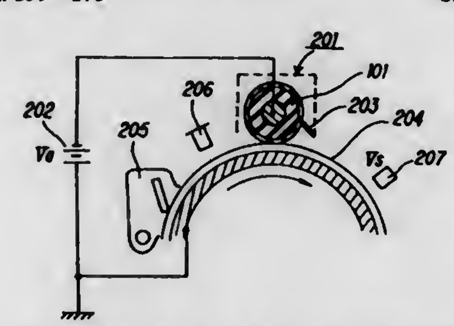
Junji Kurokawa; Toshio Nakahara, both of Yokohama, and Norimasa Soumiya, Souka, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed May 31, 1994, Ser. No. 251,363

Claims priority, application Japan, May 31, 1993, 5-154482; May 31, 1993, 5-154483; May 31, 1993, 5-154484; May 24, 1994, 6-132500

Int. Cl.[6] G03G *15/02*

U.S. Cl. 399—176 **33 Claims**



1. A roller charging apparatus for homogeneously charging a surface of a photosensitive element by loading a DC voltage only to a charging roller made of epichlorohydrin rubber and at a same time a roller hardness of said charging roller is 42 measured by a JISA hardness meter or more, which contacts a drum-formed or a belt-formed photosensitive element and rotates.

5,619,312

DEVELOPING DEVICE WITH DEVELOPER-SUPPLYING MECHANISM

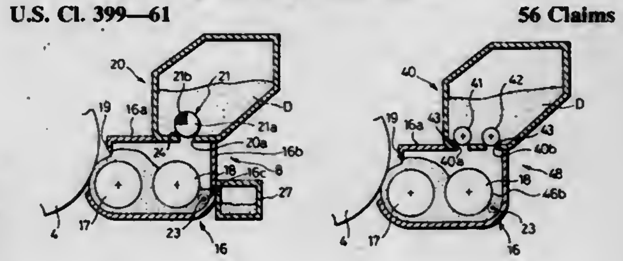
Shintarou Hatano, Hiroshima; Hiroshi Kawahito, Kitakatsuragi-gun; Yoshiki Ichikawa, Shiki-gun; Fumito Mizoguti, Yamatokoriyama; Masahiro Tsuji, Nara; Takao Hiroyasu, Nara; Hiroshi Kawamoto, Nara; Syouichi Fujita, Kashiba; Hideyuki Nishimura, Yamatokoriyama; Itaru Kawabata, Kashiba, and Yuichi Kazaki, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

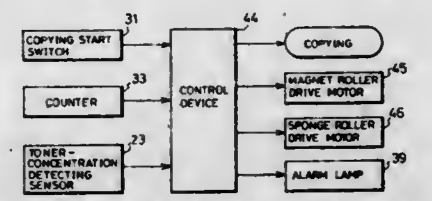
Filed Nov. 8, 1994, Ser. No. 335,948

Claims priority, application Japan, Nov. 10, 1993, 5-281535; Nov. 11, 1993, 5-282441; Mar. 2, 1994, 6-032618

Int. Cl.[6] G03G *15/08; 21/00*

U.S. Cl. 399—61 **56 Claims**





1. A developing device for developing an electrostatic latent image, comprising:
a developer container for storing a developer including toner and carrier;
agitating means for agitating the developer in said developer container;
a developing roller for bringing the developer in said developer container agitated by said agitating means into contact with the electrostatic latent image;
developer supply means for successively supplying a supply developer including toner and carrier to said developer container; and
developer discharge means for discharging the developer in said developer container as the supply developer is supplied to said developer container by said developer supply means,
said developer supply means including:
a single supply-developer storage section, disposed above said developer container, for storing the supply developer including a mixture of toner and carrier;
a toner attracting member, disposed at a bottom of said supply-developer storage section, for selectively attracting toner to a surface thereof;
a carrier attracting member, disposed at a bottom of said supply-developer storage section, for selectively attracting carrier to a surface thereof; and
a scraper means for scraping and bringing the toner and the carrier from the surfaces of said toner attracting member and said carrier attracting member into said developer container,
wherein both said toner attracting member and said carrier attracting member are disposed at the bottom of said single supply-developer storage section.

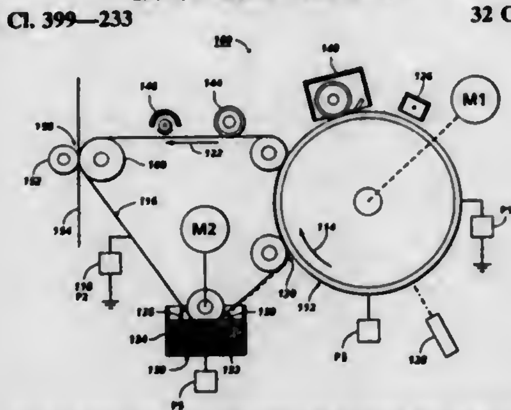
5,619,313
METHOD AND APPARATUS FOR LIQUID IMAGE DEVELOPMENT AND TRANSFER

Gerald A. Domoto, Briarcliff Manor; John F. Knapp, Fairport; Vittorio Castelli, Yorktown Heights; Joannes N. M. deJong, Suffern, and Lloyd A. Williams, Mahopac, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 1, 1995, Ser. No. 431,803

Int. Cl.⁶ G03G *15/10;15/14*

U.S. Cl. 399—233 **32 Claims**



1. An apparatus for simultaneously developing and transferring a liquid toner image, the apparatus comprising:

(a) a movable photoreceptive member having a charge bearing surface biased to an uncharged, first electrical potential;

(b) a movable flexible intermediate transfer member biased to a second electrical potential, said flexible intermediate transfer member forming a long concave simultaneous development and transfer process nip with said charge bearing surface, and said flexible intermediate transfer member being spaced a distance of 15 to 50 microns within said process nip from said charge bearing surface;

(c) means for forming a latent image electrostatically on said charge bearing surface, said latent image forming means including a charging device for uniformly placing a layer of charge on said charge bearing surface, and said formed latent image including image areas each having a third electrical potential, and background areas each having said uncharged, first electrical potential of said charge bearing surface; and

(d) means for introducing charged liquid toner consisting of toner solids and a carrier liquid into said process nip, said charged liquid toner having a fourth electrical potential, and said charged liquid toner being sandwiched, within an electrical field formed within said nip by said first, said second, and said third electrical potentials, and between said charge bearing surface and said intermediate transfer member, so as to simultaneously develop and transfer a toner image of image areas of said latent image onto said intermediate transfer member, and a toner pattern of said background areas of said latent image onto said charge bearing surface.

5,619,314
IMAGE FORMING APPARATUS

Takahiro Kubo, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 391,079, Feb. 21, 1995, abandoned, which is a continuation of Ser. No. 257,672, Jun. 8, 1994, abandoned. This application Jul. 13, 1995, Ser. No. 501,886

Claims priority, application Japan, Jun. 10, 1993, 5-163826

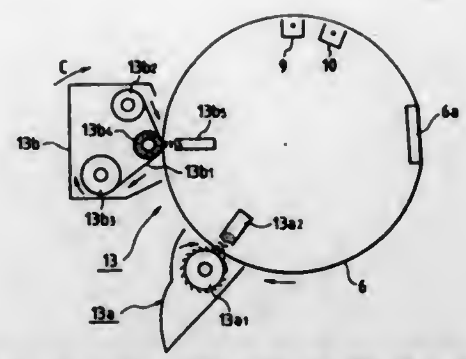
Int. Cl.⁶ G03G *15/14*

U.S. Cl. 399—296 **68 Claims**

1. An image forming apparatus comprising:

image forming means for forming a toner image on a recording material at a recording position;

conveying means having a recording material bearing member for bearing the recording material for conveying the recording material to said recording position,



wherein said image forming means and said conveying means form the toner image first on one surface of the recording material and then form the toner image on a second surface of the recording material;

first cleaning means having a rotatably-driven, brush-shaped cleaning member slidingly contacted with a surface of said recording material bearing member for cleaning the surface of said recording material bearing member; and

second cleaning means having an oil absorber member abutted against the surface of said recording material bearing member for cleaning the surface of said recording material bearing member, said oil absorber member being abutted against the surface of said recording material bearing member at a side opposite to a side with respect to said brush-shaped cleaning member where the toner is scattered due to the sliding contact between said brush-shaped cleaning member and the surface of said recording material bearing member.

5,619,315
FIXING APPARATUS USING A COATED ELASTIC MEMBER FOR USE IN AN IMAGE FORMING APPARATUS

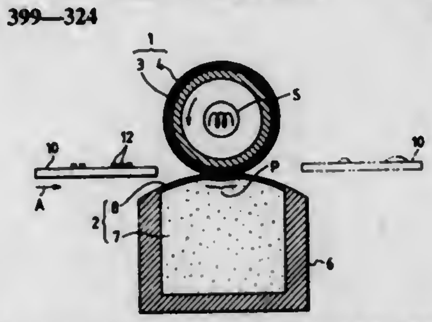
Yasuhiro Kusumoto; Yasuhiro Uehara; Yoshio Kanesawa; Tohru Inoue, all of Kanagawa; Hiroshi Kato, and Hiroyasu Kikukawa, both of Tokyo, all of Japan, assignors to Fuji Xerox Co., Ltd., and Japan Gore-Tex Inc., both of Tokyo, Japan

Filed Dec. 28, 1994, Ser. No. 365,544

Claims priority, application Japan, Dec. 29, 1993, 5-353813

Int. Cl.⁶ G03G *15/20*

U.S. Cl. 399—324 **20 Claims**



1. A fixing apparatus for an image forming apparatus comprising:

a rotatable heat roll;

a fixed elastic member disposed to form a nip section in contact with an outer circumferential surface of said heat roll, said nip section being adapted to receive a recording sheet, and said elastic member being impregnated with a liquid release agent which is supplied to said nip section; and

a porous fluororesin film formed by sintering a fluororesin powder for coating a surface of said elastic member coming in contact with said heat roll so that the release agent can be supplied by a predetermined amount while permeating through said film.

5,619,316
IMAGE FORMING APPARATUS

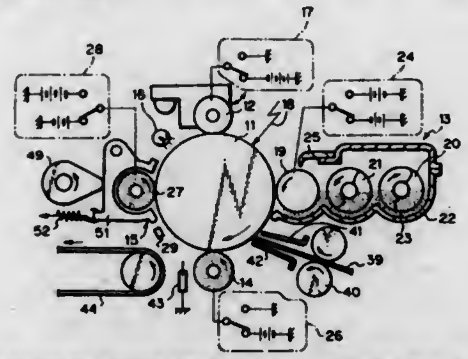
Hisashi Shoji, Kawasaki; Hidetoshi Yano, Yokohama; Tsukuru Kai, Fujisawa; Yoshiko Ishii, Tsukuba; Nobuto Yokokawa, Gotenba; Masako Suzuki, Yokohama, and Yukiko Iwasaki, Tokyo, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Feb. 1, 1996, Ser. No. 595,502

Claims priority, application Japan, Feb. 2, 1995, 7-016229

Int. Cl.⁶ G03G *21/00;15/00*

U.S. Cl. 399—359 **5 Claims**



1. In an image forming apparatus selectively operable in any one of an image formation mode for uniformly charging a photoconductive image carrier by charging means, optically exposing said image carrier to thereby electrostatically form a latent image, developing the latent image by developing means storing a toner and carrier mixture to thereby form a corresponding toner image, transferring the toner image to a recording medium by image transferring means, electrically collecting the toner left on the recording medium by cleaning means, and fixing the toner image transferred to the recording medium by fixing means; a toner collection mode for transferring the toner from said cleaning means to said image carrier, and collecting the toner in said developing means; and a toner image sensing mode for forming a reference toner image on said image carrier, sensing a reflection density from the reference toner image by density sensing means, and operating, based on an output of said density sensing means, toner replenishing means for replenishing a fresh toner to said developing means, or setting a developing condition matching the output of said density sensing means;

said toner collection mode is executed when a series of image formation modes ends and every time said image formation mode is continuously repeated a preselected number of times, while said toner image sensing mode is executed every time said image formation mode is repeated a preselected number of times.

5,619,317
LIGHT-WAVE DISTANCE METER BASED ON LIGHT PULSES

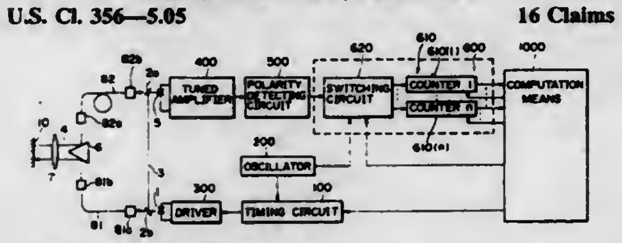
Masahiro Oishi, and Fumio Ohtomo, both of Tokyo, Japan, assignors to Kabushiki Kaisha TOPCON, Tokyo, Japan

Filed Nov. 18, 1994, Ser. No. 342,264

Claims priority, application Japan, Nov. 18, 1993, 5-314380; May 16, 1994, 6-126756

Int. Cl.⁶ G01C *3/08;* **G01S** *17/00*

U.S. Cl. 356—5.05 **16 Claims**



1. A distance meter comprising:

a light source device for emitting light pulses at nominally equal emission time intervals;

a light radiator device optically coupled to the light source device for radiating the emitted light pulses to a reflective measurement target at a distance to be determined;

a light receiver device configured and disposed for receiving light pulses reflected from the measurement target and converting the reflected light pulses into reception signals;

a data former device operatively coupled to the light receiver device for forming, from the reception signals, data representing frequency of occurrence of the reflected light pulses at nominally equal sampling time intervals, the data former device comprising a sampler device for sampling into the reception signals to produce sampled values and a cumulative memory device for cumulating the sampled values and storing the cumulated values as the frequency of occurrence of the reflected light pulses;

a timer device operatively coupled to the light source device and/or the data former device for applying a dither within a prescribed dither range to the emission time intervals and/or the sampling time intervals; and

a distance calculator device operatively coupled to the data former device for using the data to determine the distance to the measurement target.

5,619,318
OPTICAL DISPLACEMENT SENSOR

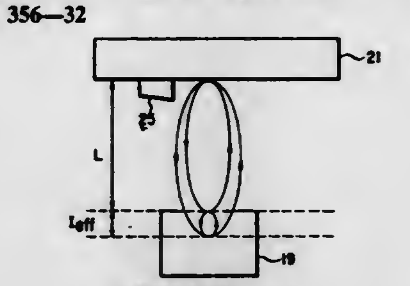
Eiji Yamamoto, Tokyo; Takashi Mihara, Iruma, and Masataka Ito, Tokyo, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 287,169, Aug. 8, 1994, abandoned. This application Jun. 13, 1995, Ser. No. 480,514

Claims priority, application Japan, Aug. 10, 1993, 5-198318

Int. Cl.⁶ G01D *5/26*

U.S. Cl. 356—32 **17 Claims**



⟨STRUCTURE OF COMPOSITE RESONATOR⟩

1. An optical displacement sensor comprising:

a vertical-cavity surface-emitting laser for emitting a predetermined laser beam;

external reflection means combined with said vertical-cavity surface-emitting laser to form a compound cavity; and

detection means capable of detecting a change in relative displacement between said vertical-cavity surface-emitting laser and a reflection surface of said external reflection means, by measuring a periodic variation in a laser output created due to a change in relative displacement between said vertical-cavity surface-emitting laser and said external reflection means, or a periodic variation in mirror loss of said compound cavity;

wherein said external reflection means includes:

at least two reflection regions within a beam-irradiated area of said vertical-cavity surface-emitting laser, and is combined with said vertical-cavity surface-emitting laser to form at least two sets of compound cavities, and

optical phase shifting means, provided in at least one of said two sets of compound cavities, for shifting a phase of a beam resonated in said at least one compound cavity, with respect to a beam resonated in another compound cavity.

5,619,319

APPARATUS FOR ACQUIRING DATA USED TO EVALUATE AND REPRODUCE THE COLOR OF A SAMPLE ON THE BASIS OF THE CHROMA AND GLOSSINESS OF THE SAMPLE

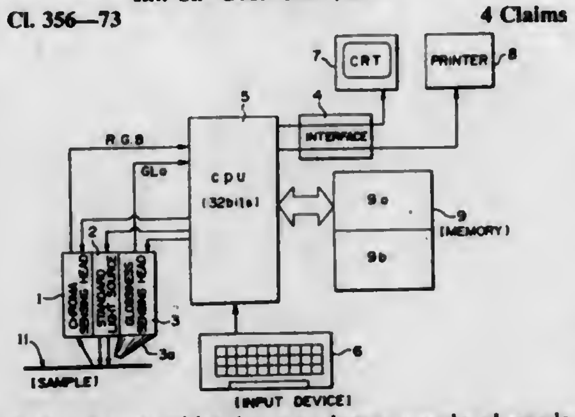
Tetsuya Muraoka, Hamamatsu, Japan, assignor to Sanmei Electronic Co., Ltd., Shimizu, Japan

Filed Mar. 8, 1994, Ser. No. 207,088

Claims priority, application Japan, Aug. 11, 1993, 5-217962

Int. Cl.⁶ G01N *21/27;21/57*

U.S. Cl. 356—73 **4 Claims**



1. Apparatus for acquiring data to evaluate a reproduced sample in accordance with the chroma and glossiness thereof comprising:

a standard light source;

chroma sensing means, said chroma sensing means acquiring chroma data (Rso, Gso, and Bso) from three prime color sensors (Rs, Gs, and Bs) when said sample is exposed to light from said standard light source;

glossiness sensing means, said glossiness sensing means acquiring glossiness data (Glo) from said sample upon receiving a component of light reflected by said sample when said sample is exposed to light from said light source;

decision data storing means for

storing chroma data acquired by said chroma sensing means and glossiness data acquired by said glossiness sensing means for each of a plurality of mark plates, said mark plates being prepared for a variety of colors and degrees of glossiness while exposed to light from said standard light source; and

storing equivalent wavelengths (λeq) of the mark plates and upper and lower thresholds thereof, said thresholds being determined by experiments conducted by a specific group of humans having the same eye color; and

arithmetic operation means to output an equivalent wavelength (λeq) of said sample by comparing said chroma and glossiness data (Rso, Gso, Bso and Glo) of the sample to corresponding data stored in said decision data storing means.

5,619,320

METHOD AND APPARATUS FOR MEASURING DISPERSION ZERO ALONG AN OPTICAL FIBER

Michael H. Eiselt, Long Branch; Robert M. Jopson, and Rogers H. Stolen, both of Rumson, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Oct. 31, 1995, Ser. No. 551,216

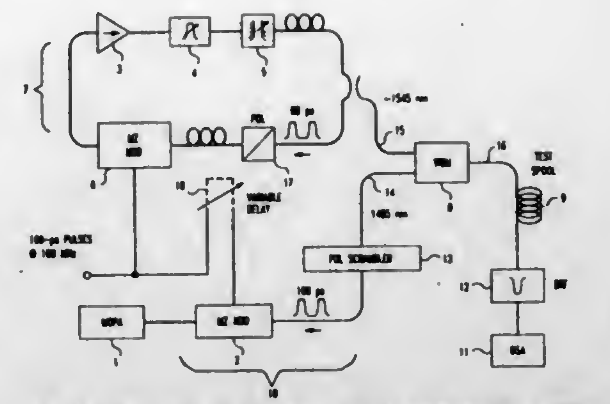
Int. Cl.⁶ G01N *21/84;* **G01D** *11/00*

U.S. Cl. 356—73.1 **26 Claims**

1. An apparatus for non-destructively determining the dispersion-zero wavelengths of an optical fiber at points along the fiber, comprising:

a first signal source operating at a first wavelength that outputs a first pulse train of optical pulses each having a first pulse width;

a second signal source operating at a second wavelength that outputs a second pulse train of optical pulses each having a second pulse width, the second wavelength being separated in wavelength from the first wavelength, and optical pulses of



the first and second pulse trains being separated by a delay such that at least one optical pulse of the first pulse train overlaps with at least one optical pulse of the second pulse train at a point along the fiber having a length of a specified range in order to determine the zero-dispersion wavelength of the fiber at the point; and

a combiner for combining the first and second pulse trains into a mixed pulse train and for inputting the mixed pulse train into the fiber.

5,619,321

METHOD OF AND DEVICE FOR MEASURING THE KERR NON-LINEARITY COEFFICIENT IN A SINGLE MODE OPTICAL FIBER

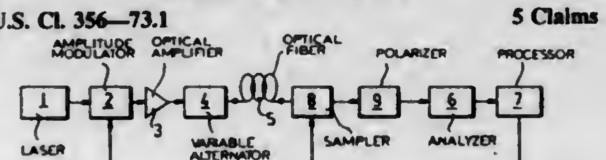
Massimo Artiglia, Turin; Ernesto Ciaramella, Rome, and Bruno Sordo, Dogliani, all of Italy, assignors to CSELT -Centro Studi e Laboratori Telecommunicazioni S.p.A., Turin, Italy

Filed Feb. 28, 1996, Ser. No. 608,481

Claims priority, application Italy, Apr. 13, 1995, 95A000290

Int. Cl.⁶ G01N *21/84;21/41*

U.S. Cl. 356—73.1 **5 Claims**



1. A method of measuring the Kerr non-linearity coefficient in a single-mode optical fiber, comprising the steps of:

(a) launching into a single-mode optical fiber whose Kerr non-linearity coefficient is to be measured input optical signals in the form of rectangular high-power optical pulses of a wavelength causing the optical fiber to operate in an anomalous dispersion condition and at a peak power of the pulses as to cause modulation instability in the optical fiber;

(b) analyzing a spectrum of output optical signals exiting from said optical fiber to measure a maximum value of a modulation instability gain for a plurality of values of peak power of said input optical signals; and

(c) obtaining the Kerr non-linearity coefficient γ from the measured maximum values of modulation instability gain by minimizing, in a range of power values used for measurement, the error with respect to a theoretical curve expressing such maximum gain as a function of peak power.

5,619,322

METHOD OF ADJUSTING OPTICAL AXIS OF HEADLIGHT OF VEHICLE

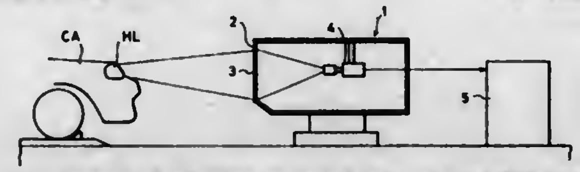
Nagatoshi Murata; Hisaya Ooiwa, and Takeshi Masaki, all of Sayama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 28, 1995, Ser. No. 411,977

Claims priority, application Japan, Aug. 22, 1994, 6-197026; Feb. 15, 1995, 7-026738

Int. Cl.⁶ H05B *37/00*

U.S. Cl. 356—121 **6 Claims**



1. A method of adjusting an optical axis of a headlight of a vehicle comprising:

picturing that illuminating pattern of the headlight which appears on a screen disposed in front of the vehicle; and

adjusting the optical axis of the headlight based on an image of the illuminating pattern;

wherein the improvement comprises:

measuring a distribution of illuminance of the illuminating pattern along a scanning line which bridges a light portion and a dark portion of the image of the illuminating pattern; and

obtaining a position of a reference point which serves as a reference in adjusting the optical axis from that point on the scanning line which corresponds to a crossing point of a first straight line and a second straight line, said first straight line being obtained from a portion corresponding at least to one of the light portion and the dark portion of a curve which represents the measured distribution of illuminance, said second straight line being obtained from a portion corresponding to that transient region of the curve which is positioned between the light portion and the dark portion.

5,619,323

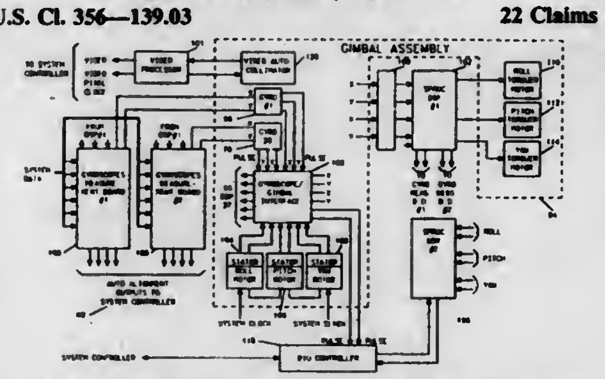
GYROSCOPIC SYSTEM FOR BORESIGHTING EQUIPMENT BY TRANSFERRING A FRAME OF REFERENCE

Stephen B. Hamilton, Baltimore; James J. Jaklitsch, Parkton; Christopher J. Reed, Pasadena; Charles E. Schulz, Jarrettsville; Leslie H. Debelius, Jr., Manchester; Niall B. McNelis, Baltimore, all of Md., and Edward B. Baker, Altamonte, Fla., assignors to AAI Corporation, Cockeysville, Md.

Continuation-in-part of Ser. No. 990,976, Dec. 16, 1992, Pat. No. 5,438,404. This application Dec. 30, 1994, Ser. No. 368,410

Int. Cl.⁶ G01B *11/26;* **G01C** *1/00*

U.S. Cl. 356—139.03 **22 Claims**



1. A gyroscopic system for translating a frame of reference between a reference line and a device to be aligned with respect to the reference line, comprising:

a first inertial sensor boresighted with respect to said reference line and held stationary relative thereto, said first inertial sensor including a first gyroscopic combination for generating a first output indicating a frame of reference, and a docking station for alignment of a mating inertial sensor;

a portable second inertial sensor positionable in the docking station of said first inertial sensor for alignment relative thereto, said second inertial sensor including a second gyroscopic combination for generating a second output indicating a frame of reference; and

a control circuit in communication with said first and second inertial sensors for processing the first and second outputs generated thereby, and for determining the relative orientations of said first and second inertial sensors therefrom;

whereby said portable second inertial sensor may be positioned in the docking station of said first inertial sensor for alignment therewith and processing of the first output and second output for determining gyroscopic error, and said portable second inertial sensor may then be aligned with a device to be boresighted and said first and second outputs again processed to determine an alignment of said device with respect to said reference line.

5,619,324

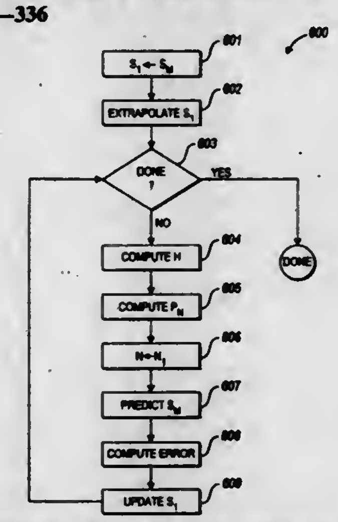
METHOD FOR MEASURING PARTICLE SIZE IN THE PRESENCE OF MULTIPLE SCATTERING

Thomas L. Harvill, Walnut Creek, and Donald J. Holve, Danville, both of Calif., assignors to Insitec Measurement Systems, San Ramon, Calif.

Filed Dec. 29, 1995, Ser. No. 581,681

Int. Cl.⁶ G01N *15/02*

U.S. Cl. 356—336 **8 Claims**



1. In an ensemble laser diffraction instrument, a method for providing a single scattering signature from a measured scattering signature, said single scattering signature being applicable to accurately computing a particle size distribution, said method comprising the steps of:

measuring a scattering signature S_m;

assigning an initial value as a current value for a single scattering signature S_1; and

Using said current value, iteratively performing, until a predetermined convergence criterion is met, the steps of:

(a) computing a current value of a scattering redistribution function H using said current value of said single scattering signature S_1;

(b) computing a pluralities of probability of multiple scattering P_n, each of said P_n denoting the probability of exactly n scattering events, n being an integer greater or equal to 1;

(c) computing a predicted multiple scattering signature S_{mp} using the relation:

$$S_{mp}=\sum_{k=1}^{n} P_n H^{n-1} S_1$$

and (d) updating said current value of said single scattering signature S_1 using said measured multiple scattering signature S_m and said predicted multiple signature S_{mp}.

5,619,325

OPTICAL SYSTEM FOR ELLIPSOMETRY UTILIZING A CIRCULARLY POLARIZED PROBE BEAM

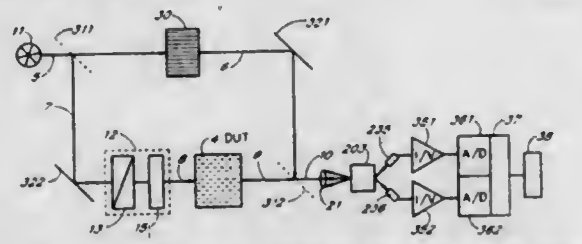
Haruo Yoshida, Saitama, Japan, assignor to Advantest Corporation, Tokyo, Japan

Filed Apr. 4, 1996, Ser. No. 628,964

Claims priority, application Japan, Apr. 4, 1995, 7-102958; Apr. 19, 1995, 7-117809; May 23, 1995, 7-148330

Int. Cl.⁶ G01B *9/02*

U.S. Cl. 356—351 **21 Claims**



1. An ellipsometry optical system for analyzing a polarization state of an optical device under test by measuring optical parameters of a light beam which experienced a birefringence of the optical device under test, comprising:

a light source for generating a coherent light beam;

a first beam splitter for splitting said coherent light beam into two light beams;

an optical frequency shifter for shifting a frequency of one of said two light beams splitted by said first beam splitter to form a reference light beam;

a circular polarization converter for circularly polarizing the other of said two light beams splitted by said first beam splitter to form a probing light beam which is a circularly polarized light beam to be applied to the optical device under test;

a second beam splitter for combining said reference light beam and said probing light beam that transmitted through said optical device under test;

a birefringence prism for receiving a light beam combined by said second beam splitter and separating polarization components which are perpendicular with each other; and

a photo detector for receiving said polarization components and converting the same to corresponding electric signals.

5,619,326

METHOD OF SAMPLE VALUATION BASED ON THE MEASUREMENT OF PHOTOTHERMAL DISPLACEMENT

Hiroyuki Takamatsu; Tsutomu Morimoto; Shingo Sumie, and Naoyuki Yoshida, all of Kobe, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Mar. 24, 1995, Ser. No. 409,670

Claims priority, application Japan, Mar. 25, 1994, 6-055357; Jan. 13, 1995, 7-003721

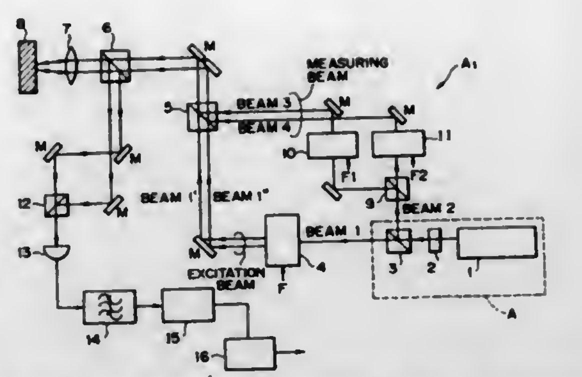
Int. Cl.⁶ G01B *9/02*

U.S. Cl. 356—357 **9 Claims**

1. A sample evaluation method based on the measurement of a photothermal displacement on a sample caused by the illumination of an excitation light beam, said method comprising the steps of:

generating two exciting beams and two measuring beams;

implementing intensity modulation for the two exciting beams in different phase relationship and illuminating the modulated light beams to different positions of a sample;



providing different oscillation frequencies for the two measuring beams;

illuminating the two measuring beams to the irradiation positions of the exciting beams correspondingly; and

merging reflected lights of the measuring beams from the sample so as to interfere with each other and evaluating the sample based on the phase of the interference light.

5,619,327

TESTING A METAL COMPONENT FOR COLD COMPRESSION OF THE METAL

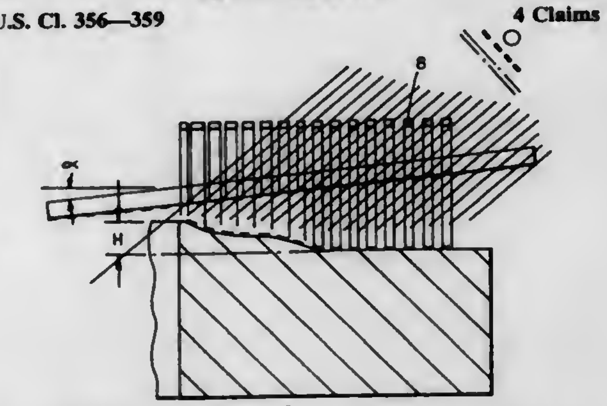
Edwin W. O'Brien, Bristol, Great Britain, assignor to British Aerospace Public Limited Company, Farnborough, United Kingdom

Filed Mar. 14, 1995, Ser. No. 403,441

Claims priority, application United Kingdom, Mar. 19, 1994, 9405457

Int. Cl.⁶ G01B *9/02*

U.S. Cl. 356—359 **4 Claims**



1. A method of testing a metal component for cold compression of the metal, the component defining a generally smooth surface and including a region subject to cold compression which breaks that surface in a given area, the method including the steps of:

placing a moiré grid such that it is spaced from and coextends at a small included angle with said area of the surface creating generally parallel carrier interference fringes for viewing by an observer to aid the distinguishing of the said surface eruption interference fringes,

directing a source of generally parallel light through the grid, and at an oblique angle thereto, at said area of the surface, and

viewing the surface through the grid substantially normal to the surface in order to observe any light interference fringes caused by eruption of the surface, due to cold compression of the metal.

5,619,328

COMPONENT MOUNTER AND RECOGNITION METHOD

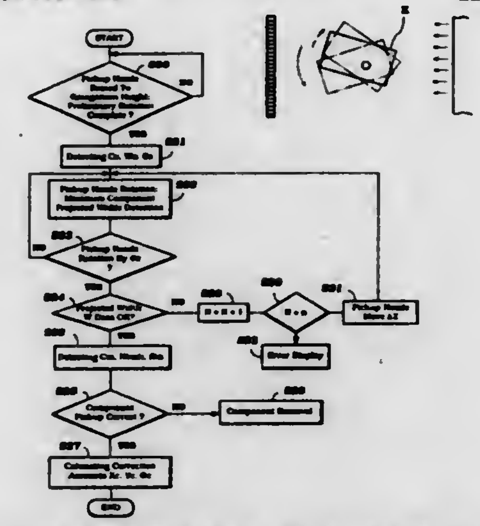
Hiroshi Sakurai, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Dec. 23, 1994, Ser. No. 363,682

Claims priority, application Japan, Dec. 27, 1993, 5-331221

Int. Cl.⁶ G01B *11/00*

U.S. Cl. 356—375 **22 Claims**



1. A component measuring system for recognizing a component in a detecting station comprising a pick up device supported for movement in a first direction, a detection station having a range limited in the first direction, means for moving said pick up device in said first direction into a first position wherein the component held thereby is moved into said detection station range, means for controlling movement in said first direction so that a first area of the component will be within the detection station range, an error detector for determining whether said detection station has correctly measured said first area in said detection station, and means for incrementally moving said pick up device in said first direction to a second position for placing a second area of said component in said detection station range and performing a second measurement upon said component if said first measurement was incorrect.

5,619,329

CONTACTLESS THICKNESS MEASURING APPARATUS AND MEASURING METHOD FOR THE SAME

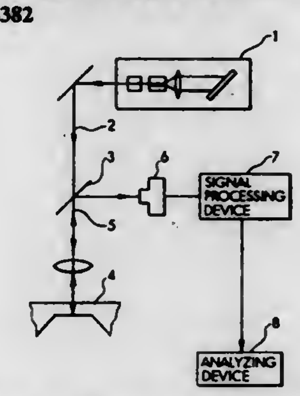
Atsushi Otani, Nisshin, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed May 12, 1995, Ser. No. 440,137

Claims priority, application Japan, May 13, 1994, 6-124636

Int. Cl.⁶ G01B *11/06;9/02*

U.S. Cl. 356—382 **18 Claims**



1. An apparatus for non-contact measurement of an absolute thickness of a sample object, said apparatus comprising:

a light source for selectively illuminating said sample object with a source light beam, said light source emitting said source light beam in such a manner that a wavelength of said source light beam varies continuously within a predetermined wavelength range;

a light intensity detector measuring an intensity of a reflected light beam reflected-by said sample object and generating a detection signal representative of said intensity, said detection signal varying in said intensity in response to said continuous variation in said wavelength of said source light beam; and

thickness determining means for determining an absolute thickness of said sample object based on an amount of phase change which appears in said variation of said detection signal according to said continuous variation within said predetermined wavelength range.

5,619,330

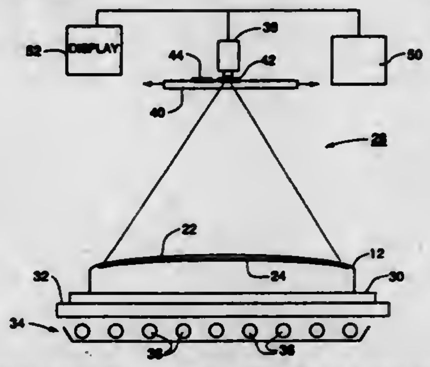
METHOD AND APPARATUS FOR DETERMINING THICKNESS OF AN OPC LAYER ON A CRT FACEPLATE PANEL

George M. Ehemann, Jr.; Edward R. Garrity, Jr., both of Lancaster; Robert A. Duschl, Lititz, and Istvan Gorog, Lancaster, all of Pa., assignors to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Dec. 22, 1995, Ser. No. 577,313

Int. Cl.⁶ G01B *11/06*

U.S. Cl. 356—382 **14 Claims**



1. A method for determining the thickness of a transparent layer that is strongly absorptive to visible light at a first wavelength and substantially transmissive to visible light at a second wavelength, said transparent layer overlying a transparent substrate, said method includes the steps of:

a) illuminating said transparent layer and said transparent substrate with a light, said light transmitted through said layer and said substrate being incident on a first filter transmissive to light of said first wavelength;

b) sensing a first light intensity pattern transmitted through said first filter;

c) storing said first light intensity pattern in a first memory frame;

d) illuminating said transparent layer and said transparent substrate with said light, said light transmitted through said layer and said substrate being incident on a second filter transmissive to light of said second wavelength,

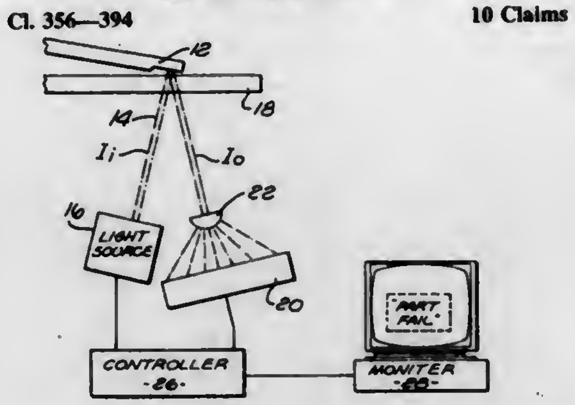
e) sensing a second light intensity pattern transmitted through said second filter;

f) storing said second light intensity pattern in a second memory frame;

g) determining a ratio of said first light intensity pattern and said second light intensity pattern; and

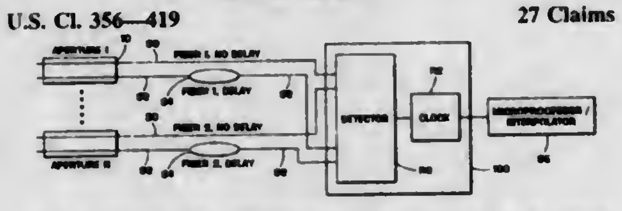
h) utilizing said ratio to calculate the thickness of said transparent layer.

5,619,331
MONITORING THE EFFECT OF READ/WRITE ELEMENT ON THE EFFECTIVE OPTICAL CONSTANTS OF THE AL_2O_3 FILM BY USING A REFLECTOMETER
YuFeng Li, Fremont, Calif., assignor to Samsung Electronics, Ltd., Rep. of Korea
Filed Jul. 26, 1996, Ser. No. 688,013
Int. Cl.[6] G01B 11/00
U.S. Cl. 356—394 10 Claims



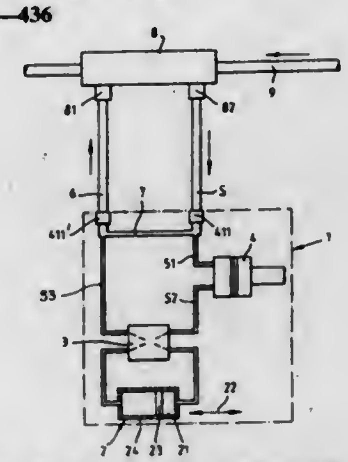
1. A monitor for monitoring an optical property of a recording head, comprising:
- a light source that emits a light beam that is reflected off of the recording head, wherein the light beam emitted from said light source has an intensity Ii and the light beam reflected from the recording head has an intensity Io;
- a photodetector that senses the reflected light beam; and,
- a controller that is coupled to said light source and said photodetector and which calculates and monitors a reflectance R based on the intensities Ii and Io.

5,619,332
HIGH SPECTRAL RESOLUTION FIBER OPTIC SPECTROMETER
James E. Nicholson, Austin, Tex., assignor to Tracor, Inc., Austin, Tex.
Filed May 15, 1995, Ser. No. 440,637
Int. Cl.[6] G01J 3/51
U.S. Cl. 356—419 27 Claims



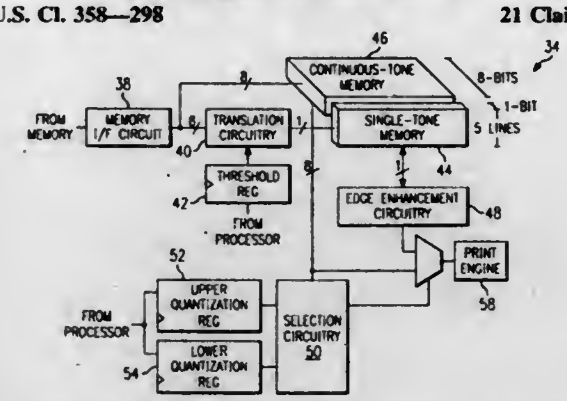
1. An apparatus for determining the wavelength of an optical signal received by an array of apertures, the apparatus comprising:
- a) a plurality of fiber pairs coupled to the apertures, each pair forming a channel and having a delay fiber with a unique length and a no-delay fiber, the pair having a unique transmission characteristic;
- b) a timer coupled to the plurality of channels to measure a duration from the time the optical signal exits the no-delay fiber and the time the optical signal exits the delay fiber; and
- c) an interpolator coupled to the output of the timer to convert the duration into a wavelength value.

5,619,333
FLOW CONTAMINATION MONITOR
Paul E. Staff; David Button; John D. Pratt, all of Suffolk, and Dominic P. E. Barnard, Oxon, all of England, assignors to UCC Corporation of Engadinstrasse, Switzerland
Continuation of Ser. No. 849,057, Apr. 24, 1992, abandoned. This application Mar. 17, 1995, Ser. No. 407,060
Claims priority, application United Kingdom, Dec. 4, 1989, 8927371
Int. Cl.[6] G01N 21/00; 15/02
U.S. Cl. 356—436 19 Claims



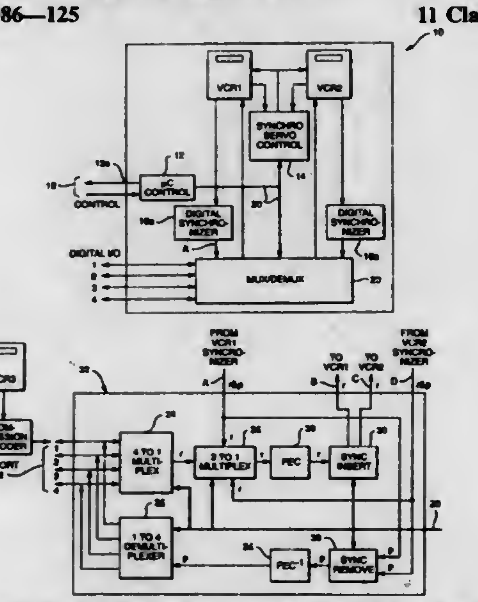
1. An on-line fluid contamination monitor apparatus for determining the level at which a fluid flowing in a fluid circuit (8, 9) is contaminated by particles contained in the fluid, said apparatus comprising:
- first conduit means (411, 7, 411') couplable to the fluid circuit, a portion of the fluid flowing in the fluid circuit (8, 9) being removed from the fluid circuit into said first conduit means and passed through said first conduit means;
- second conduit means (51, 52, 53) in fluid communication with said first conduit means for providing a fluid flow path that is in parallel with at least a portion (7) of said first conduit means;
- fluid displacement means (2, 3) coupled to said second conduit means, by means of which part of the fluid portion in the first conduit means is withdrawn from said first conduit means (411, 7, 411') and passed through said second conduit means (51, 52, 53) at a predetermined, controlled flow rate determined by said fluid displacement means, said fluid displacement means being directly coupled to said second conduit means downstream of the connection of the second conduit means to the first conduit means; and
- optical means (4) coupled to said second conduit means (51, 52) for viewing the fluid part passing through the second conduit means and determining the level of contamination by observation of the particles therein, the optical means viewing fluid through a window in said second conduit means by means of a light source disposed to project light through the window and the fluid, the optical means having a light sensor disposed on the opposite side of the window from the light source and arranged to detect particles in the fluid passing across the window at the predetermined controlled rate, and said optical means having means for determining the level at which the fluid is contaminated by particles by sensing the extent of light obscuration caused by particles in the fluid and by sensing the time durations that the particles moving at the predetermined, controlled rate obscure the light from the light source.

5,619,334
CONTINUOUS-TONE PRINTER WITH EDGE ENHANCEMENT
Gregory K. Adams, Tomball, and Ralph K. Williamson, Spring, both of Tex., assignors to Compaq Computer Corporation, Houston, Tex.
Filed Aug. 18, 1994, Ser. No. 292,790
Int. Cl.[6] H04N 1/40; 1/409; 1/46; 1/58
U.S. Cl. 358—298 21 Claims



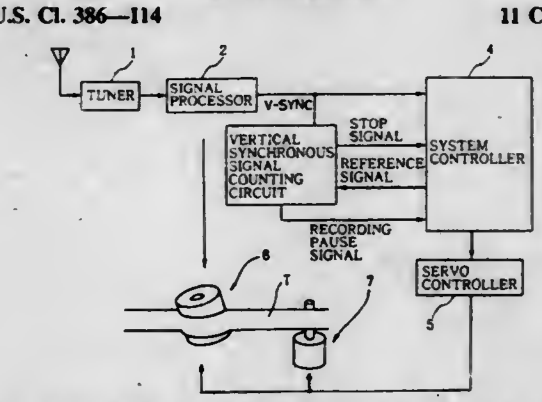
1. Circuitry for providing edge enhancement in a printer from continuous-tone data representing pixels to be printed, comprising:
- circuitry for generating single-tone data from the continuous-tone data;
- a first memory for storing single-tone data;
- a second memory for storing continuous-tone values corresponding to the single-tone values stored in said first memory;
- edge enhancement circuitry for generating modified pixel data based on the data stored in said first memory; and
- circuitry for selecting either the modified single-tone pixel data or corresponding continuous-tone data for a current pixel.

5,619,335
DIGITAL VIDEO RECORDING AND PLAYBACK SYSTEM AND METHOD HAVING MULTIPLE PLAYBACK DEVICES OUTPUTTING VIDEO PROGRAM DATA ON MULTIPLE CHANNELS
Mikhail Tsinberg, Riverdale, N.Y., and Shigeo Ogawa, Robbinsville, N.J., assignors to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan
Filed Sep. 28, 1993, Ser. No. 127,511
Int. Cl.[6] H04N 5/76; 5/92
U.S. Cl. 386—125 11 Claims



1. A digital video system for simultaneous playback of a plurality of programs, the system comprising:
- a first programming source for outputting a first digital signal when the first programming source is in a playback state the first digital signal comprising a first plurality of channels, selected ones of the first digital signal channels including a first source program segment;
- a second programming source for outputting a second digital signal when the second programming source is in a playback state, the second digital signal comprising a second plurality of channels corresponding to the first digital signal channels, selected ones of the second digital signal channels corresponding to the selected first digital signal channels and including a second source program segment;
- for each of the selected corresponding first and second digital signal channels, the first and second source program segments, when played back sequentially, producing a continuous output signal corresponding to a continuous playback of one of the programs;
- control means operatively coupled to the first and second programming sources for alternately switching the first and second programming sources between a first mode in which the first programming source is in the playback state and the second programming source is in a non-playback state, and a second mode in which the first programming source is in a non-playback state and the second programming source is in the playback state; and
- means for separating the first digital signal into the first plurality of channels, and for separating the second digital signal into the second plurality of channels.

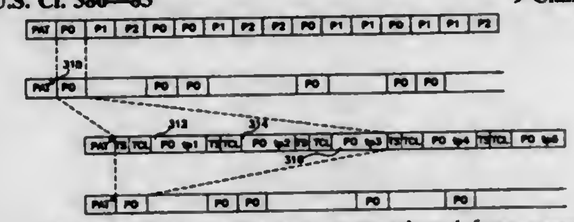
5,619,336
RECORDING APPARATUS AND METHOD FOR VIDEO CASSETTE RECORDER HAVING SNOW NOISE REMOVING FUNCTION
Ye T. Kim, Kyungki-Do, Rep. of Korea, assignor to Goldstar Electron Co., Ltd., Cheongju, Rep. of Korea
Filed Dec. 5, 1994, Ser. No. 353,282
Claims priority, application Rep. of Korea, Dec. 4, 1993, 26421/1993
Int. Cl.[6] H04N 5/76
U.S. Cl. 386—114 11 Claims



1. A recording apparatus for a video cassette recorder having a snow noise removing function, comprising:
- tuning means for tuning a television broadcasting signal received through an antenna to a channel desired by the user;
- signal processing means for separating a vertical synchronous signal, a video signal and an audio signal from the television broadcasting signal tuned by said tuning means;
- vertical synchronous signal counting means for counting the number of pulses of the vertical synchronous signal from said signal processing means;
- system control means for discriminating a received state of the television broadcasting signal in response to the vertical synchronous signal from said signal processing means and a plurality of output signals from said vertical synchronous signal counting means and determining an operating mode of the video cassette recorder in accordance with the discriminated result; and

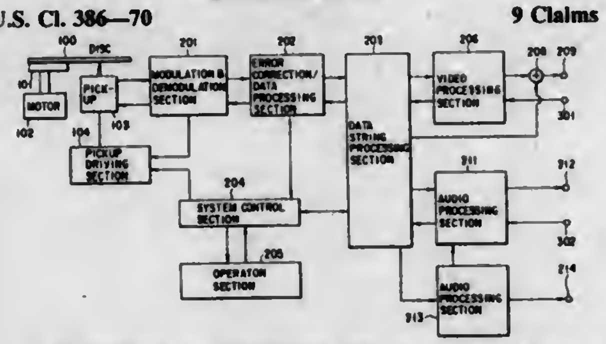
servo control means for controlling a head drum and a capstan under control of said system control means to record the video and audio signals from said signal processing means on a magnetic tape.

5,619,337
MPEG TRANSPORT ENCODING/DECODING SYSTEM FOR RECORDING TRANSPORT STREAMS
Saiprasad V. Naimpally, Langhorne, Pa., assignor to Matsushita Electric Corporation of America, Secaucus, N.J.
Filed Jan. 27, 1995, Ser. No. 380,262
Int. Cl.⁶ H04N *5/76;* **G11B** *5/09;5/02;* **G11C** *15/18*
U.S. Cl. 386—83 **9 Claims**



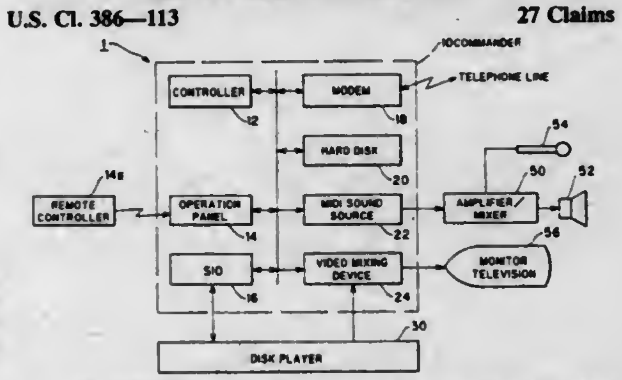
1. Apparatus for recording a program selected from a multi-program transport stream including a plurality of transport packets, the apparatus comprising:
means for receiving a user selection related to the selected program in the multi-program transport stream;
means, responsive to the received user selection, for processing and extracting transport packets corresponding to the selected program from the multi-program transport stream to provide a transport data stream for the selected program and for providing a timing signal containing timing information for each respective one of the transport packets in the transport stream representing the selected program;
means for encoding the timing information; and
means for recording the encoded timing information with each respective packet of the transport data stream representing the selected program.

5,619,338
REPRODUCTION APPARATUS WITH A SEARCH FUNCTION
Masatoshi Nakai, and Mitsutaka Kuwabara, both of Fukaya, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Oct. 28, 1994, Ser. No. 330,628
Claims priority, application Japan, Oct. 29, 1993, 5-271641
Int. Cl.⁶ H04N *5/76*
U.S. Cl. 386—70 **9 Claims**



1. An apparatus for reproducing data on a disk in which a management area is formed in a portion thereof and a data area is formed in another portion thereof, programs being recorded in said data area, each of said programs being composed of a plurality of data units, said apparatus comprising:
pickup means for reading the information from said disk;
demodulation means for demodulating an output signal of said pickup means;
management information storage means for storing management information in said management area output from said demodulation means;
a data unit memory for storing said data units output from said demodulation means;
video decode means for decoding video information on said data units output from said demodulation means, said data units including:
compressed data obtained by compressing, using frame correlation, a plurality of frames of video information as a motion picture, said compressed data including non-compressed frame data and a plurality of difference data, the non-compressed frame data being input to said video decode means when the compressed data is decoded and the plurality of difference data being input to said video decode means in a predetermined order so that decoded frame data corresponding to said plurality of difference data is obtained, and
start address information indicating the start addresses of said plurality of data units, said start address information being stored in said management area;
an image memory for storing a frame (or a field) of image data output from said video decode means;
first control means for calculating in which data unit on said disk a target frame corresponding to an inputted frame number belongs, reading the calculated target data unit from said disk according to the start address in said management information, and storing the target data unit in said data unit memory;
second control means for supplying the video information on said stored target data unit to said video decode means wherein said video decode means decodes the video information, said second control means including:
means for storing in said image memory the decoded frame data located in an intermediate position between the start frame of said tarmet data unit and the target frame, and
means for using the decoded frame data stored in said image memory to reduce a period of time required for reproducing a new target frame when the target frame is changed; and
third control means for counting frame synchronizing pulses while decoding the video information on said target data unit and performing still reproduction by storing the decoded output in said image memory when said target frame is decoded.

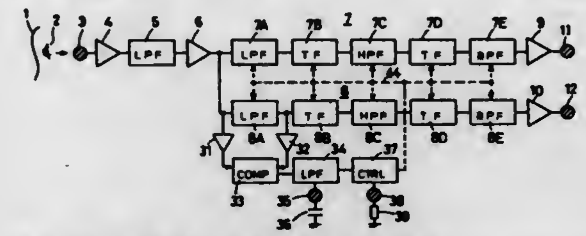
5,619,339
IMAGE REPRODUCTION DEVICE FOR REPRODUCING IMAGE DATA FROM VIDEO DISKS
Masayoshi Iguchi, Nagoya; Kazuhiko Omura, Tokai; Masatoshi Yoshiyama, and Hiroshi Nishikawa, both of Nagoya, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha/ Xing Inc., Nagoya, Japan
Filed Jan. 25, 1995, Ser. No. 378,448
Claims priority, application Japan, Jan. 26, 1994, 6-007071
Int. Cl.⁶ H04N *5/76;* **G11B** *5/02*
U.S. Cl. 386—113 **27 Claims**



1. An image reproduction device for reproducing images recorded on a plurality of image disks, the image reproduction device comprising:

a plurality of drive units each for reproducing images from image disks;
drive unit selecting means for selecting one drive unit from said plurality of drive units;
drive unit control means for controlling the drive unit selected by said drive unit selecting means to reproduce images and for controlling another drive unit as a replacement drive unit to reproduce images when a reproduction error occurs in the selected drive unit; and
statement recording means for recording a malfunction statement for each of said drive units, said drive unit control means selecting the replacement drive unit by giving priority to drive units with fewer malfunctions based on the malfunction statements recorded in said statement recording means.

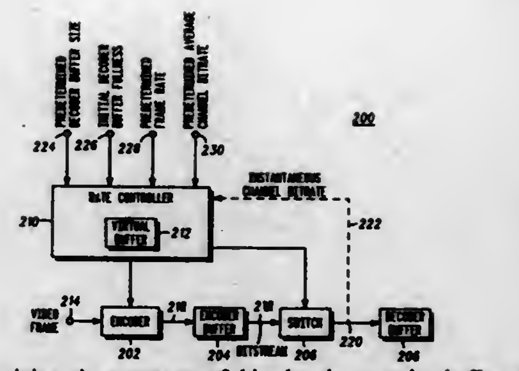
5,619,340
VIDEO REPRODUCING APPARATUS HAVING FILTER CIRCUIT OF AUTOMATIC FREQUENCY ADJUSTMENT TYPE
Ryosuke Inagaki, Kyoto, Japan, assignor to ROHM Co., Ltd., Kyoto, Japan
Continuation of Ser. No. 111,408, Aug. 25, 1993, abandoned. This application Nov. 22, 1995, Ser. No. 562,300
Claims priority, application Japan, Aug. 26, 1992, 4-226848
Int. Cl.⁶ H04N *9/79;5/91*
U.S. Cl. 386—99 **9 Claims**



1. A video reproducing apparatus comprising:
a plurality of filters for separating a reproduced audio signal into a left channel component for a left channel and a right channel component for a right channel, said plurality of filters being provided to each of said left and right channels, said filters for each channel being connected in series between an input terminal and an output terminal for the reproduced audio signal;
a phase comparator connected to an input and an output of one of the plurality of filters, said phase comparator for comparing phases of input and output signals from said one of the plurality of filters in one of the left and right channels; and
means for supplying an output of the phase comparator to each of the plurality of filters to control a frequency characteristic of each of the plurality of filters.

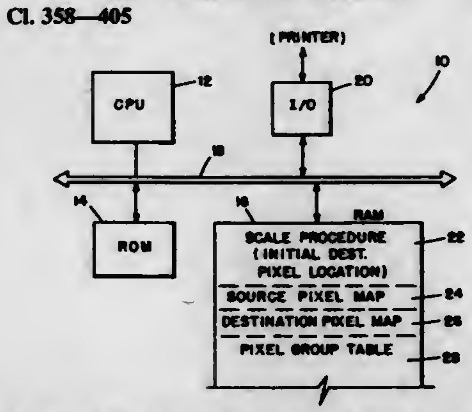
5,619,341
METHOD AND APPARATUS FOR PREVENTING OVERFLOW AND UNDERFLOW OF AN ENCODER BUFFER IN A VIDEO COMPRESSION SYSTEM
Cheung Auyeung, Hoffman Estates; Brett L. Lindsley, Algonquin, and Stephen N. Levine, Itasca, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Feb. 23, 1995, Ser. No. 392,583
Int. Cl.⁶ H04N *1/00*
U.S. Cl. 358—404 **7 Claims**

1. A method for preventing overflow and underflow of an encoder buffer in a video compression system, the method comprising the steps of:
a) using a virtual buffer, in a rate controller, to model a decoder buffer fullness;
b) generating a sequence of bits by an encoder, wherein the encoder is controlled by the rate controller to prevent a decoder buffer underflow and overflow;



c) receiving the sequence of bits by the encoder buffer to produce a bitstream;
d) transmitting the bitstream from the encoder buffer to a decoder buffer following a delay to produce a delayed bitstream, wherein the delayed bitstream corresponds to an instantaneous channel bitrate; and
e) controlling the delay by the rate controller to synchronize an encoder buffer fullness with a virtual buffer fullness, wherein the synchronization prevents overflow and underflow of the encoder buffer,
wherein a predetermined encoder buffer size is larger than a predetermined decoder buffer size,
wherein the delay is based on the predetermined decoder buffer size, an initial decoder buffer fullness, a predetermined average channel bitrate, and a predetermined frame rate.

5,619,342
METHOD FOR DETERMINIG A DESTINATION PIXEL LOCATION FROM AN ARBITRARY SOURCE PIXEL LOCATION DURING SCALING OF A BIT MAP IMAGE
Terrence M. Shannon, Kuna, Id., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Nov. 30, 1995, Ser. No. 565,568
Int. Cl.⁶ H04N *1/00;* **G06K** *9/42*
U.S. Cl. 358—405 **5 Claims**



1. A computer implemented method for scaling a source image of n pixels per unit measure to a destination image of m pixels per unit measure and for determining a first destination pixel corresponding to a given source image pixel that is displaced X source pixels from an initial source pixel on a source image raster scan line, where $X \geqq 0$, said method comprising the steps of:
(a) compiling a scale table having one entry per source pixel in a "pixel group", a "pixel group" encompassing destination pixels from a start destination pixel to an end destination pixel, said end destination pixel positioned where a first accumulation (hereafter called "Scale Source Sum") of sets of m pixels, equals a second accumulation (hereafter called "Scale Destination Sum") of sets n pixels, said Scale Source Sum derived by successively adding m pixel, for each successively read source pixel, and said Scale Destination Sum derived by successively adding n pixels for each written destination pixel, wherein each source pixel entry in said scale

table includes a Scale Destination Sum value at a first destination pixel which represents said source pixel;

(b) factoring both a source pixel set of n pixels and a destination pixel set of m pixels by y, where y is a largest common denominator of both n and m, to derive "(factored source)" and "(factored destination)";

(c) dividing X by (factored source) to determine an integer number of pixel groups between said given source image pixel and said initial source pixel, and determining a total number of destination pixels encompassed by said integer number of pixel groups;

(d) determining a position of said given source image pixel within a pixel group on said source raster image scan line and employing said position to determine from said scale table, a corresponding destination pixel within said pixel group;

(e) combining said corresponding destination pixel and said total number of destination pixels determined in step (c) to find said first destination pixel position; and

(f) positioning a scaled version of said source image in memory, starting at said first destination pixel position.

5,619,343

IMAGE READING APPARATUS FOR READING BOTH SIDES OF A DOUBLE-SIDED ORIGINAL

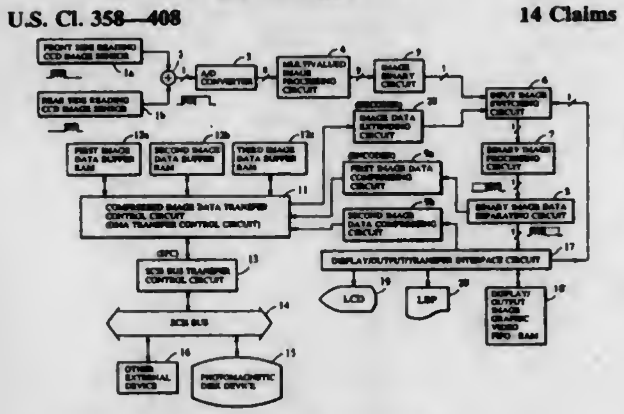
Masami Amemiya, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 15, 1994, Ser. No. 340,412

Claims priority, application Japan, Dec. 10, 1993, 5-341336

Int. Cl.⁶ H04N *1/00*

U.S. Cl. 358—408 **14 Claims**



1. An image reading apparatus comprising:

conveyance means for conveying an original sheet;

reading means for reading concurrently an image of a front side and an image of a back side of the original conveyed by said conveyance means;

compression means for compressing one of the images of the front side and of the back side of the original, each of which has been read by said reading means;

first storage means for storing the other image concurrently with compression of said one image by said compression means; and

second storage means for temporarily storing said one image compressed by said compression means,

wherein, after said one image is compressed and stored in said second storage means, said compression means compresses said other image which is stored in said first storage means.

5,619,344

IMAGE PROCESSING APPARATUS FOR RECORDING A PLURALITY OF SETS OF IMAGE DATA

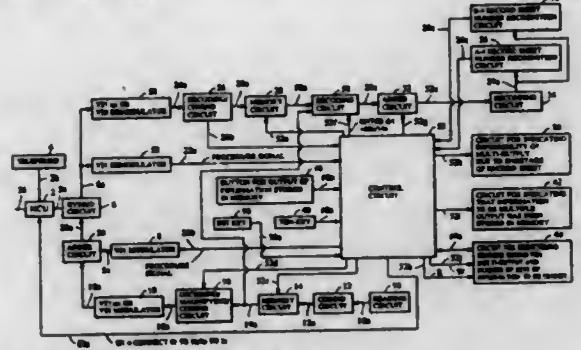
Takehiro Yoshida, Tokyo, and Toru Nakayama, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 10, 1994, Ser. No. 338,772

Claims priority, application Japan, Nov. 18, 1993, 5-312731

Int. Cl.⁶ H04N *1/00; 1/21*

U.S. Cl. 358—468 **22 Claims**



1. A facsimile apparatus comprising:

recognizing means for recognizing an amount of recording sheets remaining in said facsimile apparatus;

recording means for recording, on the recording sheets, at least one set of a record of received image data;

setting means for setting said recording means to record a plurality of sets of the record of the received image data;

control means for controlling said recording means to record only one set of the received image data on the recording sheets regardless of a status of the setting by said setting means in accordance with the amount of the recording sheets recognized by said recognizing means; and

indicating means for indicating that, although the received image data is designated for recording in plural sets, only one set of the record has been produced.

5,619,345

LINEAR IMAGE SENSOR OF THE CONTACT TYPE

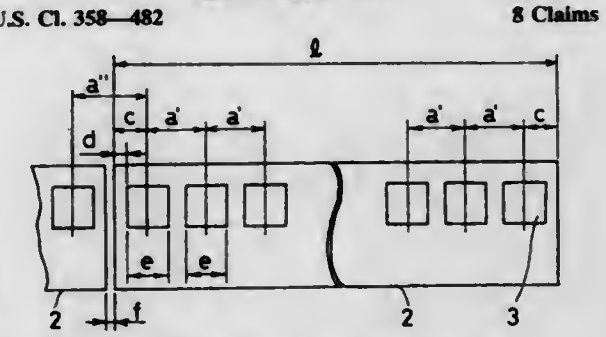
Satoshi Machida; Yukito Kawahara; Hiroshi Mukainakano, and Masahiro Yokomichi, all of Tokyo, Japan, assignors to Seiko Instruments Inc., Japan

Filed Jul. 16, 1991, Ser. No. 731,741

Claims priority, application Japan, Jul. 26, 1990, 2-198286

Int. Cl.⁶ H04N *1/04*

U.S. Cl. 358—482 **8 Claims**



1. An image sensor of the contact type, comprising:

a base plate; and

a plurality of image sensor chips disposed on the base plate and arranged linearly with one another in a main scanning direction so as to read an image by a given standard reading pitch a, each image sensor chip having an array of picture elements arranged linearly in the main scanning direction, and all the picture elements including the picture elements at opposed ends of each chip being arranged at a given constant pitch a' which is set slightly smaller than the standard reading pitch a.

5,619,346

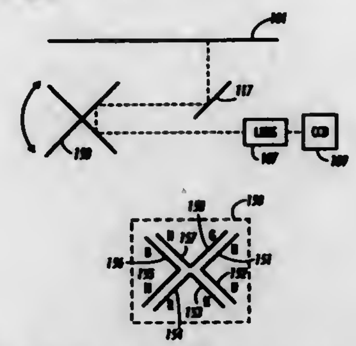
METHOD AND SYSTEM FOR CONVERTING A HALF RATE/FULL RATE MONOCHROME SCANNER TO A HALF RATE/FULL RATE COLOR SCANNER

John G. Powers, Ontario, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 28, 1995, Ser. No. 519,887

Int. Cl.⁶ H04N *1/48*

U.S. Cl. 358—505 **7 Claims**



1. A full color digital scanning system, comprising:

a lamp carriage including a light source and a mirror; and

a mirror carriage including a rotatable corner mirror assembly;

said rotatable corner mirror assembly including,

a first color corner mirror subassembly,

a second color corner mirror subassembly, and

a third color corner mirror subassembly.

4. A mirror carriage for a half rate/full rate digital scanner, comprising:

a mirror carriage including a rotatable corner mirror assembly;

said rotatable corner mirror assembly including,

a first color corner mirror subassembly,

a second color corner mirror subassembly, and

a third color corner mirror subassembly.

5,619,347

APPARATUS FOR CALCULATING A DEGREE OF WHITE BALANCE ADJUSTMENT FOR A PICTURE

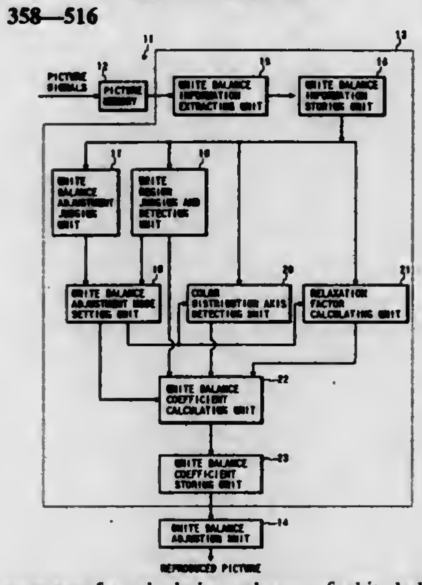
Kouji Taniguchi, and Katsuhiro Kanamori, both of Kawasaki, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 26, 1995, Ser. No. 533,731

Claims priority, application Japan, Sep. 28, 1994, 6-233831

Int. Cl.⁶ H04N *9/73*

U.S. Cl. 358—516 **21 Claims**



1. An apparatus for calculating a degree of white balance adjustment for a colored picture, comprising:

white balance information extracting means for partitioning a colored picture into a plurality of picture blocks respectively having a uniform size and extracting one or more pieces of white balance information, which each indicates one or more color features of one picture block or one or more color features of the colored picture, from pieces of picture data corresponding to pixels of the colored picture;

white region judging and detecting means for judging whether or not a white region having a low chromaticity exists in one of the picture blocks according to the white balance information extracted in the white balance information extracting means and detecting the white region as a basis of white in a white balance adjustment for the colored picture in cases where the white region exists in one of the picture blocks;

color distribution axis detecting means for detecting a color distribution axis extending from an original point of a three-dimensional color space to a gravity center of a color distribution of the colored picture according to the white balance information extracted in the white balance information extracting means;

white balance coefficient calculating means for calculating a white balance coefficient denoting an amplification gain for colors of pixels of the colored picture according to a color of the white region detected in the white region judging and detecting means in cases where it is judged that the white region exists in one of the picture blocks or according to the color distribution axis detected in the color distribution axis detecting means; and

relaxation factor calculating means for calculating a relaxation factor to relax the influence of the color distribution axis detected in the color distribution axis detecting means on the white balance coefficient calculated in the white balance coefficient calculating means, a difference between the white balance coefficient and 1.0 being reduced according to the relaxation factor.

5,619,348

COLOR MASKING PARAMETER DETERMINING APPARATUS

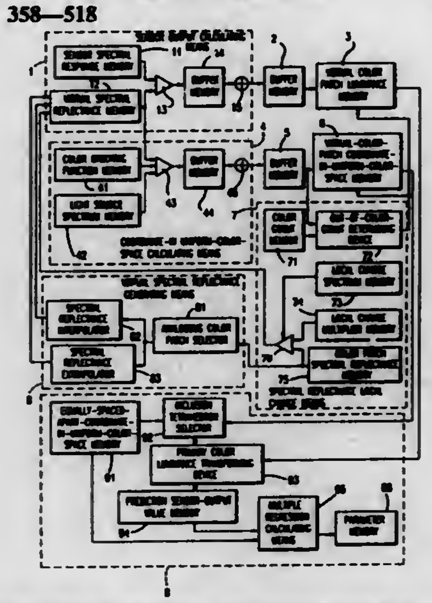
Kiwame Tokai, Ebina, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Oct. 18, 1995, Ser. No. 544,552

Claims priority, application Japan, Oct. 19, 1994, 6-253249

Int. Cl.⁶ H04N *1/60*

U.S. Cl. 358—518 **2 Claims**

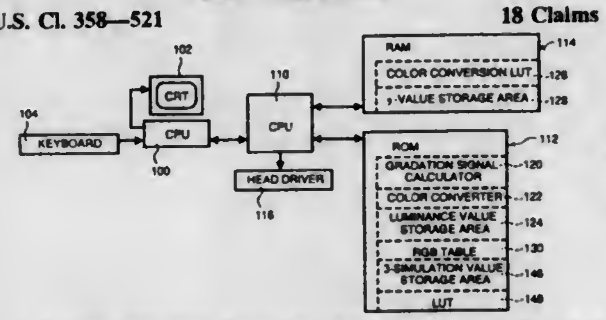


1. A color masking parameter determining apparatus comprising:

a virtual spectral reflectance generating means for generating virtual spectral reflectance according to the spectral reflectance of actually printed color patches;

a sensor output calculating means for performing calculation on said virtual spectral reflectance and the spectral response of the constituent elements of a color sensor thereby obtaining primary color luminance as the ideal output of said color sensor;
a coordinate-in-uniform-color-space calculating means for calculating the coordinates in the uniform color space corresponding to said virtual spectral reflectance; and
a masking parameter calculating means for calculating, according to said primary color luminance and said coordinates in the uniform color space, prediction luminance value of the output of said color sensor corresponding to coordinates sampled at regular intervals in the uniform color space and obtaining color masking parameters from said sampled coordinates and said prediction output luminance values.

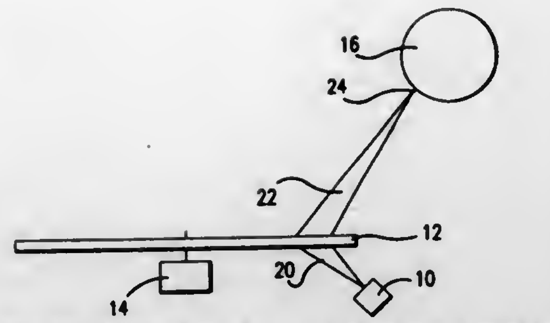
5,619,349
CRT CALIBRATION DEVICE FOR CALIBRATING DISPLAY COLOR OF A CRT TO A COLOR STANDARD
Masashi Ueda, and Ryohei Komiya, both of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan
Filed Dec. 19, 1994, Ser. No. 358,256
Claims priority, application Japan, Dec. 27, 1993, 5-331539
Int. Cl.⁶ H04N 9/69
U.S. Cl. 358—521 **18 Claims**



1. A CRT calibration device for calibrating display colors of a CRT to a color standard, the device comprising:
input means for inputting a gradation reproduction characteristic value of the CRT;
storage means for storing relative luminance data of the CRT;
determining means for determining a gradation signal value of the CRT based on the gradation reproduction characteristic value input by said input means and the relative luminance data stored in said storage means; and
display control means for controlling a color display based on the gradation signal value determined by said determining means, the color display indicating when an actual CRT gradation reproduction characteristic value approximately equals the gradation reproduction characteristic value input by said input means.

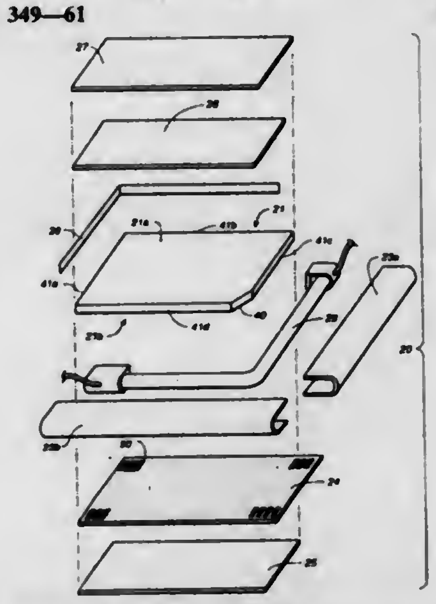
5,619,350
OPTICAL SCANNING DEVICE
Kazunari Taki, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan
Filed Feb. 21, 1995, Ser. No. 391,181
Claims priority, application Japan, Feb. 22, 1994, 6-024003
Int. Cl.⁶ G02B 5/32; 26/08
U.S. Cl. 359—18 **16 Claims**

1. An optical scanning device including a semiconductor laser and a scanning optical system for transmitting a laser beam emitted from said semiconductor laser and scanning the laser beam, wherein said scanning optical system includes at least one hologram having relief on the surface thereof, a depth h of the relief being set to be smaller than a minimum pitch P of the unevenness of the relief in an area on said hologram to which the laser beam is



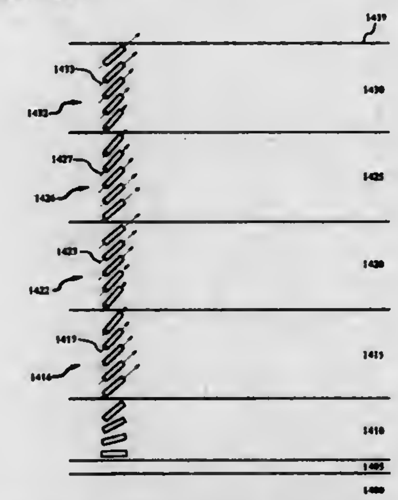
irradiated, and wherein the optical power on a scanning surface is set to approximately 100 μW or less.

5,619,351
SURFACE-TYPE ILLUMINATION DEVICE AND LIQUID CRYSTAL DISPLAY
Tatsuaki Funamoto; Toru Yagasaki, and Fumiaki Akahane, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan
PCT No. PCT/JP93/00965, § 371 Date May 10, 1994, § 102(e) Date May 10, 1994, PCT Pub. No. WO94/01795, PCT Pub. Date Jan. 20, 1994
PCT Filed Jul. 13, 1993, Ser. No. 204,374
Claims priority, application Japan, Jul. 13, 1992, 4-184976; May 13, 1993, 5-111852
Int. Cl.⁶ G02F 1/1335
U.S. Cl. 349—61 **18 Claims**



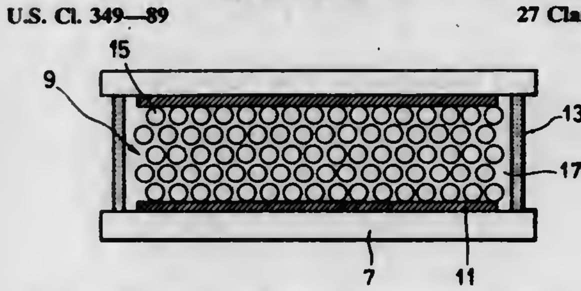
1. An illumination device, comprising:
a substantially transparent light guide plate having first and second surfaces opposite to each other and a diffusion pattern arranged on said first surface, said light guide plate including a cutout portion at a corner between its two adjacent sides; and
an L-shaped illuminant disposed around said cutout portion of said light guide plate such that said illuminant faces the two adjacent sides of said light guide plate, said illuminant introducing light into said light guide plate;
wherein said diffusion pattern causes light within said light guide plate to evenly emit out from said second surface of said light guide plate.

5,619,352
LCD SPLAY/TWIST COMPENSATOR HAVING VARYING TILT AND /OR AZIMUTHAL ANGLES FOR IMPROVED GRAY SCALE PERFORMANCE
Gene C. Koch, Swisher, Iowa; Bruce K. Winker, Moorpark, and William J. Gunning, III, Newbury Park, both of Calif., assignors to Rockwell International Corporation, Seal Beach, Calif.
Continuation of Ser. No. 313,476, Sep. 30, 1994, abandoned, which is a continuation-in-part of Ser. No. 223,251, Apr. 4, 1994, Pat. No. 5,504,603. This application Jul. 31, 1996, Ser. No. 690,033
Int. Cl.⁶ G02F 1/1333; 1/1335; 1/13
U.S. Cl. 349—89 **29 Claims**



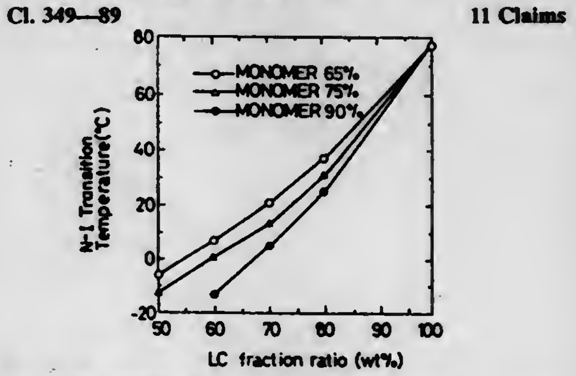
4. A compensator for a liquid crystal display, said compensator comprising a layer of a birefringent material having an optical symmetry axis defined by a tilt angle, measured relative to the plane of the layer, and an azimuthal angle, measured relative to a reference axis in the plane of the layer, wherein each of said tilt angle and said azimuthal angle varies along an axis normal to said layer.

5,619,353
ELECTRO-OPTICAL DEVICE
Shunpei Yamazaki, Tokyo; Toshimitsu Konuma, Kanagawa; Takeshi Nishi, Kanagawa, and Michio Shimizu, Kanagawa, all of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa-ken, Japan
Continuation of Ser. No. 895,708, Jun. 9, 1992, abandoned. This application Nov. 21, 1994, Ser. No. 345,342
Claims priority, application Japan, Jun. 10, 1991, 3-165065
Int. Cl.⁶ G02F 1/13
U.S. Cl. 349—89 **27 Claims**



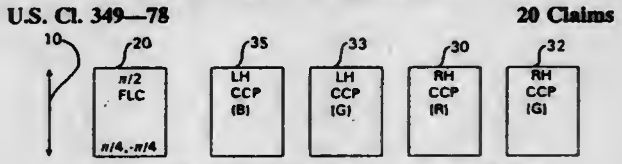
1. An active matrix type electro-optical device comprising:
a pair of substrates;
an electro-optical modulating layer disposed between said substrates and comprising a liquid crystal material dispersed in a carrier; and
an electrode arrangement formed on inside surfaces of said substrates in order to apply an electric field to said electro-optical modulating layer whereby said electro-optical modulating layer is placed in either a light transparent or a light scattering condition depending upon application of the electric field thereacross,
wherein said carrier contains a ferroelectric material having a dielectric constant not less than 5, and the ferroelectric material is selected among from the group consisting of polyvinylidenefluoride and a copolymer of vinylidenefluoride and trifluoroethylene.

5,619,354
DISPERSION TYPE ELECTRO-OPTICAL DEVICE AND METHOD FOR FORMING THE SAME
Michio Shimizu; Kouji Moriya; Takeshi Nishi, and Toshimitsu Konuma, all of Kanagawa, Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa-ken, Japan
Division of Ser. No. 72,126, Jun. 7, 1993. This application Jun. 5, 1995, Ser. No. 464,445
Claims priority, application Japan, Jun. 9, 1992, 4-173712
Int. Cl.⁶ G02F 1/1333
U.S. Cl. 349—89 **11 Claims**



1. An electro-optical device comprising:
an electro-optical modulating layer including a liquid crystal and an organic substance, said organic substance derived from a urethane oligomer and an acrylic monomer;
wherein a weight of said monomer in said organic substance is higher than that of said oligomer,
transmittance of said device is 50% or higher when a driving voltage of from 25 to 50 V is applied and
the transmittance is in a range of from 1 to 5% when no electric field is applied.

5,619,355
LIQUID CRYSTAL HANDEDNESS SWITCH AND COLOR FILTER
Gary D. Sharp, Boulder, and Kristina M. Johnson, Longmont, both of Colo., assignors to The Regents of the University of Colorado, Boulder, Colo.
Filed Oct. 5, 1993, Ser. No. 131,725
Int. Cl.⁶ G02F 1/1335; 1/1347; 1/141
U.S. Cl. 349—78 **20 Claims**



1. A liquid crystal wavelength filter for light comprising:
a first linear polarizer having an axis of polarization;
a first liquid crystal retarder means, having a quarter-wave retardance and having an optic axis switchable between orientations of π/4 and −π/4 with respect to said axis of polarization, for receiving light from said first linear polarizer and

for converting it into light with polarization switchable between a first and a second circular linear polarization, said first liquid crystal retarder means comprising a liquid crystal cell; and

a first polarization sensitive wavelength filtering means for receiving light from said first liquid crystal retarder means and for transmitting a first spectrum for light of said first circular polarization and a second spectrum for light of said second circular polarization; said first polarization sensitive wavelength filtering means comprising a first cholesteric circular polarizer of a first handedness, a second cholesteric circular polarizer of a second handedness and a third cholesteric circular polarizer.

5,619,356

REFLECTIVE LIQUID CRYSTAL DISPLAY DEVICE HAVING A COMPENSATOR WITH A RETARDATION VALUE BETWEEN 0.15 μM AND 0.38 μM AND A SINGLE POLARIZER

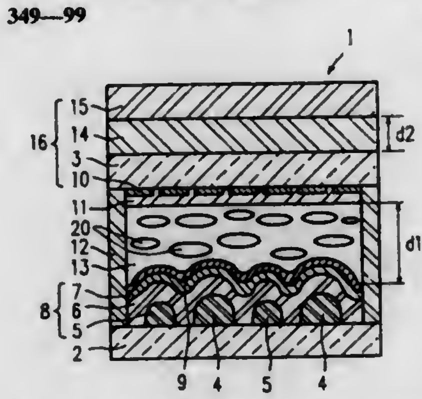
Nakamura Kozo, Kashiba; Mitsui Seiichi, Nara, and Fukuda Ichiro, Kanazawa, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 16, 1994, Ser. No. 307,913

Claims priority, application Japan, Sep. 16, 1993, 5-230581

Int. Cl.⁶ G02F *1/1335*

U.S. Cl. 349—99 **29 Claims**



7. A reflective liquid crystal display device comprising: a first substrate; a second substrate; a liquid crystal layer interposed between said first substrate and said second substrate; electrodes for applying a voltage to said liquid crystal layer; a single polarizing plate provided on a side of said liquid crystal layer on which said first substrate is provided; a reflective member provided on a side of said liquid crystal layer on which said second substrate is provided; and an optical compensation member provided between said polarizing plate and said liquid crystal layer,

wherein said liquid crystal layer has a twist angle in a range of 220° to 260° and a retardation value in a range of 0.5 μm to 0.8 μm,

said optical compensation member has a retardation value in a range of 0.43 μm to 0.55 μm,

and an angle β which is formed between a polarization axis direction of said polarizing plate and an alignment direction of liquid crystal molecules in said liquid crystal layer on a side of said polarizing plate satisfies one of following expressions (C) and (D) when n is an integer:

$$70°+90°n \leqq \beta \leqq 105°+90°n \quad (C)$$

$$20°+90°n \leqq \beta \leqq 50°+90°n \quad (D).$$

5,619,357

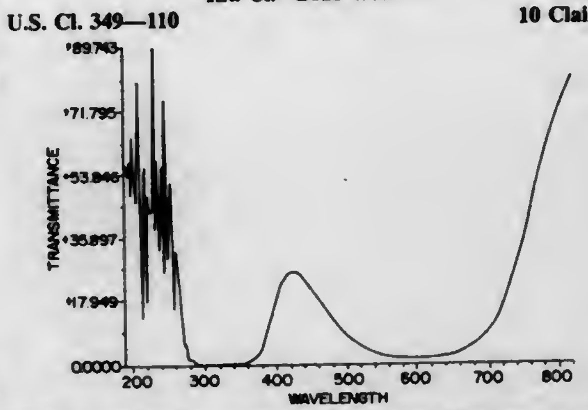
FLAT PANEL DISPLAY CONTAINING BLACK MATRIX POLYMER

Marie Angelopoulos, Cortlandt Manor; Ali Afzali-Ardakani, Yorktown Heights; Claudius Feger, and Chandrasekhar Narayan, both of Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 6, 1995, Ser. No. 466,317

Int. Cl.⁶ G02F *1/1335*

U.S. Cl. 349—110 **10 Claims**



10. A thin film transistor display wherein the improvement comprises a black matrix polymer layer, that comprises a polymer having an optical density of at least about 0.8 per μm and being self-absorbent of visible light and being selected from the group consisting of substituted and unsubstituted polyanilines, substituted and unsubstituted polyparaphenylenevinylenes, substituted and unsubstituted polythiophenes, substituted and unsubstituted polyazines, substituted and unsubstituted polyparaphenylenes, substituted and unsubstituted polyfuranes, substituted and unsubstituted polypyrroles, substituted and unsubstituted polyselenophene, substituted and unsubstituted poly-p-phenylene sulfides and substituted and unsubstituted polyacetylenes, and mixtures thereof, and copolymers thereof; and a pigment.

5,619,358

LIQUID CRYSTAL DISPLAY DEVICE WITH SEAL CONTACTING SUBSTRATES BETWEEN TWO CONDUCTIVE FILMS OF DUMMY ELECTRODES

Shozo Tanaka, Nara, and Kazuya Yoshimura, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 13, 1995, Ser. No. 556,699

Claims priority, application Japan, Nov. 14, 1994, 6-279519

Int. Cl.⁶ G02F *1/1343; 1/1339*

U.S. Cl. 349—143 **11 Claims**

2. A liquid crystal display device comprising:

a pair of substrate members, at least one of which is light permeable,

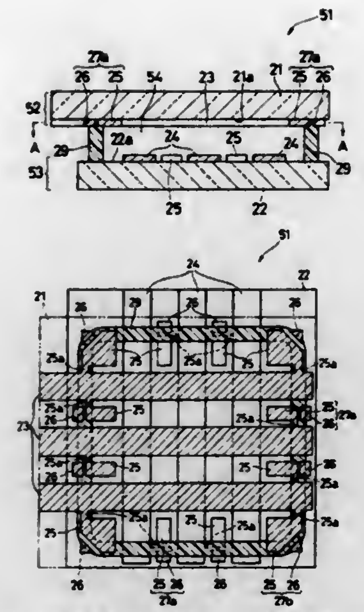
a sealing member arranged between the pair of substrate members, through which the circumferences of the pair of substrate members are glued to form a space between the pair of substrate members; and

a liquid crystal layer formed by filling the space enclosed by the substrate members and the sealing member with liquid crystal,

each substrate member including an insulating substrate and plural band-shaped display electrodes parallel with each other at intervals, the display electrodes being formed on the liquid crystal layer side of the insulating substrate of the same substrate member,

at least one of the substrate members including dummy electrodes for making the thickness of the liquid crystal layer uniform, the dummy electrodes being formed on the liquid crystal layer side of the insulating substrate of the same substrate member,

the band-shaped display electrodes of one substrate member being arranged so as to be at right angles to the band-shaped display electrodes of the other substrate member, wherein



each dummy electrode is composed of a first conductive film and a second conductive film, defining, between said film a gap positioned in a contact region where the sealing member contacts the substrate member, and

the first conductive film is arranged laterally inside in relation to the second conductive film, and a portion of the second conductive film is outside the seal member.

5,619,359

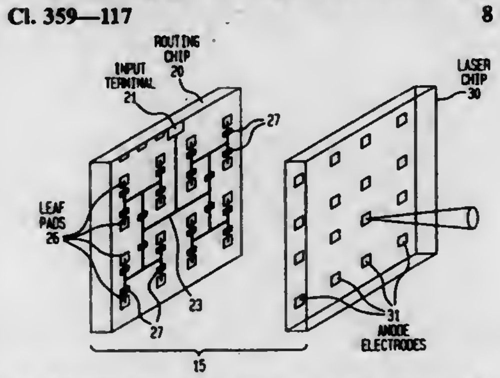
OPTOELECTRONIC APPARATUS

Ian R. Redmond, Princeton, and Eugen Schenfeld, Monmouth Junction, both of N.J., assignors to NEC Research Institute, Inc., Princeton, N.J.

Filed Nov. 16, 1994, Ser. No. 340,680

Int. Cl.⁶ H04B *10/20;* **H04J** *14/00; 14/02; 14/08*

U.S. Cl. 359—117 **8 Claims**



1. An optoelectronic switch for use in an information handling systems comprising:

semiconductive means for forming a binary tree having a trunk and plurality of leaves with an input connection to the trunk and an output connection to each leaf and including circuitry for routing data applied at the input connection to a selected output connection, the output connections at the leaves being spaced to form a two-dimensional array pattern, and

and light emitting means for providing a plurality of light sources, each including a separate anode and a common cathode, the separate anode forming a two-dimensional array pattern matching the two-dimensional array pattern of leaf connections, the light-emitting means and semiconductive means being aligned whereby the two-dimensional array of leaf connections contacts electrically a two-dimensional array of anodes.

5,619,360

OPTICAL PROCESSING IN ASYNCHRONOUS TRANSFER MODE NETWORK

Ian W. Marshall, Woodbridge, and Mark B. Tweddle, Bedford, both of England, assignors to British Telecommunications PLC, London, England

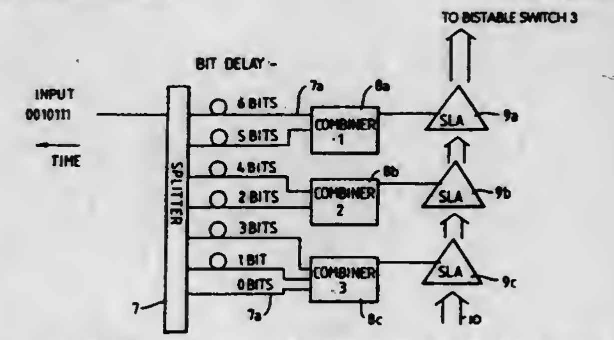
PCT No. PCT/GB93/00090, § 371 Date Sep. 8, 1994, § 102(e) Date Sep. 8, 1994, PCT Pub. No. WO93/14604, PCT Pub. Date Jul. 22, 1993

PCT Filed Jan. 15, 1993, Ser. No. 256,535

Claims priority, application United Kingdom, Jan. 16, 1992, 9200897

Int. Cl.⁶ H04J *14/08*

U.S. Cl. 359—140 **12 Claims**



1. An OCRU for recognising a predetermined n-bit optical code, the OCRU comprising:

an n-way passive optical splitter having an input and n parallel outputs,

a plurality of combiners optically connected to the splitter outputs, and

a respective gate controlled by the output of each of the combiners,

wherein each of the splitter outputs is subject to a different delay of from 0 to (n−1) bit periods, and each combiner receives an input from at least one of the splitter outputs, and

wherein the OCRU gates are turned on if a predetermined optical code is applied to the splitter input.

5,619,361

INFORMATION TRANSMITTING/PROCESSING SYSTEM

Yasuhiro Sagesaka, Kodaira; Yoshifumi Kawamura, Tokyo; Junichi Tatezaki, Kodaira; Hideo Wada, Kanoya; Isao Kodama, Akita, and Atsushi Ogane, Chiba, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 18, 1994, Ser. No. 182,657

Claims priority, application Japan, Feb. 3, 1993, 5-016150; Nov. 29, 1993, 5-325921

Int. Cl.⁶ H04B *10/00;* **G05B** *23/02*

U.S. Cl. 359—172 **28 Claims**

1. An information transmitting/processing system for a game machine comprising a base station as a control terminal and a plurality of portable stations as controlled terminals,

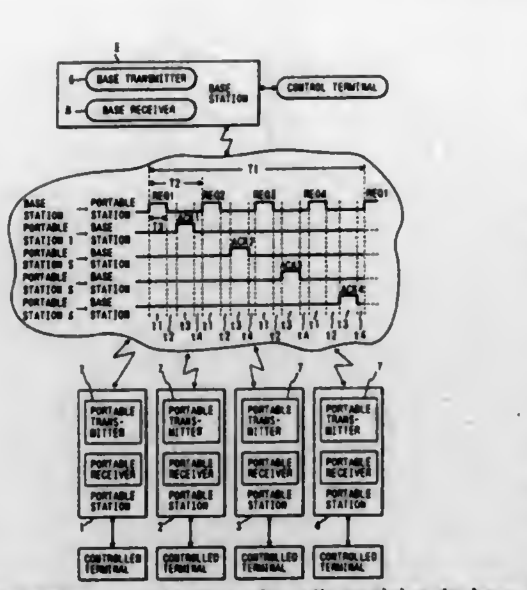
wherein said base station includes:

a monitor which displays a predetermined picture and which has a regular frame period when the predetermined picture changes,

base station transmitting means for radio-transmitting a base station transmission signal from the base station at regular time intervals to each of the portable stations which is designated by portable station discriminating information transmitted from said base station to said portable stations, and

base station receiving means for radio-receiving portable station transmission signals, each portable station transmission signal being transmitted from one of the designated portable stations during each regular time interval,

wherein each of said portable stations includes:



portable station receiving means for radio-receiving the base station transmission signal during each regular time interval, and

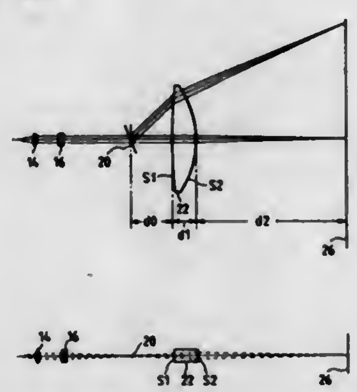
portable station transmitting means adapted to be designated by said portable station discriminating information for radio-transmitting the portable station transmission signal to said base station in response to the base station transmission signal coming from said base station within the range of the regular time interval,

wherein the base station periodically communicates with all or predetermined ones of the plurality of portable stations within the regular frame period, and

wherein the base station performs radio transmissions with each of the portable stations using half-duplex communications during each regular time interval.

5,619,362
SCANNING LENS AND OPTICAL SCANNER USING THE SAME

Akira Ota, Saitama, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan
Filed Oct. 19, 1994, Ser. No. 325,530
Claims priority, application Japan, Dec. 17, 1993, 5-318763
Int. Cl.[6] G02B *26/08*
U.S. Cl. 359—205 **2 Claims**



1. A scanning lens which is a single lens element that is positioned between deflecting means for deflecting an incident light beam in a predetermined direction at a constant angular velocity and a scanning surface and which converges the incident light beam in such a way that a beam spot is scanned at a constant speed, said scanning lens comprising:

a first lens surface having a rotating axis that is located in a deflecting plane formed by principal rays of light beam deflected by said deflecting means and which crosses an optical axis of said scanning lens at right angles, wherein a curve said first lens surface forms by crossing the deflecting plane is convex toward said deflecting means in the neighborhood of the optical axis and wherein an arc of a circle said first lens surface forms by crossing a plane crossing said deflecting plane at right angles is an aspheric surface convex toward the scanning surface; and

a second lens surface having a rotating axis that is located in the plane crossing the deflecting plane at right angles and which crosses the optical axis at right angles, wherein arcs of circles said second lens surface forms by crossing the deflecting plane and the plane crossing the deflecting plane at right angles are formed of toric surface convex toward the scanning surface,

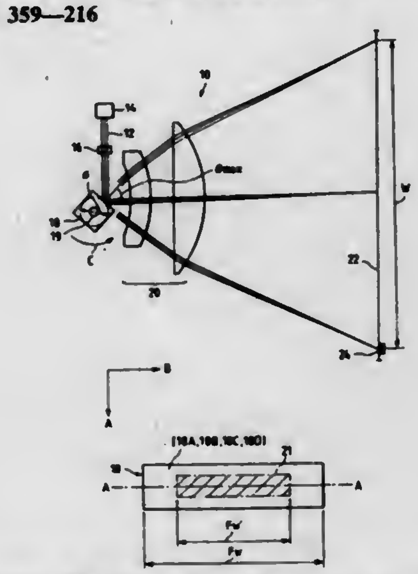
wherein said first and second lens surfaces satisfy the following conditions:

$R1M/R2M<-1$
$R1S/R2S>1$
$-0.9<R2M/f<-0.55$
$-0.16<R2S/f<-0.08$

where R1M is a near-axis radius of curvature of the aspheric lens surface, R1S is a radius of curvature of an arc of a circle of the aspheric lens surface in the plane crossing the deflecting plane at right angles, R2M is a radius of curvature of an arc of a circle of the toric lens surface in the deflecting plane, R2S is a radius of curvature of an arc of a circle of the toric lens surface in the plane crossing the deflecting plane at right angles, and f is a focal length of said scanning lens in the deflecting plane, provided that the sign of radius of curvature is positive when the curvature is convex in a direction in which the incident light beam is launched and negative when it is convex in a direction in which the incident light beam travels.

5,619,363
LASER OPTICAL SYSTEM

Masaki Hachisuga, Saitama, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan
Filed Oct. 13, 1994, Ser. No. 322,534
Claims priority, application Japan, Dec. 28, 1993, 5-337458
Int. Cl.[6] G02B *26/08*
U.S. Cl. 359—216 **3 Claims**



1. A laser optical system comprising:

a rotary polygonal mirror made of a plastic material; and

an f-θ lens for forming an image on a scanning surface with a laser beam reflected by said rotary polygonal mirror,

wherein a surface length F_w (mm) of said rotary polygonal mirror in a rotary direction satisfies the following expression,

$$F_W > \left\{ \frac{0.4 \cdot f \cdot \lambda}{(100 - D_F) \cdot \pi \ \omega_0} + d \cdot \tan\frac{\theta_{max}}{2} \right\} \times \beta + \alpha$$

where

θ_{max} (rad) is a maximum scanning half angle; max

ω_0 (μm) is a beam diameter on the scanning surface;

λ (nm) is a wavelength of the laser beam;

f (mm) is a focal distance of the f-θ lens;

D_F (%) is an effective scanning efficiency;

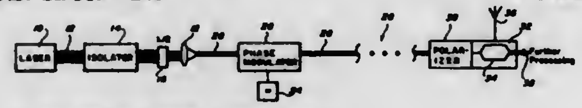
β is a coefficient wherein $1<\beta<2$;

d (mm) is a diameter of an inscribed circle of said rotary polygonal mirror having a maximum half scanning angle θ_{max}, an overall mirror surface of which is highly accurate; and

α (mm) is a size of an unused portion located close to an end of the mirror surface.

5,619,364
DEPOLARIZED SOURCE FOR HIGH POWER OPERATION OF AN INTEGRATED OPTICAL MODULATOR

William K. Burns, Alexandria, Va., and Marta M. Howerton, Bowie, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Feb. 22, 1995, Ser. No. 392,310
Int. Cl.[6] G01B *9/02;* **H01S** *3/10;* **G02B** *6/10*
U.S. Cl. 359—246 **14 Claims**



1. An optical system, comprising:

a laser system;

a phase modulator adapted to receive optical output of said laser system effective to stimulate in said phase modulator TE and TM modes, said phase modulator being further effective to differentially phase modulate said TE and TM modes in accordance with a selected modulation signal to produce a phase modulated output; and

means for launching said phase modulated output into an optical waveguide;

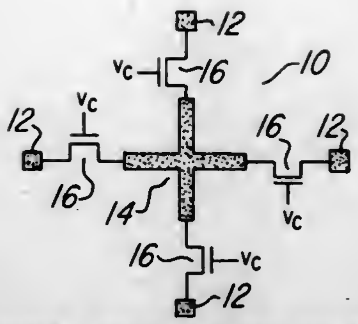
wherein said phase modulator is effective to phase modulate said output at a frequency greater than ΔV_b, where ΔV_b is the Brillouin scattering linewidth of said optical waveguide.

5,619,365
ELECRONICALLY TUNABLE OPTICAL PERIODIC SURFACE FILTERS WITH AN ALTERABLE RESONANT FREQUENCY

Charles M. Rhoads, Plano; Gary Frazier, Garland; Richard G. Hoffman, II; Oren B. Kesler, both of Plano, all of Tex., and Daniel J. Ryan, Sycamore, Ill., assignors to Texas Instruments Incorporated, Dallas, Tex.
Continuation of Ser. No. 23,989, Feb. 26, 1993, abandoned, which is a division of Ser. No. 894,895, Jun. 8, 1992, abandoned. This application May 30, 1995, Ser. No. 453,531
Int. Cl.[6] G02F *1/03*
U.S. Cl. 359—248 **13 Claims**

1. A tunable surface filter comprising:

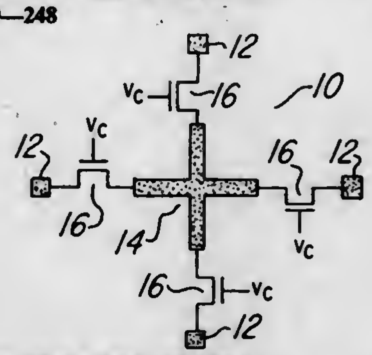
a. at least one element at a surface of said filter; and



b. an electronically tunable electro-optic material to alter the resonant frequency of said element.

5,619,366
CONTROLLABLE SURFACE FILTER

Charles M. Rhoads, Plano; Gary Frazier, Garland; Richard G. Hoffman, II; Oren B. Kesler, both of Plano, all of Tex., and Daniel J. Ryan, Sycamore, Ill., assignors to Texas Instruments Incorporated, Dallas, Tex.
Continuation of Ser. No. 23,989, Feb. 26, 1993, abandoned, which is a division of Ser. No. 894,895, Jun. 8, 1992, abandoned. This application May 30, 1995, Ser. No. 454,462
Int. Cl.[6] G02F *1/03*
U.S. Cl. 359—248 **14 Claims**



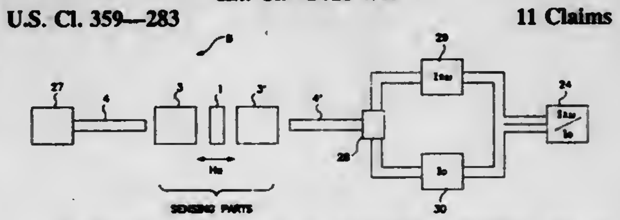
1. A tunable surface filter comprising:

a. at least one element at a surface of said filter; and

b. electronic control to change the effective optical length of said element.

5,619,367
APPARATUS AND METHOD FOR MEASURING MAGNETIC FIELDS EMPLOYING MAGNETO-OPTIC ELEMENT

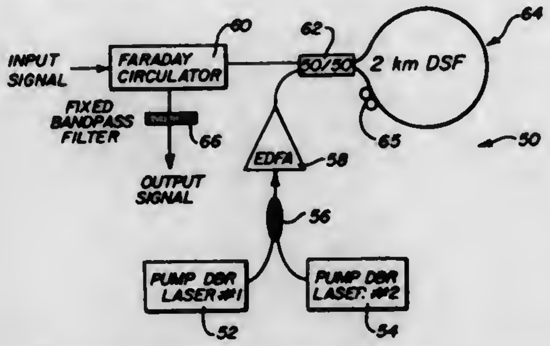
Shinji Iwatsuka; Yoshikazu Narumiya, and Makoto Nakazawa, all of Tokyo, Japan, assignors to TDK Corporation, Tokyo, Japan
Division of Ser. No. 892,468, Jun. 2, 1992, Pat. No. 5,477,376. This application Sep. 11, 1995, Ser. No. 526,336
Claims priority, application Japan, Jun. 4, 1991, 3-159500; Oct. 28, 1991, 3-281737; Oct. 28, 1991, 3-281738; Mar. 4, 1992, 4-81398
Int. Cl.[6] G02F *1/09*
U.S. Cl. 359—283 **11 Claims**



1. A magnetic field sensor for detecting a magnetic field in which the sensor is placed, comprising a magneto-optic element which exhibits a multiple domain structure in a state where no

magnetic field is applied, wherein magnetization components in adjacent domains of the element along a direction in which a light beam travels are different from one another, the light beam being diffracted by the magneto-optic element, said magneto-optic element being a Bi-substituted rare earth iron garnet film formed by liquid-phase epitaxial (LPE) growth, and a reflector provided on one side of said magneto-optic element, said reflector being provided on a surface of said magneto-optic element.

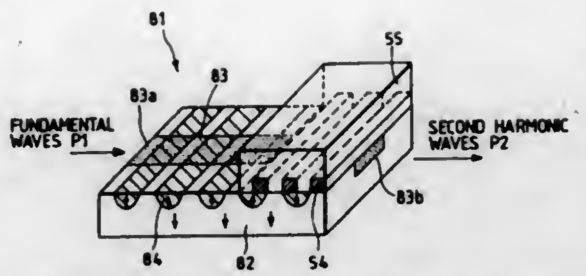
5,619,368
OPTICAL FREQUENCY SHIFTER
Eric A. Swanson, Acton, Mass., assignor to Massachusetts Inst. of Technology, Cambridge, Mass.
Continuation of Ser. No. 442,374, May 16, 1995, abandoned. This application Oct. 13, 1995, Ser. No. 542,570
Int. Cl.[6] G02F *1/35*
U.S. Cl. 359—326 **27 Claims**



1. An optical wavelength converter comprising:
a signal port for accepting an input optical signal, of a first wavelength, to be processed for producing an output signal of a second wavelength;
a pump port for accepting a laser pump signal of a pump wavelength; and
an optical interferometer connected to the signal port and pump port to separately receive the input signal from the signal port and the pump signal from the pump port, and comprising a nonlinear medium characterized by a nonlinear optical property, connected for separate injection of the input signal and the pump signal into the nonlinear medium, the nonlinear optical property of the nonlinear medium producing nonlinear interaction of the separately injected input signal and the pump signal to generate an output conjugate signal of a second wavelength based on the input signal first wavelength and the pump signal wavelength.

5,619,369
DIFFRACTING DEVICE HAVING DISTRIBUTED BRAGG REFLECTOR AND WAVELENGTH CHANGING DEVICE HAVING OPTICAL WAVEGUIDE WITH PERIODICALLY INVERTED-POLARIZATION LAYERS
Kazuhisa Yamamoto, Settsu, and Kiminori Mizuuchi, Neyagawa, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan
Filed Jul. 15, 1993, Ser. No. 91,955
Claims priority, application Japan, Jul. 16, 1992, 4-189138; Jul. 31, 1992, 4-204815; Jul. 31, 1992, 4-204821; Apr. 13, 1993, 5-085950
Int. Cl.[6] G02F *1/37*
U.S. Cl. 359—332 **79 Claims**

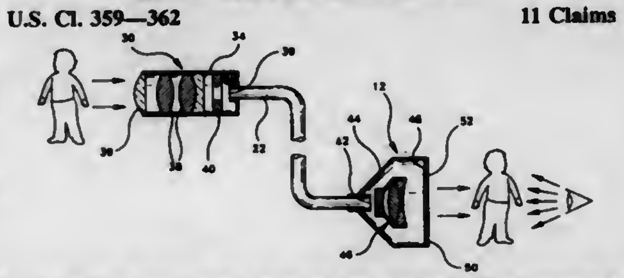
50. A laser beam generating apparatus comprising:
a semiconductor laser for radiating a beam of coherent light consisting of fundamental waves;
a diffracting device for fixing a wavelength of the coherent light radiated from the semiconductor laser, the diffracting device including



(1) a substrate,
(2) an optical waveguide arranged in the substrate for transmitting the coherent light radiated from the semiconductor laser from an incident side to an output side,
(3) a grating which is composed of a series of parallel grating elements periodically arranged adjacent to the optical waveguide at grating intervals in a propagation direction of the coherent light transmitting through the optical waveguide, the grating being made of a soft material which has high workability, and a first refractive index of the grating being equal to N1, and
(4) a covering layer arranged between the grating elements for covering the grating, a second refractive index of the covering layer being equal to N2 which differs from the first refractive index N1 of the grating to form a refractive change in a periodic structure consisting of the covering layer and the grating, a part of the coherent light being reflected by the periodic structure to the semiconductor laser to fix the wavelength of the coherent light radiated from the semiconductor laser, and the coherent light of which the wavelength is fixed being output from the output side of the optical waveguide; and

a plurality of inverted polarization layers periodically arranged in the substrate, which is made of a non-linear crystal polarized in a first direction perpendicular to the propagation direction, at phase-matching intervals in the propagation direction to cross the optical waveguide, a polarization direction of the inverted polarization layers being opposite to the first direction of the substrate, a part of the fundamental waves changing to second harmonic waves in alternate rows of the inverted polarization layers and the substrate.

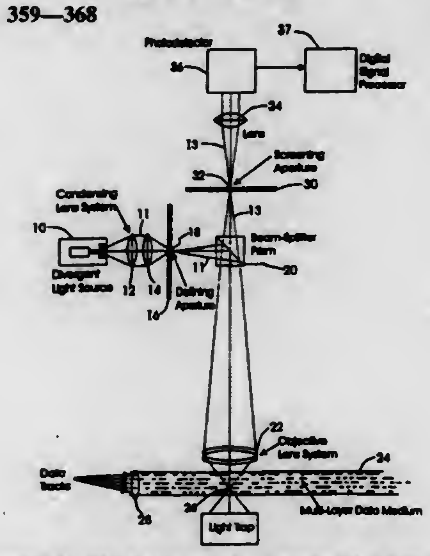
5,619,370
OPTICAL SYSTEM FOR VIEWING A REMOTE LOCATION
Patrick J. Guinosso, Bldg. 26 Apt. B7 700 Lower State Rd., North Wales, Pa. 19454
Filed Mar. 28, 1994, Ser. No. 218,643
Int. Cl.[6] G02B *23/36;23/00;7/00;9/00*
U.S. Cl. 359—362 **11 Claims**



1. In a vehicle having a reverse gear setting and a blind spot behind the vehicle that can not be seen by the operator of the vehicle when sitting within the vehicle, an optical system for viewing the blind spot, comprising:
at least one objective lens arrangement coupled to said vehicle, wherein said at least one objective arrangement is oriented to view the blind spot;
a rear view mirror assembly disposed within said vehicle, said rear view mirror assembly including:
a focusing lens arrangement; and

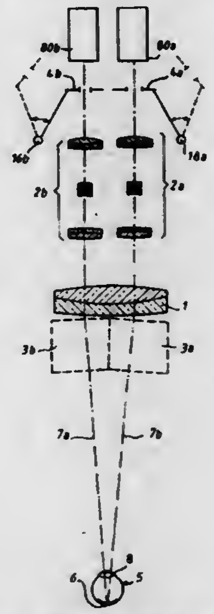
an imaging plane disposed proximate said focusing lens arrangement, said imaging plane having a front surface viewable from within the vehicle and a rear surface oriented toward said focusing lens arrangement, wherein said front surface of said imaging plane appears substantially reflective from within said vehicle when second surface is not illuminated from said focusing lens arrangement; and
an image conduit coupling said at least one objective lens arrangement to said rear view mirror assembly at a point proximate said focusing lens arrangement, wherein an image of the blind spot, viewed by said at least one objective lens arrangement, is capable of being propagated across said image conduit and directed toward said focusing lens arrangement, and said focusing lens arrangement focuses the image onto said rear surface of said imaging plane for viewing through said imaging plane; and
an optical diaphragm operationally coupled to the reverse gear setting of the vehicle for selectively changing the system between an ON condition when the vehicle is in the reverse gear setting, wherein the image from said at least one objective lens impinges upon said rear surface of said imaging plane, and an OFF condition when the vehicle is not in the reverse gear setting, wherein the image from said at least one objective lens is obscured prior to reaching said imaging plane.

5,619,371
CONFOCAL OPTICAL MICROSCOPY SYSTEM FOR MULTI-LAYER DATA STORAGE AND RETRIEVAL
Duane H. Pontius, Gardendale, Ala., assignor to Southern Research Institute, Birmingham, Ala.
Filed Mar. 2, 1995, Ser. No. 397,364
Int. Cl.[6] G02B *21/00*
U.S. Cl. 359—368 **13 Claims**



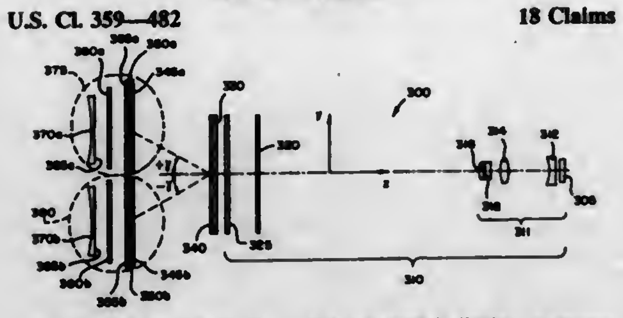
1. A confocal optical microscopy system for retrieving optical data from a multi-layer data medium of multiple layers of recorded optical data, comprising:
an illuminating means for emitting a first coherent light beam through a first pinhole aperture and focusing said first coherent light beam onto a sensing plane of a layer which contains optical information, in said multi-layer data medium;
an imaging means for focusing a second coherent light beam reflected from said sensing location of said layer in said multi-layer data medium, through a second pinhole aperture, said first and second apertures having a common optical distance to said layer, processing rays of said second coherent light beam carrying said optical information, and blocking rays in said second coherent light beam which do not originate from said sensing plane;
a detecting means for converting said second coherent light beam carrying said optical information recorded on said layer in said multi-layer data medium into an electrical signal representing binary data; and
a processing means electrically coupled to said detecting means, for processing said binary data.

5,619,372
STEREOMICROSCOPE FOR MAKING TRANSPARENT MEDIA VISIBLE AND METHOD THEREFOR
Thomas Hellmuth, Danville, Calif.; Peter Seidel, Steinheim, and Peter Schäffer, Oberkochen, both of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim, Germany
Filed Aug. 10, 1994, Ser. No. 288,305
Claims priority, application Germany, Aug. 10, 1993, 43 26 761.0
Int. Cl.[6] G02B *21/06;21/00*
U.S. Cl. 359—389 **18 Claims**



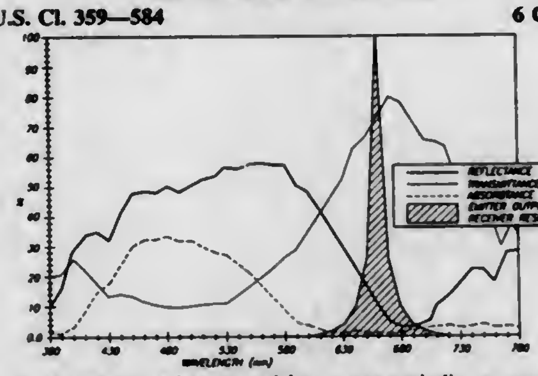
1. A stereomicroscope, especially of the kind utilized to conduct ophthalmologic surgery, for making transparent media visible, the stereomicroscope comprising:
first and second optics defining first and second viewing beam paths;
said transparent media defining objects, said objects being phase objects in transilluminating light and being positioned in said beam paths;
a light source arrangement for imaging illuminating light into a primary light source image on a light-reflecting surface, said primary light source image being reflected by said light-reflecting surface to produce wave components of reflected light transmitted through said objects and along said viewing beam paths whereby said objects form diffraction images and effect phase shifts of the diffracted wave components of said reflected light corresponding to said diffraction images;
said light-reflecting surface defining a first image plane and said first and second optics being configured to image said primary light source image including said diffraction images in a second image plane on said viewing beam paths; and,
phase contrasting elements disposed in said beam paths, respectively, for translating said phase shifts into amplitude contrasts visible to a person viewing with said stereomicroscope.

5,619,373
OPTICAL SYSTEM FOR A HEAD MOUNTED DISPLAY
Dietrich Meyerhofer, Princeton, and Herschel C. Burstyn, Plainsboro, both of N.J., assignors to Hasbro, Inc., Pawtucket, R.I.
Filed Jun. 7, 1995, Ser. No. 485,370
Int. Cl.[6] G02B 27/22
U.S. Cl. 359—482 18 Claims



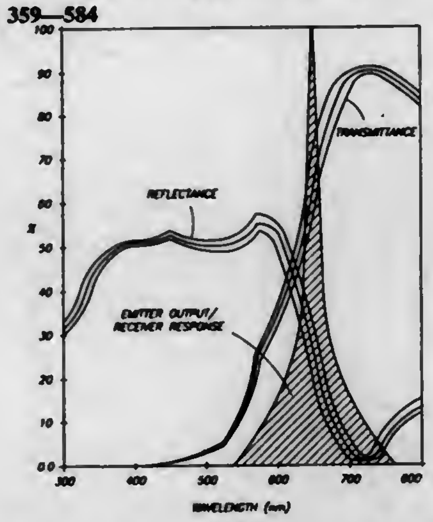
1. An optical system for a head mounted display apparatus comprising:
- a display for producing a source image;
- a microprism beamsplitter located in front of said display, said microprism beamsplitter splitting said source image into a right eye image and a left eye image;
- left and right eye deflection optical elements located in front of said microprism beamsplitter, said deflection optical elements deflecting said left and right eye images from said microprism beamsplitter;
- at least one left eyepiece optical element located in front of said left eye deflection optical element; and
- at least one right eyepiece optical element located in front of said right eye deflection optical element.

5,619,374
MIRROR COATING
John K. Roberts, Sheboygan, Wis., assignor to K. W. Muth Company, Inc., Sheboygan, Wis.
Division of Ser. No. 163,838, Dec. 7, 1993, Pat. No. 5,528,422. This application Oct. 13, 1995, Ser. No. 542,526
Int. Cl.[6] G02B 1/10;5/26;5/28
U.S. Cl. 359—584 6 Claims



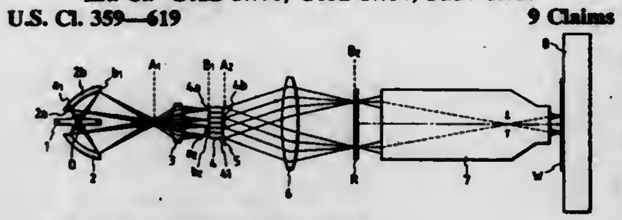
1. A mirror coating comprising a non-periodic succession of materials in a layered interference filter structure, and wherein the mirror coating exibits substantially neutral reflected chromaticity as observed with reflected ambient light, has a peak transmittance of not less than 60% within a predetermined spectral band pass region, has a peak absorbance of not less than 30% within a spectral region other than the predetermined spectral band pass region, and which simultaneously has a luminous reflectance of greater than 50% for the ambient light striking the mirror coating, and wherein the mirror coating comprises:
- a first layer of copper having a thickness of about 3.68 nanometers;
- a second layer of silicon dioxide having a thickness of about 87.68 nanometers;
- a third layer of titanium oxide having a thickness dimension of about 63.70 nanometers;
- a fourth layer of silicon dioxide having a thickness dimension of about 77.68 nanometers;
- a fifth layer of titanium oxide having a thickness dimension of about 42.28 nanometers;
- a sixth layer of silicon dioxide having a thickness dimension of about 81.21 nanometers; and
- a seventh layer of titanium oxide having a thickness dimension of about 61.63 nanometers.

5,619,375
MIRROR COATING
John K. Roberts, Sheboygan, Wis., assignor to K. W. Muth Company, Inc., Sheboygan, Wis.
Continuation-in-part of Ser. No. 163,838, Dec. 7, 1993, Pat. No. 5,528,422. This application Oct. 17, 1995, Ser. No. 544,064
Int. Cl.[6] G02B 1/10;5/26;5/28
U.S. Cl. 359—584 2 Claims



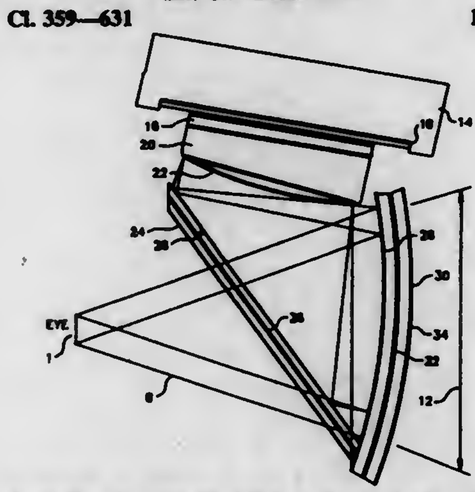
1. A mirror coating comprising a non-periodic succession of materials in a layered interference filter structure and wherein the mirror coating exhibits substantially neutral reflected chromaticity as observed with reflected ambient light, has a peak transmittance of not less than 60% within a predetermined spectral band pass region, has a peak absorbance of not less than 30% within a spectral region other than the predetermined spectral band pass region, and which simultaneously has a luminous reflectance of greater than 50% for the ambient light striking the mirror coating, and wherein the mirror coating comprises:
- a first layer of ferric oxide having a thickness of about 95 nanometers;
- a second layer of silicon dioxide having a thickness of about 35.50 nanometers;
- a third layer of ferric oxide having a thickness dimension of about 51.50 nanometers;
- a fourth layer of silicon dioxide having a thickness dimension of about 103.00 nanometers; and
- a fifth layer of ferric oxide having a thickness dimension of about 22.50 nanometers.

5,619,376
ILLUMINATING OPTICAL APPARATUS FOR UNIFORMLY ILLUMINATING A RETICLE
Yuji Kudo, Tokyo, Japan, assignor to Nikon Corporation, Tokyo, Japan
Division of Ser. No. 154,548, Nov. 19, 1993. This application May 12, 1995, Ser. No. 439,773
Claims priority, application Japan, Nov. 24, 1992, 4-312545; May 31, 1993, 5-128642
Int. Cl.[6] G02B 27/10; G03B 27/54; F21V 29/00
U.S. Cl. 359—619 9 Claims



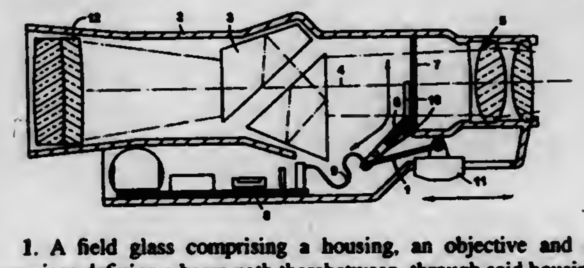
1. An exposure apparatus comprising:
- an illuminating optical system; and
- a projecting optical system,
- said illuminating optical system including,
- a light source,
- a reflector having a non-reflecting area and a light transmissive region through which an optical axis extends, and having a reflecting area positioned between said non-reflecting area and said light transmissive region, with a rotationally symmetric shape about the optical axis,
- an image-forming optical system,
- a fly's eye lens, and
- a condenser optical system, arranged such that a light beam from said light source is guided via said reflecting area of said reflector, said image-forming optical system, said fly's eye lens, and said condenser optical system;
- wherein said image-forming optical system forms images of said reflecting area and said non-reflecting area of said reflector on a predetermined plane of said fly's eye lens.

5,619,377
OPTICALLY CORRECTED HELMET MOUNTED DISPLAY
Richard D. Rallison, Paradise, Utah, assignor to Virtual I/O, Inc., Seattle, Wash.
Continuation of Ser. No. 152,213, Nov. 12, 1993, abandoned, which is a division of Ser. No. 832,237, Feb. 7, 1992, Pat. No. 5,303,085. This application May 8, 1995, Ser. No. 436,494
Int. Cl.[6] G02B 27/14
U.S. Cl. 359—631 15 Claims



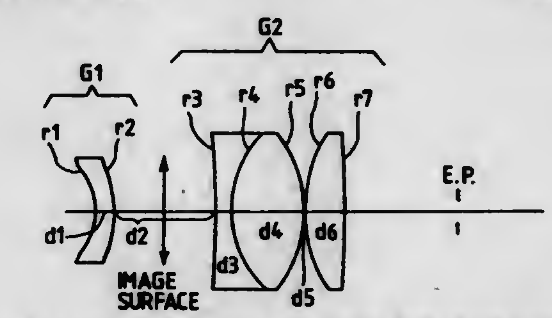
1. A method for blurring edges of pixels of an LCD without losing image resolution, comprising:
- placing a fiber optic faceplate, having a numerical aperture and having an input side, in an optical path of light emanating from the LCD at such a physical distance from pixels of the LCD that the numerical aperture of the fiber optic faceplate is substantially equal to twice the pixel size of the LCD divided by a distance between the input side of said fiber optic faceplate and said pixels.

5,619,378
FIELD GLASS WITH ADDITIONAL INFORMATION
Kurt Schwab, deceased, late of Mils, Austria, assignor to D. Swarovski & Co., Wattens, Austria
Continuation of Ser. No. 88,325, Jul. 7, 1993, abandoned. This application Jun. 23, 1995, Ser. No. 494,606
Claims priority, application Germany, Jul. 8, 1992, 42 22 417.9
Int. Cl.[6] G02B 27/14
U.S. Cl. 359—638 2 Claims



1. A field glass comprising a housing, an objective and an eyepiece defining a beam path therebetween, through said housing, and means for alternatively observing additional information comprising at least one information carrier or information deflecting means disposed within the housing of the field glass and adapted to be brought into and out of the beam path between the objective and the eyepiece, said beam path being only partially obstructed by said at least one information carrier or information deflecting means disposed in a first position within said housing, and said beam path being fully unobstructed by said at least one information carrier or information deflecting means disposed in a second position within said housing.

5,619,379
ASPHERICAL SURFACE OCULAR LENS
Satoshi Fukumoto, Machida, Japan, assignor to Nikon Corporation, Tokyo, Japan
Filed Jun. 15, 1995, Ser. No. 490,991
Claims priority, application Japan, Sep. 7, 1994, 6-239367
Int. Cl.[6] G02B 25/00;3/02
U.S. Cl. 359—644 4 Claims

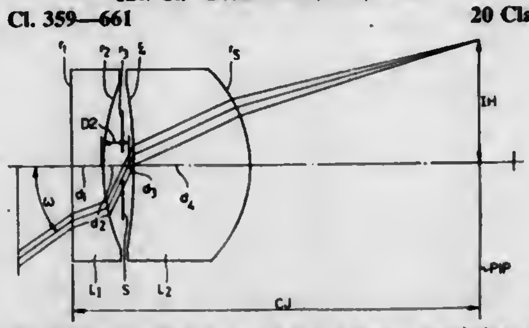


1. An ocular lens comprising, sequentially from an object side:
- a first lens unit exhibiting a negative refracting power on the whole; and
- a second lens unit exhibiting a positive refracting power on the whole,
- wherein an object-side focal plane of said second lens unit is positioned between said first lens unit and said second lens unit,
- at least one lens-surface of said first lens unit is formed in an aspherical shape, and

a closest-to-object surface of said first lens unit is a concave surface and a closest-to-eye-point surface of said first lens unit is a convex surface.

5,619,380
OBJECTIVE OPTICAL SYSTEM FOR ENDOSCOPES

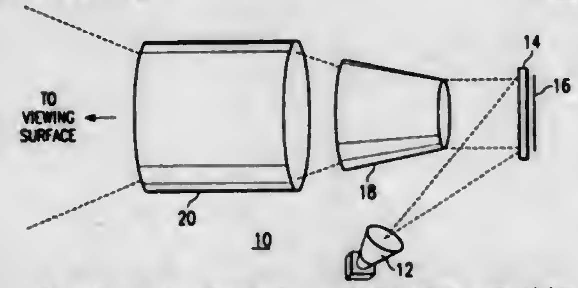
Syuichiro Ogasawara; Takao Mori, both of Tokyo-to, and Akira Yokota, Kanagawa-ken, all of Japan, assignors to Olympus Optical Co. Ltd., Tokyo-to, Japan
Continuation of Ser. No. 65,784, May 24, 1993, abandoned. This application Apr. 28, 1995, Ser. No. 430,254
Claims priority, application Japan, May 25, 1992, 4-156218; Aug. 14, 1992, 4-237592
Int. Cl.⁶ G02B *21/02;3/02;9/00*
U.S. Cl. 359—661 **20 Claims**



1. An objective optical system for endoscopes consisting of, in order from an object side:
a front lens unit consisting of a single lens component having a negative refractive power;
an aperture stop; and
a rear lens unit consisting of a single lens component having a positive refractive power;
wherein said objective optical system satisfies the following conditions:
$CJ<8IH$
$D_2<2f$
wherein said reference symbol CJ represents a distance as measured from a first surface of said objective optical system to a paraxial image surface thereof, said reference symbol IH designates a maximum image height, said reference symbol D_2 represents a distance as measured from an image side surface of said negative single lens component to said aperture stop, and said reference symbol f designates a focal length of said objective optical system as a whole.

5,619,381
OFFSET ZOOM LENS FOR REFLECTIVE LIGHT MODULATORS

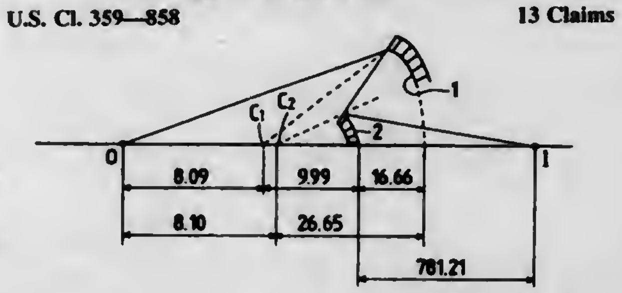
Doug Anderson, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Jun. 2, 1995, Ser. No. 460,572
Int. Cl.⁶ G02B *15/15;15/14;3/02*
U.S. Cl. 359—677 **7 Claims**



1. An optical system with variable magnification, comprising:
a zoom lens group including at least one aspheric lens, said zoom lens group having negative optical power and being movable;
a compensator lens group having positive optical power and being movable, said compensator group including:
at least one aspheric lens element; and
at least two other lens elements, wherein said at least two other lens elements are fixed together to minimize chromatic aberrations in said system; and
a aperture stop located with said compensator group and which moves with said compensator group thereby allowing constant brightness.

5,619,382
REFLECTION TYPE IMAGING OPTICAL SYSTEM

Mikiko Kato, Hachiouji, and Yoshinori Iketaki, Oume, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 806,776, Dec. 12, 1991, abandoned, which is a continuation of Ser. No. 482,985, Feb. 22, 1990, abandoned. This application Jun. 25, 1993, Ser. No. 82,514
Claims priority, application Japan, Feb. 23, 1989, 1-044659
Int. Cl.⁶ G02B *5/10;2/00*
U.S. Cl. 359—858 **13 Claims**

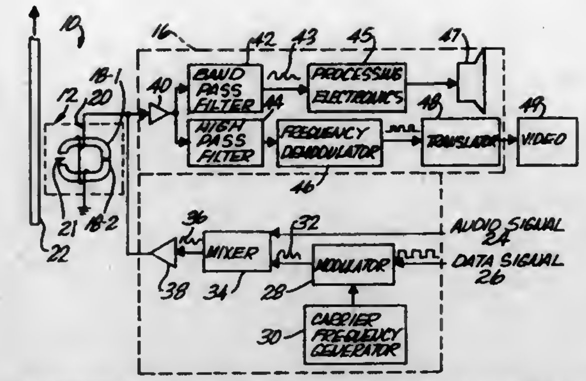


1. A Schwarzschild type optical system for converging light emanating from an object point at a predetermined position, comprising:
a concave mirror having an aperture at a center portion thereof, said aperture including an optical axis of said optical system; and
a convex mirror disposed to face said aperture of said concave mirror;
each of said concave mirror and said convex mirror including a reflecting surface divided into a plurality of zone areas in a direction across said reflecting surface and which surround said optical axis, and each of said plurality of zone areas differing in spectral reflectance from all others of said plurality of zone areas.

5,619,383
METHOD AND APPARATUS FOR READING AND WRITING AUDIO AND DIGITAL DATA ON A MAGNETIC TAPE

Hing Y. Ngai, Rancho Palos Verdes, Calif., assignor to Gemstar Development Corporation, Pasadena, Calif.
Continuation of Ser. No. 67,870, May 26, 1993, abandoned. This application May 5, 1995, Ser. No. 441,392
Int. Cl.⁶ G11B *5/02*
U.S. Cl. 360—20 **14 Claims**

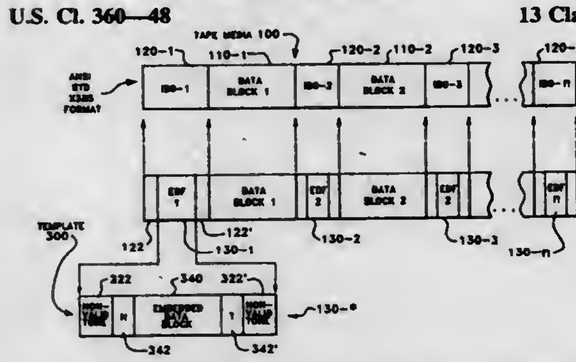
1. A method for recording audio information and data related to the audio information on the same track of a magnetic recording tape so that the magnetic recording tape may be interchangeably played in either a tape player that reads only audio information without interference from the data or a tape player that can read both the audio information and the data, the method comprising the steps of:
positioning a recording head near the track of the magnetic tape;
generating an unmodulated audio signal containing the audio information;
generating digital data that is related to the audio information;



generating a carrier signal at a frequency near the peak of a side lobe in the frequency response curve of the recording head and outside the frequency range of human hearing;
modulating the carrier signal with the data related to the information in the audio signal;
combining the audio signal and the modulated signal to form a composite signal;
applying the composite signal to the recording head to create a changing magnetic field in response to the composite signal; and
magnetizing the track of the magnetic tape in response to the changing magnetic field to record the composite signal thereon.

5,619,384
SYSTEM FOR PROVIDING TRANSPARENT STORAGE OF DATA EMBEDDED WITHIN PREDEFINED RECORDING FORMATS

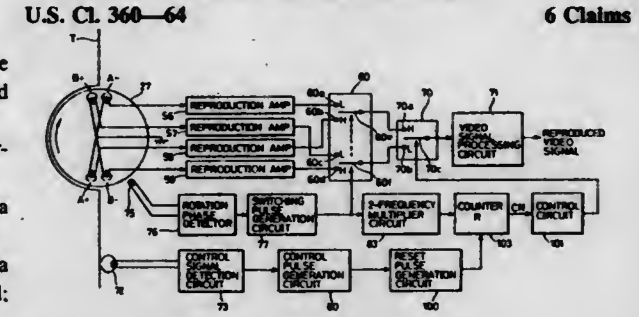
Michael L. Leonhardt, Longmont, and Charles A. Milligan, Golden, both of Colo., assignors to Storage Technology Corporation, Louisville, Colo.
Filed Jan. 25, 1994, Ser. No. 186,803
Int. Cl.⁶ G11B *5/09*
U.S. Cl. 360—48 **13 Claims**



1. In an enhanced data recording system for recording data on media having a predefined data format including reserved areas designated by said predefined data format as not of interest with respect to recordation of data therein, a method of storing supplementary data in such a manner that the supplementary data is transparent to an unenhanced data recording system, said method comprising the step of:
storing said supplementary data, including an embedded data field, in said reserved areas ignored by said unenhanced data recording system.

5,619,385
VIDEO TAPE RECORDER CARRYING OUT FIELD EXTRACTION RECORDING AND/OR REPRODUCTION OF A VIDEO SIGNAL

Kouichi Kawakami; Toshihide Hamaguchi; Satoru Kuge, and Yoshiaki Maida, all of Osaka, Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan
Continuation of Ser. No. 460,811, Jun. 2, 1995, abandoned, which is a division of Ser. No. 120,930, Sep. 15, 1993, Pat. No. 5,452,144. This application Jun. 28, 1996, Ser. No. 672,560
Claims priority, application Japan, Sep. 17, 1992, 4-247915; Dec. 17, 1992, 4-337358; Mar. 18, 1993, 5-058959
Int. Cl.⁶ G11B *15/14;5/00;15/52*
U.S. Cl. 360—64 **6 Claims**



1. A video tape recorder, comprising:
an input terminal for a video signal to be recorded;
means for extracting said video signal at a ratio of one field to every predetermined number of fields to record the extracted video signal alternately by each field on a magnetic tape at first and second azimuth angles differing from each other for forming a pattern of continuous recording tracks;
means for recording a control signal on a control track on said magnetic tape in synchronization with recording by a determined one of said first and second azimuth angles;
a 4-head cylinder of double-azimuth used at least for reproducing said video signal recorded on said magnetic tape, said cylinder including a first pair of heads of a first head having said first azimuth angle and a second head having said second azimuth angle and disposed in the proximity of said first head, and a second pair of heads of a third head having said second azimuth angle and disposed opposing to said first head along the circumference of said cylinder and a fourth head having said first azimuth angle and disposed in the proximity of said third head and opposing to said second head along the circumference of said cylinder;
first switching means for alternately selecting outputs of said first pair of heads and outputs of said second pair of heads for every ½ rotation of said cylinder at the time of reproduction of said magnetic tape;
second switching means for selectively switching between a first state in which the reproduced output of said first head is selected out of said first pair of heads selected by said first switching means or the reproduced output of said third head is selected out of said second pair of heads selected by said first switching means, and a second state in which the reproduced output of said second head is selected out of said first pair of heads selected by said first switching means or the reproduced output of said fourth head is selected out of said second pair of heads selected by said first switching means;
means for detecting said control signal recorded on a control track on said magnetic tape at the time of reproduction of said magnetic tape;
control means responsive to said detected control signal for controlling said second switching means to switch to said first state over a preset first time period and to said second state over a second time period differing from said first time period, with the recording track having a predetermined position relationship with the detected control signal on said magnetic tape; and
means for detecting the rotation phase of said cylinder for generating switching pulses to control the switching operation of said first switching means.

wherein there is a predetermined phase difference between a predetermined edge of said detected control signal and a predetermined edge of said switching pulses,

wherein said control means controls said second switching means to switch between said first state and said second state upon the detection of an edge of said switching pulses in relation to a predetermined edge of said detected control signal, and

wherein said control means comprises means for multiplying by two said switching pulses, and counter means to be reset in response to a predetermined edge of said detected control signal for counting a predetermined number of edges of said two-multiplied switching pulses.

5,619,386

ARRANGEMENT FOR READING INFORMATION FROM A TRACK ON A RECORD CARRIER COMPRISING A FAST SETTLING READ AMPLIFIER FOR MAGNETO-RESISTIVE HEADS

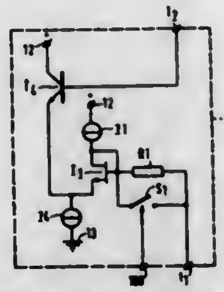
Johannes O. Voorman, and Joao N. V. L. Ramalho, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 5, 1994, Ser. No. 318,420

Claims priority, application European Pat. Off., Oct. 6, 1993, 93202836; Jun. 23, 1994, 94201806

Int. Cl.⁶ G11B *5/02;5/03;* **H03F** *21/00*

U.S. Cl. 360—67 **28 Claims**



27. An arrangement for reading out an information signal from a magnetic record carrier, comprising:

read means for reading the information signal; and

an amplifier coupled to the read means and having an output terminal, the amplifier including

a transistor having a control terminal, a first main flow terminal coupled to the read means, and a second main flow terminal coupled to the output terminal of the amplifier; and

feedback means for providing feedback from the output terminal of the amplifier to the control terminal of the transistor, the feedback means having a cut-off capacitor, and a voltage buffer having an output terminal which is directly connectable to the cut-off capacitor in response to a control signal.

5,619,387

DISK STORAGE DEVICE WITH SPIRAL DATA TRACK AND INCREMENTAL ERROR OFFSETS IN ANGULARLY SPACED IMBEDDED CONCENTRIC SERVO PATTERNS

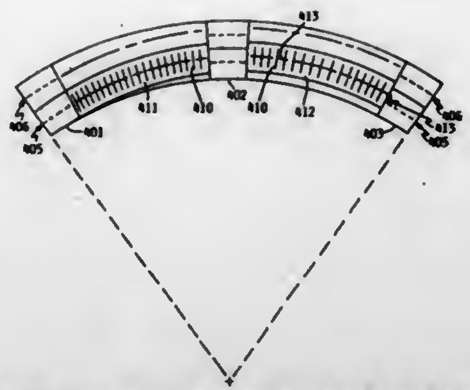
Hal H. Ottesen; Earl A. Cunningham; Richard Greenberg, and Dana H. Brown, all of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 444,175, May 18, 1995, abandoned, which is a division of Ser. No. 288,525, Aug. 10, 1994, which is a continuation-in-part of Ser. No. 184,417, Jan. 21, 1994. This application Aug. 12, 1996, Ser. No. 689,582

Int. Cl.⁶ G11B *5/55*

U.S. Cl. 360—77.08 **7 Claims**

1. A rotating disk data storage device, comprising:



at least one disk rotatably mounted on a spindle, said at least one disk having a first annular recording surface for recording magnetically encoded data, wherein said recording surface is formatted to contain at least one spiral data track, and wherein said recording surface is formatted to contain a plurality of angularly spaced imbedded servo patterns, said imbedded servo patterns defining a plurality of concentric track centerlines;

a spindle motor for rotating said at least one disk in a predetermined direction;

a data transducer mounted on a movable actuator for accessing data recorded on said recording surface; and

a servo feedback system for positioning said data transducer to follow said spiral data track, wherein said servo feedback system derives separate position error information from each respective one of said angularly spaced imbedded servo patterns, each said position error information representing deviation of said data transducer from a concentric track centerline defined by said imbedded servo patterns, said deviation being measured at a respective one of said angularly spaced imbedded servo patterns, and wherein said servo feedback system adds a spiral track position error offset to each said position error information derived from each respective one of said angularly spaced imbedded servo patterns, said spiral track position error offset being a unique, discrete amount associated with each respective angularly spaced imbedded servo pattern, said unique, discrete amounts varying incrementally as a function of angular position of each said respective angularly spaced imbedded servo pattern on said disk.

5,619,388

TAPE LOADING DEVICE

Toshiaki Kawai, Nagaokakyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 216,546, Mar. 23, 1994, abandoned. This application Mar. 27, 1996, Ser. No. 622,935

Claims priority, application Japan, Apr. 1, 1993, 5-075686

Int. Cl.⁶ G11B *15/665*

U.S. Cl. 360—85 **55 Claims**

1. A tape loading device for withdrawing tape from a cassette from an unloaded position in the cassette to a loaded position where the tape comes into contact with a drum, comprising:

a motor;

a plate cam which moves in a straight line at a substantially constant speed under the driving force of said motor;

a rack provided on said plate cam;

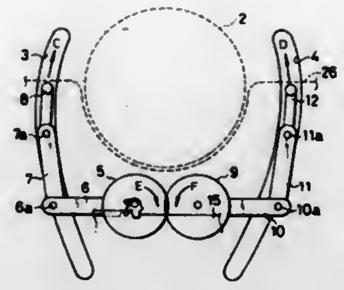
an arm load gear provided with a gearwheel that engages said rack, and rotates as said plate cam executes linear motion;

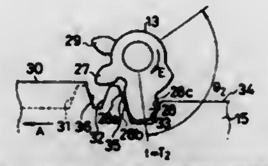
a lever mechanism which moves as said arm load gear rotates;

a tape guide provided on said lever mechanism, that guides the tape; and

a guide member provided with a guide hole guiding said tape guide from the unloaded position to the loaded position and from the loaded position to the unloaded position;

wherein said gearwheel includes a first tooth having a pitch circle with a first radius; a second tooth having a pitch circle with a second radius which is larger than the first radius; and





a third tooth having a pitch circle substantially the same as the pitch circle of said first tooth, an involute curve substantially the same as an involute curve of said first tooth and a face width less than a face width of said first tooth, and

wherein as the tape is being loaded, said rack engages with said third tooth then said rack engages with said first tooth so as to move said tape guide from the unloaded position to a predetermined position before the loaded position, and wherein said rack subsequently engages said second tooth so as to move said tape guide to the loaded position.

5,619,389

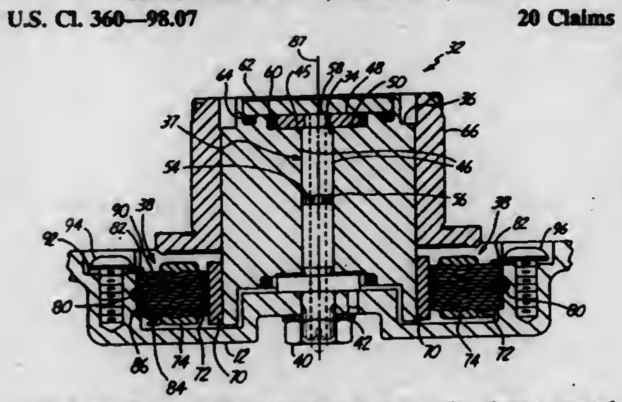
STATOR ISOLATION FOR SPINDLE MOTOR

John C. Dunfield, Santa Cruz, and Gunter K. Heine, Aptos, both of Calif., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Feb. 10, 1995, Ser. No. 386,883

Int. Cl.⁶ G11B *17/02;* **H02K** *5/24;1/12*

U.S. Cl. 360—98.07 **20 Claims**



12. A spindle motor for rotating at least one disc about a central axis in a storage device, comprising:

a base having a side wall;

a stationary member attached to the base;

a hub comprising a rotor, wherein the hub is rotatable with respect to the stationary member;

a hydrodynamic bearing interconnecting the hub with the stationary member;

a stator positioned within the base, axially below the hub with respect to the central axis and radially external to and coaxial with the rotor, wherein the stator has a side surface which is located at an outer diameter of the stator and is spaced from the base side wall;

a first resilient, vibration damping coupling which couples the stator and the base; and

a second resilient, vibration damping coupling which couples the stator and the base, wherein the second resilient coupling is spaced from the first resilient coupling in an axial direction with respect to the central axis.

5,619,390

MAGNETIC DISK APPARATUS WITH OFFSET HEAD ASSEMBLIES

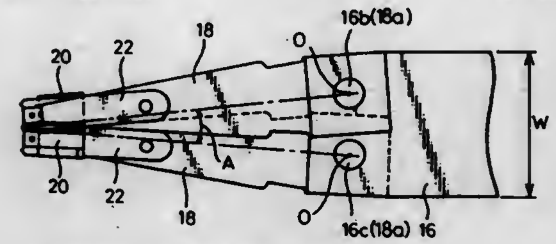
Shingo Kida, Iwaki, Japan, assignor to Fujitsu Limited, Japan

Filed Jun. 26, 1995, Ser. No. 494,780

Claims priority, application Japan, Sep. 28, 1994, 6-233404

Int. Cl.⁶ G11B *5/48;21/16*

U.S. Cl. 360—104 **6 Claims**



1. A magnetic disk apparatus comprising:

magnetic disks;

planar access arms;

head assemblies, each head assembly including a magnetic head arranged to face a magnetic disk and a flexible arm attached to a planar access arm for supporting the magnetic head;

each magnetic head having two parallel rails and a head element having a gap, the head element being formed at a position adjacent to one of the two parallel rails; and

two of the head assemblies being attached to one planar access arm on either side thereof with the gaps of the head elements facing outwardly, the two head assemblies being arranged at offset positions from each other so that a position of the gap of one head element coincides and is aligned with a position of the gap of the other head element.

5,619,391

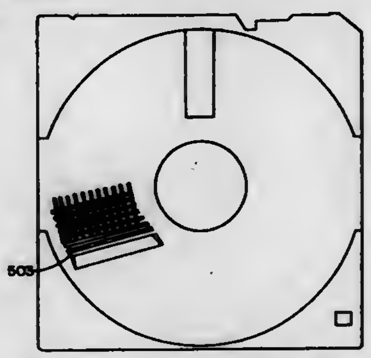
DISC CARTRIDGE WITH OPPOSING SETS OF CROSSED RIBS DIRECTLY PRESSING WIPING MEMBERS INTO CONTACT WITH BOTH SIDES OF DISC

Jacques S. Getzoyan, Rockland; John G. Kennedy, Bridgewater, and Stephen P. Joslin, Brewster, all of Mass., assignors to Kao Infosystems Company, Plymouth, Mass.

Filed Sep. 25, 1995, Ser. No. 533,635

Int. Cl.⁶ G11B *23/033*

U.S. Cl. 360—133 **10 Claims**



1. A disc cartridge containing a medium sandwiched between wiper elements, said disc cartridge comprising:

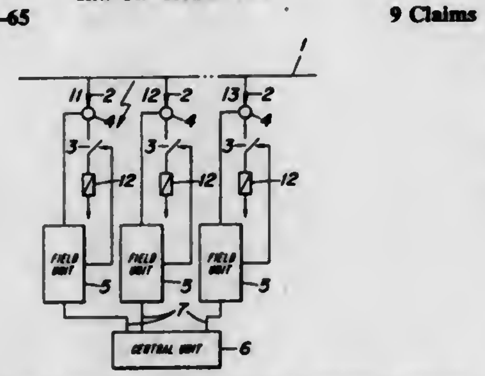
an upper member having a plurality of projections thereon;

a lower member having at least one lifter rib;

said at least one lifter rib having a longitudinal direction which is skew with respect to each longitudinal direction of said projections, said at least one lifter rib and said projections each directly contacting respective said wiper elements to cause pressure to be exerted on both sides of said medium by said respective wiper elements to clean dust and debris from said both sides of said medium, said at least one lifter rib and said projections directly opposing each other and crossing one

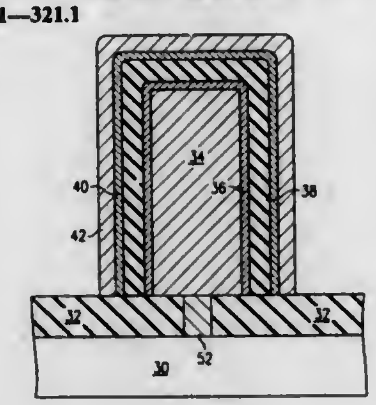
another as viewed along a direction perpendicular to a plane defined by said projections so as to maintain medium planarity in a region defined between said projections and said at least one lifter rib while said dust and debris are cleaned from said both sides of said medium.

5,619,392
METHOD AND DEVICE FOR PROTECTING BUSBARS
Joachim Bertsch, Bietigheim-Bissingen, Germany, and David Peck, Fislisbach, Switzerland, assignors to Asea Brown Boveri AG, Baden, Switzerland
Filed Apr. 24, 1995, Ser. No. 427,588
Claims priority, application Germany, Jun. 13, 1994, 44 20 513.9
Int. Cl.[6] H02H *3/18*
U.S. Cl. 361—65 9 Claims



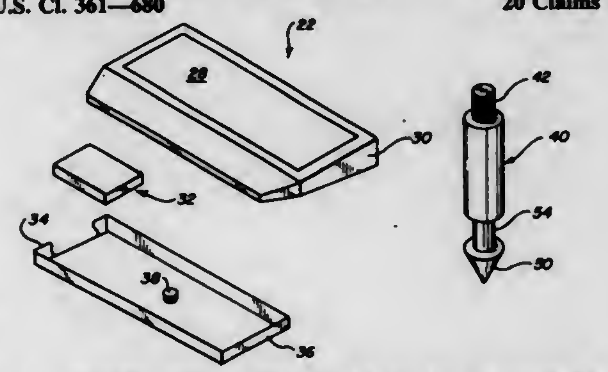
1. A method for protecting busbars having multiple outgoers, comprising the steps of:
determining current characteristics of the outgoers;
determining a fault signal using a vectorial representation of the current characteristics;
determining a value representative of a maximum current characteristic; and
maintaining the representative value for a hold time t_h, wherein the hold time t_h is calculated as $t_h=t_c-t_a$, t_a corresponding to the instant of the occurrence of the maximum current characteristic, and t_c corresponding to an externally-defined maximum hold period.

5,619,393
HIGH-DIELECTRIC-CONSTANT MATERIAL ELECTRODES COMPRISING THIN RUTHENIUM DIOXIDE LAYERS
Scott R. Summerfelt, Dallas; Howard R. Beratan, Richardson, and Bruce E. Gnade, Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Continuation of Ser. No. 283,881, Aug. 1, 1994. This application Jun. 7, 1995, Ser. No. 472,149
Int. Cl.[6] H01G *4/005*
U.S. Cl. 361—321.1 22 Claims



22. A microelectronic structure comprising:
(a) a non-Ru, non-RuO_2 conductive lower electrode base, comprising sidewalls with an aspect ratio of at least 1:2;
(b) a first ruthenium dioxide film overlying said electrode base, including said sidewalls, wherein said first ruthenium dioxide film is less than 35 nm thick;
(c) a high-dielectric-constant material layer overlying said first ruthenium dioxide film;
(d) a second ruthenium dioxide film overlying said high-dielectric-constant material layer, wherein said second ruthenium dioxide film is less than 35 nm thick; and
(e) an upper electrode overlying said second ruthenium dioxide film.

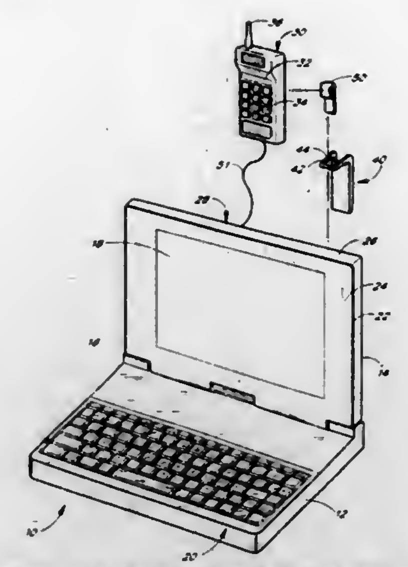
5,619,394
LIMITED MOVEMENT COMPUTER KEYBOARD RETAINING ASSEMBLY
Donald L. Oros, Solon, Ohio, assignor to Elsag International N. V., Netherlands
Filed Aug. 17, 1995, Ser. No. 516,357
Int. Cl.[6] G06F *1/16;* **H05K** *7/16*
U.S. Cl. 361—680 20 Claims



1. A keyboard retaining assembly for movably mounting the keyboard to a work surface of a computer workstation comprising:
a peg connected to a bottom surface of the keyboards; retaining means for capturing said peg therein;
a computer workstation work surface having said retaining means affixed thereto to allow said peg and the keyboard connected thereto to be movably mounted flush with said work surface;
said retaining means allowing the rotational movement of said peg therein and the rotational movement of the keyboard connected to said peg along said work surface and has a first peg holder section mounted into said work surface to be flush with said work surface and an enlarged bottom section connected to said peg holder section for capturing said retaining means to this bottom of said work surface; and
said peg holder section being formed to have a tapered inlet leading to a narrow opening having a spring loaded retainer extending there into and said peg has a recessed area there along for interference fitting with said retainer when said peg is inserted into said retaining means.

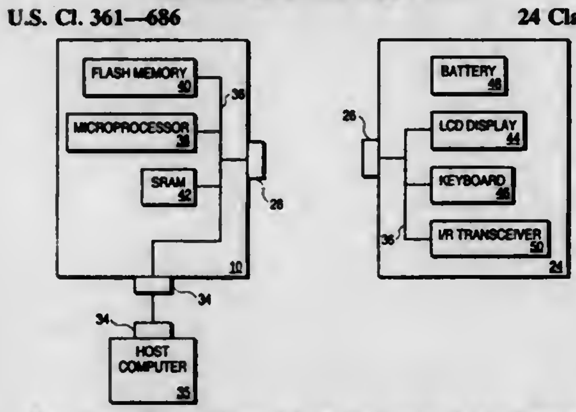
5,619,395
DEVICE FOR ATTACHING A WIRELESS TELEPHONE TO A PORTABLE COMPUTER
Jon McBride, 2676 E. Colmere, Sandy, Utah 84092
Filed Apr. 25, 1995, Ser. No. 428,462
Int. Cl.[6] G06F *1/16;* **H04M** *1/06;* **A47G** *29/00*
U.S. Cl. 361—683 10 Claims

1. A computer/phone combination, comprising:
a portable computer having a base and a lid, wherein the lid is opened into a generally vertical orientation while the base remains generally horizontal;
a wireless phone having a front and a back and an antenna, wherein the back of the phone includes a clip which remov-



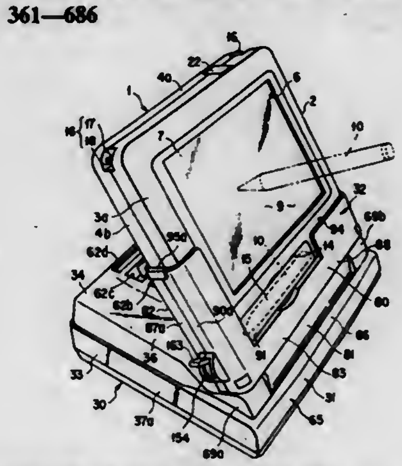
ably mounts to a clip-holder on the lid of said computer so that said phone is supported in an upright manner; and
a data transmission line linking said portable computer and said wireless phone.

5,619,396
MODULAR PCMCIA CARD
Homer T. Gee, Roseville; Daniel C. Steere, Jr., and Walter S. Matthews, both of Folsom, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.
Filed Feb. 21, 1995, Ser. No. 391,110
Int. Cl.[6] H05K *7/20;* **G06F** *1/20*
U.S. Cl. 361—686 24 Claims



9. A companion computer for a host computer where said host computer is adapted to receive PC cards substantially rectangular in top view and having a thickness no larger than a predetermined first thickness and including a connector for electrically communication with said PC cards, said companion computer comprising:
a base member having two long sides and two short sides that form a substantially rectangular PC card, the area within said short sides and said long sides being divided into an edge area and a center area, said center area including a mechanical and electrical connector, said base member having a thickness no larger than said first predetermined thickness, said base member further having a first connector for communication with said host and containing at least flash memory;
an add on section having length and width dimensions substantially the same as said center area and containing a mechanical and electrical connector adapted to mate mechanically and electrically with said connector on said center area of said base section and in combination with said base member having a thickness greater than a second predetermined thickness, said add on section including a battery, a microprocessor and one or more peripheral components that when connected to said flash memory and microprocessor form a stand alone computer.

5,619,397
ELECTRONIC DEVICE SYSTEM INCLUDING A PORTABLE ELECTRONIC DEVICE HAVING A HANDWRITING INPUT DEVICE LOCKED TO AN EXPANSION STATION WHEN THE POWER SWITCH OF THE PORTABLE ELECTRONIC DEVICE IS TURNED ON
Masami Honda, Tokyo, and Yosuke Miura, Funabashi, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa-Ken, Japan
Filed Jul. 31, 1995, Ser. No. 509,617
Claims priority, application Japan, Sep. 29, 1994, 6-235696
Int. Cl.[6] G06F *1/16;* **H05K** *7/10;* **H01R** *13/639*
U.S. Cl. 361—686 14 Claims



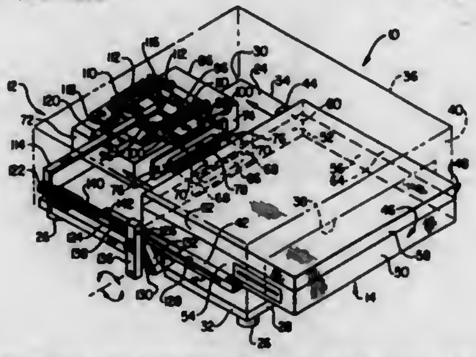
1. An electronic device system comprising:
a portable electronic device including an input surface through which information is input, a power switch manually turned on or off, and a first connector electrically connected to the power switch; and
an expansion station having an expansion device for expanding a function of the electronic device and an input section connected to a power supply, the expansion station including: a main body containing the expansion device and the input section; a stand supported by the main body and removably holding the electronic device, the stand maintaining the main body together with the input surface in a stand-up state; and a second connector arranged in the stand, the second connector being electrically connected to the expansion device and the input section, and connected to the first connector when the electronic device is held by the stand, wherein
the stand includes: a pair of engaging members movable between a first position, in which they hook first and second ends in a width direction of the electronic device, and a second position, in which they are released from the first and second ends of the electronic device, when the first and second connectors are connected to each other; and lock means movable between a lock position, in which the engaging members are inhibited from being moved from the first position to the second position, and a lock release position, in which the engaging members are allowed to move from the first position to the second position; and
the lock means is maintained in the lock position, when the electronic device is connected to the power supply through the first and second connectors and the power switch of the electronic device is turned on.

5,619,398

MANUAL DOCKING APPARATUS HAVING LATCH AND DRIVE MECHANISM FOR A PORTABLE COMPUTER

Robert C. Harrison, Houston, and Steven J. Lau, Tomball, both of Tex., assignors to COMPAQ Computer Corporation, Houston, Tex.

Filed Dec. 27, 1995, Ser. No. 579,290
Int. Cl.⁶ G06F *1/16;* H05K *7/10;* H01R *13/629*
U.S. Cl. 361—686 20 Claims



1. Manual docking apparatus for use in operatively connecting a portable computer to a desktop computer peripheral device, the portable computer having a rear side wall upon which a first electrical connector is carried, said manual docking apparatus comprising:

an expansion base structure having a generally horizontally oriented support deck upon which the portable computer may be positioned for forward and rearward sliding movement relative thereto, a rear portion having a second, forwardly disposed electrical connector releasably mateable with the first electrical connector to couple it to the peripheral device, and guide members slidably engageable with the portable computer and operative to horizontally align said second electrical connector with the first electrical connector; and

a manual docking assembly operable, with the portable computer placed on said support deck, to horizontally move the portable computer toward and away said rear expansion base structure portion in a manner respectively mating and disconnecting said first and second electrical connectors, said manual docking assembly including:

latch and drive means associated with said rear expansion base structure portion and being operatively movable sequentially from (1) a pre-docking position in which, in response to rearward manual movement of the portable computer toward said latch and drive means along said support deck, said latch and drive means are releasably locked to the rear side wall of the portable computer, with the first and second electrical connectors being aligned with one another but not operatively coupled, to (2) a docked position in which said latch and drive means have been moved to drive the rear side wall of the portable computer toward said rear expansion base structure portion in a manner forcibly mating the first and second electrical connectors, to (3) an undocked, released position in which the first and second electrical connectors have been forcibly disengaged from one another and said latch and drive means have been detached from the rear side wall of the portable computer, and

control means for receiving a manual positioning force and responsively moving said latch and drive means selectively between said pre-docking position, said docked position, and said undocked, released positions thereof.

9. Manual docking apparatus for use in operatively connecting a portable computer to a desktop computer peripheral device, said manual docking apparatus comprising:

a horizontally positionable support deck having a rear side portion, and a pair of upwardly projecting elongated guide portions longitudinally extending in a spaced apart, parallel relationship along opposite left and right side portions of said support deck;

a support block member carried on said rear side portion of said support deck and having a front side;

an electrical connector carried on said front side of said support block member;

a first elongated member carried by said support deck for longitudinal movement in a front-to-rear direction relative thereto;

a manual pivot member carried by said support deck for pivotal movement relative thereto and linked to a front end portion of said first elongated member in a manner longitudinally moving it in a front-to-rear direction in response to manually created pivotal movement of said pivot member;

a second elongated member pivotally connected at a first end thereof to a front end portion of said first elongated member, pivotally connected at a longitudinally intermediate portion thereof to said support block member, and having a second end;

a drive plate member supported above said support block for sliding forward and rearward movement relative thereto, said drive plate member being pivotally secured to said second end of said second elongated member in a manner causing said drive plate member to be driven forwardly in response to rearward movement of said first elongated member, and to be driven rearwardly in response to forward movement of said first elongated member; and

a spaced pair of elongated latch arm members having indented front end portions and being supported above said support block, on opposite sides of said drive plate member, for longitudinal movement in front-to-rear directions between a rearwardly shifted first position in which said latch arm members are generally parallel, with said indented front end portions thereof forwardly projecting outwardly beyond said support block, and a forwardly shifted second position in which said front end portions of said latch arm members are pivoted outwardly from one another toward said guide portions of said support deck,

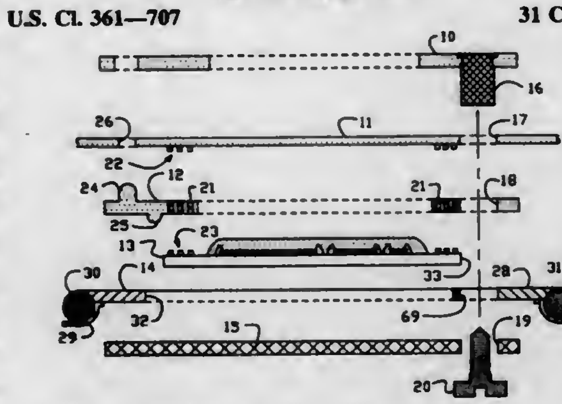
said latch arm members and said drive plate member having cooperatively engaged portions operative to cause said drive plate member to drive said latch arm members from said first position thereof to said second position thereof in response to forward movement of said drive plate member relative to said support block.

5,619,399

MULTIPLE CHIP MODULE MOUNTING ASSEMBLY AND COMPUTER USING SAME

Sammy L. Mok, Cupertino, Calif., assignor to Micromodule Systems, Inc., Santa Clara, Calif.

Filed Feb. 16, 1995, Ser. No. 389,905
Int. Cl.⁶ H05K *7/20*
U.S. Cl. 361—707 31 Claims



1. An electronic assembly, comprising:

a board having a surface including an array of board contacts;

a circuit module having a first surface and a second surface opposite the first surface, including a substrate, a multilayer interconnect on the substrate, a plurality of integrated circuits on the substrate in electrical communication with the multilayer interconnect, and an array of circuit contacts on the first surface in electrical communication with the multilayer interconnect;

a connector including conductors for connection between circuit contacts in the array of circuit contacts on the circuit module and board contacts in the array of board contacts on the board;

a heat spreader assembly in thermal contact with the second surface of the circuit module; and

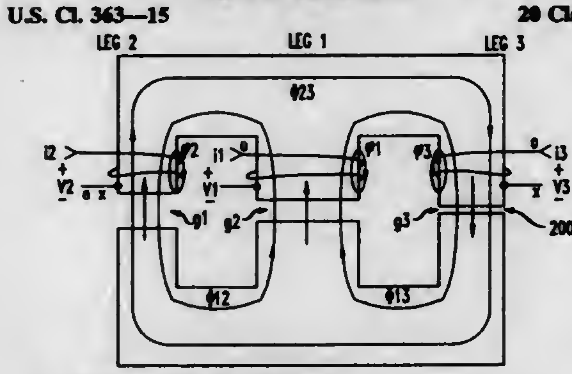
a fastener which fastens the circuit module to the board and to the heat spreader assembly such that thermal contact is made between the circuit module and the heat spreader, and electrical contact is made through the connector between the array of circuit contacts and the array of board contacts.

5,619,400

MAGNETIC CORE STRUCTURES AND CONSTRUCTION TECHNIQUES THEREFOR

Wayne C. Bowman, Allen; Ashraf W. Lotfi, Rowlett, and Matthew A. Wilkowski, Mesquite, all of Tex., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jul. 18, 1995, Ser. No. 503,683
Int. Cl.⁶ H02M *3/335*
U.S. Cl. 363—15 20 Claims



1. A magnetic device, comprising:

a first core-portion composed of a magnetic material and having first and second legs associated therewith, said first leg having a first end face and a predetermined first cross-sectional area, said second leg having a second end face and a predetermined second cross-sectional area different from said first cross-sectional area;

a winding assembly having first and second windings associated therewith and disposed about first and second winding apertures, respectively, said first and second legs passing through said first and second winding apertures, respectively, to couple said first and second windings magnetically to said first and second legs, respectively;

a second core-portion composed of said magnetic material and adapted to mate with said first and second legs of said first core-portion; and

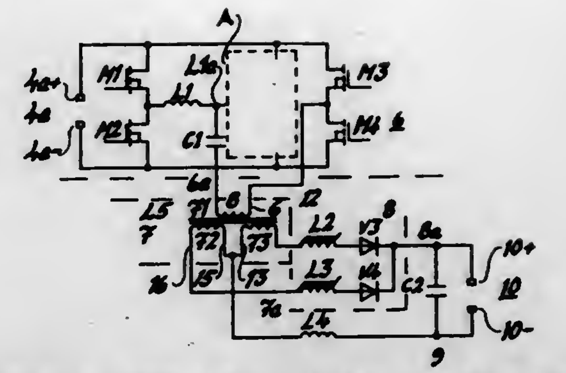
an interstitial non-magnetic material of a predetermined uniform thickness disposed on said first and second end faces and joining said first and second core-portions to form a core for said magnetic device, said non-magnetic material forming a uniform air gap in said first and second legs.

5,619,401

CIRCUIT ARRANGEMENT

Bror M. Karlsson, Huddinge, and Roland J. E. Wald, Skärholmen, both of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Jun. 2, 1995, Ser. No. 460,823
Claims priority, application Sweden, Jun. 2, 1994, 9401902
Int. Cl.⁶ H02M *3/335*
U.S. Cl. 363—17 20 Claims



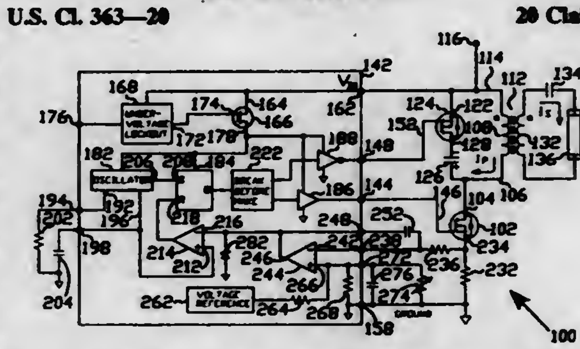
1. A circuit including a first direct voltage to an alternating voltage transforming unit, an alternating voltage to a second direct voltage transforming unit, and a direct voltage smoothing filter, connectable to a load, whereby the first direct voltage to an alternating voltage transforming unit has an inductance that is connected to a mutual point for a two series connected rectifying means, and where the alternating voltage to a second direct voltage transforming unit includes a parallel related rectifying means, whereby a back current through one of two parallel related rectifying means is formed at the switching period of the alternating voltage, the transforming unit further comprising a power contribution redistributing organ for redistributing a power contribution to said inductance originating from said back current to reduce the losses appearing in the series connected rectifying means whereby the organ comprises both of the series connected rectifying means to shorten the duration in time of the back current.

5,619,402

HIGHER-EFFICIENCY COLD-CATHODE FLUORESCENT LAMP POWER SUPPLY

Kwang H. Liu, Sunnyvale, Calif., assignor to O_2 Micro, Inc., Santa Clara, Calif.

Filed Apr. 16, 1996, Ser. No. 633,221
Int. Cl.⁶ H02M *3/335*
U.S. Cl. 363—20 20 Claims



1. A switched-mode power supply for energizing a cold-cathode fluorescent lamp ("CCFL"), the switched-mode power supply converting a comparatively low, direct current ("dc") input voltage into high, alternating current ("ac") output voltage that may be supplied to a CCFL, the switched-mode power supply comprising:

a first semiconductor switch having a first principal terminal, a second principal terminal, and a control terminal; the first principal terminal being coupled to a circuit ground of the switched-mode power supply;

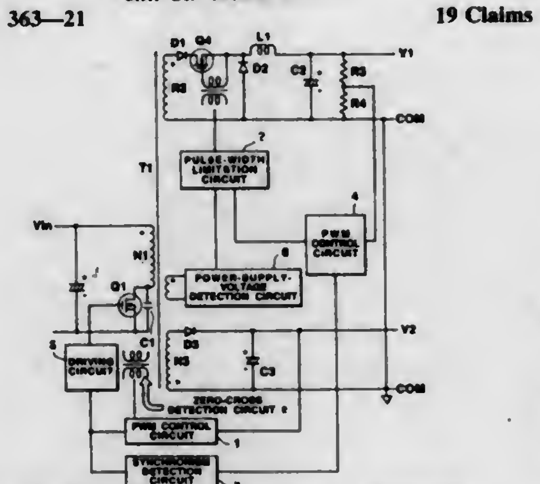
a step-up transformer having a primary winding that has a primary inductance, and a secondary winding; the primary winding and the secondary winding being disposed about a core; the secondary winding having a number of turns that is at least ten times greater than a number of turns of the primary winding; a first end of said primary winding connecting to the second principal terminal of said first semiconductor switch, whereby said transformer and said first semiconductor switch connect in series, and the primary winding having a second end that is coupled to a power source terminal for the switched-mode power supply;

a second semiconductor switch having a first principal terminal, a second principal terminal, and a control terminal; and a capacitor having a capacitance and a first terminal that connects to one of the principal terminals of said second semi-

conductor switch, whereby said second semiconductor switch and said capacitor connect in series; the other principal terminal of said second semiconductor switch and a second terminal of said capacitor connecting respectively to the second principal terminal of said first semiconductor switch and to the second end of the primary winding of said transformer, whereby said series connected second semiconductor switch and capacitor connect in parallel with the primary winding of said transformer; the combined primary inductance of said transformer and capacitance of said capacitor having a resonant frequency;

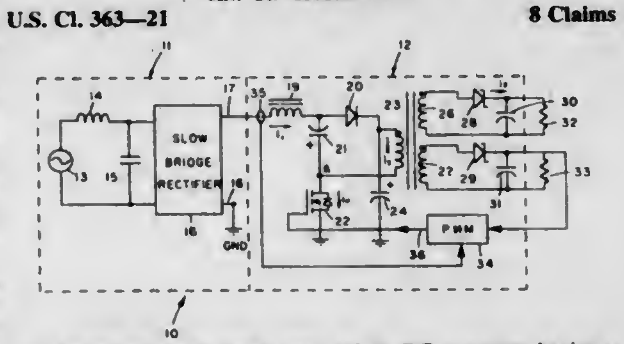
- a controller circuit having a first switch-driving output-terminal that connects to the control terminal of said first semiconductor switch, and having a second switch-driving output-terminal that connects to the control terminal of said second semiconductor switch, said controller circuit transmitting signals to said first semiconductor switch and to said second semiconductor switch for turning said first semiconductor switch first on and then off while concurrently turning said second semiconductor switch first off and then on thereby establishing duty cycles respectively for said first and second semiconductor switches; whereby periodically a current flows through the primary winding of said transformer and through said first semiconductor switch while said first semiconductor switch is turned-on and said second semiconductor switch is turned-off, and whereby a current flows through the primary winding and through said series connected second semiconductor switch and capacitor while said second semiconductor switch is turned-on and said first semiconductor switch is turned-off; said controller circuit turning said first and second semiconductor switches on and off at a frequency that is higher than the resonant frequency of the combined primary inductance of said transformer and capacitance of said capacitor; and
- a decoupling capacitor having a first terminal that connects to a first end of the secondary winding of said transformer, whereby the decoupling capacitor and the secondary winding are connected in series; said decoupling capacitor having a second terminal and the secondary winding having a second end that provide ac power output terminals of the switched-mode power supply across which a CCFL may be connected.

5,619,403
MULTI-OUTPUT POWER SUPPLY APPARATUS
Tadashi Ishikawa, Tokyo, and Atsushi Asayama, Inagi, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 20, 1993, Ser. No. 93,627
Claims priority, application Japan, Jul. 24, 1992, 4-197939; Oct. 2, 1992, 4-264770
Int. Cl.⁶ H02M *3/335*
U.S. Cl. 363—21 **19 Claims**



15. A multi-output power supply apparatus, comprising:
a) A transformer comprising:
a primary winding;
an on-off secondary winding;
an on-on secondary winding;
a first switching device for switching said primary winding; and
a feedback circuit for controlling the switching operation of said first switching device in accordance with the output of said on-off secondary winding,
b) a second switching device for switching the output of said on-on secondary winding;
c) a power-supply-voltage detection circuit for detecting an input voltage to said primary winding; and
d) a driving circuit for limiting an "on" period of the switching operation of said second switching device in accordance with the output of said power-supply-voltage detection circuit.

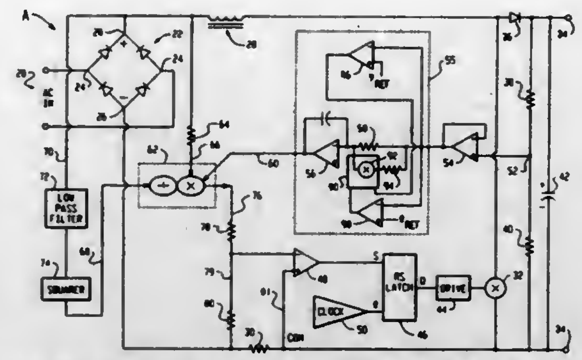
5,619,404
MULTI-CHANNEL SINGLE STAGE HIGH POWER FACTOR AC TO DC CONVERTER
Alexander Zak, 8 Kislev Street, Ashkelon 38721, Israel
Filed Oct. 30, 1995, Ser. No. 550,469
Int. Cl.⁶ H02M *3/335*
U.S. Cl. 363—21 **8 Claims**



1. A multi-channel single stage AC to DC converter having a high power factor, comprising:
- a pair of input terminals for connecting to an a.c. supply so as to receive an a.c. supply voltage,
- a bridge rectifier connected across the input terminal, for converting the a.c. supply voltage to a d.c. voltage, and
- a D.C. to D.C. converter having an input connected to an output of the bridge rectifier for receiving said d.c. voltage, and including a high frequency switch connected to the input for converting the d.c. voltage to high frequency intermittent pulses, a transformer having a primary winding connected to the high frequency switch and having at least two secondary windings each connected to a respective rectifier for producing a d.c. output voltage thereacross;
- wherein a pair of capacitors are connected in the input of the DC to DC converter so that when the switch is OPEN a first one of the capacitors receives energy from the a.c. supply and a second one of the capacitors receives energy from the transformer, whilst when the switch is CLOSED the first capacitor restores energy to the transformer and the second capacitor restores energy to the a.c. supply.

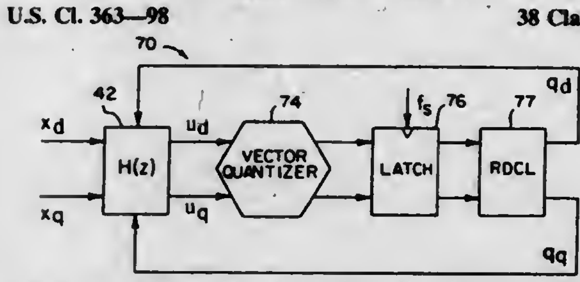
5,619,405
VARIABLE BANDWITH CONTROL FOR POWER FACTOR CORRECTION
Neil A. Kammiller, and Zissis L. Kalivas, both of Lorain, Ohio, assignors to Reltec Corporation, Lorain, Ohio
Filed Dec. 21, 1995, Ser. No. 576,620
Int. Cl.⁶ H02M *7/155*
U.S. Cl. 363—80 **8 Claims**

1. A power supply having power factor control comprising:
an error amplifier having first and second inputs;
a first reference voltage from a voltage reference source supplied to the first input of the error amplifier;
a first resistance connected to the second input of the error amplifier;



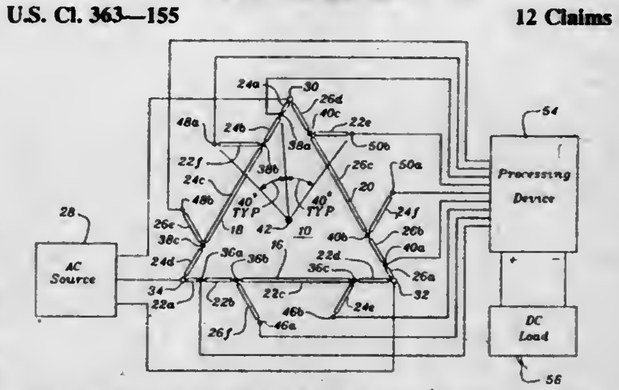
a switch connected to a second resistance, and placed across the first resistance; and
a voltage comparator connected to the switch which compares a second reference voltage to a sample voltage wherein when a predetermined value is output from the voltage comparator, the switch is closed placing the second resistance in parallel with the first resistance.

5,619,406
MODULATOR FOR RESONANT LINK CONVERTERS
Deepakraj M. Divan; Ian Dobson, and Glen A. Luckjiff, all of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.
Filed Jun. 16, 1995, Ser. No. 491,542
Int. Cl.⁶ H02M *1/12;1/14;3/24;5/42*
U.S. Cl. 363—98 **38 Claims**



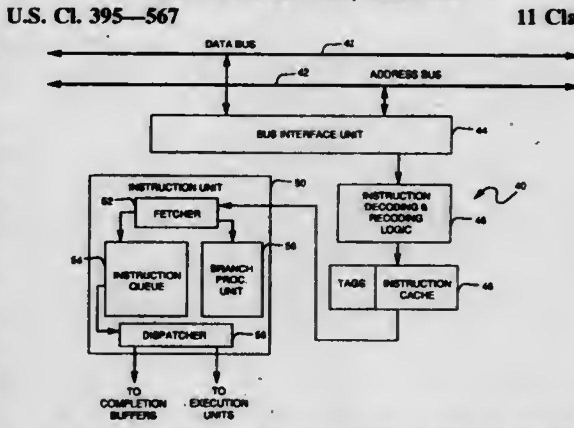
1. A modulator for a resonant DC link converter including switching devices to be switched between a finite number of switching states to connect a converter bus to outputs of the converter and a means for providing zero voltage or zero current switching conditions on the bus, comprising:
(a) a linear system having as inputs at least two reference waveform signals and two feedback waveform signals and having as outputs at least two linear system signals, each linear system signal being derived from a difference between one of the reference waveform signals and one of the feedback waveform signals;
(b) a vector quantizer having as inputs the linear system signals and providing a discrete switching state signal as an output wherein there are a finite number of different switching state signals corresponding to switching states of the converter and where the quantizer continuously maps the linear state signals to one of the switching state signals such that the switching state signal depends on a combination of all of the linear state signals;
(c) a latching means having as inputs the switching state signal and a clocking signal which indicates one of zero voltage or zero current switching conditions in the converter and providing as an output a control signal which is equal to the switching state signal at points in time defined by the clocking signal and wherein the control signal is usable for both controlling the switching devices of the converter such that the outputs of the converter are driven to match the reference waveforms and for deriving the feedback waveform signals.

5,619,407
AUTOTRANSFORMER
Peter W. Hammond, Greensburg, Pa., assignor to Robicon Corporation, New Kensington, Pa.
Filed Feb. 6, 1996, Ser. No. 597,169
Int. Cl.⁶ H02M *5/02*
U.S. Cl. 363—155 **12 Claims**



1. An autotransformer for converting three-phase AC power to nine-phase AC power, comprising:
a. three coils each having a plurality of serial windings and a plurality of stub windings;
b. said serial windings forming a delta;
c. said stub windings each being magnetically coupled with corresponding ones of said serial windings and each being electrically connected at a first end thereof with other respective ones of said serial windings;
d. three terminals connected to respective apices of said delta for connecting to a three-phase AC source;
e. a plurality of direct outputs each being directly tapped into one of said coils intermediate respective ones of said serial windings within said coil; and
f. a plurality of indirect outputs each being electrically connected with a second end of a respective one of said stub windings.

5,619,408
METHOD AND SYSTEM FOR RECODING NONEFFECTIVE INSTRUCTIONS WITHIN A DATA PROCESSING SYSTEM
Bryan Black; Marvin A. Denman; Lee E. Eisen; Robert T. Golla, all of Austin; Albert J. Loper, Jr., Cedar Park; Soummya Mallick, and Russell A. Reininger, both of Austin, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Feb. 10, 1995, Ser. No. 387,145
Int. Cl.⁶ G05B *15/00;* **G06F** *9/30*
U.S. Cl. 395—567 **11 Claims**



1. A method within a data processing system of processing instructions prior to execution by a processor including at least one execution unit, wherein instructions are stored within a memory within said data processing system, said method comprising:
retrieving a plurality of instructions from said memory;

decoding a selected instruction among said plurality of instructions to determine if execution of said selected instruction would alter data stored within one of a plurality of data registers within said processor;

in response to a determination that execution of said selected instruction would not alter data stored within one of said plurality of data registers within said processor, recoding said selected instruction into a first instruction format prior to dispatching said selected instruction to said at least one execution unit; and

thereafter, discarding said selected instruction in said first instruction format.

5,619,409

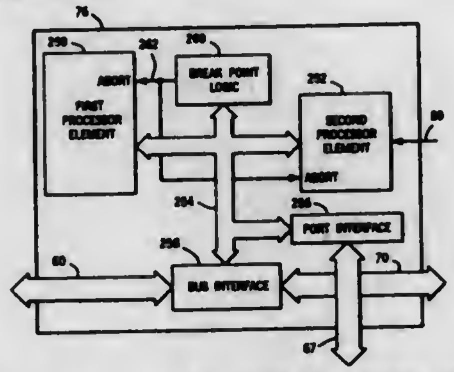
PROGRAM ANALYSIS CIRCUITRY FOR MULTI-TASKING INDUSTRIAL CONTROLLER

Ronald E. Schultz, Solon; Charles M. Rischar, Chardon; Richard S. Gunsaulus, Highland Heights, and Otomar Schmidt, Richmond Heights, all of Ohio, assignors to Allen-Bradley Company, Inc., Milwaukee, Wis.

Filed Jun. 12, 1995, Ser. No. 489,422

Int. Cl.⁶ G06F *19/00;9/46*

U.S. Cl. 364—146 **9 Claims**



1. An industrial controller operating controlled equipment according to a control program divided into at least two tasks, the controller comprising:

(a) an I/O module receiving electrical inputs and outputs connected to controlled equipment;

(b) a user terminal for entering data from the user providing a breakpoint value;

(d) an electronic memory;

(e) a bus communicating signals to and from the electronic memory for transferring data to and from memory locations of the electronic memory, the data of the memory including:

(i) instructions for the at least two tasks of the control program;

(ii) variables for the at least two tasks of the control program;

(iii) an operating system program controlling the execution of the tasks according to a task scheduling table;

(iv) instructions for a breakpoint recording program,

(d) means for monitoring the memory locations of the transfer of data to and from electronic memory to produce a breakpoint signal when the memory location matches at least one particular memory location indicated by the breakpoint value;

(e) an electronic processor communicating with the I/O module to receive the inputs and change the outputs, according to the inputs and the control program, and executing the operating system program to:

(i) execute a specific one of the at least two tasks according to the task scheduling table;

(ii) upon the occurrence of the breakpoint signal executing the breakpoint record routine to record an indication the specific one of the at least two tasks.

5,619,410

KEYWORD EXTRACTION APPARATUS FOR JAPANESE TEXTS

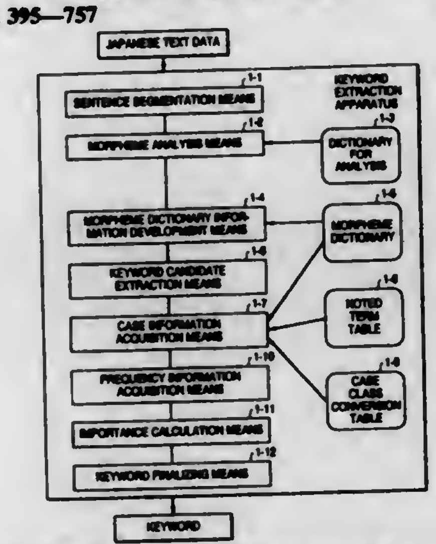
Kiyoshi Emori, and Noriko Ohtsuki, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Mar. 29, 1994, Ser. No. 219,530

Claims priority, application Japan, Mar. 29, 1993, 5-093655

Int. Cl.⁶ G06F *17/30;17/20*

U.S. Cl. 395—757 **3 Claims**



1. A keyword extraction apparatus for extracting keywords from Japanese text data, comprising:

sentence segmentation means for segmenting the Japanese text data into sentence-by-sentence data;

analytical information storage means for storing information regarding mutual continuation between morphemes;

morpheme analysis means for dividing the sentence-by-sentence data segmented by the sentence segmentation means into morphemes and for analyzing the morphemes;

morpheme information storage means for storing morpheme information on a morpheme-by-morpheme basis, the morpheme information including part of speech information, semantic classification information, sentence pattern information, and noted term information;

morpheme information development means for developing morpheme information with respect to each morpheme analyzed by the morpheme analysis means, on a basis of the morpheme information stored in the morpheme information storage means;

keyword candidate extraction means for extracting keyword candidates from the sentence-by-sentence data, on a basis of the morpheme information developed by the morpheme information development means;

noted term information storage means for storing information regarding case classes of keyword candidates, among all of the keyword candidates, that immediately precede noted terms;

case class conversion information storage means for storing relational information between case types and the case classes;

case information acquisition means for acquiring case classes of the keyword candidates on a basis of the information stored in the noted term information storage means, and for acquiring case types corresponding to the acquired case classes on a basis of the relational information stored in the case class conversion information storage means;

frequency information acquisition means for acquiring an appearance frequency of each keyword candidate by classifying each keyword candidate into the case types obtained from the case information acquisition means, and for acquiring a number of all morphemes in the Japanese text data, the number of all morphemes being indicative of a length of the Japanese text data;

importance calculating means for calculating a frequency score on a basis of the appearance frequency of each keyword candidate and the number of all morphemes in the Japanese text data, for calculating a class-by-class appearance frequency of each keyword candidate in the Japanese text data, and for calculating an overall importance of each keyword candidate on a basis of the corresponding frequency score and the class-by-class appearance frequency; and

keyword finalizing means for determining keywords from the keyword candidates, wherein the keywords have a corresponding overall importance obtained from the importance calculating means which exceeds a predetermined value.

5,619,411

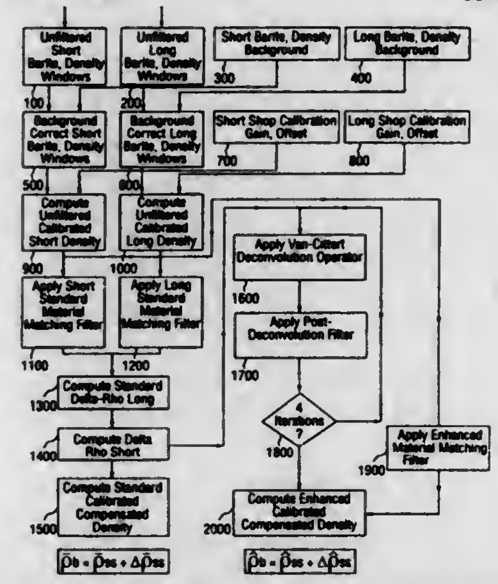
ENHANCED VERTICAL RESOLUTION PROCESSING OF DUAL-SPACED DENSITY TOOLS

Michael P. Smith, Houston, Tex., assignor to Halliburton Company, Houston, Tex.

Filed Dec. 2, 1994, Ser. No. 348,561

Int. Cl.⁶ G06F *19/00;* **G01V** *3/00*

U.S. Cl. 364—422 **33 Claims**



1. A method for determining the density of earth formations with enhanced vertical resolution comprising the steps of:

(a) moving a logging tool through a well borehole that penetrates at least one formation, wherein the logging tool includes a source of gamma rays and at least two detectors that measure the gamma rays scattered by the at least one formation and wherein said detectors are spaced from the source by different distances;

(b) measuring count rate responses from said detectors as a function of tool depth while moving the logging tool through said borehole and computing a density measurement from at least one of said detectors;

(c) depth aligning and filtering said count rate responses to produce at least two count rate inputs for a compensated formation density computation;

(d) computing a value of compensated formation density and formation density correction from at least two of said count rate inputs according to a predetermined relationship;

(e) computing a detector vertical response function according to a second predetermined relationship;

(f) deconvolving said formation density correction for one of said detectors from said compensated formation density measurement from step (d) by using said vertical response function and according to a third predetermined relationship to obtain a deconvolved formation density correction with enhanced vertical resolution; and

(g) combining said deconvolved formation density correction and one of said computed density measurements from (b) according to a fourth predetermined relationship to compute a compensated formation density with enhanced vertical resolution.

5,619,412

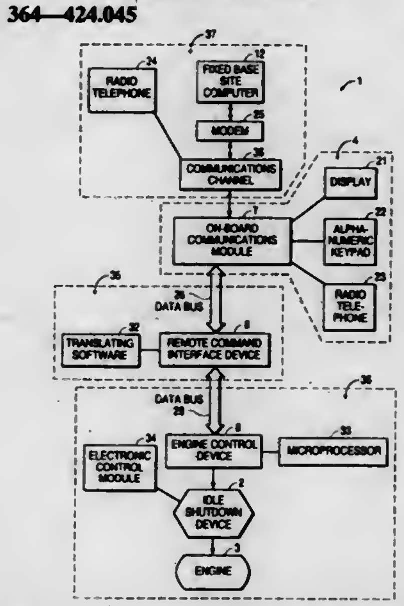
REMOTE CONTROL OF ENGINE IDLING TIME

Roger J. Hapka, Columbus, Ind., assignor to Cummins Engine Company, Inc., Columbus, Ind.

Filed Oct. 19, 1994, Ser. No. 325,908

Int. Cl.⁶ G06F *11/30*

U.S. Cl. 364—424.045 **25 Claims**



1. A vehicle control system for controlling engine operation in response to execution of a sequence of commands stored onboard the vehicle and modifiable from a central fixed base site which monitors one or more such vehicles at a distant location, comprising:

(a) an engine control means connected to an engine of the vehicle including storage means for controlling the operation of said engine by executing a sequence of commands stored aboard the vehicle in said storage means;

(b) remote vehicle operation control means located at the fixed base site for generating and transmitting from said fixed base site to the vehicle an instruction to modify one or more of the stored sequence of commands;

(c) an on-board communications module for receiving said instruction from the fixed base site and modifying the sequence of commands stored in said storage means; and

wherein engine operation occurring at any future time based on the execution of said stored sequence of commands may be remotely modified, in advance, by the generation and transmission of said instructions to modify said sequence of commands.

5,619,413
VEHICLE SUSPENSION COMPRISING AN ACTUATOR CONNECTED BETWEEN A VEHICLE BODY AND WHEEL IN WHICH CONTROL OF THE ACTUATOR IS DEPENDENT ON HYDRAULIC FLUID PRESSURE

Robin N. Oakley, Norfolk, United Kingdom, assignor to Lotus Cars Limited, United Kingdom

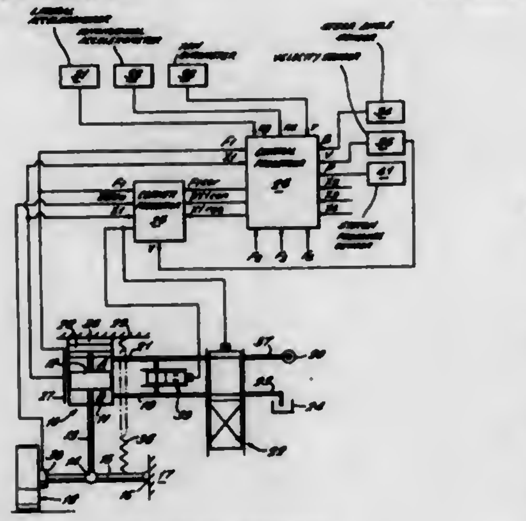
PCT No. PCT/GB93/01431, § 371 Date May 2, 1995, § 102(e) Date May 2, 1995, PCT Pub. No. WO94/01988, PCT Pub. Date Jan. 20, 1994

PCT Filed Jul. 8, 1993, Ser. No. 360,796

Claims priority, application United Kingdom, Jul. 8, 1992, 9214543

Int. Cl.⁶ B60G *17/015*

U.S. Cl. 364—424.046 **8 Claims**



1. A vehicle suspension system comprising:
an actuator connected between a body of the vehicle and a wheel and hub assembly of the vehicle,
a road spring connected between the body of the vehicle and the wheel and hub assembly in parallel with the actuator,
a source of pressurized fluid,
an exhaust for fluid,
valve means for controlling flow of fluid to the actuator from the source of pressurized fluid and from the actuator to the exhaust for fluid,
sensor means for generating signals indicative of sensed vehicle parameters, and
a control system for controlling the actuator comprising processor means which processes the signals generated by the sensor means and controls the valve means to control fluid flow to and from the actuator, the processor means outputting a control signal to the valve means and thereby controlling the actuator, wherein the processor means in normal operating conditions uses a first set of preprogrammed constants in algorithms used by the processor means to calculate the control signal outputted thereby,
the processor means uses a different set of preprogrammed constants in the algorithms at low pressures of the fluid supplied by the source of pressurized fluid, and
when the passive ride height of the vehicle supported by the road spring alone is different from the active ride height of the vehicle when the processor means is operative, the processor means at low fluid supply pressure ramps the ride height of the vehicle from the passive ride height at a rate determined by ramping means provided in the processor means.

5,619,414
THERMAL DISPLACEMENT CORRECTING METHOD OF MACHINE TOOL

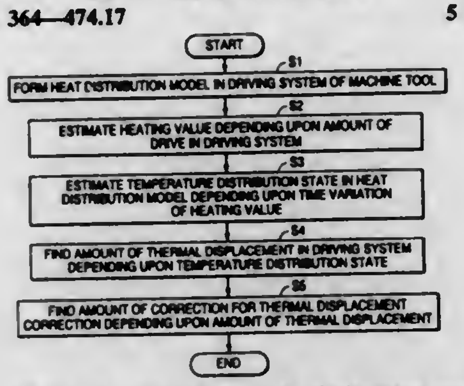
Hisao Ishii, Tokyo, Japan, assignor to Fanuc, Ltd., Yamanashi, Japan

Filed Apr. 20, 1995, Ser. No. 425,746

Claims priority, application Japan, Apr. 27, 1994, 6-110215

Int. Cl.⁶ G05B *19/048;19/404*

U.S. Cl. 364—474.17 **5 Claims**



1. A method of correcting thermal displacement error in a driving system of a machine tool, comprising the steps of:
forming a heat distribution model including said driving system;
estimating a heating value supplied to the heat distribution model depending upon an amount of drive in said driving system;
estimating a temperature distribution state in the distribution model by finding a time variation of heating value in the heat distribution model receiving supply of the estimated heating value;
finding an amount of thermal displacement in the driving system depending upon said temperature distribution state; and
finding a correction value for thermal displacement correction depending upon the amount of thermal displacement.

5,619,415
METHOD OF DRAWING A CUTTING AREA

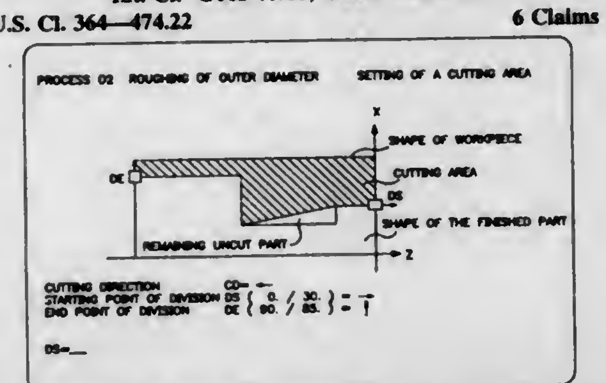
Masaki Seki, Tokyo; Satoru Shinozaki, Shimodate, and Hideaki Maeda, Oshino-mura, all of Japan, assignors to Fanuc Ltd., Minamitsuru-gun, Japan

Filed Nov. 17, 1994, Ser. No. 341,100

Claims priority, application Japan, Nov. 19, 1993, 5-312878

Int. Cl.⁶ G06F *19/00;* **G06G** *7/64;7/66*

U.S. Cl. 364—474.22 **6 Claims**



1. A method of drawing a cutting area of a workpiece to be machined, wherein an initial shape of the workpiece and a shape of a part of the workpiece to be cut, which when cut results in a finished part, are set and inputted in an interactive mode in one of an automatic programming apparatus and a numerical control apparatus; a kind of machining, data of a tool to be used in the machining, and a cutting condition are specified and inputted for each machining process in said apparatus; and a cutting area setting screen for each machining process is respectively displayed

on a display to enable setting of the cutting area for each machining process in an interactive mode, said method comprising the steps of:
drawing, on the cutting area setting screen for each machining process, the shape of the part of the workpiece to be cut to achieve the finished part, and the shape of the workpiece which has been defined in the machining process just before said each machining process, and
drawing, on the cutting area setting screen, the cutting area defined in said each machining process, after completing setting of the cutting area for said each machining process, wherein the shape of the part of the workpiece to be cut to achieve the finished part and the cutting area defined in said each machining process are simultaneously displayed to reveal a remaining uncut part of the workpiece which would still need to be cut after completion of said each machining process.

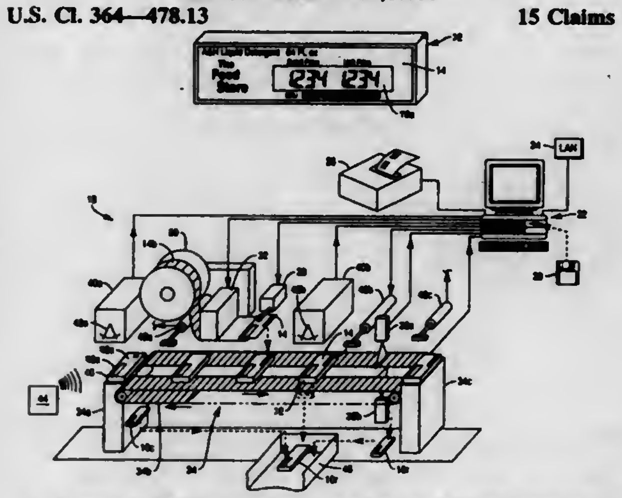
5,619,416
LABELING SYSTEM AND METHOD FOR AN ELECTRONIC PRICE LABEL

W. Tony Kosarew, Centerville, Ohio, assignor to NCR Corporation, Dayton, Ohio

Filed Sep. 14, 1995, Ser. No. 528,000

Int. Cl.⁶ G06F *17/60;19/00*

U.S. Cl. 364—478.13 **15 Claims**



1. A method for labeling tags, each having a visual electronic display and a serial number (SN) in the form of an identification (ID) bar code comprising:
providing a customer data file (CDF) including a first batch of records each having a plurality of printing fields including product description and corresponding record number (RN);
printing sequentially on respective labels said printing fields for corresponding records, with said RN being printed in the form of an RN bar code;
applying said printed labels to respective tags;
reading both said tag SN and label RN from said ID bar code and RN bar code on said tags; and
recording in said CDF for said records said tag SN corresponding with said RN.

5,619,417
BATTERY MONITORING SYSTEM FOR AN ELECTRIC VEHICLE

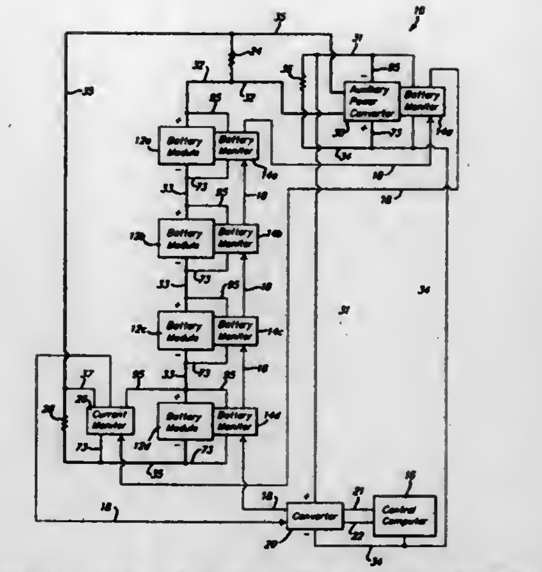
Jeffrey M. Kendall, Southfield, Mich., assignor to Chrysler Corporation, Auburn Hill, Mich.

Filed Nov. 23, 1994, Ser. No. 344,036

Int. Cl.⁶ G01R *19/00*

U.S. Cl. 364—483 **17 Claims**

3. A system for managing at least two interconnected batteries in an electric vehicle, comprising:



at least two sensors, each one of said sensors in electrically operable relation with and in close spatial relation to one of the batteries, for sensing the voltage across the battery;
at least two local processors, each one of said local processors in electrically operable relation to one of said sensors, for processing said sensed voltage into voltage data;
at least two transceivers, each one of said transceivers in electrically operable relation to one of said local processors, for converting said voltage data into optical data;
a central processor, in optically operable relation to said transceiver, for communicating command data to said local processor, for receiving said voltage data from said local processor, and for determining the status of the batteries based on said voltage data; and
an optical fiber, connecting in series each of one of said local processors and communicating with said central computer, for transporting said optical data between said local processors and said central computer.

5,619,418
LOGIC GATE SIZE OPTIMIZATION PROCESS FOR AN INTEGRATED CIRCUIT WHEREBY CIRCUIT SPEED IS IMPROVED WHILE CIRCUIT AREA IS OPTIMIZED

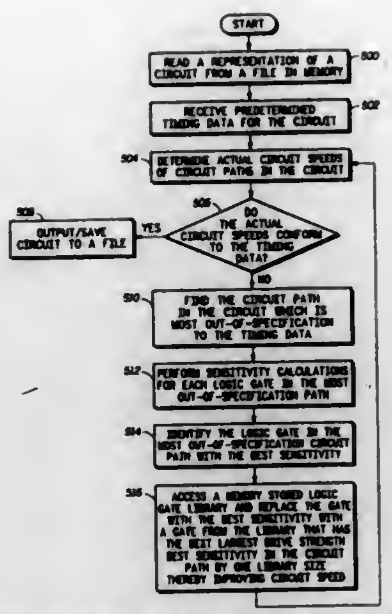
David T. Blaauw; Joseph W. Norton; Larry G. Jones, all of Austin, Tex.; Susanta Misra, Bangalore, Ind., and R. Iris Bahar, Boulder, Colo., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 16, 1995, Ser. No. 390,210

Int. Cl.⁶ G06F *17/50*

U.S. Cl. 364—489 **29 Claims**

1. A method for setting gate strengths within a circuit, the method comprising the steps of:
receiving a circuit description file describing the circuit in terms of at least one input, at least one output, and at least one circuit path between the at least one input and the at least one output, the at least one circuit path comprising a plurality of gates, the strength of each gate in the plurality of gates being set to an initial strength;
receiving predetermined timing data which indicates required circuit speeds of the at least one circuit path;
determining the circuit speed of one path within the at least one circuit path and performing step (*) when the circuit speed of the one path is not in accordance with the required circuit speeds of the at least one circuit path;
(*) determining for every gate affecting the one path, when the circuit speed of the one path is not in accordance with the required circuit speeds of the at least one circuit path, an amount of reduction in circuit path delay (ΔS) in response to an amount of increase in gate area (ΔA) via $\Delta S/\Delta A$ and



increasing the size of one gate which has a largest ΔS/ΔA ratio and affects the one path; and

repeating the steps of determining until the at least one circuit path is in accordance with the predetermined timing data.

5,619,419

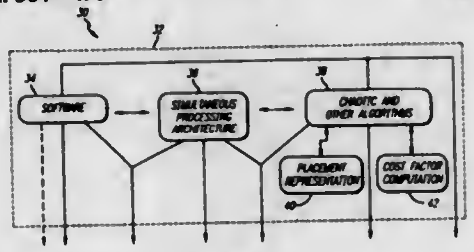
METHOD OF CELL PLACEMENT FOR AN ITEGRATED CIRCUIT CHIP COMPRISING INTEGRATED PLACEMENT AND CELL OVERLAP REMOVAL

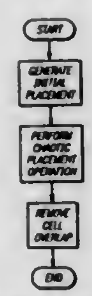
Patrik D'Haeseleer, Atherton, and Douglas B. Boyle, Palo Alto, both of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Filed Sep. 13, 1994, Ser. No. 306,182

Int. Cl.⁶ G06F *15/00*

U.S. Cl. 364—490 **42 Claims**





17. A computer implemented method of improving a placement of cells for an integrated circuit chip, comprising the steps of:

(a) selecting and moving a plurality of first cells in accordance with a first predetermined function to reduce a cost factor of said placement;

(b) selecting and moving a plurality of second cells in accordance with a second predetermined function to improve a spatial distribution of said placement;

(c) altering said first and second predetermined functions to decrease a scale factor for movement of said first cells and increase a scale factor for movement of second cells respectively; and

(d) repeating steps (a) to (c).

5,619,420

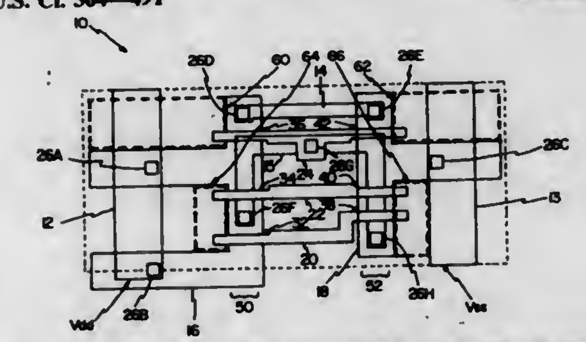
SEMICONDUCTOR CELL HAVING A VARIABLE TRANSISTOR WIDTH

Duane G. Breid, Lakeville, Minn., assignor to LSI Logic Corporation, Milpitas, Calif.

Filed May 4, 1995, Ser. No. 434,660

Int. Cl.⁶ G01B *101/80*

U.S. Cl. 364—491 **16 Claims**



1. A semiconductor cell library for defining a plurality of semiconductor cells during a layout process of an intergrated circuit, wherein the library comprises a semiconductor cell definition for each of the plurality of semiconductor cells and wherein at least one of the semiconductor cell definitions comprises:

a cell layout pattern of interconnected transistors;

a transistor width input variable which is independent of the transistor width input variables of the semiconductor cell definitions for the other semiconductor cells;

a cell loading input variable;

geometry data for the interconnected transistors, wherein the geometry data for at least one of the transistors is a function of the transistor width input variable; and

a cell propagation delay characteristic which is a function of the cell loading input variable and the transistor width input variable.

5,619,421

COMPUTER-IMPLEMENTED PROCESS AND COMPUTER SYSTEM FOR ESTIMATING THE THREE-DIMENSIONAL SHAPE OF A RING-SHAPED MOLECULE AND OF A PORTION OF A MOLECULE CONTAINING A RING-SHAPED STRUCTURE

Ganesh Venkataraman; Viswanathan Sasisekharan; Ram Sasisekharan; Ratnaleela Bobba, all of Somerville; Charles L. Cooney, Brookline, and Robert Langer, Newton, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jun. 17, 1994, Ser. No. 261,166

Int. Cl.⁶ G06F *17/00;17/16*

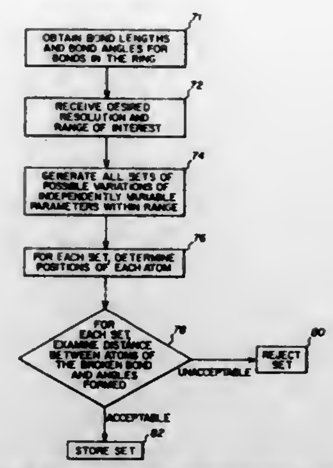
U.S. Cl. 364—496 **73 Claims**

1. In a computer-implemented process for estimating at least one shape of a molecule including a ring of atoms, from bond angles and bond lengths of the ring defined by the atom of the ring, a process comprising the steps, performed by a computer, of:

selecting a candidate combination of values for independently variable parameters of the ring of atoms;

selecting first and second adjacent atoms of the ring wherein the first and second atoms define a broken bond;

for the selected candidate combination, determining coordinates of the atoms of the ring in a sequence from the first atom to the second atom according to the bond angles, the selected candidate combination of values, and the bond lengths;



comparing a distance between the determined coordinates of the first and second atoms of the ring to an acceptable range of a bond length of the broken bond between the first and second atoms to determine whether the determined coordinates define a physically possible ring; and

recording an indication of the candidate combination as a candidate shape if the determined coordinates define a physically possible ring.

5,619,422

ROTOR TEMPERATURE CONTROL SYSTEM

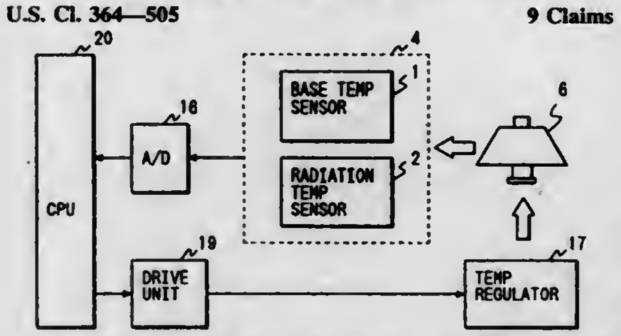
Takashi Nakazawa; Shinji Azuma, and Norihisa Sagawa, all of Katsuta, Japan, assignors to Hitachi Koki Company Limited, Tokyo, Japan

Filed Dec. 17, 1993, Ser. No. 168,311

Claims priority, application Japan, Dec. 18, 1992, 4-338650

Int. Cl.⁶ G06F *17/00*

U.S. Cl. 364—505 **9 Claims**



1. A rotor temperature control system for a centrifuge comprising:

ambient temperature determining means for determining ambient temperature around the system to provide a signal indicative thereof;

temperature regulating means for regulating temperature of a rotor of the centrifuge according to an operation factor variable within a range of preselected maximum to minimum values; and

controlling means, responsive to the signal from said ambient temperature determining means, for controlling the operation factor of said temperature regulating means in a preselected relation to the ambient temperature and a given target rotor temperature to modify the temperature of the rotor to the target rotor temperature,

wherein said temperature regulating means includes heat radiating/absorbing means surrounding the rotor and heat-exchanging means operable to transfer heat between ambient air and the heat radiating/absorbing means, said ambient temperature determining means monitoring temperature of the heat-exchanging means to determine the ambient temperature.

5,619,423

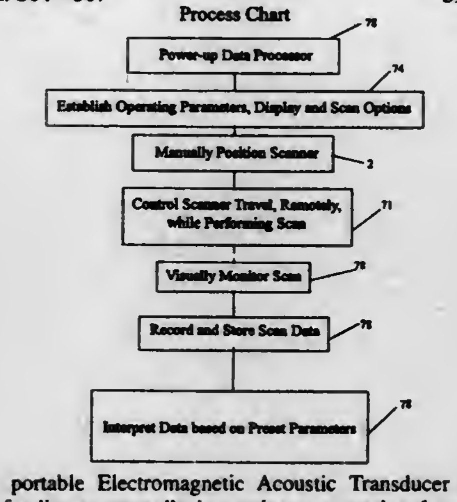
SYSTEM, METHOD AND APPARATUS FOR THE ULTRASONIC INSPECTION OF LIQUID FILLED TUBULARS AND VESSELS

Leonard Scrantz, P.O. Box 1145, Breaux Bridge, La. 70517

Filed Jan. 21, 1994, Ser. No. 183,747

Int. Cl.⁶ G01B *7/06*

U.S. Cl. 364—507 **39 Claims**



1. A portable Electromagnetic Acoustic Transducer (EMAT) system for linear externally inspecting non-rotating ferrous tubulars and tanks for flaws and thinning, comprising:

a) a power supply;

b) a computer chassis electrically connected to said power supply;

c) a CRT and keypad electrically connected to said computer;

d) a control chassis electrically connected to said computer chassis;

e) at least one couplantless, self-propelled Electromagnetic Acoustic Transducer (EMAT) probe, having integral juxtaposed, convoluted transmitter and receiving coils, umbilically connected to said control chassis; and

f) a software program, having predetermined parameters for comparison with data being received from said EMAT probe and thereby determining flaws and thinning while scanning a tubular or tank.

5,619,424

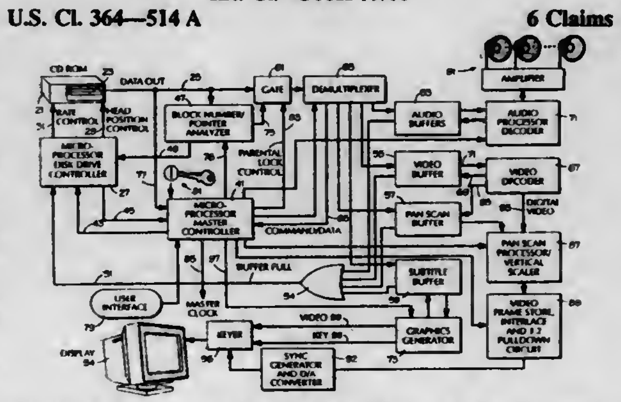
SOFTWARE CARRIER FOR STORING DIGITAL DATA REPRESENTATIVE OF PICTURE INFORMATION AND INCLUDING PAN SCAN DATA

Christopher J. Cookson; Lewis S. Ostrover, and Warren N. Lieberfarb, all of Los Angeles, Calif., assignors to Time-Warner Entertainment Co., L.P., Burbank, Calif.

Continuation of Ser. No. 146,440, Oct. 29, 1993, Pat. No. 5,463,565. This application Oct. 2, 1995, Ser. No. 512,293

Int. Cl.⁶ G06K *19/00*

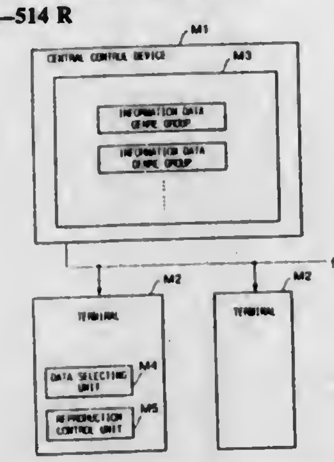
U.S. Cl. 364—514 A **6 Claims**



1. A software carrier for storing thereon digital data representative of frames of a motion picture, said digital data having a data

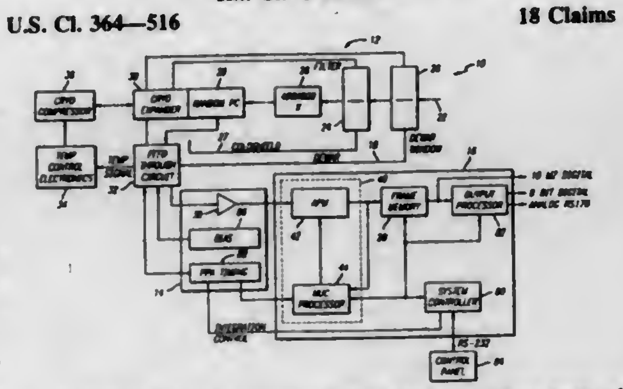
structure comprising a lead-in section followed by successive data blocks, said lead-in section containing data indicative of the aspect ratio of the picture frames represented by said data blocks, and said data blocks containing pan scan data together with picture frame data, each item of pan scan data being indicative of a portion of an overall frame, with different items of pan scan data being indicative of different portions of an overall frame.

5,619,425
DATA TRANSMISSION SYSTEM
Yasuhiro Funahashi; Kazunori Ikami, both of Nagoya, and Yukie Hasegawa, Kasugai, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, and Xing Inc., both of Nagoya, Japan
Filed Mar. 17, 1995, Ser. No. 405,825
Claims priority, application Japan, Mar. 22, 1994, 6-050506
Int. Cl.⁶ A63H *1/28*
U.S. Cl. 364—514 R **24 Claims**



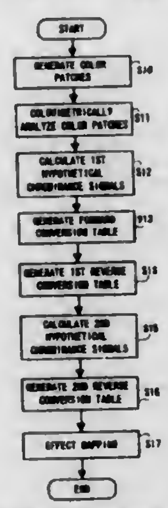
1. A data transmission system for transmitting data including image information, sound information, or both, the data transmission system comprising:
a central control device having data memory means for storing a plurality of information data categorized in a plurality of genres;
a plurality of terminals connected to the central control device by a transmission line, each of the plurality of terminals including data selecting means for selecting out of the plurality of information data stored in the data memory means, at least one information data desired to be reproduced at the terminal, each of the plurality of terminals being contracted for at least one of the plurality of genres each of the plurality of terminals including data storage means for temporarily storing the desired information data transmitted from the central control device; and
reproduction control means for controlling the desired information data to be transmitted from the central control device to the terminal to be stored in the data storage means and to be normally reproduced at the terminal when the desired image data is of the at least one genre the terminal is contracted for, and for preventing the desired information data from being normally reproduced at the terminal when the desired image data is out of the at least one genre the terminal is contracted for.

5,619,426
FLEXIBLE MODULAR SIGNAL PROCESSOR FOR INFRARED IMAGING AND TRACKING SYSTEMS
Vernon ¯ Hutchens, Hermosa Beach, and Spencer W. White, Los Angeles, both of Calif., assignors to Hughes Electronics, Los Angeles, Calif.
Filed Jun. 16, 1995, Ser. No. 491,035
Int. Cl.⁶ F41G *5/00*
U.S. Cl. 364—516 **18 Claims**



1. A modular signal processing system for a focal plane array of detectors comprising:
an analog signal processing module for adjusting signals from the focal plane array;
a nonuniformity correction module for providing signal adjustment parameters to the analog signal processing module for the outputs of one or more detectors in the focal plane array;
a system control module for providing system control signals to one or more of the modules in the system; and
means for communicating the system control signals to each of the modules, the means for communicating including a programmable register on each module for receiving and storing the control signals.

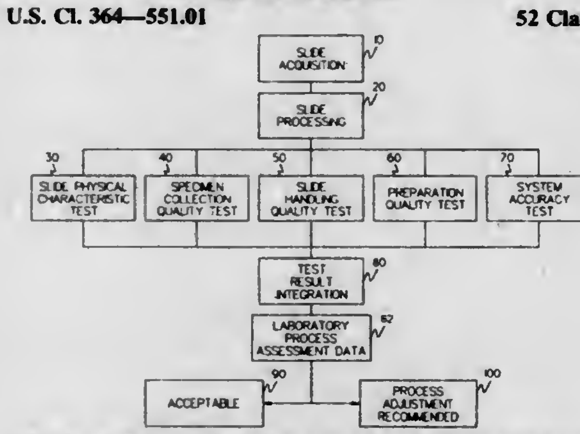
5,619,427
COLOR CONVERSION METHOD AND COLOR CONVERSION TABLE GENERATING APPARATUS
Akito Ohkubo, Kanagawa-ken, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Jun. 5, 1996, Ser. No. 655,235
Claims priority, application Japan, Jun. 22, 1995, 7-156555
Int. Cl.⁶ G01J *3/46;* **G03F** *3/08*
U.S. Cl. 364—526 **9 Claims**



7. A color conversion table generating apparatus for use in an image output apparatus for converting color signals from a first colorimetric system to a second colorimetric system and outputting a color image based on color signals of the second colorimetric system, comprising:

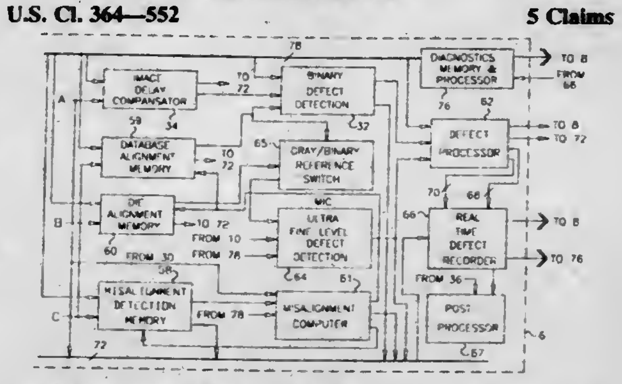
a colorimeter for colorimetrically analyzing color patches which are outputted from the image output apparatus based on the color signals of the second colorimetric system;
hypothetical signal generating means for generating, from the color signals and colorimetrically analyzed values of the color patches, hypothetical color signals and hypothetical colorimetrically analyzed values capable of maintaining a monotonous relationship between the color signals and the colorimetrically analyzed values;
forward conversion table generating means for determining a relationship between said color signals and said hypothetical color signals, and said colorimetrically analyzed values and said hypothetical colorimetrically analyzed values, as a forward conversion table; and
reverse conversion table generating means for generating a reverse conversion table corresponding to said forward conversion table according to a method of repetitive calculations.

5,619,428
METHOD AND APPARATUS FOR INTEGRATING AN AUTOMATED SYSTEM TO A LABORATORY
Shih-Jong J. Lee, Bellevue; Dayle G. Ellison; Chih-Chau L. Kuan, both of Redmond; Seho Oh, Mukilteo, and Paul S. Wilhelm, Kirkland, all of Wash., assignors to NeoPath, Inc., Redmond, Wash.
Filed May 31, 1995, Ser. No. 455,388
Int. Cl.⁶ G01B *9/04*
U.S. Cl. 364—551.01 **52 Claims**



42. An apparatus for integrating an automated biological screening system to a laboratory comprising:
(a) a means for automated biological screening providing a biological data output;
(b) a means for assessing laboratory processes connected to receive the biological data output and providing a laboratory process assessment output wherein the means for assessing laboratory process further comprises:
(i) a means for gathering image data representative of a population of slides from the laboratory and providing an image data output;
(ii) a means for determining processing quality data connected to receive the image data output and providing a plurality of processing quality data outputs; and
(iii) a data processing system connected to receive and integrate the plurality of processing quality data outputs with each other, wherein the data processing system provides a population suitability data output based on the plurality of processing quality data outputs, where the population suitability data output provides an indication of the suitability of the laboratory's slide population for processing by an automated biological screening system;
(c) a means for adjusting laboratory processes connected to receive the laboratory process assessment output wherein the means for adjusting laboratory process further includes means for providing a process adjustment recommendation;
(d) a means for setup, calibration and installation of the automated biological screening system connected to receive the laboratory process assessment output and providing a calibration parameter output; and
(e) a means for monitoring operation of the automated biological screening system connected to receive the biological data output and the calibration parameter output and providing a laboratory process monitoring output.

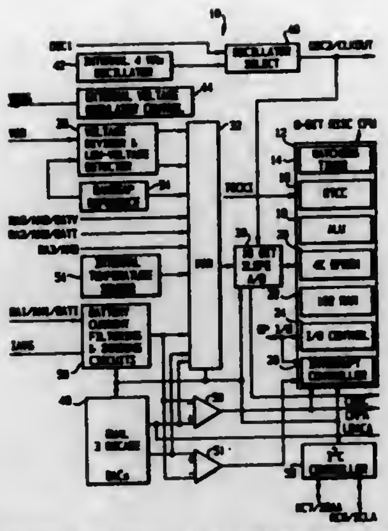
5,619,429
APPARATUS AND METHOD FOR INSPECTION OF A PATTERNED OBJECT BY COMPARISON THEREOF TO A REFERENCE
Meir Aloni, Herzliya; Amir Alon, Yahud; Yair Eran, Rehovot; Itzhak Katz, Givat Shmuel; Yigal Katzir, Holon, and Gideon Rosenfeld, Tel Aviv, all of Israel, assignors to Orbot Instruments Ltd., Yavne, Israel
Filed Nov. 27, 1991, Ser. No. 801,761
Claims priority, application Israel, Dec. 4, 1990, 96541
Int. Cl.⁶ G06K *9/68*
U.S. Cl. 364—552 **5 Claims**



1. An inspection method comprising:
providing a patterned object to be inspected and compared with a reference;
initially inspecting the patterned object and providing an output of information relating to visually sensible characteristics of the patterned object;
comparing the information relating to visually sensible characteristics of the patterned object to information relating corresponding visually sensible characteristics of the reference, thereby to provide an output indication of differences between the patterned object and the reference, representing possible defects, and simultaneously storing information regarding visually sensible characteristics of areas of the patterned object at which possible defects are indicated; and
automatically carrying out a further inspection of visually sensible characteristics of said areas of the patterned object using said stored information,
and wherein said automatically carrying out comprises comparing the visually sensible characteristics of at least some of said areas to a reference.

5,619,430
MICROCONTROLLER WITH ON-CHIP LINEAR TEMPERATURE SENSOR
James B. Nolan; Russell E. Cooper, both of Chandler, and Brian Dellacroce, Sedona, all of Ariz., assignors to Microchip Technology Inc., Chandler, Ariz.
Filed Oct. 10, 1995, Ser. No. 541,666
Int. Cl.⁶ G06F *9/22*
U.S. Cl. 364—557 **10 Claims**

1. A microcontroller device for use in battery charging and battery monitoring applications, the device having a microcontroller fabricated on a semiconductor chip to execute programs and instructions and to generate control signals as a result of execution by the microcontroller of programs and instructions for selectively controlling a battery charging and battery monitoring system when



said chip is housed in a battery pack with the battery to be charged and monitored, the microcontroller including microprocessor means for executing instructions, program memory means for storing programs to be executed by the microcontroller and data memory means for storing data, the device further including:

on-chip, temperature sensor means fabricated on the same chip with said microcontroller for monitoring the temperature of the chip, said on-chip, temperature sensor means including:

voltage means for generating a first voltage having a level linearly proportional to absolute temperature of the chip; and

means for sampling said first voltage and for developing a digital count representative of the level of said first voltage as a measure of the absolute temperature of the chip and of the battery with which the chip is housed and indicative of the then-current energy capacity of the battery.

5,619,431

POSITION DETECTING DEVICE AND CORRESPONDING METHOD WITH COMPENSATION FOR THE EFFECTS OF OFFSET VOLTAGE AND/OR GAIN VARIATION

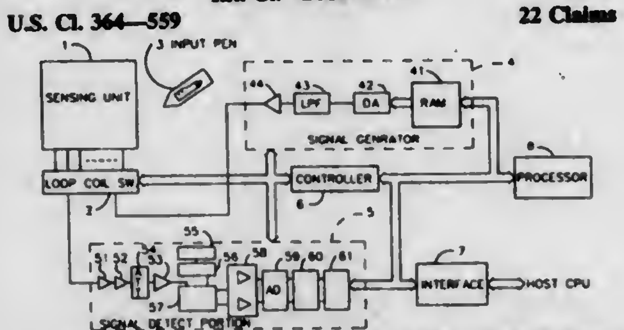
Yasuo Oda, Otone-machi, Japan, assignor to Wacom Co., Ltd., Japan

Filed Mar. 6, 1995, Ser. No. 398,782

Claims priority, application Japan, Mar. 18, 1994, 6-073944

Int. Cl.[6] G01B *7/004*

U.S. Cl. 364—559 **22 Claims**



1. A position detecting device for calculating coordinate values of a specified position of a position indicator based upon electromagnetic effects between a sensing unit comprising a large number of loop coils disposed in parallel with respect to one another in the direction of position detection and the position indicator having at least one coil, wherein said position detecting device comprises:

signal processing means for processing a receiving signal from said sensing unit; and

coordinate calculating means for calculating the coordinates of said position indicator;

said signal processing means including:

a phase detect signal generator for generating a plurality of phase detect signals including first phase detect signals orthogonally related to each other, and second phase detect signals, each phase of which is respectively in an inverted phase relationship with each of said first signals;

(ii) a switch for selecting one of said plurality of phase detect signals;

(iii) an analog signal detect portion for performing multiplications and integrations of said plurality of phase detect signals with said receiving signal, and outputting a plurality of values of real or imaginary parts which correspond to one frequency component of said receiving signal;

(iv) an analog to digital converter for converting said values of real or imaginary parts into digital signals; and

(v) a first arithmetic processor for performing predetermined add and/or subtract operations to said plurality of values of real or imaginary parts in order to eliminate offsets and/or gain variations included in said values;

said coordinate calculating means including:

a second arithmetic processor for calculating amplitudes and/or phase angles of any one of said frequency components within said receiving signal using the result of the first arithmetic processor; and

wherein said plurality of phase detect signals in said signal processing means include first and second phase detect signals which are different by 90° from each other and third and fourth phase detect signals which are different by 180°, respectively, from the first and second signals;

said analog signal detect portion comprising first and second analog phase detectors, each of which contains a multiplier and an integrator;

said plurality of values of real and imaginary parts respectively comprising:

values of the real part which are outputs from the first and second detectors detecting the first and third signals; and

values of the imaginary part derived from the first and second detectors processing the second and fourth signals; and

said predetermined add and or subtract operations processed within the first arithmetic processor including:

a) adding the difference of the values of the real part of first and third signal outputs by the first detector and the difference of the values of the real parts of the first and third signal outputs by the second detector, adding the difference of the values of the real part of first signal output by the first and second detectors and the difference of the values of the real part of third signal outputs by the first and second detectors, then adding the results of the former two additions;

b) adding the difference of the values of the imaginary part of the second and fourth signal outputs by the first detector and the difference of said values of the imaginary part of the second and fourth signal outputs by the second detector; and

c) adding the difference of the value of the imaginary part of second signal output by the first and second detectors and the difference of the values of the imaginary part of fourth signal outputs by the first and second detectors, then calculating the difference of the result of the former two additions.

5,619,432

DISCRIMINATE REDUCTION DATA PROCESSOR

Larry S. Chandler, Falls Church, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

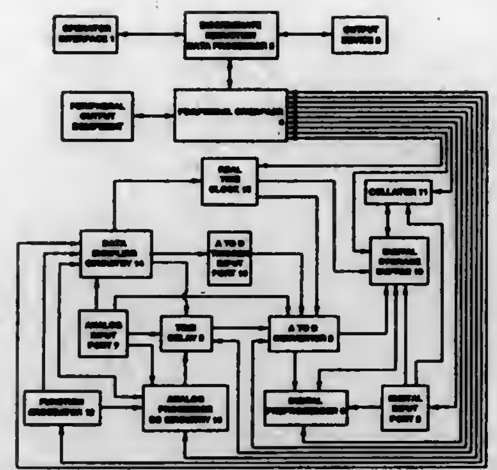
Filed Apr. 5, 1995, Ser. No. 417,340

Int. Cl.[6] G06E *1/00*

U.S. Cl. 364—573 **24 Claims**

1. A data processing system, comprising:

a memory; and



means for accessing and processing information whereby a data representation of variation in characteristic measurement is generated;

said data representation being stored in said memory;

said data representation being generated by the method comprising:

accessing at least some said information which characterizes said variation;

effectuating at least one form of discriminate reduction data processing, said effectuating including establishing correspondence between at least some said information and at least one approximating parameter which will substantially minimize a parametric expression; and

evaluating said at least one approximating parameter which substantially minimizes said parametric expression in correspondence with said information.

5,619,433

REAL-TIME ANALYSIS OF POWER PLANT THERMOHYDRAULIC PHENOMENA

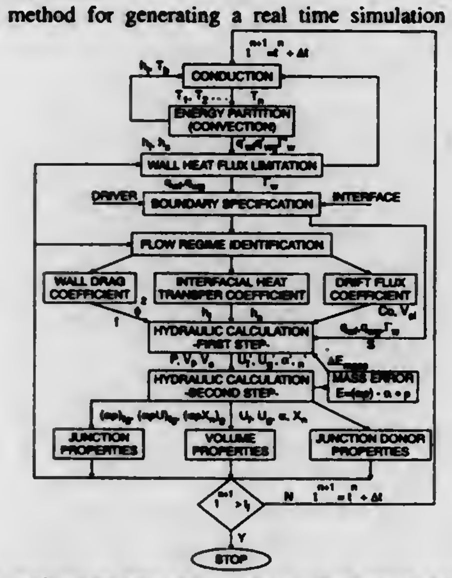
Guan-Hwa Wang, Potomac; Zen-Yow Wang, Elliott City, and Horngshyang Lein, Columbia, all of Md., assignors to General Physics International Engineering Simulation Inc., Columbia, Md.

Continuation-in-part of Ser. No. 846,753, Mar. 4, 1992, abandoned, which is a continuation-in-part of Ser. No. 761,000, Sep. 17, 1991, abandoned. This application Oct. 9, 1992, Ser. No. 959,937

Int. Cl.[6] G06F *17/50*

U.S. Cl. 364—578 **33 Claims**

1. A method for generating a real time simulation and best



estimate engineering analysis of power plant thermohydraulic phenomena comprising:

providing a single computer having a memory and an operating system for executing software;

selecting a two-phase thermal hydraulic methodology for a power plant thermohydraulic system;

selecting a real time computational methodology having a constant time step;

synthesizing the selected two phase thermal hydraulic and real time computational methodologies, and producing thereby a real time simulation and best estimate engineering analysis for said power plant thermohydraulic system operable to cover a full range power plant simulation and analysis within a high fidelity tolerance; and

storing the sythesized real time simulation and best estimate engineering analysis as a software program in said computer memory, providing a set of thennohydraulic parameters for said power plant thermohydraulic system, and using said software program to train power plant operators to learn how to respond to unexpected events arising from power plant thermohydraulic system malfunctions, and accidents in response to said provided set of thermohydraulic parameters.

5,619,434

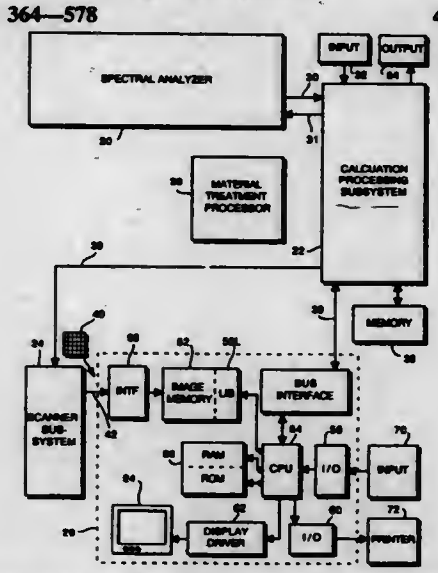
METHOD AND APPARATUS FOR SIMULATING COLORED MATERIAL

Michael P. Keating, Greensboro, N.C., assignor to Cone Mills Corporation, Greensboro, N.C.

Continuation of Ser. No. 227,642, Apr. 14, 1994, Pat. No. 5,493,518. This application Nov. 16, 1995, Ser. No. 558,650

Int. Cl.[6] G01J *3/46*

U.S. Cl. 364—578 **45 Claims**



1. A method for simulating a colored target material, the method comprising:

selecting a point in color space, the selected point having at least one coordinate value;

storing in a memory character reference values for a character reference pattern having at least one desired character property of the target material;

using the coordinate value of the selected point to modify the reference values stored in the memory;

using the reference values stored in the memory to provide a visual output representative of the target material.

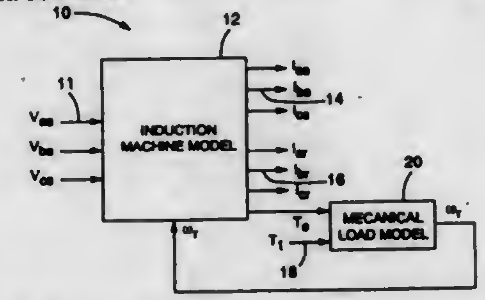
5,619,435
METHOD AND APPARATUS FOR SIMULATING THE BEHAVIOR AND OPERATION OF A THREE-PHASE INDUCTION MACHINE

Rajiva Prakash, Westland; Marc R. Davis, Dearborn, and Christos A. Kambouris, Northville, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 43,675, Apr. 7, 1993, abandoned. This application Nov. 13, 1995, Ser. No. 558,950

Int. Cl.⁶ H02P *5/40*

U.S. Cl. 364—578 **9 Claims**



1. For use in cooperation with a load simulator operative to generate an analog machine speed signal in response to a received simulated torque, an apparatus for simulating off-line and in real-time the behavior and operation of a 3-phase induction machine in accordance with input analog stator phase voltages and user-selected inductance machine parameters, the apparatus comprising:

a computer bus;

specification means in electrical contact with said computer bus for specifying said user selected inductance machine parameters to generate a first plurality of digital input signals corresponding thereto;

first converter means in electrical contact with said computer bus and said load simulator for converting said analog machine speed signal and said input analog stator phase voltages to digital signals to generate a second plurality of digital input signals corresponding thereto;

first storage means in electrical contact with said computer bus for storing a simulator program adapted to recursively solve a selected set of mathematical equations corresponding to the behavior of said 3-phase induction machine;

processing means in electrical contact with said computer bus for executing said program using said first and second plurality of digital input signals to generate a plurality of digital output signals simulating stator currents drawn by said 3-phase induction machine and simulating a torque of said induction machine; and

second converter means in electrical contact with said computer bus for converting said plurality of digital output signals simulating said stator currents and said torque to generate analog output signals corresponding to said simulated stator currents and said simulated torque, said analog output signals simulating said torque being applied to said load simulator to generate said analog machine speed signal.

5,619,436
Patent Not Issued For This Number

5,619,437
PARALLEL DATA COUNTER CIRCUIT

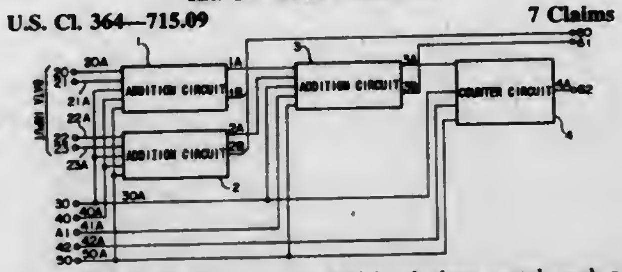
Hiroshi Nagai, Tokyo, Japan, assignor to Ando Electric Co., Ltd., Tokyo, Japan

Filed Sep. 27, 1995, Ser. No. 534,714

Claims priority, application Japan, Sep. 30, 1994, 6-261734

Int. Cl.⁶ G06F *7/00;15/00*

U.S. Cl. 364—715.09 **7 Claims**



1. A parallel data counter circuit which calculates a total number of 1's or 0's in a set of parallel data, comprising:

k addition means, where k is an integer greater than 2, including 1st through k-th addition means, the 1st addition means add said parallel data two pieces at a time and output carry signals corresponding to the additions, n-th addition means of said k addition means, where n represents every integer between 1 and k, add the carry signals output from (n−1)th addition means two at a time and output carry signals corresponding to the additions, the k-th addition means add the carry signals output from (k−1)th addition means two at a time and output carry signals corresponding to the additions; and

counter means for calculating the carry signals output from the k-th addition means, and for outputting calculation result as a calculation of the total number of 1's or 0's in the set of parallel data.

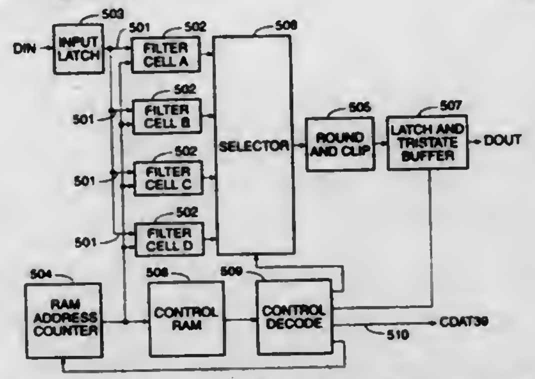
5,619,438
FILTER CIRCUIT FOR USE WITH REAL-TIME IMAGE CONVERTER

Shai W. Farley, Arcadia, and William McCown, So. Pasadena, both of Calif., assignors to Leon Lyon, Newport Beach, Calif.

Division of Ser. No. 882,650, May 13, 1992, abandoned, which is a continuation of Ser. No. 515,002, Apr. 26, 1990, Pat. No. 5,117,289. This application Aug. 5, 1993, Ser. No. 103,472

Int. Cl.⁶ G06F *17/10*

U.S. Cl. 364—724.1 **7 Claims**



1. A filter circuit for interpolating a data value, comprising

a set of filter cells, each having a memory;

a selector coupled to one of said set of filter cells;

a control circuit coupled to each one of said set of filter cells and to said selector, wherein said control circuit comprises means for supplying a memory address, a control memory coupled to said means for supplying, and a decoder coupled to said means for supplying and coupled to said control memory;

wherein said means for supplying is coupled to said first input of at least one said filter cell.

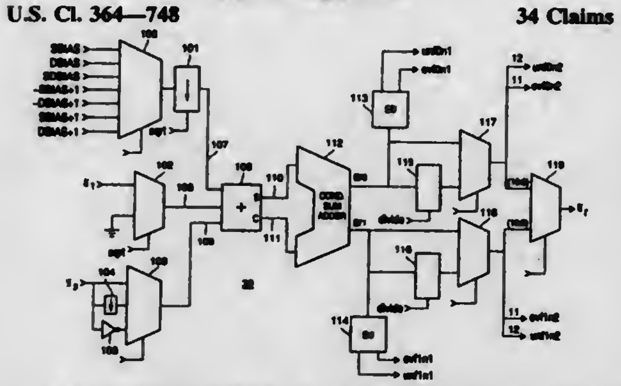
5,619,439
SHARED HARDWARE FOR MULTIPLY, DIVIDE, AND SQUARE ROOT EXPONENT CALCULATION

Robert K. Yu, Newark, and Grzegorz B. Zyner, San Jose, both of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Jul. 5, 1995, Ser. No. 498,420

Int. Cl.⁶ G06F *7/38*

U.S. Cl. 364—748 **34 Claims**



1. An exponent calculation circuit that computes a resultant exponent for either multiplication or a second floating point function, the exponent calculation circuit comprising:

a bias selection circuit that supplies a bias that is either a multiplication bias or a second floating point function bias;

a second operand exponent selection circuit that supplies a selected second operand exponent that is either a multiplication second operand exponent or a second floating point function second operand exponent;

an exponent computation circuit that takes the selected bias, the selected second operand exponent output, and a first operand exponent as inputs and computes an operation result;

a register that stores the operation result for a second floating point function and produces a stored operation result; and

an output selection circuit that selects between the stored operation result and the operation result.

5,619,440
MULTIPLIER CIRCUIT WITH ROUNDING-OFF FUNCTION

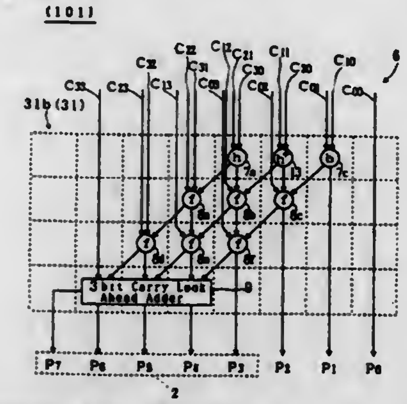
Michio Komoda, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 212,926, Mar. 15, 1994, Pat. No. 5,444,647. This application May 3, 1995, Ser. No. 433,013

Claims priority, application Japan, Mar. 22, 1993, 5-061832

Int. Cl.⁶ G06F *7/52*

U.S. Cl. 364—754 **12 Claims**



1. A multiplier circuit, comprising:

(a) a partial product generating part for generating a plurality of partial products from a plurality of multiplicand elements and a plurality of multiplier elements, said multiplicand elements each being at least one digit which forms a multiplicand A $(=A_{(M-1)} \ldots A_1 A_0)$ which is expressed in M digits in a D-ary, said multiplier elements each being at least one digit which forms a multiplier B $(=B_{(N-1)} \ldots B_1 B_0)$ which is expressed in N digits in the D-ary; and

(b) an addition processing part for adding up said partial products while aligning said partial products digit to digit to each other.

wherein said addition processing part comprises (b−1) a rounding half adder which includes a first and a second input terminals for each receiving a 1-digit value and a first and a second output terminals, a value which is available at said first output terminal of said rounding half adder being a relatively higher digit of a sum of values which are given to said first and said second input terminals and an auxiliary number, a value which is available at said second output terminal of said rounding half adder being a relatively lower digit of the sum of the values which are given to said first and said second input terminals and said auxiliary number, said rounding half adder being located at a position which corresponds to the K-th most significant digit of a product E of said multiplicand A and said multiplier B.

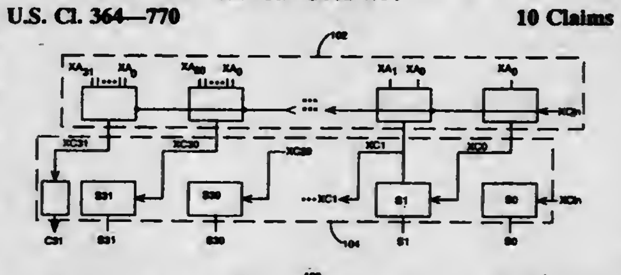
5,619,441
HIGH SPEED DYNAMIC BINARY INCREMENTER

Steven C. Bartling, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 14, 1994, Ser. No. 323,234

Int. Cl.⁶ G06F *7/50*

U.S. Cl. 364—770 **10 Claims**



1. A dynamic binary incrementer which performs an incrementation in two stages including a plurality of carry inputs and comprising:

a first stage, for providing a logical inverse of a carry expression, the first stage including a plurality of carry cells, each of the carry cells for receiving an input signal and providing a carry signal, an input signal of a particular carry cell being the logical OR of the complement of each input signal to the binary incrementer starting with a current bit to the least significant bit (LSB), inclusive; and the logical OR of the complement of C_{in}, where C_{in} is the carry in to the binary incrementer; the input signal of the particular carry cell implemented such that there are no direct current paths between the currency inputs of the binary incrementer an he input of the particular carry cell; the plurality of carry cells being coupled in parallel; and

a second stage, the second stage including a plurality of sum (S) cells, each of the sum cells for receiving the carry signal and an associated input signal value from a corresponding one of the plurality of carry cells and providing a sum output.

5,619,442
ALTERNATING POLARITY CARRY LOOK AHEAD ADDER CIRCUIT

Ion E. Opris, Stanford, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Apr. 7, 1995, Ser. No. 418,829

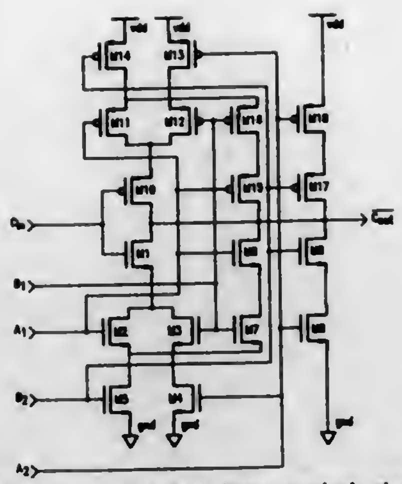
Int. Cl.⁶ G06F *7/50*

U.S. Cl. 364—787 **4 Claims**

1. An apparatus that performs carry look ahead computations in a binary adder, the apparatus comprising:

a carry input terminal that receives a carry input signal having a first logical polarity;

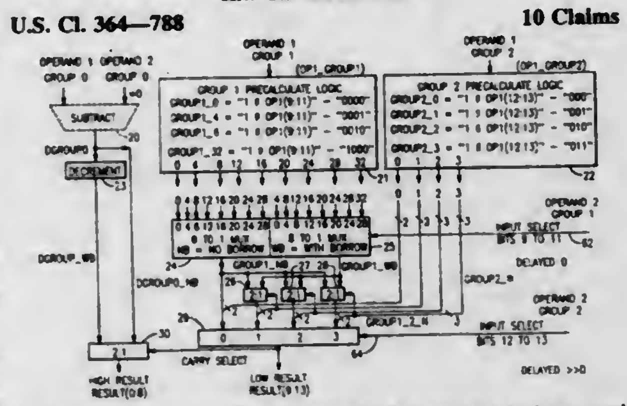
a first plurality of addend input terminals that receive a first plurality of addend bits having the first logical polarity;



a second plurality of addend input terminals that receive a second plurality of addend bits having the first logical polarity;
an output terminal that supplies a carry output signal having a second logical polarity; and
a logic gate taking the carry input signal and the first and second pluralities of addend bits as inputs and directly computing the carry output signal, such that the carry output signal is asserted when an arithmetic addition of the first and second pluralities of addend bits and the carry input signal produces a resulting sum requiring one more bit in order to represent the resulting sum than is present in either the first or second pluralities of addend bits;
wherein the first plurality of addend input terminals includes a first low order input terminal and a first high order input terminal;
wherein the first plurality of addend bits includes a first low order input signal and a first high order input signal;
wherein the second plurality of addend input terminals includes a second low order input terminal and a second high order input terminal;
wherein the second plurality of addend bits includes a second low order input signal and a second high order input signal; and
wherein the logic gate comprises:
a first n-channel transistor having a first source, a first drain, and a first gate;
a second n-channel transistor having a second source, a second drain, and a second gate;
a third n-channel transistor having a third source, a third drain, and a third gate;
a fourth n-channel transistor having a fourth source, a fourth drain, and a fourth gate;
a fifth n-channel transistor having a fifth source, a fifth drain, and a fifth gate;
a sixth n-channel transistor having a sixth source, a sixth drain, and a sixth gate;
a seventh n-channel transistor having a seventh source, a seventh drain, and a seventh gate;
an eighth n-channel transistor having an eighth source, an eighth drain, and an eighth gate; and
a ninth n-channel transistor having a ninth source, a ninth drain, and a ninth gate;
wherein the first source is connected to the second drain, the first drain is connected to the output terminal, and the first gate is connected to the carry input terminal;
wherein the second source is connected to the fifth drain, the second drain is connected to the first source, and the second gate is connected to the first low order input terminal;
wherein the third source is connected to the fourth drain, the third drain is connected to the first source, and the third gate is connected to the second low order input terminal;
wherein the fourth source is connected to a low supply voltage, the fourth drain is connected to the third source, and the fourth gate is connected to the first high order input terminal;
wherein the fifth source is connected to the low supply voltage, the fifth drain is connected to the second source, and the fifth gate is connected to the second high order input terminal;
wherein the sixth source is connected to the seventh drain, the sixth drain is connected to the output terminal, and the sixth gate is connected to the first low order input terminal;
wherein the seventh source is connected to the fifth drain, the seventh drain is connected to the sixth source, and the seventh gate is connected to the second low order input terminal;
wherein the eighth source is connected to the ninth drain, the eighth drain is connected to the output terminal, and the eighth gate is connected to the second high order input terminal; and
wherein the ninth source is connected to the low supply voltage, the ninth drain is connected to the eighth source, and the ninth gate is connected to the first high order input terminal.

5,619,443
CARRY SELECT AND INPUT SELECT ADDER FOR LATE ARRIVING DATA

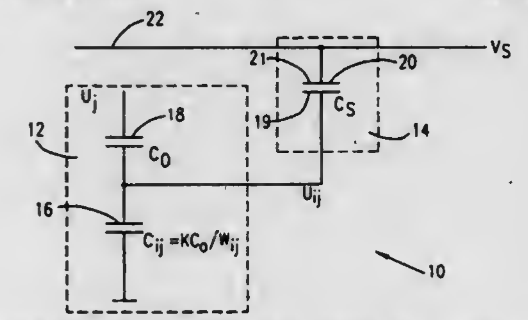
Eric M. Schwarz, Gardiner, and Robert M. Bunce, Hopewell Junction, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Mar. 31, 1995, Ser. No. 414,062
The portion of the term of this patent subsequent to Jun. 7, 2015, has been disclaimed.
Int. Cl.⁶ G06F *7/50*
U.S. Cl. 364—788 **10 Claims**



1. An adder for providing a sum of a first operand and a second operand, said first operand including a plurality of first input groups of bits, each of said first input groups arriving at the adder at a respective arrival time, said adder comprising:
precalculation circuitry that receives said second operand, said second operand partitioned into a plurality of second operand groups of bits according to said first input groups, and that generates for each one of said second operand groups a possible group output signal for each possible value of a corresponding first input group and each value of a carry-in/borrow signal from a next lower significant group for each said possible value;
selection circuitry that, in response to receiving said first input bit groups, selectively combines signals corresponding to said possible group output signals for each group to provide said sum.

5,619,444
APPARATUS FOR PERFORMING ANALOG MULTIPLICATION AND ADDITION

Aharon Agranat, Mevasseret Zion, and Joseph Shafir, Jerusalem, both of Israel, assignors to Yissum Research Development Company of the Hebrew University of Jerusalem, Jerusalem, Israel
Filed Jun. 20, 1994, Ser. No. 263,648
Claims priority, application Israel, Jun. 20, 1993, 106067
Int. Cl.⁶ G06G *7/16*
U.S. Cl. 364—841 **16 Claims**

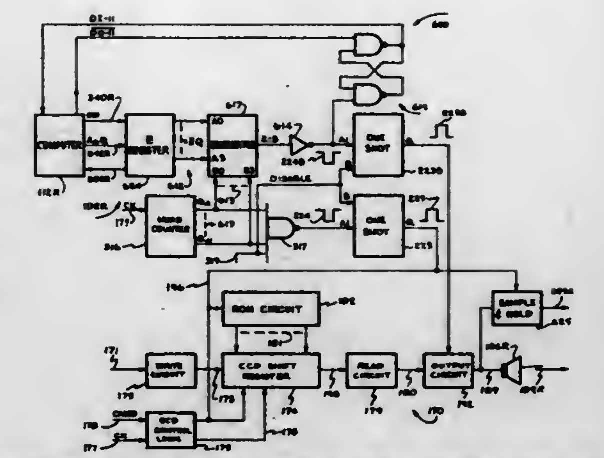


1. Apparatus for performing analog multiplication of a first value by a second value comprising:
a variable capacitor whose capacitance represents said first value;
a second value voltage receiver, serially connected to said variable capacitor, wherein said second value voltage represents said second value;
wherein a voltage level of said variable capacitor resulting from the provision of said second value voltage to said second value voltage receiver represents the multiplication of said first and second values.

5,619,445
ANALOG MEMORY SYSTEM HAVING A FREQUENCY DOMAIN TRANSFORM PROCESSOR

Gilbert P. Hyatt, P.O. Box 81230, Las Vegas, Nev. 89180
Continuation of Ser. No. 493,061, Mar. 13, 1990, , which is a continuation of Ser. No. 520,277, Aug. 4, 1983, Pat. No. 4,910,706, which is a division of Ser. No. 160,871, Jun. 19, 1980, Pat. No. 4,445,189, which is a continuation-in-part of Ser. No. 101,881, Dec. 28, 1970, abandoned, Ser. No. 134,958, Apr. 19, 1971, abandoned, Ser. No. 135,040, Apr. 19, 1971, abandoned, Ser. No. 229,213, Apr. 13, 1972, Pat. No. 3,820,894, Ser. No. 230,872, Mar. 1, 1972, Pat. No. 4,531,182, Ser. No. 232,459, Mar. 7, 1972, Pat. No. 4,370,720, Ser. No. 246,867, Apr. 24, 1972, Pat. No. 4,310,878, Ser. No. 288,247, Sep. 11, 1972, Pat. No. 4,121,284, Ser. No. 291,394, Sep. 22, 1972, Pat. No. 4,396,976, Ser. No. 302,771, Nov. 1, 1972, Ser. No. 325,933, Jan. 22, 1973, Pat. No. 4,016,540, Ser. No. 325,941, Jan. 22, 1973, Pat. No. 4,060,848, Ser. No. 366,714, Jun. 4, 1973, Pat. No. 3,986,922, Ser. No. 339,817, Mar. 9, 1973, Pat. No. 4,034,276, Ser. No. 402,520, Oct. 1, 1973, Pat. No. 4,825,364, Ser. No. 490,816, Jul. 22, 1974, Pat. No. 4,029,853, Ser. No. 476,743, Jun. 5, 1974, Pat. No. 4,364,110, Ser. No. 522,559, Nov. 11, 1974, Pat. No. 4,209,852, Ser. No. 550,231, Feb. 14, 1975, Pat. No. 4,209,843, Ser. No. 727,330, Sep. 27, 1976, abandoned, Ser. No. 730,756, Oct. 7, 1976, abandoned, Ser. No. 754,660, Dec. 27, 1976, Pat. No. 4,486,850, Ser. No. 752,240, Dec. 20, 1976, abandoned, Ser. No. 801,879, May 13, 1977, Pat. No. 4,144,582, Ser. No. 812,285, Jul. 1, 1977, Pat. No. 4,371,953, Ser. No. 844,765, Oct. 25, 1977, Pat. No. 4,523,290, Ser. No. 849,812, Nov. 9, 1977, Ser. No. 860,278, Dec. 13, 1977, Pat. No. 4,471,385, and Ser. No. 889,301, Mar. 23, 1978, Pat. No. 4,322,819. This application Jun. 6, 1994, Ser. No. 254,818
Int. Cl.⁶ G11C *13/00*
U.S. Cl. 365—45 **64 Claims**

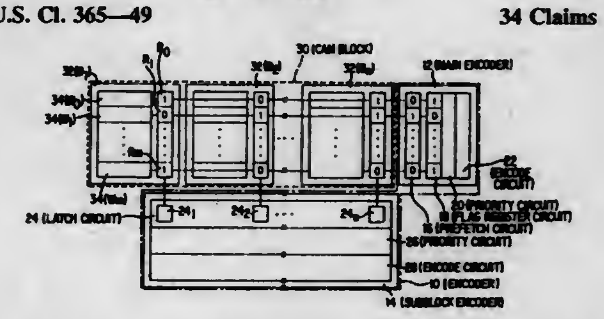
12. An analog memory system comprising:
an optical lens projecting an illumination image;



an analog image memory storing analog image signals, the analog image memory being coupled to receive the illumination image projected by the optical lens and writing analog image signals into the analog image memory in response to the received illumination image;
a shifting circuit coupled to the analog image memory and shifting the analog image signals stored by the analog image memory;
an analog to digital converter coupled to receive analog image signals stored by the analog image memory, the analog to digital converter generating digital output signals in response to the received analog image signals; and
a frequency domain transform processor coupled to receive digital image signals generated by the analog to digital converter, the frequency domain transform processor generating transformed frequency domain image information by transform processing the received digital image signals.

5,619,446
HIERARCHICAL ENCODER INCLUDING TIMING AND DATA DETECTION DEVICES FOR A CONTENT ADDRESSABLE MEMORY

Masato Yoneda; Hiroshi Sasama, and Naoki Kanazawa, all of Tokyo, Japan, assignors to Kawasaki Steel Corporation, Hyogo, Japan
Filed Jan. 7, 1993, Ser. No. 1,751
Claims priority, application Japan, Jan. 10, 1992, 4-003405; Feb. 28, 1992, 4-043963; Jun. 26, 1992, 4-169258; Jul. 1, 1992, 4-174314; Jul. 8, 1992, 4-181194
Int. Cl.⁶ G06F *12/02*
U.S. Cl. 365—49 **34 Claims**



1. An encoder for use in a content addressable memory having a plurality of content addressable memory subblocks, each of the plurality of content addressable memory subblocks having a plurality of content addressable memory words, the encoder comprising:
a priority main encoder that encodes flag data in a word-to-word priority order, the flag data being generated by matching retrieval data with the plurality of the content addressable memory words in each of the plurality of content addressable memory subblocks; and

a priority subblock encoder that assigns subblock-to-subblock priorities to the plurality of content addressable memory subblocks, the priority subblock encoder assigning one of the plurality of content addressable memory subblocks as a first priority content addressable subblock and another one of the plurality of content addressable memory subblocks as a second priority content addressable subblock, wherein the priority main encoder comprises:

a flag register that stores the flag data of the first priority content addressable memory subblock; and

a prefetch circuit that prestores the flag data of the second priority content addressable memory subblock while at least one match signal of the flag data in the flag register is being encoded.

5,619,447

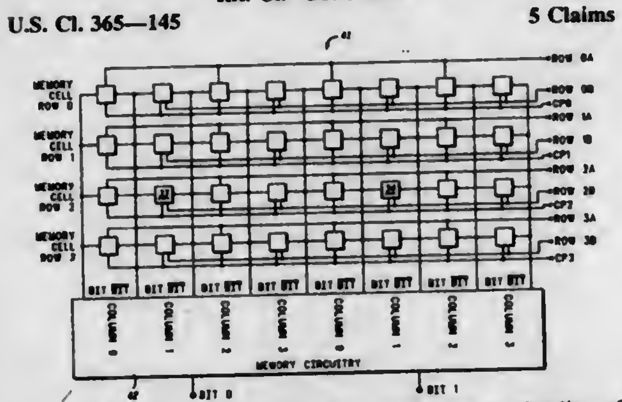
FERRO-ELECTRIC MEMORY ARRAY ARCHITECTURE AND METHOD FOR FORMING THE SAME

Jy-Der D. Tai, Phoenix, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 2, 1995, Ser. No. 433,880

Int. Cl.⁶ G11C *7/00*

U.S. Cl. 365—145 **5 Claims**



1. A ferro-electric memory array comprising a plurality of memory cells arrayed in a plurality of memory cell rows and a plurality of memory cell columns wherein each memory cell is coupled to a pair of BIT lines to generate a differential voltage thereacross when enabled and wherein adjacent memory cell columns of said plurality of memory cell columns share a BIT line.

5,619,448

NON-VOLATILE MEMORY DEVICE AND APPARATUS FOR READING A NON-VOLATILE MEMORY ARRAY

Yi-Pin Lin, Hsinchu, Taiwan, assignor to Myson Technology, Inc., Hsinchu, Taiwan

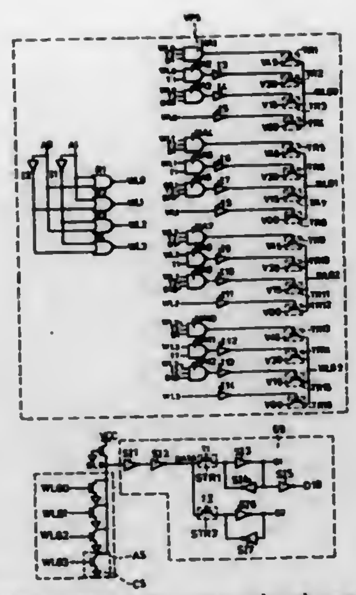
Filed Mar. 14, 1996, Ser. No. 615,402

Int. Cl.⁶ G11C *7/00*

U.S. Cl. 365—185.03 **6 Claims**

1. An apparatus for reading a non-volatile memory array, said memory array including a plurality of memory cells, each of the memory cells storing two-bits of data therein and being formed from one of first, second, third and fourth transistors, said first transistor having a first threshold voltage and corresponding to data bits **00**, said second transistor having a second threshold voltage greater than the first threshold voltage and corresponding to data bits **01**, said third transistor having a third threshold voltage greater than the second threshold voltage and corresponding to data bits **10**, said fourth transistor having a fourth threshold voltage greater than the third threshold voltage and corresponding to data bits **11**, said apparatus comprising:

voltage providing means, adapted to be connected to the memory cells, for providing a first test voltage between the second and third threshold voltages to an addressed one of the memory cells; and



sensing means, adapted to be connected to the memory cells and to said voltage providing means, for sensing whether the addressed one of the memory cells is in a conducting state after the first test voltage has been applied thereto to determine a first bit of data stored therein;

when the first bit of data stored in said addressed one of the memory cells is 0, said sensing means controlling said voltage providing means to provide a second test voltage between the first and second threshold voltages and sensing whether said addressed one of the memory cells is in the conducting state after the second test voltage has been applied thereto to determine a second bit of data stored therein:

when the first bit of data stored in said addressed one of the memory cells is 1, said sensing means controlling said voltage providing means to provide a third test voltage between the third and fourth threshold voltages and sensing whether said addressed one of the memory cells is in the conducting state after the third test voltage has been applied thereto to determine a second bit of data stored therein.

5,619,449

BIT LINE SENSING IN A MEMORY ARRAY

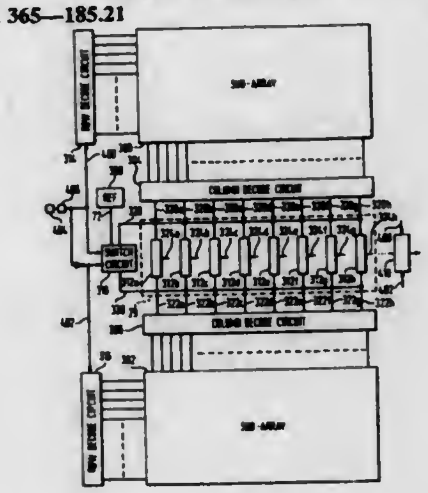
David H. McIntyre, Bishopston, United Kingdom, assignor to SGS-Thomson Microelectronics Limited, Almondsbury Bristol, United Kingdom

Filed Nov. 15, 1995, Ser. No. 559,695

Claims priority, application United Kingdom, Nov. 15, 1994, 9423032

Int. Cl.⁶ G11C *16/04*

U.S. Cl. 365—185.21 **12 Claims**



1. A memory comprising:

first and second arrays of memory cells, each array comprising a plurality of rows of memory cells, the cells in each row being connected to a respective one of a plurality of wordlines and a plurality of columns, the cells in each column being connected to a respective one of a plurality of bit lines, wherein the wordlines of the first array are addressable independently of the wordlines of the second array so that when a cell is selected in an addressed one of the first and second arrays a cell in a corresponding column in the other array is not:

at least one sense amplifier having first and second input nodes respectively for connection to corresponding bit lines of the first and second arrays of memory cells to sense the difference between a signal on a selected one of said bit lines and a reference signal; and

a reference generating circuit to generate said reference signal on one of said first and second nodes connected to the bit line of the non-addressed array for comparison with the signal on the corresponding bit line of the addressed array connected to the other of said first and second nodes, said reference generating circuit being responsive to a current control signal to generate said reference signal at a magnitude dependent on the value of the current control signal.

5,619,450

DRIVE CIRCUIT FOR FLASH MEMORY WITH IMPROVED ERASABILITY

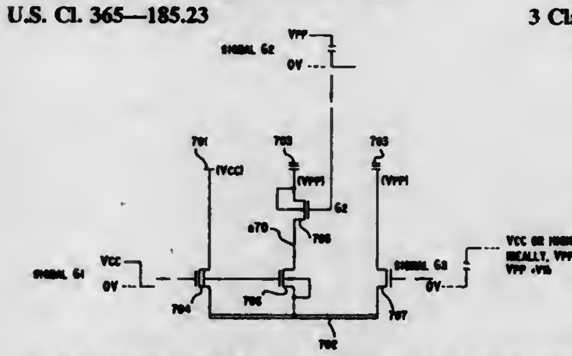
Tetsuji Takeguchi, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Division of Ser. No. 98,406, Aug. 6, 1993, abandoned. This application May 15, 1995, Ser. No. 440,843

Claims priority, application Japan, Dec. 9, 1991, 3-324701; Dec. 27, 1991, 3-346571; Jan. 14, 1992, 4-4678; Mar. 19, 1992, 4-64143; Jun. 5, 1992, 4-145300; Jun. 15, 1992, 4-154958; Sep. 15, 1992, 4-256594; Nov. 10, 1992, 4-299987; WIPO, Dec. 9, 1992, PCT/JP2/01608

Int. Cl.⁶ G11C *16/06*

U.S. Cl. 365—185.23 **3 Claims**



1. An internal power switching circuit for a semiconductor memory, comprising:

a first n-channel MIS transistor (**704**) one of whose drain and source electrodes is connected to a first power line (**701**) and the other of whose drain and source electrodes is connected to a second power line (**702**);

a second p-channel MIS transistor (**705**) one of whose drain and source electrodes, and whose well are connected to a third power line (**703**) the voltage (Vpp) of which is higher than the voltage (Vcc) on said first power line (**701**), and the other of whose drain and source electrodes is connected to a node (**n70**); and

a third p-channel MIS transistor (**706**) one of whose drain and source electrodes is connected to said node (**n70**), and the other of whose drain and source electrodes, and whose well are connected to said second power line (**702**), further including:

a fourth n-channel MIS transistor (**707**) one of whose drain and source electrodes is connected to said third power line (**703**) and the other of whose drain and source electrodes is connected to said second power line (**702**).

5,619,451

METHOD FOR THE ERASURE OF A MEMORY, AND CIRCUITS FOR THE IMPLEMENTATION THEREOF

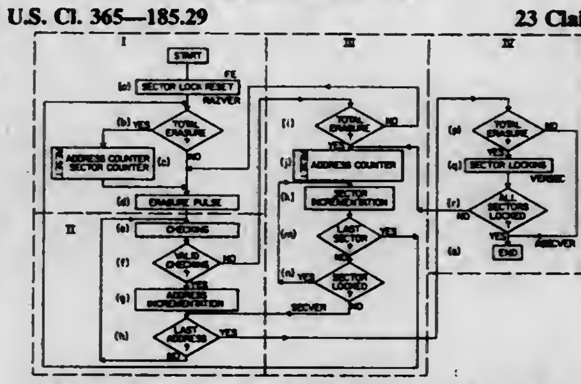
Claude Costabello, and Jean-Marie Gaultier, both of Rousset, France, assignors to SGS-Thomson Microelectronics S.A., Saint Genis, France

Filed Apr. 12, 1995, Ser. No. 421,671

Claims priority, application France, Apr. 13, 1994, 94 04393

Int. Cl.⁶ G11C *11/34*

U.S. Cl. 365—185.29 **23 Claims**



1. A method for erasing a non-volatile electrically erasable and programmable integrated circuit memory that is divided into N sectors selected separately by addressing circuits having a sector counter, wherein the N sectors are arranged in m groups of n sectors each, the cells of each sector being selected by addressing circuits for addressing by rows and columns having an address counter, wherein said method comprises the following steps:

(A) erasing the cells of the memory by the simultaneous application of a pulse to at least all the sectors of a group;

(B) detecting erasure of cells of the memory in each sector of the group, until one of an unerased cell and the last cell of a sector is detected;

(C) locking each sector for which no unerased cell is detected;

(D) determining whether all the sectors are locked;

(E) applying an erasure pulse to the unlocked sectors of a next group; and

(F) returning to step (B).

5,619,452

SEMICONDUCTOR DISK DEVICE WITH A CONSTANT DATA-WRITING TIME PERIOD

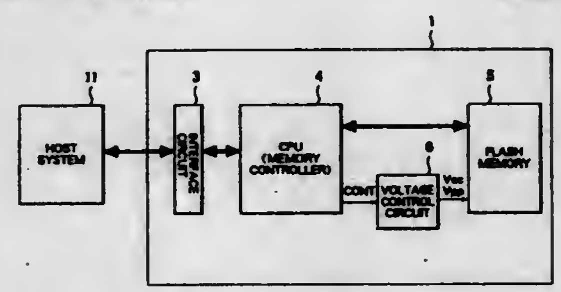
Shigenori Miyauchi, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 27, 1995, Ser. No. 429,773

Claims priority, application Japan, Oct. 17, 1994, 6-250786

Int. Cl.⁶ G11C *11/34*

U.S. Cl. 365—185.29 **10 Claims**



1. A semiconductor device, comprising:

a memory including a plurality of blocks, each block including a data storage area and an erasing-condition storage area in which an erasing condition has been written in advance;

a data controller for writing data provided from the outside into said data storage area of said memory, and for reading data from said data storage area of said memory and outputting the read data to the outside;

a power supply voltage calculating unit that compares the erasing condition stored in the erasing-condition storage area of said memory with a predefined reference condition, thereby determining a power supply voltage that minimizes the difference between said reference condition and an actual erasing condition for each block of said memory;

a memory power supply unit that, in response to the output of said power supply voltage calculating unit, supplies electric power to said memory during an erasing process; and

an erasing-control unit that erases data from block to block of said memory.

5,619,453

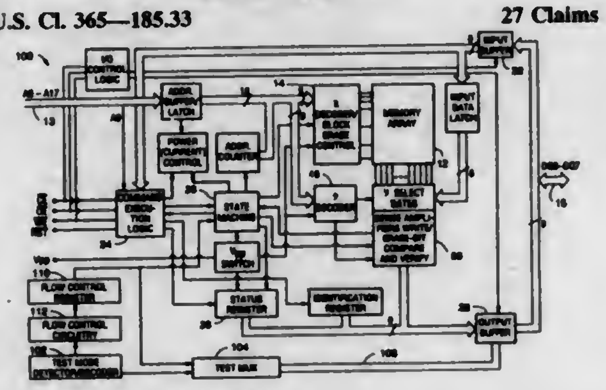
MEMORY SYSTEM HAVING PROGRAMMABLE FLOW CONTROL REGISTER

Frankie F. Roohparvar, Cupertino, and Christophe J. Chevallier, Palo Alto, both of Calif., assignors to Micron Quantum Devices, Inc., Santa Clara, Calif.

Filed Jul. 28, 1995, Ser. No. 508,921

Int. Cl.⁶ G06F *12/00*

U.S. Cl. 365—185.33 27 Claims



1. A memory system comprising:

an array of memory cells;

control means for controlling operation of the memory system in response to memory read, memory program, and memory erase commands from a command source, the control means including

(a) a state machine for controlling sequencing of a set of operations and sub-operations performed on a memory cell in the array in response to the memory read, memory program, and memory erase commands;

(b) a memory cell read module for reading one of the memory cells in response to the memory read command;

(c) a memory cell program module for carrying out a memory program operation to program one of the memory cells in response to the memory program command, with the program operation including a plurality of memory program sub-operations;

(d) a memory cell erase module for carrying out a memory erase operation to erase one of the memory cells in response to the erase command, with the erase operation including a plurality of memory erase sub-operations; and

(e) a flow controller for causing the state machine to alter the sequencing of the program or erase sub-operations.

5,619,454

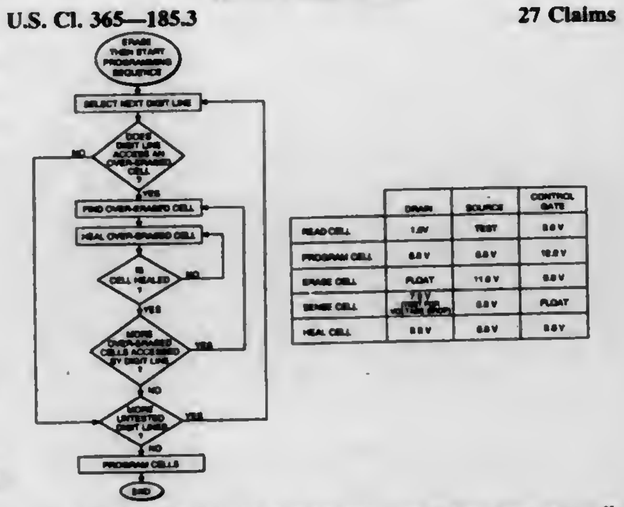
PROGRAMMING METHOD FOR HEALING OVER-ERASED CELLS FOR A FLASH MEMORY DEVICE

Roger Lee, and Fernando Gonzalez, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation-in-part of Ser. No. 412,815, Mar. 28, 1995, Pat. No. 5,508,959, which is a continuation of Ser. No. 152,809, Nov. 15, 1993, Pat. No. 5,424,993. This application Aug. 25, 1995, Ser. No. 519,275

Int. Cl.⁶ G11C *29/00*

U.S. Cl. 365—185.3 27 Claims



1. A method for healing at least one over-erased memory cell, comprising:

a) accessing a number of control gates and accessing a digit line thereby activating said number of memory cells, each of said memory cells having a source, a drain, and a control gate;

b) subsequent to accessing said digit line, sensing the presence of at least one over-erased activated cell from said number of memory cells;

c) subsequent to sensing the presence of said over-erased cell, applying a first voltage to said digit line, a second voltage tosaid control gate of at least said over-erased cell, and a third voltage to said source of at least said over-erased cell, said first and second voltages being higher than said third voltage.

5,619,455

PIPELINE-OPERATING TYPE MEMORY SYSTEM CAPABLE OF READING DATA FROM A MEMORY ARRAY HAVING DATA WIDTH LARGER THAN THE OUTPUT DATA WIDTH

Noboru Akiyama, Katsuta; Yuji Yokoyama, Ome; Tatsuyuki Ohta, Niigata; Kunihiko Suzuki, Hitachi, and Yutaka Kobayashi, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 23, 1993, Ser. No. 35,651

Claims priority, application Japan, Mar. 23, 1992, 4-065039

Int. Cl.⁶ G11C *7/00*

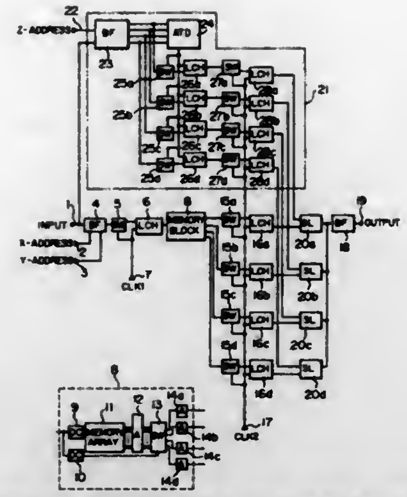
U.S. Cl. 365—189.05 15 Claims

1. A pipeline-operating type memory system having latch means and being arranged to alternately set the latch means into a latching state and a through state in a manner to suit a pipeline operating cycle for transferring data for any X or Y address and to output at least one predetermined data, said pipeline-operating type memory system comprising:

first input means, receiving a first Z address signal to select data, for converting the first Z address signal into a plurality of second Z address signals;

second input means for receiving at least an X address signal and a Y address signal for selecting said data;

first means, receiving said X and Y address signals, for latching said X and Y address signals by means of a first clock signal and continuously outputting said data selected by said X and



Y address signals until said first clock signal is changed into a non-latching signal level;

second means for latching said plurality of second Z address signals from said first input means; and

third means for latching a plurality of data from said first means by a second clock signal, and latching said second Z address signals from said second means by said second clock signal to thereby continuously output the data until said second clock signal is changed into the non-latching signal level.

5,619,456

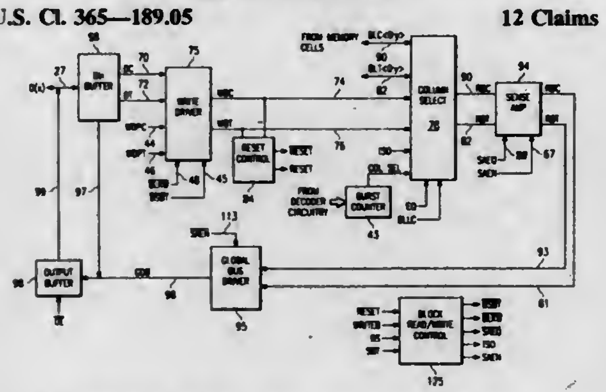
SYNCHRONOUS OUTPUT CIRCUIT

David C. McClure, Carrollton, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Jan. 19, 1996, Ser. No. 588,901

Int. Cl.⁶ G11C *13/00*

U.S. Cl. 365—189.05 12 Claims



1. A synchronous output buffer circuit comprising:

a data input terminal;

a first clock controlled transfer gate coupled to the data input terminal, the first clock controlled transfer gate being enabled to pass data through the transfer gate on a first phase of a clock cycle and disabled on a second phase of the clock cycle;

a first latch circuit coupled to the output of the first transfer gate and receiving the data at the input terminal when the first transfer gate is enabled; and

a second clock controlled transfer gate coupled to the output of the first latch circuit and having its output coupled to an input terminal of an output driver circuit to provide data to the driver circuit from the first latch circuit.

5,619,457

DYNAMIC SEMICONDUCTOR MEMORY DEVICE THAT CAN CONTROL THROUGH CURRENT OF INPUT BUFFER CIRCUIT FOR EXTERNAL INPUT/OUTPUT CONTROL SIGNAL

Goro Hayakawa, and Yasuhiko Tsukikawa, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

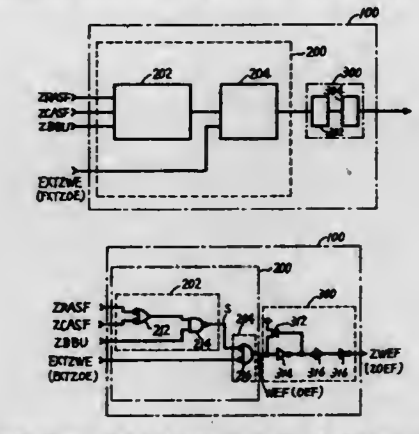
Filed Jan. 22, 1996, Ser. No. 589,687

Claims priority, application Japan, Apr. 26, 1995, 7-102473

Int. Cl.⁶ G11C *11/34*

U.S. Cl. 365—189.05 5 Claims

1. A dynamic semiconductor memory device that can specify



three operations modes of a stand-by state, a self refresh state, and a read/write state by an external signal, comprising:

timing signal generation means responsive to said external signal for providing an internal signal specifying one of said three operation modes,

control signal input buffer means receiving said internal signal and an external input/output control signal for providing an internal input/output control signal,

wherein said control signal input buffer means comprises

a first CMOS logic gate circuit controlled by said internal signal and receiving said external input/output control signal, for providing a corresponding said internal input/output control signal when in said read/write operation state, and attaining a closed state when in said stand-by state and said self refresh state, and

data input/output buffer means responsive to said internal input/output control signal for inputting/outputting data.

5,619,458

Patent Not Issued For This Number

5,619,459

ON-CHIP MOBILE ION CONTAMINATION TEST CIRCUIT

Gary R. Gilliam, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed May 31, 1995, Ser. No. 455,833

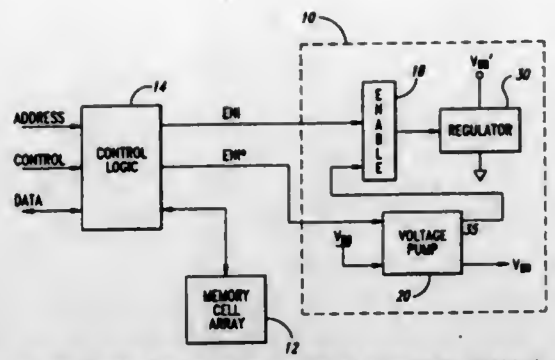
Int. Cl.⁶ G11C *29/00*

U.S. Cl. 365—201 9 Claims

3. A test circuit for an integrated circuit formed on a substrate of a semiconductor chip along with the test circuit to test the semiconductor chip for ion contamination, said test circuit comprising:

a voltage pump driving the substrate toward a normal-operating voltage; and

a test circuit allowing said integrated circuit to be tested for mobile ion contamination, said test circuit selectively maintaining the voltage level of the substrate at a test voltage that is intermediate the normal-mode operating voltage and



ground, said test circuit including a selectively enabled voltage sensitive current shunt comprising the series combination of first and second field effect transistors connected between the substrate and ground, the first transistor having its gate connected to its source to function as a diode, and the second transistor receiving a control signal that causes the second transistor to conduct when the shunt circuit is enabled whereby, when enabled, said voltage sensitive current shunt allows current to flow between the substrate and ground whenever the absolute value of the voltage on the substrate reaches the test voltage to allow the integrated circuit to be tested for mobile ion contamination.

5,619,460

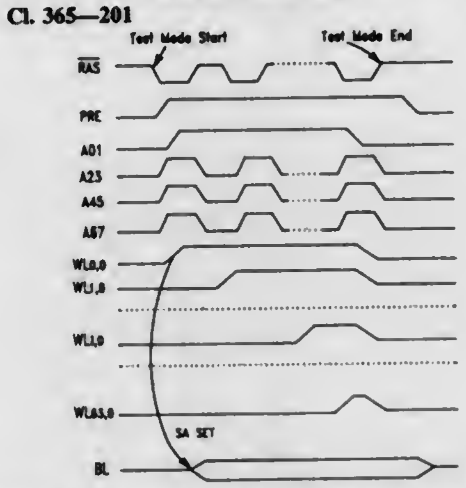
METHOD OF TESTING A RANDOM ACCESS MEMORY

Toshiaki Kirihata, Wappingers Falls, N.Y., and Hing Wong, Norwalk, Conn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 7, 1995, Ser. No. 477,061

Int. Cl.[6] G11C *29/00*

U.S. Cl. 365—201 **9 Claims**



1. A method of testing a RAM array, said array being arranged in rows and columns, said rows being grouped into a plurality of groups, said method comprising the steps of:

a) asserting an array select signal and disabling a reset signal;

b) selecting a group of rows in said array;

c) selecting at least one row of said selected group of rows;

d) repeating steps b and c until all of said groups are selected; and,

e) comparing measured array data with expected data.

5,619,461

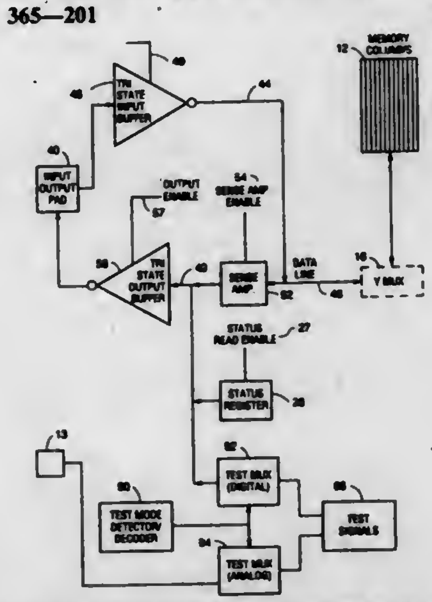
MEMORY SYSTEM HAVING INTERNAL STATE MONITORING CIRCUIT

Frankie F. Roohparvar, Cupertino, Calif., assignor to Micron Quantum Devices, Inc., Santa Clara, Calif.

Filed Jul. 28, 1995, Ser. No. 508,924

Int. Cl.[6] G06F *11/00;* G11C *7/00*

U.S. Cl. 365—201 **38 Claims**



1. A memory system having a standard mode of operation in which a user can program, erase, and read a memory cell and a test mode of operation in which internal signals used to monitor the memory system can be accessed, wherein access to the test mode of operation occurs upon detection of a test mode access state different from states which occur during the standard mode of operation, the memory system comprising:

test mode detection means for detecting the test mode access state for accessing the test mode of operation, wherein the test mode access state is different from states which occur during the standard mode of operation;

switching means for selecting which of a plurality of internal signals input to the switching means for use in monitoring an operating status of the memory system is to be routed to a data output means when the test mode of operation is accessed; and

data output means to which the selected signal is routed by the switching means.

5,619,462

FAULT DETECTION FOR ENTIRE WAFER STRESS TEST

David C. McClure, Carrollton, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Jul. 31, 1995, Ser. No. 509,158

Int. Cl.[6] G11C *29/00*

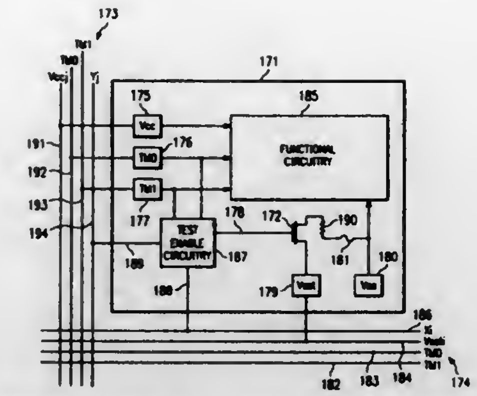
U.S. Cl. 365—201 **39 Claims**

39. A silicon wafer including:

a plurality of dies arranged in rows and columns on which are integrated a plurality of integrated circuits, each integrated circuit having functional circuitry, test enable logic circuitry, a switching transistor and control inputs extending to the edge of the die, and operable in a normal operation mode and at least one special test operation mode:

control lines running between the dies and connected to corresponding control inputs of some of the plurality of integrated circuits for applying control signals to the integrated circuits for enabling and controlling the at least one special test operation mode; and

test power supply lines running between the dies and connected to corresponding control inputs of some of the plurality of



integrated circuits, for receiving a test power supply voltage on each test power supply line;

wherein each switching transistor has a conduction path connected on one end to one of the test power supply lines and coupled on another end to the functional circuitry, and having a control terminal coupled to an output of the test enable logic circuitry, for applying the test power supply voltages to the functional circuitry responsive to the corresponding control inputs receiving corresponding control signals.

5,619,463

INTEGRATED CIRCUIT DEVICE AND TEST METHOD THEREFOR

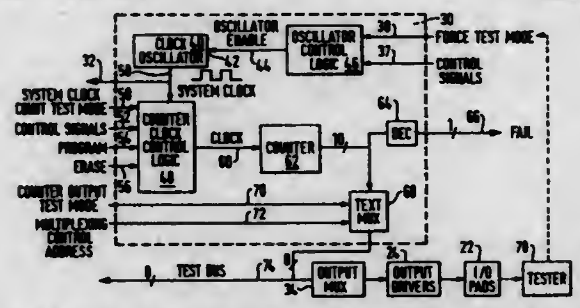
Vijay Malhi, Milan, Italy, assignor to SGS-Thomson Microelectronics Limited, Almondsbury Bristol, United Kingdom

Filed Aug. 24, 1995, Ser. No. 518,422

Claims priority, application United Kingdom, Aug. 26, 1994, 9417244

Int. Cl.[6] G01R *31/28;15/12*

U.S. Cl. 365—201 **27 Claims**



1. An integrated circuit device, operable in a normal mode and a test mode, the device being testable in association with a tester, including:

an oscillator arranged to produce a periodic output signal for controlling operations of the device, during the normal mode of operation;

a counter having an input for receiving a timing signal representing operations of the device, during the normal mode of operation, and arranged to count transitions in said periodic output signal to generate an output count during the test mode of operation;

switch circuitry for selectively connecting said periodic output signal of the oscillator to the input of the counter in the test mode of operation, said test mode being implemented for a predetermined time; and

an output circuit for providing the output count generated by said counter after said predetermined time to the tester so that the tester can derive the frequency of the oscillator from said output count and said predetermined time.

5,619,464

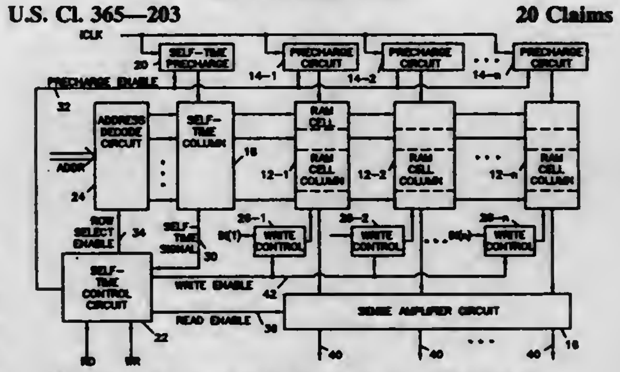
HIGH PERFORMANCE RAM ARRAY CIRCUIT EMPLOYING SELF-TIME CLOCK GENERATOR FOR ENABLING ARRAY ACCESSESS

Thang M. Tran, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jun. 7, 1995, Ser. No. 473,103

Int. Cl.[6] G11C *13/00*

U.S. Cl. 365—203 **20 Claims**



1. A random access memory array circuit comprising:

a RAM cell column including a plurality of RAM cells;

an address decode circuit coupled to said RAM cell column, wherein said address decode circuit is configured to receive an address signal and to select one of said plurality of RAM cells depending upon said address signal;

a precharge circuit coupled to said RAM cell column for precharging said plurality of RAM cells, wherein said precharge circuit is configured to precharge said plurality of said RAM cells in response to a clock signal;

a self-time column having a delay approximately equal to a delay of said RAM cell column, wherein said self-time column is configured to generate a self-time signal indicative of a charged or discharged state of said self-time column; and

a self-time control circuit coupled to said self-time column and to said precharge circuit, wherein said self-time control circuit is configured to enable an access of said RAM cell column in response to said self-time signal.

5,619,465

SEMICONDUCTOR MEMORY DEVICE

Hidenori Nomura; Kenji Nagai; Masami Nakashima, all of Kasugai; Hiroshi Yamamoto, and Isaya Sobue, both of Tanabe, all of Japan, assignors to Fujitsu Limited, Kawasaki, and Fujitsu VLSI Limited, Kasugai, both of Japan

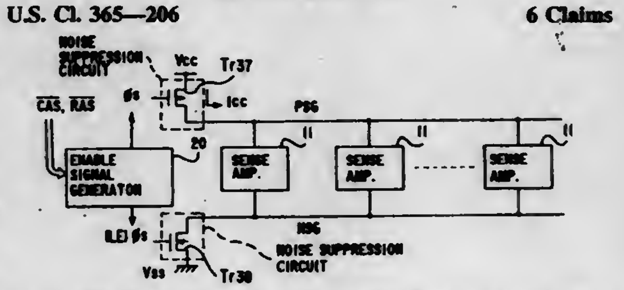
Division of Ser. No. 305,722, Sep. 14, 1994, Pat. No. 5,508,965.

This application Jan. 11, 1996, Ser. No. 584,471

Claims priority, application Japan, Sep. 14, 1993, 5-229224; Sep. 14, 1993, 5-229225

Int. Cl.[6] G11C *7/02*

U.S. Cl. 365—206 **6 Claims**



1. A semiconductor memory device, supplied with power from a power supply, comprising:

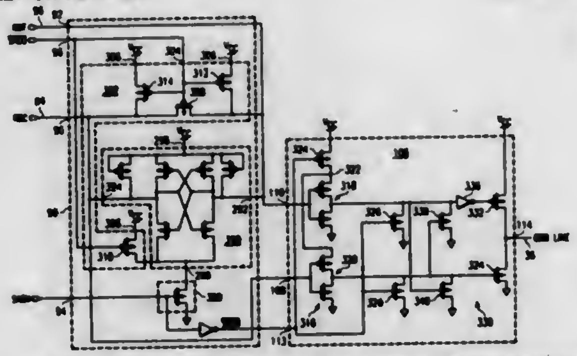
memory cells for storing data:

a sense amplifier coupled to said memory cells via a pair of bit lines;

an enabling circuit responsive to an enable signal for enabling said sense amplifier to write cell data, read on said pair of bit

lines, into said memory cell and to rewrite the written cell data to the memory cells during a self-refresh operation: and
a noise suppression circuit incorporated in said enabling circuit, for suppressing rapid changes in the flow of current between said power supply and said sense amplifier in order to minimize power supply related noise, wherein the memory device includes a plurality of memory cells separated into a plurality of blocks; and wherein said noise suppression circuit allows said self-refreshing operation to be performed on one block at a time, block by block.

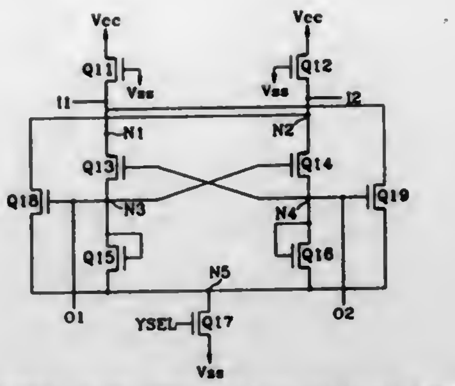
5,619,466
LOW-POWER READ CIRCUIT AND METHOD FOR CONTROLLING A SENSE AMPLIFIER
David C. McClure, Carrollton, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.
Filed Jan. 19, 1996, Ser. No. 589,024
Int. Cl.⁶ C11C *7/06*
U.S. Cl. 365—207 **14 Claims**



1. A read circuit for a memory cell that stores data, comprising:
a sense amplifier operable to be coupled to said memory cell via a pair of data lines, and operable to amplify said data; and
an equilibrate circuit coupled to said sense amplifier and operable to receive an equilibrate signal, to equilibrate said sense amplifier when said equilibrate signal has a first active level, and to cause said sense amplifier to draw substantially zero supply current when said equilibrate signal has a first inactive level regardless of signal levels on said data lines, and
an enable circuit coupled to said sense amplifier and operable to receive an enable signal to enable said sense amplifier to amplify said data when said enable signal has a second active level, and to disable said sense amplifier from amplifying said data when said enable signal has a second inactive level.

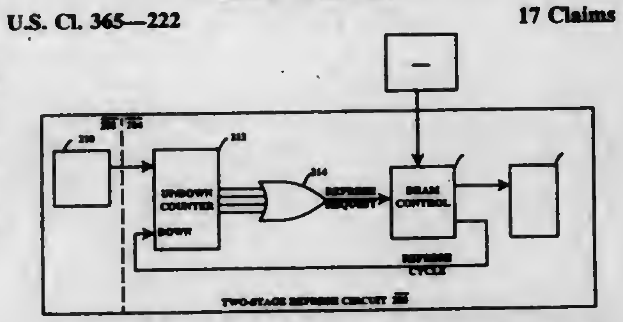
5,619,467
SENSE AMPLIFIER FOR SEMICONDUCTOR MEMORY DEVICE HAVING FEEDBACK CIRCUITS
Jai-Hoon Sim, Kyungki-do, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea
Filed Mar. 29, 1996, Ser. No. 623,790
Claims priority, application Rep. of Korea, Mar. 31, 1995, 7518/1995
Int. Cl.⁶ G11C *7/06*
U.S. Cl. 365—208 **16 Claims**

1. A sense amplifier for a semiconductor memory device, comprising:
a differential amplifier which senses first and second input signals respectively received at first and second input nodes and amplifies a difference between said input signals to cause an amplified difference between first and second difference signals at first and second output nodes;



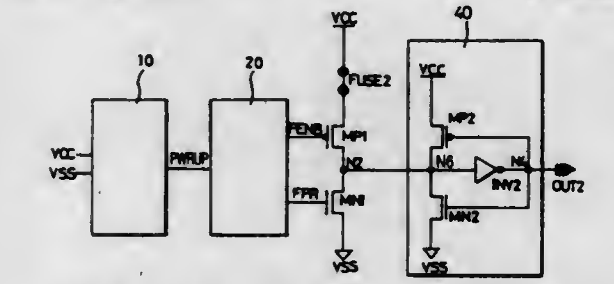
a first feedback circuit coupled between said second input node and a current control node, said first feedback circuit being controlled by said first difference signal from said first output node; and
a second feedback circuit coupled between said first input node and said current control node, said second feedback circuit being controlled by said second difference signal from said second output node, said first feedback circuit and said second feedback circuit further increasing said amplified difference across said first and second output nodes.

5,619,468
TWO-STAGE MEMORY REFRESH CIRCUIT
Atish Ghosh, and Jennifer B. Pencis, both of Austin, Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.
Filed Dec. 7, 1995, Ser. No. 568,848
Int. Cl.⁶ G06F *12/02*
U.S. Cl. 365—222 **17 Claims**



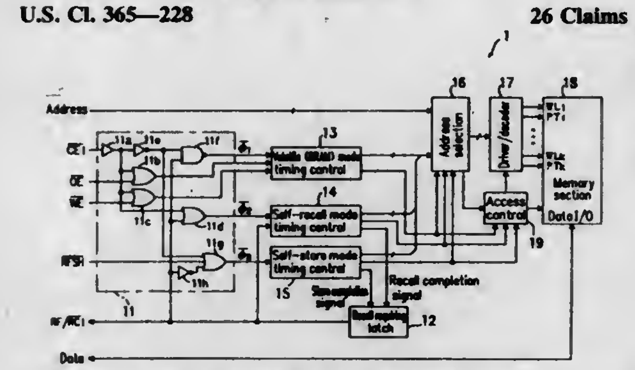
1. A timing control circuit for controlling timing signals to a fixed-timing circuit in a variable-time system, the fixed-timing circuit having an input terminal for receiving a timing signal and an output terminal for generating a timing signal indicative of fixed-timing circuit timing, the fixed-timing circuit being accessible to timing signals of the timing control circuit in a first state and inaccessible to timing signals of the timing control circuit in a second state, the timing control circuit comprising:
a fixed timing signal generator;
a counter having a first input terminal coupled to the fixed timing signal generator, a second input terminal coupled to the output terminal of the fixed-timing circuit and a plurality of output bit lines; and
a combinational logic circuit having a plurality of input bit lines coupled to the plurality of output bit lines of the counter and an output line coupled to the input terminal of the fixed-timing circuit.

5,619,469
FUSE REDUNDANCY CIRCUITRY FOR A SEMICONDUCTOR MEMORY DEVICE
Yang-Sung Joo, Seoul, Rep. of Korea, assignor to LG Semicon Co., Ltd., Chungcheongbuk-do, Rep. of Korea
Filed Dec. 6, 1995, Ser. No. 569,795
Claims priority, application Rep. of Korea, May 26, 1995, 95-13405
Int. Cl.⁶ G11C *7/00*
U.S. Cl. 365—225.7 **20 Claims**



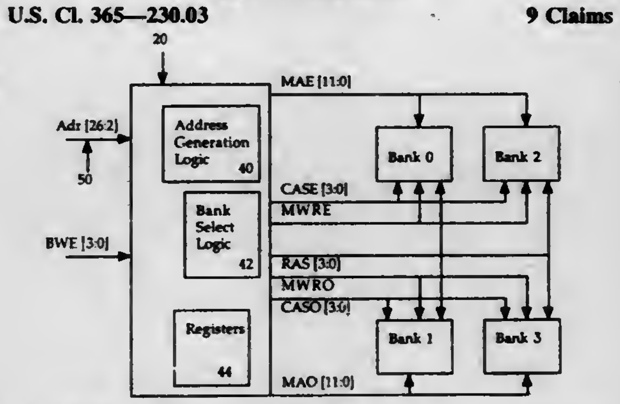
1. A programming section of a semiconductor memory device, comprising:
an external power source detecting circuit detecting an initial power supply and generating a power-up signal;
a gate control section receiving the power-up signal from the external power source detecting circuit and generating a first signal and a second signal;
a programmable ROM cell receiving the first and second signals from the gate control section and generating an output; and
a latch section latching the output of the programmable ROM cell.

5,619,470
NON-VOLATILE DYNAMIC RANDOM ACCESS MEMORY
Katsumi Fukumoto, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Jun. 2, 1995, Ser. No. 459,098
Claims priority, application Japan, Aug. 17, 1994, 6-193341
Int. Cl.⁶ G11C *7/00*
U.S. Cl. 365—228 **26 Claims**



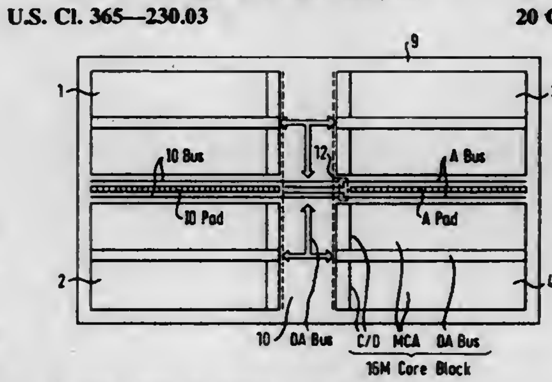
1. A semiconductor memory device including:
memory means for storing data having volatile and non-volatile capability;
access means for reading/writing the data stored in a volatile state at an address in said memory means in accordance with an access command indicating the address;
transfer means for transferring the data stored in said memory means from the volatile state into a non-volatile state; and
recall means for recalling the data stored in said memory means in the non-volatile state into the volatile state,
wherein said recall means selectively performs a recall operation for a section of said memory means which includes the address before said access means performs a read/write operation for the data, when the data at the address is stored in the non-volatile state.

5,619,471
MEMORY CONTROLLER FOR BOTH INTERLEAVED AND NON-INTERLEAVED MEMORY
Ann B. Nunziata, Cupertino, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.
Filed Jun. 6, 1995, Ser. No. 470,971
Int. Cl.⁶ G11C *8/00*
U.S. Cl. 365—230.03 **9 Claims**



1. A memory system comprising:
a plurality of memory banks, at least two of which are associated with one another for one of interleaved and non-interleaved operations;
a memory controller including:
a size register for storing a size of each of said plurality of memory banks;
an interleave register for storing a status of each of said memory banks as interleaved or non-interleaved based upon said size of said respective memory bank; and
address generation logic which generates a row address based upon an input system address irrespective of said status of said each of said memory banks and which generates a column address based upon said input system address, said size and said status.

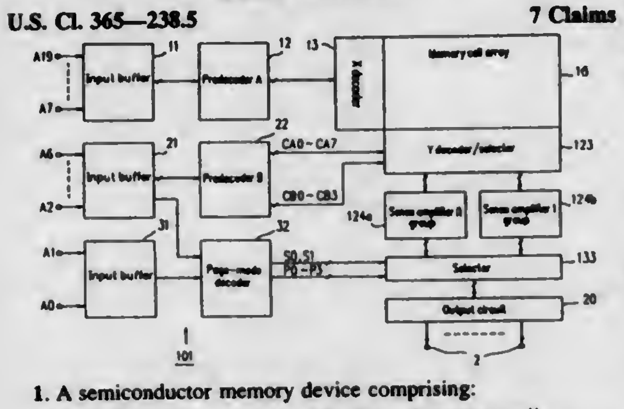
5,619,472
SEMICONDUCTOR MEMORY DEVICE WITH A PLURALITY OF BONDING PADS ARRANGED IN AN ARRAY
Junichi Okamura, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan
Filed Sep. 28, 1995, Ser. No. 535,409
Claims priority, application Japan, Nov. 10, 1994, 6-276259
Int. Cl.⁶ G11C *8/00;5/02*
U.S. Cl. 365—230.03 **20 Claims**



1. A semiconductor memory comprising:
a first, a second, a third and a fourth core blocks each comprising a memory cell array wherein a plurality of memory cells are arranged in a matrix and sense amplifiers and decoders accompanying the memory cell array;
an inter-block region arranged between the first and the second core blocks and the third and the fourth core blocks wherein data signal lines, address signal lines and control signal lines are arranged;

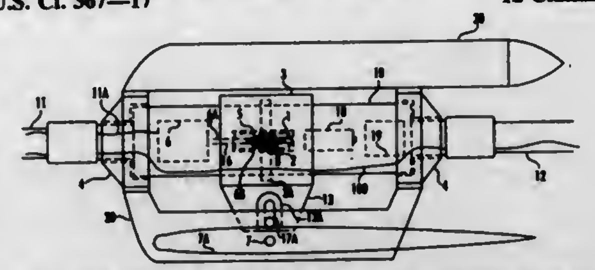
a first pad array comprising a plurality of pads arranged between the first and the second core blocks;
a second pad array comprising a plurality of pads arranged between the third and the fourth core blocks;
first and second buses extending to the inter-block region along both sides of the first pad array;
third and fourth buses extending to the inter-block region along both sides of the second pad array; and
a connection region arranged between the second pad array and the inter-block region;
wherein the third and the fourth buses are jogged in the connection region to pass between the first and second buses in the inter-block region, the data signal lines, the address signal lines and the control signal lines being connected to the first, the second, the third and the fourth buses in the inter-block region.

5,619,473
SEMICONDUCTOR MEMORY DEVICE WITH DUAL ADDRESS MEMORY READ AMPLIFIERS
Yasuhiro Hotta, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Jun. 2, 1995, Ser. No. 459,792
Claims priority, application Japan, Aug. 23, 1994, 6-198498
Int. Cl.⁶ G11C *8/00*
U.S. Cl. 365—238.5 **7 Claims**



1. A semiconductor memory device comprising:
a memory cell array having a plurality of memory cells;
first predecode means for generating a row address of an input address;
second predecode means for generating a first column address of the input address, and also for generating a second column-address different from the first column address;
selecting means for selecting a plurality of first memory cells based on the row address and the first column address and for selecting a plurality of second memory cells based on the row address and the second column address; and
sense amplifier means for sensing data stored in the plurality of memory cells, the sense amplifier means including at least two sense amplifier groups, a first sense amplifier group of the sense amplifier groups sensing data read from the plurality of first memory cells, and a second sense amplifier group of the sense amplifier groups sensing data read from the plurality of second memory cells;
wherein the first sense amplifier group is different from the second sense amplifier group: and
wherein the semiconductor memory device has a page mode for rapidly switching and outputting data from the plurality of first and second memory cells which have been read in parallel to the sense amplifier means in accordance with the input address.

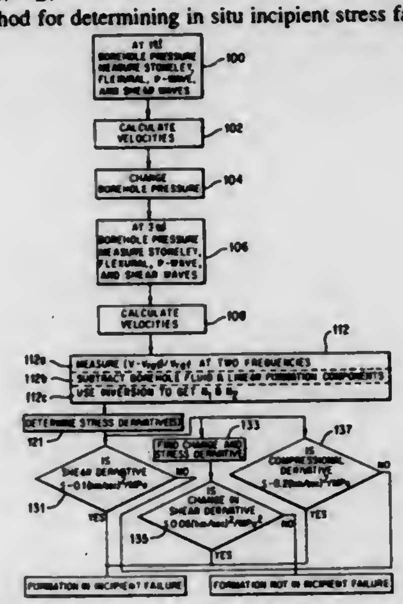
5,619,474
DEPTH CONTROL APPARATUS
Hans-Walter Kuche, Sprockhövel, Germany, assignor to Petroleum Geo-Services A/S, Lysaker, Norway
Filed May 10, 1995, Ser. No. 438,632
Claims priority, application Norway, May 13, 1994, 941801
Int. Cl.⁶ G01V *1/38;* **B63G** *8/14*
U.S. Cl. 367—17 **12 Claims**



1. A depth control apparatus for use with a seismic streamer, comprising a central unit adapted for inserted mounting in the streamer substantially in axial alignment with the streamer, a housing having a longitudinal first axis which can rotate about the central unit and carries at least one control wing being angularly adjustable about a second axis transverse to the longitudinal axis of the housing adapted to be substantially horizontal in operative position, and an electric motor for adjusting the angle of the control wing about the second axis, wherein the motor is located in the central unit and is adapted to have its current supply through the streamer, the control wing is so arranged on the housing that the second axis in operative position runs underneath the central unit, and a transmission mechanism for the angular adjustment of the control wing by means of the motor, wherein the transmission mechanism comprises a slide member which is positioned and arranged for movement in the axial direction of the central unit and substantially surrounding the central unit.

5,619,475
METHOD OF PREDICTING MECHANICAL FAILURE IN FORMATION UTILIZING STRESS DERIVATIVES WHICH MEASURE FORMATION NONLINEARITY
Kenneth W. Winkler, Ridgefield, Conn., assignor to Schlumberger Technology Corportion, New York, N.Y.
Continuation of Ser. No. 298,718, Aug. 31, 1994, abandoned, which is a continuation-in-part of Ser. No. 220,717, Mar. 30, 1994, Pat. No. 5,544,127. This application Nov. 9, 1995, Ser. No. 555,796
Int. Cl.⁶ G01V *1/40*
U.S. Cl. 367—27 **17 Claims**

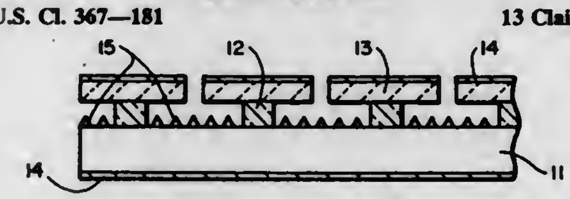
1. A method for determining in situ incipient stress failure of an



underground formation traversed by a borehole, comprising:

(a) positioning a tool having an acoustic source and at least one receiver in the borehole near the formation;
(b) transmitting an acoustic signal from the source into the formation and detecting the signal with the at least one receiver after it has propagated through the formation;
(c) determining, from the received signal, at least one of a compressional wave velocity and a shear wave velocity;
(d) determining, from at least one of the compressional wave velocity and the shear wave velocity, a value of a non-linear parameter of the formation; and
(e) comparing the value of the non-linear parameter with a threshold value so as to determine incipient stress failure of the formation.

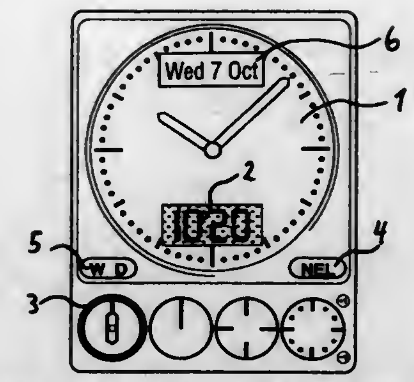
5,619,476
ELECTROSTATIC ULTRASONIC TRANSDUCER
Matthew I. Haller, San Francisco, and Butrus T. Khuri-Yakub, Palo Alto, both of Calif., assignors to The Board of Trustees of the Leland Stanford Jr. Univ., Stanford, Calif.
Filed Oct. 21, 1994, Ser. No. 327,210
Int. Cl.⁶ B06B *1/02*
U.S. Cl. 367—181 **13 Claims**



1. An ultrasonic transducer which includes:
a substrate having first and second major surfaces;
a layer of insulator material having a plurality of void regions and support regions formed on one major surface of said substrate;
a layer of silicon nitride having residual stress formed on and supported by said layer of insulator material and extending over said void regions spaced from said one major surface of said substrate to form a membrane capable of vibrating at each of said void regions, said silicon nitride layer including openings communicating with each of said void regions;
a thin conductive film formed on an outer surface of said silicon nitride layer and a thin conductive film formed on a major surface of said substrate whereby to form a plurality of transducers one at each of said void regions.

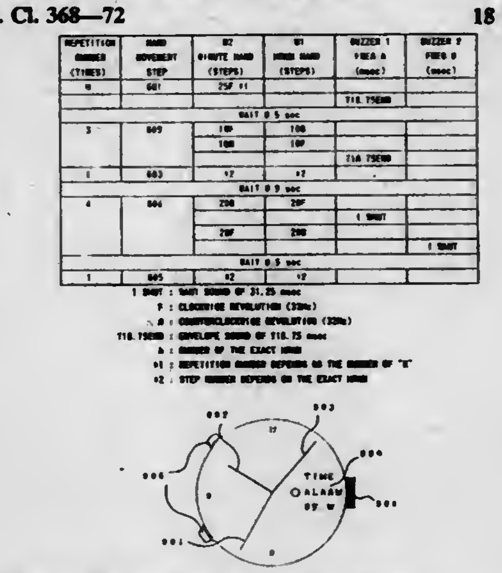
5,619,477
CLOCK WITH TARGET TIME ENTRY SYSTEM
U. Martin Schenk, Grabenstrasse 45/55, A-8010, Graz, Austria
PCT No. PCT/EP92/01819, § 371 Date Feb. 8, 1994, § 102(e) Date Feb. 8, 1994, PCT Pub. No. WO93/03428, PCT Pub. Date Feb. 18, 1993
PCT Filed Aug. 10, 1992, Ser. No. 193,102
Claims priority, application Germany, Aug. 8, 1991, 41 26 323.5
Int. Cl.⁶ G04B *47/00;19/24;45/00*
U.S. Cl. 368—10 **12 Claims**

1. A time piece for the storage of specified future target times comprising:
a clock for measuring time;
an actual time display;
a target time display; and
an input unit comprising first, second and third inputs of first, second and third target periods, respectively, wherein each target period comprises a beginning and an end, and wherein said target periods comprise integer multiples and/or integer fractions of well known segments of time, wherein each



operation of said inputs advances the target time displayed to the beginning of the next target period corresponding to the operated input.

5,619,478
ANALOG TIMEPIECE HAVING MEANS FOR SIGNALING AN ALARM TIME AND A CHANGE OF MODE
Atsushi Mutoh, Chiba, Japan, assignor to Seiko Instruments Inc., Japan
Filed Jul. 25, 1995, Ser. No. 507,041
Claims priority, application Japan, Jul. 26, 1994, 6-174544
Int. Cl.⁶ G04B *23/02*
U.S. Cl. 368—72 **18 Claims**



1. An analog electronic timepiece comprising:
at least two hands for indicating time;
at least one motor for driving said hands;
at least one motor driving circuit for driving said motor;
a mode change key for manually inputting a mode of the timepiece and outputting a mode change signal;
a sound signal generating circuit for outputting a sound generating signal to a speaker to generate a sound;
an oscillation circuit for producing and outputting a high-frequency standard signal;
a frequency dividing circuit for frequency dividing the standard signal outputted from said oscillation circuit into predetermined frequency signals;
a clock circuit for counting time information in response to the predetermined frequency signals outputted from said frequency dividing circuit;

a time information signal generating circuit for outputting an operation signal for informing the time information to said motor driving circuit and said sound signal generating circuit in response to the time information counted by said clock circuit;

a judgement circuit for judging a predetermined condition to output a starting signal of hand movement and generation of sound;

an information operation storing circuit for storing and reading out a preselected number of hand movement operation steps and frequencies of sound generation; and

an information signal generating circuit for producing timing signals for driving the hands and generating sound in response to the starting signal, and outputting an operation generation signal to said motor driving circuit and/or said sound signal generating circuit according to the preselected number of hand movement steps and frequencies read out from said information operation storing circuit.

5,619,479

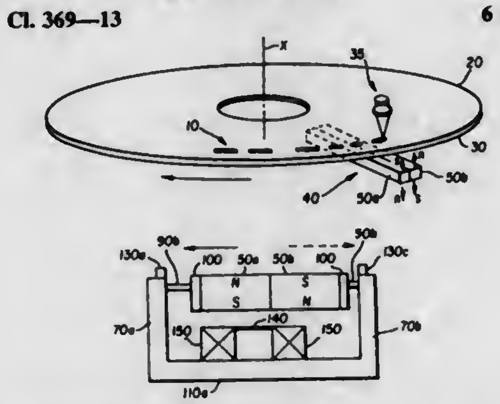
TRANSLATIONAL BIAS-FIELD DEVICE FOR A MAGNETO-OPTICAL SYSTEM

Edward P. Furlani, Lancaster; Bijan Barzideh, Rush; Svetlana Reznik, Rochester; Christopher C. Williams, Rochester, and Charles E. Brugger, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 4, 1996, Ser. No. 583,164

Int. Cl.⁶ C11B ***11/00***

U.S. Cl. 369—13 **6 Claims**



1. A translational, bias-field device for a magneto-optical system having a magneto-optical recording element moving through a first magnetic field created by the bias-field device so that information is selectively recorded on or erased from the recording element, the device comprising:

(a) a housing;

(b) a first rail for enabling translational movement attached to said housing;

(c) a permanent magnet positioned adjacent the recording element for providing the first magnetic field to the recording element, and attached to said first rail which enables translational movement to said magnet when said magnet is induced with a second magnetic field; and

(d) a coil positioned adjacent to said magnet which, when energized, imparts the second magnetic field to said permanent magnet.

5,619,480

MAGNETIC RECORDING MEDIUM AND RECORDING/REPRODUCING METHOD THEREFOR AS WELL AS INFORMATION PROCESSING APPARATUS BY MEANS THEREOF

Yuzo Seo, Kamakura, and Shuichi Maeda, Hidaka, both of Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

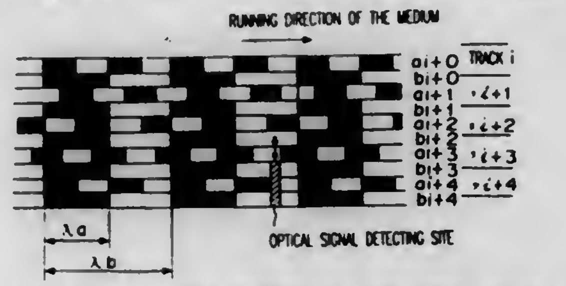
PCT No. PCT/JP93/01593, § 371 Date Aug. 8, 1994, § 102(e) Date Aug. 8, 1994, PCT Pub. No. WO94/11867, PCT Pub. Date May 26, 1994

PCT Filed Nov. 4, 1993, Ser. No. 256,141

Claims priority, application Japan, Nov. 6, 1992, 4-297076; Dec. 16, 1992, 4-336279; Dec. 17, 1992, 4-337536; Oct. 1, 1993, 5-247136

Int. Cl.⁶ G11B ***13/00;5/82***

U.S. Cl. 369—14 **19 Claims**



1. A magnetic recording medium of a disk shape having a magnetic layer containing a magnetic material formed on a non-magnetic support and having, between the non-magnetic layer and the magnetic layer, a layer containing a dye, of which the optical property changes by irradiation of energy rays, characterized in that, in the dye containing layer, continuous servo-signals based on the change of the optical property of said dye by irradiation of energy rays are recorded on concentric tracks, wherein the continuous servo-signals recorded on the concentric tracks contain signals having two signals with different wavelengths superposed on each other, and said two signals are uniform, respectively, and the phase difference between said two signals differs sequentially from one track to the next.

5,619,481

INFORMATION RECORDING/REPRODUCING METHOD

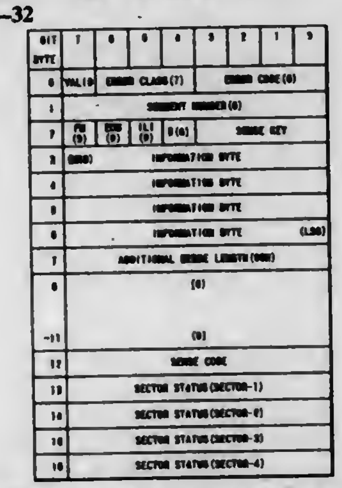
Hideki Hosoya, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 22, 1995, Ser. No. 394,165

Claims priority, application Japan, Feb. 23, 1994, 6-25147

Int. Cl.⁶ G11B ***17/22***

U.S. Cl. 369—32 **2 Claims**



1. An information recording/reproducing method for recording/reproducing predetermined information on/from an information recording medium having a plurality of tracks, each having one or a plurality of sectors arranged thereon, in accordance with a command from a host computer via a small computer system interface,

characterized in that when an error occurs during execution of a command accompanied by an operation of reproducing information from said information recording medium, the command is terminated by using a check condition status, and status information of all sectors on a track, of the information recording medium, which includes a logical block in which the error has occurred is set in sense data.

5,619,482

OPTICAL HEAD UNIT FOR AN OPTICAL DISK USING A DIFFRACTION GRATING

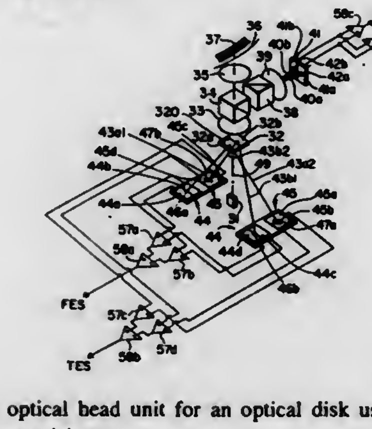
Koichi Tezuka; Kyoko Miyabe, and Shingo Hamaguchi, all of Kawasaki, Japan, assignors to Fujitsu Limited, Japan

Filed Sep. 15, 1995, Ser. No. 529,270

Claims priority, application Japan, Oct. 5, 1994, 6-241447; Jul. 10, 1995, 7-173806

Int. Cl.⁶ G11B ***7/09***

U.S. Cl. 369—44.23 **17 Claims**



1. An optical head unit for an optical disk using a diffraction grating comprising:

diffraction means provided with a reflected optical beam reflected on a storage medium, said diffraction means having a plurality of areas which respectively produce +1-order diffraction light and −1-order diffraction light;

first and second optical detection means for respectively detecting one polarity diffraction light of said +1-order diffraction light and said −1-order diffraction light produced from said areas of said diffraction means in a far-field state;

first circuit means for generating a tracking error signal based on output signals of said first and second optical detection means;

third and fourth optical detection means for respectively detecting the other polarity diffraction light of said +1-order diffraction light and said −1-order diffraction light produced from said areas of said diffraction means, said third and fourth optical detection means being positioned adjacent to a focussed point of said other polarity diffraction light; and

second circuit means for generating a focus error signal based on output signals of said third and fourth optical detection means.

5,619,483

METHOD OF RECORDING ON A RECORDING MEDIUM EMPLOYING AN AUTOMATIC TERMINATION OF RECORDING BY MONITORING THE SIGNAL BEING RECORDED

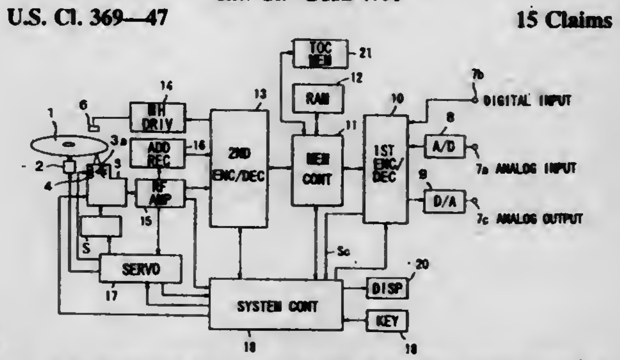
Teppei Yokota; Junichi Aramaki, both of Chiba, and Nobuyuki Kihara, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 178,105, Jan. 6, 1994, abandoned. This application Sep. 29, 1995, Ser. No. 536,075

Claims priority, application Japan, Jan. 6, 1993, 5-015887; Jan. 6, 1993, 5-015888; Feb. 16, 1993, 5-050188

Int. Cl.⁶ G11B ***7/00***

U.S. Cl. 369—47 **15 Claims**



1. A recording method for recording an inputted digital signal on a recording medium in which management data corresponding to the digital signal is recorded with an additional information, wherein:

the inputted digital signal is recorded on the recording medium, and it is detected whether the additional information of the inputted digital signal changes or not; and

when no change of a reproducing time information contained in the additional information is detected, and simultaneously, no existence of data in the inputted digital signal is detected, the recording operation of the inputted digital signal to the recording medium is stopped.

5,619,484

PULLING-IN CIRCUIT FOR PLL CIRCUIT, PULLING-IN METHOD FOR PLL CIRCUIT, PLL CIRCUIT DEVICE AND APPARATUS FOR REPRODUCING OPTICAL DISC

Hiroshi Yokota; Ryuichi Naito; Hiroyuki Hirano; Katsumi Ishii; Shinichi Naohara; Yoshifumi Tsukada, all of Tokorozawa, and Kanya Matsumoto, Tokyo-to, all of Japan, assignors to Pioneer Electronic Corporation, Tokyo-to, Japan

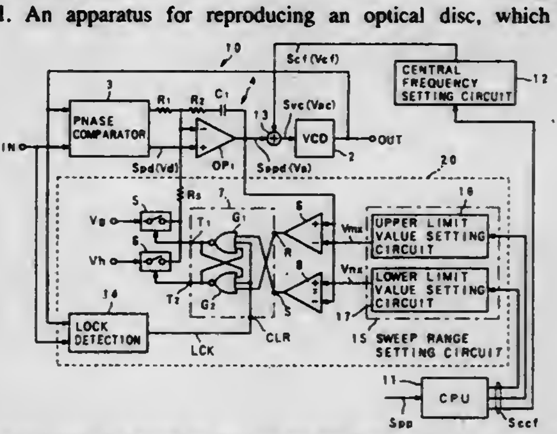
Filed Oct. 11, 1995, Ser. No. 540,982

Claims priority, application Japan, Oct. 14, 1994, 6-249873

Int. Cl.⁶ G11B ***7/00***

U.S. Cl. 369—50 **2 Claims**

1. An apparatus for reproducing an optical disc, which is



recorded with information by a constant linear velocity, comprising: a PLL circuit, to which an input clock signal is inputted, and a pulling-in circuit,

said PLL circuit comprising:
a voltage controlled oscillator for outputting an output clock signal;
a control voltage generation circuit for generating a control voltage to lock phases of the input and output clock signals by a loop, and outputting the generated control voltage to a control input terminal of said voltage controlled oscillator;
and a central frequency setting circuit for setting a central frequency, to which a frequency of the output clock signal is to be pulled-in, to said control voltage generation circuit,
said pulling-in circuit comprising:
a sweep range setting circuit for setting a sweep range, where the frequency of the output clock signal is to be pulled-in to the set central frequency, on the basis of the set central frequency;
a lock detector for detecting whether or not a pulling-in operation is completed in said PLL circuit, and outputting a lock signal when the pulling-in operation is detected to be completed and
a sweep range control circuit for controlling said control signal generation circuit to generate the control signal to repeatedly sweep the frequency of the output clock signal through the set sweep range during the pulling-in operation until the lock signal is supplied thereto,
said reproducing apparatus further comprising:
a rotation means for rotating the optical disc by a constant angular velocity on the basis of the output clock signal outputted by said PLL circuit;
an optical pickup for reading the information from the rotated optical disc and outputting the input clock signal based on the data transmission rate of the read information;
a position detection means for detecting a reading position on the rotated optical disc where the information is read by said optical pickup, said central frequency setting circuit setting the central frequency in accordance with the detected reading position.

5,619,485

Patent Not Issued For This Number

5,619,486

STORAGE DISK MODULE AND STORAGE DISK DEVICE HAVING A PLURALITY OF STORAGE DISK MODULES

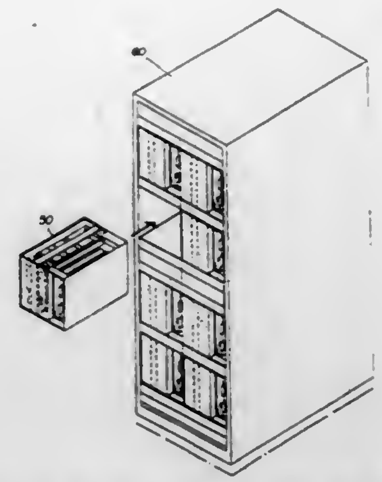
Hirosi Uno, and Takao Hakamatani, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 258,594, Jun. 10, 1994, Pat. No. 5,485,446, which is a continuation of Ser. No. 799,610, Nov. 27, 1991, abandoned. This application Apr. 21, 1995, Ser. No. 428,353

Claims priority, application Japan, Nov. 30, 1990, 2-334161; Feb. 14, 1991, 3-42578; Feb. 22, 1991, 3-50679; Mar. 1, 1991, 3-59321; Mar. 1, 1991, 3-59322

Int. Cl.⁶ G11B *33/12*

U.S. Cl. 369—75.1 **25 Claims**



1. A storage disk device comprising:
a locker; and
a plurality of storage disk modules accommodated in said locker, each of said storage disk modules comprising:
a frame having front and back portions;
a disk drive unit having a storage disk, said disk drive unit being accommodated in said frame;
a circuit unit which controls said disk drive unit, said circuit unit being accommodated in said frame;
a power source unit which supplies said disk drive unit and said circuit unit with electrical energy, said power source unit being accommodated in said frame;
said disk drive unit, said circuit unit and said power source unit each having corresponding front and back portions and being slidingly insertable in a first direction into said frame in substantially parallel, side by side relationship with respect to each other so that the back portion of each unit is opposite to the back portion of the frame; and
a back panel mounted in the back portion of said frame and extending transversely to the first direction, said back panel having a front surface and electrically connecting said disk drive unit, said circuit unit and said power source unit to each other.

5,619,487

OPTICAL DATA READOUT WITH TWO BEAMS ON THREE TRACKS

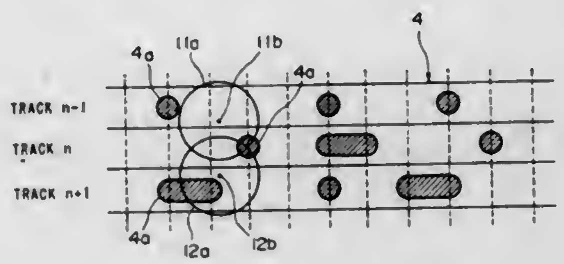
Takaya Tanabe, Tokorozawa; Manabu Yamamoto, Sayama; Kikuji Katoh, Tokorozawa, and Hisanobu Dobashi, Tokyo, all of Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed Aug. 4, 1995, Ser. No. 511,242

Claims priority, application Japan, Aug. 10, 1994, 6-188039; Sep. 5, 1994, 6-211571; Mar. 6, 1995, 7-045832

Int. Cl.⁶ G11B *7/00*

U.S. Cl. 369—100 **21 Claims**



1. A data readout method for regenerating data recorded on an optical recording medium by using optical beams, the method comprising the steps of:
making a first optical beam incident on the optical recording medium in a manner such that in three successive tracks n−1, n, and n+1, n being an integer of two or more, on the recording medium, the center of the beam spot of the first optical beam lies, in a transverse direction of the tracks, between the boundary point of tracks n−1 and n and the center of track n−1;
making a second optical beam incident on the optical recording medium in a manner such that the center of the beam spot of the second optical beam lies, in the transverse direction of the tracks, between the boundary point of tracks n+1 and n and the center of track n+1;
detecting reflected beams of the first and second optical beams from the optical recording medium; and
regenerating data recorded on the three tracks in accordance with amplitude levels of the detected reflected beams.

5,619,488

INFORMATION RECORDING DEVICE

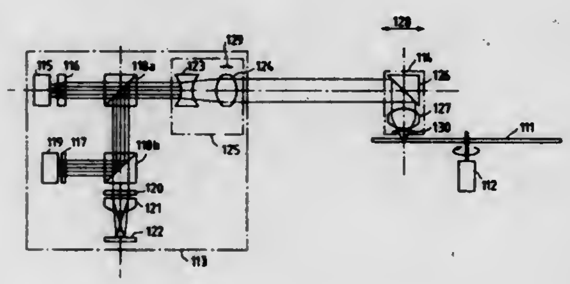
Takeshi Ota, and Masao Ito, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 941,155, Sep. 4, 1992, abandoned. This application Feb. 10, 1995, Ser. No. 386,594

Claims priority, application Japan, Sep. 7, 1991, 3-227532; May 1, 1992, 4-112906

Int. Cl.⁶ G11B *7/00*

U.S. Cl. 369—112 **5 Claims**



1. An information recording device comprising:
light source means including a plurality of laser light sources in a monolithic laser array, which are substantially linearly arrayed and independently driven;
deflecting means for periodically deflecting a plurality of beams of laser light emitted from said light source means in a direction crossing that of an array of said beams;
an image forming optical system for focusing the plurality of laser beams from said deflecting means onto a photoreceptor; and
a lens means comprising a monolithic array of microlenses, each of said microlenses being optically coupled to one of said laser light sources,
wherein said lens means defines an apparent light source plane behind a light emitting plane of said light source means, and wherein said image forming optical system projects the image of said apparent light source plane on said photoreceptor.

5,619,489

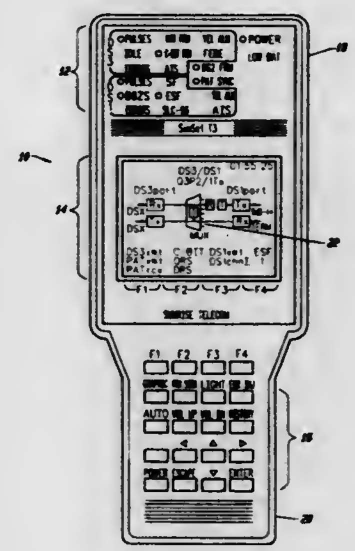
HAND-HELD TELECOMMUNICATION TESTER

Paul K. Chang, San Jose; Paul A. Marshall, Morgan Hill, and Robert C. Pfeiffer, San Jose, all of Calif., assignors to Sunrise Telecom, Inc., San Jose, Calif.

Filed Jul. 28, 1995, Ser. No. 504,949

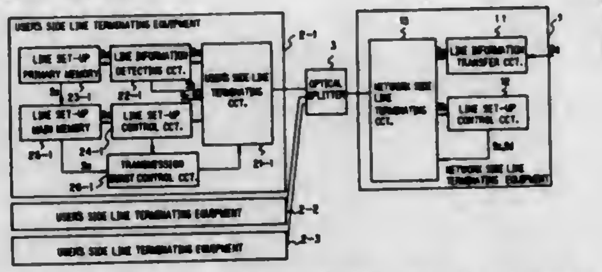
Int. Cl.⁶ H04J *3/14*; H04M *1/24*

U.S. Cl. 370—241 **20 Claims**



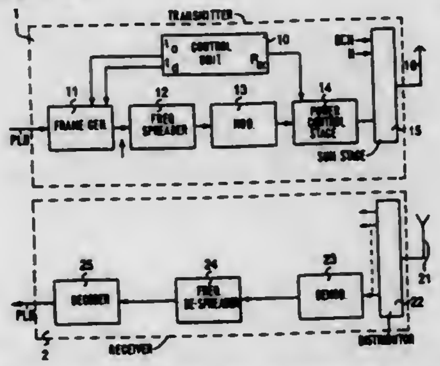
1. A device for testing communication transmission networks comprising:
at least one signal input port;
test circuitry which receive signals from said signal input port;
a multiplexer which routes said signals to said test circuitry;
a microprocessor that controls operation of said multiplexer and test circuitry;
a user input device for inputting operating instructions to said microprocessor, said operating instructions including a configuration of a communication transmission network; and
a graphical display showing said configuration as said configuration is being input;
wherein graphical editing of said configuration of said communication transmission network is achieved.

5,619,490
LINE SET-UP SYSTEM
Hitoshi Nagafuchi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Aug. 29, 1995, Ser. No. 520,646
Claims priority, application Japan, Sep. 7, 1994, 6-213111
Int. Cl.^{6} H04L *1/16*
U.S. Cl. 370—241 **20 Claims**



1. A line set-up system wherein a network side line terminating set is connected to a total of n (n=positive integer) user's side line terminating sets to form an n-branch star configuration comprising:
transfer means provided in said network side line terminating set for transferring at least line information concerning a phase of transmission of transmission burst signals to each of said n user's side line terminating sets;
memory means provided in each of said n user's side line terminating sets for storing said line information to control at least the phase of transmission of said transmission burst signals;
storing means provided in each of said n user's side line terminating sets for storing said line information from said transfer means;
determination means provided in each of said n user's side line terminating sets for determining if said line information from said transfer means is normal or not;
write-in means provided in each of said n user's side line terminating sets for writing said line information into said storing means when said determination determines it to be normal;
transmission means provided in each of said n user's side line terminating sets for transmitting a detection result signal representing the result of detection of the line information formed by adding an error correction code to the determined result of said determination means to said network side line terminating set;
output means provided in said network side line terminating set for generating either a line set-up permission signal directing update of the line information or a line set-up inhibition signal inhibiting update of the line information depending on the signal representing the result of detection of line information from the transmission means of all the n user's side line terminating sets;
update means provided in each of said n user's side line terminating sets for updating the contents of said memory means by the line information stored in said storing means when the line set-up permission signal is generated by said output means; and
write-in inhibition means provided in each of said n user's side line terminating sets for inhibiting said line information stored in said storing means from being written into said memory means when the line set-up inhibition signal is produced by said output means.

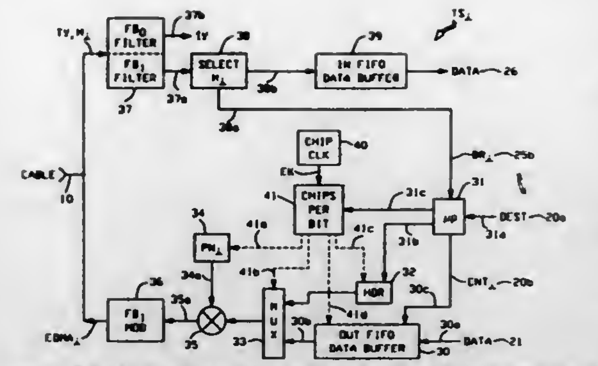
5,619,491
CDMA TRANSMISSION SYSTEM
Herbert Panzer, Nürnberg, Germany, assignor to U.S. Philips Corporation, New York, N.Y.
PCT No. PCT/IB94/00158, § 371 Date Apr. 3, 1995, § 102(e) Date Apr. 3, 1995, PCT Pub. No. WO94/29980, PCT Pub. Date Dec. 22, 1994
PCT Filed Jun. 16, 1994, Ser. No. 381,997
Claims priority, application Germany, Jun. 16, 1993, 43 19 830.9
Int. Cl.^{6} H04J *13/00*
U.S. Cl. 370—342 **6 Claims**



6. A transmitter for use in a CDMA transmission system wherein said transmitter is for converting an original sequence of data words which may have various bit rates into a sequence of spread spectrum data words by encoding the original data words in accordance with selected code words, and transmititing the spread spectrum data words; characterized in that said transmitter comprises:
frame generating means for compressing the data words in the original sequence into data bursts having higher bit rates and shorter durations, and including the data bursts in time slots of a sequence of data frames;
frequency spreading means coupled to the frame generating means for spreading the frequency spectrum of the data bursts by encoding them in accordance with said selected code words, the frequency spectrum of a data burst being spread as a function of the bit rate thereof;
power control means coupled to said frequency spreading means for setting transmit power levels of the spread spectrum data bursts as a function of the bit rates thereof, higher transmit power levels being provided for data bursts which have higher bit rates; and
transmission control means for controlling the compression provided by said frame generating means for each of said data words and the positioning of said data bursts in said frames, in order to substantially uniformly fill the bandwidth of each of said frames.

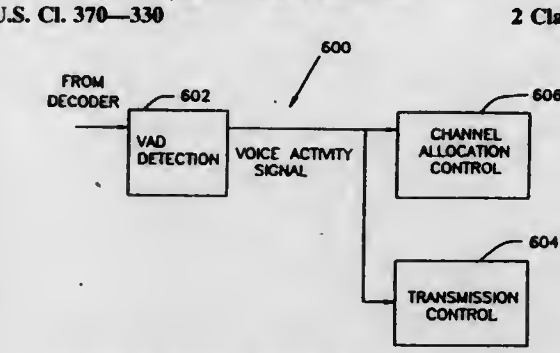
5,619,492
CDMA COMMUNICATION SYSTEM IN WHICH BIT RATES ARE DYNAMICALLY ALLOCATED
Harry B. Press, Sandy; Thomas R. Giallorenzi, Salt Lake City, and Mark T. Rafter, Park City, all of Utah, assignors to Unisys Corporation, Blue Bell, Pa.
Filed Jun. 16, 1995, Ser. No. 491,033
Int. Cl.^{6} H04J *13/04*
U.S. Cl. 370—441 **10 Claims**

1. A CDMA communication system, in which bit rates are dynamically allocated, comprising:
a plurality of CDMA transmitting stations and a single CDMA receiving station, all of which are intercoupled to each other over a CDMA channel and a feedback channel;
each CDMA transmitting station including a control circuit which sends control signals on said CDMA channel in spaced apart time intervals which request respective bit rates on said CDMA channel;



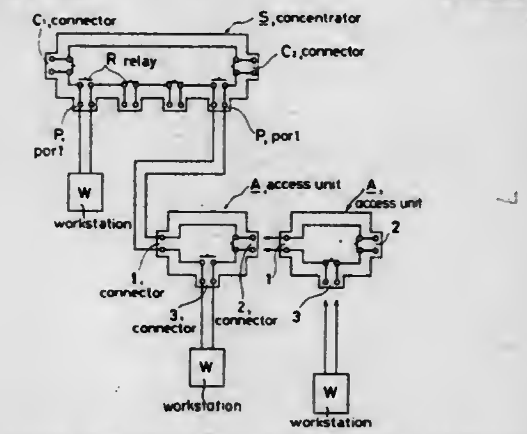
said CDMA receiving station including a bit rate allocating circuit which receives and responds to said control signals by sending feedback messages over said feedback channel that address individual CDMA transmitting stations and grant respective bit rates to the addressed station; said bit rate allocating circuit also including a circuit that tallies the bit rates which are granted in said feedback messages, and maintains the tally below a predetermined maximum aggregate bit rate for said CDMA channel; and,
each CDMA transmitting station including a receiver circuit that receives those feedback messages which address that particular station, and a data transmitting circuit which sends CDMA digital data on said CDMA channel at the bit rates granted in the received feedback messages.

5,619,493
SPREAD-SPECTRUM, FREQUENCY-HOPPING RADIO TELEPHONE SYSTEM WITH VOICE ACTIVATION
Mordechai Ritz, Givat Elah; Noam Livneh, D.N. Misgav, and Glora Silbershatz, Haifa, all of Israel, assignors to Rafael Armament Development Authority, Haifa, Israel
Continuation of Ser. No. 401,924, Mar. 9, 1995, abandoned, which is a continuation of Ser. No. 80,075, Jun. 18, 1993, Pat. No. 5,408,496. This application Feb. 26, 1996, Ser. No. 606,587
Claims priority, application Israel, Nov. 3, 1992, 103620
Int. Cl.^{6} H04J *4/00;13/06*
U.S. Cl. 370—330 **2 Claims**



1. A method of providing multiple access communications in a communication system having a plurality of fixed frequency channels in which signals are transmitted, comprising the steps of:
transmitting a signal spread over the plurality of fixed frequency channels in accordance with a sequence of frequency channels;
detecting the signed activity level of the transmission of the signal on one of the plurality of fixed frequency channels to generate a voice activity signal;
deactivating the transmission of the signal when the voice activity signal indicates that the signal is silent: and
transmitting the signal in accordance with a new sequence of frequency channels when signal activity resumes.

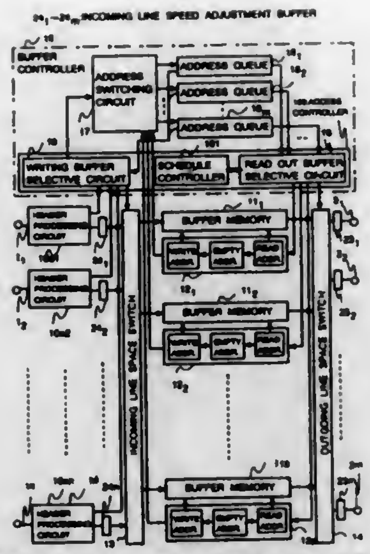
5,619,494
ACCESS UNIT FOR LOCAL AREA NETWORK AND CONCENTRATOR SYSTEM THEREOF
Toshiyuki Nishikawa, and Hiroshi Ishihara, both of Hyogo-ken, Japan, assignors to Mitsubishi Cable Industries, Ltd., Hyogo-ken, Japan
Continuation of Ser. No. 700,751, May 15, 1991, abandoned. This application Sep. 15, 1994, Ser. No. 306,521
Claims priority, application Japan, May 18, 1990, 2-129910
The portion of the term of this patent subsequent to Jan. 12, 2000, has been disclaimed.
Int. Cl.^{6} H04L *12/42;12/40*
U.S. Cl. 370—357 **8 Claims**



5. An access unit coupled to a workstation in a local area network system, comprising:
a first connector connectable to circuit means preceding a workstation, a second connector connectable to circuit means subsequent said workstation, a third connector comprising a single port connector for said workstation connectable between said first and second connectors, a set of relay contacts of an electrically energizable relay coupled across said third connector, said set of relay contacts being switchable from a closed state to an open state in response to a detachable interconnection of said workstation to said third connector, and a mechanically operated electrical switch coupled across said second connector and between said first connector and said set of relay contacts, said electrical switch being switchable from a closed state to an open state in response to a detachable interconnection thereto of said circuit means subsequent said workstation and thereby switching said circuit means preceding said workstation and said circuit means subsequent said workstation into circuit relationship with said workstation, said switch being in said closed state in absence of said circuit means subsequent said workstation for switching said workstation into circuit relationship only with said circuit means preceding said workstation through said first connector.

5,619,495
CELL SWITCHING APPARATUS AND A CELL SWITCHING SYSTEM
Hideaki Yamanaka; Hirotaka Saito; Munenori Tsuzuki; Yasuhito Sasaki; Hirotoshi Yamada, and Kazuyoshi Oshima, all of Kanagawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 21, 1995, Ser. No. 517,169
Claims priority, application Japan, Sep. 2, 1994, 6-210240
Int. Cl.^{6} H04Q *11/04*
U.S. Cl. 370—413 **24 Claims**

1. A cell switching apparatus comprising:
a plurality of incoming lines for receiving a cell having data and a header that includes destination information;
a plurality of outgoing lines, the cell being transmitted from a selected outgoing line of the plurality of outgoing lines



according to the destination information indicated by the header, during a predefined one cell time;

a plurality of header processing circuits, connected to each of the incoming lines, for selecting the selected outgoing line according to the destination from the header of the cell input from the incoming line;

a plurality of buffer memories, the cell being written to a selected buffer memory of the plurality of buffer memories by indicating an address, and which is possible to read out the cell, without relating to a writing order of any other cells stored in the selected buffer memory, by indicating the address;

an incoming-line space switch for connecting the header processing circuits to the buffer memories selectively;

an outgoing-line space switch for connecting the buffer memories to the outgoing lines selectively; and,

a buffer controller for controlling the incoming-line space switch and selecting the selected buffer memory in which the cell is written, the buffer controller being constructed and arranged to both read a first cell from one of the plurality of buffer memories and to write a second cell to said one of the plurality of buffer memories during said predefined one cell time, the buffer controller further controlling the outgoing-line space switch so as to transmit the cell to the selected outgoing line, and wherein the cell is transmitted from the outgoing line.

5,619,496
INTEGRATED NETWORK SWITCH HAVING MIXED MODE SWITCHING WITH SELECTABLE FULL FRAME/HALF FRAME SWITCHING

Steven Weir, Petaluma, Calif., assignor to Harris Corporation, Melbourne, Fla.

Continuation of Ser. No. 257,886, Jun. 10, 1994, abandoned. This application Aug. 28, 1995, Ser. No. 520,004

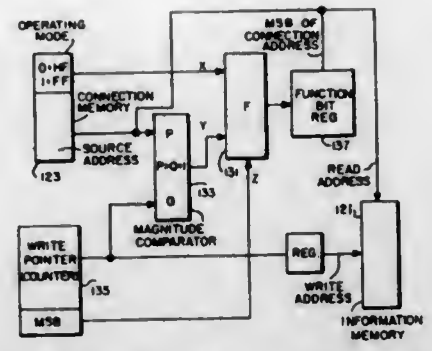
Int. Cl.[6] H04L *12/56*

U.S. Cl. 370—363 **8 Claims**

1. In an integrated network switch including ports for connection to peripheral devices, and switching apparatus for selectively switching signals organized in frame format between ports, each of said ports occupying a fixed time slot in the frame, apparatus for selectively switching said signals in either full-frame or half-frame format comprising:

an information memory for storing source data from said ports,

a connection memory for storing port-port connection data,



a time slot counter for providing time slot information to the information memory and the connection memory, each time slot being associated with a unique memory address in the information memory,

said information memory having at least two memory cells associated with each time slot, and

means for selectively switching said signals organized in frame format according to one of a half-frame mode of operation or full-frame mode of operation.

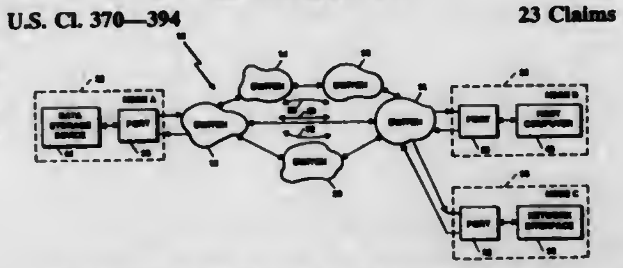
5,619,497
METHOD AND APPARATUS FOR REORDERING FRAMES

Brian Gallagher, Marlboro, and Miklos A. Sandorfi, Foxboro, both of Mass., assignors to EMC Corporation, Hopkinton, Mass.

Continuation of Ser. No. 433,086, May 3, 1995, abandoned, which is a continuation-in-part of Ser. No. 363,392, Dec. 22, 1994. This application Mar. 15, 1996, Ser. No. 616,776

Int. Cl.[6] H04L *12/56*

U.S. Cl. 370—394 **23 Claims**



1. A communications network for transmitting frames between nodes connected to the network, said network comprising:

(a) at least one node comprising:

(i) a plurality of ports capable of receiving frames from another node connected to said network substantially simultaneously and transmitting frames to another node connected to said network;

(ii) a frame handler for processing said frames received by said plurality of ports;

(iii) a multiplexer for forwarding a first frame received by a selected one of said ports to said frame handler; and

(iv) a demultiplexer for routing a second frame from said frame handler to at least a selected one of said plurality of ports; and

(b) a plurality of node clients in communication with said least one node, wherein each one of said node clients is associated with a corresponding one of said plurality of ports.

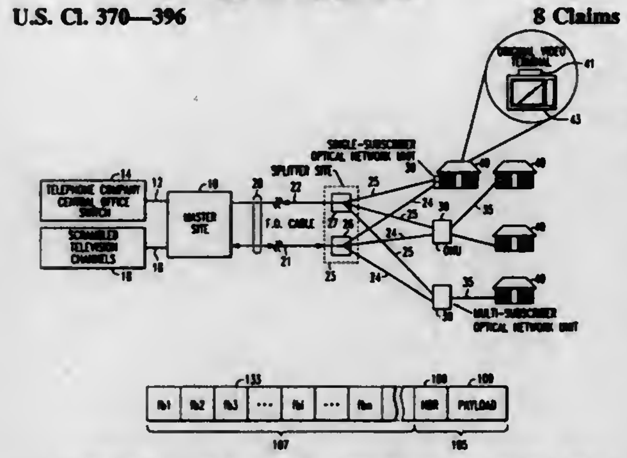
5,619,498
FLAG FIELD-BASED ROUTING MECHANISM FOR FIBER OPTIC TELECOMMUNICATION SYSTEM EMPLOYING STS-BASED TRANSMISSION FORMAT CONTAINING ASYNCHRONOUS TRANSFER MODE CELLS

Randall B. Sharpe, Chapel Hill, N.C., assignor to Broadband Technologies, Inc., Durham, N.C.

Filed Aug. 8, 1995, Ser. No. 512,654

Int. Cl.[6] H04L *12/56*

U.S. Cl. 370—396 **8 Claims**



1. A method of conveying telecommunication messages over a communication path from a master site to customer premises equipment coupled to a plurality of remote sites comprising the steps of:

at said master site,

(a) examining a respective data cell having a header and payload, said payload containing data to be conveyed to one or more customer premises of said remote sites, in order to determine which customer premises have requested said respective data cell;

(b) assembling said telecommunication messages as data cells, each data cell having a multibit flag field pre-inserted to said header, such that each bit of said multibit flag field is set to a prescribed bit value associated with customer premises of a remote site requesting said respective data cell;

(c) transmitting said respective data cell assembled in accordance with step (b) to said plurality of remote sites; and

at a respective one of said plurality of remote sites,

(d) extracting said multibit flag field of a respective data cell that has been transmitted thereto in step (c), and examining the contents of the extracted multibit flag field in order to determine whether the bit of said flag field associated with customer premises of said respective one of said plurality of remote sites has been set to said prescribed bit value, and forwarding said respective data cell absent said flag field to a customer premises, if the bit of said flag field associated with customer premises of said respective one of said plurality of remote sites has been set to said prescribed bit value, but otherwise not forwarding said respective data cell to said customer premises.

5,619,499
PROTOCOL PROCESSOR IN COMMUNICATION NETWORK TRANSFERRING DATA IN ASYNCHRONOUS TRANSFER MODE

Takeo Nakabayashi, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

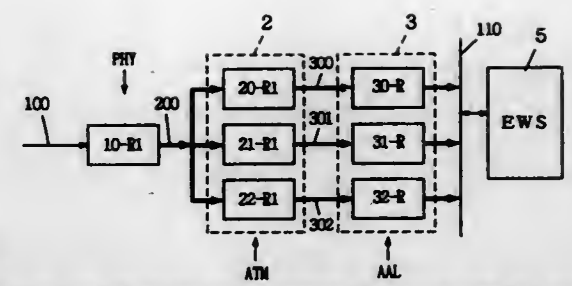
Filed May 12, 1995, Ser. No. 439,751

Claims priority, application Japan, May 13, 1994, 6-099806

Int. Cl.[6] H04J *3/16*

U.S. Cl. 370—469 **32 Claims**

1. A protocol processor including a physical layer being coupled to a transmission line for carrying out prescribed processing on data for transmission to said transmission line and an ATM layer



for carrying out prescribed processing on received data for transmission to said physical layer, and employed for a communication network in which data communication is carried out in an asynchronous transfer mode, said protocol processor comprising:

a plurality of ATM layer transmission means provided in correspondence to different applications respectively for carrying out preallocated ATM layer processing on received data, each of said plurality of ATM layer transmission means including output means for outputting processed data in activation thereof; and

physical layer transmission means coupled to receive said output data from said plurality of ATM layer transmission means for carrying out physical layer processing on received data for transmission onto said transmission line.

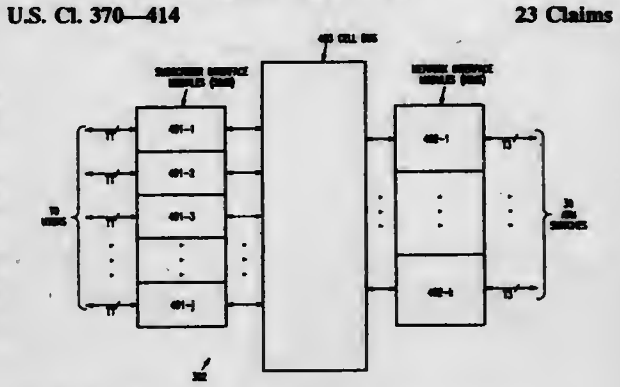
5,619,500
ATM NETWORK INTERFACE

Nasser Hiekali, San Jose, Calif., assignor to Digital Link Corporation, Sunnyvale, Calif.

Filed Sep. 1, 1994, Ser. No. 299,737

Int. Cl.[6] H04L *12/56*

U.S. Cl. 370—414 **23 Claims**



9. An ATM network interface comprising:

a plurality of output ports coupled to one or more users;

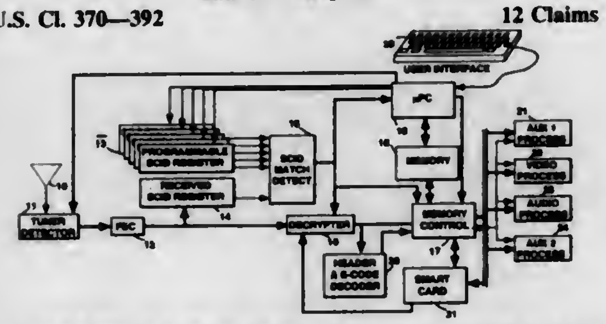
an input port for receiving data from said ATM network, said input port having a bandwidth less than the sum of the bandwidths of said plurality of output ports;

a memory array for storing said data received on said input port until said data is sent to said users via said output port;

a plurality of pointer pools, each comprising a plurality of locations for storing pointers serving to address a portion of said data stored in said memory array; and

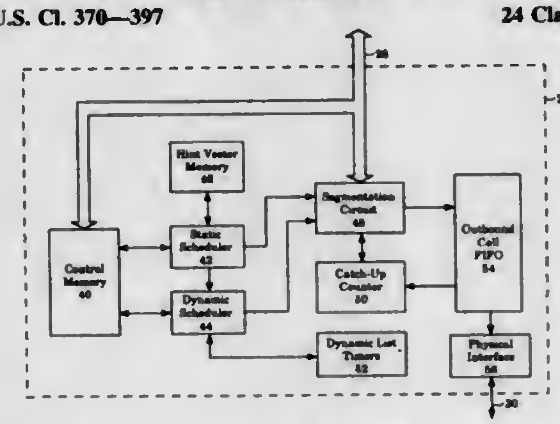
a control circuit for storing within said pointer pools addresses corresponding to data stored in said memory array based on a priority for which said data stored in said memory array is to be output to said users via said output port.

5,619,501
CONDITIONAL ACCESS FILTER AS FOR A PACKET VIDEO SIGNAL INVERSE TRANSPORT SYSTEM
Gregory G. Tamer, Indianapolis; Michael S. Deiss, Zionsville; John W. Chaney, and James E. Hailey, both of Indianapolis, all of Ind., assignors to Thomson Consumer Electronics, Inc., Indianapolis, Ind.
Filed Apr. 22, 1994, Ser. No. 232,794
Int. Cl.[6] H04J *3/26*
U.S. Cl. 370—392 **12 Claims**



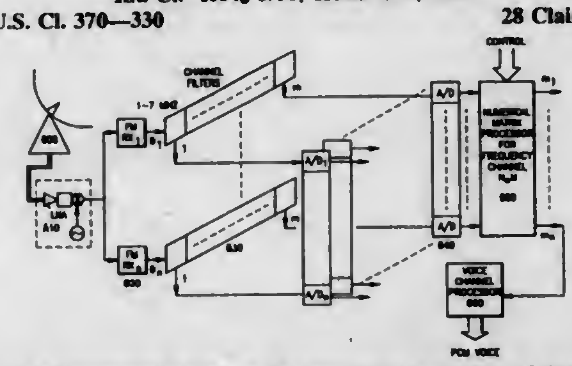
1. Apparatus in a packet signal receiver for processing a packet signal containing entitlement data included in signal packets having a header identifying such packets as containing entitlement data, and having a payload containing said entitlement data and a payload header including a plurality of adjacently concatenated N-byte conditional access codes, said apparatus comprising:
means for applying said packet signal;
a transport processor, responsive to said packet signal, for identifying signal packets containing entitlement data, and extracting entitlement data payloads from identified packets;
memory means for storing extracted entitlement data payloads; and
a conditional access filter arranged to examine payload header data of extracted entitlement data payloads for subscriber specific or subscriber group N-byte conditional access codes, including a comparator, for comparing, said payload header data including said plurality of adjacently concatenated N-byte conditional access codes, in exclusive N-byte groups, with an N-byte conditional access code stored in said receiver, and if a match is made of said N-byte conditional access code with any of said exclusive N-byte groups, generating an enable signal to write said entitlement data to said memory means.

5,619,502
STATIC AND DYNAMIC SCHEDULING IN AN ASYNCHRONOUS TRANSFER MODE COMMUNICATION NETWORK
Kevin Kahn, Portland, Oreg., and David Eckhardt, Mt. Lebanon, Pa., assignors to Intel Corporation, Santa Clara, Calif.
Filed Sep. 16, 1994, Ser. No. 307,925
Int. Cl.[6] H04L *12/56*
U.S. Cl. 370—397 **24 Claims**



1. A communication subsystem, comprising:
static scheduler that accesses a scheduling list that specifies either a virtual circuit or a dynamic scheduling indication for a cell slot on a communication link, the static scheduler selecting the virtual circuit specified by the scheduling list for transfer of an outbound communication cell if the scheduling list specifies the virtual circuit for the cell slot;
dynamic scheduler that selects a virtual circuit from a dynamic scheduling list for transfer of the outbound communication cell if the scheduling list specifies the dynamic scheduling indication for the cell slot.

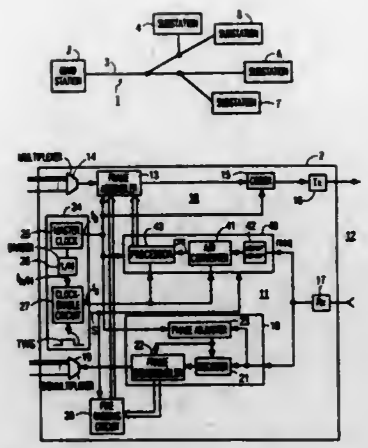
5,619,503
CELLULAR/SATELLITE COMMUNICATIONS SYSTEM WITH IMPROVED FREQUENCY RE-USE
Paul W. Dent, Stehags, Sweden, assignor to Ericsson Inc., Research Triangle Park, N.C.
Filed Jan. 11, 1994, Ser. No. 179,953
Int. Cl.[6] H04J *3/16;* **H04B** *1/10;15/00*
U.S. Cl. 370—330 **28 Claims**



1. A transmitting apparatus for transmitting a plurality of signals to a plurality of receivers using the same radio frequency channel, comprising:
channel processing means for converting each of said signals to a numerical sample stream representative of a modulated radio wave;
matrix processing means for forming numerical combinations of said numerical sample streams using a set of matrix coefficients;
conversion means for converting said numerical combinations to corresponding analog modulated radio signals on a designated frequency and amplifying said modulated radio signals to a transmit power level;
antenna means, coupled to said conversion means, for transmitting said modulated radio signals; and
control means for selecting or adjusting said matrix coefficients for use by said matrix processing means such that each of said receivers receives an intended one of said plurality of signals with reduced interterence from remaining, unintended signals.

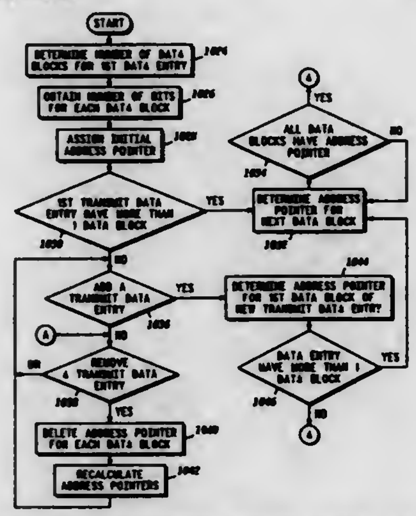
5,619,504
TELECOMMUNICATION SYSTEM AND A MAIN STATION FOR USE IN SUCH A SYSTEM
Petrus A. M. Van Grinsven, and Wilfred A. M. Snijders, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Mar. 14, 1994, Ser. No. 213,483
Claims priority, application European Pat. Off., Mar. 15, 1993, 93200743
Int. Cl.[6] H04J *3/10*
U.S. Cl. 370—347 **20 Claims**

1. A telecommunication system comprising: a main station and a plurality of substations, in which system communication between the main station and the substations occurs by transmission of data samples via a transmission channel in accordance with a multiple access protocol of respective time slots in successive data frames, which channel is common to the substations, wherein for coarse



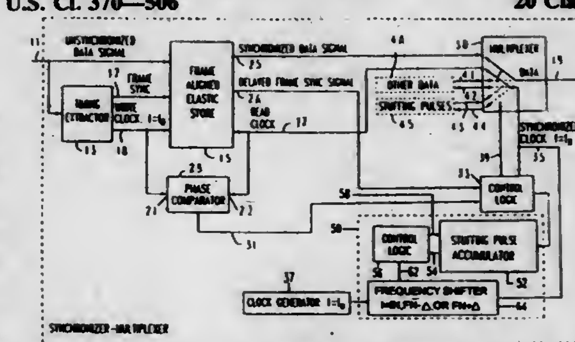
ranging the substations include ranging transmission means for transmitting in a data frame a ranging sequence of samples of low magnitude with respect to the magnitude of data samples to be transmitted in the time slots of said data frame, and the main station includes correlation means for recovering ranging information by correlating a received ranging sequence (rseq) with a reference sequence which is identical to a transmitted sequence, the main station comprising means for providing the reference sequence; and, for coarse ranging, the correlation means principally correlates those samples of a received ranging sequence which fall within a time window reserved for ranging in said data frame.

5,619,505
METHOD FOR PRODUCING AND RECOVERING A DATA STREAM FOR A DMT TRANSCEIVER
Gary W. Grube, Barrington, Ill.; Timothy W. Markison, Austin, Tex.; Matthew A. Pendleton, Cedar Park, Tex., and Mathew A. Rybicki, Austin, Tex., assignors to Motorola Inc., Schaumburg, Ill.
Filed Jan. 26, 1995, Ser. No. 378,697
Int. Cl.[6] H04B *1/40;* **H04J** *3/00*
U.S. Cl. 370—476 **23 Claims**



21. A method for determining address pointers for storing a number of data blocks from a data stream in a data memory, the method comprising the steps of:
a) accessing a carrier channel allocation database to determine the number of data blocks in the data stream;
b) allocating an initial address pointer to a first data block of the number of data blocks, wherein the initial address pointer is equal to an initial address of the data memory; and
c) when the number of data blocks is greater than one, determining an address pointer for a second data block of the number of data blocks.

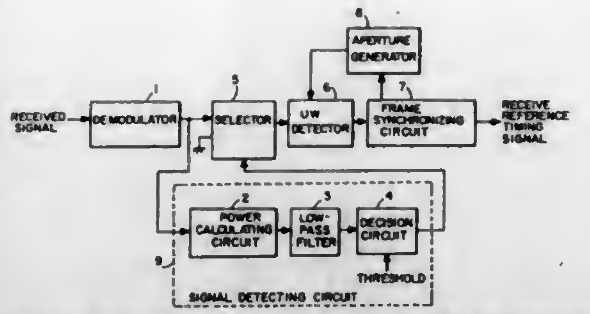
5,619,506
METHOD AND APPARATUS FOR REDUCING WAITING TIME JITTER IN PULSE STUFFING SYNCHRONIZED DIGITAL COMMUNICATIONS
Richard A. Burch, Madison; Kevin W. Schneider, Huntsville, and Michael D. Turner, Madison, all of Ala., assignors to Adtran, Inc., Huntsville, Ala.
Filed Apr. 27, 1995, Ser. No. 429,950
Int. Cl.[6] H04J *3/07*
U.S. Cl. 370—506 **20 Claims**



6. An apparatus for synchronizing an asynchronous digital signal to produce a synchronized digital signal comprising:
an elastic store into which successive components of said asynchronous digital signal are written by a write clock coupled to said elastic store, and from which successive components of said synchronized digital signal are read out by a read clock coupled to said elastic store;
a phase comparator to which said write and read clocks are coupled and which is operative to produce an output representative of the phase difference between said write and read clocks;
an output multiplexer which is coupled to receive said synchronized digital signal and stuff pulses, and is operative to controllably multiplex said stuff pulses with components of said synchronized signal in accordance with a control signal to produce a stuffed synchronous output signal having a number of stuffs per stuffing opportunity; and
a stuff controller which is operative to generate said control signal in accordance with the output of said phase comparator, said stuff controller controllably adjusting the frequency of said synchronized signal in accordance with said ratio of stuffs per stuffing opportunity.

5,619,507
METHOD AND APPARATUS FOR ESTABLISHING AND MAINTAINING FRAME SYNCHRONIZATION IN A SATELLITE COMMUNICATION SYSTEM
Hiroki Tsuda, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Jun. 30, 1994, Ser. No. 268,454
Claims priority, application Japan, Jun. 30, 1993, 5-196657
Int. Cl.[6] H04J *3/06*
U.S. Cl. 370—350 **28 Claims**

1. An apparatus for establishing frame synchronization in a satellite communication system which receives a modulated signal having frames, a unique word and data being multiplexed in each of said frames, said apparatus comprising:
means for demodulating said modulated signal and providing a demodulated signal, said demodulated signal including said unique word;
signal detecting means for comparing the signal power of said demodulated signal with a threshold signal and providing a detection signal



selecting means for providing, in accordance with said detection signal, one of said demodulated signal and fixed data, which is different from said unique word as a selected signal; and

frame synchronizing means which is operative for detecting said unique word from said selected signal when said demodulated signal is provided as said selected signal by said selecting means, and establishing frame synchronization based on said unique word, and wherein said frame synchronization means is not operative for detecting said unique word when said fixed data is provided as said selected signal.

5,619,508

DUAL PORT INTERFACE FOR A COMPUTER-BASED MULTIFUNCTION PERSONAL COMMUNICATION SYSTEM

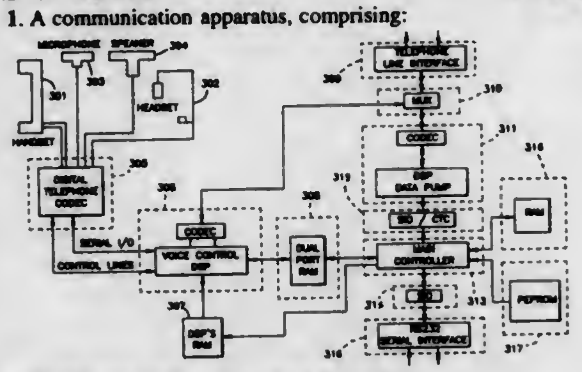
Jeffrey P. Davis, Ham Lake, and Raghu Sharma, North Oaks, both of Minn., assignors to Multi-Tech Systems, Inc., Mounds View, Minn.

Division of Ser. No. 161,915, Dec. 3, 1993, Pat. No. 5,453,986, which is a continuation-in-part of Ser. No. 142,801, Oct. 25, 1993, Pat. No. 5,486,986, which is a continuation-in-part of Ser. No. 2,467, Jan. 8, 1993, Pat. No. 5,452,289. This application Mar. 23, 1995, Ser. No. 409,017

Int. Cl.[6] H04J *3/17;3/18;* **H04L** *5/14*

U.S. Cl. 370—495 **5 Claims**

1. A communication apparatus, comprising:



data interface connected a personal computer;

first telephone line interface means for connection to a first telephone line;

second telephone line interface means for connection to a second telephone line;

telephone device means for receiving local voice signals from a local user and for conveying remote voice signals from a remote user to the local user;

full-duplex conversion means connected to the telephone device means for converting the local voice signals into outgoing digital voice data and for converting incoming digital voice data into the remote voice signals;

voice compression means connected to the full-duplex conversion means for compressing the outgoing digital voice data into compressed outgoing digital voice data and for decompressing compressed incoming digital voice data into the incoming digital voice data;

main control means connected to the voice compression means, the data interface, the first telephone line interface means and the second telephone line interface means, for receiving the compressed outgoing digital voice data from the voice compression means,

receiving outgoing computer digital data from the personal computer through the data interface,

multiplexing and transmitting compressed outgoing digital voice data with the outgoing computer digital data to the first telephone line interface means for transmission on the first telephone line,

receiving and demultiplexing compressed incoming digital voice data and incoming computer digital data from the first telephone line interface means from the first telephone line, and

passing the remote voice signals to the second telephone line interface means for transmission on the second telephone line.

5,619,509

APPARATUS AND METHODS FOR TESTING TRANSMISSION EQUIPMENT AND A SELF-TEST METHOD

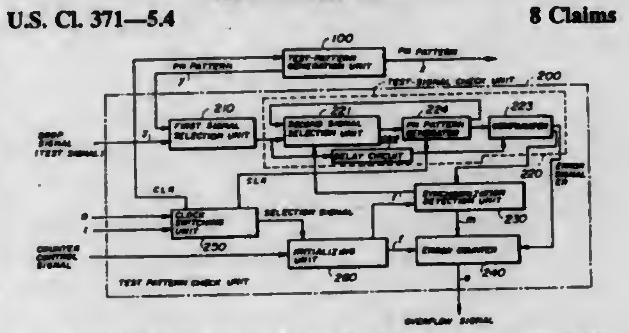
Akira Maruyama, and Koji Aihara, both of Kawasaki, Japan, assignors to Fujitsu, Limited, Kanagawa, Japan

Filed Mar. 8, 1995, Ser. No. 400,911

Claims priority, application Japan, Mar. 18, 1994, 6-049489

Int. Cl.[6] G06F *11/00*

U.S. Cl. 371—5.4 **8 Claims**



1. A transmission test apparatus having a system-clock redundancy system for testing a transmission path, said transmission test apparatus comprising:

a clock switching unit for selecting a proper one from a plurality of system clocks in response to a clock selection signal and supplying a selected system clock;

test-signal check means for performing a synchronization operation in which a first test pattern generated based on said selected system clock in the test-signal check means is synchronized with a test signal coming through said transmission path, which test signal has been formed with the same pattern as the first test pattern, and for comparing the first test pattern with the test signal;

synchronization detection means for detecting a synchronization between said first test pattern and said test signal by examining a comparison result of said test-signal check means and for producing a synchronization detection signal which indicates a synchronous state when detecting the synchronization;

an error counter performing a counting operation in which a number of error bits existing in said comparison result of said test-signal check means is counted after receiving said synchronization detection signal from said synchronization detection means; and

initilizing means for generating an initializing signal in response to said clock selection signal to initialize the synchronizing operation in said test-signal check means and the counting operation in said error counter,

wherein:

in response to said initializing signal said synchronization detection means initializes the synchronization detecting operation and controls said test-signal check means to carry out the synchronizing operation again by a deactivated synchronization detection signal which indicates an asynchronous state; and

said error counter, after being reset by said initializing signal, restarts the counting operation in response to the synchronization detection signal generated again in said synchronization detection means.

5,619,510

OUTPUT BUFFER TYPE ASYNCHRONOUS TRANSFER MODE SWITCH AND DETECTING ERROR BOARDS THEREOF

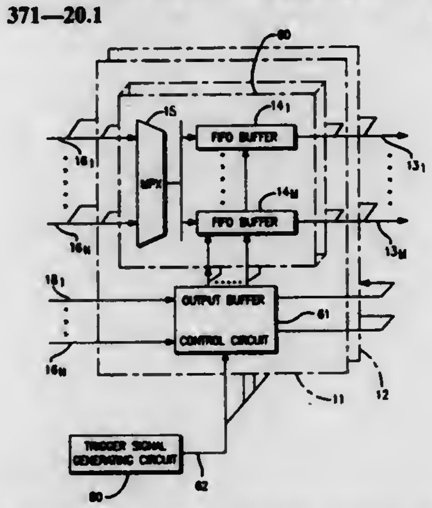
Takatoshi Kurano, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 15, 1995, Ser. No. 490,891

Claims priority, application Japan, Jun. 15, 1994, 6-132768

Int. Cl.[6] H04J *3/14;* **H04L** *12/26*

U.S. Cl. 371—20.1 **25 Claims**



1. An output buffer type asynchronous transfer mode (ATM) switch, comprising:

a plurality of boards having a bit slice structure, each of the boards including:

N input ports, wherein N is an integer of at least 2, supplied with N input signals, said N input signals being composed of cells prescribed by an ATM communication and divided to be input to said N input ports of each of said boards, respectively;

a cell demultiplexing circuit for demultiplexing said N input signals, dividing said demultiplexed signal into M input signals (M is integer not less than 2) in accordance with cell destinations, and outputting cell demultiplexed signals;

M output buffer circuits for temporarily storing said cell demultiplexed signals, said M output buffer circuits being controlled by an externally supplied output control signal; and

M output ports, each of which outputs said cell demultiplexed signals outputted from said M output buffer circuits;

said ATM switch further comprising:

a master buffer control circuit on one of said boards, said master buffer control circuit being supplied with N control signals corresponding to said N input signals, sending said output control signal prescribed by said N control signals to each of said M output buffer circuits, and outputting a synchronizing timing signal to output said output control signal; and

at least one slave buffer control circuit on another of said boards, for being supplied with N control signals corresponding to said N input signals, for receiving said timing signal from said master buffer control circuit, and for sending said output control signal prescribed by said N control signal corresponding to each of said M output buffer circuits.

5,619,511

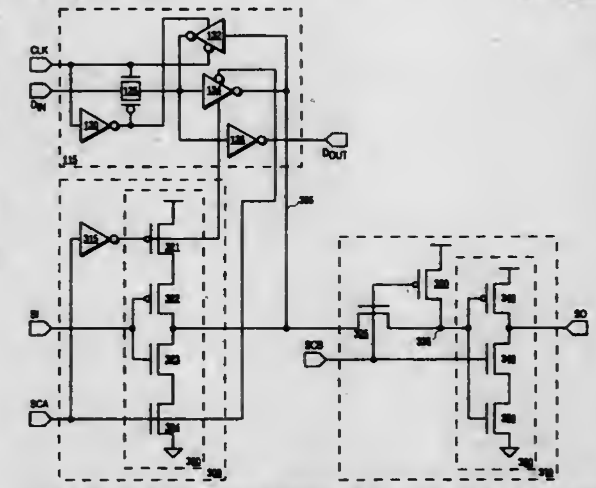
DYNAMIC SCAN CIRCUIT AND METHOD FOR USING THE SAME

Junji Sugisawa, Santa Clara, and Dilip Lalwani, Sunnyvale, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Jul. 30, 1996, Ser. No. 692,864

Int. Cl.[6] G06F *11/00*

U.S. Cl. 371—22.3 **20 Claims**



1. A scan latch slave stage coupled to a storage node of a storage device, the scan latch slave stage comprising:

a tri-state output driver having an output driver input node and having an enable input coupled to a scan clock line;

a pass gate coupling the storage node to the output driver input node, the pass gate being controlled by the scan clock line.

5,619,512

INTEGRATED CIRCUIT HAVING SELF-TESTING FUNCTION

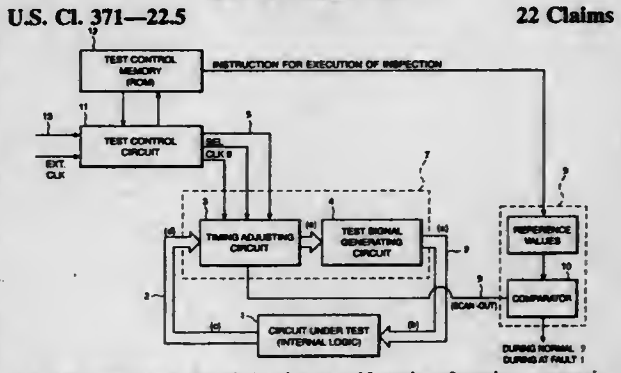
Takeshi Kawashima, Obu, and Hiroaki Tanaka, Okazaki, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Nov. 8, 1994, Ser. No. 337,826

Claims priority, application Japan, Nov. 8, 1993, 5-278300; Feb. 9, 1994, 6-037802; Apr. 25, 1994, 6-110317

Int. Cl.[6] G06F *11/00*

U.S. Cl. 371—22.5 **22 Claims**



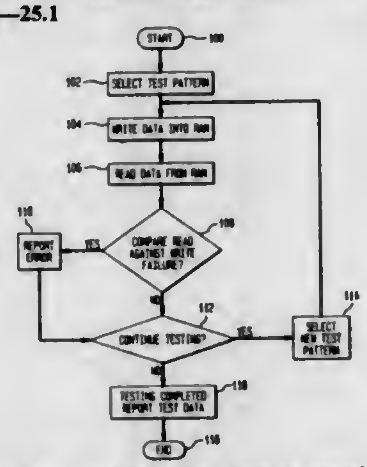
1. An integrated circuit having a self-testing function, comprising:

a circuit under test having a logic circuit, said circuit under test receiving a first set of input test data as a set of testing data, and outputting a first set of output data corresponding to a result calculated by said logic circuit based on said first set of test data; and

a testing circuit to which all of said first set of output data from said circuit under test is input as a second set of input data, said testing circuit automatically generating a second set of output data from said second set of input data, and providing said second set of output data to said circuit under test as said first set of test data, wherein output of testing data from said

testing circuit to said circuit under test is performed repeatedly to carry out said self-testing function, said testing circuit comprising:
a testing data generating circuit comprising:
input signal lines receiving said second set of input data;
output signal lines to output said second set of output data from said testing circuit; and
interconnections between said input signal lines and said output signal lines to rearrange data carried by said input and said output signal lines as said data flows through said testing circuit via said input signal lines and said output signal lines such that a pattern of data on said input signal lines differs from a pattern of data on said output signal lines; and
a timing adjustment circuit controlling a timing at which said second set of output data is output from said timing circuit.

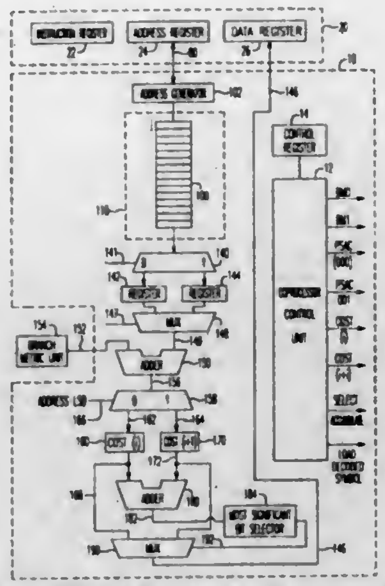
5,619,513
FAST, COST-EFFECTIVE METHOD FOR MEMORY TESTING
Shmuel Shaffer, and David Weiss, both of Palo Alto, Calif., assignors to Siemens Business Communications Systems, Inc., Santa Clara, Calif.
Continuation of Ser. No. 262,426, Jun. 20, 1994, abandoned. This application Feb. 21, 1996, Ser. No. 603,562
Int. Cl.^{6} G06F *11/00*
U.S. Cl. 371—25.1 **20 Claims**



1. A method for testing a memory system comprising the steps of:
(a) initializing, by a processor, a DMA controller and a peripheral controller;
(b) in response to the initializing in step (a), writing a test pattern generated by a pattern generator within the peripheral controller to a random access memory, writing of the test pattern being controlled by the DMA controller; and,
(c) retrieving, from the random access memory to the peripheral controller, the test pattern written into the random access memory in step (b), including the following substep,
(c.1) comparing, using a data checker within the peripheral controller, the test pattern as retrieved from the random access memory with the test pattern as generated in step (b) to detect whether any errors have occurred.

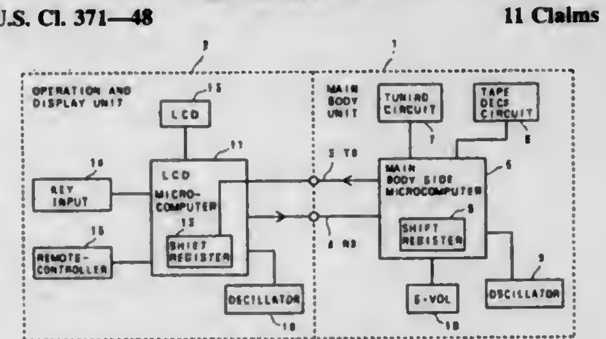
5,619,514
IN-PLACE PRESENT STATE/NEXT STATE REGISTERS
David L. Smith, Hummelstown, Pa., assignor to Lucent Technologies Inc., Murray Hill, N.J.
Filed Dec. 29, 1994, Ser. No. 366,195
Int. Cl.^{6} G06F *11/10*; H03M *13/12*
U.S. Cl. 371—43 **13 Claims**

6. An integrated circuit for processing signals, comprising:
an array of registers;



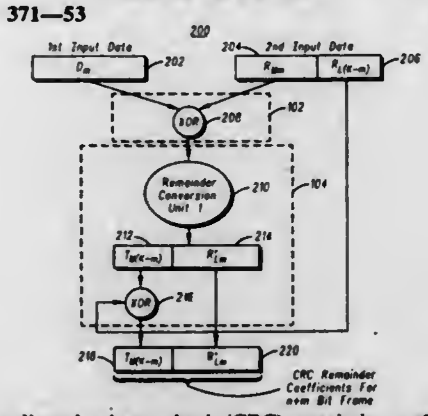
means for retrieving a first present state accumulated cost from a first register of the array;
means for retrieving a second present state accumulated cost from a second register of the array;
means for calculating a first next state accumulated cost based on one of said first and second present state accumulated costs; and
means for storing the first next state accumulated cost in said first register of the array.

5,619,515
ON-VEHICLE ELECTRONIC APPARATUS
Akira Hayama, Kawagoe, Japan, assignor to Pioneer Electronic Corporation, Tokyo-to, Japan
Filed Dec. 21, 1994, Ser. No. 360,431
Claims priority, application Japan, Dec. 24, 1993, 5-328780
Int. Cl.^{6} H04B *3/60*
U.S. Cl. 371—48 **11 Claims**



1. An on-vehicle electronic apparatus comprising:
a main body unit fixed with respect to a vehicle and having a first clock generation means for generating a clock for synchronization in said main body unit, a first shift register for taking in data and a first controller for controlling transmission and reception of the data at said main body unit; and
an operation and display unit detachably mounted on said main body unit and having a second clock generation means for generating a clock for synchronization in said operation and display unit, a second shift register for taking in data and a second controller for controlling transmission and reception of the data at said operation and display unit,
wherein the transmission and reception of the data between said main body unit and said operation and display unit are established through just two transmission lines, one of which is for transmission from the operation and display unit to the main body unit and the other of which is for transmission from the main body unit to the operation and display unit.

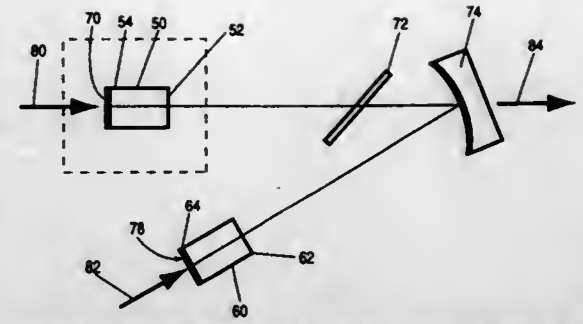
5,619,516
EFFICIENT CRC REMAINDER COEFFICIENT GENERATION AND CHECKING DEVICE AND METHOD
Shiping Li, Canton, and James A. Pasco-Anderson, Needham, both of Mass., assignors to Motorola, Inc., Schaumburg, Ill.
Continuation of Ser. No. 998,193, Dec. 29, 1992, abandoned. This application Oct. 11, 1995, Ser. No. 541,168
Int. Cl.^{6} H03M *13/00*
U.S. Cl. 371—53 **16 Claims**



1. A cyclic redundancy check (CRC) remainder coefficient generator in a CRC circuit having a first input of data for a plurality m of coefficients representing the last m bits of an (n+m) bit frame (n is a positive integer) and a second input of data for a plurality K (where K is a positive integer representing a degree of a CRC generating polynomial) of previously calculated CRC remainder coefficients of the first n bits of the frame, said CRC remainder coefficient generator comprising:
1A) CRC circuit combining means, operably coupled to receive a preselected portion of data from said first input of data and a preselected portion of data from said second input of data, for performing bitwise modulo-two addition of the preselected portion of data from said first input of data and the preselected portion of data from said second input of data to provide a plurality of adjusted coefficients; and
1B) CRC circuit conversion means, operably coupled at least to the CRC circuit combining means, comprising a combination of a plurality of look-up tables and at least a first EXCLUSIVE-OR circuit, for utilizing at least the plurality of adjusted coefficients to provide a plurality of CRC remainder coefficients for the (n+m) bit frame, wherein the CRC circuit conversion means includes at least a remainder conversion unit that includes j memory look-up tables ($1<j<m$) of size 2^b by K (where jb=m), operably coupled to the CRC circuit combining means, for utilizing at least the plurality of adjusted coefficients to output all coefficients of the CRC intermediate remainder for the (n+m) bit frame, and wherein each coefficient has been precomputed and stored in one of the j memory look-up tables, wherein, where selected, the coefficients of the CRC intermediate remainder for the (n+m) bit frame are stored in memory registers for output to a second EXCLUSIVE-OR circuit.

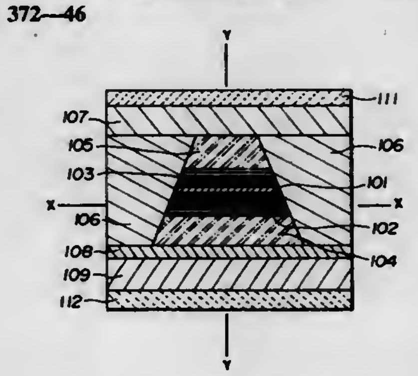
5,619,517
OPTICAL PARAMETRIC OSCILLATOR WITH BUILT-IN SEEDING LASER SOURCE
George J. Dixon, Indian Harbor Beach, Fla., assignor to Research Foundation of the University of Central Florida, Orlando, Fla.
Filed Feb. 1, 1995, Ser. No. 382,085
Int. Cl.^{6} H01S *3/10*
U.S. Cl. 372—21 **12 Claims**

1. An apparatus for generating coherent radiation by converting an input wave via optical parametric oscillation, comprising the combination of: a laser having an optical cavity for circulating a



seeding wave and an idler wave; a gain medium positioned within the optical cavity for generating the seeding wave; and a quantity of nonlinear optical material positioned in the laser optical cavity for converting the input wave into a signal wave and the idler wave, the idler wave having a frequency substantially coinciding with a frequency of the seeding wave, the optical cavity circulating both the seeding and idler waves such that their modes are substantially automatically matched.

5,619,518
SEMICONDUCTOR LASER DIODE
Hideyoshi Horie; Yuichi Inoue; Kenji Shimoyama; Nobuyuki Hosoi, and Goto Hideki, all of Ushiku, Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan
Filed Dec. 23, 1994, Ser. No. 363,261
Claims priority, application Japan, Dec. 27, 1993, 5-333221
Int. Cl.^{6} H01S *3/19*
U.S. Cl. 372—46 **21 Claims**



1. A semiconductor laser diode comprising at least a first clad layer, an active layer and a second clad layer disposed in this order on a substrate, and
a buried layer for current blocking disposed at both sides in the cavity direction of the active layer,
at least one of the first clad layer and second clad layer having at least one superlattice in the direction parallel with the substrate, and the average refractive index (nc1) of the first clad layer, the refractive index (na) of the active layer and the average refractive index (nc2) of the second clad layer satisfying the following equations

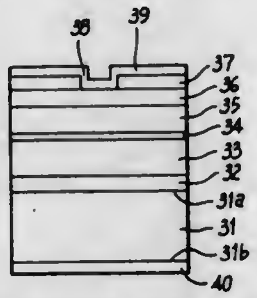
$$na>nc1 \quad (1)$$

$$na>nc2 \quad (2).$$

5,619,519
SEMICONDUCTOR LASER DEVICE

Hiroki Hamada; Shoji Honda; Masayuki Shono, and Takao Yamaguchi, all of Osaka-fu, Japan, assignors to Sanyo Electric Co. Ltd., Osaka, Japan

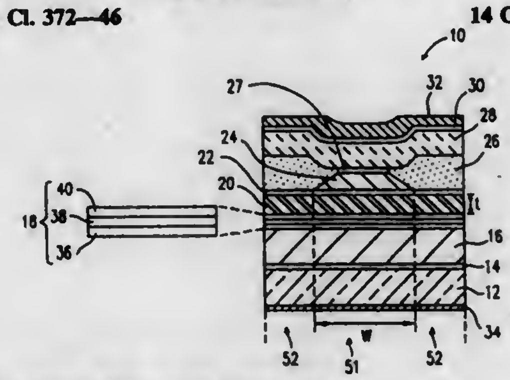
Continuation of Ser. No. 134,293, Oct. 8, 1993, Pat. No. 5,411,915, which is a division of Ser. No. 896,386, Jun. 10, 1992, Pat. No. 5,264,389, which is a division of Ser. No. 664,866, Apr. 11, 1991, Pat. No. 5,146,466, which is a continuation of Ser. No. 412,786, Sep. 26, 1989, Pat. No. 5,016,252.
This application Jan. 13, 1995, Ser. No. 372,147
Claims priority, application Japan, Sep. 29, 1988, 63-245148; Mar. 20, 1989, 1-068784; Mar. 31, 1989, 1-083107
Int. Cl.^{6} H01S *3/19*
U.S. Cl. 372—46 **28 Claims**



1. In a semiconductor laser device comprising:
a GaAs substrate of a first conductivity type having a main surface inclined by at least about 5° from a {100} plane of said substrate in a <011> direction,
a first clad layer of a first conductivity type containing Al, Ga, In and P, formed on said main surface,
an active layer containing Ga, In and P, formed on said first clad layer,
a second clad layer of a second conductivity type containing Al, Ga, In and P, formed on said active layer,
an intermediate layer formed on said second clad layer, and
a GaAs cap layer of the second conductivity type formed on said intermediate layer.

5,619,520
SEMICONDUCTOR LASER

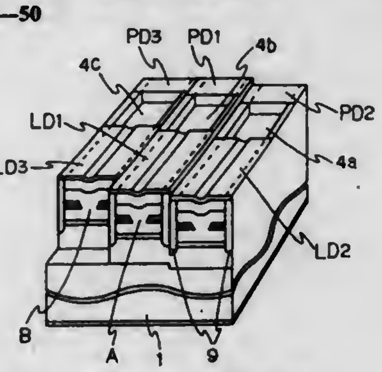
Yoichi Sasai, Hirakata; Nobuyuki Uemura, Takatsuki; Satoshi Kamiyama, Sanda; Minoru Kubo, Nabari, and Takashi Nishikawa, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Sep. 5, 1995, Ser. No. 523,189
Claims priority, application Japan, Sep. 9, 1994, 6-215956
Int. Cl.^{6} H01S *3/18*
U.S. Cl. 372—46 **14 Claims**



1. A semiconductor laser comprising:
a semiconductor substrate;
a first cladding layer made of a first conductivity type ZnMgSSe, which is held by the semiconductor substrate and lattice-matches with the semiconductor substrate;
a stripe-shaped second cladding layer made of a second conductivity type ZnMgSSe lattice-matching with the semiconductor substrate;
a light-emitting layer including a first and a second light guiding layers made of Zn$_{1-x}$Mg$_x$S$_{1-y}$Se$_y$ ($0 \leqq x < 1$, $0 \leqq y < 1$) and a quantum well layer made of Zn$_{1-z}$Cd$_z$Se ($0 \leqq z < 1$) which is interposed between the first and the second light guiding layers, the light-emitting layer being interposed between the first and the second cladding layers; and
a burying layer which is made of ZnMgSSe lattice-matching with the semiconductor substrate and formed on sides of the second cladding layer.

5,619,521
SEMICONDUCTOR LASER SYSTEM

Haruo Tanaka, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan
Continuation of Ser. No. 208,668, Mar. 11, 1994, abandoned. This application Dec. 11, 1995, Ser. No. 574,580
Claims priority, application Japan, Apr. 12, 1993, 5-84870
Int. Cl.^{6} H01S *3/02*
U.S. Cl. 372—50 **4 Claims**

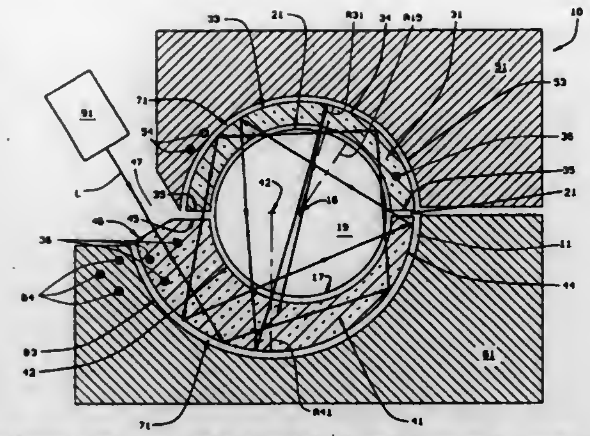


1. A semiconductor laser system comprising:
at least first, second and third laser beam emitters formed on a surface of a substrate of one semiconductor chip, said second laser beam emitter having a light emitting face laterally offset from a light-emitting face of said first laser beam emitter, and said third laser beam emitter having a light-emitting face vertically offset from said light-emitting face of said second laser beam emitter;
wherein the laser beams therefrom are directed in a same direction but do not exist in a same plane, and wherein at least two of but not all of the laser beam emitters share one plane, perpendicular to the laser beams, for their light-emitting faces.

5,619,522
LASER PUMP CAVITY

George Dubé, 342 W. Manor Dr., Chesterfield, Mo. 63017
Filed Sep. 7, 1995, Ser. No. 524,593
Int. Cl.^{6} H01S *3/093*
U.S. Cl. 372—72 **39 Claims**

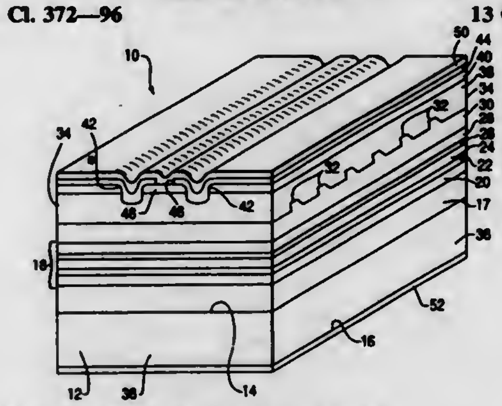
1. A laser pump including a pump housing defining a pump cavity, a pump light source positioned with respect to said housing to emits a pump light into said cavity, a laser element mounted within the pump cavity and a reflective surface in said pump cavity; said reflective surface including at least a first section having a longitudinal axis and a second section having a longitudinal axis; said first section longitudinal axis being parallel to and off-set from said second section longitudinal axis; the pump light source directing the pump light towards one or both of said reflective surface and said laser element, the reflective surface



reflecting the pump light through the laser element to create a symmetric deposition of pump light in the laser element.

5,619,523
SEMICONDUCTOR DISTRIBUTED FEEDBACK LASER DIODE

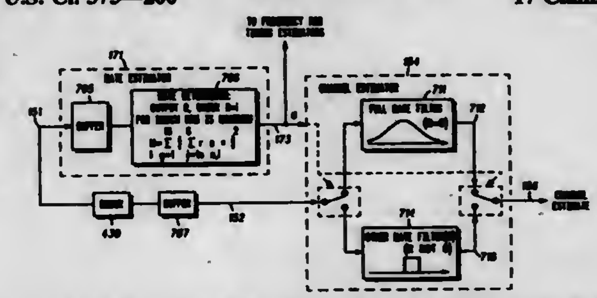
John C. Connolly, Clarksburg; Joseph H. Abeles, Highland Park, both of N.J., and Nancy A. Morris, Newtown, Pa., assignors to David Sarnoff Research Center, Inc., Princeton, N.J.
Filed Sep. 8, 1995, Ser. No. 524,956
Int. Cl.^{6} H01S *3/18*
U.S. Cl. 372—96 **13 Claims**



1. A semiconductor laser diode comprising:
a substrate of a semiconductor material of a first conductivity type having first and second opposed surfaces;
a first clad layer of a semiconductor material of the first conductivity type on the first surface of the substrate;
a confining layer of an undoped semiconductor material on the first clad layer;
a first quantum well layer of undoped semiconductor material on the first confining layer;
a barrier layer of undoped semiconductor material on the first quantum well layer;
a second quantum well layer of an undoped semiconductor material on the barrier layer;
a second confining layer of an undoped semiconductor material on the second quantum well layer;
a spacer layer of a semiconductor material of a second conductivity type opposite that of the first conductivity type on the second confining layer;
a plurality of spaced, parallel grating bars of a semiconductor material of said second conductivity type on and extending across the spacer layer;
a second clad layer of a semiconductor material of said second conductivity type on and between the grating bars;
a cap layer of highly a highly conductive semiconductor material of the second conductivity type on the second clad layer;
a first conductive contact on the cap layer; and
a second conductive contact on the second surface of the substrate;
the first and second clad layers, first and second confining layers, barrier layer, spacer layer and grating bars being of AlGaAs, and the quantum well layers and the cap layer each being substantially of GaAs;
each of the clad layers being of graded AlGaAs with the first clad layer having a lower content of aluminum at the surface of the substrate than at the first confining layer and the second clad layer having a higher content of aluminum at the cap layer than at the spacer layer.

5,619,524
METHOD AND APPARATUS FOR COHERENT COMMUNICATION RECEPTION IN A SPREAD-SPECTRUM COMMUNICATION SYSTEM

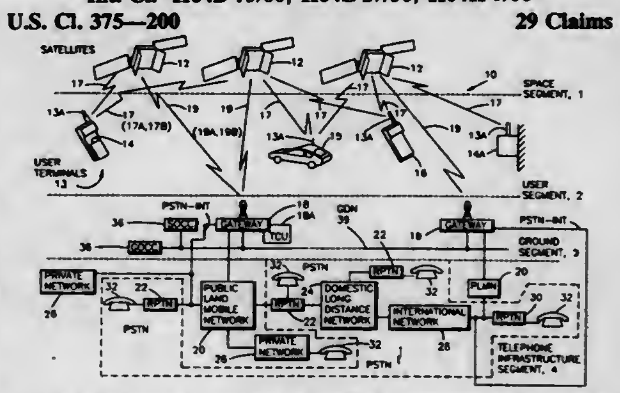
Fuyun Ling, Hoffman Estates; Thomas A. Sexton, Schaumburg, and Gene Bruckert, Arlington Heights, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Continuation-in-part of Ser. No. 317,501, Oct. 4, 1994. This application Feb. 28, 1995, Ser. No. 396,453
Int. Cl.^{6} H04K *1/00;* H04B *1/66*
U.S. Cl. 375—200 **17 Claims**



1. A method of estimating transmission rate in a receiver including a sampler for digitizing a received spread spectrum signal including transmitted data, and a despreader following the sampler for despreading the received spread spectrum signal into a data signal, the method comprising the steps of:
(a) extracting reference sample information from the data signal;
(b) estimating by a rate estimator which slots of a first frame are occupied by the reference sample information; and
(c) outputting a rate estimate based on the step of estimating.

5,619,525
CLOSED LOOP POWER CONTROL FOR LOW EARTH ORBIT SATELLITE COMMUNICATIONS SYSTEM

Robert A. Wiedeman, Los Altos, and Michael J. Sites, Fremont, both of Calif., assignors to Globalstar L.P., San Jose, Calif.
Filed Jun. 6, 1995, Ser. No. 467,209
Int. Cl.^{6} H04B *15/00;* H04L *27/30;* H04K *1/00*
U.S. Cl. 375—200 **29 Claims**



1. A method for operating a satellite communication system having at least one satellite and at least one ground station, the

satellite communication system further having a plurality of ground receivers, comprising the steps of:

transmitting a plurality of uplink signals from the ground station, at least one of the uplink signals being designated as an uplink reference signal, said plurality of uplink signals being transmitted with a first frequency from the ground station to the satellite and experiencing a first amount of attenuation between the ground station and the satellite;

receiving the plurality of uplink signals with the satellite and repeating the plurality of uplink signals with a second frequency as a plurality of downlink signals that are transmitted from the satellite to the plurality of ground receivers, the second frequency being less than the first frequency such that the plurality of downlink signals experience a second amount of attenuation between the satellite and the plurality of ground receivers, the second amount of attenuation being less than the first amount of attenuation, the plurality of downlink signals being transmitted with a power that is a function of the power of the received plurality of uplink signals;

receiving at least the reference signal from the plurality of downlink signals with at least one of the ground receivers, the received reference signal being designated as a received downlink reference signal, and determining from the received downlink reference signal the first amount of attenuation that was experienced at least by the uplink reference signal between the ground station and the satellite; and

adjusting a transmitted power of the plurality of uplink signals from the ground station in accordance with the determined amount of attenuation so as to substantially compensate for the first amount of attenuation.

5,619,526

CDMA BASE STATION MODULATOR FOR DIGITAL CELLULAR MOBILE COMMUNICATION SYSTEMS

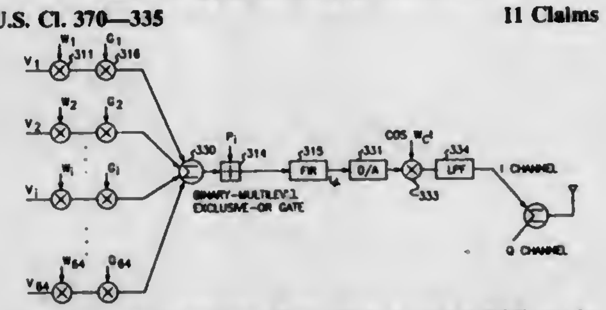
Jin U. Kim; Sun Y. Kim; Jeom D. Lee, and Sung K. Lee, all of Daejeon, Rep. of Korea, assignors to Electronics and Telecommunications Research Institute, Daejeon, Rep. of Korea

Filed Nov. 23, 1994, Ser. No. 348,071

Claims priority, application Rep. of Korea, Dec. 1, 1993, 1993-26127

Int. Cl.[6] H04K *1/02;* **H04J** *11/00;13/00*

U.S. Cl. 370—335 **11 Claims**



1. A base band Quaternary Phase Shift Keying (QPSK) modulating circuit in a CDMA digital mobile communication system which includes a summing means for summing a plurality of Walsh covered signals from a plurality of Walsh sequence covers and a Pilot pseudorandom noise sequence generator, comprising:

a binary-multilevel Exclusive-ORing means for Exclusive-ORing multilevel outputs from said summing means and Pilot PN sequences from the Pilot PN sequence generator; and

a finite impulse response (FIR) filtering means, connected to the binary-multilevel Exclusive-ORing means, for FIR filtering the output signals of the binary-multilevel Exclusive-ORing means.

5,619,527

CHIP-BASED SELECTIVE RECEIVING SYSTEM FOR A SPREAD SPECTRUM SIGNAL

Noriyoshi Kuroyanagi, Tokyo; Naoki Suehiro, Ibaraki, and Toshikatsu Naito, Samukawa-machi, all of Japan, assignors to Toyo Communication Equipment Co., Ltd., Kanagawa, and Noriyoshi Kuroyanagi, Tokyo, both of Japan

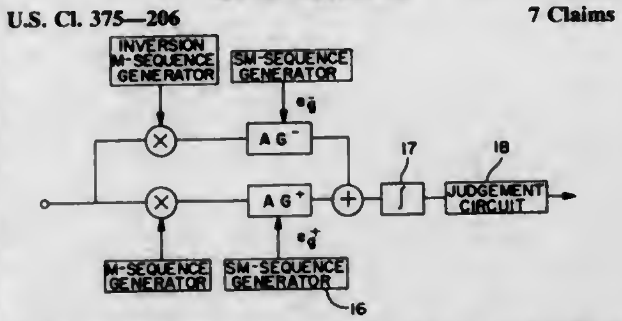
PCT No. PCT/JP94/00892, § 371 Date Feb. 10, 1995, § 102(e) Date Feb. 10, 1995, PCT Pub. No. WO95/01016, PCT Pub. Date Jan. 5, 1995

PCT Filed Jun. 2, 1994, Ser. No. 387,702

Claims priority, application Japan, Jun. 23, 1993, 5-176145

Int. Cl.[6] H04B *1/707*

U.S. Cl. 375—206 **7 Claims**



2. A chip-based selective receiving system for a spread spectrum signal comprising: means for receiving a signal processed by spread spectrum modulation through multiplication of a data to be transmitted by a predetermined spread code sequence, means for applying proper attenuation or amplification to non-inverted and inverted outputs resulting from each chip of the spread code sequence, a means for multiplying the received signal by the inverted and non-inverted versions of the spread code sequence used on the modulation, and means for adding the obtained outputs and for applying the sum to a judgment circuit for integrating it over one frame cycle.

5,619,528

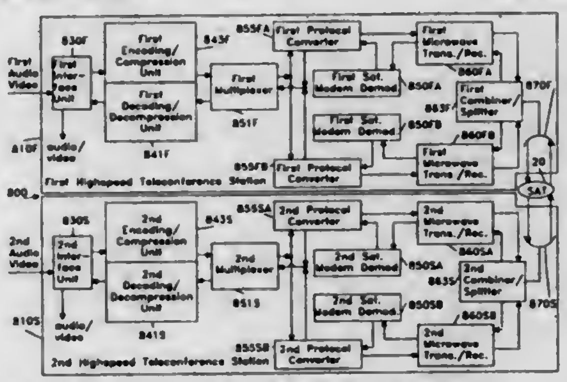
HIGH SPEED TELECONFERENCE SYSTEM

Mohammed S. Rebec, and Mihailo V. Rebec, both of Bristol, Ind., assignors to Trans Video Electronics, Bristol, Ind.

Division of Ser. No. 47,089, Apr. 16, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 475,332

Int. Cl.[6] H04B *1/38*

U.S. Cl. 375—219 **16 Claims**



1. A high speed teleconference station comprising:

interface means for receiving a first analog signal and outputting a first digital signal;

encoding/compressing means, coupled to said interface means, for encoding and compressing said first digital signal to produce a first compressed encoded signal;

multiplexing/demultiplexing means, coupled to said encoding/compressing means, for receiving and splitting said first compressed encoded signal into at least two split first compressed encoded signals;

at least two converting means, coupled to said multiplexing/demultiplexing means, for receiving a respective one of said at least two split first compressed encoded signals and respectively producing at least two first synchronous signals;

at least two microwave transmitter/receiver means, each coupled to a respective one of said at least two converting means, each for receiving a respective one of said at least two first synchronous signals, for generating a respective first microwave signal, for modulating said respective first microwave signal according to said respective one of said at least two first synchronous signals to produce at least two first modulated microwave signals; and

combining/splitting means, coupled to said at least two microwave transmitter/receiver means, for combining said at least two first modulated microwave signals and outputting a first combined microwave signal.

5,619,529

NON-CONTACT IC CARD AND NON-CONTACT IC CARD READER/WRITER

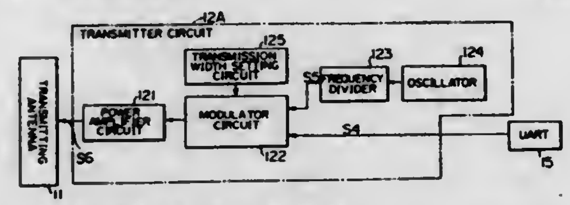
Shuzo Fujioka, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 92,985, Jul. 19, 1993, abandoned. This application Jul. 11, 1995, Ser. No. 500,640

Claims priority, application Japan, Jul. 20, 1992, 4-192093

Int. Cl.[6] H04L *5/16;* **H04B** *1/38*

U.S. Cl. 375—219 **3 Claims**



1. A non-contact IC card comprising:

receiving antenna means for receiving a signal transmitted from a reader/writer;

a receiver circuit for demodulating the signal received by said receiving antenna means and for converting the demodulated signal into a received data signal having signal units with respective durations corresponding to a duration of one data bit, said receiver circuit comprising:

a first amplifier circuit having a gain for amplifying the signal received by said receiving antenna means;

a detector circuit for demodulating the received signal amplified by said first amplifier circuit;

an automatic gain control circuit for controlling the gain of said first amplifier circuit upon reception of a signal received from an IC card, the signal received including a data row initially including dummy data, so that the intensity of the dummy data received from the IC card is equal to a predetermined intensity, whereby the received signal demodulated by said detector circuit has a constant intensity; and

a bit width generation circuit for converting the received signal demodulated by said detector circuit into the received data signal having the signal units with respective durations corresponding to the duration of one data bit;

a control circuit for data processing in response to the received data signal converted by said receiver circuit;

a transmitter circuit for forming a transmission signal in response to a data signal supplied by said control circuit, said transmitting circuit comprising:

a modulator circuit for forming the transmission signal in response to the data signal supplied by said control circuit; and

a second amplifier circuit for amplifying the transmission signal from said modulator circuit and for outputting the amplified transmission signal to said transmitting antenna means, said automatic gain control circuit controlling the gain of said second amplifier circuit of said transmitter circuit; and

transmitting antenna means for transmitting the transmission signal from said transmitter circuit to the reader/writer.

5,619,530

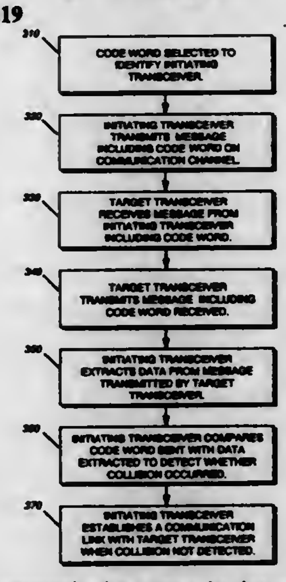
METHOD AND APPARATUS FOR DETECTING AND HANDLING COLLISIONS IN A RADIO COMMUNICATION SYSTEM

Jimmy W. Cadd, Coral Springs, and Tracy L. Fulghum, Sunrise, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 222,069, Apr. 4, 1994, abandoned. This application Mar. 7, 1996, Ser. No. 612,395

Int. Cl.[6] H04B *1/38*

U.S. Cl. 375—219 **11 Claims**



1. In a radio communication system having transceivers sharing a communication channel, a method of detecting and handling channel use collisions occurring when multiple transceivers attempt, substantially simultaneously, to establish a communication link with other transceivers, the method comprising the steps of, at the initiating transceiver:

transmitting a message on the communication channel, the message including a code word particular to the initiating transceiver;

receiving particular data on the communication channel;

comparing the particular data with the code word;

detecting that a channel use collision occurred when the particular data is a combination of different code words and the combination does not correspond to the code word; and

transmitting a collision detect signal on the communication channel after detecting the channel use collision.

5,619,531

WIRELESS RADIO MODEM WITH MINIMAL INTERDEVICE RF INTERFERENCE

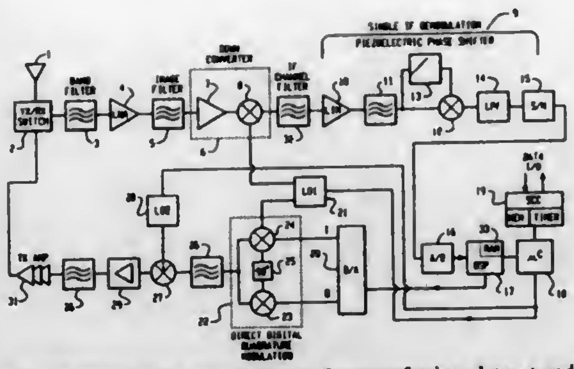
Bryan Taylor; Mihal Lazaridis, both of Waterloo; Peter Edmonson, Hamilton; Perry Jarmuszewski, Guelph; Lizhong Zhu, Waterloo; Steven Carkner, Waterloo, and Matthias Wandel, Waterloo, all of Canada, assignors to Research In Motion Limited, Waterloo, Canada

Filed Nov. 14, 1994, Ser. No. 337,841

Int. Cl.[6] H04L *5/16*

U.S. Cl. 375—222 **34 Claims**

1. A wireless radio modem comprising:



(a) transmission/reception means for transferring data at radio frequencies between a host data processing device and another device; and

(b) modulation/demodulation means for demodulating digital data received from the transmission/reception means and modulating data generated by said host data processing device, the modulation/demodulation means including frequency discrimination means responsive to a received radio signal for retrieving baseband information from the received radio signal, wherein the frequency discrimination means includes one or more electronically-coupled piezoelectric phase-shift devices.

5,619,532

DIGITAL COMMUNICATION SYSTEM

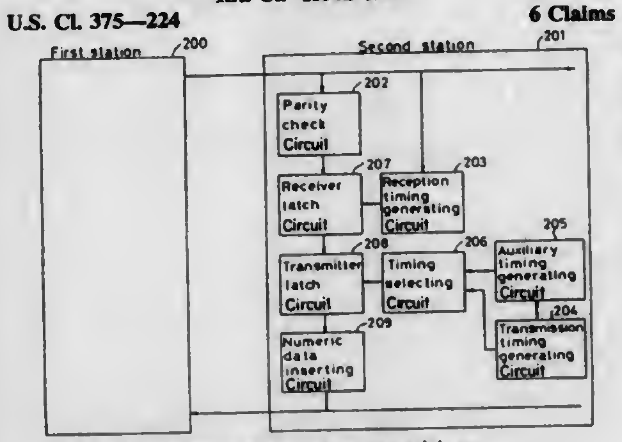
Shigeo Tani; Katsuaki Yamanaka; Hironori Aono, and Toshiaki Kinoshita, all of Osaka, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Jun. 7, 1995, Ser. No. 488,250

Claims priority, application Japan, Sep. 5, 1994, 6-211555

Int. Cl.^{6} H04B *3/46*

U.S. Cl. 375—224 **6 Claims**



1. A digital communication system comprising:

a first station;

a second station; and

a network for transmitting predetermined communication frames between the first and second stations,

the communication frame including a communication data part for accepting communication data and a control data part for accepting control data,

the first station successively transmitting the frames to the second station based on a first clock generated in the first station,

the second station evaluating transmission quality of data in the frame received from the first station based on the data in the frame and inserting the evaluated transmission quality into the control data part to successively transmit the frames to the first station based on a second clock generated in the second station,

parity check data being inserted into the control data part of each frame transmitted from the first station to the second station, in which

the second station comprises:

parity check counting means for performing a parity check on each of the frames received from said first station to output numeric data indicative of a mismatch count;

reception timing generating means for generating a reception timing signal having the same cycle as the frames received from said first station based on said first clock;

transmission timing generating means for generating a transmission timing signal having the same cycle as the frames to be transmitted to the first station based on the second clock;

auxiliary timing generating means for generating an auxiliary timing signal having a half-cycle phase offset with respect to said transmission timing signal;

timing selecting means for selecting either one of the transmission timing signal and the auxiliary timing signal to output the selected timing signal;

receiver latch means for latching the numeric data in synchronization with the reception timing signal;

transmitter latch means for latching the numeric data latched by the receiver latch means in synchronization with the timing signal output from the timing selecting means; and

numeric data inserting means for inserting the numeric data latched by the transmitter latch means into the corresponding frame to be transmitted to the first station,

the timing selecting means switching a timing signal to be output between the transmission timing signal and the auxiliary timing signal when a phase difference between the reception timing signal and the timing signal output from the timing selecting means is not greater than a predetermined value.

5,619,533

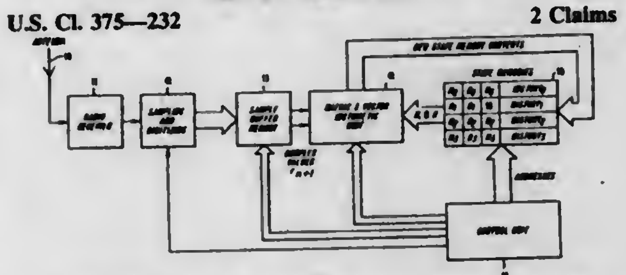
CHANNEL-INDEPENDENT EQUALIZER DEVICE

Paul W. Dent, Stehags, Sweden, assignor to Ericsson Inc., Research Triangle Park, N.C.

Division of Ser. No. 305,727, Sep. 14, 1994, Pat. No. 5,557,645. This application Jun. 3, 1996, Ser. No. 657,345

Int. Cl.^{6} H04L *25/03*

U.S. Cl. 375—232 **2 Claims**



1. A blind equalizing apparatus for demodulating information-symbol-bearing signals received through a communications channel with unknown echoes or time-dispersion, comprising:

a sequential maximum likelihood processor having a number of state memories each equipped with:

a path history memory,

a path metric memory, and

a first memory for a plurality of adaptive values;

path metric computing means for computing new path metric values using old path metric values, said adaptive values, and a latest sample of the received signals; and

adapting means for adapting said adaptive values such mat each of said new metric values is substantially equal in value to one of said old metric values plus an increment based on the latest received sample, wherein said old metric values have been calculated with the benefit of information contained in the latest received signal sample.

5,619,534

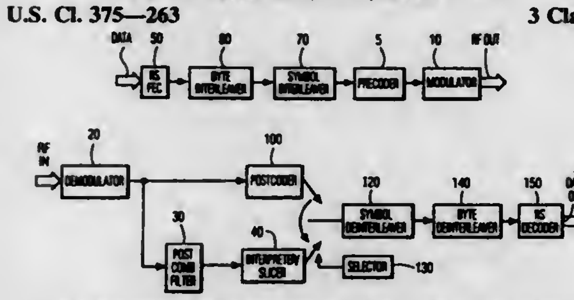
METHOD AND APPARATUS FOR REDUCING PRECODING LOSS WHEN USING A POST-COMB FILTERING APPROACH TO REDUCE CO-CHANNEL INTERFERENCE IN HIGH DEFINITION TELEVISION TRANSMISSION

Samir N. Hulyalkar, White Plains, N.Y., assignor to Philips Electronics North America Corporatioin, New York, N.Y.

Continuation of Ser. No. 170,471, Dec. 20, 1993, abandoned, which is a continuation-in-part of Ser. No. 60,181, May 7, 1993, abandoned. This application Apr. 11, 1995, Ser. No. 420,891

Int. Cl.^{6} H04L *5/12;23/02;* **H04B** *15/00*

U.S. Cl. 375—263 **3 Claims**



1. A transmitter for transmitting digital data, the transmitter comprising:

a) a byte interleaver for coding an input byte sequence into a symbol sequence;

b) a symbol interleaver having a symbol interleaving depth, coupled to said byte interleaver, for interleaving said symbol sequence on a symbol by symbol basis to provide a symbol interleaved digital signal;

c) means for delaying the symbol interleaved digital signal by a delay interval so as to produce a delayed interleaved digital signal, said delay interval and the symbol interleaving depth of said symbol interleaver being equal; and

d) a precoding filter for performing a first finite field arithmetic process using the interleaved digital signal and the delayed interleaved digital signal to produce a precoded digital signal.

5,619,535

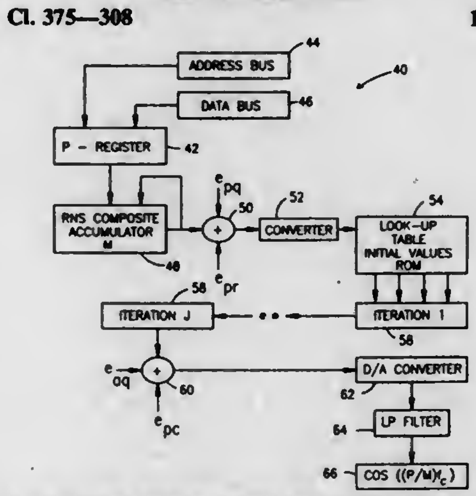
DIGITAL FREQUENCY SYNTHESIZER

Cesar E. Alvarez, Jr., 6028 Lynn Lake Dr. South, Apt. 238, St. Petersburg, Fla. 33712

Filed Jul. 27, 1994, Ser. No. 281,289

Int. Cl.^{6} H04L *27/20*

U.S. Cl. 375—308 **17 Claims**



1. A device that generates phase angle information, said phase angle information having utility in the synthesis of periodic waveforms, comprising:

a residue number system phase increment register having an output that provides phase increment words represented as a set of residue number system phase increment word digits;

residue number system accumulator having an input coupled to said output of said residue number system phase increment register for receiving said phase increment word digits;

said residue number system accumulator providing successive residue number system values as said residue number system accumulator successively receives said phase increment word digits;

said residue number system accumulator outputting a signal representing phase angle information;

said phase angle information being obtained through residue number system arithmetic and in the absence of a carry between residue number system digits.

5,619,536

DIGITAL SUPERHETERODYNE RECEIVER AND BASEBAND FILTER METHOD USED THEREIN

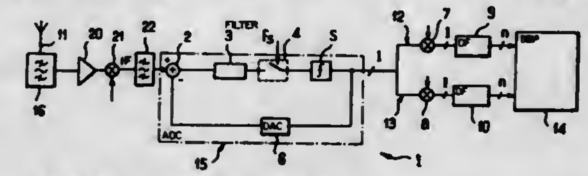
Frédéric Gourgue, Paris, France, assignor to Alcatel Radiotelephone, Paris, France

Filed Mar. 14, 1994, Ser. No. 212,730

Claims priority, application France, Mar. 15, 1993, 93 02948

Int. Cl.^{6} H04L *27/06*

U.S. Cl. 375—316 **9 Claims**



1. A digital receiver (1), comprising:

analog converter means (21) for converting an incoming signal to a predetermined intermediate frequency (IF) to produce an intermediate frequency signal;

baseband processing means (14);

analog/digital converter means (15) which receives at an input said intermediate frequency signal and processes said intermediate frequency signal using oversampling relative to a baseband signal bandwidth and undersampling relative to said intermediate frequency, said analog/digital converter means being of the Sigma-Delta type and comprising subtractor means (2), filter means (3) coupled to an output of said subtractor means, sampling means (4) coupled to an output of said filter means, quantizing means (5) coupled to an output of said sampling means, and a feedback loop (6) coupled to an output of said quantizing means and to an input of said subtractor means and incorporating digital/analog converter means; and

decimation filter means (9, 10) receiving at an input an output signal of said analog/digital converter means (15) and having an output connected to said baseband processing means (14).

5,619,537

MAXIMUM A POSTERIORI DECODER FOR DIGITAL COMMUNICATIONS

Richard A. Altes, La Jolla, Calif., assignor to Chirp Corporation, La Jolla, Calif.

Continuation of Ser. No. 367,748, Jan. 3, 1995, abandoned, which is a continuation of Ser. No. 225,741, Apr. 11, 1994, abandoned, which is a continuation of Ser. No. 607,582, Nov. 1, 1990, Pat. No. 5,303,269. This application Jul. 3, 1995, Ser. No. 497,888

Int. Cl.^{6} H03D *3/00*

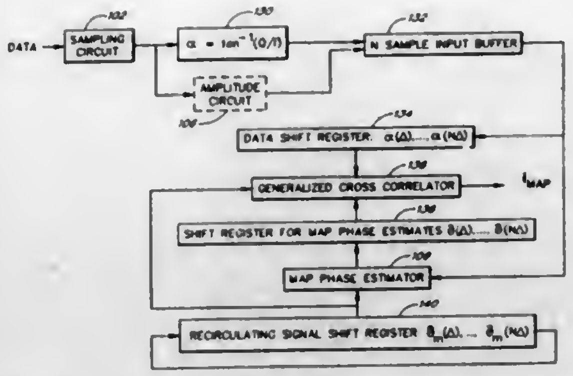
U.S. Cl. 375—322 **20 Claims**

1. A maximum a posteriori decoder, comprising:

a data sample input buffer receiving a plurality of samples of a received signal;

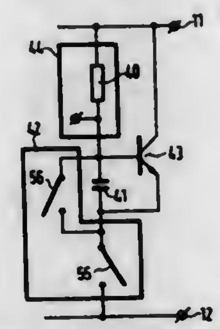
a data sample shift register receivably connected to the data sample input buffer;

a mean phase shift register storing a plurality of mean phases each indicative of a unique coded signal;



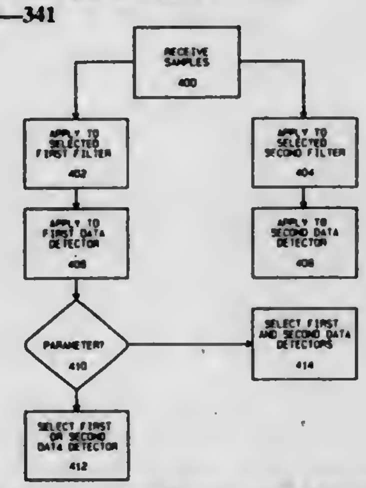
a maximum a posteriori phase estimator receivably connected to the data sample input buffer and the mean phase shift register, said estimator generating a plurality of phase estimates;
a phase estimate shift register receivably connected to the phase estimator; and
a generalized cross correlator receivably connected to the data sample shift register, the mean phase shift register and the phase estimate shift register, said cross correlator generating a likelihood statistic for each unique coded signal.

5,619,538
PULSE SHAPING FM DEMODULAR WITH LOW NOISE WHERE CAPACITOR CHARGE STARTS ON INPUT SIGNAL EDGE
Adrianus Sempel, and Johannes Van Nieuwenburg, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Mar. 24, 1995, Ser. No. 410,022
Claims priority, application European Pat. Off., Apr. 12, 1994, 94200986
Int. Cl.⁶ H03D *3/18*
U.S. Cl. 375—328 **10 Claims**



1. A receiver comprising, arranged in this order, an input section, an FM demodulator, to which a frequency-modulated input signal is applied, and an LF section, said FM demodulator comprising a pulse shaper and a low-pass filter, characterized in that
the pulse shaper comprises:
a series arrangement of at least a load and a capacitance, said load being coupled to a first supply terminal;
a switching device which charges said capacitance in a first state, initiated by a first edge of the frequency-modulated input signal, and which discharges said capacitance in a second state, initiated by a second edge following the first edge;
a first transistor having a base-emitter junction arranged across said capacitance, and having a collector coupled to the first supply terminal for limiting a voltage across said capacitance; and
output means for generating an output signal which varies with a current through said capacitance, wherein a charging time and a discharging time of said capacitance are smaller than a minimum time between two successive edges of the frequency-modulated input signal.

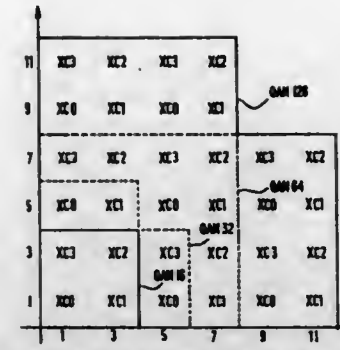
5,619,539
DATA DETECTION METHODS AND APPARATUS FOR A DIRECT ACCESS STORAGE DEVICE
Jonathan D. Coker, Rochester, Minn.; Francois B. Dolivo, Wadenswil, Switzerland; Richard L. Galbraith, Rochester, Minn.; Reto J. Hermann, Buttikon; Walter Hirt, Zurich, both of Switzerland, and Kevin Vannorsdel, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Feb. 28, 1994, Ser. No. 203,413
Int. Cl.⁶ H04L *5/02;27/06*
U.S. Cl. 375—341 **21 Claims**



6. A method for maximum-likelihood data detection in a direct access storage device including a partial-response (PR) data channel including a head and disk assembly providing an analog signal coupled to an analog to digital converter (ADC) providing digital samples, said method comprising the steps of:
receiving a plurality of digital samples from the ADC;
applying the received digital samples to a noise whitening filter for providing noise whitening digital samples;
applying the received digital samples to a selected second filter;
applying the filtered noise whitening digital samples to a first data detector;
applying the second filtered digital samples to a second data detector;
identifying a predetermined parameter responsive to the received digital samples; and
selecting at least one of the first and second data detectors responsive to the identified predetermined parameter.

5,619,540
TRANSMISSION SYSTEM USING BLOCK-CODED OR TRELLIS-CODED MODULATIONS, RECEIVER AND DECODER FOR SUCH A SYSTEM
Saïd Moridi, Paris, and Georges Martinez, Crosne, both of France, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Aug. 1, 1994, Ser. No. 283,456
Claims priority, application France, Aug. 4, 1993, 93 09610
Int. Cl.⁶ H04L *27/06;* **H03D** *1/00*
U.S. Cl. 375—341 **5 Claims**

1. A modem for receiving a series of transmitted digital symbols in a digital communication system wherein each of the transmitted symbols is encoded in accordance with a block-coded or trellis-coded 2-dimensional quadrature amplitude modulation (QAM) constellation of points corresponding to authorized code values, which constellation is divided into a plurality of subsets of points corresponding to authorized code values; said modem including a decoder for decoding the received symbols, which decoder comprises:
means for determining an authorized point in said constellation which is closest to a point therein corresponding to a received sample;

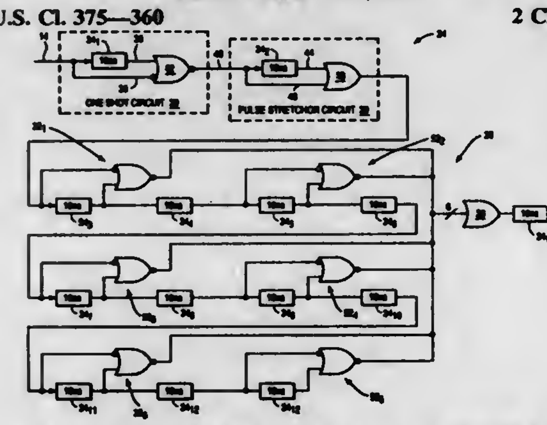


means for determining a source subset of said constellation to which said authorized point belongs;
means for determining a point closest to the received point in each of a plurality of subsets of said constellation other than said source subset; and
means for calculating a branch length μ for each of said other subsets between the received point and an authorized point which is closest thereto;
said branch length μ being calculated as a relative distance given by the following function ℑ:

$$\mu=\Im(|\Delta_i|, \mathrm{sgn}(\Delta_i), \mathrm{sgn}(E_i), |I_i|)$$

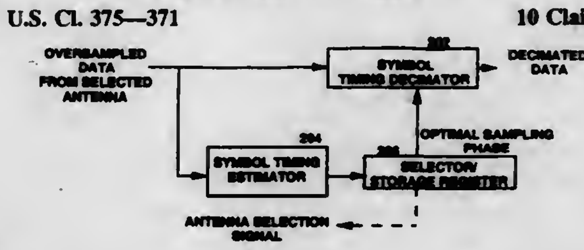
in which
the index i indicates the abscissa (i=x) or the ordinate (i=y) of the quantity indicated,
$|\Delta_i|$ represents the displacement between successive authorized points of said constellation,
E_i is an abscissa or ordinate error distance using the same index as for Δ_i between the received sample point and the authorized point which is closest thereto in said constellation, and
Sgn() indicates the sign function.

5,619,541
DELAY LINE SEPARATOR FOR DATA BUS
Roger Van Brunt, San Francisco, and Florin Oprescu, Sunnyvale, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.
Continuation of Ser. No. 4,441, Jan. 14, 1993, Pat. No. 5,412,697. This application Feb. 3, 1995, Ser. No. 383,318
Int. Cl.⁶ H04C *7/02;7/00*
U.S. Cl. 375—360 **2 Claims**



1. A delay line separator extracting a clock signal from a combined data/clock signal received along a serial data line, said combined data/clock signal including a plurality of sequential bit cells having a predefined width (W), with selected bit cells being separated by signal level transitions, said signal level transitions being of two types, said data being encoded subject to an encoding scheme which ensures that at least two transitions of like type occur within no more than a predefined number (N) of bit cells, said separator comprising:
a first one-shot pulse circuit, connected to said serial data line, generating a pulse signal having an individual pulse corresponding to each transition of one pre-determined type within said combined clock/data signal;
at least N additional one-shot pulse circuits, sequentially connected to said first one-shot pulse circuit, receiving said pulse signal and generating additional pulses corresponding to each pulse in said pulse signal, with each of said additional one-shot pulse circuit including a delay circuit delaying said pulse signal by an amount equal to said bit cell width W; and
OR-gate circuit, connected to each of said additional one-shot pulse circuit, combining output pulses from each of said additional one-shot pulse circuits to yield a single clock signal, said clock signal including pulses having a width of W/2.

5,619,542
DEVICE AND METHOD FOR EFFICIENT TIMING ESTIMATION IN A DIGITAL RECEIVER
David P. Gurney, Algonquin, and Kevin L. Baum, Rolling Meadows, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Aug. 30, 1994, Ser. No. 298,488
Int. Cl.⁶ H04L *1/02;* **H04B** *7/02*
U.S. Cl. 375—371 **10 Claims**



200

8. A method for optimizing the implementation of symbol timing estimation in a receiver with at least two antennas receiving digitally modulated signals, comprising the steps of:
A) computing, by a symbol timing estimator, at least a first and a second distortion value, each associated with at least a first and a second expected, optimal sampling phase estimate of oversampled received data of the digitally modulated signals using the at least two antennas and a predetermined scheme based on previously received data,
B) storing, by a selector, at least the first and second distortion values and the at least first and second expected optimal sampling phase estimates and
determining, by the selector, which of the at least two antennas is a more favorable antenna based on a minimum distortion value of the at least first and second distortion values,
C) decimating, by a symbol timing decimator, upon receiving oversampled received data from the more favorable antenna, the oversampled received data to a predetermined symbol rate in accordance with the expected optimal sampling phase estimate for the more favorable antenna,
wherein the digitally modulated signals are transmitted in a time division multiplex system,
wherein the previously received data comprises at least a portion of at least one previous time slot.

5,619,543

DIGITAL PHASE-LOCKED LOOP FILTER

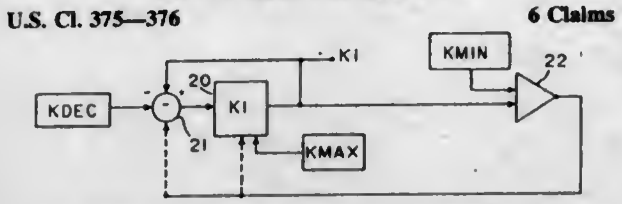
William Glass, Seyssinet-Pariset, France, assignor to SGS-Thomson Microelectronics S.A., Saint Genis Pouilly, France

Filed Aug. 30, 1994, Ser. No. 298,559

Claims priority, application France, Aug. 31, 1993, 93 10578

Int. Cl.^{6} G03D *3/24;* H04B *1/10*

U.S. Cl. 375—376 **6 Claims**



1. A circuit for modifying a value of a coefficient of a digital phase-locked loop filter, said circuit comprising:

a register having said value of said coefficient; initiation means for setting an initial value in said register;

modifying means for changing the value in said register at each clock pulse; and

termination means for preventing operation of said modifying means.

5,619,544

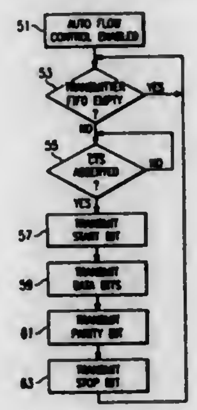
UNIVERSAL ASYNCHRONOUS RECEIVE/TRANSMIT CIRCUIT WITH FLOW CONTROL

Clarence D. Lewis, Richardson; Mahmoud M. Yazdani, Allen; Dinghui Nie, Dallas,; Brian T. Deng, Richardson, all of Tex., and Matthew J. DiMarco, Chicago, Ill., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 253,882, Jun. 3, 1994, abandoned. This application Feb. 27, 1996, Ser. No. 607,840

Int. Cl.^{6} H04B *1/38;* H04L *7/00*

U.S. Cl. 375—377 **23 Claims**



1. In an asynchronous communication device, comprising an input data bus; and a Universal Asynchronous Receive/Transmit (UART) circuit including a transmit data memory coupled to said input data bus for receiving and storing data words for transmission; the improvement comprising:

said UART further including transmit data control circuitry for transmitting the data words on an asynchronous transmit data output, said transmit data control circuitry pausing said transmission of said data words, without processor intervention, in response to a transition on a first control signal coupled to a remote receiving device.

5,619,545

PROCESS FOR PURIFICATION OF RADIOIODIDES

Glenn D. Grummon, St. Louis, Mo., and Michael A. Janik, Freeburg, Ill., assignors to Mallinckrodt Medical, Inc., St. Louis, Mo.

Filed Jan. 28, 1994, Ser. No. 188,507

Int. Cl.^{6} G21G *1/10*

U.S. Cl. 376—195 **5 Claims**

1. A process for purifying cyclotron produced ^{123}I which comprises:

(a) passing a recovered solution of a cyclotron produced iodide over an anion exchange resin;

(b) washing the ion exchange resin in (a) with a weak solution comprising NaOH;

(c) washing the ion exchange resin in (a) with a stronger solution of NaOH than used in (b); and

(d) recovering the wash solution of (c).

5,619,546

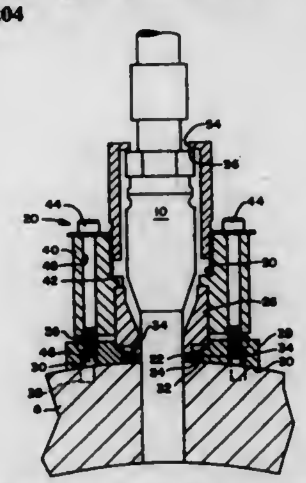
RESISTANCE TEMPERATURE DETECTOR NOZZLE MECHANICAL CLAMP

Douglas S. Porter, Simsbury, Conn., and Keith E. Coe, Hixton, Tenn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Apr. 20, 1995, Ser. No. 425,552

Int. Cl.^{6} G21C *13/00*

U.S. Cl. 376—204 **5 Claims**



1. A fluid tight mechanical clamp seal for nuclear reactor coolant system hot and cold leg pipe transversely extending resistance temperature detector nozzles comprising:

an annular compressible seal ring at a pipe and nozzle joint surrounding said nozzle;

an annular split ring made up of plural sections surrounding and confining the periphery of said annular seal ring;

an annular split load sleeve made up of plural sections telescopically received in said split ring to compress axially said peripherally confined seal ring against said pipe and thereby also to expand radially said peripherally confined seal ring against said nozzle and against said annular split ring;

a reaction plate having a first surface shaped to engage said pipe, a second and annular surface to peripherally engage and to confine radially said split ring and a third surface to confine axially said split ring against said pipe;

said reaction plate being fixed to said pipe;

a load ring surrounding and having a surface axially abutting against said split load sleeve;

said load ring having bolts threadedly connected to holes in said reaction plate to provide an axial driving and compressing force through the load ring surface axially abutting against said split load sleeve to compress said annular seal ring.

5,619,547

DEVICE FOR GUIDING A FUEL ASSEMBLY DURING LOADING

Pierre Amiet, Condrieu, and Michel Brin, Bourgoin Jallieu, both of France, assignors to Framatome, Courbevoie, and Compagnie Generale des Matières Nucléaires, Velizy Villacoublay, both of France

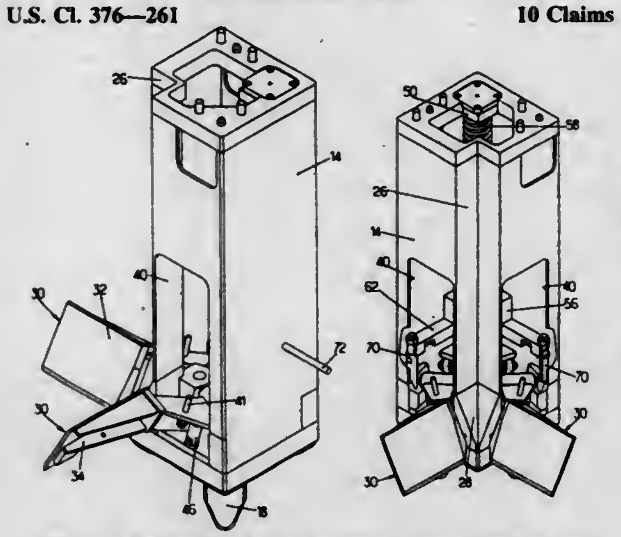
PCT No. PCT/FR95/00193, § 371 Date Oct. 12, 1995, § 102(e) Date Oct. 12, 1995, PCT Pub. No. WO95/23414, PCT Pub. Date Aug. 31, 1995

PCT Filed Feb. 20, 1995, Ser. No. 530,123

Claims priority, application France, Feb. 23, 1994, 94 02054

Int. Cl.^{6} G21C *19/20*

U.S. Cl. 376—261 **10 Claims**



1. Device for guiding a fuel assembly during loading into a predetermined fuel assembly location on a nuclear reactor lower core plate, comprising:

a body having a transverse cross-section substantially identical to a transverse cross-section of a fuel assembly, suitable to rest on the lower core plate, holding means on said body for being grasped by a fuel assembly handling machine, and indexing means extending downwardly from the body for positioning said body on the lower core plate at an assembly location adjacent to the assembly location intended to receive the fuel assembly to be guided, and

two wings carried by a lower part of said body, retractable from a deployed state in which they form an angle of 90° in a horizontal plane into a position in which they are within the transverse cross-section of the body, each said wing having a face which is inclined guide face and has a downward end above the location intended to receive the assembly when the device is in place and said wings are deployed.

5,619,548

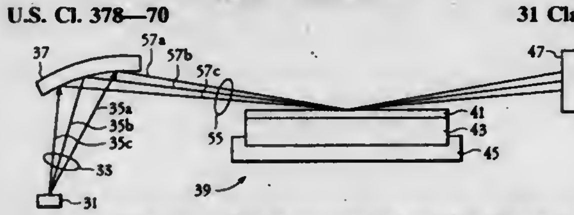
X-RAY THICKNESS GAUGE

Louis N. Koppel, Palo Alto, Calif., assignor to Oryx Instruments and Materials Corp., Fremont, Calif.

Filed Aug. 11, 1995, Ser. No. 514,303

Int. Cl.^{6} G21K *1/06*

U.S. Cl. 378—70 **31 Claims**



1. A device for measuring properties of a thin-film disposed on a layered structure using scattering X-rays, said device comprising:

a source adapted to produce X-rays;

a curved surface positioned between said source and said thin-film, with the surface being in fixed orientation with respect to the layered structure and adapted to focus the X-rays onto a first focal area of the layered structure with one point of said area having X-rays impinging thereon at varying angles of incidence, with a reflected X-ray being associated with each of said plurality of X-rays;

a detector positioned to sense said reflected X-rays, said detector adapted to produce a signal corresponding to an angle of reflection and an intensity of each of the reflected X-rays sensed; and

a processor means, connected to receive signals produced by the detector, for determining properties of the thin-film based upon a comparison of the intensity and the angle of reflection of the reflected X-rays sensed, the properties including thin-film thickness.

5,619,549

ROTARY-ANODE X-RAY TUBE COMPRISING A SLEEVE BEARING

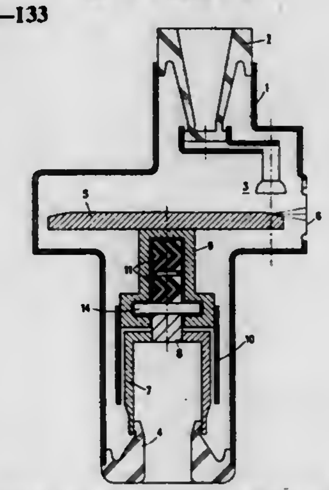
Axel Vetter, and Christoph Bathe, both of Hamburg, Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 3, 1995, Ser. No. 552,404

Claims priority, application Germany, Nov. 3, 1994, 44 39 143.9

Int. Cl.^{6} H01J *35/10*

U.S. Cl. 378—133 **20 Claims**



1. A rotary-anode X-ray tube, comprising a sleeve bearing with a stationary and a rotatable bearing portion provided with facing bearing faces, at least one of which is provided with a groove pattern, a lubricant which is liquid at least in the operating condition being present between said bearing faces, characterized in that a solid having a low sliding friction is added to the lubricant.

5,619,550

TESTING WITHIN COMMUNICATION SYSTEMS USING AN ARQ PROTOCOL

Rod Averbuch, Buffalo Grove; Kamala Urs, Bloomingdale, and Israel A. Cimet, Buffalo Grove, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 23, 1993, Ser. No. 125,972

Int. Cl.^{6} H04M *1/24;* H04J *1/16;* H04B *17/00;* G01R *31/28*

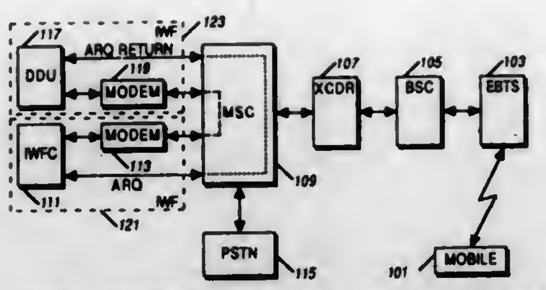
U.S. Cl. 379—5 **9 Claims**

1. A method of testing a plurality of components of an infrastructure of a communication system that uses an automatic-repeat-request (ARQ) protocol that is terminated in at least one communication unit and a first processor within the infrastructure, comprising the steps of:

providing a test processor within the infrastructure;

choosing a component from the plurality of components for testing;

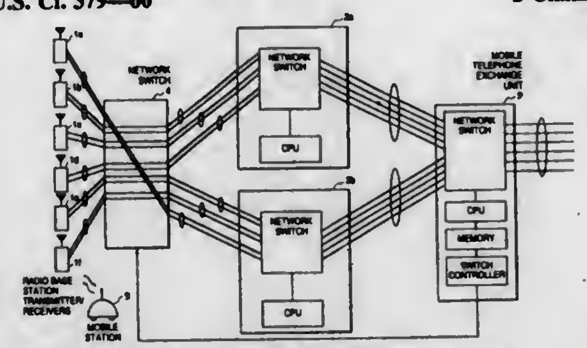
forming a duplex loopback that separates the chosen component from each of the plurality of components that is between the



chosen component and the at least one communication unit in the communication system;
emulating the ARQ protocol by the test processor; and
testing the chosen component by transmitting data in accord with the ARQ protocol between the first processor and the test processor through the duplex loopback.

5,619,551
CELLULAR TELEPHONE EXCHANGE SYSTEM WHICH ALLOWS SETTING OF CONNECTIONS BETWEEN THE BASE STATION TRANSMITTER-RECEIVERS AND BASE STATION CONTROLLERS BASE ON MOVEMENT OF THE MOBILE STATION

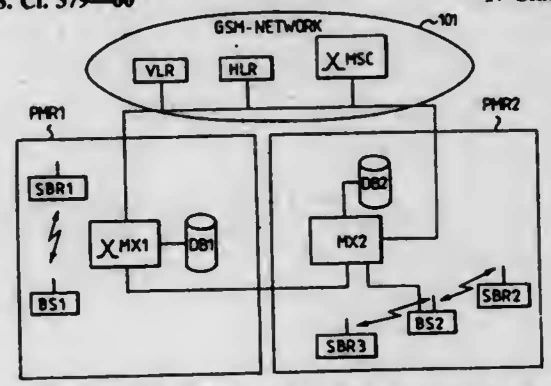
Masahiko Yahagi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Continuation-in-part of Ser. No. 950,275, Sep. 24, 1992, abandoned. This application Jun. 27, 1994, Ser. No. 265,713
Claims priority, application Japan, Sep. 26, 1991, 3-273620
Int. Cl.[6] H04Q *7/22*
U.S. Cl. 379—60 **2 Claims**



1. A cellular telephone exchange system comprising:
one or more mobile stations,
a plurality of radio base-station transmitter-receivers,
a plurality of base-station controllers for controlling said radio base-station transmitter-receivers,
a switch which allows setting of connecting conditions between said plurality of radio base-station transmitter-receivers and said plurality of base-station controllers, and
a mobile station exchange unit for controlling said plurality of base-station controllers,
wherein said switch is controlled by said mobile telephone exchange unit,
wherein said mobile telephone exchange unit assigns said plurality of radio base-station transmitter-receivers to said plurality of base-station controllers based on an amount of movement of said mobile station among a plurality of coverage areas corresponding to said plurality of radio base-station transmitter-receivers, and
wherein radio base-station transmitter-receivers having a large amount of movement by said mobile station in and out of said coverage areas corresponding to said radio base-station transmitter-receivers are assigned to one of said plurality of base-station controllers, and radio base-station transmitter-receivers having a small amount of movement in and out of said coverage areas corresponding to said radio base-station transmitter-receivers are assigned to another of said plurality of base-station controllers.

5,619,552
ARRANGEMENT AND METHOD FOR LOCATION REGISTRATION

Arto Karppanen, Helsinki; Reino Talarmo, Riihimäki, and Markku Tuohino, Espoo, all of Finland, assignors to Nokia Telecommunications OY, Espoo, Finland
PCT No. PCT/FI94/00363, § 371 Date Apr. 19, 1995, § 102(e) Date Apr. 19, 1995, PCT Pub. No. WO95/06396, PCT Pub. Date Mar. 2, 1995
PCT Filed Aug. 19, 1994, Ser. No. 416,867
Claims priority, application Finland, Aug. 20, 1993, 933693
Int. Cl.[6] H04Q *7/22*
U.S. Cl. 379—60 **17 Claims**

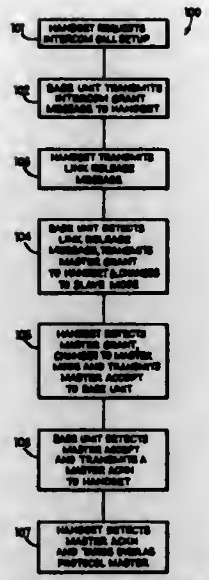


1. An arrangement for subscriber location management among a group of radio networks comprising at least a first and a second radio network in which at least some of the subscribers may roam away from the first radio network, which is the subscribers' home network, and register in the second radio network over the radio path, wherein the subscriber database of a third radio network, which does not belong to the same group of radio networks as said first and second radio network, and in which the subscribers of said first and second radio network cannot register, is arranged to maintain in a centralized manner the location data of all the subscribers that have roamed away from their home network and registered in the second radio network at least with an accuracy of a radio network.

5,619,553
METHOD OF CONDUCTING AN INTERCOM COMMUNICATION BETWEEN TWO CORDLESS TELEPHONE HANDSETS

Philip A. Young, Camberley, and Michael Beatty, Richmond, both of Great Britain, assignors to Vtech Communications, Ltd., Hong Kong, Hong Kong
Filed Jun. 1, 1994, Ser. No. 252,260
Claims priority, application United Kingdom, Jun. 2, 1993, 9311298
Int. Cl.[6] H04Q *7/24*
U.S. Cl. 379—61 **5 Claims**

4. A method of transferring timing master status from a master radio transmitter/receiver to a slave radio transmitter/receiver in a system having:
the master radio transmitter/receiver which maintains system timing;
two or more slave radio transmitter/receivers which synchronize to the master radio transmitter/receiver,
each of the master and slave radio transmitter/receivers being capable of transmitting and receiving signals between one another on one of two or more radio frequencies,
the method comprising the steps of:
transmitting from a requesting one of the two or more slave radio transmitter/receivers to the master radio transmitter/receiver a request to initiate a communication with another slave radio transmitter/receiver;
transmitting from the master radio transmitter/receiver to the requesting slave radio transmitter/receiver a message granting the request to initiate the communication;

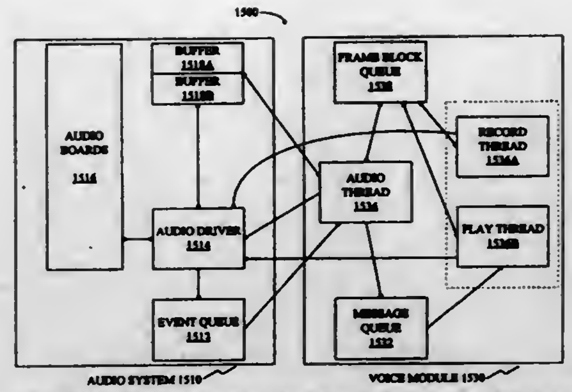


transmitting from the requesting slave radio transmitter/receiver to the master radio transmitter/receiver a link request message;
in response to receiving the link request message on the master radio transmitter/receiver transmitting from the master radio transmitter/receiver a message granting to the requesting slave radio transmitter/receiver the timing master status;
in response to receiving the timing master status grant message on the requesting slave radio transmitter/receiver, transferring the requesting slave radio transmitter/receiver into master mode and transmitting from the requesting slave radio transmitter/receiver a message accepting the grant of the timing master status;
in response to receiving said message accepting the grant of the timing master status on the master radio transmitter/receiver, transmitting from the master radio transmitter/receiver a message acknowledging the acceptance of the grant of the timing master status; and
in response to receiving said message acknowledging acceptance of the grant of the timing master status by the requesting slave radio transmitter/receiver, making the requesting slave radio transmitter/receiver temporary master responsible for maintaining system timing.

5,619,554
DISTRIBUTED VOICE SYSTEM AND METHOD

Steven J. Hogan; Kristi T. Feltz; Douglas R. Murdock; David J. Vercande, all of Cedar Rapids, and Roy A. Rhodes, Marion, all of Iowa, assignors to LinkUSA Corporation, Cedar Rapids, Iowa
Filed Jun. 8, 1994, Ser. No. 257,623
Int. Cl.[6] G10L *9/00;* **H04M** *1/64;3/50*
U.S. Cl. 379—67 **16 Claims**

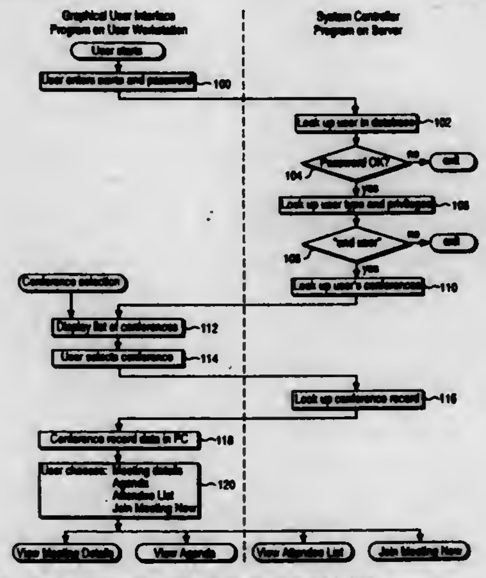
1. A method for storing voice data for a call processing system, comprising the steps of:
(a) recording audio voice by an audio driver and storing said audio voice in a first data buffer;
(b) encapsulating said recorded audio voice stored in said first data buffer into data packets, thereby creating voice data, wherein said step of encapsulating comprises the steps of:
i. checking said audio voice in said first data buffer to determine whether a configurable length of silence is detected; and
ii. commanding said audio driver to stop recording if said configurable length of silence is detected; and
(c) storing said voice data in a database, wherein said step of storing comprises the steps of:
i. checking said data packets for silence;



ii. discarding one of said data packets if said one of said data packets does not contain any frames that have detectable voice energy; and
iii. storing one of said data packets if said one of said data packets does contain frames that have detectable voice energy.

5,619,555
GRAPHICAL COMPUTER INTERFACE FOR AN AUDIO CONFERENCING SYSTEM

Wayne Fenton; Glenn A. Eaton, both of San Jose; Joseph A. McFadden, Palo Alto; Stuart A. Taylor, Menlo Park; Edward D. Tracy, Palo Alto, and Emil C. W. Wang, Menlo Park, all of Calif., assignors to Latitude Communications, Santa Clara, Calif.
Filed Jul. 28, 1995, Ser. No. 508,553
Int. Cl.[6] H04M *3/56*
U.S. Cl. 379—67 **60 Claims**



2. An audio conferencing system comprising:
a telephony conference subsystem that performs conferencing of a plurality of participants coupled via telephones;
a server coupled to the telephony conference subsystem to control operations performed on the telephony conference subsystem;
a user computer system coupled to the server through a data communication network, said computer system comprising a processor, a display and an input device; and
a graphical user interface (GUI) program executed by the user computer system to generate displays of information on the display and receive input by the user using the input device, said user computer system executing the GUI program prompting the user to enter a user identification and forwarding the user identification to the server;

said server further verifying that the user is registered and supplying to the user computer system executing the GUI program information regarding scheduled audio conferences that the user scheduled or for which the user is a designated participant; and

said user computer system executing the GUI program displaying the information regarding the audio conferences on the display and enabling the user to select a conference to attend using the input device.

5,619,556

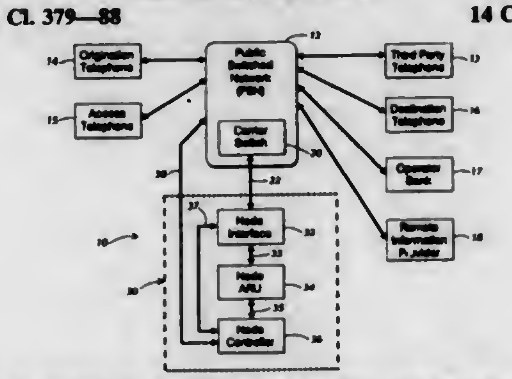
AUTOMATED TELECOMMUNICATION PERIPHERAL SYSTEM

Charles T. Richardson, Jr., Norcross; Kevin L. Austin, Roswell, and Samuel F. Billingsley, III, Atlanta, all of Ga., assignors to United States Advanced Network, Inc., Norcross, Ga.

Continuation of Ser. No. 861,625, Apr. 1, 1992, Pat. No. 5,335,266, which is a continuation-in-part of Ser. No. 852,491, Mar. 16, 1992, Pat. No. 5,317,627, which is a continuation of Ser. No. 591,047, Oct. 1, 1990, Pat. No. 5,113,430. This application Jun. 15, 1994, Ser. No. 259,853

Int. Cl.⁶ H04M *1/64;3/42*

U.S. Cl. 379—88 **14 Claims**



1. A method of providing an automated operator service to bridge a call, said method comprising the steps of:

providing a bridging node located outside of a public switched network and connected to a carrier switch within the public switched network, wherein the bridging node includes a storage device with a plurality of stored voice prompts;

receiving on a first communication path at the bridging node from the carrier switch a call bridging request, including, at least, a destination number assigned to a destination telephone located remotely from the bridging node and an origination number, as a result of a caller initiating a first telephone call from an origination telephone located remotely from the bridging node to which is assigned the origination number;

answering the first telephone call on the first communication path at the bridging node;

initiating a second telephone call from the bridging node through a second communication path to the destination telephone, including transmitting the destination number from the bridging node through the second communication path to the carrier switch;

connecting the first communication path to the second communication path at the bridging node to bridge the origination telephone to the destination telephone;

accepting on a third communication path at the bridging node a monitoring call from a monitor telephone as a result of a monitor dialing a number associated with a monitoring service;

transmitting a voice prompt of the plurality of stored voice prompts from the bridging node to the monitor telephone prompting the monitor for a criterion representative of a type of conversation to be selected for monitoring;

receiving a response at the bridging node from the monitor; and based upon the response from the monitor, determining at the bridging node whether or not to monitor conversation between the origination telephone and the destination telephone.

5,619,557

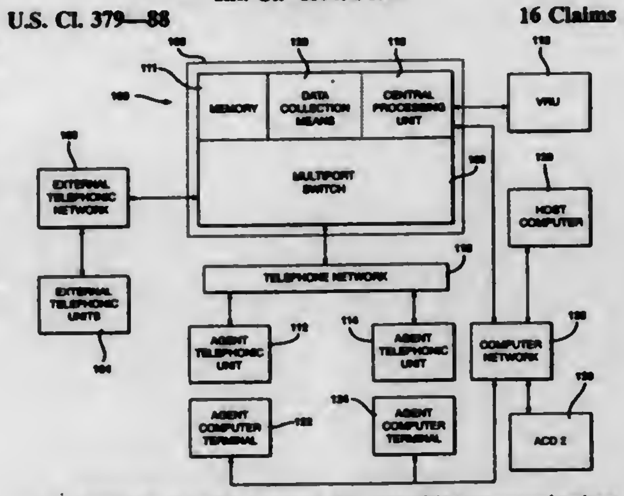
TELEPHONE SWITCHING SYSTEM AND METHOD FOR CONTROLLING INCOMING TELEPHONE CALLS TO REMOTE AGENTS AND FOR COLLECTING AND PROVIDING CALL DATA

Paul E. Van Berkum, Winfield, Ill., assignor to Rockwell International Corporation, Downers Grove, Ill.

Filed Jul. 10, 1995, Ser. No. 500,301

Int. Cl.⁶ H04M *3/42*

U.S. Cl. 379—88 **16 Claims**



1. A telephone switching system for controlling communications between a caller and one of a plurality of agents, the telephone switching system comprising:

an automatic call distributor for receiving an incoming telephone call from the caller and for selectively dialing a telephone number of the one of the agents;

an agent telephonic unit associated with the one of the agents for answering the incoming telephone call;

a telephone network connecting the agent telephonic unit to the automatic call distributor;

an agent computer terminal for receiving instructions from the one of the agents, for generating control signals representative of the instructions and for providing the control signals directly to a central processing unit within the automatic call distributor to subsequently control the incoming telephone call; and

a computer network for transmitting the control signals from the agent computer terminal to the automatic call distributor.

5,619,558

ATM SEGMENT OF ONE MARKETING METHOD

Elizabeth A. Jheeta, West Carrollton, Ohio, assignor to NCR Corporation, Dayton, Ohio

Filed Nov. 13, 1995, Ser. No. 557,866

Int. Cl.⁶ H04M *11/00*

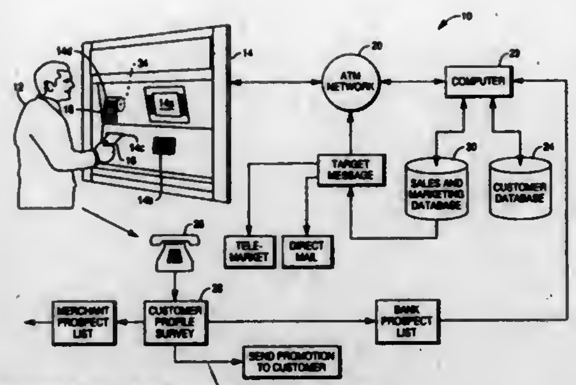
U.S. Cl. 379—90 **13 Claims**

1. A method for segment of one marketing to one of a plurality of customers utilizing one of a plurality of automated teller machines (ATMs) comprising:

dispensing to a customer from an ATM a receipt containing a transaction record, a promotion, and a telephone number for said customer to call for redeeming said promotion;

conducting a telephonic survey with said customer upon calling by said customer of said telephone number in response to said promotion, said survey including a plurality of questions relating to products and services offered by a marketeer;

storing answers to said survey questions in a profile for said customer in a computer database therefor;



sending said promotion to said customer;

generating a segment of one target message specific to said customer to offer a specific product or service from said marketeer based on said stored customer profile; and

sending said target message to said customer.

5,619,559

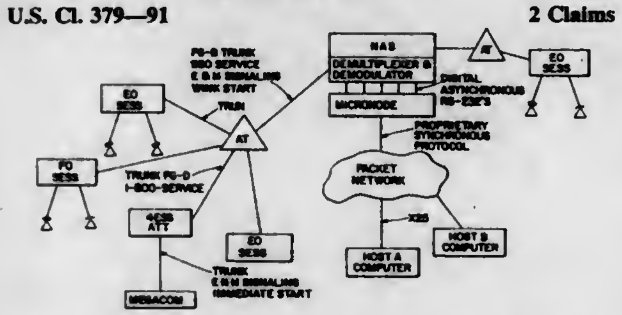
FINANCIAL CARD AUTHORIZATION SYSTEM

Rand A. Kennedy, Worthington, Ohio, assignor to CompuServe Incorporated, Columbus, Ohio

Continuation of Ser. No. 328,537, Oct. 25, 1994, abandoned, which is a continuation of Ser. No. 904,199, Jun. 25, 1992, abandoned. This application Jul. 25, 1995, Ser. No. 507,652

Int. Cl.⁶ H04M *11/00*

U.S. Cl. 379—91 **2 Claims**



1. A method of constructing a credit card authorization network over a public telephone switched network comprising the steps of:

providing a feature group trunk;

providing an all digital network access system (NAS) device directly connected to said feature group trunk via a Tl digital link;

providing a plurality of credit card authorization terminals for automatically accessing said feature group trunk through an exchange carrier;

providing a micronode connected by an RS-232 interface to said NAS device;

providing a communication network for connection with said micronode; and

providing a host computer in communication with said communication network, such that said authorization terminals access said NAS device using said feature group trunk, and said micronode processes data communication between said communication network and said NAS device to enable said authorization terminals to communicate with said host computer.

5,619,560

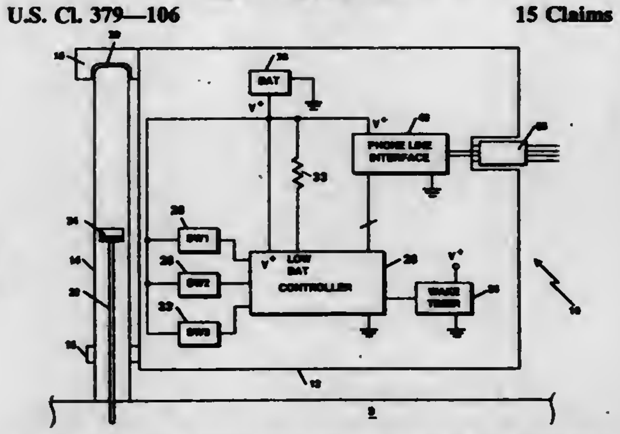
RESIDENTIAL FUEL OIL TANK LEVEL REPORTING DEVICE

Arthur W. Shea, Somerville, Mass., assignor to Scully Signal Company, Wilmington, Mass.

Filed Jun. 5, 1995, Ser. No. 465,341

Int. Cl.⁶ H04M *11/00*

U.S. Cl. 379—106 **15 Claims**



1. A remote level sensor for a residential fuel oil tank having a gauge with a permanent magnet which changes positions along a first axis with changes in the level of oil in the tank, the sensor comprising:

a housing;

a reed switch located in the housing which switches under the influence of a magnetic field from the magnet when the magnet is within a predetermined distance from the switch;

a controller connected to a telephone line for seizing the telephone line, dialing a telephone number and transmitting and receiving information over the telephone line, the controller detecting said switching of the reed switch and responding by initiating a telephone call to a monitoring location, and transmitting information to the monitoring location indicative of the switching of the reed switch;

a connector by which the housing is connected to the gauge, the connector being attached to a predetermined portion of the housing and receiving a top portion of the gauge such that the connector, when receiving said top portion of the gauge, maintains the housing in a predetermined position relative to the gauge and prevents movement of the housing in a first direction parallel to the first axis, such that location of the housing in the predetermined position is achieved by orienting the connector to receive the top portion, and moving the housing in the first direction until further movement is prevented by the connector.

5,619,561

CALL-WAITING AND CALLER IDENTIFICATION WITH THREE-WAY CONVERSATIONS ARRANGEMENTS

Morris Reese, P.O. Box 6651, Thousand Oaks, Calif. 91359

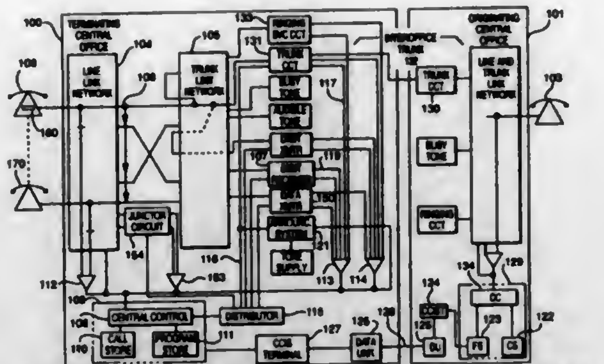
Filed Jun. 22, 1995, Ser. No. 493,563

Int. Cl.⁶ H04M *1/57*

U.S. Cl. 379—142 **2 Claims**

1. A method of providing to a first party already engaged in a telephone conversation with a second party via a terminating central office a directory telephone number with a corresponding name (DN) of a calling third party wishing to converse with said first party and then, in response to a predetermined digit entered on a keypad of said first party apparatus while said first party is engaged in said telephone conversation with said second party, connecting said calling third party to said first and second parties for three way conversations between said first, second and third parties, comprising the steps of:

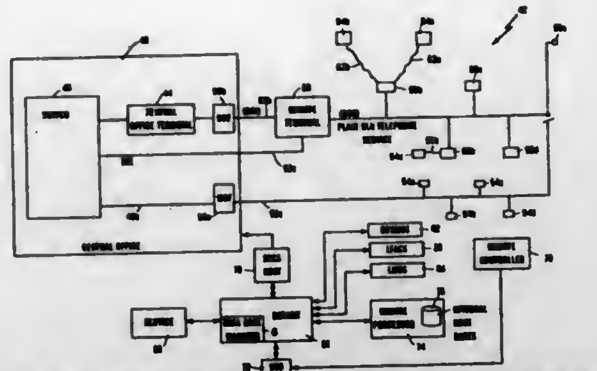
(a) said terminating central office, in response to receiving said calling third party DN flagged as public from an originating central office of said calling third party indicating that said



DN is to be disclosed to said first party, sending a call waiting tone signal to said first party;
(b) said first party apparatus, in response to said call waiting tone signal, muting its associated handset for a predetermined interval of time;
(c) said first party apparatus also generating and transmitting an acknowledgment tone to said terminating central office;
(d) said terminating central office, in response to said acknowledgment tone, transmitting said DN of said calling third party to said first party apparatus during a silent interval of said call waiting tone signal cycle;
(e) said first party apparatus receiving and displaying said DN of said calling third party from said terminating central office during said silent interval of said call waiting tone signal cycle while said first party is engaged in said telephone conversation with said second party;
(f) said terminating central office determining whether a hookswitch flash has been detected on said first party loop due to said first party answering said calling third party call based on said calling third party identity;
(g) said terminating central office determining whether a predetermined digit has been received from said first party apparatus while said first party is engaged in said telephone conversation with said second party if the hookswitch flash has not been detected on said first party loop; and
(h) said terminating central office connecting said calling third party to said first and second parties for said three way conversations between said first, second and third parties if the predetermined digit has been received from said first party apparatus while said first party is engaged in said telephone conversation with said second party and that said received digit is a permitted digit.

5,619,562
METHOD AND SYSTEM FOR REMOTELY ACTIVATING/ CHANGING SUBSCRIBER SERVICES IN A PUBLIC SWITCHED TELEPHONE NETWORK
Kevin Maurer, Old Bridge; Maria Castan, Jackson; Thomas Cousin, Haddonfield; Gilbert Spagnola, New Providence, all of N.J.; Kathleen M. Daley, Manassas, Va.; Margaret Keegan, Bowie, Md., and Thomas Smith, West Paterson, N.J., assignors to Bell Atlantic Network Services, Inc., Arlington, Va.
Filed Feb. 6, 1995, Ser. No. 383,740
Int. Cl.[6] H04M *3/42*
U.S. Cl. 379—201 **28 Claims**

12. In a public switched telephone network comprising a plurality of end offices each having a switch coupled to corresponding subscribers by facilities, each of said subscribers having assigned office equipment and facilities identified by data stored in a network database, a system comprising:
a facilities processor adapted to store a plurality of unused facilities data corresponding to unused facilities;
a change processor comprising a change database adapted to store at least a portion of said data identifying assigned office equipment and facilities corresponding to selected subscribers downloaded from said network database and at least one of



said unused facilities data downloaded from said facilities processor, said change processor generating recent change signals for said end office switches corresponding to said selected subscribers in response to a remote activation signal; and
communication means for supplying said downloaded data from said network database and said facilities processor to said change processor in response to a database manager download command and for supplying said recent change signals from said change processor to said corresponding end office switches and said network database.

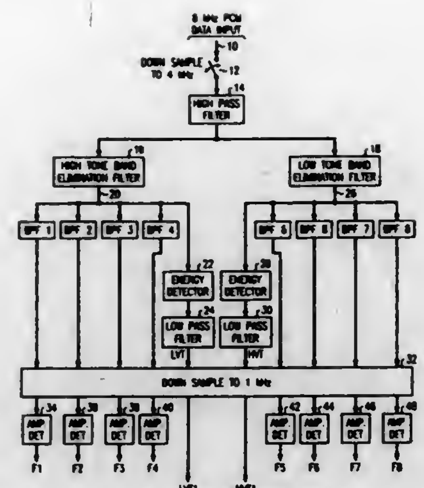
5,619,563
MNEMONIC NUMBER DIALING PLAN
Alaric S. Hsiao, Shrewsbury, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.
Filed Dec. 19, 1994, Ser. No. 359,269
Int. Cl.[6] H04M *1/27*
U.S. Cl. 379—368 **10 Claims**

DIGIT	MNDP SYMBOLS
2	ㄅ·ㄆ·ㄇ
3	ㄈ·ㄉ·ㄊ
4	ㄋ·ㄌ·ㄍ
5	ㄎ·ㄏ·ㄐ
6	ㄑ·ㄒ·ㄓ
7	ㄔ·ㄕ·ㄖ
8	ㄗ·ㄘ·ㄙ
9	ㄧ·ㄨ·ㄩ

1. A telephone with a keyset comprising
a numerical key for each of the digits 0 to 9; unique phonetic characters associated with at least a plurality of said numerical keys; and
said keys being part of a telephone such that dialing takes place as keys are depressed;
whereby telephone dialing is achieved by dialing phonetic characters of a mnemonic.

5,619,564
TONE DETECTOR WITH IMPROVED PERFORMANCE IN THE PRESENCE OF SPEECH
Ronald J. Canniff, Naperville, and Ali N. Jabiway, Aurora, both of Ill., assignors to Lucent Technologies Inc., Murray Hill, N.J.
Filed May 31, 1995, Ser. No. 455,805
Int. Cl.[6] H04M *1/50*
U.S. Cl. 379—386 **23 Claims**

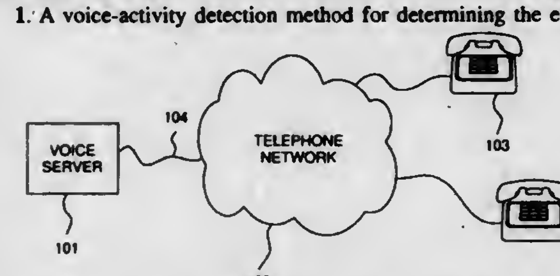
1. A tone detector that detects the presence of a first tone in a first frequency band on a communication channel that carries voice information which includes spectral components within the first frequency band, the communication channel also carrying at least a



second tone in a second frequency band that does not overlap the first frequency band, the tone detector comprising:
means for receiving signals carried on the communication channel;
a band elimination filter coupled to the receiving means that generates a first filtered signal in which signals in the second frequency band have been attenuated;
a band pass filter coupled to the band elimination filter that band pass filters the first filtered signal to generate a second filtered signal, the band pass filter having a pass frequency band that includes the first frequency and hence passes the first tone in the second filtered signal;
means coupled to the band elimination filter for generating a variable threshold signal based on the amplitude of the first filtered signal;
means coupled to the band pass filter for generating a third signal based on the amplitude of the second filtered signal;
means for comparing the amplitudes of the third signal and the variable threshold signal;
means coupled to the comparing means for determining if the first tone has been received based on the results of said comparison, the determining means determining the first tone is present when the amplitude of the third signal exceeds the amplitude of the variable threshold signal for a predetermined period of time.

5,619,565
VOICE ACTIVITY DETECTION METHOD AND APPARATUS USING THE SAME
Claude Cesaro, Le Cannet, and Gerard Richter, Saint Jeannet, both of France, assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 202,615, Feb. 28, 1994, Pat. No. 5,533,118. This application Feb. 8, 1996, Ser. No. 598,294
Claims priority, application European Pat. Off., Apr. 29, 1993, 93480048
Int. Cl.[6] H04M *1/00*
U.S. Cl. 379—386 **3 Claims**

1. A voice-activity detection method for determining the exist-

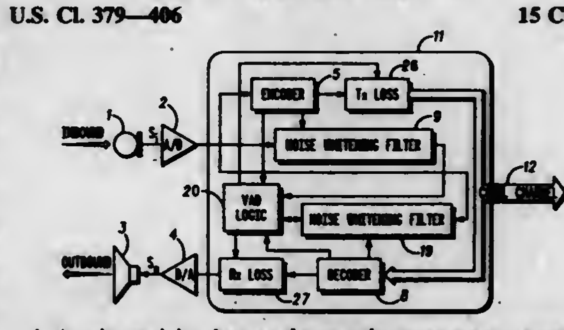


ence of voice signals in a telephone signal received where can also exist one or two frequency tones, characterized in that it comprises the steps of:
computing the value of the ratio,

$$\frac{A_{max}^2}{E}$$

where Amax corresponds to the maximum value of the received signal during a sampling window and E a measure of the energy,
comparing said computed ratio to a first determined threshold value, and
reporting the existence of a unique tone when said ratio appears to be lower than said first threshold value.

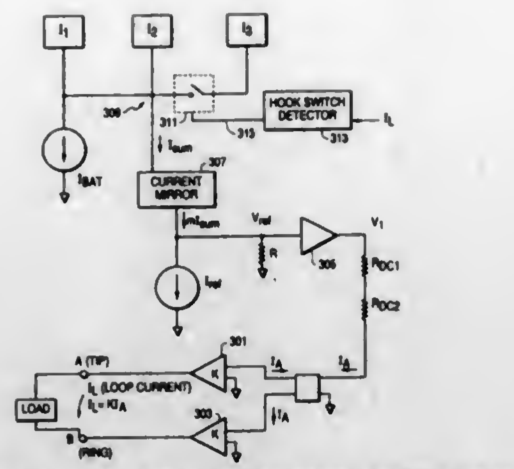
5,619,566
VOICE ACTIVITY DETECTOR FOR AN ECHO SUPPRESSOR AND AN ECHO SUPPRESSOR
Eliezer Fogel, Tel Aviv, Israel, assignor to Motorola, Inc., Schaumburg, Ill.
PCT No. PCT/IB94/00285, § 371 Date Jul. 20, 1995, § 102(e) Date Jul. 20, 1995, PCT Pub. No. WO95/06382, PCT Pub. Date Mar. 2, 1995
PCT Filed Aug. 11, 1994, Ser. No. 338,581
Claims priority, application United Kingdom, Aug. 27, 1993, 9317825
Int. Cl.[6] H04M *9/08;* **G10L** *5/00*
U.S. Cl. 379—406 **15 Claims**



1. A voice activity detector for an echo suppressor, comprising:
a receive audio path having a voice decoder for receiving voice parameters and synthesizing voice therefrom,
a transmit audio path,
a whitening filter for levelling the spectrum of the audio signal on the transmit path to provide a levelled signal,
decision means coupled to the whitening filter to measure energy in the levelled signal and thereby to detect voice on the transmit path, characterized in that
the whitening filter is a voice whitening filter and
means are provided for adapting the whitening filter according to the voice parameters received by the voice decoder in the receive path.

5,619,567
VARIABLE DC FEED CHARACTERISTIC IN A SUBSCRIBER LINE INTERFACE CIRCUIT
Russell J. Apfel, Austin, Tex., assignor to Advanced Micro Devices, Sunnyvale, Calif.
Filed Oct. 31, 1994, Ser. No. 332,512
Int. Cl.[6] H04M *1/00;19/00*
U.S. Cl. 379—413 **19 Claims**

1. A telephone interface circuit for coupling to a subscriber line including a telephone, the telephone interface circuit comprising:
off-hook detection circuitry; and
a switch responsive to said off-hook detection circuitry to tailor a feed characteristic in an on-hook and an off-hook state of said telephone,
wherein said feed characteristic includes a first region indicative of said on-hook state of said telephone, a second region indicative of said off-hook state of said telephone, and a third



region between said first and second regions, said third region being indicative of a state of transition of said telephone between said on-hook state and said off-hook state,

wherein said off-hook detection circuitry detects said off-hook condition in said third region, and

wherein said feed characteristic has a first component representative of a first voltage overhead and a second component representative of a second voltage overhead.

5,619,568

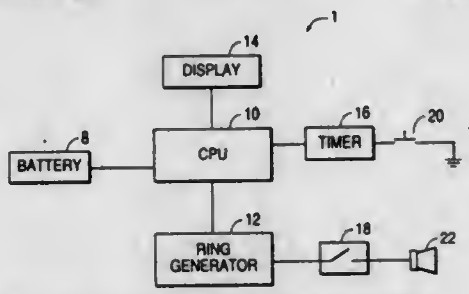
CORDLESS PHONE WITH TIME-OUT CONTROLLED RINGER

Jerry A. Miller, Ringwood, N.J., assignor to Sony Corporation, Japan, and Sony Electronics Inc., N.J.

Filed Jul. 24, 1995, Ser. No. 505,967

Int. Cl.^{6} H04M *11/02*

U.S. Cl. 379—413 **16 Claims**



9. A battery powered telephone handset, comprising:

a telephone handset

a timer switch on said handset;

a timer responsive to said timer switch for generating an active signal for a period of time following actuation of said timer switch;

a ringer in said handset for indicating an incoming telephone call; and

means for enabling said ringer only during said period of time.

5,619,569

COIL CORD SNARL PREVENTING DEVICE AND METHOD

Clifford R. McVay, P.O. Box 1393, Casper, Wyo. 82602-1393

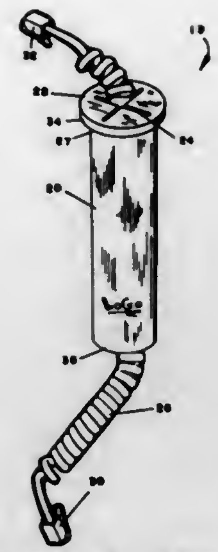
Filed May 19, 1995, Ser. No. 453,153

Int. Cl.^{6} H04M *1/00*

U.S. Cl. 379—438 **16 Claims**

1. A snarl preventing device for unrestrictingly surrounding a portion of a telephone coil cord, comprising:

a hollow member of predetermined length, breadth and material having first and second opened ends;



one and only one closure article defining coil cord fastening means having an opening, operably joined with one end of said hollow member, for firmly yet slidably receiving a coil cord.

5,619,570

INFORMATION FURNISHING AND COLLECTION SYSTEM

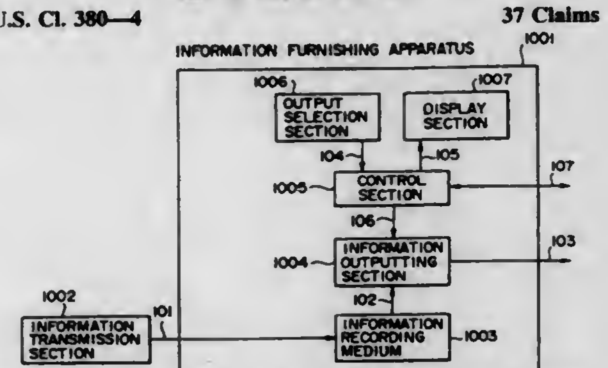
Kyoya Tsutsui, Kanagawa, Japan, assignor to Sony Corporation, Japan

Filed Oct. 8, 1993, Ser. No. 131,943

Claims priority, application Japan, Oct. 16, 1992, 4-304706

Int. Cl.^{6} H04L *9/00;9/32*

U.S. Cl. 380—4 **37 Claims**



25. An information furnishing and collection system, comprising:

an information furnishing apparatus for providing information to at least one information recording apparatus;

said information furnishing apparatus including a first information recording medium for recording information to be used in said at least one information recording apparatus, a second information recording medium for recording information regarding the use of the information in said first information recording medium by said at least one information recording apparatus, a transmission means for transmitting information recorded on said second information recording medium to the outside, and means for writing information onto said first information recording medium;;

wherein said information furnishing apparatus further comprises a control section for controlling the writing and reading of information into and from said first and second information recording media and the transmission of information by the transmission means;

wherein said at least one information recording apparatus has a control section and recording medium, said control section of the recording apparatus communicating with said control section of said information furnishing apparatus;

wherein said control section in said information furnishing apparatus further comprises means for reading out and transmitting information recorded on said second information recording medium;

wherein said information recording apparatus has an information furnishing condition stored in said recording medium and updates such information in response to the type of information read out from said second information recording medium.

5,619,571

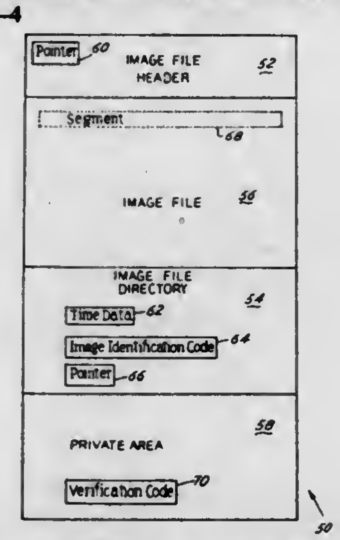
METHOD FOR SECURELY STORING ELECTRONIC RECORDS

Brent B. Sandstrom, 942 Copperkey Ct.; Ernest R. Ewert, 261 W. Verano Pl., both of Gilbert, Ariz. 85233, and Robert D. Reisch, 2036 E. Clipper Cir., Gilbert, Ariz. 85234

Filed Jun. 1, 1995, Ser. No. 457,835

Int. Cl.^{6} H04L *9/00;* **H04K** *1/00;* **G06F** *11/00*

U.S. Cl. 380—4 **41 Claims**



1. A method for a computer to store an image data stream on a medium, comprising, in combination:

receiving an image identification code and time data from at least one trusted source;

combining said time data and image identification code to generate a key;

creating an associated directory and inserting said time data and image identification code into said associated directory;

generating a verification code from said image data stream;

creating a private area and inserting said verification code into said private area;

encrypting said private area with said key; and

storing said image data stream, associated directory, and private area on said medium.

5,619,572

METHOD AND APPARATUS FOR PROVIDING SECURE COMMUNICATIONS FOR A REQUESTED CALL

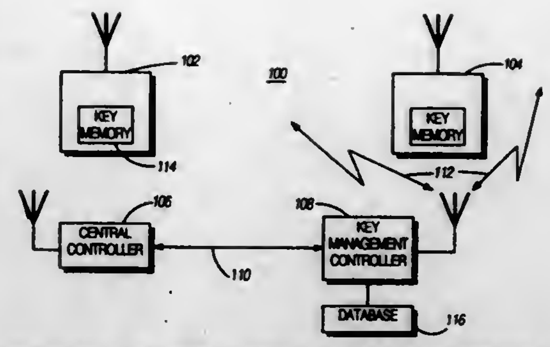
Hans C. Sowa, Schaumburg, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 16, 1994, Ser. No. 261,373

Int. Cl.^{6} H04L *9/00*

U.S. Cl. 380—21 **10 Claims**

10. In a secure trunked communication system that includes a central controller and provides over-the-air-rekeying (OTAR) to a plurality of radios using a key management controller, a method of providing secure communications for a private call comprising the steps of:



receiving by the central controller, an inbound signaling word (ISW) which includes a call type identifying the private call and an identification for each member of the private call;

identifying, by the key management controller, which of the plurality of radios are intended to be members of the private call on the basis of the ISW and transmitting a call key to the members of the private call; and

providing, by each member, secure communications between the members for the duration of the private call using the call key, and after completion of the private call, disabling the call key.

5,619,573

VEHICLE SECURITY DEVICE WITH ELECTRONIC USE AUTHORIZATION CODING

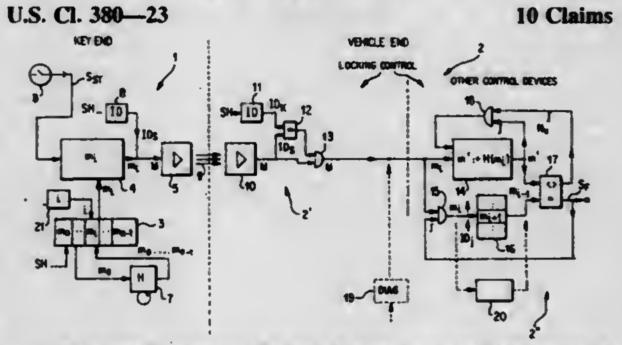
Horst Brinkmeyer, Waiblingen; Michael Daiss, Filderstadt; Günter Schwegler, Weinstadt, and Bertolt Krüger, Bonn, all of Germany, assignors to Mercedes-Benz AG, Germany

Filed Apr. 3, 1995, Ser. No. 415,374

Claims priority, application Germany, Apr. 1, 1994, 44 11 449.4

Int. Cl.^{6} H04L *9/00;9/30*

U.S. Cl. 380—23 **10 Claims**



1. Vehicle security device having an electronic use-authorization coding arrangement, comprising:

a user-end key unit for successively transmitting items of user code information which differ from one another;

a vehicle-end apparatus for receiving the transmitted user code information, and generating as a function thereof an item of actual authorization information; and

means for comparing said item of actual authorization information with an item of desired authorization information present at the vehicle end, and for generating an item of use-enabling information based on a result of said comparing; wherein

said successively transmitted user code information comprises an inverse image for a one-way function;

the desired authorization is in each case a one-way function value associated with the inverse image contained in said item of user code information; and

the determination of the actual authorization information from the received user code information includes the formation of the one-way function value associated with the inverse image contained in the received user code information.

5,619,574

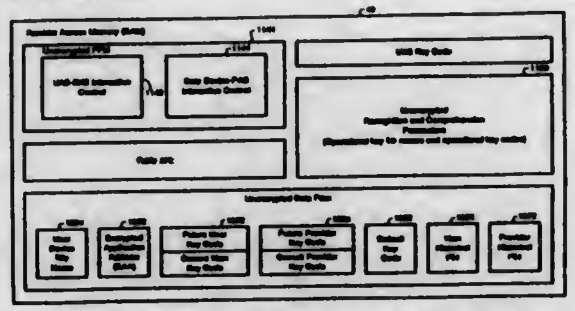
PERSONAL ACCESS MANAGEMENT SYSTEM

William C. Johnson, Los Angeles, and Donald L. Marx, Redondo Beach, both of Calif., assignors to ETA Technologies Corporation, Los Angeles, Calif.

Filed Feb. 13, 1995, Ser. No. 388,210

Int. Cl.[6] H04L *9/32*

U.S. Cl. 380—25 **92 Claims**



1. A method for coordinating the exchange of information between a user device and a provider device, comprising the steps of:

the user device:

generating a message;

retrieving a user device file name and a set of identification information stored in the user device;

deriving a first key code;

processing said identification information using said first key code to derive a set of processed identification information;

sending said user device file name, said processed identification information, and said message to the provider device;

the provider device:

receiving said user device file name, said processed identification information, and said message;

accessing a user file stored in the provider device using said user device file name as an index, said user file containing a set of recognition parameters corresponding to the user device;

deriving a second key code using said recognition parameters;

processing said processed identification information using said second key code to derive a set of de-processed identification information;

comparing said de-processed identification information with a set of reference information stored in said user file; and

terminating communication with the user device in response to a determination that said de-processed identification information is inconsistent with said reference information.

5,619,575

PSEUDORANDOM COMPOSITION-BASED CRYPTOGRAPHIC AUTHENTICATION PROCESS

Philip J. Koopman, Jr., Hebron; Alan M. Finn, Amston, and Robert E. LaBarre, Willington, all of Conn., assignors to United Technologies Automotive, Inc., Dearborn, Mich.

Filed Aug. 22, 1994, Ser. No. 294,147

Int. Cl.[6] H04K *1/00*

U.S. Cl. 380—28 **19 Claims**

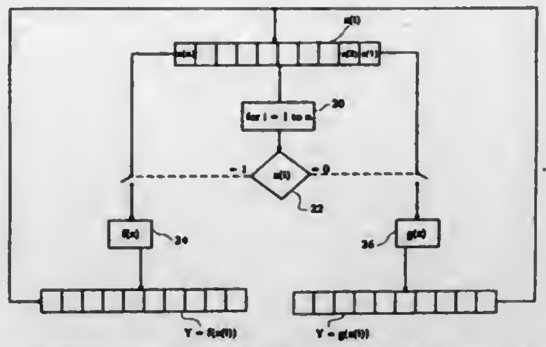
1. A method of encrypting digital information comprising the steps of:

(a) representing said digital information as a set of binary digits, N:

(b) testing one of the binary digits to determine if the digit is a 1 or a 0;

(c) applying a first encryption process on said digital information if the digit is a 1 or a second encryption process on said digital information if the digit is a 0 to produce an altered set of digital information;

(d) replacing said digital information with said altered set of digital information;



(e) repeating steps (b) through (d) upon testing a second of said binary digits to determine if said second of said binary digits is a 1 or a 0.

5,619,576

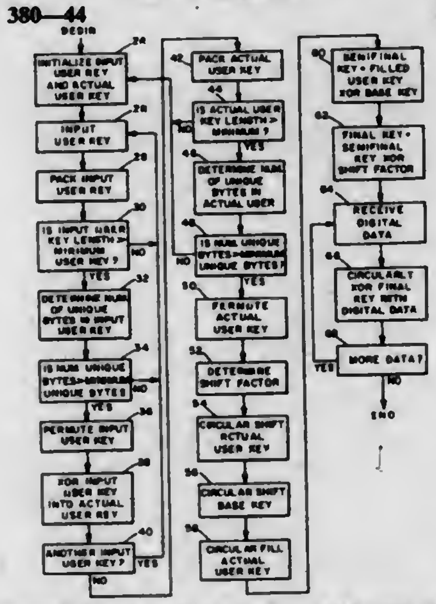
VARIABLE-KEY CRYPTOGRAPHY SYSTEM

William Y. Shaw, 5449 Pacifica Dr., La Jolla, Calif. 92037

Continuation-in-part of Ser. No. 209,918, Mar. 14, 1994, Pat. No. 5,425,103. This application Apr. 3, 1995, Ser. No. 415,719

Int. Cl.[6] H04L *9/00*

U.S. Cl. 380—44 **25 Claims**



1. A method for encrypting and decrypting input digital data, comprising the steps of:

providing a first key comprising a sequence of bits;

selecting a plurality of invariant bit positions in response to said first key; and

providing output digital data having in each of said invariant bit positions a bit equal in value to said bit in a corresponding position in said input digital data and having in all other positions bits determined in response to said first key.

5,619,577

TRANSMISSION SYSTEM, AND A TRANSMITTER AND A RECEIVER FOR USE IN SUCH A SYSTEM

Rudolf Hasler, Vienna, Austria, assignor to U.S. Philips Corporation, New York, N.Y.

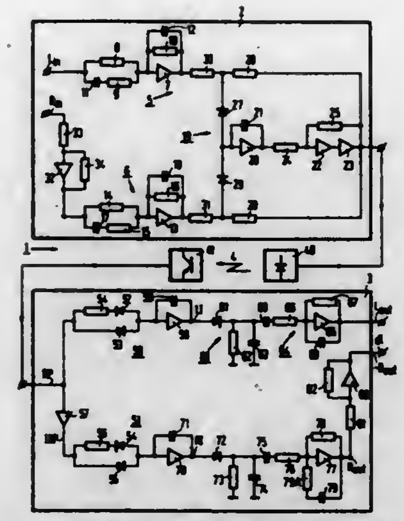
Filed Nov. 23, 1994, Ser. No. 345,030

Claims priority, application European Pat. Off., Nov. 26, 1993, 93203309

Int. Cl.[6] H04N *5/00*

U.S. Cl. 381—14 **9 Claims**

1. A transmission system comprising a transmitter having signal combining means for combining a first signal and a second signal



to form a combined signal, and having transmission means for transmitting the combined signal, characterized in that the signal combining means comprises periodic signal generating means for providing a signal, as the combined signal, in which successive periods having different polarity which are modulated alternately in relation to the sampling of the first signal and the second signal, respectively.

5,619,578

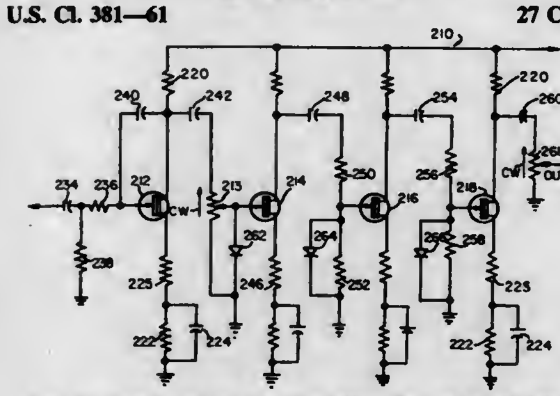
MULTI-STAGE SOLID STATE AMPLIFIER THAT EMULATES TUBE DISTORTION

Jack C. Sondermeyer, and James W. Brown, Sr., Meridian, both of Miss., assignors to Peavey Electronics Corporation, Meridian, Miss.

Continuation-in-part of Ser. No. 179,546, Jan. 10, 1994. This application Sep. 2, 1994, Ser. No. 299,104

Int. Cl.[6] H03G *3/00*

U.S. Cl. 381—61 **27 Claims**



1. A solid state amplifier for emulating the distortion associated with a flow of current in the grid of an overdriven multi-stage tube amplifier at high input signal levels resulting in a desirable input clipping characteristic comprising:

a plurality of series connected solid state devices for amplifying a signal each including an input circuit and an output circuit having an output signal capability, each device downstream of a first one of said devices having its input circuit coupled to the output circuit of one of such devices immediately upstream thereof; and

clipping means in the input circuit between each of the devices for establishing a clipping level in one direction between such devices, duplicating in such solid state amplifier the desirable input clipping characteristic of a tube amplifier wherein the output signal capability and the clipping level between stages are in a ratio similar to tube circuits sufficient to result in adequate second harmonic distortion to emulate the distortion effect of a tube amplifier.

5,619,579

REVERBERATION IMPARTING APPARATUS

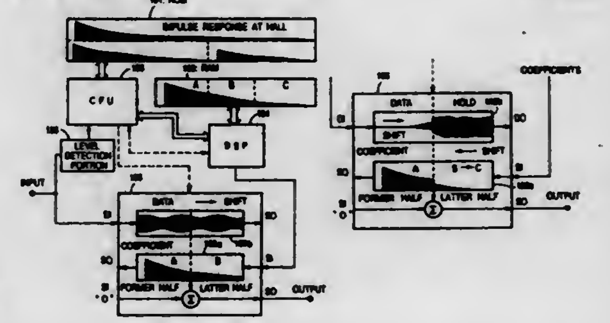
Shigeo Ando; Yuji Ikegaya, and Shinichi Muramatsu, all of Hamamatsu, Japan, assignors to Yamaha Corporation, Japan

Filed Dec. 27, 1994, Ser. No. 364,615

Claims priority, application Japan, Dec. 29, 1993, 5-352247

Int. Cl.[6] H03G *3/00*

U.S. Cl. 381—63 **2 Claims**



1. A reverberation imparting apparatus which comprises an arithmetic convolution means for performing an arithmetic convolution, using a string of coefficients, on a string of sampling data previously inputted, said reverberation imparting apparatus comprising:

level detection means for outputting a level-detection signal when an amplitude level of the sampling data inputted, to which reverberation is imparted, becomes lower than a predetermined level;

sampling-data storing means for storing a certain number of sampling data inputted;

coefficient storing means for storing the string of coefficients;

data-input control means for when the level-detection signal is not outputted, controlling the sampling-data storing means to store new sampling data, which is newly inputted in a current sampling period, and for also controlling the sampling-data storing means to output the certain number of sampling data previously stored to the arithmetic convolution means, whereas when the level-detection signal is outputted, the data-input control means controls the sampling-data storing means to output the certain number of sampling data previously stored to the arithmetic convolution means without storing the new sampling data which is inputted in the current sampling period; and

coefficient processing means for when the level-detection signal is not outputted, controlling the coefficient storing means to output the string of coefficients to the arithmetic convolution portion, while when the level-detection signal is outputted, the coefficient processing means controls the coefficient storing means to output the string of coefficients, except a new coefficient, which is newly incorporated in the string of coefficients, but together with an old coefficient, which is older than the string of coefficients, to the arithmetic convolution means and store them in the coefficient storing means, whereas when a state, where the level-detection signal is outputted, is changed to a stale where the level-detection signal is not outputted, the coefficient processing means initializes the contents of the coefficient storing means by a certain set of coefficients which correspond to a period of time between a current timing and a certain previous timing.

5,619,580

HEARING AID COMPENSATING FOR ACOUSTIC FEEDBACK

Roy S. Hansen, Dragør, Denmark, assignor to GN Danovox A/S, Taastrup, Denmark

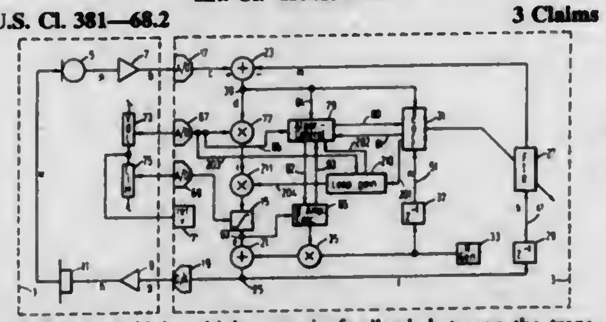
PCT No. PCT/DK93/00332, § 371 Date Apr. 13, 1995, § 102(e) Date Apr. 13, 1995, PCT Pub. No. WO94/09604, PCT Pub. Date Apr. 28, 1994

PCT Filed Oct. 8, 1993, Ser. No. 338,577

Claims priority, application Denmark, Oct. 20, 1992, 1282/92

Int. Cl.⁶ H04R *25/00*

U.S. Cl. 381—68.2 **3 Claims**



1. Hearing aid in which acoustic feedback between the transducer and the microphone is compensated for electronically by means of an electrical feedback signal produced using an adjustable digital filter, the coefficients of which are adjusted in accordance with actual acoustic feedback, and where a microphone signal is converted to digital signals which pass an amplitude limiting circuit arranged so as to prevent the transducer from entering a non-linear range, and where a digital noise signal from a digital noise generator and a digital compensation signal from a digital filter are added to the microphone signal to produce a composite signal, the composite signal being fed to a digital-to-analog converter to produce an analogue signal fed to the transducer via an amplifier, the hearing aid comprising:

a user-operated volume control to regulate amplification in the hearing aid via a second analog-to-digital converter:

a digital multiplication circuit in a digital signal path of the hearing aid between the analog-to-digital converter and the digital-to-analog converter;

an additional digital circuit coupled to the volume control and coupled to the digital filter to scan current filter coefficients and thereby calculate amplification of the digital filter, the additional digital circuit reducing multiplication in the digital multiplication circuit if the product of volume setting and calculated digital filter amplification exceeds a certain value, the certain value being constant or a function of frequency.

5,619,581

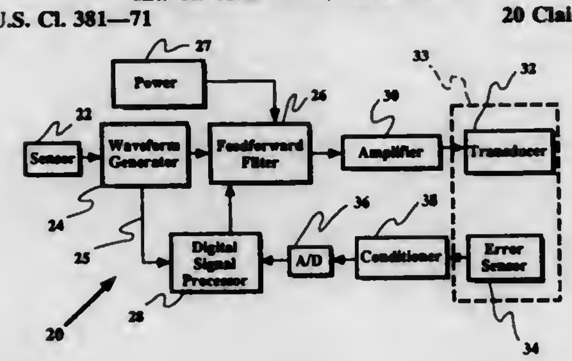
ACTIVE NOISE AND VIBRATION CANCELLATION SYSTEM

Matthew K. Ferguson, Erie, Pa.; Steve C. Southward, and Michael C. Heath, both of Cary, N.C., assignors to Lord Corporation, Erie, Pa.

Filed May 18, 1994, Ser. No. 245,717

Int. Cl.⁶ A61F *11/06;* **H03B** *29/00*

U.S. Cl. 381—71 **20 Claims**



10. An active control system, comprising:

(a) a digital signal processor for calculating weights in an adaptation path; providing an output control signal to a feedforward circuit and

(b) a separate waveform generator for

i) implementing a feedforward path by supplying sinusoidal control signal outputs to said feedforward circuit, said feedforward circuit which separately processes an input signal to arrive at particular phases and frequencies of said sinusoidal control signal to produce an active vibration control signal, and

ii) supplying timing signals to said digital signal processor which are synchronized to said input signal from an input source;

whereby the digital signal processor is freed from having to manipulate any data associated with the feedforward path.

5,619,582

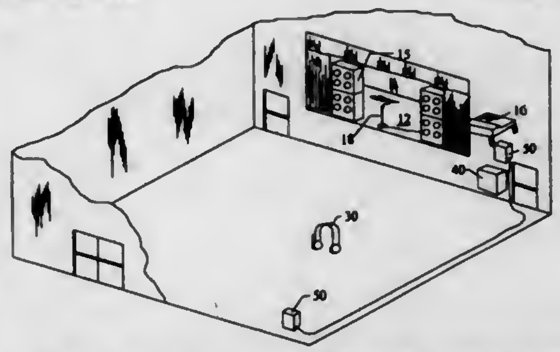
ENHANCED CONCERT AUDIO PROCESS UTILIZING A SYNCHRONIZED HEADGEAR SYSTEM

Randy Oltman, 10A Cedar La., Highland Park, N.J. 08904, and Perry L. Nusbaum, 650 4th St., NE., No. 3, Washington, D.C. 20002

Filed Jan. 16, 1996, Ser. No. 585,774

Int. Cl.⁶ H04R *27/00*

U.S. Cl. 381—82 **12 Claims**



1. An audio enhancing system for delivering an enhanced audio signal from a primary source to a plurality of discrete locations located within an arena, said audio enhancing system comprising:

an audio source means for generating a first audio signal and for converting said first audio signal to a first electromagnetic signal;

a primary signal propagating means for broadcasting said first audio signal;

a first transmitting means for transmitting said first electromagnetic signal via a wireless media;

a receiver means for receiving said first electromagnetic signal and converting said first electromagnetic signal into a second audio signal;

a second transmitting means for transmitting an electromagnetic locating signal, said electromagnetic locating signal comprising information related to a relative position of said receiver means with respect to said primary signal propagating mean;

a synchronization means for automatically delaying said first electromagnetic signal based on said electromagnetic locating signal, said receiver means deriving said second audion signal by substantially synchronizing said first audio signal with said second audio signal by said synchronization means.

5,619,583

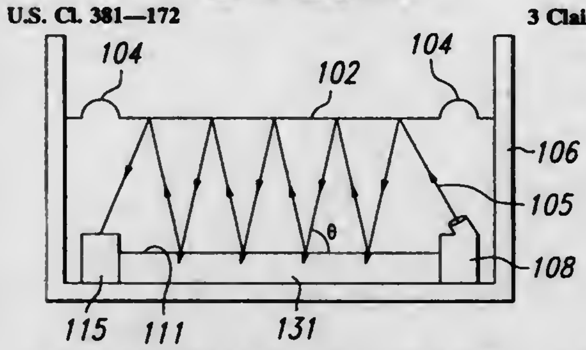
APPARATUS AND METHODS FOR DETERMINING THE RELATIVE DISPLACEMENT OF AN OBJECT

Steven L. Page; James Hollander, both of Dallas, and Gene Frantz, Missouri City, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 837,291, Feb. 14, 1992. This application Jun. 7, 1995, Ser. No. 475,249

Int. Cl.⁶ H04R *25/00*

U.S. Cl. 381—172 **3 Claims**



1. An apparatus for detecting relative displacement of a diaphragm, comprising:

a signal source for providing a predetermined signal having a string of regularly spaced pulses;

a structure for receiving and distorting said predetermined signal in response to relative displacement of said diaphragm to produce a distorted signal, said structure for receiving and distorting said predetermined signal distorts said signal by distorting the relative phase of said regularly spaced pulses;

a processor for receiving said distorted signal and determining said relative displacement from said distorted signal;

memory circuits connected to said processor for storing instructions for said processor; and

additional memory circuits connected to said processor for storing displacement values corresponding to predetermined levels of signal distortion;

said diaphragm is flexibly connected to said base by a connecting element having a determinable transfer function, said transfer function introducing an error factor in the displacement of said diaphragm in response to an external pressure;

said displacement values stored in said memory represent a pressure value corresponding to said external pressure; and

said processor including instructions stored in said memory for canceling out said error factor so that a truer estimate of said external pressure is determined.

5,619,584

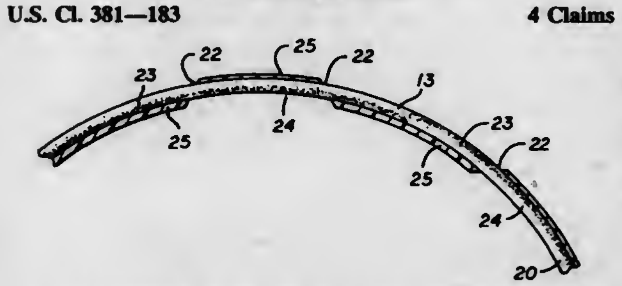
HEADPHONE

Teng K. Lin, Kaohsiung, Taiwan, assignor to Califone International Inc., Chatsworth, Calif.

Filed Dec. 1, 1995, Ser. No. 565,790

Int. Cl.⁶ H04R *25/00*

U.S. Cl. 381—183 **4 Claims**



1. In a headphone having ear pieces joined by a head band with an electrical cable interconnecting the ear pieces, said head band being a single U-shaped member having an inner surface and an outer surface, the improvement comprising:

a first plurality of outward opening grooves in said outer surface of said head band and a second plurality of inward opening grooves in said inner surface of said head band,

with said first and second grooves alternately positioned along said head band defining a path for the electrical cable between the ear pieces, with said cable in said first and second grooves of said path alternately at said outer surface of said headband and said inner surface of said headband.

5,619,585

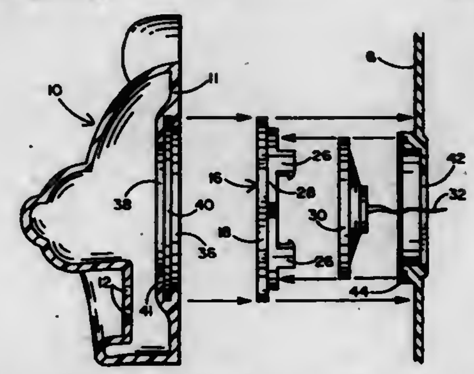
MEANS FOR AFFIXING AN ORNAMENTAL SCULPTURE TO A SOUND EMITTING DEVICE

Mark A. Grasso, 20748 Pacific Coast Hwy., Malibu, Calif. 90265

Filed Jul. 14, 1994, Ser. No. 275,303

Int. Cl.⁶ H04R *25/00*

U.S. Cl. 381—188 **11 Claims**



1. A combination comprising a sound emitting device, an ornamental sculpture, and means to affix said ornamental sculpture to said sound emitting device,

said ornamental sculpture having an opening formed therein, and said sound emitting device having a plurality of slots formed therein, and

said means to affix said ornamental sculpture to said sound emitting device including coupling means having a first end received through and retained within the opening of said ornamental sculpture, whereby the first end of said coupling means is attached to said sculpture, said coupling means also having a plurality of flexible legs projecting therefrom and snap-fit within respective ones of said slots in said sound emitting device, whereby said coupling means and the ornamental sculpture attached thereto are affixed to said sound emitting device.

5,619,586

METHOD AND APPARATUS FOR PRODUCING A DIRECTLY VIEWABLE IMAGE OF A FINGERPRINT

Alastair Sibbald, Maidenhead, United Kingdom, assignor to Thorn EMI plc, London, United Kingdom

Continuation of Ser. No. 39,202, Apr. 15, 1993, abandoned. This application May 3, 1995, Ser. No. 433,303

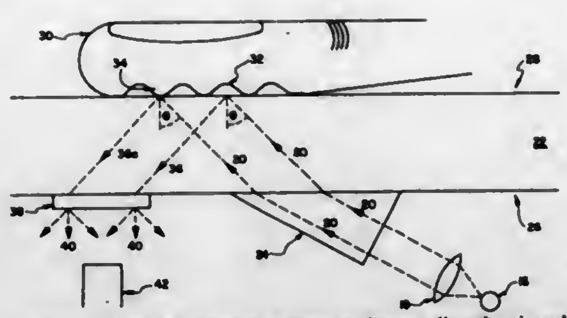
Claims priority, application United Kingdom, Dec. 20, 1990, 9027718

Int. Cl.⁶ G06K *9/00*

U.S. Cl. 382—127 **10 Claims**

1. A method for forming a direct image of a fingerprint, the method comprising:

introducing collimated light into a light transmitting member having first and second parallel major surfaces such that the light interacts with the first major surface thereof, in contact with which is a fingerprint to be imaged, the light then reflecting from the first major surface towards the second major surface, characterized in that one of said major surfaces carries a directly viewable image producing means which receives light reflected from the first major surface and emits



scattered light in response thereto to form a directly viewable image of the fingerprint at the said image producing means.

5,619,587

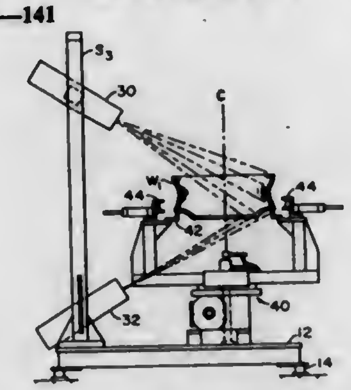
SYSTEM AND METHOD FOR CONTACTLESSLY GAUGING THE THICKNESS OF A CONTOURED OBJECT, SUCH AS A VEHICLE WHEEL

Louis G. Willoughby, Jr., Bay Village; Donald G. Jordan, Willoughby, both of Ohio; Paul R. Adomaitis, Trafford, Pa.; Avraham C. Goldman, South Euclid, Ohio; Anthony J. Tomasello, Schaumburg, Ill.; Steve Montellese, Ross Township, Allegheny County, Pa.; Edward W. Weed, Upper St. Clair, Pa., and Abraham Shtrahman, O'Hara Township, Allegheny County, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Continuation of Ser. No. 739,058, Jan. 2, 1992, abandoned, which is a continuation-in-part of Ser. No. 698,754, May 10, 1991, abandoned. This application Dec. 15, 1993, Ser. No. 166,891

Int. Cl.⁶ G06K *9/00*

U.S. Cl. 382—141 **56 Claims**



1. Method for contactlessly measuring the shape and cross sectional dimensions of a substantially hollow cylindrical object having at least one open end, an inner surface and an outer surface, and having an object longitudinal axis extending therethrough, said method comprising the steps of:

a) positioning said object on a support which defines a support longitudinal axis extending parallel to said object longitudinal axis, said support also defining a reference plane at a known location and extending perpendicular to said support longitudinal axis;

b) illuminating at least a portion of the outer surface of said object along an outer line in a first inspection plane extending perpendicular to said reference plane and through said support longitudinal axis at a first inspection position on said object;

c) detecting the illumination on said object along said outer line and, in response thereto, generating a first location signal representing the locations of said portion of the outer surface of said object along said outer line with respect to said support longitudinal axis and said reference plane;

d) illuminating at least a portion of the inner surface of said object through said open end along an inner line in said first inspection plane;

e) detecting the illumination on said object along said inner line and, in response thereto, generating a second location signal representing the locations of said portion of the inner surface of said object along said inner line with respect to said support longitudinal axis and said reference plane; and

f) combining said first location signal and said second location signal with respect to said support longitudinal axis and said reference plane and generating a cross section signal representing the dimensions of at least a portion of said object between said outer surface and said inner surface at said first inspection position.

5,619,588

APPARATUS AND METHOD FOR COMPARING AND ALIGNING TWO DIGITAL REPRESENTATIONS OF AN IMAGE

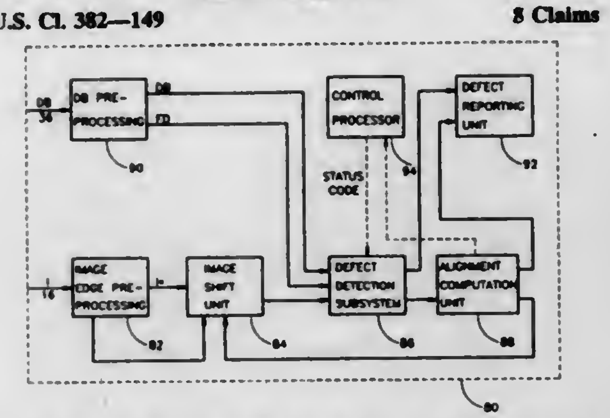
Joel Yolles, Rehovot; Meir Aloni, Herzliya; Yair Eran, Rehovot, and Haim Kaplan, Ra'anana, all of Israel, assignors to Orbot Instruments Ltd., Yavne, Israel

Filed Jul. 26, 1993, Ser. No. 97,971

Claims priority, application Israel, Jul. 27, 1992, 102659

Int. Cl.⁶ G06K *9/00*

U.S. Cl. 382—149 **8 Claims**



1. A method for comparing first and second digital representations of an image, the method comprising:

for each individual translation from among a plurality of translations from the first digital representation to the second digital representation:

for each individual image location from among a plurality of image locations within a comparison entity within the first digital representation:

comparing the individual image location to a location in the second digital representation defined by operating the individual translation on the individual image location;

evaluating the geometrical complexity of the vicinity of the location in the second digital representation; and

determining the legitimacy of the individual translation for the individual image location in accordance with the results of the comparing and the evaluating; and

combining the legitimacies of all image locations within the comparison entity, thereby defining the legitimacy of the individual translation for the comparison entity; and

announcing a defect for the comparison entity if none of the translations thereof are legitimate.

5,619,589

METHOD FOR ADAPTIVE LEARNING TYPE GENERAL PURPOSE IMAGE MEASUREMENT AND RECOGNITION

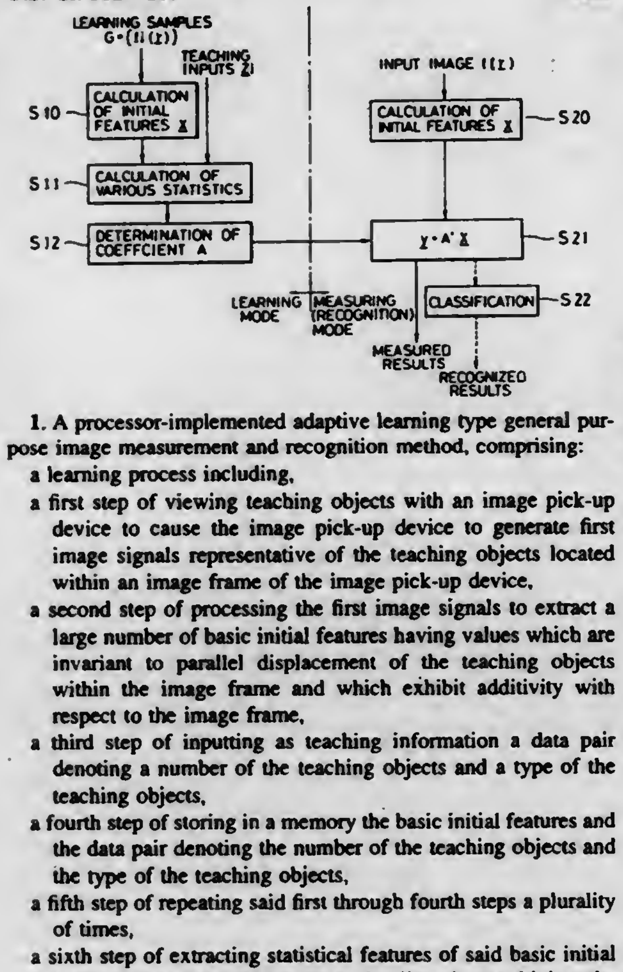
Nobuyuki Otsu; Takio Kurita, both of Tsukuba, and Shigesumi Kuwashima, Tokyo, all of Japan, assignors to Agency of Industrial Science and Technology, and Kabushiki Kaisha Ouyo Keisoku Kenkyusho, both of Tokyo, Japan

Continuation of Ser. No. 80,976, Jun. 24, 1993, Pat. No. 5,442,716, which is a continuation of Ser. No. 778,741, Oct. 18, 1991, abandoned, which is a continuation of Ser. No. 414,530, Sep. 29, 1989, abandoned. This application Dec. 5, 1994, Ser. No. 353,323

Claims priority, application Japan, Oct. 11, 1988, 63-255678; Oct. 11, 1988, 63-255679

Int. Cl.⁶ G06K *9/66*

U.S. Cl. 382—160 **1 Claim**



1. A processor-implemented adaptive learning type general purpose image measurement and recognition method, comprising:

a learning process including,

a first step of viewing teaching objects with an image pick-up device to cause the image pick-up device to generate first image signals representative of the teaching objects located within an image frame of the image pick-up device,

a second step of processing the first image signals to extract a large number of basic initial features having values which are invariant to parallel displacement of the teaching objects within the image frame and which exhibit additivity with respect to the image frame,

a third step of inputting as teaching information a data pair denoting a number of the teaching objects and a type of the teaching objects,

a fourth step of storing in a memory the basic initial features and the data pair denoting the number of the teaching objects and the type of the teaching objects,

a fifth step of repeating said first through fourth steps a plurality of times,

a sixth step of extracting statistical features of said basic initial features stored in said memory by linearly combining the basic initial features stored in said memory to obtain linear coefficients which are optimally determined based on a multiple regression analysis, and

a seventh step of storing the coefficients in said memory; and

a recognition process including,

an eighth step of viewing other unknown objects with the image pick-up device to cause the image pick-up device to generate second image signals representative of the other unknown objects located within the image frame,

a ninth step of processing the second image signals to extract the basic initial features having values which are invariant to parallel displacement of the other unknown objects within the image frame and which have additivity with respect to the image frame,

a tenth step of processing the basic initial features of the other unknown objects by applying said coefficients stored in said memory to the basic initial features of the other unknown objects, and

an eleventh step of outputting as a recognition result at least one data pair denoting a number and a type of the other unknown objects based on said processing of the basic initial features of said tenth step.

5,619,590

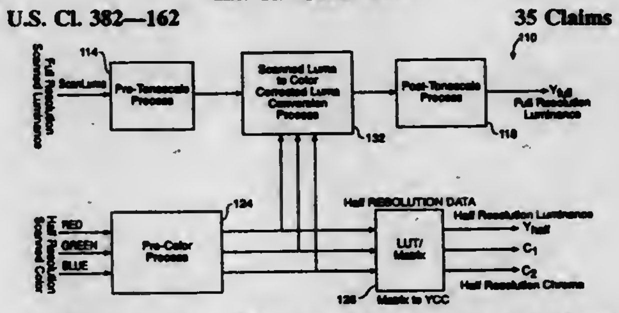
SYSTEM FOR ELECTRONIC IMAGE SIGNAL PROCESSING TO PROVIDE A TONESCALE CORRECTED FULL RESOLUTION LUMINANCE AND TWO HALF RESOLUTION CHROMINANCE SIGNALS

Leslie G. Moore, Jr., Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 6, 1994, Ser. No. 318,923

Int. Cl.⁶ G06K *9/00*

U.S. Cl. 382—162 **35 Claims**



1. A system for use with film scanning apparatus generating full resolution luminance and half resolution color (RGB) image signals, and an encoding apparatus utilizing a full resolution luminance (Y) and two half resolution chrominance (C_1,C_2) signals to encode an image for hybrid residual-based hierarchical storage of full resolution tonescale corrected luminance signals together with sub-sampled half resolution chrominance signals and for providing high resolution digital images from the stored signals, said system characterized by:

means for signal processing the full resolution luminance signal and half resolution color signals received from said film scanning apparatus to directly generate a tonescale corrected full resolution scene luminance signal compatible with hybrid residual-based hierarchical image storage, said signal processing means comprising converter apparatus for modifying the scanned full resolution luminance signal by utilizing a combination of the scanned half resolution color signals and scanned luminance signal; and

color conversion apparatus receiving the scanned half resolution color signals and converting the scanned color signals into two half resolution chrominance signals.

5,619,591

ENCODING AND DECODING COLOR IMAGE DATA BASED ON MEAN LUMINANCE AND AN UPPER AND A LOWER COLOR VALUE

Wai M. Tsang, North Point, and Ching K. Chan, Yuen Long, both of Hong Kong, assignors to Vtech Electronics, Ltd., Hong Kong, Hong Kong

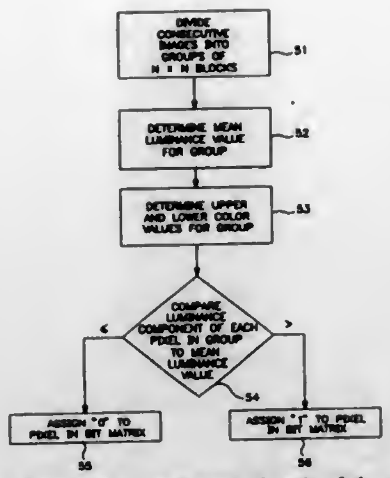
Filed Aug. 23, 1995, Ser. No. 518,581

Int. Cl.⁶ H04N *11/02*; G06K *9/00*

U.S. Cl. 382—166 **10 Claims**

1. A method for encoding a sequence of frames of digitized motion picture video data, the sequence of frames containing a plurality of sets of proximately-positioned frames within the sequence, each frame within the sequence of frames containing a plurality of digital pixel values, the method comprising the steps of:

dividing each frame within each set of proximately-positioned frames of digitized motion picture video data into a plurality of blocks of pixels, each block corresponding to at least one other block within at least one proximately-positioned frame, so as to create a plurality of groups of corresponding blocks;



averaging a luminance component of each of the pixel values within each group of corresponding blocks to generate a mean luminance value for each group of corresponding blocks;
determining an upper color value for each group of corresponding blocks, the upper color value being equal to a combination of averages of color components of pixels within the group of corresponding blocks having a luminance component greater in magnitude than the mean luminance component for the group of corresponding blocks;
establishing a lower color value for each group of corresponding blocks, the lower color value being equal to a combination of averages of color components of pixels within the group of corresponding blocks having a luminance component which is not greater in magnitude than the mean luminance component for the group of corresponding blocks;
comparing the luminance components of each pixel within each block with the mean luminance value for the corresponding group of blocks;
setting a one-bit value in a one-bit per pixel matrix to a first binary level when the luminance component of an associated pixel value is greater in magnitude than the corresponding mean luminance value; and
setting a one-bit value in a one-bit per pixel matrix to a second binary level when the luminance component of an associated pixel value is not greater in magnitude than the corresponding mean luminance value;
whereby each set of proximately-positioned frames may be represented in encoded form by a one-bit per pixel matrix for each frame, a single upper color value for each group of blocks, and a single lower color value for each group of blocks.

5,619,592

DETECTION OF HIGHLIGHTED REGIONS

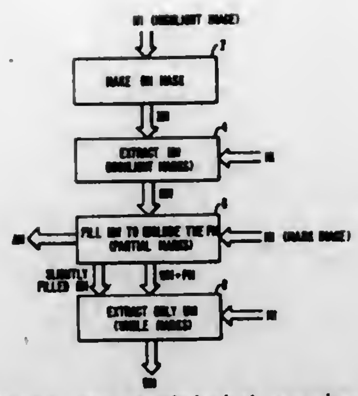
Dan S. Bloomberg, Palo Alto; Henry W. Sang, Jr., Cupertino, and Lakshmi Dasari, Palo Alto, all of Calif., assignors to Xerox Corporation, Rochester, N.Y.

Continuation of Ser. No. 226,436, Apr. 12, 1994, abandoned, which is a continuation of Ser. No. 988,529, Dec. 10, 1992, abandoned, which is a division of Ser. No. 751,263, Aug. 28, 1991, Pat. No. 5,272,764, which is a division of Ser. No. 447,985, Dec. 8, 1989, Pat. No. 5,048,109. This application Jun. 7, 1995, Ser. No. 477,358

Int. Cl.[6] G06K *9/34*

U.S. Cl. 382—175 **4 Claims**

1. An optical character recognition system for identifying characters in a document identified by a highlight mark comprising:
a) means for forming an image of the document, said image including a plurality of pixels;
b) means for applying morphological operations to pixels of said image to form a mask identifying a region of the highlight



mark, wherein said morphological operations belong to a group consisting of dilation, erosion, opening, and closing; and
c) means for identifying characters in said region identified by said mark independently from remaining characters.

5,619,593

METHOD FOR EXTRACTING OBJECT IMAGES AND METHOD FOR DETECTING MOVEMENTS THEREOF

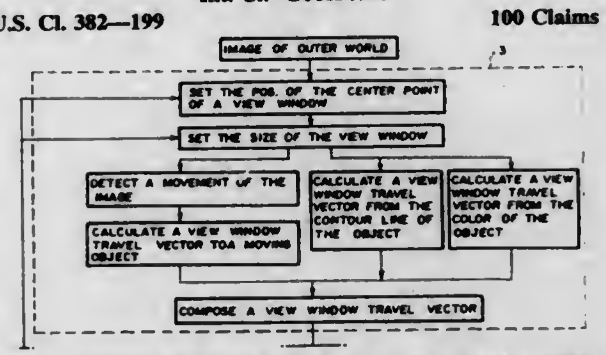
Shuji Ono, Kanagawa-ken, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 14, 1992, Ser. No. 944,850

Claims priority, application Japan, Sep. 12, 1991, 3-233213; Dec. 6, 1991, 3-323342; Dec. 6, 1991, 3-323343; Dec. 6, 1991, 3-323344; Jan. 28, 1992, 4-013092; Jan. 28, 1992, 4-013093; Jan. 28, 1992, 4-013094; Jan. 28, 1992, 4-013095; Jan. 28, 1992, 4-013096; Jan. 28, 1992, 4-013097

Int. Cl.[6] G06K *9/48*

U.S. Cl. 382—199 **100 Claims**



1. A computer-implemented method for extracting and outputting an object image from an image signal, in which an extraction area for extraction of a candidate for a predetermined object image from an image is determined, the method for extracting an object image comprising the steps of:
i) inputting and storing in memory an image signal containing the candidate object for a predetermined object image, and causing the center point of only one view window, which has a predetermined size smaller than the entire input image signal, to travel to a position of said candidate for the predetermined object image;
ii) determining and extracting said extraction area in accordance with one of the size, the shape, and the size and shape of said candidate for the predetermined object image, the center point of said view window being taken as a reference during the determination of said extraction area; and
iii) determining if the predetermined object image is extracted and setting the size of said view window if the predetermined object image is determined not to be extracted, and determining the movement of the center point of the view window based on image data in the extracted area; and
iv) outputting an image signal containing said extracted object image.

5,619,594

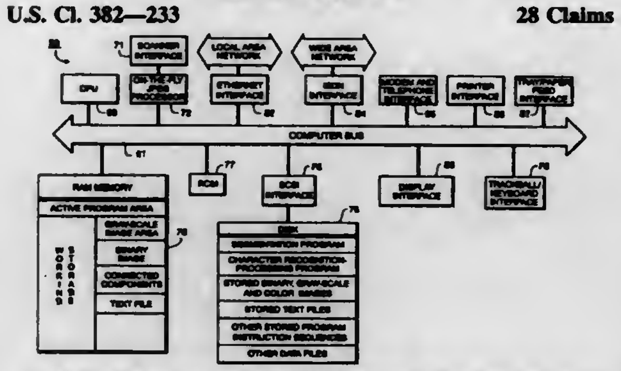
IMAGE PROCESSING SYSTEM WITH ON-THE-FLY JPEG COMPRESSION

Roger D. Melen, Los Altos Hills, Calif., assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 228,418, Apr. 15, 1994, abandoned. This application Jul. 27, 1995, Ser. No. 507,866

Int. Cl.[6] G06K *9/36*

U.S. Cl. 382—233 **28 Claims**



1. A personal imaging computer system which scans in documents and determines the identity of printed characters on the scanned-in documents, said system comprising:
a scanner for scanning in lines of the document so as to form lines of gray-scale document information;
an on-the-fly compression processor which operates in coordination with the scanner to compress, using lossy compression, the lines of gray-scale document information so as to form a compressed document image which includes compressed printed character images;
decompression means for decompressing the compressed document image and the compressed printed character images in the compressed document image so as to form a decompressed gray-scale document image which includes gray-scale printed character images containing artifacts due to lossy compression by said compression processor and decompression by said decompression means;
optical-character-recognition-processing means for gray-scale OCR identification of the artifacted gray-scale printed character images in the decompressed gray-scale document image so as to obtain computerized character codes which correspond to the printed characters; and
storing means for storing the compressed document image in association with a text file containing the character codes determined by said optical-character-recognition-processing means.

5,619,595

APPARATUS FOR DETECTING MOTION VECTOR INCLUDED IN IMAGE INFORMATION

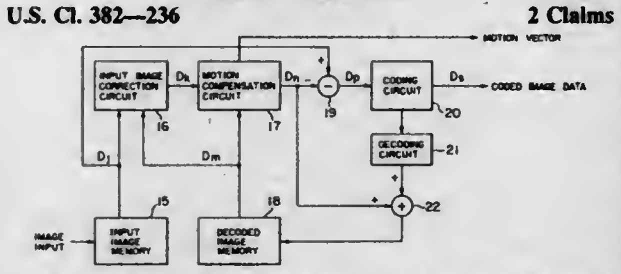
Joji Naito, Tokyo-to, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Apr. 27, 1993, Ser. No. 52,920

Claims priority, application Japan, Apr. 28, 1992, 4-136003

Int. Cl.[6] G06K *9/36*

U.S. Cl. 382—236 **2 Claims**



1. An apparatus for detecting a motion vector included in image information, comprising:
an input image correction circuit which corrects input image data on the basis of input image information by using decoded image data which is processed prior to said input image data, in a manner such that said input image data are multiplied by the reciprocal of a value corresponding to a level ratio between said input image data and said decoded image data in order to correct an average level difference between corrected input image data and decoded image data;
a motion compensation circuit which detects a motion vector representing displacement between two data sets of input image data and which data sets are corrected by said input image correction circuit and said decoded image data, said motion compensation circuit composing predictive image data in which a motion is compensated corresponding to said input image data; and
a coding/decoding circuit which codes/decodes an output of said motion compensation circuit and supplies said decoded image data as respective comparison components to said input image correction circuit and said motion compensation circuit.

5,619,596

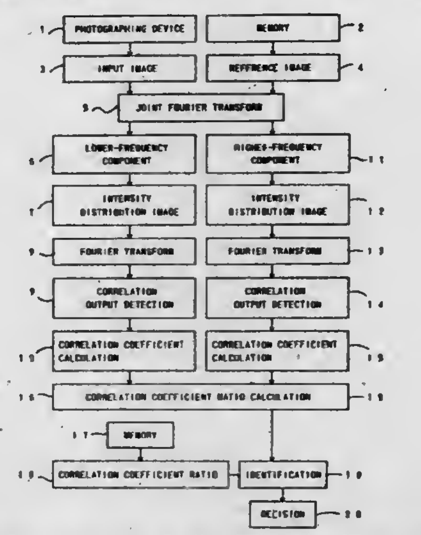
METHOD AND APPARATUS FOR OPTICAL PATTERN RECOGNITION

Tadao Iwaki; Nobuyuki Kasama; Shuhei Yamamoto; Toshiharu Takesue, and Yasuhiro Takemura, all of Tokyo, Japan, assignors to Seiko Instruments Inc., and Sumitomo Cement Co. Ltd., both of Japan

Filed Oct. 6, 1993, Ser. No. 132,660

Int. Cl.[6] G06F *15/336;* **G06K** *9/74*

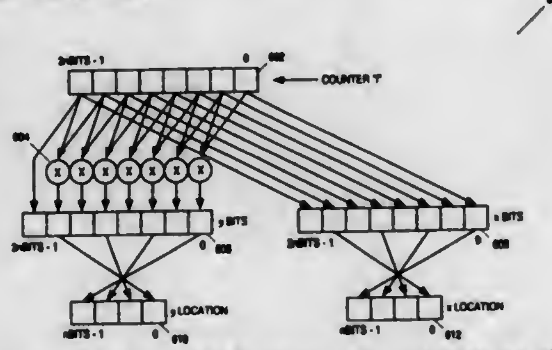
U.S. Cl. 382—278 **13 Claims**



1. An optical pattern recognition apparatus capable of automatically recognizing an input image by optical correlation processing using a coherent light for a two-dimensional input image obtained from an image pick-up means, the optical pattern recognition apparatus comprising: conversion means for converting at least one reference image and at least one input image into a coherent image; Fourier transform means for optically Fourier transforming the coherent image of the reference image and the input image and producing a corresponding Fourier transform image; filter forming means for independently forming a lower-frequency filter mainly formed of the lower-frequency component of a Fourier transform of the reference image and a higher-frequency filter mainly formed of the higher-frequency component of the reference image; filtering means for independently optically filtering a Fourier transform of the input image by the lower-frequency filter and the higher-frequency filter; correlation function means for independently obtaining a first correlation function corresponding to the lower-frequency filter and a second correlation function corresponding to the higher-frequency filter, the Fourier transform of the input image being optically filtered by the lower-frequency filter and the high-frequency filter being again optically Fourier transformed; a photodetector for converting signal intensity into corresponding

electric signals by independently detecting the intensity of at least one first correlation peak contained in the first correlation function and the intensity of at least one second correlation peak contained in the second correlation function; calculating means for calculating a correlation coefficient ratio of the input image in accordance with a ratio of intensity of the first correlation peaks converted into the electric signals and intensity of the second correlation peaks converted into the electric signals; storage means for storing a correlation coefficient ratio of the reference image that is the intensity ratio of the correlation peaks, the correlation coefficient ratio being previously obtained from the Fourier transform of the reference image; and decision means for discriminating the input image by comparing the correlation coefficient ratio of the input image with the correlation coefficient ratio of the reference image previously stored.

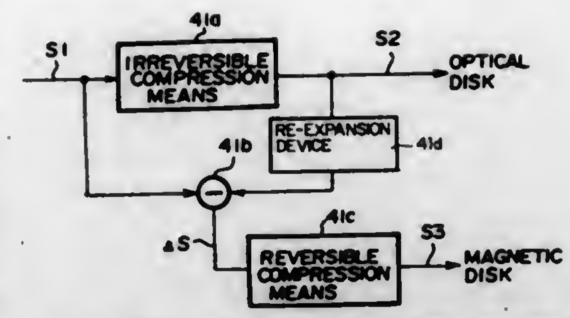
5,619,597
METHOD FOR SAMPLING A UNIFORM SPATIALLY-DISTRIBUTED SEQUENCE OF PIXELS IN A BLOCK
Henry P. Moreton, Oakland, Calif., assignor to Silicon Graphics, Inc., Mountain View, Calif.
Division of Ser. No. 281,753, Jul. 28, 1994, Pat. No. 5,506,624. This application Feb. 1, 1996, Ser. No. 595,192
Int. Cl.⁶ G06K *9/32;9/00*
U.S. Cl. 382—296 **1 Claim**



1. A method of sampling blocks of an image having pixels arranged in two axes comprising the following steps:
a. maintaining a counter which has as a maximum value a total number of said pixels of each of said blocks minus one;
b. performing an XOR operation on pairs of bits in said counter in order to generate a first value;
c. bit reversing alternating bits in said first value in order to generate a second value, said second value used to reference a sampled pixel at a first of said axes in each of said blocks;
d. bit reversing alternating bits in said counter in order to generate a third value, said third value used to reference said sampled pixel at a second of said axes in each of said blocks;
e. referencing said sampled pixel by addressing said pixel at said second value in said first axis, and said third value in said second axis; and
f. incrementing said counter and repeating steps b–e for a next sampled pixel.

5,619,598
IMAGE FILING APPARATUS USING BOTH REVERSIBLE AND IRREVERSIBLE COMPRESSION
Takefumi Nagata; Hiroshi Tanaka, and Kazuhiro Hishinuma, all of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Continuation of Ser. No. 747,577, Aug. 20, 1991, abandoned. This application Mar. 24, 1994, Ser. No. 217,212
Claims priority, application Japan, Aug. 20, 1990, 2-218482
Int. Cl.⁶ G06K *9/00*
U.S. Cl. 382—305 **7 Claims**

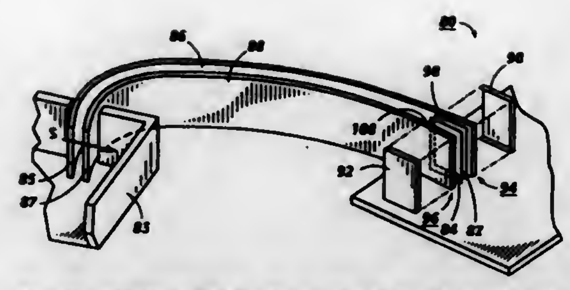
1. An image filing apparatus comprising:
an image recording and read-out device comprising:



a reading device which reads an image from a medium and provides an original image signal; and
a data entering device which provides data signals to said reading device, said data signals representing information pertaining to the image on said medium, said image recording and read-out device outputting said original image signal and said data signals;
an image processing unit which receives said original image signal and said data signals directly from said image recording and read-out device, comprising:
i) means for distinguishing said original image signal from said data signals;
ii) irreversible signal compression means for carrying out irreversible signal compression processing on said original image signal, said original image signal being made up of a series of image signal components representing said image on said medium, and thereby generating an irreversibly compressed image signal;
iii) difference operation means for subtracting the image signal components of a re-expanded signal of said irreversibly compressed image signal from said original image signal, and then generating a difference image signal, which represents a difference image corresponding to the differences between said original image signal and said re-expanded irreversibly compressed image signal;
iv) reversible signal compression means for carrying out reversible signal compression processing on said difference image signal, and thereby generating a reversibly compressed difference image signal; and
v) means for outputting said irreversibly compressed image signal, said reversibly compressed difference image signal, and said data signals; and
an image filing device which receives said irreversibly compressed image signal, said reversibly compressed difference image signal, and said data signals directly from said image processing unit, comprising:
first storage means for storing said irreversibly compressed image signal; and
second storage means, separate from said first storage means, on which information can be rewritten and which stores said reversibly compressed difference image signal.

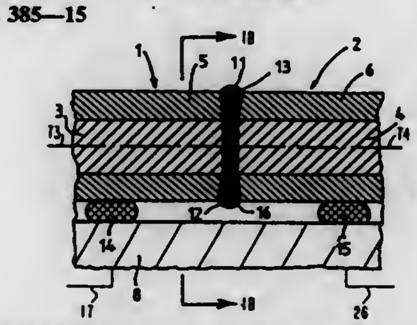
5,619,599
REMOTE SPLIT SCAN DETECTOR
James M. Wilson, Glendora, and Girmay K. Girmay, La Mirada, both of Calif., assignors to Xerox Corporation, Stamford, Conn.
Filed May 12, 1995, Ser. No. 439,841
Int. Cl.⁶ G02B *6/00*
U.S. Cl. 385—12 **6 Claims**

1. A split scan detector for detecting start of scan or end of scan in a raster output scanner comprising:
two flexible light pipes each having four walls extending in the longitudinal direction;
each light pipe being rectangular in cross section;
said rectangular cross section having two opposing sides which are substantially longer than the other two opposing sides with each of the sides corresponding to a respective one of said four walls;



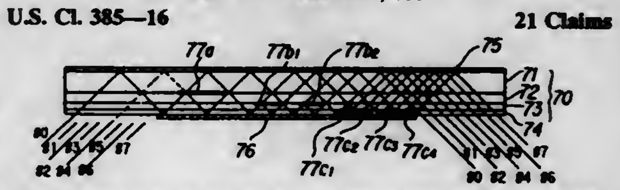
one wall corresponding to one of the longer opposing sides of the rectangular cross section being a reflective wall and one wall corresponding to the other of the longer opposing sides of the rectangular cross section being an exit wall;
each light pipe having an input end and an output end;
said two light pipes each having a terminating end wall located at said output end and being connected to and transverse to said four walls and a light transmitting input end wall, for receiving a light beam, located at said input end and connected to and transverse to said four walls;
each of said two light pipes being positioned to receive a light beam at its input end and being so constructed and arranged to transfer the received light beam to said output end;
a portion of said exit wall on each light pipe being diffused at said output end;
on each of said light pipes, said terminating end wall and a portion of said reflective wall at said output end having reflective means;
on each of said light pipes, said diffused portion of said exit wall, said reflective means of said reflective wall and said reflective means of said terminating end wall being so constructed and arranged to reflect the received light beam toward said diffused portion to allow the received light beam to exit said light pipe through said diffused portion;
said diffused portion of each of said two light pipes being so constructed and arranged to disperse the exiting light beam;
two light beam sensor means one for each of said two light pipes, each sensor being located relative to said diffused portion of a respective one of said two light pipes to receive the exiting light beam from said diffused portion of its respective light pipe; and
said diffused portions of said two light pipes facing each other and said two light beam sensor means being located between said output ends of said two light pipes.

5,619,600
NEAR-FIELD PHOTON TUNNELING DEVICES USING LIQUID METAL
Wolfgang D. Pohl, Adliswil, Switzerland, assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Oct. 21, 1993, Ser. No. 140,800
Claims priority, application European Pat. Off., Oct. 22, 1992, 92810814
Int. Cl.⁶ G02B *6/36*
U.S. Cl. 385—15 **15 Claims**



1. A photon tunneling device comprising:
at least two optical waveguides arranged in juxtaposition with a variable photon tunnel barrier positioned therebetween through which photons from at least one of said optical waveguides can be caused to tunnel through said barrier,
said variable photon tunnel barrier includes a gap of controllable width containing a layer of liquid metal.

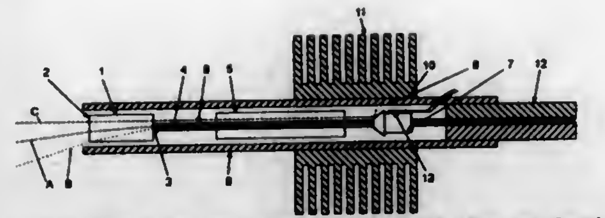
5,619,601
OPTICAL SWITCH AND OPTICAL DISTRIBUTOR USING POLARIZATION CONTROL AND PARTIAL REFLECTION
Tamotsu Akashi; Tsuyoshi Yamamoto, both of Kawasaki, and Takakiyo Nakagami, Tokyo, all of Japan, assignors to Fujitsu Limited, Kanagawa, Japan
Filed Oct. 24, 1994, Ser. No. 328,061
Claims priority, application Japan, Dec. 28, 1993, 5-335332
Int. Cl.⁶ G02B *6/27;6/35*
U.S. Cl. 385—16 **21 Claims**



13. An optical switch for switching optical path of incident light, comprising:
an optical distributor for distributing each of n-number of incident light beams to first through n-th optical paths and shifting the distributing optical path of each incident light beam in direction of propagation at a prescribed pitch with respect to the distributing optical path of a neighboring incident light beam;
an i-th optical shutter, which is provided to correspond to an i-th distributing optical path of all incident light beams, for passing light from the i-th distributing optical path conforming to a j-th incident light beam and blocking other light beams; and
condensing means for condensing light which passes through said i-th optical shutter and outputting the condensed light on an i-th output optical path;
said optical distributor including:
a stacked optical transmission member comprising a plurality of stacked parallel plate-shaped optical transmission members;
first and second reflecting means provided on both sides of said stacked optical transmission member in such a manner that incident light propagates owing to reflection; and
a partial reflecting film provided on each stacking surface of said optical transmission members;
wherein each incident light beam is distributed to n-number of optical paths by the partial reflecting film and the distributing optical path of each incident light beam is shifted in direction of propagation a prescribed amount with respect to the distributing optical path of a neighboring incident light beam.

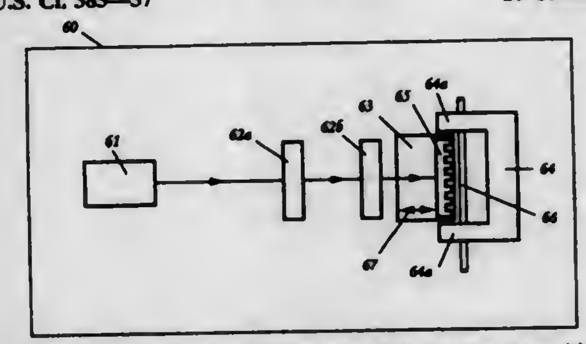
5,619,602
FIBRE
Ulf Sandstrom, Styrso; Sven-Olov Roos, Lerum, and Kennet Vilhelmsson, Partille, all of Sweden, assignors to Permanova Laser System AB, Ostersund, Sweden, and Rofin-Sinar Laser GmbH, Hamburg, Germany
Continuation of Ser. No. 219,837, Mar. 30, 1994, abandoned. This application Nov. 1, 1995, Ser. No. 551,410
Claims priority, application Sweden, Apr. 1, 1993, 9301100
Int. Cl.⁶ G02B *6/26*
U.S. Cl. 385—31 **11 Claims**

1. An optical fiber cable for high power laser radiation transmission comprising:
a light absorbing area;
a fiber having a core and a cladding;



a rod provided at at least one of the ends of the fiber and fused to an end surface of the core, said rod being substantially cylindrical and having a diameter larger than that of the fiber;
a reflector provided at a distance from said rod along the fiber core for reflecting light entering outside the fiber core and through said rod to said light absorbing area; and
a glass capillary surrounding said fiber and in optical contact with the cladding of the fiber and located between the reflector and the rod.

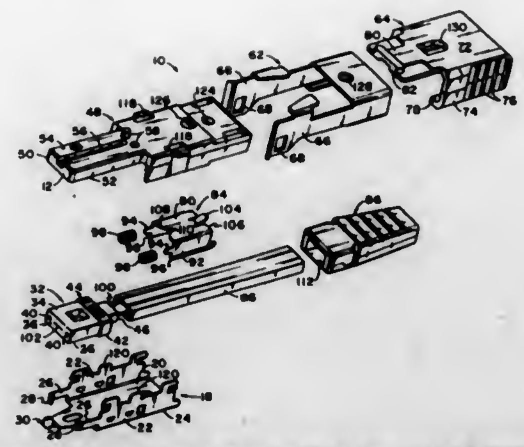
5,619,603
METHOD OF CREATING BRAGG GRATINGS IN WAVEGUIDES
Richard E. Epworth, Sawbridgeworth, and Terry Bricheno, Great Sampford, both of United Kingdom, assignors to Northern Telecom Limited, Montreal, Canada
Filed May 23, 1995, Ser. No. 447,803
Claims priority, application United Kingdom, May 26, 1994, 9410545
Int. Cl.^{6} G02B *6/34*
U.S. Cl. 385—37 **10 Claims**



1. A method of creating a Bragg grating in a photosensitive optical waveguide by irradiating the waveguide with an interference fringe pattern generated by the passage of electromagnetic radiation through a diffraction grating located adjacent the waveguide and oriented to have diffracting elements of the diffraction grating extending at an angle to the waveguide axis, wherein, during said creation, the physical spacing between the diffraction grating and the waveguide is modulated.

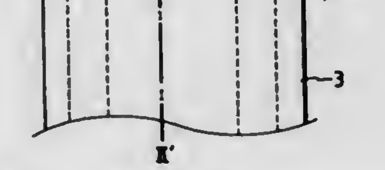
5,619,604
MULTI-FIBER OPTICAL CONNECTOR
Elbert O. Shiflett, Simpsonville, S.C., and James M. Wittes, Bernardsville, N.J., assignors to Alcoa Fujikura Limited, Brentwood, Tenn.
Filed Feb. 26, 1996, Ser. No. 607,063
Int. Cl.^{6} G02B *6/38*
U.S. Cl. 385—59 **5 Claims**

1. A multi-fiber optical connector having a front end and a rear end and comprising:
a generally U-shaped enclosure having a center wall and an integral pair of depending side walls extending from the center wall in a generally parallel fashion from longitudinal edges of said center wall, said enclosure having an integral pair of fingers with inwardly turned ends extending longitudinally from said side walls, and an integral spring tab extending longitudinally from said center wall, said fingers and said tab located at the front end of said connector;



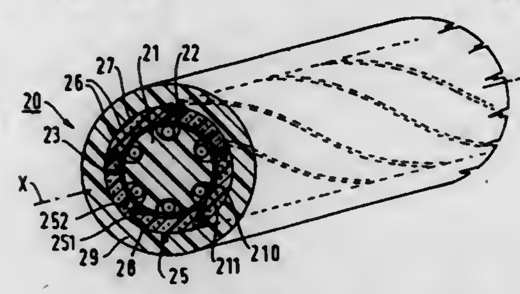
a ferrule having a front surface with at least two apertures for receiving two guide pins from a second multi-fiber object, said ferrule having an upper surface and a lower surface, said ferrule in addition having opposed side surfaces positioned between the fingers of said U-shaped enclosure; and
a connector body having a guide prong providing a reference surface for engaging the upper surface of the ferrule while the tab of said U-shaped enclosure engages the lower surface of the ferrule and forces it against the reference surface of said prong.

5,619,605
OPTICAL CONNECTOR
Tomohiko Ueda; Ichiro Matsuura; Makoto Honjo; Toshiaki Kakii; Toru Yamanishi, all of Kanagawa, and Shinji Nagasawa, Ibaraki, all of Japan, assignors to Sumitomo Electric Industries, Ltd., and Nippon Telegraph & Telephone Corporation, both of Japan
Division of Ser. No. 235,853, Apr. 29, 1994, Pat. No. 5,519,800. This application Dec. 29, 1995, Ser. No. 580,587
Claims priority, application Japan, Apr. 30, 1993, 5-104483; Apr. 26, 1994, 6-088640
Int. Cl.^{6} G02B *6/38*
U.S. Cl. 385—80 **15 Claims**



1. An optical connector comprising:
an optical connector ferrule capable of fixing optical fibers;
optical fibers fixed onto said optical connector ferrule, so that the end surfaces of said optical fibers project from an end surface of said optical connector ferrule a distance of less than about 1 μm;
an adhesive for fixing said optical fibers onto said optical connector ferrule; and
a member whose Young's Modulus is less than that of said optical fibers, said member being provided to an area on said end surface of said optical connector ferrule surrounding the projected portions of said optical fibers, such that the end surfaces of said optical fibers project beyond said member.

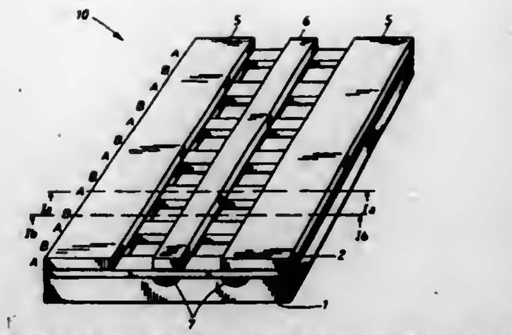
5,619,606
METHOD OF MANUFACTURING A REINFORCED CABLE CONTAINING OPTICAL FIBERS APPARATUS FOR IMPLEMENTING THE METHOD AND A CABLE OBTAINED BY PERFORMING THE METHOD
Jean-Pierre Bonicel, Rueil Malmaison, France, assignor to Alcatel Cable, Clichy Cedex, France
Filed Aug. 2, 1995, Ser. No. 510,489
Claims priority, application France, Aug. 10, 1994, 94 09902
Int. Cl.^{6} G02B *6/44*
U.S. Cl. 385—102 **20 Claims**



1. A method of manufacturing a reinforced cable containing optical fibers, the cable including an optical core assembly containing at least one optical fiber installed in a strength member, said optical core assembly being surrounded by a plurality of mechanical reinforcing members made of a plastics material reinforced with reinforcing fibers, referred to as an "FRP" material, the reinforcing members being disposed helically around said core assembly so as to form a reinforcing tube therearound, said reinforcing members having a thermal expansion coefficient that is lower than those of the remaining portions of said cable and a Young's modulus that is higher than those of the remaining portions of said cable other than said optical fibers, said method including the following steps:
simultaneously manufacturing said reinforcing members on their own and by coating said reinforcing fibers with the plastics material in which they are to be embedded, without the material being polymerized;
winding said reinforcing members around said optical core assembly, while interposing a separator made of a plastics material having low adhesion to said FRP material between each of said reinforcing members, so as to separate each of said reinforcing members from the adjacent reinforcing members by means of said separators which are disposed such that two adjacent reinforcing members are not in contact with each other and they are separated from each other by at least a portion of one of said separators; and
polymerizing said plastics material.

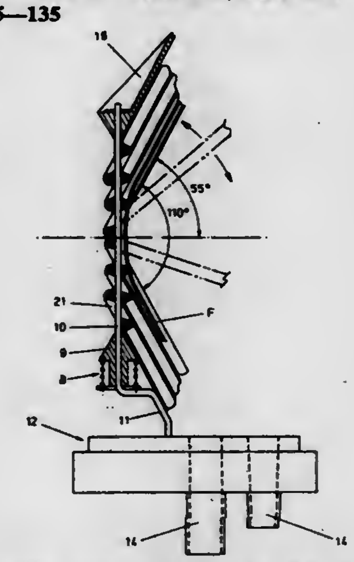
5,619,607
DEVICE FOR VELOCITY MATCHING BETWEEN ELECTRICAL AND OPTICAL SIGNALS IN A WAVE GUIDE STRUCTURE
Anders G. Djupsjobacka, Solna, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden
Continuation of Ser. No. 106,919, Aug. 16, 1993, abandoned. This application Oct. 23, 1995, Ser. No. 546,843
Claims priority, application Sweden, Aug. 17, 1992, 9202355-5
Int. Cl.^{6} G02B *6/10*
U.S. Cl. 385—129 **4 Claims**

1. A device for velocity matching between optical and electrical signals in a waveguide structure comprising first waveguiding means for optical signals and second waveguiding means for electrical signals, wherein the cross-section of the waveguide structure periodically varies dielectrically in the direction of propagation, and the variation in the cross-section comprises a periodical



grating, the grating constant being significantly smaller than the wavelength of the electrical signal.

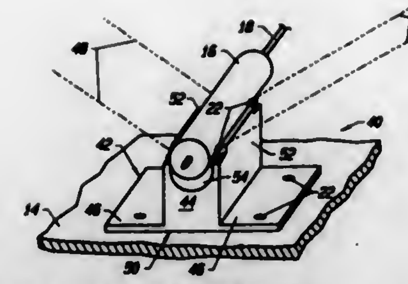
5,619,608
OPTICAL FIBRE SPLICE ENCLOSURES
Raymond C. Foss, and Andrew S. Cammack, both of Plymouth, England, assignors to Bowthorpe PLC, United Kingdom
PCT No. PCT/GB94/00217, § 371 Date Aug. 1, 1995, § 102(e) Date Aug. 1, 1995, PCT Pub. No. WO94/18590, PCT Pub. Date Aug. 18, 1994
PCT Filed Feb. 4, 1994, Ser. No. 501,081
Claims priority, application United Kingdom, Feb. 4, 1993, 9302199
Int. Cl.^{6} G02B *6/26;* **B65D** *1/34*
U.S. Cl. 385—135 **18 Claims**



1. An enclosure assembly for optical fibre splices or other optical fibre components, the assembly comprising a plurality of trays disposed in a stack with the trays inclined at a common angle to a longitudinal axis of the stack, each tray being of generally elliptical shape in plan and being pivotally mounted, adjacent one end of its major axis, to an upright support.

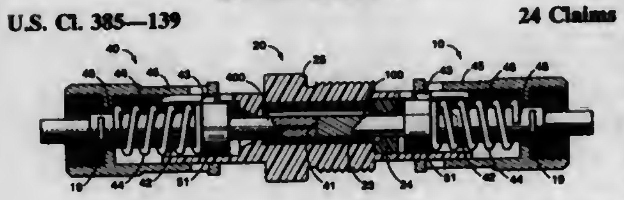
5,619,609
FIBEROPTIC SUPPORT CLIP
Jing-Jong Pan, Milpitas; Paul S. Jiang, San Jose; Ming Shih, Milpitas; Jian Chen, and Li-Hua Wang, both of San Jose, all of Calif., assignors to E-Tek Dynamics, Inc., San Jose, Calif.
Filed Feb. 2, 1996, Ser. No. 597,449
Int. Cl.^{6} G02B *6/00*
U.S. Cl. 385—136 **23 Claims**

1. A clip for supporting an end of an optical fiber relative to a mount surface, wherein a sleeve is disposed over the optical fiber adjacent the end, the clip comprising:



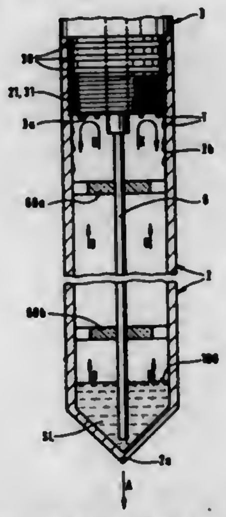
a clip body having a lower surface;
a flange disposed adjacent the lower surface of the body for affixing the lower surface of the body to the mount surface; and
walls extending from the body to define a channel which fittingly receives the sleeve when a height of the fiber from the lower surface is anywhere within a predetermined range so that vertical alignment of the end of the optical fiber above the mount surface can be varied, wherein the channel is affixable about the sleeve so that the body rigidly couples the sleeve to the flange.

5,619,610
OPTICAL TERMINATOR
Wilton W. King, Chamblee, Ga., and William R. Lambert, Chester, N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.
Filed Dec. 29, 1995, Ser. No. 581,077
Int. Cl.[6] G02B *6/00*
U.S. Cl. 385—139 **24 Claims**



1. A low-reflectance optical terminator for making end-to-end contact with an optical fiber whose end portion is held within a cylindrical ferrule and the cylindrical ferrule is held within an optical connector, said optical terminator comprising a generally cylindrical structure whose diameter is approximately equal to the cylindrical ferrule and whose refractive index is approximately equal to the refractive index of the optical fiber, said terminator having a longitudinal axis which extends from a distal end to a proximal end thereof, said proximal end being solid for a predetermined distance 'd' along the longitudinal axis and having an end face that is perpendicular to the longitudinal axis; the power reflected by said terminator being at least about 50 dB below the power level of the incident optical signal and comprising the power sum of (i) and (ii) where:
(i)=the portion of the incident optical signal which is reflected at the interface between the cylindrical ferrule and the optical terminator; and
(ii)=the portion of the incident optical signal which traverses the optical terminator and is reflected at the distal end thereof.

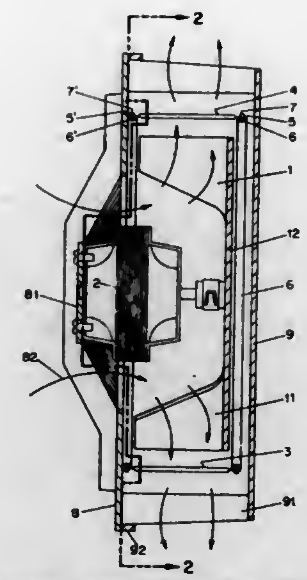
5,619,611
DEVICE FOR REMOVING DOWNHOLE DEPOSITS UTILIZING TUBULAR HOUSING AND PASSING ELECTRIC CURRENT THROUGH FLUID HEATING MEDIUM CONTAINED THEREIN
Carsten Löschen, Bonn, and Alexander Thiel, Speyer, both of Germany, assignors to TuB Tauch-und Baggertechnik GmbH, Cologne, Germany
Filed Dec. 12, 1995, Ser. No. 570,942
Int. Cl.[6] E21B *43/24*
U.S. Cl. 392—324 **12 Claims**



1. A device for removing deposits such as asphalt, hydrates, and paraffins from petroleum and natural gas production strings and pipelines which comprises a tubular housing that is adapted to fit within the production string and that is divided into a heating section with a front end zone arranged in an operating direction and a ballast section at a rear end, said heating section containing an electrically conducting heating medium and an electrode, a part of the housing forming the heating section being made of an electrically conducting material, and the electrode being connected to one pole of an electrical power supply, and the part of the housing forming said heating section being connected to another pole of the electrical power supply so that the heating section is heated by the electrical power supply; the electrode extending up to a point close to the interior of the front end zone of the heating section and being guided inside said heating section by means of electrically insulating spacers, whereby the electrode tip dips into the heating medium in the operating state and the heating medium being an aqueous solution of a salt mix in distilled water to which high-melting point finely divided metals including at least one of titanium and tungsten are added.

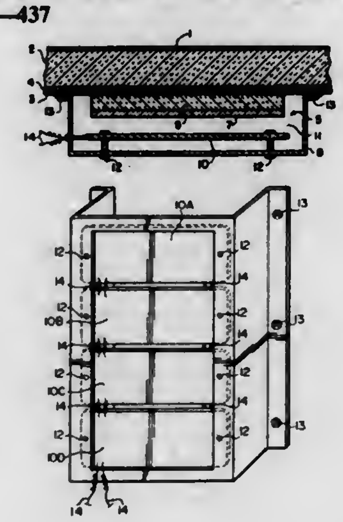
5,619,612
ELECTRIC AIR HEATER WITH CAGE-SHAPED HEATING ELEMENT COMPRISED OF RESISTANCE ALLOY STRIPS AND INCLINED GUIDE VANES
Dov Z. Glucksman, Wenham, and John A. Deros, Salem, both of Mass., assignors to Appliance Development Corp., Danvers, Mass.
Filed Jan. 18, 1994, Ser. No. 182,223
Int. Cl.[6] H05B *1/00;* **F24H** *3/04*
U.S. Cl. 392—360 **15 Claims**

1. An electric air heater comprising:
a housing having a rear wall, a front wall and a periphery defined between said rear and front walls, said front wall having an air inlet means, said periphery defining an air outlet;
an electric motor coupled to said front wall of said housing and in concentric alignment with said air inlet means, said electric motor having a motor shaft extending towards said rear wall, said motor shaft defining an axis;



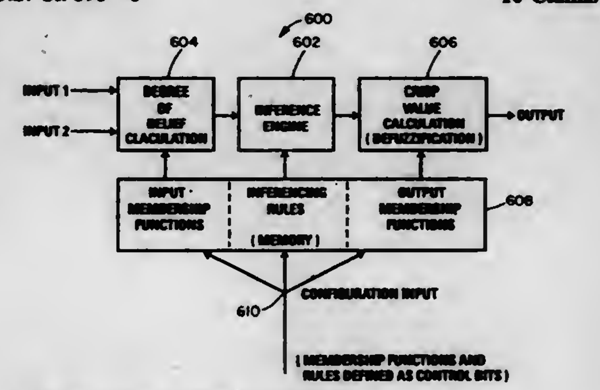
a bladed centrifugal impeller mounted on said motor shaft and rotatable about said axis for drawing air in an axial direction and exhausting air along the periphery of said impeller at an air velocity having a velocity vector;
an electric heating element in the shape of a first stationary cylindrical cage of spaced longitudinal interconnected vanes, each vane having a strip of conductive material of substantially equal width and substantially equal length spaced to surround said bladed centrifugal impeller, said conductive strips dimensioned and arranged substantially parallel to said velocity vector so that the velocity vector emerging from said conductive strips are substantially the same as the velocity vector emerging from said impeller; and
a plurality of guide vanes forming a second stationary cylindrical cage concentrically surrounding said impeller and said electric heating element, each of said guide vanes having a substantially equal length and a substantially equal cross section.

5,619,613
HEATING CHAMBER WITH INSULATIVE SHIELD PANEL AND ELECTRIC HEATING PANELS MOUNTED ON GUARD FRAMES
Chizuko Otaki, 17-30, Kamitakaido 2-chome, Suginami-ku, Tokyo, Japan
Filed Feb. 21, 1995, Ser. No. 391,055
Claims priority, application Japan, Feb. 21, 1994, 6-061932
Int. Cl.[6] A47J *39/02;* **F24C** *7/04;15/34*
U.S. Cl. 392—437 **2 Claims**



1. Heating chamber comprising side walls each basically formed by outer and inner walls both made of material presenting relatively high heat conduction, a first insulating member interposed between these outer and inner walls, insulating paper sandwiched between said insulating member and said inner wall, each of said shield panels including a laminate of a second insulating member and a third insulating member, heater guard frames, and ceramic panel heaters each mounted on the inner side of each heater guard frame, wherein each of said heater guard frames is mounted on the associated inner wall so that the associated one of said shield panels is enclosed thereby and an air gap is maintained between said shield panel and the associated ceramic panel heater.

5,619,614
APPLIANCE ELECTRONIC CONTROL SYSTEM WITH PROGRAMMABLE AND RECONFIGURABLE FUZZY LOGIC CONTROLLER
Thomas R. Payne; Steven A. Rice, and William W. Wead, all of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.
Continuation of Ser. No. 969,139, Oct. 30, 1992, abandoned.
This application Apr. 12, 1995, Ser. No. 421,037
Int. Cl.[6] F26B *21/10;* **G06F** *9/44;* **D06F** *33/02*
U.S. Cl. 395—3 **10 Claims**



1. A fuzzy logic controller comprising:
at least one input for receiving an input value;
an output;
a configuration input for receiving definitions of at least one set of input membership functions corresponding to said at least one input, definitions of a set of output membership functions, and a set of inferencing rules each defined as a plurality of control bits;
memory elements for storing input membership function definitions, output membership function definitions and inferencing rules;
updating elements connected to said configuration input and to said memory elements for updating membership functions and inferencing rules in said memory elements while inferencing rules are being processed during operation of the fuzzy logic controller;
elements for calculating a degree of belief for each of the stored input membership functions based on the input value;
an inference engine operable, for each of the stored set of inferencing rules, to calculate a scaled value for a particular output membership function based on at least one input membership function degree of belief in accordance with control bits of the inferencing rule; and
elements for calculating a crisp value based on the calculated scaled values and for outputting the crisp value to said output.

5,619,615

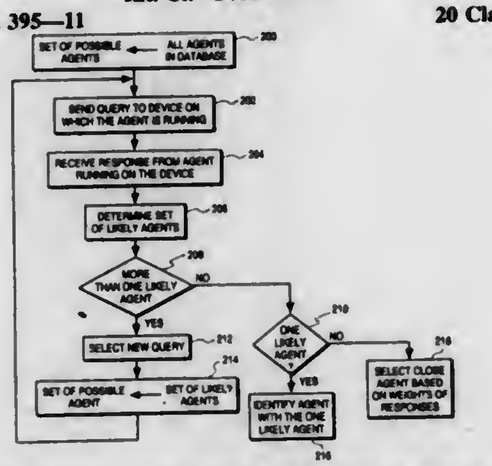
METHOD AND APPARATUS FOR IDENTIFYING AN AGENT RUNNING ON A DEVICE IN A COMPUTER NETWORK

Balaji Pitchaikani, Santa Clara, and Chen-Yea Luo, Sunnyvale, both of Calif., assignors to Bay Networks, Inc., Santa Clara, Calif.

Filed Jul. 22, 1994, Ser. No. 279,491

Int. Cl.⁶ G06F *15/163*

U.S. Cl. 395—11 **20 Claims**



1. A method for identifying an agent running on a device in a network system, the method comprising the steps of:

a) a network management station (NMS) establishing a plurality of agents as a set of possible agents;

b) said NMS transmitting a current query over said network to said agent, said current query requesting information regarding one or more characteristics of said agent;

c) said NMS receiving a current response over said network from said agent;

d) determining a set of likely agents based on said current response, said set of likely agents being a subset of said set of possible agents;

e) if said set of likely agents includes more than one agent, then said NMS:

i) selecting a new query based upon said current response,

ii) establishing said new query as said current query,

iii) establishing said set of likely agents as said possible set of agents,

iv) repeating steps (b) through (e) until said set of likely agents includes less than two agents; and

f) if said set of likely agents includes a single agent, then said NMS selecting said single agent to identify said agent.

5,619,616

VEHICLE CLASSIFICATION SYSTEM USING A PASSIVE AUDIO INPUT TO A NEURAL NETWORK

Mark J. Brady, Cottage Grove, and Michael E. Hamerly, Vadnais Heights, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 25, 1994, Ser. No. 232,758

Int. Cl.⁶ G06E *1/00;3/00;* **G06F** *15/18*

U.S. Cl. 395—22 **22 Claims**

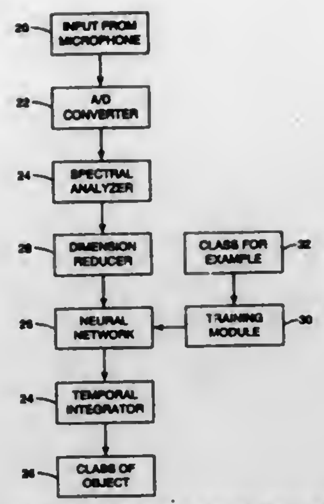
14. A method of classifying an object emitting sound, said method comprising the steps of:

receiving analog sound wave characteristics associated with said object, said analog sound wave characteristics measured from a time interval;

convening said analog sound wave characteristics to digital sound wave characteristics;

converting said digital sound wave characteristics to a power spectrum;

applying a fuzzification function to said power spectrum to create a vector of a predetermined dimension for characterizing said power spectrum; and



producing a class designator at a neural network based on said vector.

5,619,617

NEURON UNIT, NEURAL NETWORK AND SIGNAL PROCESSING METHOD

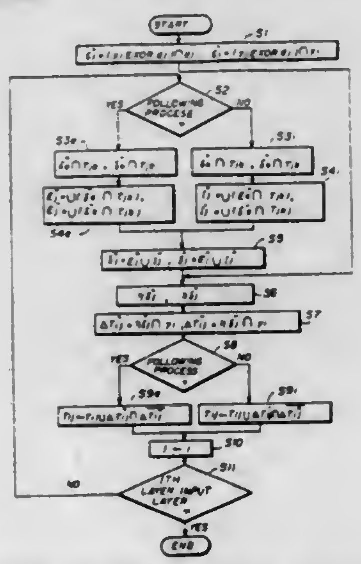
Toshiyuki Furuta; Hiroyuki Horiguchi; Hirotoshi Eguchi; Yutaka Ebi; Tatsuya Furukawa, all of Yokohama; Yoshio Watanabe, Kawasaki, and Toshihiro Tsukagoshi, Itami, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 889,380, May 28, 1992, Pat. No. 5,333,241, which is a division of Ser. No. 629,632, Dec. 18, 1990, Pat. No. 5,167,006. This application Sep. 30, 1993, Ser. No. 128,707

Claims priority, application Japan, Dec. 29, 1989, 1-343891; Mar. 7, 1990, 2-55523; Mar. 9, 1990, 2-58515; Mar. 9, 1990, 2-58548; Mar. 12, 1990, 2-60738; Mar. 16, 1990, 2-67938; Mar. 16, 1990, 2-67939; Mar. 16, 1990, 2-67940; Mar. 16, 1990, 2-67941; Mar. 16, 1990, 2-67942; Mar. 16, 1990, 2-67943; Mar. 16, 1990, 2-67944; Oct. 11, 1990, 2-272827

Int. Cl.⁶ G06E *1/00;3/00;* **G06F** *15/18*

U.S. Cl. 395—23 **7 Claims**



1. A computer-implemented apparatus for simulating a self-learning process of a neuron unit which carries out a processing with respect to a plurality of input signals and outputs an output signal which is indicative of a result of the processing, said neuron unit including

a) input line means for receiving the input signals; and

b) forward process means including:

1) supplying means for supplying weight functions and

2) operations means for carrying out an operation on each of the input signals using the weight functions supplied by said supplying means and for outputting the output signal;

said computer-implemented apparatus comprising:

(a) means for calculating an error signal which describes an error between the output signal outputted from said forward process means of the neuron unit and a teaching signal, the error signal having a first error signal component and a second error signal component, the calculating means including:

1) means for calculating the first error signal component from a logical product of the output signal outputted by said forward process means of the neuron unit and a logical NOT of the teaching signal; and

2) means for calculating the second error signal component from a logical product of a logical NOT of the output signal outputted by said forward process means of the neuron unit and the teaching signal;

(b) means for generating new weight functions based on the error signal; and

(c) means for varying the weight functions supplied by said supplying means of said forward process means of the neuron unit to the new weight functions which are generated.

5,619,618

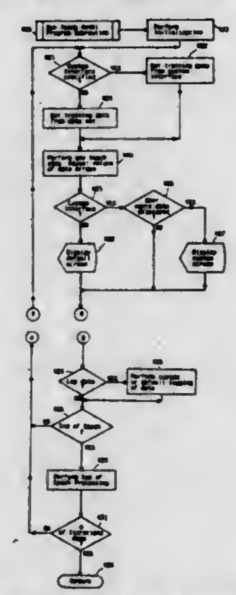
NEURAL NETWORK SHELL FOR APPLICATION PROGRAMS

Joseph P. Bigus, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 75,370, Jun. 11, 1993, Pat. No. 5,450,529, which is a division of Ser. No. 849,116, Mar. 10, 1992, Pat. No. 5,222,196, which is a division of Ser. No. 482,450, Feb. 20, 1990, Pat. No. 5,142,665. This application Jun. 2, 1995, Ser. No. 459,983

Int. Cl.⁶ G06F *15/18*

U.S. Cl. 395—23 **12 Claims**



1. A program product for teaching a neural network in a computer system, the neural network having an input, an output for a result comprising:

a recording medium containing instructions capable of being executed on the computer system;

means, recorded on the recording medium, for creating a neural network data structure in memory of the computer system, wherein the neural network data structure defines a structure and organization of a plurality of data arrays in the memory, wherein the plurality of data arrays have data types and an order within the neural network data structure, wherein the neural network data structure is common and generic to all of the plurality of defined neural network models, and wherein the plurality of data arrays have data values specific to a selected one of the plurality of defined neural network models;

means, recorded on the recording medium, for presenting training data at said input of said neural network;

means, recorded on the recording medium, for repeatedly adjusting the values of said plurality of data arrays until said result at said output is within tolerance of a correct result; and

means, recorded on the recording medium, for locking the values of said plurality of data arrays responsive to said adjusting means.

5,619,619

INFORMATION RECOGNITION SYSTEM AND CONTROL SYSTEM USING SAME

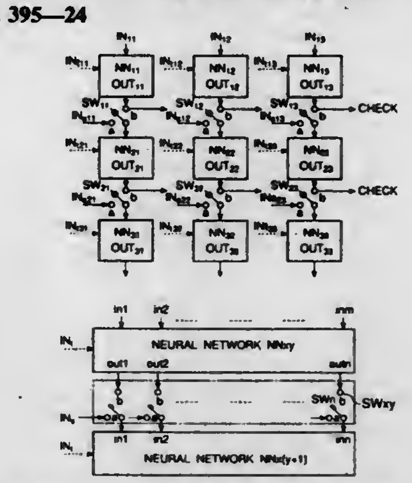
Wataro Shinohara, Kawasaki; Yasuo Takagi, Chigasaki; Yutaka Iino, Kawasaki; Shinji Hayashi, Yokohama; Junko Ohya; Yuichi Chida, both of Kawasaki, and Masahiko Murai, Ichikawa, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 11, 1994, Ser. No. 208,584

Claims priority, application Japan, Mar. 11, 1993, 5-050791; Mar. 11, 1993, 5-050880; Mar. 11, 1993, 5-051066

Int. Cl.⁶ G06F *15/18;* **G06G** *7/02*

U.S. Cl. 395—24 **1 Claim**



1. An information recognition system, comprising:

a plurality of recognition processing units arranged in a predetermined order, each composed of a neural network;

a plurality of teaching signal transmission lines through which teaching signals are individually supplied to each of said plurality of said recognition processing units;

a plurality of data transmission lines through which data to be learned are individually supplied to each of said plurality of said recognition processing units, said plurality of said recognition processing units generating output signals in response to said teaching signals and said data;

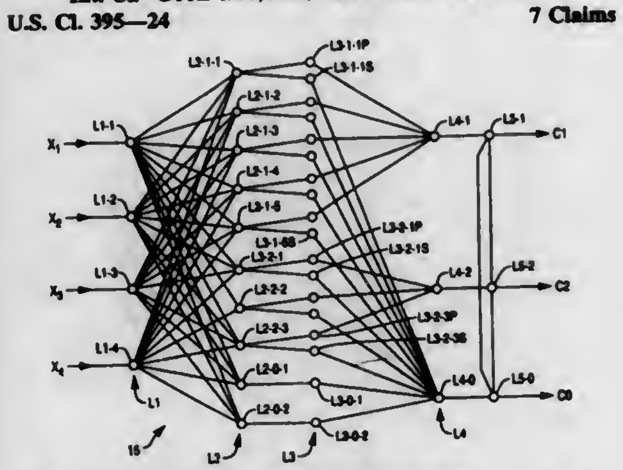
a plurality of output signal transmission lines through which said output signals are individually supplied as said data to succeeding recognition processing units among said recognition processing units;

a plurality of output signal external-transmission lines for transmitting output signals of said plurality of said recognition processing units externally to check the output signals thereof; and

switching means for selectively connecting each of said plurality of said output signal transmission lines to at least one of said plurality of said data transmission lines or to at least one of said plurality of said output signal external-transmission lines.

5,619,620
NEURAL NETWORK FOR BANKNOTE RECOGNITION AND AUTHENTICATION

Nicholas J. Eccles, Edinburgh, Scotland, assignor to AT&T Global Information Solutions Company, Dayton, Ohio
Filed Jun. 24, 1994, Ser. No. 265,473
Claims priority, application United Kingdom, Dec. 24, 1993, 9326440
Int. Cl.⁶ G06E *1/00;3/00;* **G06F** *15/18;* **G06G** *7/00*
U.S. Cl. 395—24 **7 Claims**

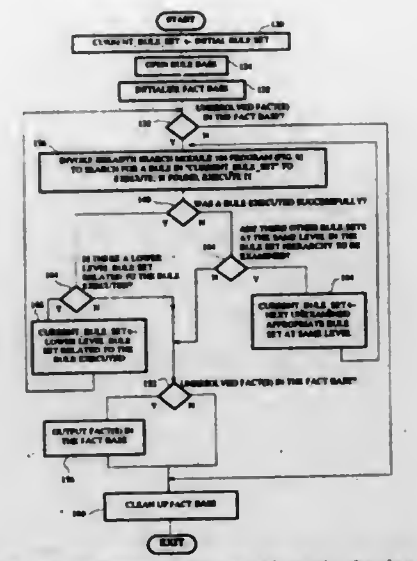


1. A banknote recognition system comprising:
means for measuring a plurality of characteristics of a banknote;
a probabilistic neural network including a layer of input nodes for receiving a number of input signals in which each input signal is represented as an input vector;
the probabilistic neural network including a layer of exemplar nodes in which each exemplar node has an exemplar vector associated therewith and is coupled to each input node;
the probabilistic neural network including a layer of sum nodes including a number of design class sum nodes and a null class sum node;
the probabilistic neural network including a number of primary non-linear transform nodes and a number of secondary non-linear transform nodes corresponding to the number of primary nodes wherein (i) each pair of primary and secondary nodes is fed from a respective exemplar node, (ii) each primary node has a non-linear transfer function with a peak amplitude and a spread and is fed to a design class sum node which combines the outputs of primary nodes for that class, and (iii) each secondary node has a non-linear transfer function with a lower peak amplitude and a broader spread than the corresponding primary node and is fed to the null class sum node; and
means for feeding the plurality of characteristics of the banknote to the probabilistic neural network.

5,619,621
DIAGNOSTIC EXPERT SYSTEM FOR HIERARCHICALLY DECOMPOSED KNOWLEDGE DOMAINS

Timothy L. Puckett, Thornton, Colo., assignor to Storage Technology Corporation, Louisville, Colo.
Filed Jul. 15, 1994, Ser. No. 275,499
Int. Cl.⁶ G06F *17/00*
U.S. Cl. 395—51 **22 Claims**

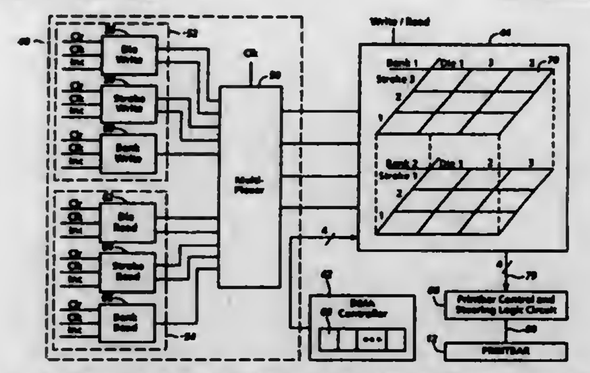
1. A method for analyzing data comprising:
establishing a hierarchical decomposition of a device into a plurality of components, each of the components outputting diagnostic data items, said hierarchical decomposition including a plurality of levels of said components of the device with each lower level component having a related higher level component such that a lower level component provides a functional capability of its related higher level component;



storing in storage means a rule set hierarchy having a plurality of rule sets, said rule set hierarchy having a hierarchical relationship between rule sets of said plurality of rule sets wherein:
(A1) each rule set of said plurality of rule sets includes rules for inferring a performance of a related component of said plurality of components; and
(A2) for each pair, R_1 and R_2, of said rule sets, R_1 is a lower level rule set related to R_2 as a higher level rule set, when said related component for R_1 is a lower level component to said related component for R_2;
selecting, as a designated rule, an eligible rule from a current rule set of said plurality of the rule sets, when such an eligible rule exists, wherein said designated rule has a premise with a maximal number of predicates for evaluation using informational data items stored in a fact base;
evaluating said premise of said designated rule for determining a premise value;
performing, when said premise value is a predetermined value, a consequent of said designated rule for determining additional informational data items using said diagnostic data items, said performance of said consequent at least providing a result;
using said result for determining whether to add said additional informational data items to said fact base and for determining a new instantiation of said current rule set, wherein:
(B1) when Said result includes a first predetermined value, said new instantiation of said current rule set must be a predetermined eligible rule set that is at a lower level to said current rule set;
(B2) when said result includes a second predetermined value, said new instantiation of said current rule set must be an eligible rule set that is:
(a) unrelated to said current rule set, and
(b) is at a lower level than each previous instantiation of said current rule set;
setting said current rule set to ineligible for reconsideration as said current rule set;
repeating said steps of selecting, evaluating, performing, using, and setting until a rule cannot be selected for said designated rule;
stopping the analysis of the diagnostic data items output by components of the device; and
outputting an analysis related to a performance of the device using information from performing a consequent of at least one rule selected as said designated rule.

5,619,622
RASTER OUTPUT INTERFACE FOR A PRINTBAR

Anthony E. Audi, Rochester, and Frederick A. Donahue, Walworth, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Dec. 16, 1994, Ser. No. 357,839
Int. Cl.⁶ G06K *15/00*
U.S. Cl. 395—108 **24 Claims**

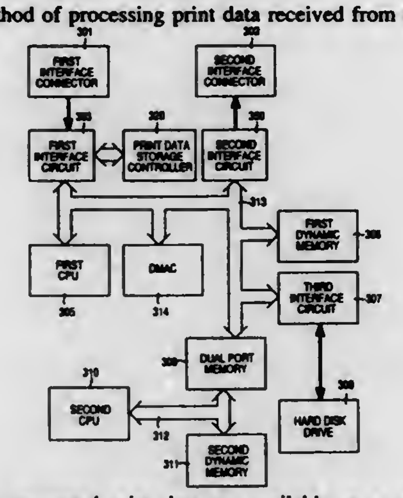


1. A printer for printing a raster image organized into a plurality of scan lines on a recording medium moving in a process direction, comprising:
a printbar, including a plurality of nozzles, angled with respect to the process direction, printing portions of N of the plurality of scan lines substantially simultaneously;
a memory circuit organized into N rows of addressable memory locations and a plurality of columns the number thereof being equal to the plurality of nozzles; and
a raster interface circuit, coupled to said memory circuit, writing portions of one of the scan lines to N rows of said plurality of rows of addressable memory locations in a first order, reading the contents of said N rows of said plurality of rows of addressable memory locations in a second order different from the first order, and transmitting the contents of said N rows of said plurality of rows of addressable memory locations read from said memory circuit in the second order to said printbar.

5,619,623
METHOD AND DEVICE FOR TRANSMITTING AND PROCESSING PRINT DATA USED FOR PRINTER

Toshihiro Takayanagi, Okazaki; Kenji Yanase, and Kiyoji Muramatsu, both of Nagoya, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi-ken, Japan
Filed Sep. 15, 1994, Ser. No. 305,321
Claims priority, application Japan, Sep. 21, 1993, 5-234476; Sep. 21, 1993, 5-234477; Sep. 21, 1993, 5-234478
Int. Cl.⁶ G06K *15/00*
U.S. Cl. 395—114 **9 Claims**

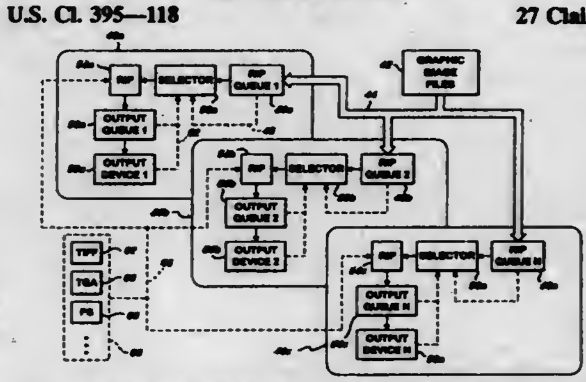
8. A method of processing print data received from a computer



so that the processed print data are available on a printer, said method comprising:
a storing step of separately storing in memory means said print data received from said computer, such that first direct image data included in said print data are stored as a direct image data file, while non-direct image data included in said print data are stored as a non-direct image data file, said non-direct image data file being separate from said direct image data file, said non-direct image data being data other than said first direct image data and comprising indirect image data and print control data for controlling at least a printing operation according to said first direct image data;
a converting step of interpreting said non-direct image data of said non-direct image data file stored in said memory means, and converting said indirect image data into second direct image data;
a synthesizing step of synthesizing said second direct image data obtained in said converting step, and said first direct image data stored in said memory means; and
a transmitting step of transmitting to said printer said first and second direct image data as synthesizing in said step of synthesizing said second and first direct image data.

5,619,624
APPARATUS FOR SELECTING A RASTERIZER PROCESSING ORDER FOR A PLURALITY OF GRAPHIC IMAGE FILES

Loren Schoenzeit, Orono; Philip Lodwick, Richfield; Richard A. Keeney, Eagan, and William H. Glass, Edina, all of Minn., assignors to Management Graphics, Inc., Minneapolis, Minn.
Filed May 20, 1994, Ser. No. 246,795
Int. Cl.⁶ G06T *11/00*
U.S. Cl. 395—118 **27 Claims**



1. Apparatus for managing a plurality of output devices to generate images from graphic image files, said apparatus being associated with a host system and wherein each of said output devices is associated with a respective control system, said control systems comprising:
a first queue for storing graphic image files to be processed by the associated output device;
said graphic image files stored in said first queue containing data for different images in a first order;
means for rasterizing image data from the graphic image files stored in said first queue to provide raster image data for a plurality of images;
a second queue for storing the raster image data generated by said rasterizing means; and
means for selecting said image data from the graphic image files stored in said first queue on a real-time basis for processing by said rasterizing means, said selecting means being responsive to parameters of said graphic image files and the associated output device to manage the flow of image data from said first queue to said rasterizing means and from said rasterizing means to said associated output device via said second queue;
such that said rasterizer means can process additional image data from the graphic image files stored in said first queue even while said associated output device cannot receive additional data from said second queue.

5,619,625

METHOD FOR INTERPOLATING SMOOTH FREE-FORM SURFACES INTO CURVE MESH INCLUDING COMPOSITE CURVES

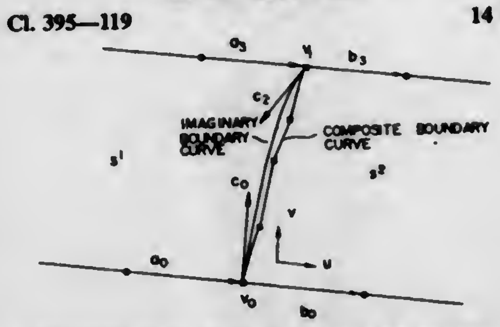
Kouichi Konno, Tokorozawa, and Hiroaki Chiyokura, Tokyo, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed May 27, 1994, Ser. No. 250,451

Claims priority, application Japan, May 28, 1993, 5-151526

Int. Cl.⁶ G06T *17/20*

U.S. Cl. 395—119 **14 Claims**



1. A free-form surface generation method for smoothly joining two adjacent free-form surfaces when said two adjacent free-form surfaces share a composite curve as a boundary in a three-dimensional (3 D) computer-aided design (CAD) system to generate a three-dimensional shape based on curve mesh, said free-form surface generation method comprising the steps of:

(a) determining continuity conditions on said composite curve as to whether or not said composite curve is non-rational based upon said composite curve and curves connected to said composite curve;

(b) determining connection conditions on said composite curve as to whether or not said composite curve is non-polynomial if said continuity conditions indicate that said composite curve is non-rational;

(c) generating an imaginary curve approximating said composite curve with a polynomial if said connection conditions indicate that said composite curve is non-polynomial;

(d) generating interior control points of said two adjacent free-from surfaces with respect to said imaginary curve by using said connection conditions; and

(e) using said interior control points to allow processing of said three-dimensional shape with consistency of surface continuity in CAD applications.

5,619,626

PROCESSING IMAGE DATA

Richard S. Huddy, Guildford, United Kingdom, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 29, 1993, Ser. No. 143,132

Claims priority, application United Kingdom, Nov. 6, 1992, 9223375

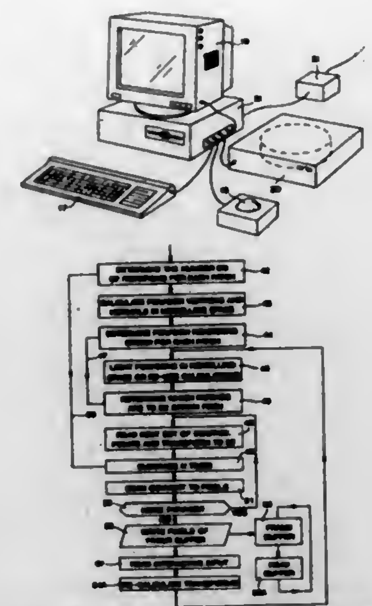
Int. Cl.⁶ G06T *15/40*

U.S. Cl. 395—121 **47 Claims**

1. In a graphics apparatus having a processor for processing signals defining objects in a three-dimensional space, each object being comprised of a plurality of parametric surface patches, an object-based method of processing the signals to determine a rendering order for the surface portions of the object, comprising the steps of:

(a) dividing each surface patch of the object into a plurality of polygons, so as to generate a set of polygons defining the object;

(b) determining a polygon order in which the polygons in the set may be rendered so as to effect hidden surface removal; and



(c) determining from said polygon order a patch order in which the patches of the object may be rendered so as to effect hidden surface removal.

5,619,627

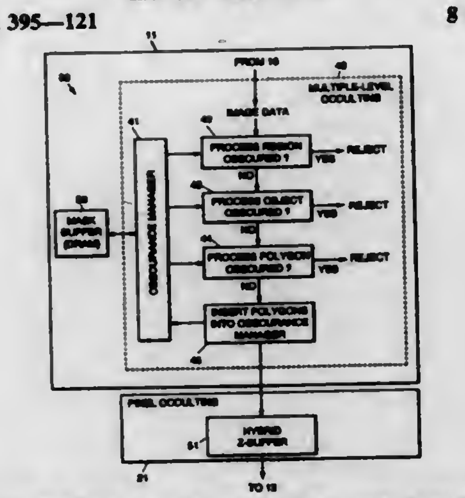
MULTIPLE-LEVEL OCCULTING USING A MASK BUFFER

Brian T. Soderberg, Woodinville; Dale D. Miller; Henrik Lind, both of Seattle; Richard Jarvis, Everett, and Mark Kenworthy, Duvall, all of Wash., assignors to Loral Aerospace Corp., New York, N.Y.

Filed May 3, 1994, Ser. No. 237,285

Int. Cl.⁶ G06T *15/10*

U.S. Cl. 395—121 **8 Claims**



1. Occulting apparatus for use with an image generator that generates an image derived from an image database for display, said occulting apparatus comprising:

a mask buffer;

control logic coupled to the mask buffer and to the database for processing image data derived from the image database to construct and store an obscurance mask in the mask buffer, wherein foreground entities contained in the image data are logically ORed into the mask buffer with foreground entities of the image that have been previously stored in the mask buffer until the entities extend beyond a predefined range from a predetermined image viewpoint, and wherein the constructed and stored mask is used by the control logic to reject entities contained in subsequently processed image data that are fully obscured by the foreground entities that comprise the obscurance mask.

5,619,628

3-DIMENSIONAL ANIMATION GENERATING APPARATUS

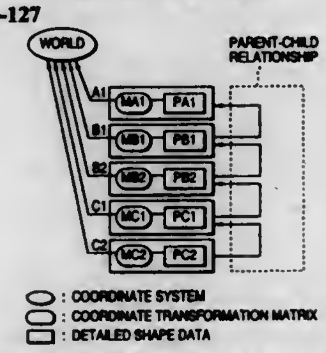
Takushi Fujita; Mitsuaki Fukuda; Chikako Matsumoto; Masaaki Oota; Hitoshi Matsumoto, all of Kawasaki; Shuro Shindo, Inagi; Waku Ooe, Inagi, and Yuichi Nagai, Inagi, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Apr. 25, 1995, Ser. No. 428,413

Claims priority, application Japan, Apr. 25, 1994, 6-086779; Apr. 24, 1995, 7-098570

Int. Cl.⁶ G06T *17/00*

U.S. Cl. 395—127 **7 Claims**



1. A 3-dimensional animation generating apparatus using a computer system which is capable of automatically generating a number of frames specified by the user by interpolation, these to be placed between each of key frames, under the condition that a plurality of static images of objects having a parent-child relationship are generated as said key frames during one cut period which is defined to be a sequence from start to end of an animation motion, comprising:

means for time storage which stores the time of each of the key frames;

means for parent object coordinate storage which stores parent object coordinates of parent objects in each of the key frames in a world coordinate system;

means for child object coordinate storage which stores child object coordinates of child objects in each of the key frames in the world coordinate system;

means for parent-child relationship storage which stores parent-child relationships of the parent objects and the child objects in each of the key frames;

means for setting an interpolated frame which sets interpolated frames between neighboring key frames in a time series according to data which indicates the number of interpolated frames;

means for calculating an interpolated frame parent-child relationship using interpolation of the parent-child relationships in the neighboring key frames in the time series;

means for calculating and storing the parent object coordinates of the interpolated frame in the world coordinate system by performing interpolation of neighboring key frames in the time series;

means for calculating the child object coordinates of the interpolated frame in the world coordinate system and calculating and storing the child object coordinates from the parent-child relationship in the interpolated frame and from the parent object coordinates; and

means for generating an animated picture which generates an animated picture according to the parent object coordinates in the interpolated frame, the child object coordinates in the interpolated frame, and the parent-child relationship.

5,619,629

DRAWING DATA PRODUCING APPARATUS AND DRAWING DATA PRODUCING METHOD

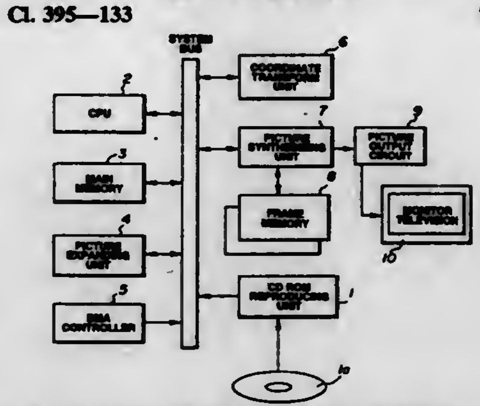
Teiji Yutaka, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 11, 1994, Ser. No. 320,272

Claims priority, application Japan, Oct. 15, 1993, 5-258625

Int. Cl.⁶ G06F *15/00*

U.S. Cl. 395—133 **7 Claims**



1. A drawing data producing apparatus comprising:

a plurality of sequence tables into which sequence data indicating processing sequences of a plurality of blocks obtained by dividing a picture are written for each object of the picture having addresses corresponding to information in a Z-direction of three dimensional coordinates of representative pixels of the respective blocks; and

sorting control means for carrying out, in a stepwise manner, sorting in a depth direction (Z-sorting) of a plurality of sequence tables therebetween, so as to produce drawing data by stepwise Z-sorting of the plurality of sequence tables therebetween.

5,619,630

APPARATUS FOR PRODUCING EXPLODED VIEW AND ANIMATION OF ASSEMBLING AND METHOD THEREOF

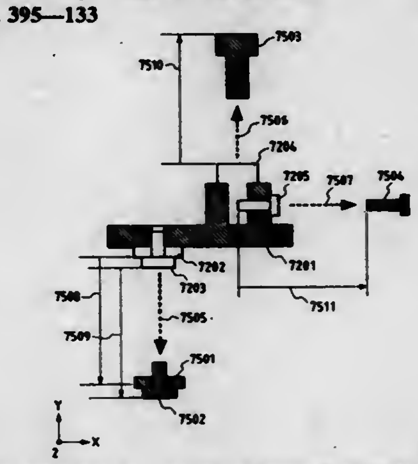
Shunsuke Minami, Brookline, Mass.; Tomotoshi Ishida, Hitachinaka, Japan; Yoshiaki Shinotsuka, Hitachi, Japan, and Kunio Kumamoto, Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 28, 1995, Ser. No. 395,993

Claims priority, application Japan, Feb. 28, 1994, 6-029267; Oct. 6, 1994, 6-242901

Int. Cl.⁶ G06T *17/00*

U.S. Cl. 395—133 **51 Claims**



14. An apparatus for producing animation of an assembling operation, comprising:

a geometrical data memory for storing geometrical data of parts composing an assembly;

an attaching procedure data memory for storing attaching procedures data composed of attaching orders, part to be attached data and attaching direction data;

a jointing data memory for storing jointing data composed of part to be attached data and jointing method data;

a table for storing jointing sound data composed of jointing method data and sound data for said jointing method data; and

operating data producing means for producing operating data, for an animation, generated from the geometrical data in said geometrical data memory, the attaching procedure data in said attaching procedure data memory, the jointing data in said jointing data memory, and the table of jointing sound data.

5,619,631

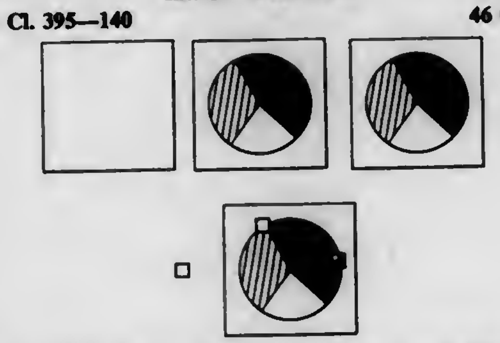
METHOD AND APPARATUS FOR DATA ALTERATION BY MANIPULATION OF REPRESENTATIONAL GRAPHS

Eric G. Schott, Mercer Island, Wash., assignor to BinaryBlitz, Reno, Nev.

Filed Jun. 7, 1995, Ser. No. 472,390

Int. Cl.⁶ G06F *15/00*

U.S. Cl. 395—140 **46 Claims**



1. A method for altering data for use with a computer system having a processing unit, system memory, a user manipulation device, and a video display, by manipulation of a dynamic graphical representation of the data, comprising:

(a) creating a dynamic graphical representation using data representation elements, wherein the data elements include graphical elements having at least one data representation element which may be focused or unfocused;

(b) determining focus information based on input received from the user manipulation device;

(c) if the focus information indicates an unfocused data representation element, reconfiguring the dynamic graphical representation to shift focus to the data representation element indicated by the focus information;

(d) determining alteration information concerning the focused data representation element based on input received from the user manipulation device;

(e) modifying the focused data representation element according to the alteration information; and

(f) altering the data stored in system memory corresponding to the focused data representation element according to the alteration information.

5,619,632

DISPLAYING NODE-LINK STRUCTURE WITH REGION OF GREATER SPACINGS AND PERIPHERAL BRANCHES

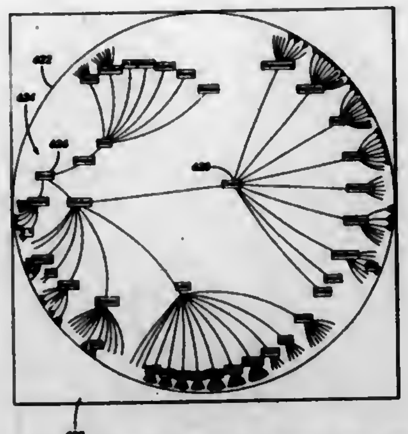
John O. Lamping, Los Altos, and Ramana B. Rao, San Francisco, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 14, 1994, Ser. No. 306,074

Int. Cl.⁶ G06T *11/00*

U.S. Cl. 395—141 **22 Claims**

1. A method comprising:



obtaining node-link data defining a node-link structure; the node-link structure including nodes and links, each link relating at least two of the nodes; and

using the node-link data to present a sequence of representations of the node-link structure on a display; the sequence beginning with a first representation and ending with a last representation; the last representation being perceptible as a changed continuation of the first representation;

each representation in the sequence including bounded node features representing nodes in the node-link structure; each bounded node feature having a center of area that has a nearest node spacing from a nearest other node feature's center of area; each bounded node feature's center of area and nearest node spacing defining a mid-spacing circle for the node feature that is centered at the center of area and has a diameter equal to the nearest node spacing;

the mid-spacing circles of the bounded node features in each representation together determining a first convex hull for the representation, each representation's first convex hull enclosing a total area for the representation;

the bounded node features of each representation including a subset of more spaced node features, the mid-spacing circles of the more spaced node features determining a second convex hull for the representation, each representation's second convex hull enclosing approximately half the representation's total area and enclosing a region in which bounded node features have nearest node spacings that are in general perceptibly greater than in a region enclosed by the first convex hull but outside the second convex hull;

the nodes represented in each representation forming at least one peripheral branch, each peripheral branch including a top level and at least one lower level, the top level including a top level node and the lower levels including lower level nodes that are not in the representation's subset of more spaced node features, each node at each lower level having a parent node at a next higher level to which the node is related through one link;

lower level node features that share a parent node feature having centers of area positioned in order approximately along an arc with sufficiently similar spacings from the center of area of the parent node feature and with sufficiently similar spacings from adjacent node features along the arc that the lower level node features sharing the parent node feature are perceptible as a group of related node features;

the second convex hulls of the first and last representations including subsets of bounded node features that represent different sets of nodes; the sequence of representations producing a perception that at least one bounded node feature has a nearest node spacing that increases from the first representation to the last representation and that at least one other bounded node feature has a nearest node spacing that decreases from the first representation to the last representation.

5,619,633

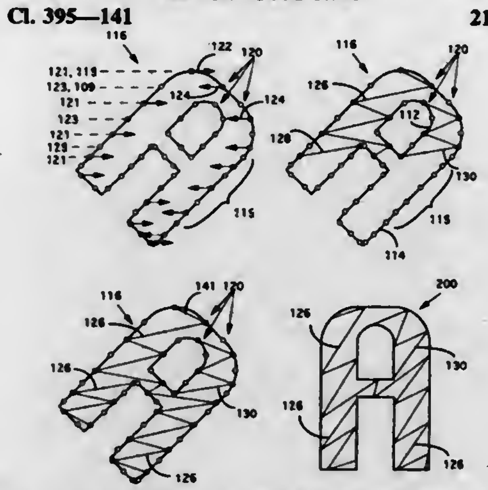
COMPUTER GENERATED SCRIBBLE FILL OF A VECTOR GRAPHIC

John B. Turner, Mountain View, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed Dec. 14, 1994, Ser. No. 356,450

Int. Cl.⁶ G06T *11/40*

U.S. Cl. 395—141 **21 Claims**



2. In a computer system, a method for scribble filling a vector drawing comprising the steps of:

receiving data defining a vector shape;

creating a series of intersection lines overlaying the vector shape;

generating intersection points that indicate where the intersection lines and the vector shape intersect, the intersection lines creating an array having a row corresponding to each intersection line;

connecting, by at least one line, at least one intersection point in each row; and

verifying that all the connecting lines are located within a boundary defined by the vector shape,

wherein the intersection points connected by the at least one line are located at alternate, opposing positions of each consecutive row within the boundary defined by the vector shape and each connecting line remains within the boundary defined by the shape.

5,619,634

COLOR IMAGE PROCESSING METHOD FOR PROCESSING INPUT IMAGE DATA IN ACCORDANCE WITH INPUT CHARACTER DATA

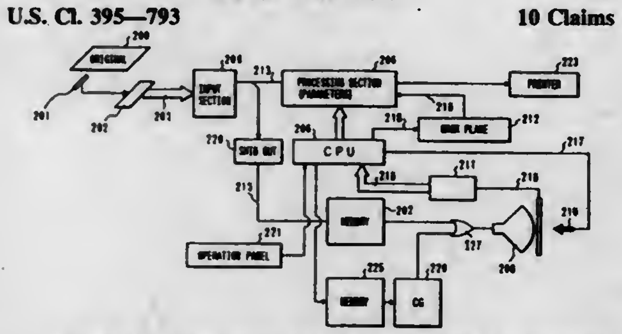
Yoshinori Ikeda, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 425,358, Apr. 19, 1995, Pat. No. 5,495,349, which is a continuation of Ser. No. 853,739, Jun. 5, 1992, abandoned. This application Nov. 14, 1995, Ser. No. 557,482

Claims priority, application Japan, Oct. 13, 1990, 2-273912; Oct. 13, 1990, 2-273913

Int. Cl.⁶ G06F *15/00*

U.S. Cl. 395—793 **10 Claims**



1. A method for processing input image data and for outputting processed image data, said method comprising the steps of:

inputting a particular word comprised of character data;

searching a memory for a plurality of processing parameters which correspond to the character data, each of the plurality of processing parameters corresponding to a different kind of image processing, wherein the memory stores the plurality of processing parameters together with corresponding character data; and

processing the input image data by using the plurality of processing parameters searched for in said step of searching.

5,619,635

PROGRAM CONTROLLED SYSTEM FOR FORMS ENGINEERING

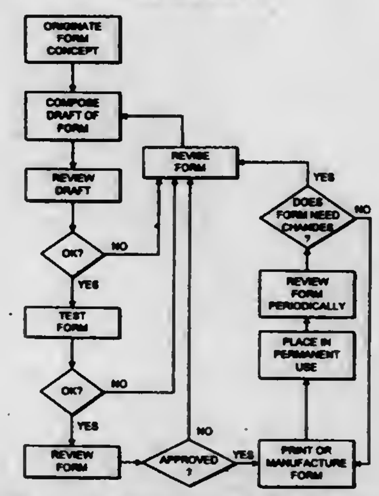
Frank Millman, Miami Beach; Phillip Bolin, Boynton Beach; Frank E. Haggar, Boca Raton, and H. Richmond Ackerman, Ft. Lauderdale, all of Fla., assignors to F3 Software Corporation, Burlington, Mass.

Continuation of Ser. No. 838,479, Feb. 19, 1992, Pat. No. 5,490,243, which is a continuation-in-part of Ser. No. 628,435, Dec. 13, 1990, abandoned. This application Nov. 7, 1995, Ser. No. 551,761

Int. Cl.⁶ G06F *15/00*

U.S. Cl. 395—768 **9 Claims**

FORM ENGINEERING



1. A data processing system directed to preparation of a set of specifications governing the production of a form, comprising:

an interactive input means for selective entry of form constraint data including form set-up attributes which comprise a form type, press type, number of pages, use of carbon, paper type and weight, and form bindery attributes; and

data processing means for collecting said form constraint data, accessing embedded system logic for selecting industry-standard default values and based thereon, determining a set of form production specifications sufficient to dictate production of a form consistent with said form constraint data and said default values.

5,619,636

MULTIMEDIA PUBLISHING SYSTEM

Mark E. Sweat, Encinitas; Philip G. Van Valkenberg; Cheri D. Melville, both of San Diego; Philip N. McDonnell, Trabuco Canyon; Cyrus M. Kamada, Encinitas; James R. Wirt, and James C. Chang, both of San Diego, all of Calif., assignors to Autodesk, Inc., San Rafael, Calif.

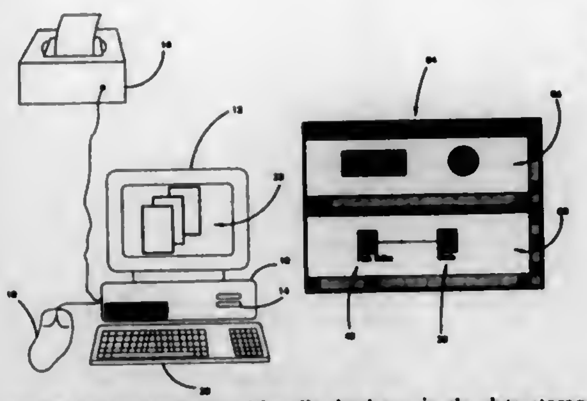
Filed Feb. 17, 1994, Ser. No. 198,220

Int. Cl.⁶ G06F *3/00*

U.S. Cl. 395—806 **21 Claims**

1. A system for developing a multimedia application comprising:

(a) a processor having a monitor and data storage means attached thereto; and



(b) an object-oriented multimedia database, in the data storage means, for storing media objects;
(c) the processor including means, coupled to the object-oriented multimedia database, for creating modules from the media objects stored in the multimedia database;
(d) the means for creating further comprising a split-screen Visual Programming Window means for creating and editing modules using the media objects stored in the multimedia database;
(e) the Visual Programming Window means being split into two panes comprising a Screen Editor and an Iconic Editor;
(f) the Screen Editor comprising means for modifying the visible aspects of a module selected from a group comprising color, position, or size;
(g) the Iconic Editor comprising means for modifying visual representations of functional connections between modules; and
(h) wherein new objects and modules can be added to an edited module in the Visual Programming Window by dragging items from a module palette into one of the panes, so that when the objects and modules are dragged into one of the panes, so that when the objects and modules are dragged into the Screen Editor pane, an iconic representation of the objects and modules is placed in an analogous position in the Iconic Editor pane.

5,619,637

METHOD AND SYSTEM FOR AUTOMATIC STORAGE OF AN OBJECT WITHIN A CONTAINER OBJECT WITHIN A GRAPHICAL USER INTERFACE WITHIN A DATA PROCESSING SYSTEM

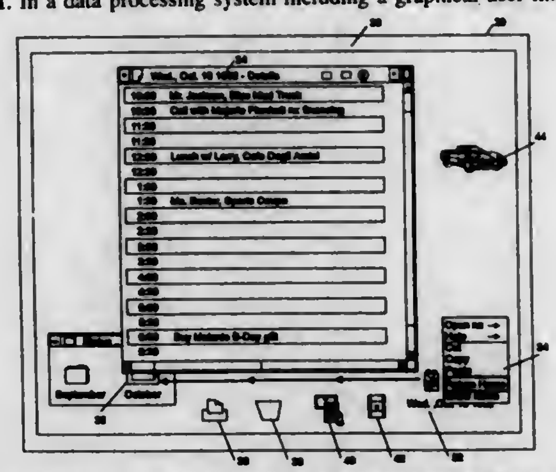
Susan F. Henshaw, and Sarah D. Redpath, both of Cary, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 2, 1993, Ser. No. 160,623

Int. Cl.⁶ G06F *19/00*

U.S. Cl. 395—159 **6 Claims**

1. In a data processing system including a graphical user inter-



face, a method for automatically storing an object within a container object within said data processing system, said data processing system including a display for displaying an iconic representation of said container object, wherein said object is a graphic object which removable from said container object for utilization, said method comprising the data processing system implemented steps of:
specifying an object within said graphical user interface;
specifying a container object within said graphical user interface;
associating said object with said container object;
removing said object from said container object for utilization; and
automatically storing said object within said container object in response to completion of said utilization of said object, wherein organization of said objects within said container object is enhanced.

5,619,638

OBJECT BASED COMPUTER SYSTEM HAVING REPRESENTATION OBJECTS FOR PROVIDING INTERPRETATIVE VIEWS ONTO A DATA OBJECT

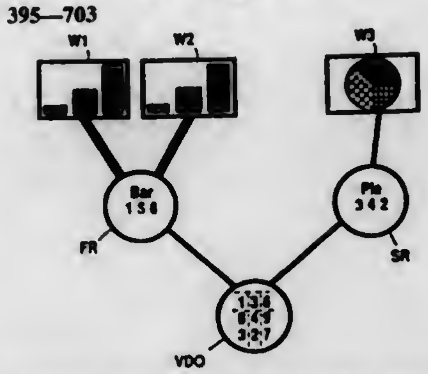
Hugh Duggan, Bristol, England, and William Morel, Redmond, Wash., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 671,806, May 3, 1991, abandoned. This application Feb. 28, 1994, Ser. No. 203,516

Claims priority, application United Kingdom, Jul. 31, 1989, 8917490

Int. Cl.⁶ G06F *3/00*

U.S. Cl. 395—703 **5 Claims**



1. A distributed object based computer system comprising:
a plurality of data objects;
a plurality of window objects for viewing said data objects;
a plurality of representation objects linked to certain of said data objects, at least some of the data of said representation objects being taken from the data objects to which said representation objects are linked, and said representation objects, when activated, controlling the presentation of data of said certain data objects to said plurality of window objects;
means for linking one of said certain data objects to at least one of said representation objects so that said at least one representation object receives details of changes made to data of said one certain data object to which said at least one representation object is linked;
an object manager for activating data objects and representation objects by associating respective processes with said data objects and said representation objects; and
means for linking a plurality of window objects to said at least one representation object so that a plurality of users can view said at least one representation object using said plurality of window objects.

5,619,639

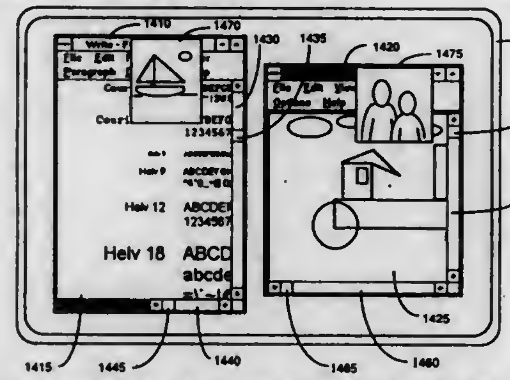
METHOD AND APPARATUS FOR ASSOCIATING AN IMAGE DISPLAY AREA WITH AN APPLICATION DISPLAY AREA

Michael B. Mast, 5158 Clareton Dr., Agoura Hills, Calif. 91301

Filed Oct. 4, 1994, Ser. No. 317,756

Int. Cl.⁶ G06F *3/14*

U.S. Cl. 395—326 **43 Claims**



1. Apparatus for associating an image display area with an application display area, said apparatus comprising:
processing means providing a windowed operating environment;
a display coupled to said processing means;
at least one application program running in said windowed operating environment, said windowed operating environment providing an application display area on said display for displaying output of said at least one application program to a user;
attaching means present in said windowed operating environment, said attaching means comprising:
hook means by which said attaching means is informed when said application display area associated with said at least one application program is created;
image attachment means for displaying an image display area on said display such that said image display area is displayed at a first location with respect to said application display area;
display area movement detection means by means of which said attaching means detects display area movement functions associated with said application display area, said display area movement detection means determining a response of said image attachment means to said display area movement functions.

5,619,640

NETWORK DEVELOPMENT SUPPORT SYSTEM

Satoru Tezuka; Shigeru Miyake; Hiroshi Furukawa, all of Yokohama; Kenichi Kihara, Fujisawa; Chiho Kitahara, Kawasaki; Hideomi Idei, Yokohama; Shihoko Taguchi, Kawasaki; Hikari Namba, Yokohama, all of Japan, and Alberto Suzano, Sao Paulo-sp, Brazil, assignors to Hitachi, Ltd., Tokyo, Japan

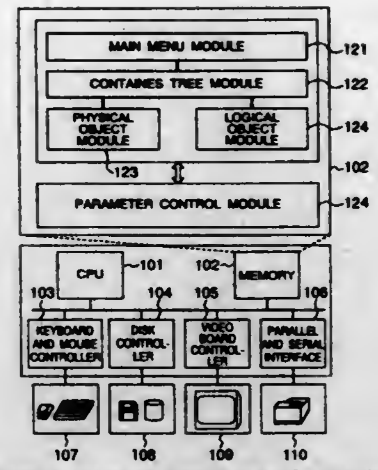
Filed Sep. 21, 1995, Ser. No. 531,902

Claims priority, application Japan, Sep. 22, 1994, 6-228230

Int. Cl.⁶ G06F *11/00*

U.S. Cl. 395—326 **7 Claims**

2. A network design support apparatus for supporting design of physical parameters defining physical constitution of respective information apparatuses constituting a network, logical parameters defining logical constitution of the network, and logical hierarchic structure of the network, comprising:
a display unit;
an external storage unit;
means for accepting, in a logical hierarchic structure designing window presented on the display unit, definition of the logical hierarchic structure of the network in the form of a container



tree including icons representing unit of the logical hierarchic structure defined in association with components of the network;
means for generating and displaying a physical parameter designing window for each of the containers presented in the logical hierarchic structure designing window;
means for generating and displaying a logical parameter designing window for each of the containers presented in the logical hierarchic structure designing window;
means for accepting, in the displayed physical parameter designing window, definitions of components of the network corresponding to units of the logical hierarchic structure, the units corresponding to the containers associated with the physical parameter designing window;
means for accepting, in the displayed logical parameter designing window, definitions of components of the network corresponding to units of the logical hierarchic structure, the units corresponding to the containers associated with the logical parameter designing window;
means for relating the definitions respectively of the physical and logical parameters to the units of logical hierarchic structure in the accepted definition of the logical hierarchic structure and thereby creating network information including description of the accepted definition of the logical hierarchic structure; and
means for storing the contents indicated by the network information as a parameter file in the external storage unit.

5,619,641

SIGNAL PROCESSING APPARATUS INCLUDING REDUNDANT FIRST AND SECOND SYSTEM WITH A DUPLEX PACKAGE CONFIGURATION

Noriaki Ohuchi; Akio Morimoto; Hiroshi Yamasaki; Takahiro Hosokawa, and Hiroyuki Kaneko, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

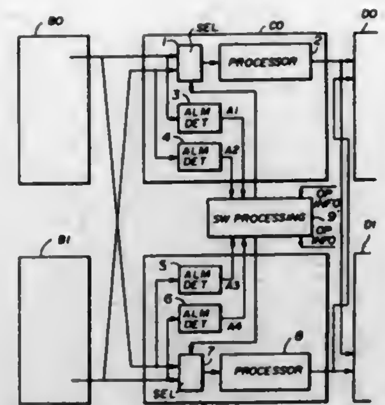
Continuation of Ser. No. 239,923, May 9, 1994, abandoned, which is a continuation of Ser. No. 933,794, Aug. 24, 1992, abandoned. This application Dec. 28, 1994, Ser. No. 365,982

Claims priority, application Japan, Aug. 26, 1991, 3-213288

Int. Cl.⁶ G06F *11/00; 11/16*

U.S. Cl. 395—181 **9 Claims**

1. A signal processing apparatus including redundant first and second systems having a duplex package configuration, said signal processing apparatus comprising:
at least two first packages, at least one of the first packages being provided in each of the redundant first and second systems, each of the first packages including a signal processor to provide a first package output signal;
at least two second packages, at least one of the second packages being provided in each of the redundant first and second systems, each of the second packages including:
a selector operatively connected to the first packages of the redundant first and second systems to select the first pack-



age output signal of one of the redundant first and second systems to provide a selected signal in response to a control signal,

a failure detector operatively connected to the first packages of the redundant first and second systems to receive the first package output signal and output a failure detection signal if a failure is detected, and

a signal processor operatively connected to said selector to receive the selected signal and to output a second package output signal;

at least two third packages, at least one of the third packages being provided in each of the redundant first and second systems, each of the third packages operatively connected to receive the second package output signal from said signal processor in a corresponding one of the at least two second packages, performing at least one operation on the second package output signal and producing operation information signals indicating operational status of the at least two third packages, respectively; and

a controller coupled to each of the second packages in the redundant first and second systems to receive the failure detection signal from said failure detector in each of the second packages in the redundant first and second systems, to provide the control signal to said selector of each of the second packages in the redundant first and second systems for selecting said signal processor of one of the at least one of the first packages in an active one of the redundant first and second systems and said controller disregarding the failure detection signal during a predetermined time in response to at least one of the operation information signals.

5,619,642

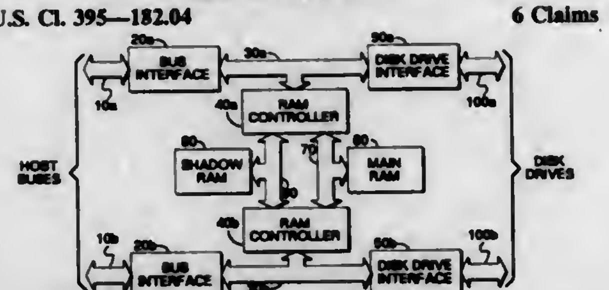
FAULT TOLERANT MEMORY SYSTEM WHICH UTILIZES DATA FROM A SHADOW MEMORY DEVICE UPON THE DETECTION OF ERRONEOUS DATA IN A MAIN MEMORY DEVICE

Michael E. Nielson, Broomfield; William A. Brant, and Gary Neben, both of Boulder, all of Colo., assignors to EMC Corporation, Hopkinton, Mass.

Filed Dec. 23, 1994, Ser. No. 363,132

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—182.04 **6 Claims**



1. A fault tolerant memory system, comprising:

a main memory device, storing data and an associated parity checking code;

a shadow memory device, storing data corresponding to the data stored in the main memory;

a multiplexer, responsive to a control signal having a first state for coupling data from the main memory device to an output terminal, and responsive to the control signal having a second state for coupling data from the shadow memory device to the output terminal; and

a controller comprising:

a comparator having a first input terminal responsive to the data from the main memory device, a second input terminal responsive to the data from the shadow memory device, a first output terminal producing a first output signal having a first state when the data from the main memory device is the same as the data from the shadow memory device and a second state otherwise, and a second output terminal producing a second output signal having a first state when only a single bit is different between the data from the main memory device and the data from the shadow memory device, and a second state otherwise;

a parity error detecting circuit having a first input terminal responsive to the data from the main memory device, a second input terminal responsive to the associated error detecting code from the main memory device, and an output terminal producing a signal having a first state when an error is detected, and a second state otherwise; and

a logic circuit having a first input terminal responsive to the first output terminal of the comparator, a second input terminal responsive to the second output signal of the comparator, a third input terminal coupled to the output terminal of the parity error detecting circuit, and an output terminal which generates the control signal having the first state when the first output signal from the comparator has the first state, generates the control signal having the first state when the first output signal from the comparator has the second state, the second output signal from the comparator has the first state, and the signal from the error detecting circuit has the second state, generates the control signal having the second state when the first output signal from the comparator has the second state, the second output signal from the comparator has the first state, and the signal from the error detecting circuit has the first state, and generates a status signal, indicating an uncorrectable-read-error when both the first and second output signals from the comparator have the second state.

5,619,643

CIRCUIT FOR DETECTING A FAULT STATE IN A CLOCK SIGNAL FOR MICROPROCESSOR ELECTRONIC DEVICES

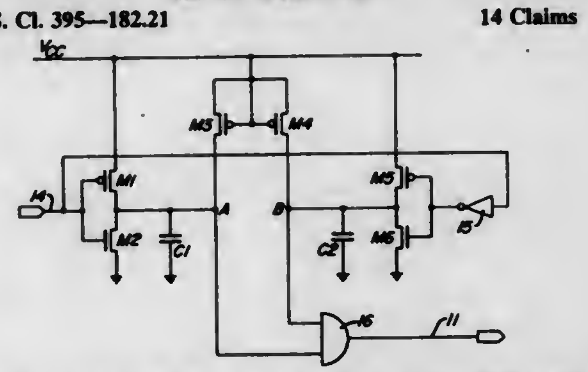
Angelo Moroni, Villanova S. fraz. Bargano; Flavio Scarra, Agrate, and Alberto Taddeo, Arenzano, all of Italy, assignors to SGS-Thomson Microelectronics, S.R.L., Italy

Filed Mar. 31, 1995, Ser. No. 414,919

Claims priority, application European Pat. Off., Oct. 27, 1994, 94830506

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—182.21 **14 Claims**



1. A circuit for detecting irregularities in a clock signal in an electronic device incorporating a microprocessor comprising:

an input terminal;

an output terminal connected to a reset input of the microprocessor;

a first input stage comprising a first complementary pair of transistors connected between a positive pole of a supply voltage generator and a negative pole of said generator, the control terminals of the first transistor pair being both connected to said input terminal and an intermediate circuit node between the transistors of the first pair being connected to a first input of a logic gate having an output terminal connected to the output terminal of the circuit,

a first capacitive element connected between the intermediate circuit node between the transistors of the first pair and a first potential reference,

a second input stage comprising a second complementary pair of transistors connected between the positive pole and the negative pole of said generator, the control terminals of the second pair being connected both to said input terminal through an inverting gate and the intermediate circuit node between the transistors of the second pair being connected to a second input of said logic gate; and

a second capacitive element connected between the intermediate circuit node between the transistors of the second pair and a second terminal connected to a second potential reference.

5,619,644

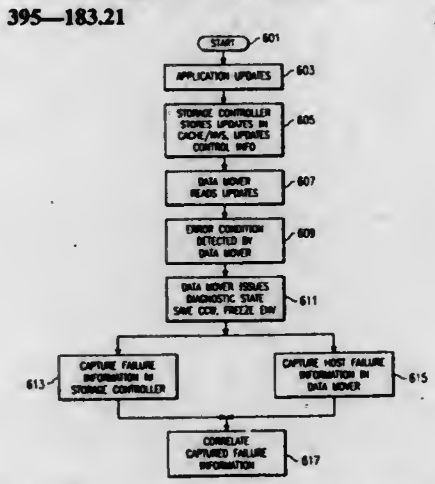
SOFTWARE DIRECTED MICROCODE STATE SAVE FOR DISTRIBUTED STORAGE CONTROLLER

Robert N. Crockett; Ronald M. Kern, and William F. Micka, all of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 18, 1995, Ser. No. 529,901

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—183.21 **20 Claims**



1. In a storage system having distributed system components including a host processor running software applications therein generating record updates and having a data mover, said host processor coupled to a first storage controller, wherein an error condition occurs in said storage system, said data mover executing a machine effected method for coordinating problem determinations amongst said distributed system components, said machine effected method comprising steps of:

(a) issuing I/O operations for record updates generated by said software applications;

(b) storing said record updates in said first storage controller according to said issued I/O operations;

(c) maintaining control information associated with said record updates in said first storage controller;

(d) reading said record updates and associated control information into said data mover from said first storage controller in preparation for remotely copying said record updates;

(e) detecting the storage system error condition in said data mover;

(f) issuing a diagnostic state save channel command word (CCW) from said data mover to said host processor and said first storage controller;

(g) capturing failure information in said host processor and said first storage controller; and

(h) correlating said failure information in said host processor with said failure information in said first storage controller according to said storage system error condition,

wherein said diagnostic state save channel command word temporarily suspends operations in said host processor and said storage controller until after said failure information is captured and correlated between said host processor and said first storage controller.

5,619,645

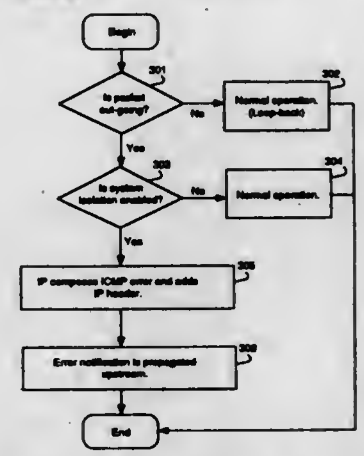
SYSTEM ISOLATION AND FAST-FAIL

Gabriel E. Montenegro, Fremont; Steven J. Drach, San Francisco, and Ho Y. Wong, Sunnyvale, all of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Apr. 7, 1995, Ser. No. 418,830

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—185.01 **25 Claims**



19. A system interfaced with a network, said system capable of continuing to function even when said system is disconnected from said network, said system comprising:

a memory containing a network layer allowing said system to communicate with said network, said network layer containing,

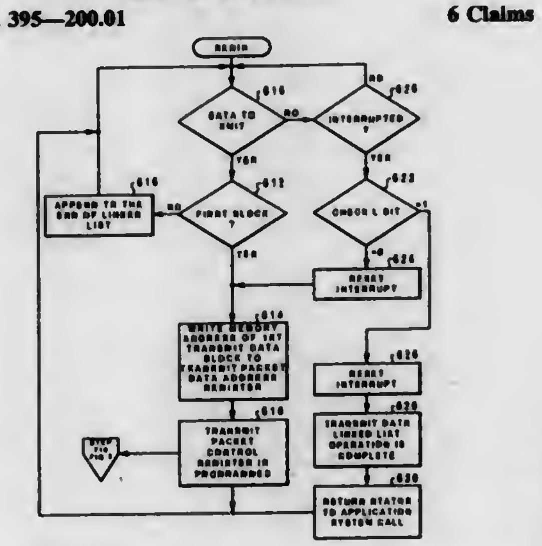
an internet protocol fast-fail mechanism for determining if system isolation has been enabled and if a network related operation has been initiated, said internet protocol fast-fail mechanism composing an error message indicating that said system is in fast-fail mode if it is determined that said system isolation has been enabled and said network related operation has been initiated; and

a processor coupled to said memory, said processor for running said internet protocol fast-fail mechanism.

5,619,646
METHOD AND SYSTEM FOR DYNAMICALLY APPENDING A DATA BLOCK TO A VARIABLE LENGTH TRANSMIT LIST WHILE TRANSMITTING ANOTHER DATA BLOCK OVER A SERIAL BUS

Gary B. Hoch, Coral Springs; Timothy V. Lee, Boca Raton; Rex E. McCrary, Boca Raton; Stephanie P. Payne, Boca Raton; Daniel Petkevich, Ft. Lauderdale, and Hai V. Pham, Margate, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 27, 1994, Ser. No. 313,638
Int. Cl.⁶ G06F *13/00*
U.S. Cl. 395—200.01 **6 Claims**



1. In a computer system using a transmission path between a plurality of nodes on said computer networking system, each node being connected to at least one other node via said path, a method of linking data operation procedures comprising the steps of:

generating a variable length transmit list of transmit data to be linked, said list including an address register and a control register;

writing a memory address of a first transmit data block to said address register;

loading a data operation procedure associated with said first transmit data block;

retrieving said transmit data block from a memory storage location;

determining whether said first transmit data block includes a linked next transmit data block indicator having a next address field;

upon identifying said indicator, retrieving a next transmit data block based on a next memory address stored in said next address field while transmitting said first transmit data block according to said data operating procedure;

storing said next memory address for said next transmit data block in said address register and a next data operating procedure in said control register;

upon indication that said address and control registers are full, requesting control of said path;

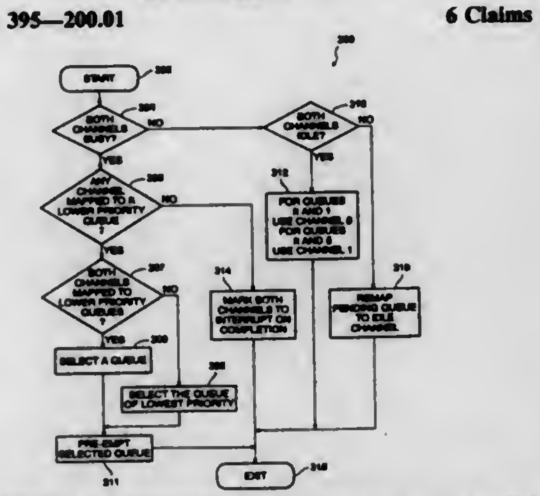
upon obtaining control of said path, formatting each transmit data block for transmission according to a data operation procedure;

before completion of the foregoing two steps, dynamically appending another transmit data block to the end of said transmit list.

5,619,647
SYSTEM FOR MULTIPLEXING PRIORITIZED VIRTUAL CHANNELS ONTO PHYSICAL CHANNELS WHERE HIGHER PRIORITY VIRTUAL WILL PRE-EMPT A LOWER PRIORITY VIRTUAL OR A LOWER PRIORITY WILL WAIT

Robert L. Jardine, Cupertino, Calif., assignor to Tandem Computers, Incorporated, Cupertino, Calif.

Filed Sep. 30, 1994, Ser. No. 316,402
Int. Cl.⁶ G06F *7/00*
U.S. Cl. 395—200.01 **6 Claims**



1. A method for implementing virtual channels in a computer system, wherein the computer system includes a fixed number, m, of physical channels for transferring data with other computer systems, wherein the computer system further includes one or more programs executing in the computer system that send data over the physical channels, the method comprising the following steps executed by the processor, of:

accepting transmission requests from the programs to send data over n virtual channels, where n is greater than m;

for each transmission request, mapping dynamically said n virtual channels onto said m physical channels, wherein said step of mapping dynamically includes the sub-steps of:

determining whether a specified one of said n virtual channels is currently mapped to one of said m physical channels;

mapping said specified one of said n virtual channels to one of said m physical channels when said specified one of said n virtual channels is not currently so mapped; and

sending data over one of said m physical channels via said specified one of said n virtual channels mapped thereto;

assigning a priority ordering to each of said n virtual channels;

wherein a physical channel is busy when it is mapped to a virtual channel and said physical channel is being used to send a transmission, said transmission comprising data; and

wherein, when all m physical channels are busy, said step of mapping said specified one of said n virtual channels further includes the sub-steps of:

comparing a priority of said specified one of said n virtual channels with a priority of each currently mapped virtual channel;

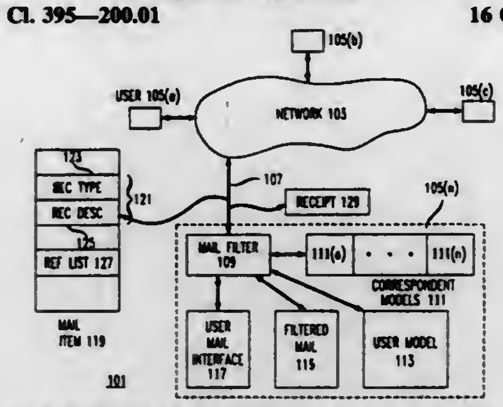
if said specified one of said n virtual channels has a lower priority than each currently mapped virtual channel, then waiting until one of said m physical channels is no longer busy before mapping said specified virtual channel to one of said m physical channels instead; and

if said specified channel has a higher priority than one or more of said currently mapped virtual channels, then pre-empting use of a physical channel by a lower-priority currently mapped virtual channel by interrupting a transmission on said physical channel and mapping said specified virtual channel to said physical channel instead.

5,619,648
MESSAGE FILTERING TECHNIQUES

Leonard M. Canale, Tinton Falls; Henry A. Kautz, Summit; Allen E. Milewski, Red Bank, and Bart Selman, Summit, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Nov. 30, 1994, Ser. No. 346,715
Int. Cl.⁶ G06F *17/20*
U.S. Cl. 395—200.01 **16 Claims**



4. An arrangement for locating expertise in a messaging system implemented in a computer system, comprising:

first means, included in a message, for indicating, via non-address information, expertise sought by a sender of the message;

second means in the computer system, for determining expertise of an addressee of the message;

third means in the computer system responsive to receipt of the message, for determining whether the expertise indicated by the first means matches the expertise of the addressee determined by the second means;

fourth means in the computer system responsive to a determination by the third means that the indicated expertise matches the determined expertise, for providing the message to the addressee, and responsive to a determination by the. third means that the indicated expertise does not match the determined expertise, for preventing the message from being provided to the addressee;

fifth means in the computer system, for determining expertise of contacts of the addressee;

sixth means responsive to a determination that the indicated expertise does not match the determined expertise of the addressee, for determining whether the indicated expertise matches the expertise of any said contacts determined by the fifth means; and

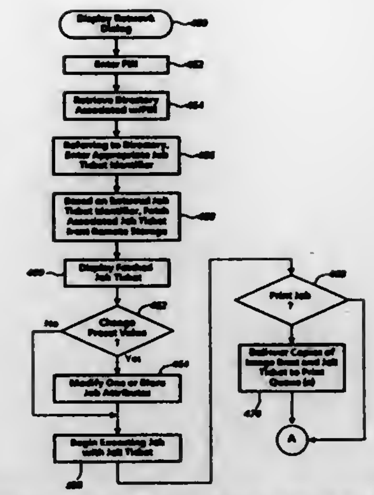
seventh means responsive to a determination by the sixth means that the indicated expertise matches the determined expertise of a contact, for sending the message to that contact.

5,619,649
NETWORK PRINTING SYSTEM FOR PROGRAMMING A PRINT JOB BY SELECTING A JOB TICKET IDENTIFIER ASSOCIATED WITH REMOTELY STORED PREDEFINED DOCUMENT PROCESSING CONTROL INSTRUCTIONS

Larry A. Kovnat, Rochester; Diane S. Rogerson, Greece, and Gerald M. Garavuso, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 12, 1995, Ser. No. 489,350
Int. Cl.⁶ G06F *13/00*
U.S. Cl. 395—200.01 **16 Claims**

1. In a network printing system for creating a document job at a document processing apparatus to be transmitted across a network to an output or storage location disposed remotely of the document processing apparatus the document job being developed In accordance with a job ticket including a set of document processing control instructions for controlling a manner in which the document processing apparatus develops a set of image data for creating the document job, the job ticket having been developed at a processing station disposed on the network remotely of the document processing apparatus and corresponding to a selected job



ticket identifier with both the job ticket and selected job ticket identifier being stored in a memory disposed on the network remotely of the document processing apparatus, said document processing apparatus comprising:

a) an input subsystem for inputting a personal identifier to the document processing apparatus;

b) a user interface for displaying, in response to the inputting of the personal identifier a job ticket identifier directory including a plurality of job ticket identifiers one of which plurality of job ticket identifiers includes the selected job ticket identifier, the user interface and input subsystem functioning cooperatively to permit the user to employ the selected job ticket identifier for facilitating transmission of a copy of the set of document processing control instructions to the document processing apparatus;

c) a document processing apparatus memory for storing the set of document processing control instructions;

d) an information retrieval subsystem for retrieving a copy of the set of document processing control instructions across the network from the remotely disposed memory to said document processing apparatus memory in response to selecting the selected job ticket identifier from the job ticket identifier directory;

e) an image capture subsystem for developing the set of Image data, the image data being automatically developed in a preprogrammed manner, in accordance with the set of document processing control instructions stored in said document processing apparatus memory, to create the document job while minimizing an amount of job programming required by the user at said document processing apparatus; and

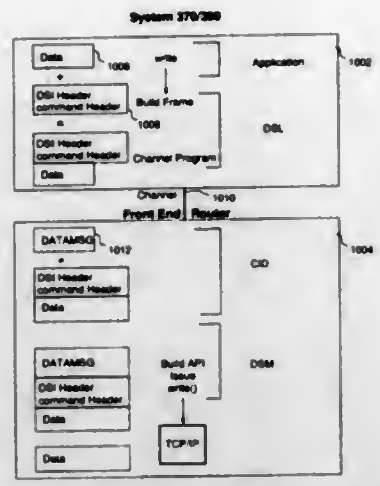
f) an image data transmission subsystem for transmitting one or more copies of said set of image data across the network for storage at the storage location or outputting at the output location.

5,619,650
NETWORK PROCESSOR FOR TRANSFORMING A MESSAGE TRANSPORTED FROM AN I/O CHANNEL TO A NETWORK BY ADDING A MESSAGE IDENTIFIER AND THEN CONVERTING THE MESSAGE

Maurice J. Bach, Haifa, Israel; Robert B. Hoppes, Hyde Park, N.Y.; Clifford B. Meltzer, Ossining, N.Y.; Kenneth J. Parchinski, Wappingers Falls, N.Y., and Gary J. Whelan, Rhinebeck, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 966,821, Dec. 31, 1992, abandoned. This application Sep. 21, 1995, Ser. No. 531,579
Int. Cl.⁶ G06F *13/00*
U.S. Cl. 395—200.01 **7 Claims**

1. A computer system for exchanging data messages with other computer systems through a point-to point communications network, said point-to-point communications network using a predetermined network transport protocol to transmit and receive data messages, said computer system including:



a). a host system including a host processor for executing application programs and at least one input/output channel, said host system using a host system data transfer protocol for transporting data messages within the host system and over the input output channel that is different from the predetermined network transport protocol, said data messages comprising distributed processing identification information generated by said host processor based on the data message content;

b). a network processor connected to at least one input/output channel of the host system for exchanging data with the host system over the input/output channel using the host system data transfer protocol, said network processor including means for transforming data messages received over the input/output channel to a format in which the transformed data messages are forwarded into the point-to-point communications network for transmission to remote computer systems using the predetermined network transport protocol and for transforming data messages received from the point-to-point communications network to a form which the messages are transmitted into the host system through the input/output channel using the host system data transfer protocol, wherein said message transforming means adds a data message identifier to the received data message and then converts the message in accordance with the distributed processing identification information when a message is transported from the input/output channel to the point-to-point communication network.

5,619,651
I/O DATA UNIT SYMMETRY IN A MEDIA ACCESS CONTROL/HOST SYSTEM INTERFACE UNIT

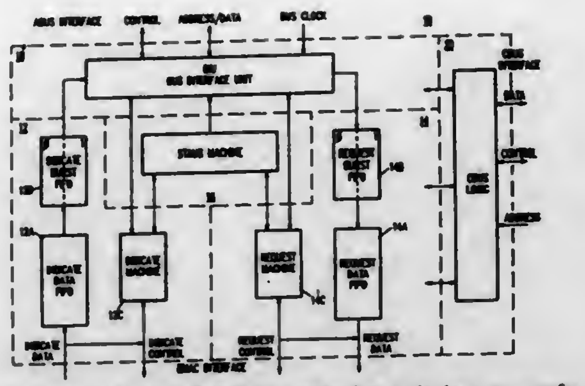
Desmond W. Young, Campbell, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 350,708, Dec. 7, 1994, abandoned, which is a continuation of Ser. No. 141,862, Oct. 22, 1993, abandoned, which is a division of Ser. No. 989,942, Dec. 10, 1992, abandoned, which is a continuation of Ser. No. 516,245, Apr. 27, 1990, abandoned. This application Aug. 4, 1995, Ser. No. 513,672

Int. Cl.^{6} G06F *13/00*

U.S. Cl. 395—200.2 **1 Claim**

1. An interface system connected between a local area network communications medium and a host system for transferring data units between the communications medium and a memory system associated with the host system, each data unit having one or more data unit descriptors associated therewith, wherein each data unit descriptor includes information related to the associated data unit, the storage system including storage space for storing both data units and data unit descriptors, the interface system comprising:



a bus interface unit adapted for connection to the host system for transferring data units and data unit descriptors between the interface system and the memory system;

a receive interface mechanism connected to the bus interface unit for transferring input data units received by the interface system from the communications medium to storage space in the memory system via the bus interface unit, the receive interface mechanism including a descriptor generator that generates input data unit descriptors corresponding to the received input data units, the input data unit descriptors having a predefined format, the receive interface mechanism transferring the input data unit descriptors to storage space in the system memory via the bus interface unit; and

a transmit interface mechanism connected to the bus interface unit for transferring output data units retrieved by the interface system from the storage space in the system memory via the bus interface unit to the communications medium utilizing output data unit descriptors having the same format as the input data unit descriptors, the transmit interface mechanism including means for pointing to input data unit descriptors located in storage space in the system memory for use as output data unit descriptors,

whereby the host system retransmits data units by pointing the transmit interface mechanism at data unit descriptors stored in the system memory without altering either data units or data unit descriptors.

5,619,652
AUTOMATIC PREEMPTION RECOVERY AND FRAME REPEAT OPTION IN A MEDIA ACCESS CONTROL/HOST SYSTEM INTERFACE UNIT

Mark A. Travaglio, Scarboro, Me., and Desmond W. Young, Campbell, Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 343,356, Nov. 22, 1994, abandoned, which is a continuation of Ser. No. 144,994, Oct. 28, 1993, abandoned, which is a division of Ser. No. 989,942, Dec. 10, 1992, abandoned, which is a continuation of Ser. No. 516,245, Apr. 27, 1990, abandoned. This application Oct. 12, 1995, Ser. No. 541,222

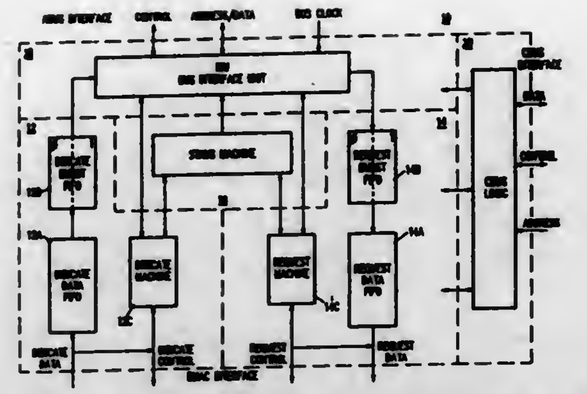
Int. Cl.^{6} G06F *15/173;13/00*

U.S. Cl. 395—200.2 **1 Claim**

1. An interface system connected between a local area network communications medium and a network station for transferring information frames between the communications medium and a memory system associated with the network station, wherein each information frame consists of a sequence of frame segments having identifiable boundaries therebetween, and wherein the memory system includes a plurality of separate storage areas, the interface system comprising:

a bus interface unit connectable to the network station for transferring information frames between the interface system and the memory system;

multiple transmit channels for transferring information frames received from the memory system to the communications medium, the transmit channels including a pre-emptable



transmit channel and at least one transmit channel having a higher priority than the pre-emptable transmit channel;

means for pre-empting transmission of information frames on the pre-emptable transmit channel and for switching to transmission of information frames on the higher priority transmit channel in response to specified criteria;

means for retaining identifier information relating to information frames transferred on the pre-emptable transmit channel; and

means responsive to completion of transmission on the higher priority transmit channel for switching back to transmission on the pre-emptable transmit channel based upon the retained identifier information.

5,619,653
BUFFER DEVICE WITH RESENDER

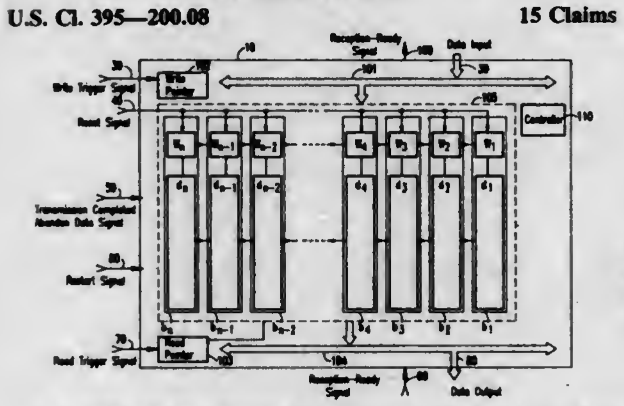
Yoshikazu Kawauchi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 115,526, Sep. 1, 1993, abandoned. This application Jul. 2, 1996, Ser. No. 676,101

Claims priority, application Japan, Sep. 4, 1992, 4-236702

Int. Cl.^{6} G06F *13/12*

U.S. Cl. 395—200.08 **15 Claims**



1. A buffer device, having a transmission side and a reception side, for transmitting data, comprising:

a plurality of data holding means each for storing one unit of data;

write attribute flags provided for each of said data holding means for indicating if data is stored within a corresponding data holding means of said plurality of data holding means;

a write data bus operatively connected to said plurality of data holding means for receiving data from said transmission side;

a read data bus operatively connected to said plurality of data holding means for transmitting data to said reception side;

write pointer means for designating a write sequence of data when storing data from said write data bus to said plurality of data holding means;

read pointer means for designating a read sequence of data when transmitting data from said plurality of data holding means to said read data bus; and

control means for controlling transmission of data to said reception side based on an input of a restart signal and an abandon signal, .

wherein said control means:

refers to said abandon signal and said restart signal;

preserves a status of said write attribute flags corresponding to data holding means from which data has been read if said abandon signal is inactive and

clears said write attribute flags corresponding to data holding means from which data has been read if said abandon signal is active.

5,619,654
SYSTEM FOR IMPLEMENTING USER REQUEST BY DIVIDING THE RETRIEVED CORRESPONDING PROCEDURE INTO FIRST COMMAND TO OBTAIN APPARATUS NAME AND SECOND COMMAND TO OBTAIN OPERATION CONTENT

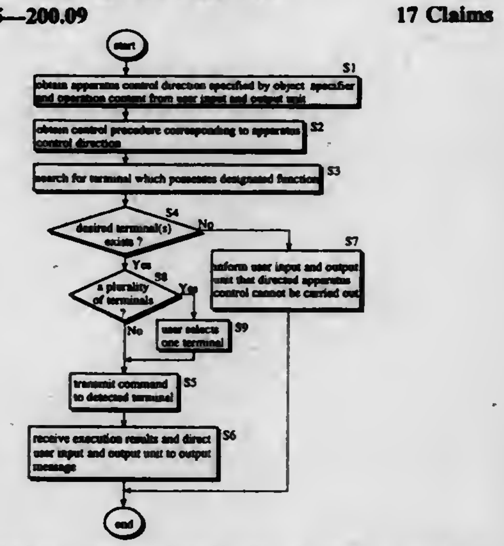
Masaki Mukai, Izumisano; Takashi Ohtsu, Yawata, and Kouichi Yasutake, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 1, 1994, Ser. No. 270,020

Claims priority, application Japan, Jul. 5, 1993, 5-165550

Int. Cl.^{6} G06F *13/00*

U.S. Cl. 395—200.09 **17 Claims**



1. An apparatus control system where a major terminal for inputting a user's request is connected via a communication path to an apparatus terminal which has an apparatus for implementing the user's request, the apparatus control system comprising:

a request accepting means for accepting the user's request written in accordance with a certain form;

a storing means for storing a correspondence table where each request is corresponded to a control procedure written in accordance with a certain rule;

a retrieving means for retrieving the control procedure which corresponds to each user's request;

a command dividing means for interpreting a control procedure and dividing the control procedure into a first command for obtaining an apparatus name and a second command for obtaining an operation content;

a corresponding apparatus identifying means using the first command to identify the apparatus which implements the user's request;

an implementation directing means for using the second command to generate an indication for the apparatus identified by the corresponding apparatus identifying means and for transmitting the generated indication to the apparatus; and

an implementation controller for receiving the indication and controlling an operation of the apparatus according to the received indication.

5,619,655

SYSTEM FOR ADMINISTRATION AND MANAGEMENT OF NETWORK FROM REMOTE OR CENTRAL STATION THROUGH AN OPERATOR INTERFACE WHICH PREPARES AND STORES THE MANAGEMENT ORDERS FOR EXECUTION

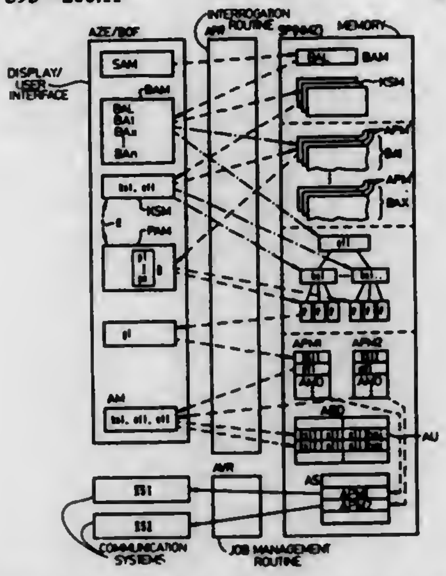
Wolfgang Weng, Munich, and Friedrich Woerndle, Ostermuenchen, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Jan. 24, 1994, Ser. No. 185,242

Claims priority, application Germany, Feb. 26, 1993, 43 06 031.5

Int. Cl.⁶ G06F *13/00*

U.S. Cl. 395—200.11 **10 Claims**



7. A method for forming administration order program modules in a network management central that is connected to an operating control and which is connectable to communication systems for a remote control administration via a communication network, comprising the steps of:

storing an operator task list, including allocated prepared administration program modules and representing different operator tasks, in the network management central;

selecting an operator task under control of a user interface, said operator task being selected from the operator task list visualized at the operating control using an interrogation routine implemented in the operating control, and interrogating operator-prescribable administration and maintenance parameters and job-associated information for the communication systems to be administered under control of the user interface and entering said parameters and said job-associated information into a respective prepared administration program module for forming an administration order program module;

said job-associated information consisting of at least communication system information identifying the communication system to be administered, job information defining the respective operator task, and type of job information determining the type of the administration order, and being stored in a job library file; storing the allocated administration order program module in a job file memory of the network management central;

due to the job library file entry of a job management routine, informing the allocated administration order program module that the administration order program modules are transmitted using the job management routine to the communication systems identified by the communication system information, that the administration and maintenance instructions of the administration order program modules are supplied to the administration program modules in the appertaining communication systems that interpret and process the administration and maintenance instructions;

communicating results of the processing are communicated via the communication network to the network management central and storing the communicating results in the network management central;

selecting the type of job information from the group of type of job information consisting of:

time information defining a next possible point in time of transmission of a respective administration order program module;

transmission time information defining a point in time of transmission of a respective administration order program module;

job display information visualizing current job information of a selected or of a plurality of administration order program modules at a display means of the operating control;

erase information that erases a job;

editing information that enables an editing of an administration order program module at the user interface; or

job status information that visualizes a current processing status of an administration order program module at the user interface;

the following being effected in the interrogation routine:

the user interface is controlled by a keyboard program module;

prescribed stored texts are forwarded to a display means at the user interface by a text program module;

help information that informs and prompts the user is forwarded to the display means by a help program module;

administration order program module can be edited by an editing program module;

the job-associated information is managed by a data management program module;

a list of available operative tasks is managed by an operated task program module;

generation of administration order program modules is effected by a generation program module; and

entry and reading of the job-associated information in the job library file is effected by a job library program module.

5,619,656

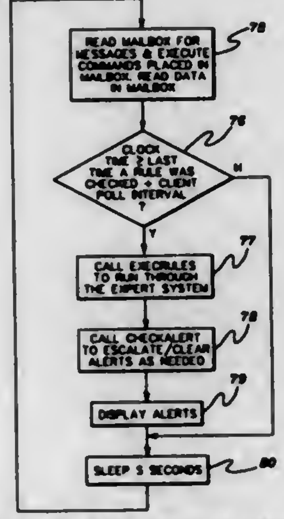
SYSTEM FOR UNINTERRUPTIVELY DISPLAYING ONLY RELEVANT AND NON-REDUNDANT ALERT MESSAGE OF THE HIGHEST SEVERITY FOR SPECIFIC CONDITION ASSOCIATED WITH GROUP OF COMPUTERS BEING MANAGED

Lars O. Graf, Rensselaer, N.Y., assignor to OPENService, Inc., Albany, N.Y.

Filed May 5, 1994, Ser. No. 238,476

Int. Cl.⁶ G06F *11/00; 11/30; 13/10*

U.S. Cl. 395—200.11 **22 Claims**



1. A method of automatically managing a group of at least one managed computer comprising the steps of:

gathering data;

analyzing the data to identify a specific computer condition;

constructing an alert message identifying said specific computer condition;

performing a set of validation tests on said alert message, said set of validating tests comprising;

querying for a duplicate alert message existing in a database in which previously posted alert messages are stored;

querying said database for an existing alert message associated a computer condition related to, and having a higher severity than, said specific computer condition prompting said alert message;

querying said database for an existing alert message associated with said specific computer condition which is being ignored; and

querying said database for a previously cleared alert message associated with said specific computer condition within a predetermined time period;

rejecting said alert message if an existing alert was found during any one test from said set of validation tests; and

displaying said alert message, when said alert message was not rejected during said validation tests, at the managed computer without inhibiting the managed computer from continuing its application processes;

whereby a user is only presented with relevant alerts and no network traffic is used to retransmit irrelevant or redundant alerts.

5,619,657

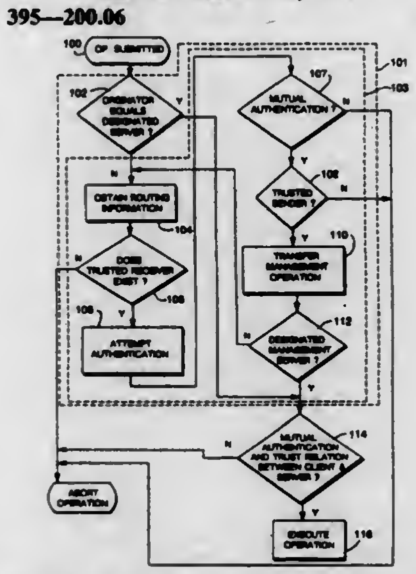
METHOD FOR PROVIDING A SECURITY FACILITY FOR A NETWORK OF MANAGEMENT SERVERS UTILIZING A DATABASE OF TRUST RELATIONS TO VERIFY MUTUAL TRUST RELATIONS BETWEEN MANAGEMENT SERVERS

Ram Sudama, Hudson; David M. Griffin, Maynard, both of Mass.; Brad Johnson, Westerly, R.I.; Dexter Sealy, Boston, Mass.; James Shelhamer, Maynard, Mass., and Owen H. Tallman, Lunenburg, Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 722,879, Jun. 28, 1991, abandoned. This application Jun. 6, 1994, Ser. No. 254,494

Int. Cl.⁶ G06F *13/14; 13/38*

U.S. Cl. 395—200.06 **10 Claims**



1. A method for providing security for a data processing network having a plurality of management servers including at least an originating management server for providing a point of submission for a management operation to be performed from a user and a final management server coupled to a host designated to perform a function described in said management operation, and a database for storing data identifying the host designated to perform the function described in said management operation and containing a list of a plurality of links between said plurality of management sewers on a path from said originating management server to said final management sewer which forms a trusted path from said originating management server to said final management server for communicating management operations from said originating management server to said final management server, said method comprising the steps of:

receiving by a first one of said management servers on said trusted path between said originating management server and said final management server a management operation to be performed;

querying said database of trusted relations by said first management server to identify a second one of said management servers on said trusted path between said originating management server and said final management server that has a trusted relation to said first management server for sending said management operation by said first management server to said second management server;

mutually authenticating between said first management server and said second management server the identities of said first management server and said second management server;

querying said database of trusted relations by said second trusted management server to verify the existence of a mutual trusted relation with said first management server for receiving said management operation by said second trusted management server from said first management server; and

sending said management operation to be management server to said second trusted management server.

5,619,658

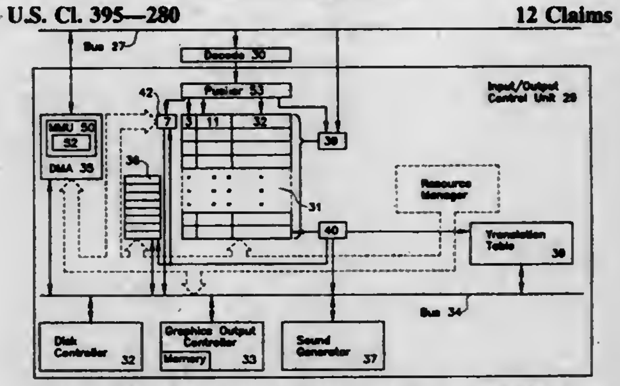
METHOD AND APPARATUS FOR TRAPPING UNIMPLEMENTED OPERATIONS IN INPUT/OUTPUT DEVICES

Curtis Priem, Fremont, and David S. H. Rosenthal, Palo Alto, both of Calif., assignors to Nvidia Corporation, Sunnyvale, Calif.

Filed May 15, 1995, Ser. No. 441,082

Int. Cl.⁶ G06F *13/00*

U.S. Cl. 395—280 **12 Claims**



1. An input/output device adapted to carry out commands irretrievably decoupled from a processor which generated the commands executing instructions of a program in a computer system comprising

a first decoding circuit for decoding a range of addresses to which the decoupled commands are addressed,

means for ascertaining whether the input/output device is able to respond to a command at an address decoded by the first decoding circuit,

a circuit for storing the command and the address of a command transferred to the input/output device to which the input/output device is unable to respond, and

means for generating an interrupt if the input/output device is unable to respond to a command.

5,619,659

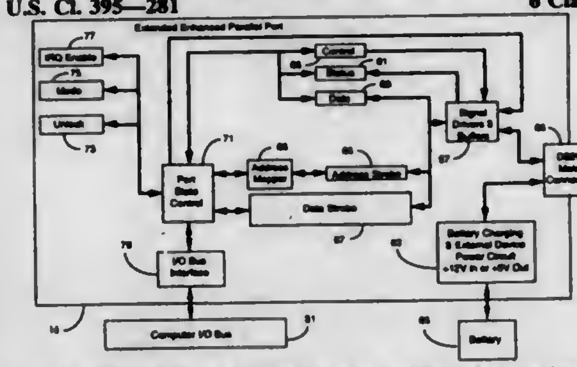
SYSTEM FOR EXTENDING ISA BUS WITHOUT USING DEDICATED DEVICE DRIVER SOFTWARE BY USING E^2P^2 INTERFACE WHICH PROVIDES MULTIPLEXED BUS SIGNAL THROUGH STANDARD PARALLEL PORT CONNECTOR

Dan Kikinis, Saratoga; William J. Seiler, Scotts Valley; Pascal Dornier, Sunnyvale, and William S. Jacobs, Santa Cruz, all of Calif., assignors to Elonex IP Holdings Ltd., London, United Kingdom

Division of Ser. No. 16,122, Feb. 10, 1993, Pat. No. 5,457,785. This application Jun. 30, 1995, Ser. No. 497,610

Int. Cl.^{6} G06F *13/00; 13/12; 13/20; 13/36*

U.S. Cl. 395—281 **6 Claims**



1. A computer having a CPU and an industry standard internal I/O (ISA) bus, comprising:

a standard parallel port (SPP) connector; and

a state-translation circuitry connected between said internal I/O bus and said SPP connector, once configured automatically and independently of the CPU and dedicated device driver software, multiplexing signals of the internal ISA bus onto pins of SPP connector, the signals including address signals from address lines of the internal bus;

wherein said CPU, upon power-up and reset of said computer, tests devices connected to the internal bus through the SPP connector for compatibility with a standard parallel port (SPP) communication mode, a standard enhanced parallel port (EPP) communication mode, and with a proprietary E^2P^2 communication mode, and configures the state-translation circuitry to operate in an appropriate mode according to the results of the compatibility tests performed during power-up and reset.

5,619,660

KEYING NOTCHES FOR SIDE CONTACTS ON A THIN FORM FACTOR COMPUTER CARD

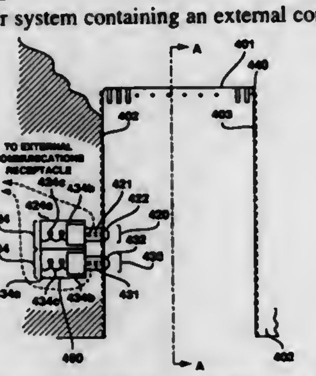
David C. Scheer, Pollock Pines; Robert J. Gormley, Citrus Heights; Michael E. Pierce, Orangeville, and Patrick E. Weston, Cameron Park, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Apr. 28, 1994, Ser. No. 234,481

Int. Cl.^{6} G06F *13/00*

U.S. Cl. 395—282 **13 Claims**

5. In a computer system containing an external communications



receptacle, a selectively-coupling integrated circuit (IC) card receptacle (1) for receiving the body of an IC card having a primary set of IC card contacts along a first surface and a secondary IC card contact recessed within a first recessed notch formed by a second surface and (2) for selectively electrically coupling said IC card to said computer system, said IC card receptacle comprising:

a primary surface and a plurality of secondary surfaces for receiving and supporting the body of said inserted IC card;

a primary electrical interface located along said primary surface to allow electrical interconnection between said primary set of IC card contacts with said computer system upon insertion of said IC card into said IC card receptacle;

a selectively-engaging secondary connection mechanism located near one of said plurality of secondary surfaces of said IC card receptacle for selectively coupling said secondary IC card contact to said external communications receptacle, said selectively-engaging secondary connection mechanism comprising:

an electrically conducting contact located near said secondary surface of said IC card receptacle, said electrically conducting contact being coupled to said external communications receptacle;

a positioning mechanism coupled to said electrically conducting contact for projecting and retracting said electrically conducting contact away from and toward said IC card;

a means for controlling said positioning mechanism such that direct contact between said electrically conducting contact and said second surface of said IC card is completely avoided during the insertion of the IC card into the IC card receptacle, and such that contact is capable of being established between said electrically conducting contact and said secondary IC card contact of said IC card only when said IC card is fully inserted into said IC card receptacle.

5,619,661

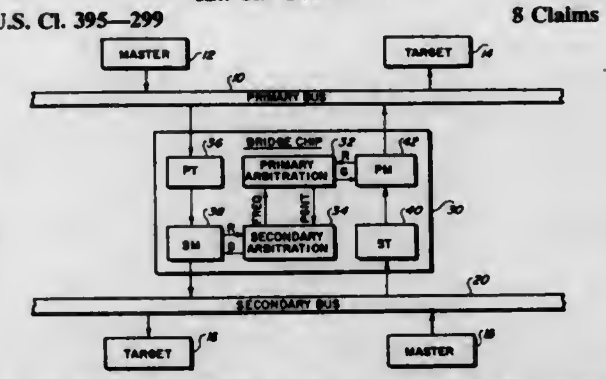
DYNAMIC ARBITRATION SYSTEM AND METHOD

Michael R. Crews, Phoenix, and Nicholas J. Richardson, Tempe, both of Ariz., assignors to VLSI Technology, Inc., San Jose, Calif.

Filed Jun. 5, 1995, Ser. No. 486,401

Int. Cl.^{6} G06F *13/14*

U.S. Cl. 395—299 **8 Claims**



1. A dynamic arbitration system for controlling data transfer between primary and secondary buses in a computer including in combination:

a primary bus having master and target components connected to it;

a secondary bus having master and target components connected to it;

a bridge controller having primary and secondary arbitration circuit members therein; and

detection logic in said bridge controller responsive to data transfer requests from said primary bus and from said secondary bus, said detection logic coupled with said primary and secondary arbitration circuit members to cause said primary and secondary arbitration circuit members normally to function independently in a concurrent arbitration mode and to cause said primary and secondary arbitration circuit members to switch to interlock arbitration in response to secondary-to-primary bus data transfer requests; and wherein said detection logic causes said primary and secondary arbitration members to switch back to said concurrent arbitration mode from interlocked arbitration in response to secondary-to secondary bus data transfer requests when said primary and secondary arbitration circuit members are operating in said interlocked arbitration mode.

5,619,662

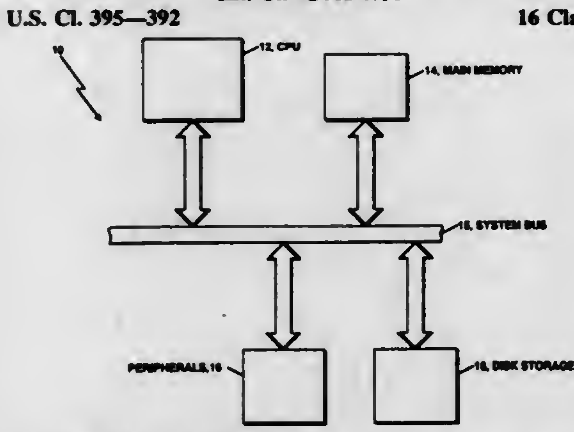
MEMORY REFERENCE TAGGING

Simon C. Steely, Jr., Hudson, N.H.; David J. Sager, Acton, and David B. Fite, Jr., Northborough, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 975,351, Nov. 12, 1992, abandoned. This application Aug. 12, 1994, Ser. No. 289,613

Int. Cl.^{6} G06F *9/30*

U.S. Cl. 395—392 **16 Claims**



1. Apparatus, comprising:

a write buffer cache responsive to memory reference instructions, comprising:

means for checking for collisions between memory reference instructions;

means, responsive to said collision checking means, for providing a tag for each one of a plurality of memory reference instructions;

means, addressed by an instruction address of said plurality of memory reference instructions, for storing said tags for each of said plurality of said memory reference instructions by an instruction address;

means for ordering execution of a first, fetched memory reference instruction after a second, fetched memory reference instruction, if a tag provided from said tag store means and associated with said first instruction is different than a tag provided from said tag store means and associated with said second instruction and for maintaining said order of first and second instructions if tags associated with each of said instructions are equal.

5,619,663

COMPUTER INSTRUCTION PREFETCH SYSTEM

Ori K. Mizrahi-Shalom, San Jose, Calif.; Farrell L. Ostler, Albuquerque, N.M., and Gregory K. Goodhue, San Jose, Calif., assignors to Philips Electronics North America Corp., New York, N.Y.

Filed Sep. 16, 1994, Ser. No. 308,051

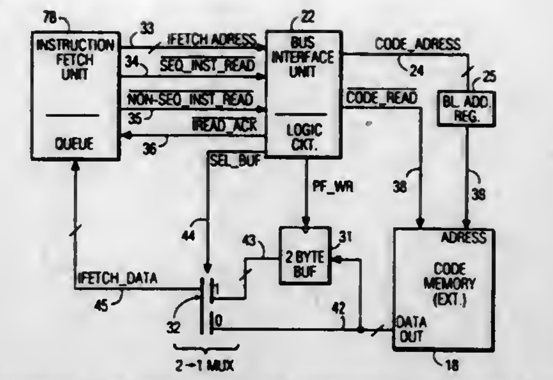
Int. Cl.^{6} G06F *9/38*

U.S. Cl. 395—383 **9 Claims**

1. A computer system comprising:

(a) a code memory divided into a plurality of M blocks each block containing a plurality of N addressable subblocks accessible via a first range of sequential addresses, said memory storing instructions in said plurality of blocks and subblocks,

(b) an instruction fetch unit for generating addresses for fetching instructions from said code memory one instruction word at a time, said instruction fetch unit being capable of generating



addresses for substantially all addressable locations of all blocks of the plurality of blocks,

(c) a prefetch buffer for storing only K subblocks representing code which is full or partial instructions, said number K being less than N,

(d) said instruction fetch unit having first means for storing the address of an instruction to be executed,

(e) second means, in response to said first means being loaded with the address of one subblock in one of said blocks, and prior to a non-sequential program flow change, for causing said prefetch buffer to fetch from the code memory and store in the prefetch buffer the instruction stored at the next subblock sequentially following the said one subblock in said one block until a subblock located in the next sequential block is reached, and

(f) third means for preventing the prefetch buffer from prefetching from the code memory a code stored at a subblock in another block that is different from said one block until said first means is first loaded with the address of a subblock in said another block.

5,619,664

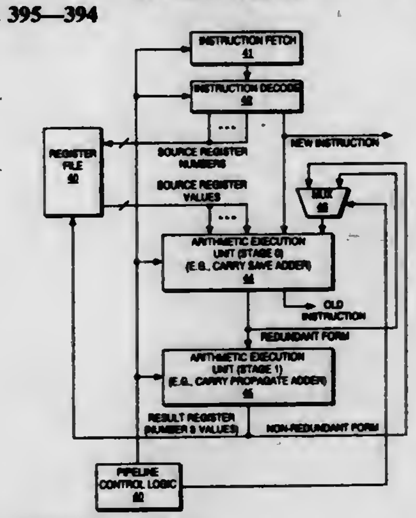
PROCESSOR WITH ARCHITECTURE FOR IMPROVED PIPELINING OF ARITHMETIC INSTRUCTIONS BY FORWARDING REDUNDANT INTERMEDIATE DATA FORMS

Andrew F. Glew, Hillsboro, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 176,783, Jan. 4, 1994, abandoned. This application Mar. 10, 1995, Ser. No. 402,322

Int. Cl.^{6} G06F *9/30*

U.S. Cl. 395—394 **9 Claims**



1. A processor comprising:

a decoder that decodes a first and a second instruction;

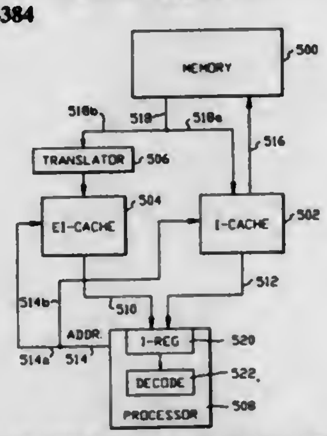
a register file coupled to the decoder that stores source operand values specified by the first and second instructions;

an arithmetic execution unit, coupled to the decoder, having an operand bypass network that receives the source operand values from the register file;

pipeline control logic, coupled to the decoder and the operand bypass network, that causes the operand bypass network to forward a redundant intermediate result generated during a first execution stage of the first instruction when the first instruction involves inter arithmetic and the second instruction involves inter arithmetic, comparison of two non-zero values, memory addressing, data storage, multiplication or division and that causes the operand bypass network to forward a non-redundant result generated during a second execution stage of the first instruction when the second instruction involves logic and zero comparison.

5,619,665
METHOD AND APPARATUS FOR THE TRANSPARENT EMULATION OF AN EXISTING INSTRUCTION-SET ARCHITECTURE BY AN ARBITRARY UNDERLYING INSTRUCTION-SET ARCHITECTURE

Philip G. Emma, Danbury, Conn., assignor to Intrnational Business Machines Corporation, Armonk, N.Y.
Filed Apr. 13, 1995, Ser. No. 421,344
Int. Cl.⁶ G06F *9/455*
U.S. Cl. 395—384 23 Claims

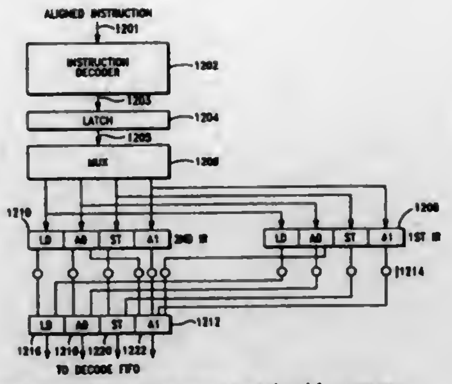


1. A method for translating a series of one or more instructions of a first semantic type into one or more instructions of a second semantic type, comprising the steps of:
providing a first memory;
providing a second memory;
translating a sequence of instructions of the first semantic type stored in the first memory into one or more primary instructions of the second semantic type and storing the instructions of the second type in the second memory;
upon a request from the processor for the sequence of instructions of the first semantic type:
providing the corresponding instructions of the second semantic type if available in the second memory;
providing the sequence of instructions of the first semantic type if the corresponding instructions of the second semantic type are not available in the second memory.

5,619,666
SYSTEM FOR TRANSLATING NON-NATIVE INSTRUCTIONS TO NATIVE INSTRUCTIONS AND COMBINING THEM INTO A FINAL BUCKET FOR PROCESSING ON A HOST PROCESSOR

Brett Coon, San Jose; Yoshiyuki Miyayama, Santa Clara; Le Trong Nguyen, Monte Sereno, and Johannes Wang, Redwood City, all of Calif., assignors to Seiko Epson Corporation, Tokyo, Japan
Continuation of Ser. No. 857,599, Mar. 31, 1992, Pat. No. 5,438,668. This application Jun. 2, 1995, Ser. No. 460,272
Int. Cl.⁶ G06F *9/30; 9/315*
U.S. Cl. 395—384 12 Claims

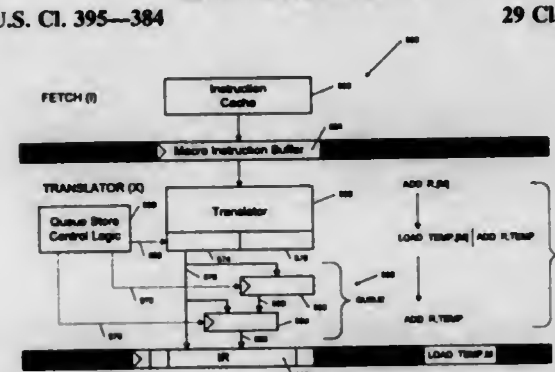
1. A computer system, comprising:
a processor;
a memory; and



a bus connecting said processor and said memory,
wherein said processor can translate a stream of non-native instructions to native instructions, said processor further comprising:
(a) means for receiving the stream of non-native instructions from said memory via said bus;
(b) means for translating the stream of non-native instructions into native instructions, wherein non-native instructions are converted into less than a predetermined number of native instructions;
(c) means for storing at least two groups of said native instructions in at least two intermediate buckets, wherein said at least two intermediate buckets can store up to said predetermined number of native instructions; and
(d) means for combining a subset of said at least two groups of said native instructions into a final bucket, so as to allow issuing of said subset of said native instructions of said final bucket on the host processor, wherein said final bucket has a maximum capacity of said predetermined number of native instructions.

5,619,667
METHOD AND APPARATUS FOR FAST FILL OF TRANSLATOR INSTRUCTION QUEUE

Glenn Henry, and Terry Parks, both of Austin, Tex., assignors to Integrated Device Technology, Inc., Santa Clara, Calif.
Filed Mar. 29, 1996, Ser. No. 626,249
Int. Cl.⁶ G06F *9/30; 9/38*
U.S. Cl. 395—384 29 Claims

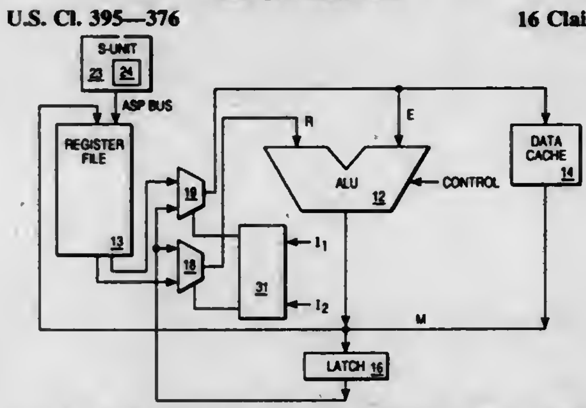


1. A pipeline processor system, for executing macro instructions, the system comprising:
an instruction cache, for storing said macro instructions;
a translator, connected to said instruction cache, for retrieving said macro instructions from said instruction cache, and for translating said macro instructions into a plurality of micro instructions, said translator comprising:
a macro instruction buffer, for temporarily storing macro instructions retrieved from said instruction cache;
translate/decode logic connected to said macro instruction buffer, for translating said macro instructions in said macro instruction buffer into said plurality of micro instructions; and

a plurality of output buffers for temporarily storing said plurality of micro instructions;
an instruction register, connected to said translator, for storing said plurality of micro instructions, for execution in later stages in said pipeline processor system; and
an instruction queue, connected between said translator and said instruction register, also for receiving said plurality of micro instructions from said translator, for temporarily storing said plurality of micro instructions, and for providing said plurality of micro instructions to said instruction register, said instruction queue comprising:
a plurality of queue buffers, connected to said output buffers, for receiving said plurality of micro instructions from said output buffers, and for temporarily storing said plurality of micro instructions; and
queue store control logic, connected to said translator, and to said plurality of queue buffers, for storing select ones of said plurality of micro instructions into select ones of said plurality of queue buffers, and for later providing said select ones of said plurality of micro instructions to said instruction register;
whereby, said translator provides at least two of said plurality of micro instructions, in parallel, to said instruction queue, and to said instruction register.

5,619,668
APPARATUS FOR REGISTER BYPASSING IN A MICROPROCESSOR

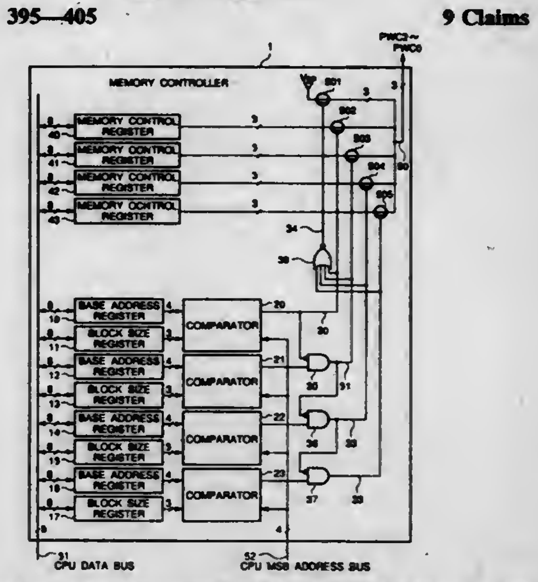
Syed A. A. Zaidi, Santa Clara, Calif., assignor to Intel Corporation, Santa Clara, Calif.
Continuation of Ser. No. 927,708, Aug. 10, 1992, abandoned. This application Sep. 22, 1994, Ser. No. 310,933
Int. Cl.⁶ G06F *9/38*
U.S. Cl. 395—376 16 Claims



1. A microprocessor having an architecture for pipelining instructions to reduce the time necessary to execute sequential instructions comprising:
a) a first arithmetic logic unit (ALU) and a second ALU, each ALU having a first data input, a second data input and a data output;
b) a register file including individual registers from which data is read for operations by the ALUs and to which data is written which results from operations of the ALUs, the register file having at least one write port which receives data from the ALUs and at least one read port which provides data to the ALUs;
c) a first latch having an input coupled to receive data from the output of the first ALU;
d) a second latch having an input coupled to receive data from the output of the second ALU; and
e) a mechanism configured to provide updated data to at least one of the ALUs, the updated data originating from one of the latches, wherein each ALU may begin processing an instruction using the updated data from one of the latches before a result of an immediately previous instruction is written to a particular register.

5,619,669
MEMORY WAIT CYCLE CONTROL SYSTEM FOR MICROCOMPUTER

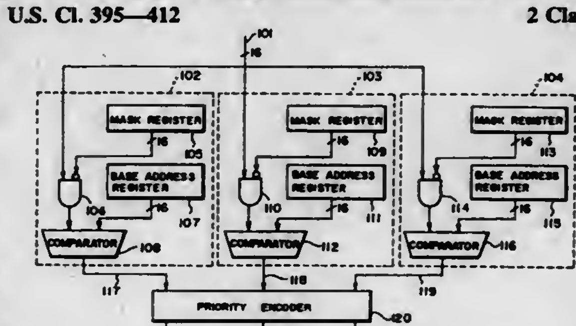
Hiroshi Katsuta, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed May 12, 1993, Ser. No. 60,955
Claims priority, application Japan, May 12, 1992, 4-118671
Int. Cl.⁶ G06F *12/00*
U.S. Cl. 395—405 9 Claims



5. A wait-cycle memory controller for controlling wait cycles for a memory partitioned into a plurality of blocks, comprising:
a plurality of memory control registers each for storing a wait data for a corresponding block in a memory;
a plurality of block registers for defining a starting address and a size of a corresponding block in memory;
a plurality of comparators, connected between said plurality of memory control registers and said plurality of block registers, for determining when a requested memory address is located in a corresponding one of said plurality of memory blocks, and for causing a corresponding one of said plurality of control registers to output said wait data; and
default control means for managing a control condition of a memory space which is not include in any one of said memory blocks.

5,619,670
ADDRESS DECODER WITH SMALL CIRCUIT SCALE AND ADDRESS AREA EXPANSION CAPABILITY

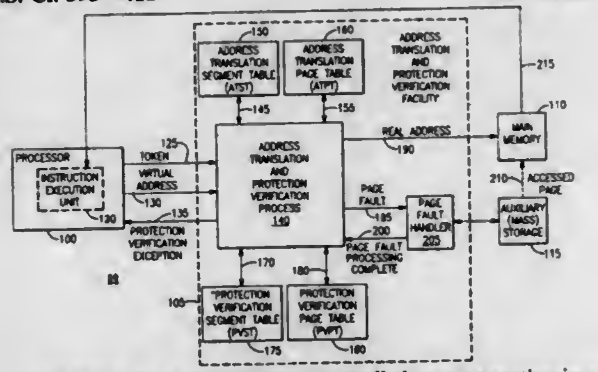
Keisuke Shindo, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Jul. 26, 1994, Ser. No. 280,531
Claims priority, application Japan, Jul. 26, 1993, 5-184112
Int. Cl.⁶ G06F *12/00; 12/02; 9/26; 9/34*
U.S. Cl. 395—412 2 Claims



1. An address decoder for decoding an address outputted from a processor, said address decoder comprising:

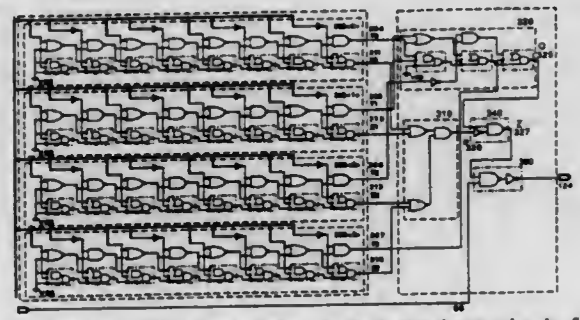
a base address register having a same bit length as said address to be decoded, for storing therein a value of a base address of a predetermined area in an address space;
a mask register having a same bit length as said address, for storing therein a mask value;
masking means for masking said address outputted from said processor for each bit with said mask value stored in said mask register; and
a comparator for comparing a resulting value of masking conducted by said masking means and said value of the base address stored in said base address register to determine whether two compared values are in accord and for outputting an address decoded signal as a result of comparison,
said mask value stored in said mask register being such that said resulting value of masking conducted by said masking means is in accord with said value of the base address stored in said base address register if the address outputted from the processor is an address within said predetermined area,
wherein said masking means is an AND gate which takes a logical AND operation of each bit for said address outputted from said processor and an inverted value taken for each bit from said mask value stored in said mask register.

5,619,671
METHOD AND APPARATUS FOR PROVIDING TOKEN CONTROLLED ACCESS TO PROTECTED PAGES OF MEMORY
Barbara J. Bryant, Clinton Corners, and Glen E. Garrison, Wallkill, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 50,694, Apr. 19, 1993, abandoned. This application Jan. 31, 1996, Ser. No. 594,406
Int. Cl.[6] G06F *12/10;12/14;13/16*
U.S. Cl. 395—412 **16 Claims**



1. Apparatus for providing token controlled page protection in a virtual memory computer, said apparatus comprising:
means for translating, in response to a program requesting access to a page of memory to perform a predetermined operation on said page of memory, a virtual page address provided by said program into a real page address;
means, connected to said translating means, for determining if said real page address corresponds to a protected page of memory with respect to said program and said predetermined operation;
means, connected to said translating means and operating in response to said determining means determining that said real page address corresponds to said protected page of memory, for producing a first token associated with said protected page of memory, said program and said predetermined operation;
means, connected to said producing means, for comparing said first token to a second token supplied by said program requesting access to said protected page of memory; and
means, connected to said comparing means, for permitting access to said protected page of memory for said program to perform said predetermined operation if said first token equals said second token; otherwise, denying access to said protected page.

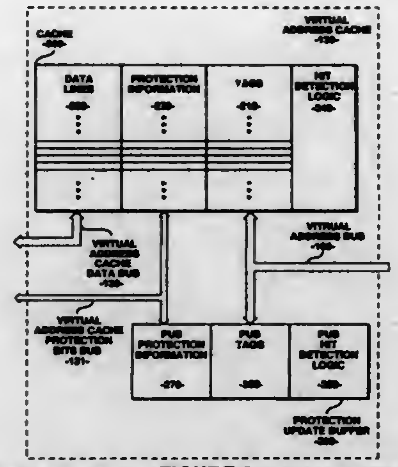
5,619,672
PRECISE TRANSLATION LOOKASIDE BUFFER ERROR DETECTION AND SHUTDOWN CIRCUIT
Yue-Hong Sutu, Pleasanton, and Paul K. French, Cupertino, both of Calif., assignors to Silicon Graphics, Inc., Mountain View, Calif.
Filed May 17, 1994, Ser. No. 245,983
Int. Cl.[6] G06F *12/10*
U.S. Cl. 395—417 **13 Claims**



1. A precise TLB error detection and shutdown circuit for detecting a physical address selection error that results when two or more tag entries in a TLB match a virtual address received from an execution unit of a computer and for generating an output TLB shutdown indicator upon detecting the physical address selection error, the precise error detection and shutdown circuit comprising:
an input n-bit tag compare indicator from a tag comparator circuit of the TLB and an input address translation cycle indicator from a control logic unit of the TLB;
an array of n error detection unit <i>, wherein i comprises a positive integer ranging from 0 to (n−1) and n corresponds to the numeral n of the n-bit tag compare indicator, each error detection unit <i> includes:
a first input bit B<i>, the input B<i> corresponding to an associated bit <i> of the n-bit tag compare indicator;
a second input bit A<i>;
a third input bit C<i>;
a first output bit Y<i>, the output Y<i> indicating a result of detecting one or more matching tag entries in a set of input bits B[i . . . 0], and
a second output bit X<i>, the output X<i> indicating a result of detecting two or more matching tag entries in the set of input bits B[i . . . 0], and
wherein for i=0, bit A<i> and bit C<i> are coupled to receive an initialized bit, and
wherein for i>0, each error detection unit <i> is coupled to another, such that bit A<i> is coupled to receive a first output bit Y<i−1> from detection unit <i−1>, while bit C<i> is coupled to receive a second output bit X<i−1> from detection unit <i−1>; and
a TLB shutdown circuit, the TLB shutdown circuit coupled to receive the address translation cycle indicator and a terminal output bit X<n−1> from the terminal error detection unit <n−1> of the array of error detection unit <i>, the shutdown circuit generating the output TLB shutdown indicator in response to detecting an active state in the address translation cycle indicator and an active state in the output bit X<n−1>.

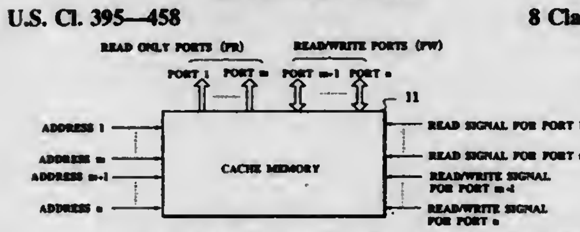
5,619,673
VIRTUAL ACCESS CACHE PROTECTION BITS HANDLING METHOD AND APPARATUS
Wen-Hann Wang, Portland, Oreg., assignor to Intel Corporation, Santa Clara, Calif.
Continuation of Ser. No. 268,222, Jun. 29, 1994, abandoned. This application Mar. 7, 1996, Ser. No. 610,802
Int. Cl.[6] G06F *12/14*
U.S. Cl. 395—417 **15 Claims**

1. An apparatus in an information processing hardware module comprising:



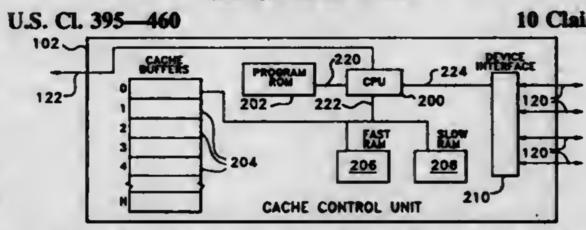
a cache for storing a plurality of address tags, a plurality of sets of data protection information, and a plurality of data lines;
a logic unit coupled to said cache, said logic unit for detecting a match between an address tag and an input address, said logic unit providing a first signal when said match is detected which enables said cache to output a portion of a data line and a set of data protection information; and
a protection update buffer, coupled to said logic unit, said protection update buffer for storing a plurality of protection update buffer tags, and for providing a second signal to said logic unit, said second signal being in a predetermined state in response to said input address matching one of said plurality of protection update buffer tags, said second signal indicating said set of data protection information has been updated, said logic unit simultaneously checking for said matches between said input address, said address tags, and said protection update buffer tags.

5,619,674
MULTIPORT CACHE MEMORY HAVING READ-ONLY PARTS AND READ-WRITE PARTS
Nobuyuki Ikumi, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Continuation of Ser. No. 733,720, Jul. 22, 1991, abandoned. This application Aug. 24, 1994, Ser. No. 294,793
Claims priority, application Japan, Jul. 27, 1990, 2-197644
Int. Cl.[6] G01F *12/08*
U.S. Cl. 395—458 **8 Claims**



1. A multiport cache memory composed of a static random access memory which includes a plurality of field effect transistors, comprising:
a plurality of latch circuits each for storing a bit of information;
a plurality of read/write ports for selectively accessing said plurality of latch circuits, each one of said plurality of read/write ports being available for either of a read operation from said multiport cache memory and a write operation to said multiport cache memory;
a plurality of read only ports for selectively accessing said plurality of latch circuits, each of said plurality of read only ports being available only for the read operation from said multiport cache memory; and
a plurality of bit lines and word lines, through which said plurality of read/write ports and said plurality of read only ports access said plurality of latch circuits,
wherein a hardware amount of each of said read only ports is reduced as compared to a hardware amount of each of said read/write ports due each of said read only ports being available only for the read operation.

5,619,675
METHOD AND APPARATUS FOR CACHE MEMORY MANAGEMENT USING A TWO LEVEL SCHEME INCLUDING A BIT MAPPED CACHE BUFFER HISTORY TABLE AND CIRCULAR CACHE BUFFER LIST
Patrick A. L. De Martine, Littleton, and Michael S. Milillo, Louisville, both of Colo., assignors to Storage Technology Corporation, Louisville, Colo.
Continuation of Ser. No. 259,506, Jun. 14, 1994, abandoned. This application May 20, 1996, Ser. No. 650,661
Int. Cl.[6] G06F *12/16*
U.S. Cl. 395—460 **10 Claims**



1. In a mass storage system connectable to a host computer system through a cache buffer management subsystem comprising a plurality of cache buffers for storing data, a method for locating one of said plurality of cache buffers to be overwritten with data, using a two level cache buffer management process, comprising the steps of:
maintaining a cache buffer history table which indicates cache buffer usage on a per cache buffer basis for each of N predetermined time intervals, where N is a positive integer greater than 1;
maintaining a cache buffer list, comprising a circular list having a plurality of entries to identify cache buffer usage in chronological order, including, in response to a reference to a cache buffer during the present one of said N predetermined time intervals, performing the steps of:
determining whether said referenced cache buffer has not been previously referenced by said host computer system during said present one of said N predetermined time intervals; and
in response to said determination that said referenced cache buffer has not been previously referenced by said host computer system during said present one of said N predetermined time intervals, adding an entry to said circular list, the added entry containing information identifying said referenced cache buffer;
in response to a request to locate any one of said cache buffers available to be overwritten, performing the steps of:
locating in said circular list an entry identifying the oldest one of said plurality of cache buffers which was previously referenced by said host computer system;
checking said identified oldest cache buffer in said cache buffer history table to determine whether said identified oldest cache buffer has been used during said N predetermined time intervals;
if said identified oldest cache buffer has been used during said N predetermined time intervals, selecting the next oldest cache buffer and repeating said steps of locating and checking until the oldest cache buffer which has not been referenced by said host computer system during said N predetermined time intervals is located; and
providing said identified oldest one of said plurality of cache buffers for receipt of new data read from said mass storage system by said host computer system.

5,619,676

HIGH SPEED SEMICONDUCTOR MEMORY INCLUDING A CACHE-PREFETCH PREDICTION CONTROLLER INCLUDING A REGISTER FOR STORING PREVIOUS CYCLE REQUESTED ADDRESSES

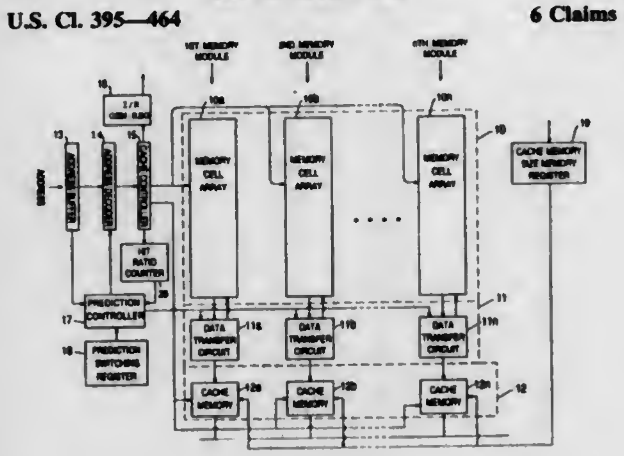
Naoyuki Fukuda, Nara-ken; Yukihiro Yoshida, Ikoma; Noboru Kubo, Yamatokoriyama, and Kazuo Kinosita, Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 205,881, Mar. 3, 1994, abandoned. This application Jul. 2, 1996, Ser. No. 675,367

Claims priority, application Japan, Mar. 4, 1993, 5-044176; Sep. 2, 1993, 5-218918

Int. Cl.⁶ G06F *12/02*

U.S. Cl. 395—464 **6 Claims**



1. A high speed semiconductor memory comprising at least one memory module and a cache controller;

the memory module including a plurality of memory cells for storing data and a cache memory for storing part of the data stored in the plurality of memory cells;

the cache controller comprising a hit ratio counter for obtaining an average cache hit ratio and a comparator for comparing an input threshold value with the average cache hit ratio,

a prediction equation memory for storing a plurality of address modification prediction equations,

wherein the cache controller determines whether or not data corresponding to an input address is stored in the cache memory; allows the data to be output from the cache memory when the data is stored in the cache memory; and allows the data to be read out from the plurality of memory cells to be stored in the cache memory so as to update memory contents of the cache memory; and

wherein a data transfer request signal is generated for transferring the data from the memory cells to the cache memory when the average cache hit ratio is lower than the threshold value, and

wherein the memory further comprises a prediction controller for receiving the data transfer request signal and determining a first address for the data to be transferred from the memory cells to the cache memory, the prediction controller including a register for storing the input addresses in past several cycles, and determining the first address of the data to be transferred from the memory cells to the cache memory based on a selected one of said plurality of address modification prediction equations and the input addresses in the past several cycles, each of the address modification prediction equations being a function of input addresses.

5,619,677

DATA PROCESSING SYSTEM WITH AN ENHANCED CACHE MEMORY CONTROL

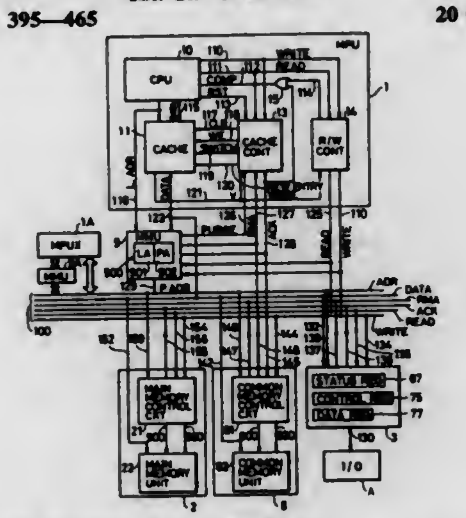
Tadahiko Nishimukai, Sagamihara; Atsushi Hasegawa, Koganei, and Masaru Matsumura, Hachioji, all of Japan, assignors to Hitachi, Ltd., and Hitachi Micro Computer Engineering, Ltd., both of Tokyo, Japan

Continuation of Ser. No. 540,218, Oct. 6, 1995, abandoned, which is a continuation of Ser. No. 435,958, May 5, 1995, Pat. No. 5,509,133, which is a continuation of Ser. No. 804,739, Dec. 11, 1991, Pat. No. 5,479,625, which is a continuation of Ser. No. 183,401, Apr. 8, 1988, Pat. No. 5,148,526, which is a continuation of Ser. No. 694,126, Jan. 23, 1985, abandoned. This application May 17, 1996, Ser. No. 649,333

Claims priority, application Japan, Jan. 23, 1984, 59-8572; Jun. 1, 1994, 6-110764

Int. Cl.⁶ G06F *12/08*

U.S. Cl. 395—465 **20 Claims**



1. A data processing system comprising:

a processor having a logical address output and data lines;

a logical address to physical address translator connected to the logical address output of the processor, the translator having a physical address output;

a memory having data lines connected to the data lines of the processor and an address input connected to the physical address output of the translator;

a cache memory having data lines connected to the data lines of the processor and the memory, the cache further having a write enable input; and

a logical circuit having an input connected to the physical address output of the translator and an output connected to the write enable input of the cache memory, the logical circuit upon receipt of a physical address corresponding to a particular region in the memory, providing an inactive signal to the write enable input of the cache memory thereby disabling the cache memory.

5,619,678

ELECTRONIC DEVICE FOR CORRECTION OF ROM DATA WITH A PARAMETER FOR CALCULATION OF POSITION OF CORRECTION DATA

Iwao Yamamoto, Tokyo, and Sunao Furui, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sep. 16, 1993, Ser. No. 122,904

Claims priority, application Japan, Sep. 19, 1992, 4-274943

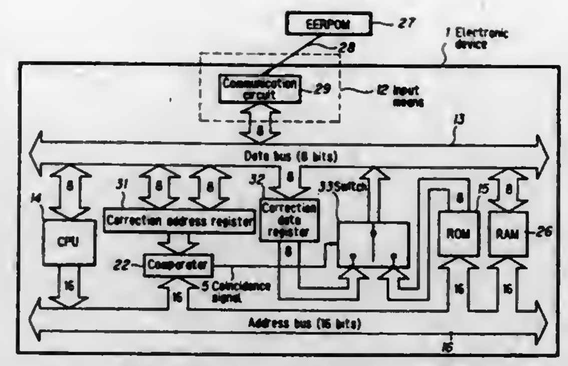
Int. Cl.⁶ G06F *9/42;12/06*

U.S. Cl. 395—492 **7 Claims**

1. An electronic device having an integrated structure comprising:

central processing means for accessing stored information and calculation processing;

fixed storage means for storing information;



input means for inputting correction information for correcting a specific part of the information stored in the fixed storage means;

correction information storage means for storing the correction information input from the input means;

change-over means for switching access by the central processing means from an area in which the specific part of the information stored in the fixed storage means is stored, to the correction information storage means;

means for starting the operation of switching access by the central processing means from the fixed storage means to the correction information storage means based on a table call command;

means for returning access by the central processing means from the correction information storage means to the fixed storage means based on a jump command; and

means for scrapping return address data stored in a stack, before access by the central processing means is returned from the correction information storage means to the fixed storage means, based on a table call command; and

wherein the correction information includes at least batch correction data for correcting the specific part of the information stored in the fixed storage means and a parameter for calculating a storage position of the batch correction data in the correction information storage means.

5,619,679

MEMORY CONTROL DEVICE AND METHOD OPERATED IN CONSECUTIVE ACCESS MODE

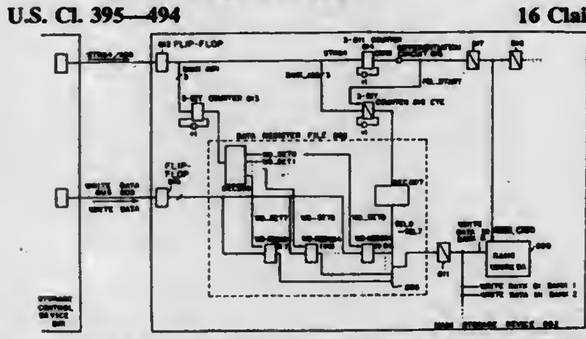
Takashi Ibi, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 28, 1995, Ser. No. 396,110

Claims priority, application Japan, Mar. 14, 1994, 6-042105

Int. Cl.⁶ G06F *12/00*

U.S. Cl. 395—494 **16 Claims**



1. A memory control device which receives a request to transfer a series of first-unit data in an address space, divides the first-unit data into second-unit data, assigns priority levels to the second-unit data, issues a data transfer instruction plural times to transfer the second-unit data to a memory device comprising a plurality of memories operable in a consecutive access mode, and thus accesses the memories in response to the request to transfer the first-unit data, comprising:

means for sequentially allocating in third units the second-unit data specified by the data transfer instruction to the memories of at most a number obtained by dividing the first unit by the third unit, said third unit being equal to the second unit or being obtained by dividing the second unit and being a multiple of an activation unit of the memories; and

means for accessing data in the allocated memories in the third units in consecutive access mode.

5,619,680

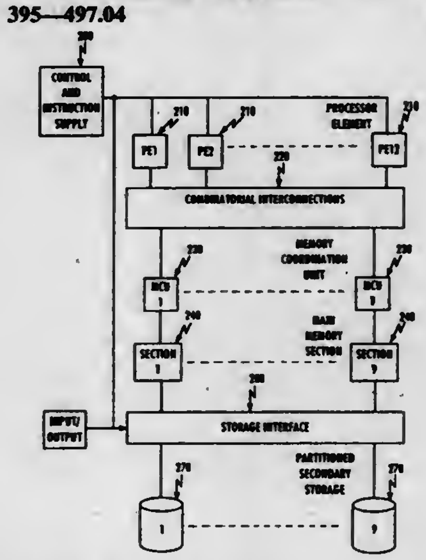
METHODS AND APPARATUS FOR CONCURRENT EXECUTION OF SERIAL COMPUTING INSTRUCTIONS USING COMBINATORIAL ARCHITECTURE FOR PROGRAM PARTITIONING

Semyon Berkovich, and Efraim Berkovich, both of 11918 Stonewood La., Rockville, Md. 20852

Filed Nov. 25, 1994, Ser. No. 348,097

Int. Cl.⁶ G06F *13/00*

U.S. Cl. 395—497.04 **12 Claims**



1. A computer system for concurrent execution of a serial program comprising:

a. a memory, partitioned into memory blocks;

b. a plurality of memory control units, each memory control unit controlling access to a respective memory block;

c. a plurality of processing elements;

d. an interconnection network of combinatorial design connecting each processing element to two or more memory control units; and

e. means for allocating instructions of the serial program to a processing element of the plurality of processing elements based on the addresses of the operands specified within instructions.

5,619,681

DELAYED FIFO STATUS FOR SERIAL SHIFT EMULATION

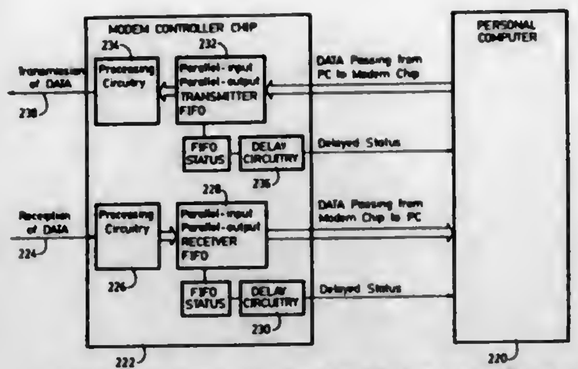
Boubekeur Benhamida, Boise; Grant Richards, Meridian, both of Id.; Stephen H. Chan, Sunnyvale, Calif.; Gyle Yearsley, Boise, Id., and Jim Nobugaki, Asao-ku, Japan, assignors to Zilog, Inc., Campbell, Calif.

Continuation-in-part of Ser. No. 980,372, Nov. 23, 1992, abandoned. This application Jun. 30, 1993, Ser. No. 85,030

Int. Cl.⁶ G06F *9/455;13/00*

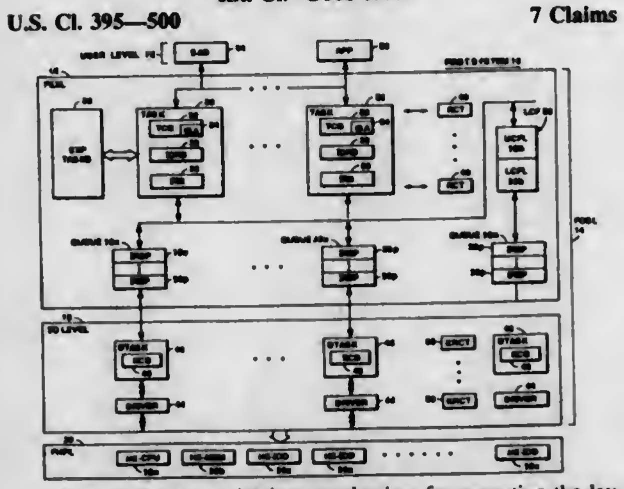
U.S. Cl. 395—500 **15 Claims**

2. A circuit on a semiconductor chip for communicating to a PC that includes software designed to expect indications at time intervals being approximately the amount of time to fill a serial shift first-in first-out buffer, said circuit comprising:



a parallel input, parallel output first-in first-out buffer which receives data in parallel and sends data in parallel to the PC;
means connected to said parallel input, parallel output buffer for producing a first indication of the condition of the parallel input, parallel output buffer; and
means connected to the producing means for emulating the status bits produced by a serial shift first-in first-out buffer, said emulating means sends a delayed indication of the status of the parallel input, parallel output buffer in a manner to emulate a serial shift first-in first-out buffer, wherein said parallel input, parallel output first-in first-out buffer is accessed with a write and read pointer and said first indication producing means comprises an arithmetic logic unit for producing a character count from the difference between said write and read pointers.

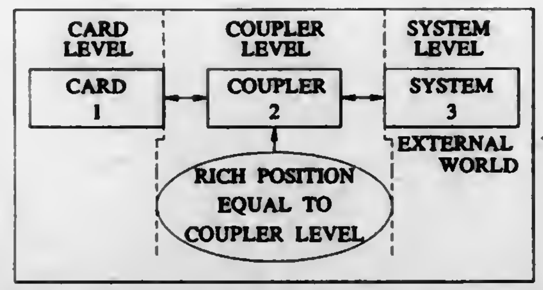
5,619,682
EXECUTING NETWORK LAYERED COMMUNICATIONS OF A FIRST SYSTEM ON A SECOND SYSTEM USING A COMMUNICATION BRIDGE TRANSPARENT TO THE DIFFERENT COMMUNICATION LAYERS
Bruce D. Mayer, Arlington; Martin Berkowitz, Newton, and Sudershan K. Sharma, Brookline, all of Mass., assignors to Bull HN Information Systems Inc., Billerica, Mass.
Filed Sep. 28, 1993, Ser. No. 127,925
Int. Cl.[6] G06F *3/00*
U.S. Cl. 395—500 **7 Claims**



1. A layered communications mechanism for executing the layered communications operations of a first system on a second system, the first system including a user level, an executive level, an input/output level and a hardware platform, the user level including at least one user program and at least one executive program for managing operations of the first data processing system and the hardware platform including a layered communications device, the executive level including at least one user task performing user level program operations and at least one executive task performing executive program operations, the user and executive tasks generating requests for first system layered communications operations and a first layered communications mechanism for responsive to the requests for layered communications operations for executing the layered communications operations of the first system, the first layered communications mechanism including a plurality of hierarchically organized layers for performing communications layer operations, the input/output level including an input/output task responsive to the first layered communications mechanism for controlling the first system input/output device in performing layered communications operations, the layered communications mechanism executing on the second system and comprising:
a second system user level process executing in a user level of the second data processing system, the second system user level process including
the first system user level program,
the first system executive program,
the first system user and executive tasks, and
at least one upper communications layer of the first communications layer mechanism,
a kernel level, including
a layered communication kernel process executing layered communications layers of the second system corresponding to all layers of the layered communications mechanism below the at least one upper communications layer of the first communications layer mechanism executing in the user level process, and
a layered communications bridge mechanism connected between the at least one upper communications layer of the first communications layer mechanism executing in the user level process and the layered communication kernel process,
the layered communications bridge mechanism including
an upper communications layer bridge mechanism connected from the at least one upper communications layer of the first communications layer mechanism executing in the user level process and operating to appear to the lowest layer of the at least one upper communications layer of the first communications layer mechanism to be the next lower layer of the first layered communications mechanism, and
a lower communications layer bridge mechanism connected between the upper communications layer bridge mechanism and the layered communication kernel process and operating to appear to the upper layer of the layered communications layers of the second system executing in the communications kernel process to be the next higher layer of the layered communications layers of the second system,
the upper communications layer bridge mechanism and the lower communications layer bridge mechanism operating to map between the operations of the lowest layer of the at least one upper communications layer of the first communications layer mechanism and the upper layer of the layered communications layers of the second system executing in the communications kernel process, and
a second system hardware platform including,
a second system layered communications input/output device responsive to the layered communication kernel process for executing the layered communications operations.

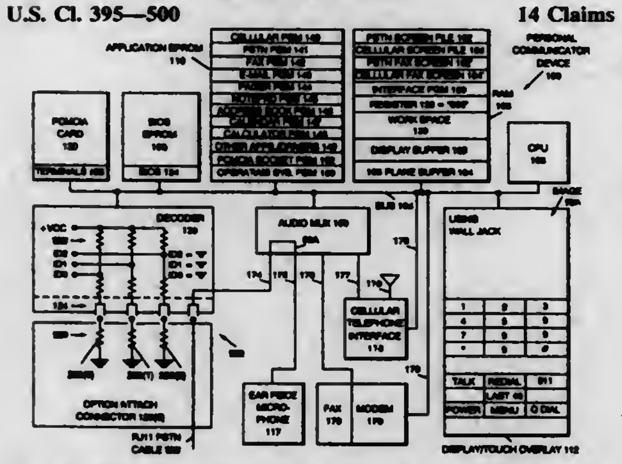
5,619,683
REFERENCE INTERNATIONAL CARD HARMONIZATION COUPLER
Hans-Diedrich Kreft, Dassendorf, Germany, assignor to Angewandte Digital Electronik, Dassendorf, Germany
Filed May 13, 1994, Ser. No. 242,112
Claims priority, application European Pat. Off., May 13, 1993, 93107810
Int. Cl.[6] G06F *15/30;* **G07F** *19/00*
U.S. Cl. 395—500 **19 Claims**

1. A coupling apparatus for physical and communication activities between a card level and a system level, wherein the card level is a standardized technical environment produced by an integrated circuit card and wherein the system level is a standardized technical environment produced by a card level independent device



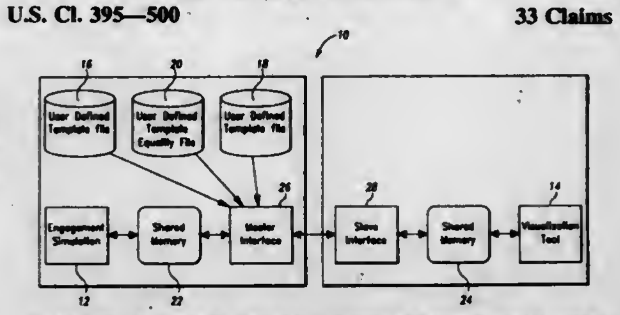
which is prepared to interact with the card level, said coupling apparatus comprising a mechanic board and an operating system and further wherein the coupling apparatus transmits a test to either the system level or the card level.

5,619,684
METHOD AND APPARATUS FOR CONSISTENT USER INTERFACE IN A MULTIPLE APPLICATION PERSONAL COMMUNICATIONS DEVICE
Julie F. Goodwin, Boca Raton; Debra A. G. Johnson, Fort Lauderdale; James R. Lewis, Coconut Creek; David J. Rasmussen; Byron K. Tiller, both of Boca Raton, and Raymond L. Yee, Coral Springs, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jul. 25, 1994, Ser. No. 279,413
Int. Cl.[6] H04L *12/00*
U.S. Cl. 395—500 **14 Claims**



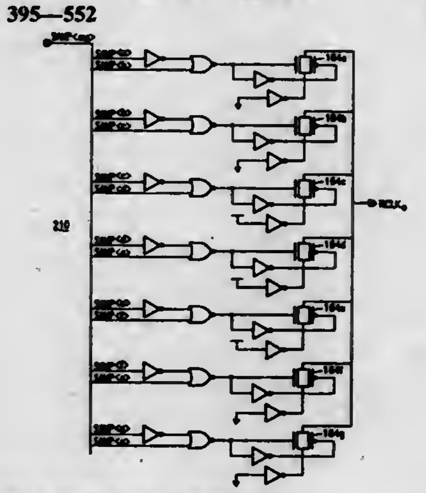
5. A method for providing a consistent user interface in a self-contained multiple application personal communications device for both cellular and PSTN communications, comprising:
identifying that a first option attach connector is connected to a receptacle of the device, and in response thereto, causing an execution of a first portion of a program means corresponding to PSTN communications stored in the device;
displaying a corresponding first E-MAIL interface image on a display screen with said first portion of said program means;
identifying an absence of the first option attach connector and in response thereto, causing a second portion of the program means corresponding to cellular communications to be executed;
displaying a corresponding second E-MAIL interface image on the display screen with said second portion of said program means.

5,619,685
RUN-TIME DYNAMICALLY ADAPTIVE COMPUTER PROCESS FOR FACILITATING COMMUNICATION BETWEEN COMPUTER PROGRAMS
Daniel P. Schiavone, Beavercreek, Ohio, assignor to Ball Corporation, Muncie, Ind.
Filed Nov. 4, 1994, Ser. No. 334,596
Int. Cl.[6] G06F *17/30;13/00*
U.S. Cl. 395—500 **33 Claims**



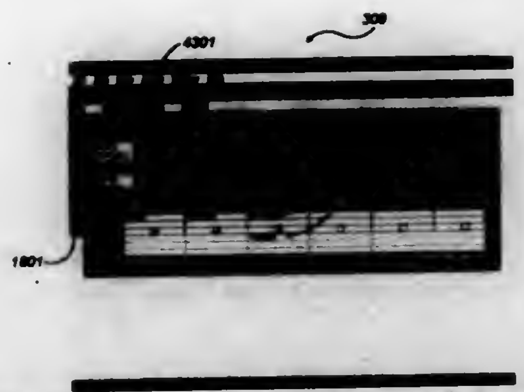
1. An interface for facilitating communications among a plurality of computer programs connected by a communications program, the interface comprising:
a template file for each of the plurality of computer programs, each template file defining data for its respective computer program and allocating memory for the data, and
a plurality of equality files, each equality file equating data of one of the plurality of computer programs with data of another of the plurality of computer programs,
means for transmitting equated data from one of the plurality of computer programs to another of the plurality of computer programs.

5,619,686
SOURCE SYNCHRONIZED DATA TRANSMISSION CIRCUIT
Allan Lin, San Jose, and Jay Deng, Union City, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.
Filed Nov. 18, 1993, Ser. No. 154,744
Int. Cl.[6] G06F *1/06*
U.S. Cl. 395—552 **31 Claims**



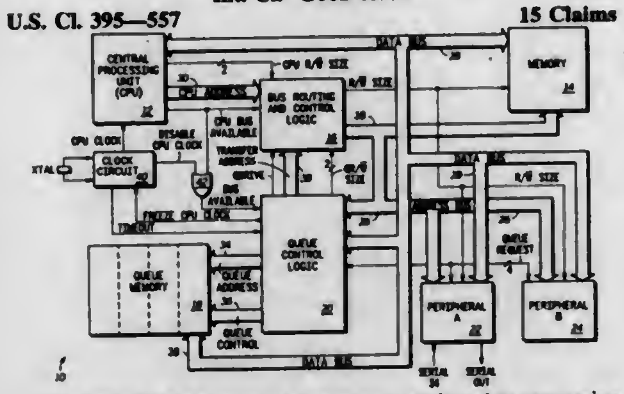
1. A data source circuit, comprising:
means for receiving a periodic source clock signal having a period T;
a synchronization signal generator for generating, based on said source clock signal, a series of two or more periodic synchronization signals having periods equal to T, each synchronization signal being delayed from a previous synchronization signal; and
a transmitter for transmitting two or more separate sub-words of a multi-bit data word, each separate sub-word having one or

more bits and being transmitted responsive to a separate combination of two progressively delayed synchronization signals.



specifying by a user of the computer system one field name of the database table for which to specify a selection criterion;
displaying the user-specified field name in one of the empty fields of the field name row;
specifying by the user the selection criterion for the user-specified field name; and
displaying the specified selection criterion within the criteria row in a column corresponding to the user-specified field name.

5,619,687
QUEUE SYSTEM HAVING A TIME-OUT FEATURE AND METHOD THEREFOR
John A. Langan; Marian L. Winter, both of Austin, and James M. Sibigtroth, Round Rock, all of Tex., assignors to Motorola Inc., Schaumburg, Ill.
Filed Feb. 22, 1994, Ser. No. 200,040
Int. Cl.⁶ G06F 13/00
U.S. Cl. 395—557 **15 Claims**

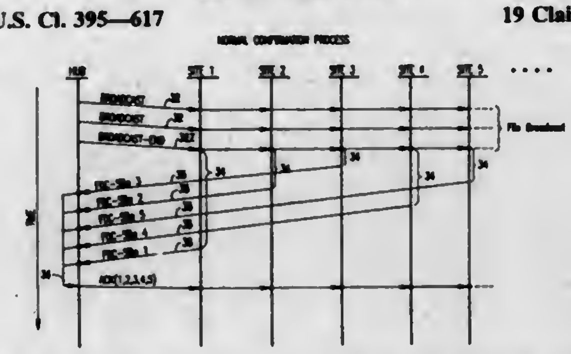


1. A method for accessing a queue memory in a data processing system, comprising the steps of:
i. requesting access to a system address bus and a system data bus by a first queue request signal provided by a peripheral device;
ii. selectively communicating a first data value between a central processing unit and the queue memory when the central processing unit has accessed the system address bus and the system data bus;
iii. selectively interrupting operation of the central processing unit and communicating the first data value between the peripheral device and the queue memory when the central processing unit has accessed the system address bus and the system data bus and a predetermined timeout period has expired;
iv. selectively communicating the first data value between the peripheral device and the queue memory when the central processing unit does not have access of the system address bus and the system data bus; and
v. repeating steps ii. through iii. if the predetermined timeout period has not expired.

5,619,688
METHOD AND SYSTEM FOR CONSTRUCTING DATABASE QUERIES USING A FIELD SELECTION GRID
Adam Bosworth, Mercer Island; Ross A. Hunter, Woodinville, and David J. Habib, Redmond, all of Wash., assignors to Microsoft Corporation, Redmond, Wash.
Filed Sep. 2, 1993, Ser. No. 116,888
Int. Cl.⁶ G06F 17/30
U.S. Cl. 395—604 **20 Claims**

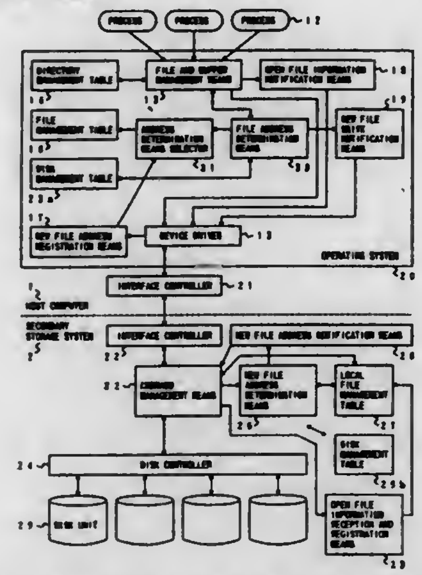
1. A method in a computer system for specifying selection criteria for retrieval of information from a database table having a plurality of fields with field names, the computer system having a display device, the method comprising the steps of:
displaying on the display device a selection grid having rows and columns, the selection grid having one of the rows designated as a field name row having empty fields for containing user-specified field names and one of the rows designated as a criteria row for containing selection criteria corresponding to the field name in the same column;

5,619,689
METHOD AND APPARATUS FOR CONFIRMING DELIVERY OF FILES IN A FILE BROADCAST SYSTEM WITH REBROADCAST TIMING AT THE RECEIVER
Frank M. Kelly, Frederick, Md., assignor to Hughes Electronics, Los Angeles, Calif.
Filed Oct. 19, 1993, Ser. No. 138,940
Int. Cl.⁶ G06F 17/30
U.S. Cl. 395—617 **19 Claims**



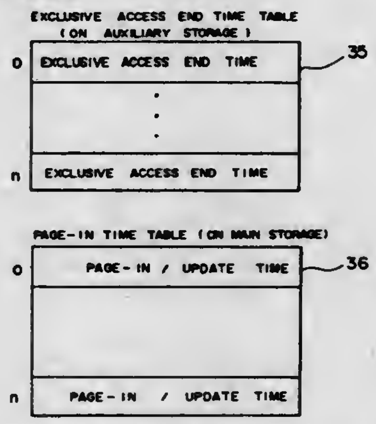
1. In a file broadcast system, wherein files are broadcast simultaneously from a hub server to multiple receiving sites, a method for confirming delivery of broadcast files, comprising the steps of:
transmitting by each receiving site to the hub server of a confirmation;
packing by the hub server of a multiplicity of said confirmations into a single acknowledgment containing a list of the receiving site sources of said confirmations;
broadcasting by said hub server of the packed acknowledgment; and
retransmitting of the confirmation by a receiving site, if the receiving site does not receive the acknowledgment within a determined period of time measured at the receiving site.

5,619,690
COMPUTER SYSTEM INCLUDING A COMPUTER WHICH REQUESTS AN ACCESS TO A LOGICAL ADDRESS IN A SECONDARY STORAGE SYSTEM WITH SPECIFICATION OF A LOCAL ADDRESS IN THE SECONDARY STORAGE SYSTEM
Naoto Matsunami, Yokohama; Soichi Isono, Chigasaki; Jun Matsumoto, Tokyo, and Minoru Yoshida, Odawara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Jun. 21, 1994, Ser. No. 262,933
Claims priority, application Japan, Jun. 21, 1993, 5-149467
Int. Cl.⁶ G06F 17/30
U.S. Cl. 395—616 **11 Claims**



10. In a computer system comprising storage media and at least one of a plurality of secondary storage systems connected via a peripheral input/output device bus to said computer, a method of accessing a file comprising the steps of:
providing said secondary storage system with a local file management table for relating file identification information for identifying files to local addresses where the files are stored and storing a correspondence therebetween;
requesting said secondary storage system to store a new file by said computer specifying file identification information of the file;
determining a local address to store the new file requested to be stored by said secondary storage system;
storing the new file in the determined local address of said storage medium by said secondary storage system;
relating the determined local address to the specified file identification information and storing a correspondence therebetween in said local file management table by said secondary storage system;
notifying said computer of the determined local address by said secondary storage system;
relating the received local address to the file requested to be stored and managing a correspondence therebetween by said computer;
providing said computer with a file management table for storing a correspondence between file identification information for identifying files and local addresses where the files are stored;
finding, when accessing a previously stored file in said secondary storage system, a local address corresponding to the file from said file management table by computer;
accessing a file already stored in said secondary storage system, finding a local address related to the file from said file management table by said computer;
sending a request for accessing the file already stored in said secondary storage system with specification of the found local address to said secondary storage system by said computer; and
upon receipt of the request for accessing the file already stored in said secondary storage system, accessing the file at the local address specified in the request by said secondary storage system.

5,619,691
FILE SHARING METHOD AND SYSTEM FOR MULTIPROCESSOR SYSTEM
Hisashi Katada; Toshiaki Arai, both of Sagamihara; Yasufumi Yoshizawa, Tachikawa; Yoshitaka Ohfusa, Yokohama, and Masayuki Kami, Fujisawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, and Hitachi Software Engineering Co., Ltd., Yokohama, both of Japan
Continuation of Ser. No. 779,512, Oct. 18, 1991, abandoned. This application Jan. 4, 1995, Ser. No. 368,765
Claims priority, application Japan, Oct. 19, 1990, 2-279074
Int. Cl.⁶ G06F 17/30
U.S. Cl. 395—620 **2 Claims**



1. In a multiprocessor system in which an auxiliary storage unit is shared in use by a plurality of processors each adopting a virtual storage management,
a file sharing method, comprising the steps of:
preparing on each of a plurality of main storages, each main storage being provided for a respective one of said plurality of processors, a page table for storing on a page-by-page basis a real address in said main storage of a file designated by a program and transferred to said main storage in correspondence to a virtual address issued by said program for designating said file;
preparing on said main storage an auxiliary page table for storing on a page-by-page basis addresses of files contained in said auxiliary storage unit;
preparing on said main storage a page-in time table for storing a page-in time at which the content of said file is transferred from said auxiliary storage unit to said main storage;
preparing on said auxiliary storage unit an exclusive control manage table storing management information for managing one of exclusive use control and shared use control for an access made to said file stored in said auxiliary storage unit;
preparing on said auxiliary storage unit an exclusive use end time table for storing a time at which the exclusive use of said file by said program inhibiting the shared use of said file by another program is completed;
responding to a file map request issued by said program for thereby storing on the page-by-page basis in said auxiliary page table an address of said file which is stored in said auxiliary storage unit and which is designated by said file map request;
responding to a page exception interruption occurring when said file is not stored in said main storage for thereby referring to the page-based address of said file stored in said auxiliary page table to thereby transfer said file to said main storage from said auxiliary storage unit and storing the time of said transfer in said page-in time table;

responding to the end of the exclusive use of said file by said program to thereby transfer said file from said main storage to said auxiliary storage unit and store the time of said transfer in both of said exclusive use end time table and said page-in time table; and

responding to a use request of said file issued by said program to thereby refer to said exclusive control manage table;

wherein when it is found as the result of said reference to said exclusive control manage table that the time stored in said exclusive use end time table is more recent than the time stored in said page-in time table, a real address corresponding to said file is invalidated.

5,619,692

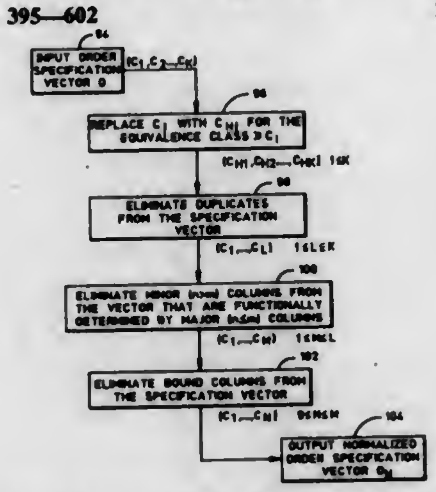
SEMANTIC OPTIMIZATION OF QUERY ORDER REQUIREMENTS USING ORDER DETECTION BY NORMALIZATION IN A QUERY COMPILER SYSTEM

Timothy R. Malkemus, Round Rock, Tex.; Eugene J. Shekita, and David E. Simmen, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 17, 1995, Ser. No. 394,532

Int. Cl.⁶ G06F *17/30*

U.S. Cl. 395—602 **20 Claims**



1. A method for order detection during processing of a query in a relational database processing system having a stored database including a plurality of base-relations {T} and a data processor for processing queries represented by query graphs {G}, wherein each said query graph G includes a plurality of relation nodes {N_i} each representing a relational operation associated with a record ordering requirement represented by an order requirement vector O_{Ri}, wherein each said relation node N_i is connected to at least one other said relation node N_j by a directed record stream R_{ij} representing a record stream output from said each relation node N_i and a record stream input to said other relation node N_j ordered according to an order property vector O_{Pi}, wherein i and j are positive integers, said method comprising the steps of:

(a) normalizing said order property vector O_{Pi} to produce a normalized order property vector O_{PNi} for said input record stream R_{ji} of a first said relation node N_i;

(b) normalizing said order requirement vector O_{Ri} to produce a normalized order requirement vector O_{RNi} for said first relation node N_i; and

(c) comparing said normalized order requirement vector O_{RNi} to said normalized order property vector O_{PNi} to detect an ordering requirement for said first relation node N_i.

5,619,693

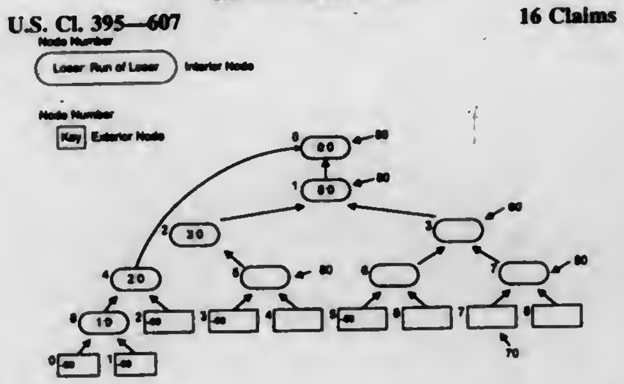
METHOD FOR SORTING AND STORING DATA EMPLOYING DYNAMIC SORT TREE RECONFIGURATION IN VOLATILE MEMORY

James H. Troisi, Sunnyvale, Calif., assignor to Tandem Computers Incorporated, Cupertino, Calif.

Filed May 2, 1994, Ser. No. 236,513

Int. Cl.⁶ G06F *17/30*

U.S. Cl. 395—607 **16 Claims**



1. A method of sorting and storing data in a computer system, the computer system including a Central Processor Unit (CPU), nonvolatile memory accessible by the CPU, and volatile working memory associated with the CPU, the nonvolatile memory including a plurality of data records stored therein, comprising the steps of:

reading said data records from said nonvolatile memory and storing them in said volatile working memory;

assigning a unique data record identifier to each data record in said volatile memory, each said identifier including a memory pointer and a key value;

initializing a sort tree in said volatile memory, said sort tree including a plurality of nodes allocated to locations in said volatile memory, said nodes including a plurality of exterior nodes, a plurality of interior nodes, and a root node arranged in a hierarchical configuration, said initializing step including: associating initialization values with said exterior nodes; and assigning a loser attribute to each of said interior nodes, said loser attribute associating an exterior node with said interior node and a remaining exterior node being associated with said root node;

serially introducing said data record identifiers into said exterior nodes of said initialized sort tree, the first of said data record identifiers being introduced into the exterior node associated with said root node and subsequent data record identifiers being associated with consecutive adjacent exterior nodes;

after the last of the data record identifiers has been introduced to said sort tree, redefining the sort tree so as to eliminate one or more of said exterior or interior nodes not containing a data record identifier;

sorting said data record identifiers by comparing said key values through said sort tree to said root node, extracting said data record identifiers from said root node and storing the data record identifiers, including the associated memory pointers, in an order in said volatile memory determined by the order they are extracted from the root node; and

reading said data records from said volatile memory in accordance with the sorted memory pointers and storing them in said nonvolatile memory in the order of said sorted key values.

5,619,694

CASE DATABASE STORAGE/RETRIEVAL SYSTEM

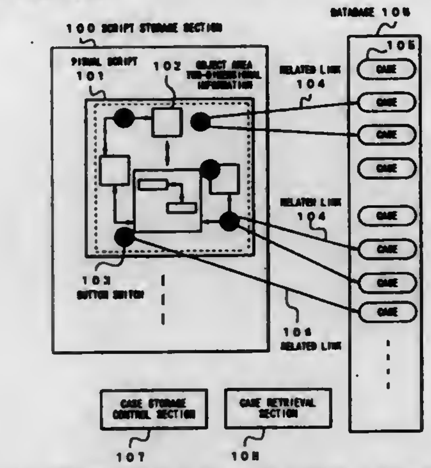
Hideo Shimazu, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 26, 1994, Ser. No. 296,464

Claims priority, application Japan, Aug. 26, 1993, 5-211270; Nov. 29, 1993, 5-297172; Dec. 21, 1993, 5-322526

Int. Cl.⁶ G06F *17/30*

U.S. Cl. 395—615 **17 Claims**



1. A case database storage/retrieval system, comprising:

a database for storing as a case events associated with objects;

script storage means for storing at least one script which describes a typically conducted series of operation and situation descriptions in time order with regard to the objects containing the case within said database;

case storage control means for defining a related link between a new case and a specific operation and situation description in said script relating to said new case in order to relate them and store said new case into said database; and

case retrieval means for retrieving to output a case related by said related link from said database with respect to the specific operation and situation description designated in the specific script.

5,619,695

METHOD AND APPARATUS FOR SCHEDULING RESOURCES

Mansur Arbabi, and Jonathan E. Baniak, both of Montgomery County, Md., assignors to Lockheed Martin Corporation, Manassas, Va.

Filed Feb. 3, 1994, Ser. No. 190,964

Int. Cl.⁶ G06F *9/455*

U.S. Cl. 395—670 **12 Claims**

1. A scheduling method for scheduling resources in a resource constrained environment comprising the steps of:

receiving a set of requests to be scheduled and inputting processing controls;

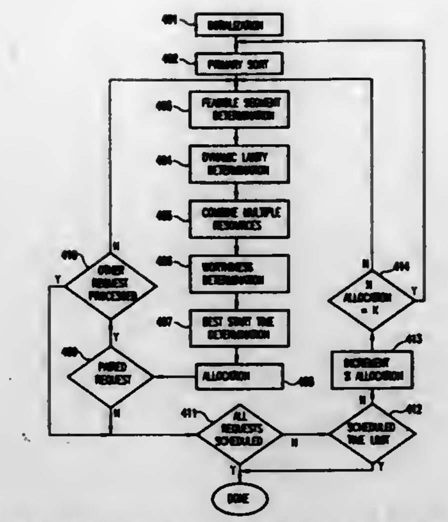
performing a primary sort of input requests to determine an order of request processing according to an importance ranking;

determining from the primary sort of input requests the times when a request could be scheduled with respect to constraints and resource availabilities;

determining a dynamic laxity using a set of heuristics which computes the allocation possibilities of a request by taking into account remaining unscheduled requests with which it conflicts;

combining multiple resources to account for those requests which require multiple concurrent resources after the step of determining the dynamic laxity; and

then repeating steps of determining the times when a request could be scheduled and determining dynamic laxity;



making a worthiness determination of each request, said worthiness determination defining a function indicating advantageous start times admitting high work values;

determining a best start time for request scheduling by combining factors including worth and request interactions; and

placing the requests into a schedule.

5,619,696

PROGRAM CACHE APPARATUS WHICH ASSOCIATES THE PHYSICAL ADDRESS OF A PHYSICAL PAGE WITH BOTH THE LOGICAL ADDRESS IN A PROGRAM CACHE SPACE AND THE LOGICAL ADDRESS IN A PROCESS SPACE

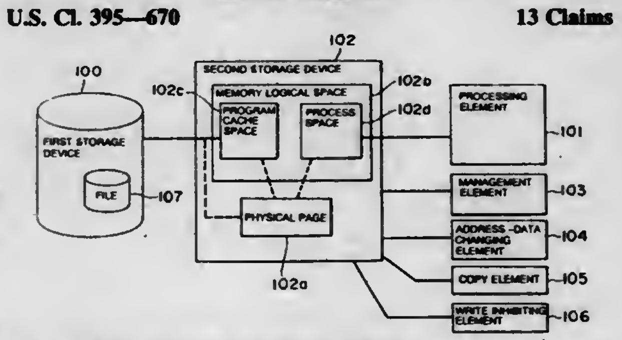
Jun Nakagawa, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 22, 1994, Ser. No. 293,593

Claims priority, application Japan, Nov. 29, 1993, 5-298585

Int. Cl.⁶ G06F *9/42*

U.S. Cl. 395—670 **13 Claims**



1. A program cache apparatus comprising:

a first storage device storing a plurality of programs;

a second storage device having a plurality of physical pages given with respective physical addresses and a memory logical space serving as a set of logical addresses corresponding to said physical addresses, said memory logical space including a program cache space storing program read from said first storage device and a process space for storing a program to be executed;

a processing means for loading a program from said first storage device onto said physical pages and for accessing said program located on said physical page and stored in said process space to execute a specific process;

address-data changing means for altering data about addresses in said program stored in said second storage device; and

management means for associating said physical addresses with said logical addresses in such a manner that after said address-data changing means alters said address data, said management means associates said physical address of said physical

page corresponding to a program stored in said program cache space with a logical address in said process space.

5,619,697

INTER-PROCESSOR COMMUNICATION SYSTEM FOR PERFORMING MESSAGE COMMUNICATION BETWEEN PROCESSORS AND MULTI-PROCESSOR REAL TIME SYSTEM FOR COMMUNICATING AMOUNG A PLURALITY OF PROCESSORS AT REAL TIME WITH THE INTER-PROCESSOR COMMUNICATION SYSTEM

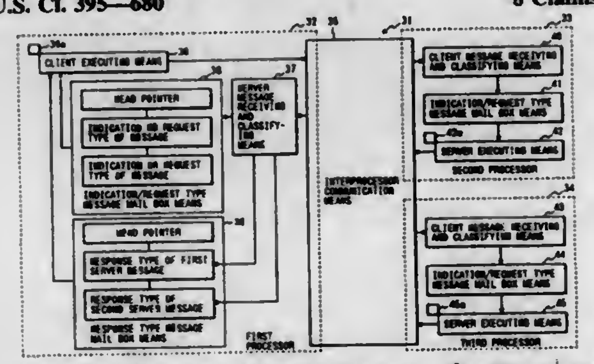
Moritugu Nishida, Fukuoka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Japan

Continuation of Ser. No. 195,013, Feb. 14, 1994, abandoned. This application Jan. 22, 1996, Ser. No. 589,415

Claims priority, application Japan, Feb. 17, 1993, 5-049906

Int. Cl.[6] G06F *9/00*

U.S. Cl. 395—680 **8 Claims**



1. An inter-processor communication system for processing a plurality of events in parallel with a first processor and a second processor, comprising:

client executing means placed in the first processor for sequentially sending a request type of a first client message and a request type of a second client message following the first client message to the second processor to request a first service and a second service for processing a first event and a second event and waiting for the first and second services sent from the second processor without sending any request type of a client message any more, the second client message being sent to the second processor regardless of whether the first service relating to the first client message is received from the second processor to the client executing means;

client message receiving and classifying means placed in the second processor for sequentially receiving the first and second client messages sent from the client executing means and classifying the first and second client messages as a request type;

request type message mail box means placed in the second processor for sequentially storing the first and second client messages classified in the client message receiving and classifying means;

server executing means placed in the second processor for performing the first and second services requested by the client executing means in sequence according to the first and second client messages stored in the request type message mail box means and sequentially generating a response type of first server message denoting a result of the first service and a response type of second server message denoting a result of the second service;

inter-processor communication means placed between the first and second processors for performing a first message communication in which the first and second client messages are sent from the client executing means to the client message receiving and classifying means and a second message communication in which the first and second server messages are sent from the server executing means to the first processor;

server message receiving and classifying means placed in the first processor for sequentially receiving the first and second server messages sent from the server executing means through the inter-processor communication means and classifying the first and second server messages as a response type; and

response type message mail box means placed in the first processor for sequentially storing the first server and the second server message following the first server message which are classified in the server message receiving and classifying means, wherein the second server message is stored in the response type message mail box means regardless of whether the processing of the first event executed in the client executing means in response to the storage of the first server message is finished, and the second event in response to the storage of the second server message in the response type message mail box means is executed in the client executing means in cases where the processing of the first event is finished.

5,619,698

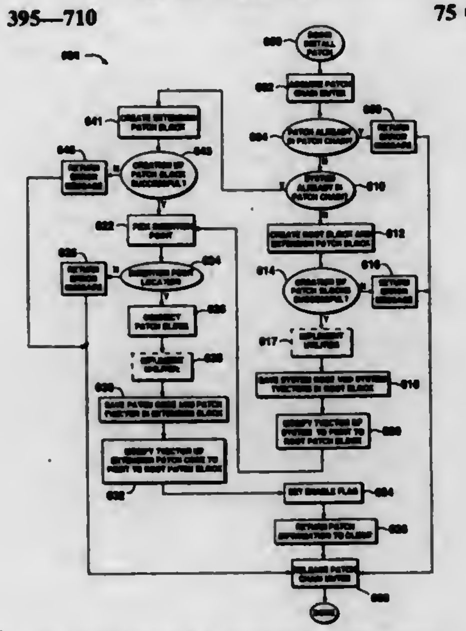
METHOD AND APPARATUS FOR PATCHING OPERATING SYSTEMS

Alan W. Lillich, Los Gatos; Jeffrey R. Cobb, Sunnyvale; Erik L. Eldt, Campbell, and Wayne N. Meretsky, Los Alto, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed May 5, 1995, Ser. No. 435,360

Int. Cl.[6] G06F *9/44*

U.S. Cl. 395—710 **75 Claims**



47. An operating system for a computer comprising:

means receptive to one or more patches for a given function that is capable of running on said computer;

means for creating a patch chain comprising a root patch block pointing to said given function and at least one patch structure chained with said root patch block, said patch structure including a patch block pointing to an associated patch, said means for creating a patch chain not responsive to create a patch chain unless said given function is to be patched by said at least one patch structure, wherein said patch structure is capable of processing a call for said given function; and

means for adding new patch structures to said patch chain, whereby a call to said given function is processed by each of said patches in said patch and by said given function.

5,619,699

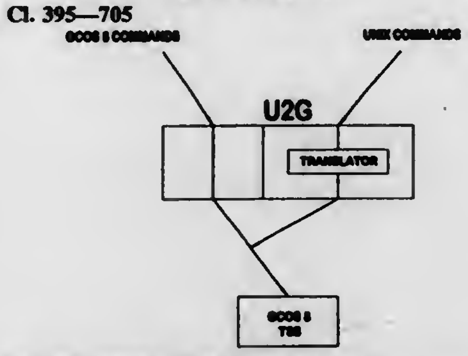
OPERATING SYSTEM TRANSLATOR INCORPORATING UNIX PIPING CAPABILITY FOR A PROPRIETARY OPERATING SYSTEM

Forouzan Golshani, Paradise Valley, and Thomas H. Howell, Scottsdale, both of Ariz., assignors to Bull HN Information Systems Inc., Billerica, Mass.

Filed May 22, 1995, Ser. No. 443,860

Int. Cl.[6] G06F *9/45*

U.S. Cl. 395—705 **4 Claims**



1. An open computer complex comprising:

A) a first computer system operating under the GCOS-8 operating system having a first operating system command repertoire;

B) a second computer system operating under the UNIX operating system having a second operating system command repertoire;

C) at least one of said first computer system and said second computer system further including a user terminal; and

D) interface means connecting said first and second computer systems, said interface means including an operating system translator, said operating system translator comprising:

1) a table of equivalent commands which are included in said first operating system command repertoire and said second operating system command repertoire, said table of equivalents including the following equivalent file operating system commands:

UNIX	GCOS-8
ls	clist
cat	display
more	p
rm	rele
mv	acce
tail	tail
diff	diff
file	len
wc	wc
sort	bsort

2) means for receiving an operating system command from said second operating system command repertoire which is to be executed in said GCOS-8 computer system;

3) means for determining from said table of equivalents an operating system command in said first operating system command repertoire which is an equivalent operating system command of said operating system command from said second operating system command repertoire which is to be executed in said GCOS-8 computer system;

4) means for executing said equivalent operating system command in said first computer system; and

5) virtual piping means responsive to the reception of a piping command from said UNIX operating system for accessing said piping capability in said UNIX operating system on behalf of said GCOS-8 operating system;

whereby, virtual piping capability is available for said GCOS-8 operating system.

5,619,700

METHOD AND DEVICE FOR MANAGING PROGRAMS

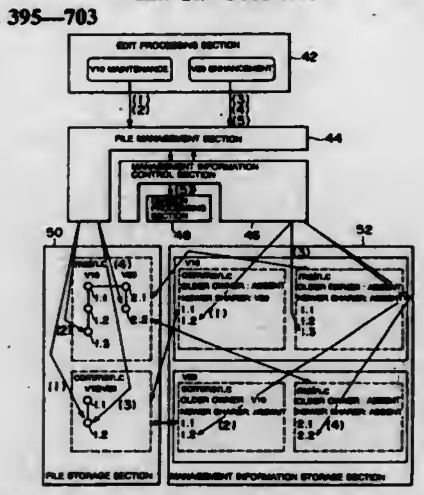
Yoshinari Abe, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 13, 1995, Ser. No. 489,951

Claims priority, application Japan, Aug. 25, 1994, 6-201073

Int. Cl.[6] G06F *9/45*

U.S. Cl. 395—703 **17 Claims**



1. A program management method comprising:

the file storing step of storing in a file storage section a plurality of program files that make up one or more versions of a program comprised of a plurality of program modules;

the management information storing step of storing in a management storage section management information for managing the relationship between each program version and program files used by that version and the sharing relationship of each of said program files used in that version to other versions which share it in order to store said program modules in said file storage section without duplication;

the file specifying step of specifying a program file stored in said file storage section by referring to said management information on the basis of a given program version and the name of said program file;

the program editing step of editing said program file specified in said file specifying step and read from said file storage section;

the storage method determining step of determining whether or not said program file edited in said editing step is to divide a version series when it is stored;

the storage processing step of, on the basis of a determination in the storage method determining step, storing said edited program file in said file storage section as an update version of the same version series as the original program file version series when said program file is not to divide the version series, or storing said edited program file in said file storage section as a new version series different from the original program file version series when said program file is to divide the version series; and

the management information updating step of updating said management information in said management information storage section when said file is stored in said storage processing step.

5,619,701

METHOD AND SYSTEM FOR ADAPTER CONFIGURATION IN A DATA PROCESSING SYSTEM

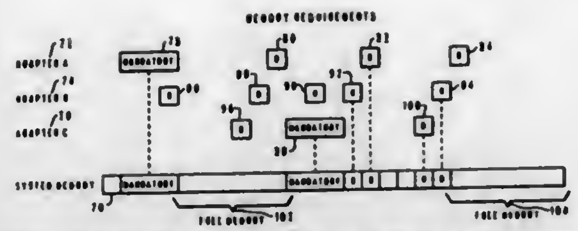
Chalapathy Neti, Boca Raton, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 824,431, Jan. 23, 1992, abandoned. This application Apr. 4, 1996, Ser. No. 631,743

Int. Cl.[6] G06F *9/00*

U.S. Cl. 395—674 **20 Claims**

1. A method of configuring a data processing system to optimally allocate system resources among a plurality of adapters



installed therein, each of said plurality of adapters having a plurality of choices associated therewith specifying selected system resources utilizable by an associated adapter, said method comprising the steps of:

determining the maximum number of possible combinations of choices for all of said plurality of adapters;

examining only a selected portion of said maximum number of possible random combinations of choices in response to said maximum number of possible combinations of choices exceeding a predetermined large number;

analyzing said selected portion of said maximum number of possible random combinations of choices; and

selecting an optimum allocation of system resources from said selected portion of said maximum number of possible random combinations of choices.

5,619,702

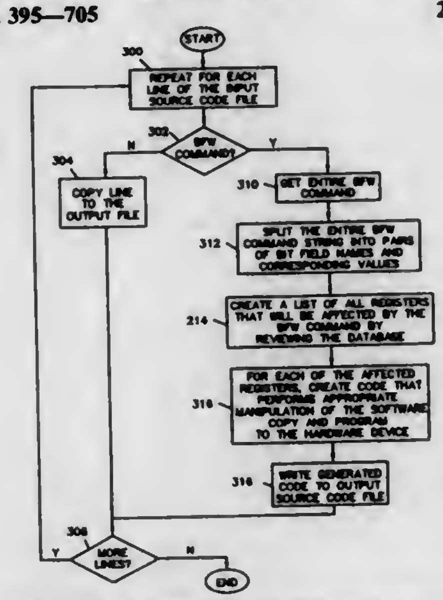
METHOD AND APPARATUS FOR PROGRAMMING REGISTERS USING SIMPLIFIED COMMANDS

Kosta Ilic, Travis County, Tex., assignor to National Instruments Corporation, Austin, Tex.

Continuation of Ser. No. 249,171, May 25, 1994, abandoned. This application Aug. 13, 1996, Ser. No. 695,968

Int. Cl.⁶ G06F *9/45*

U.S. Cl. 395—705 **24 Claims**



1. A method of generating code to program hardware registers, comprising the steps of:

storing a database defining the hardware registers and associated bit fields of each hardware register, wherein the database includes names identifying bit fields of each of said hardware registers;

receiving input code including one or more bit field write commands, wherein said one or more bit field write commands comprise simplified commands for programming the hardware registers, wherein each of said bit field write commands includes one or more of said names identifying bit fields in one or more of said hardware registers and one or more corresponding values to program into each of said bit fields identified by said one or more names; and

preprocessing the input code to generate output code in which the one or more bit field write commands are replaced with code to program the one or more values into the respective hardware registers.

5,619,703

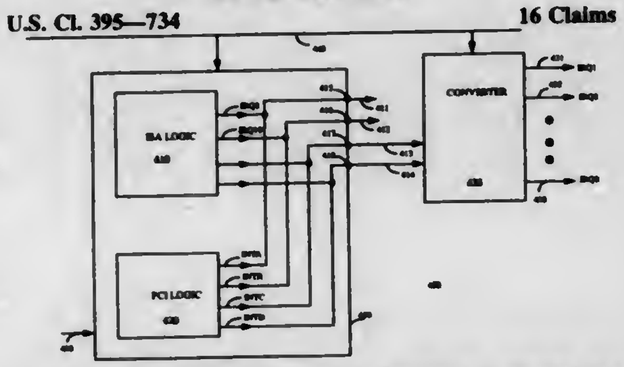
APPARATUS AND METHOD FOR SUPPORTING MULTIPLE INTERRUPT PROTOCOLS WITH UNEQUAL NUMBER OF INTERRUPT REQUEST SIGNALS

Reza G. Omid, San Jose; Sanjiv D. Pathak, Fremont; Jafar Naji, Sunnyvale; Stephen A. Smith, Palo Alto; Sriram Ramamurthy; Jihad Y. Abudayyeh, both of Fremont, and Kasturiraman Gopalaswamy, Santa Clara, all of Calif., assignors to Cirrus Logic, Inc., Fremont, Calif.

Filed Jun. 6, 1995, Ser. No. 477,012

Int. Cl.⁶ G06F *13/24*

U.S. Cl. 395—734 **16 Claims**



1. A peripheral device operable with an interrupt controller in a computer system capable of supporting a first interrupt type responsive to a first bus protocol or a second interrupt type responsive to a second bus protocol, wherein said first or said second interrupt type comprise a first and a second plurality of interrupt request signals respectively, said peripheral device comprising a converter circuit coupled to a signal generation circuit for receiving a first plurality of interrupt request signals during a first plurality of clock cycles, and generating a second plurality of interrupt request signals over a third set of external pins during a second plurality of clock cycles to an interrupt controller; and wherein said signal generation circuit and said converter circuit are both driven by a common system clock signal, said converter circuit comprising:

a plurality of tri-state devices, each of said devices being coupled to receive an enable bit and an input bit of a corresponding interrupt request signal, each of said plurality of tri-state devices outputting said input bit on a corresponding pin in said third set of external pins if said enable bit is set to a first value, and driving said corresponding pin to a high-impedance state if said enable bit is set to a second value; and

a plurality of latches coupled to a second logic circuit to receive and store a first set of data bits, each of said plurality of latches being coupled to each of said plurality of tri-state devices, and wherein said first set of bits comprise said input bits and said enable bits.

5,619,704

ASYNCHRONOUS INTERRUPT INHIBIT METHOD AND APPARATUS FOR AVOIDING INTERRUPT OF AN INSEPARABLE OPERATION

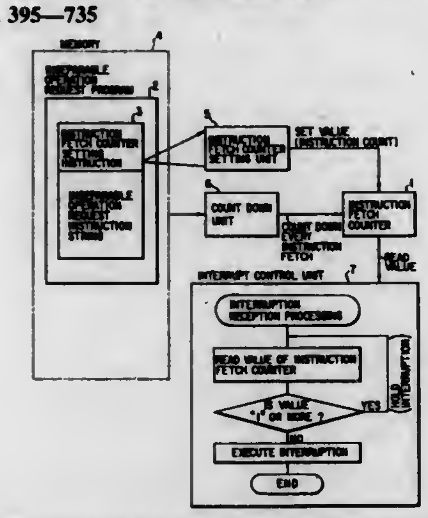
Takayuki Yagi, Tokyo, and Yoichiro Takeuchi, Urawa, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 307,050, Sep. 16, 1994, Pat. No. 5,471,595, which is a continuation of Ser. No. 863,250, Apr. 3, 1992, abandoned. This application Oct. 26, 1995, Ser. No. 548,473

Claims priority, application Japan, Apr. 4, 1991, 3-71294

Int. Cl.⁶ G06F *9/40*

U.S. Cl. 395—735 **3 Claims**



1. An asynchronous interrupt inhibit apparatus comprising:

fetch means for storing a value corresponding to a number of steps included in an inseparable operation; and

control means for inhibiting an interrupt of the inseparable operation after starting the inseparable operation until the number of steps equal to said value stored in said fetch means are executed.

5,619,705

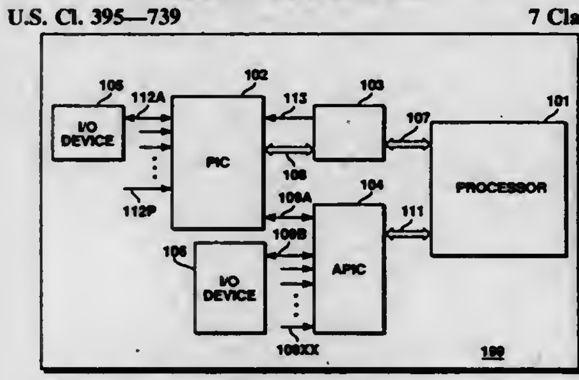
SYSTEM AND METHOD FOR CASCADING MULTIPLE PROGRAMMABLE INTERRUPT CONTROLLERS UTILIZING SEPARATE BUS FOR BROADCASTING INTERRUPT REQUEST DATA PACKET IN A MULTI-PROCESSOR SYSTEM

Milind Karnik, Aloha, and Joseph Batz, Beaverton, both of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 168,463, Dec. 16, 1993, abandoned. This application Jun. 12, 1996, Ser. No. 661,341

Int. Cl.⁶ G06F *13/24;13/26*

U.S. Cl. 395—739 **7 Claims**



1. A multi-processor system comprising:

a first bus coupled to said at least one processor;

a first I/O device operable to generate a first interrupt request signal when an interrupt is pending thereon;

a first interrupt controller, coupled to said first I/O device and having a first device type value and a predetermined identification number, operable to generate a second interrupt request signal in response to said first interrupt request signal:

a second interrupt controller, coupled to said first bus and to said first interrupt controller, operable to broadcast an interrupt request data packet on said first bus in response to said second interrupt request signal, said interrupt request data packet comprising a second field set to said first device type value and a third field set to said predetermined identification number;

a second I/O device, having a second device type value and coupled to said second interrupt controller, operable to send a third interrupt request signal to said second interrupt controller when an interrupt request is pending on said second I/O device,

said second interrupt controller being further overable to broadcast said interrupt request data packet in response to said third interrupt request signal, said second field in said interrupt request data packet being set to said second device type value and said third field therein being set to a second interrupt vector corresponding to said second I/O device and identifying an interrupt service routine to process said interrupt pending on said second I/O device;

a processor operable to identify said first interrupt controller based on said second field and said third field;

a communication device coupled to said first interrupt controller; and

a second bus coupled to said processor and said communication device.

5,619,706

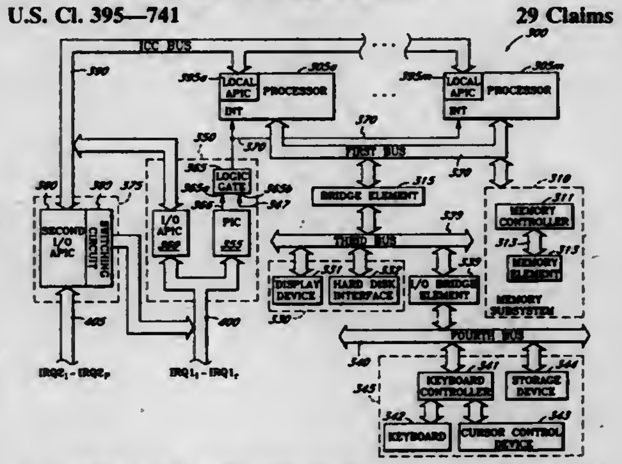
METHOD AND APPARATUS FOR SWITCHING BETWEEN INTERRUPT DELIVERY MECHANISMS WITHIN A MULTI-PROCESSOR SYSTEM

Bruce Young, Tigard, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed Mar. 2, 1995, Ser. No. 399,161

Int. Cl.⁶ G06F *9/46;13/14*

U.S. Cl. 395—741 **29 Claims**

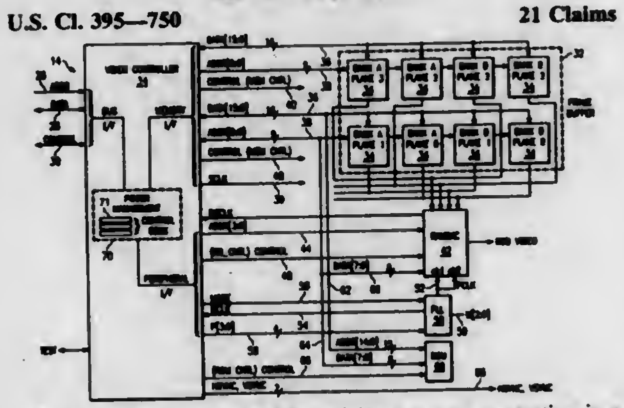


1. Adapted to a first interrupt circuit including a programmable interrupt controller and a first advanced programmable interrupt controller configured to transfer a first interrupt request through at least one interrupt request ("IRQ1") line, and a second interrupt circuit including a second advanced programmable interrupt controller configured to transfer a second interrupt request through at least one interrupt request ("IRQ2") line, a switching circuit comprising:

a combinatorial logic unit coupled to said IRQ1 line and said IRQ2 line, said combinatorial logic unit (i) asserts said IRQ1 line if said programmable interrupt controller is needed to service said second interrupt request, and (ii) deasserts said IRQ1 line if said second interrupt request is serviceable by said second advanced programmable interrupt controller to

preclude said first advanced programmable interrupt controller from servicing said second interrupt request.

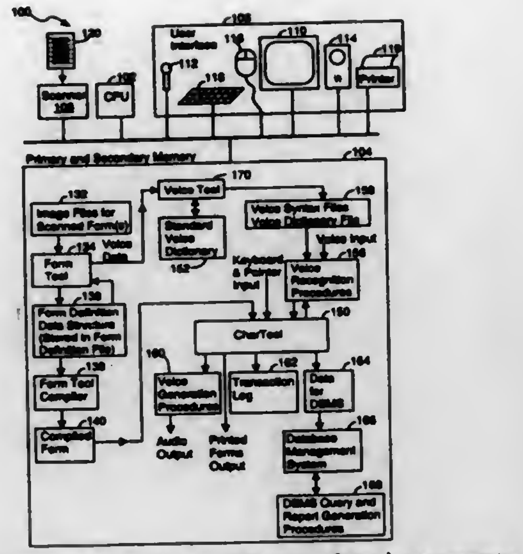
5,619,707
VIDEO SUBSYSTEM POWER MANAGEMENT APPARATUS AND METHOD
Abdel H. Suboh, Houston, Tex., assignor to Compaq Computer Corporation, Houston, Tex.
Continuation of Ser. No. 191,311, Jan. 27, 1994, Pat. No. 5,524,249. This application Apr. 10, 1996, Ser. No. 630,540
Int. Cl.[6] **G06F** *13/00*
U.S. Cl. 395—750 **21 Claims**



9. A computer system for minimizing power consumption in a video subsystem comprising:
a CPU connected to a system bus;
a plurality of peripherals connected to said CPU by the system bus;
a monitor; and
a video subsystem connected to said monitor and connected to said CPU by the system bus, comprising:
clock circuitry for programmably generating a first clock and a second clock, such that said first clock can be disabled responsive to a first control signal and said second clock can be reduced in frequency responsive to a second control signal;
a frame buffer memory;
a RAMDAC driven by said first clock coupled to said frame buffer, the power consumed by said RAMDAC dependent upon the frequency of said first clock;
a video controller driven by said second clock and coupled to said frame buffer, said video controller controlling memory cycles in said frame buffer responsive to said second clock; and
circuitry for inactivating said first clock and reducing the frequency of said second clock responsive to an indication of inactivity to reduce power consumption in said clock circuitry, said frame buffer and said RAMDAC.

5,619,708
SYSTEM AND METHOD FOR GENERATING DATABASE INPUT FORMS
Janet C. Ho, Milpitas, Calif., assignor to Korteam International, Inc., Sunnyvale, Calif.
Filed Oct. 25, 1994, Ser. No. 328,362
Int. Cl.[6] **G06F** *15/00;* **H04N** *1/387; 1/46*
U.S. Cl. 395—767 **12 Claims**

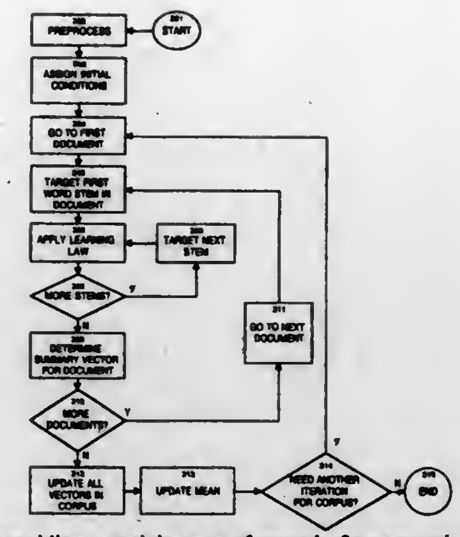
11. A method of facilitating the conversion of paper based data entry forms to fully reusable electronic computer based data entry forms for specifying data to be stored in a database, said database storing data in records each having a plurality of fields, said method comprising, comprising:
scanning an existing data entry form so as to generate a digitized representation of said data entry form, and storing said digi-



tized representation of said data entry form in a computer memory, said digitized representation including color information;
displaying on a display at least a portion of said scanned data entry form;
storing in said computer memory a form definition data structure, said form definition data structure for storing data representing said scanned data entry form;
receiving user commands indicating regions of said displayed data entry form, and storing in said form data structure data representing said indicated regions; and
receiving user commands defining a multiplicity of objects, and specifying properties of said defined objects; said objects corresponding to ones of said regions and including form sections, text boxes, and checkbox buttons, said specified properties including (A) links for linking selected ones of said defined objects to respective specified fields in said database, and (B) exclusionary relationships for specifying which of said objects cannot be selected by end users when specified others of said objects have previously been selected by said end users; and
storing in said form data structure data corresponding to said user defined objects and user specified object properties;
wherein said electronic computer based data entry form is suitable for repeated use for specifying data to be stored in said database;
said method including:
automatically defining ones of said objects to correspond to color demarcated regions of said scanned data entry form and specifying ones of said properties of said objects based on said color information.

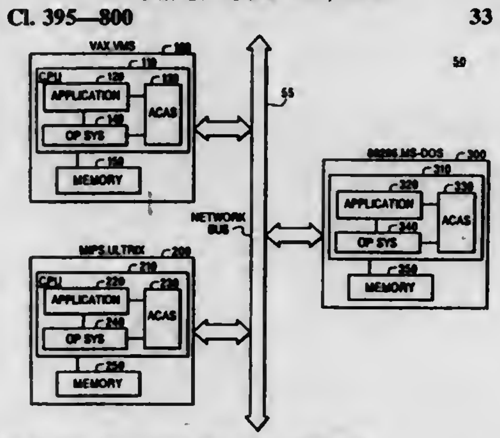
5,619,709
SYSTEM AND METHOD OF CONTEXT VECTOR GENERATION AND RETRIEVAL
William R. Caid, San Diego, and Pu Oing, La Costa, both of Calif., assignors to HNC, Inc., San Diego, Calif.
Continuation of Ser. No. 124,098, Sep. 20, 1993, abandoned. This application Nov. 21, 1995, Ser. No. 561,167
Int. Cl.[6] **G06F** *17/30; 17/16*
U.S. Cl. 395—794 **39 Claims**

1. In a computer having a processor and storage, a computer-implemented process of generating a set of summary vectors in a relative vector space such that for any subset of summary vectors associated with a subset of records there is a single logical relative orientation of the summary vectors that defines the relative meaning of the records, and a plurality of absolute orientations of the summary records, comprising the steps of:



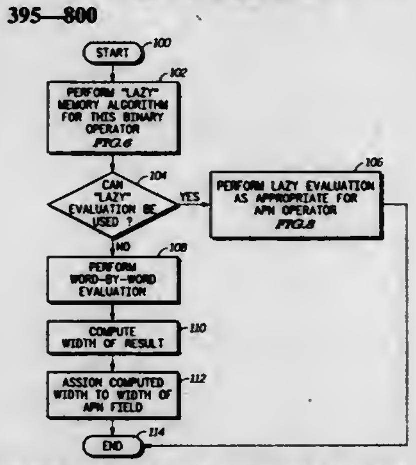
(a) providing a training set of records for processing by the processor, each record containing a plurality of information elements;
(b) assigning to selected information elements in each record an initial context vector consisting solely of a plurality of randomly generated component data values;
(c) for selected information elements in each record, modifying the initial context vector of the selected information element by a function of the context vectors of information elements within a selected proximity to the selected information element and a proximity constraint that varies a magnitude of the modification to the initial context vector;
(d) for each record, determining a summary vector by combining the modified context vectors of the information elements of the record according to program instructions in the storage and executed on the processor; and
(e) storing the determined summary vectors in the computer storage.

5,619,710
METHOD AND APPARATUS FOR OBJECT-ORIENTED INVOCATION OF A SERVER APPLICATION BY A CLIENT APPLICATION
Robert L. Travis, Jr., Concord, Mass.; Andrew P. Wilson, Commons Brink, England; Neal F. Jacobson, Nashua, N.H., and Michael J. Renzullo, Ashland, Mass., assignors to Digital Equipment Corporation, Maynard, Mass.
Continuation of Ser. No. 567,303, Aug. 14, 1990, abandoned. This application Jun. 22, 1994, Ser. No. 263,901
Int. Cl.[6] **G06F** *9/22; 12/08*
U.S. Cl. 395—800 **33 Claims**



1. In a data processing network containing
a plurality of data processing platforms for executing one or more applications, each application comprising a program capable of performing operations, wherein one of said applications, called a client application, communicates with one of said applications, called a server application, and
a class data base having portions accessible to the data processing platforms, the class data base including a plurality of method entries, each corresponding to one of said server applications and each containing a reference to a mechanism for invoking said server application to cause said server application to perform a specified operation on a specified instance, and
a plurality of class entries each containing information identifying a unique class and a corresponding group of the method entries, each of the classes being referenced by a different set of instances, instances being items that are manipulatable or accessible by the applications, and all the instances in each set having shared characteristics,
a process of invoking a server application to be executed on one of said data processing platforms from a client application executing on one of said data processing platforms comprising the steps of:
receiving a message from said client application for the performance of a selected operation involving a selected instance;
accessing the class data base using the class referenced by said selected instance and said selected operation of the received message to select a method entry and a corresponding mechanism for invoking a server application for performing said selected operation;
selecting, from among the data processing platforms, the data processing platform to execute the server application; and
invoking said server application.

5,619,711
METHOD AND DATA PROCESSING SYSTEM FOR ARBITRARY PRECISION ON NUMBERS
William C. Anderson, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Jun. 29, 1994, Ser. No. 267,740
Int. Cl.[6] **G06F** *15/00*
U.S. Cl. 395—800 **25 Claims**



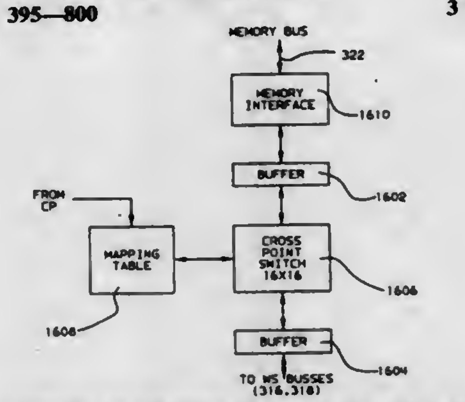
1. A method for preserving numerical precision of numbers within a data processing system wherein the data processing system has access to a memory storage unit having L total storage locations, the method comprising the steps of:
allocating a predetermined number M of storage locations within the memory storage unit to store an arbitrary precision number which is used by the data processing system, M being a finite positive integer less than L, the arbitrary precision number having a size storage location which stores the amount of storage locations M which are being used to represent the arbitrary precision number, the size storage location storing a value which is less than or equal to M, the value M and a width storage location which stores the number of bits used to represent the arbitrary precision number;
performing an operation on the arbitrary precision number to change the arbitrary precision number from a first value to a second value which is different from the first value, the

second value requiring more numerical precision in order to maintain full precision than the first value;
expanding the number of storage locations M within the memory unit to a predetermined number N of storage locations via memory allocation wherein N is greater than M and allows the arbitrary precision number to maintain full precision, N being a finite positive integer less than or equal to L wherein a value less than or equal to N and greater than M is now stored in the size storage location;
performing another operation on the arbitrary precision number to change the arbitrary precision number from the second value to a third value which is different from the second value, the third value needing less numerical precision in order to maintain full precision than the second value;
reducing a numerical value in the size storage location to a value less than N while still keeping the N storage locations allocated to the arbitrary precision number.

5,619,712

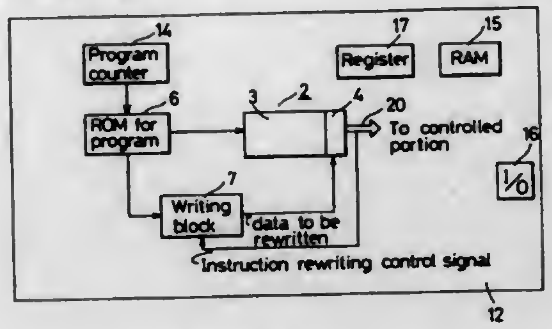
Patent Not Issued For This Number

5,619,713
APPARATUS FOR REALIGNING DATABASE FIELDS THROUGH THE USE OF A CROSSPOINT SWITCH
Richard I. Baum, Poughkeepsie; Glen A. Brent, Fishkill; Donald H. Gibson, Salt Point, and David B. Lindquist, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 993,270, Feb. 11, 1993, abandoned, which is a division of Ser. No. 499,844, Mar. 27, 1990, Pat. No. 5,210,870. This application Feb. 17, 1995, Ser. No. 390,143
Int. Cl.[6] G06F *7/24*
U.S. Cl. 395—800 **3 Claims**



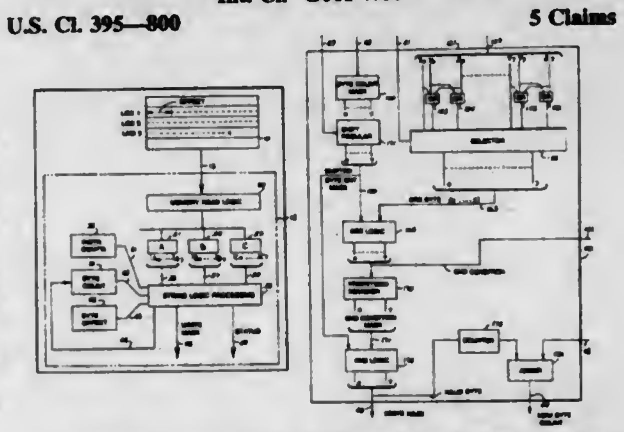
3. An apparatus for realigning database fields for use with a host computer having a system memory, said apparatus comprising:
a mapping table comprising a plurality of entries, each of the entries corresponding to a plurality of database records, wherein each of the entries comprises:
a control field for holding a data realignment bit mask indicative of at least one data byte within each of the plurality of database records;
a first address field for holding a first address in a first memory; and
a second address field for holding a second address in the system memory;
a first buffer for storing database fields;
a second buffer; and
a crosspoint switch, coupled to the first buffer and the second buffer, and having a control input coupled to the mapping table so as to receive the data realignment mask, wherein said crosspoint switch realigns data as it is read from said first buffer to said second buffer.

5,619,714
MICROCOMPUTER HAVING AN INSTRUCTION DECODER WITH A FIXED AREA AND A REWRITABLE AREA
Kiyoshi Nishimura, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan
Continuation of Ser. No. 81,186, Jun. 25, 1993, abandoned. This application Feb. 17, 1995, Ser. No. 390,428
Claims priority, application Japan, Jun. 25, 1992, 4-167500
Int. Cl.[6] G06F *9/30*
U.S. Cl. 395—385 **10 Claims**



1. A microcomputer comprising:
an instruction decoder including a) a fixed area constituted by a read only memory where a decoding function is not rewritable, and b) a rewritable area constituted by a rewritable memory where the decoding function is rewritable, wherein both the fixed and rewritable areas decode instruction data which is input thereto and where the decoding function is written in the rewritable area, an instruction is output by the rewritable area which is different from an instruction output by the fixed area based on the same instruction data.

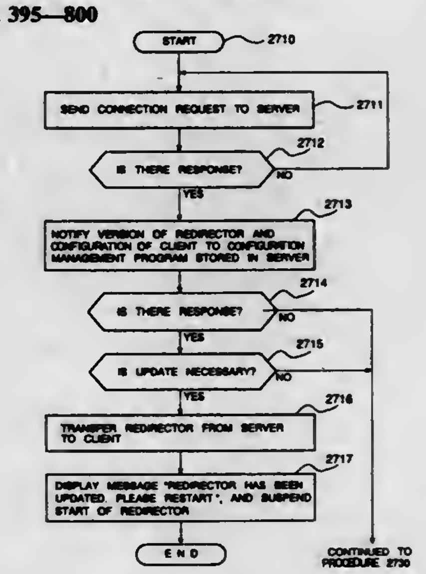
5,619,715
HARDWARE IMPLEMENTATION OF STRING INSTRUCTIONS
Robert M. Dinkjian, Woodstock; Lisa C. Heller, Saugerties; Steven R. Kordus, Kingston; Kenneth A. Lauricella, Hurley; Thomas W. Seigendall, Saugerties, all of N.Y.; Robert A. Skaggs, Manassas, Va., and Nelson S. Xu, Hyde Park, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 3,369, Jan. 12, 1993, Pat. No. 5,465,374. This application May 25, 1995, Ser. No. 452,638
Int. Cl.[6] G06F *7/00*
U.S. Cl. 395—800 **5 Claims**



1. A data processor system comprising a data storage memory, and a data processor wherein the memory comprising a plurality of multi-byte data word locations each comprising a plurality of byte positions and including a first byte position adjacent one end of each data word location, and a data string stored in the memory and comprising a plurality of data bytes including an initial byte stored in a selected data word location and displaced from the first

byte position of the selected data word location by a predetermined number of bytes and wherein the data processor comprises:
a data register;
memory access circuitry for reading the data word locations containing bytes of the data string;
a byte count register storing a value defining a number representing unprocessed bytes in the data string:
a byte offset register defining the position of the first byte of the data string relative to the first byte position of the selected data word location;
logic circuitry connected to the byte count register and the byte offset register and responsive to the contents of the byte offset register and byte count register to generate output signals defining positions of the first byte and the last byte of the data string relative to the first byte position of a data word location;
the data string comprising an end condition byte and the logic circuitry further responsive to the presence of an end condition byte in the data register and to the contents of the byte count register and to the contents of the byte offset register to generate a write mask having a significant condition bit in the position corresponding to the position of the end condition byte in the data register and a significant condition bit in each position corresponding to each other byte belonging to the data string and positioned between the end condition byte and the first byte position of a data word containing the end condition byte;
end condition detection circuitry connected to the data register for generating a multi-bit output word in which certain bits are significant condition bits defining the presence of an end condition for a correspondingly positioned byte in the data register;
a first mask circuit connected to the byte count register for generating a multi-bit byte count mask defining positions of bytes in the data register belonging to the data string;
a first logic circuit connected to the end condition detection circuitry and to the first mask circuit for logically combining the byte count mask and the multi-bit output word of the end condition detection circuit and generating a multi-bit +end condition output word defining end conditions bytes in the data register;
a second mask circuit, connected to the first logic circuit for detecting a first significant condition bit in a first position nearer one end of the end condition output word than any other significant bit in the end condition output word and for generating an end condition mask defining only bits of the end condition output word up to and including the first significant condition bit;
a second logic circuit connected to the first logic circuit and the second mask circuit for generating a multi-bit output mask having a significant condition bit in the position corresponding to the first byte in the data register representing an end condition and a significant condition bit in all other positions corresponding to bytes belonging to the data string and positioned between the first byte representing an end condition and the first byte position of a data word in the data register;
the data string stored in memory including an end byte storing an end character and the end condition detection circuitry including an end character register storing the end character and significant condition bits in the output word of the end detection circuitry defining the presence of the end character;
the data processor further comprising a shift register connected between the first mask circuit and the first logic circuit and responsive to the contents of the offset register to shift the byte count mask generated by the first mask circuit by a number of bit positions defined by the contents of the offset register before the multi-bit mask generated by the first mask circuit is applied to the first logic circuit.

5,619,716
INFORMATION PROCESSING SYSTEM HAVING A CONFIGURATION MANAGEMENT SYSTEM FOR MANAGING THE SOFTWARE OF THE INFORMATION PROCESSING SYSTEM
Naomichi Nonaka, Kawasaki; Keiichi Nakane; Hiromichi Itoh, both of Yokohama, and Hideaki Ishida, Kawasaki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Continuation of Ser. No. 971,566, Nov. 5, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 466,238
Claims priority, application Japan, Nov. 5, 1991, 3-288808; Apr. 16, 1992, 4-096278
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—800 **8 Claims**



3. An information processing system comprising:
a server equipment for providing a resource to any other equipments; and
a client equipment which utilizes said resource provided by said server equipment;
said client equipment having a program functioning as a redirector for processing an access request to be transmitted from said client equipment to said server equipment so that said resource of said server equipment may be utilized by said client equipment,
wherein said program functioning as said redirector transmits version information of said program to said server equipment before accessing said resource of said server equipment,
said server equipment comprising:
a configuration management storage for storing a program functioning as said redirector, and version information thereof according to a type of said client equipment, and
a configuration management means for comparing said version information of said program transmitted from said client equipment functioning as said redirector with said version information of said program stored in said server equipment, according to said type of said client equipment, then transmitting said program stored in said server equipment to said client equipment if said version information stored in said server equipment is newer than that transmitted from said client equipment,
said program resident in said client equipment replacing itself with said program transmitted from said server.

5,619,717

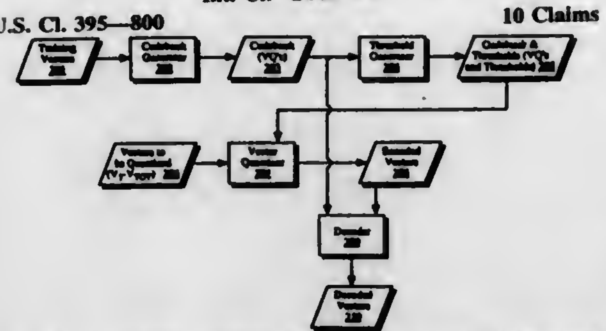
VECTOR QUANTIZATION USING THRESHOLDS

Erik Staats, Felton, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 82,022, Jun. 23, 1993, Pat. No. 5,481,739. This application Jun. 7, 1995, Ser. No. 483,282

Int. Cl.⁶ G06F *7/60*

U.S. Cl. 395—800 **10 Claims**



1. In a computer system, a method of vector quantization, comprising the following steps:

a) creating a vector quantization codebook comprising n quantized vectors;

b) for each i quantized vector (VQ_i) of said n quantized vectors, determining an i threshold ($Threshold_i$) to be associated with said i quantized vector;

c) for each i quantized vector of said n quantized vectors, associating said i threshold with said i quantized vector in said vector quantization codebook; and

d) using said vector quantization codebook to encode a set of input vectors (V_1–V_{TOT}), wherein for each input vector being coded, sequencing using an index j through said vector quantization codebook and determining for each j quantized vector in said vector quantization codebook if the distance between said input vector being coded and said j quantized vector is less than said j threshold associated with said j quantized vector then encoding said input vector and terminating sequencing through said vector quantization codebook.

5,619,718

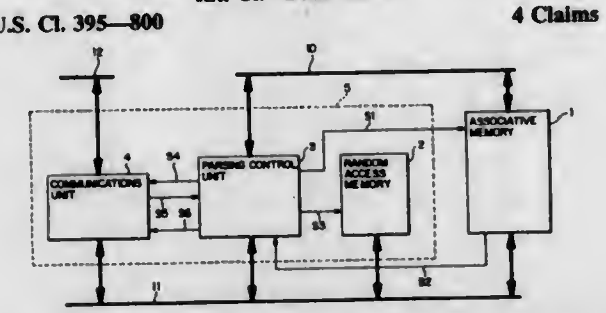
ASSOCIATIVE MEMORY PROCESSING METHOD FOR NATURAL LANGUAGE PARSING AND PATTERN RECOGNITION

Nelson Correa, Carrera 6ª Nº 57-11 Apt. 402, Santa Fe de Bogota, D.C., Colombia

Division of Ser. No. 880,711, May 8, 1992, Pat. No. 5,511,213. This application Nov. 13, 1995, Ser. No. 557,729

Int. Cl.⁶ G06F *15/78*

U.S. Cl. 395—800 **4 Claims**



1. A method of executing parsing algorithms on an associative memory processing system against a given grammar and input string, the grammar being comprised of a plurality of grammar rules, each of which has one left-hand side symbol, and zero or more right-hand side symbols, said method comprising the steps of:

storing a plurality of grammar rules in a memory, according to numeric codes for the symbols of each grammar rule, and in an order of the grammar rules;

defining a predetermined parsing algorithm, and a numeric encoding of each of the parsing states used by the parsing algorithm, so that each such encoding, referred to as a parsing state representation, may be stored in one associative memory word so as to allow retrieval by multiple access patterns;

storing the parsing state representations generated by the algorithm in the associative memory means, and distinguishing unprocessed parsing states from those parsing states already processed by the algorithm;

accessing the associative memory means with a first retrieval condition for retrieval of unprocessed parsing states;

using parsing control means for the processing of unprocessed parsing states retrieved from the associative memory means, such processing including marking the current unprocessed parsing state as processed, and yielding potentially new unprocessed parsing states;

accessing the associative memory means with a second retrieval condition for testing the presence of a potentially new unprocessed parsing state in the associative memory, and if such is the case, inhibiting the writing of the potentially new unprocessed parsing state into the associative memory; and

accessing the associative memory means with further retrieval conditions for retrieving parsing states that meet certain criteria, required for processing of unprocessed parsing states and for optimizations of the processing to be performed.

5,619,719

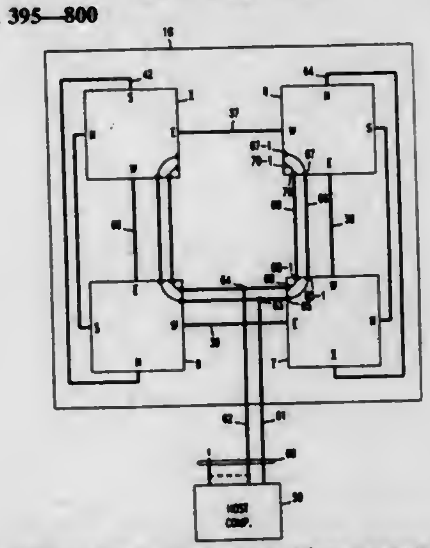
REDUCED INTER-MODULE CIRCUIT PATH CROSSOVERS ON CIRCUIT BOARDS MOUNTING PLURAL MULTI-CHIP MODULES, THROUGH REARRANGING THE NORTH-SOUTH-EAST-WEST INTERCONNECTION INTERFACES OF A GIVEN MODULE AND THROUGH SELECTIVE ROTATION OF EACH MODULE

John M. Segelken, Morristown; Richard R. Shively, Convent Station, both of N.J.; Christopher A. Stanziola, Staatsburg, N.Y., and Lesley J.-Y. Wu, Mountain Lakes, N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 293,005, Aug. 19, 1994, abandoned. This application Jul. 11, 1996, Ser. No. 678,141

Int. Cl.⁶ G06F *15/60*

U.S. Cl. 395—800 **4 Claims**



1. A computing device comprising a host computer and a plurality of computing nodes, each said node comprising an interconnected rectangular array of four circuit modules disposed on an upper surface of a circuit board, said board further having a lower surface, wherein:

a) each said circuit module comprises an interconnection interface situated on each of four respective edges;

b) with respect to a standard interconnection scheme, the interconnection interfaces on each module are respectively denoted. North (N), South (S), East (E), and West (W), and occur in the sequence NSEW upon a circumambulation of said module;

c) the modules are interconnected according to a standard interconnection scheme that calls for E to connect only to W and N only to S, permits E-W connections only within single circuit boards, and permits N-S connections within single circuit boards or to adjacent circuit boards;

d) each module within a rectangular array has a progressive 90-degree rotation relative to the preceding module within the array, whereby each edge bearing an E interconnection interface directly faces a W edge of an adjacent module, each corner formed by the E and W edges of a module faces inwardly relative to the rectangular array, and each corner formed by the N and S edges of a module faces outwardly relative to the rectangular array;

e) the host computer is connected to each computing node by way of a plurality of communication paths;

f) each communication path extends from the host computer to the lower surface of a respective circuit board and from there through a via to a connection point on an E-W interconnection path on the upper surface of said board; and

g) all of said connection points within a given node are situated on interconnection paths between the same E edge and the same W edge.

5,619,720

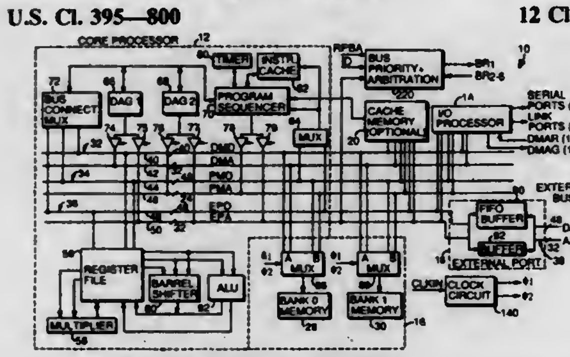
DIGITAL SIGNAL PROCESSOR HAVING LINK PORTS FOR POINT-TO-POINT COMMUNICATION

Douglas Garde, Dover, and Aaron H. Gorius, Upton, both of Mass., assignors to Analog Devices, Inc., Norwood, Mass.

Continuation of Ser. No. 317,886, Oct. 4, 1994, abandoned. This application Jul. 29, 1996, Ser. No. 681,907

Int. Cl.⁶ G06F *3/00*

U.S. Cl. 395—800 **12 Claims**



1. A digital signal processor, comprising:

a core processor for performing digital signal computations;

a memory for storing instructions and data values for the digital signal computations;

a memory bus interconnecting said core processor and said memory;

a link port for communication with an external device, said link port including means for transmitting to said external device a link clock and a data word of m bits, said data word being transmitted on n data lines as a series of m/n nibbles of n bits each, where n is at least 4, one nibble being transmitted on each link clock cycle, and means responsive to deassertion of an acknowledge signal by said external device during transmission of said data word for completing transmission of said data word; and

an I/O processor including means for interconnecting said link port and said memory.

5,619,721

CONTROLLING FONT DATA MEMORY ACCESS FOR DISPLAY AND NON-DISPLAY PURPOSES USING CHARACTER CONTENT FOR ACCESS CRITERIA

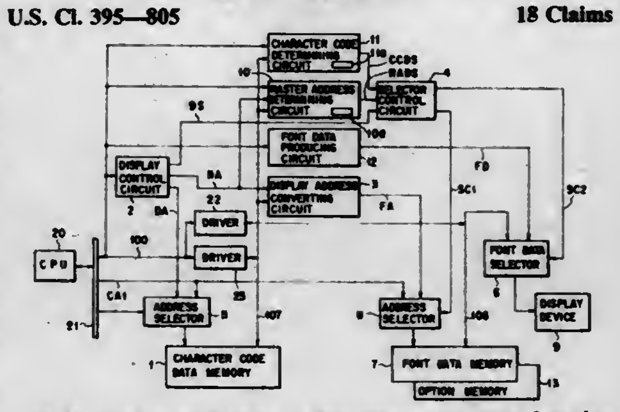
Kinya Maruko, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 882,865, May 14, 1992, abandoned. This application May 3, 1995, Ser. No. 433,132

Claims priority, application Japan, May 15, 1991, 3-110312

Int. Cl.⁶ G06F *17/21*

U.S. Cl. 395—805 **18 Claims**



10. A method of allowing a processor to access a font data memory for another purpose while character information is currently being displayed on a display in accordance with given font data, the method comprising the steps of:

supplying character code data corresponding characters to be displayed on the display;

storing accessible font data in a font data memory;

accessing the font data memory to read font data corresponding to the supplied character code data and supplying the read font data to the display;

producing font data representing a blank character;

detecting the supplied character code data indicating the blank character; and

in case the character code data indicating the character blank is detected, preventing accessing in the accessing step, and supplying the produced font data to the display, whereby the processor can access the font data memory and read out the font data therefrom while the blank character is currently being displayed on the display means.

5,619,722

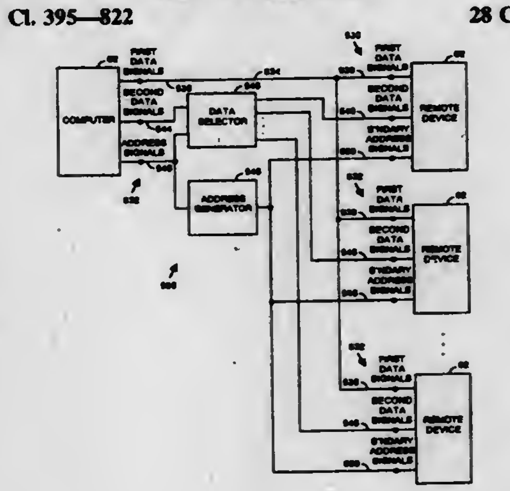
ADDRESSABLE COMMUNICATION PORT EXPANDER

Rodger T. Lovrenich, Santa Teresa, N.M., assignor to Teramar Group, Inc., El Paso, Tex.

Filed Jan. 18, 1994, Ser. No. 183,223

Int. Cl.⁶ G06F *13/00*

U.S. Cl. 395—822 **28 Claims**



1. A cascadable computer interface apparatus for providing a data communication path between an input port and a selected one of a plurality of output ports, the apparatus comprising:

a data selector circuit, responsive to a received address signal indicating the selected one of the plurality of output ports, for providing the data communication path between an RS-232 serial communication input port and the selected one of the plurality of output ports;

a secondary signal generator, responsive to the received address signal, which provides a secondary address signal to each of a plurality of the output ports, including at least one non-selected output port, for addressing a like cascadable computer interface apparatus, wherein the secondary address signal is derived from a previously received address signal and wherein the received address signal and a secondary address signal are digital signals;

wherein the input port comprises a data transmit line, a data receive line, a first control line, and a second control line, wherein the received address signal is received via the first control line and the second control line.

5,619,723

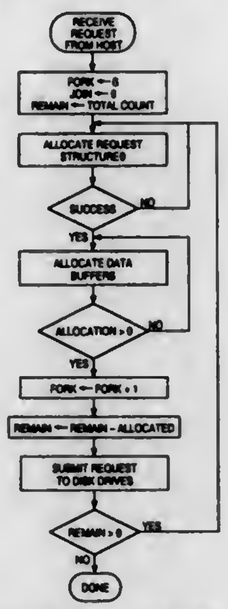
SYSTEM FOR SCHEDULING READ AHEAD OPERATIONS IF NEW REQUEST IS SEQUENTIAL OF LAST N LAST READ REQUESTS WHEREIN N IS DIFFERENT ON INDEPENDENT ACTIVITIES

Craig S. Jones, Austin; Kenneth L. Jeffries, Leander, and Terry J. Parks, Round Rock, all of Tex., assignors to Dell USA Corp., Austin, Tex.

Continuation of Ser. No. 810,277, Dec. 17, 1991, Pat. No. 5,483,641. This application Nov. 21, 1995, Ser. No. 562,238

Int. Cl.[6] G06F *13/14*

U.S. Cl. 395—823 **5 Claims**



1. A method of operating one or more disk drives through a disk drive controller which is interfaced through a bus to a host computer, wherein the disk drive controller receives read requests from the host computer, each read request specifying one or more data read addresses, the method comprising the controller-executed steps of:

monitoring the read addresses of the last plurality n disk read requests, where n is a programmable parameter having a value of n set as a function of the number of independent activities executing within the host computer;

determining whether the address of a disk read request sequentially follows any of the addresses of the last plurality n disk read requests;

scheduling a readahead operation when the disk read request sequentially follows an address of the last plurality n disk read requests;

determining a data read length specified by the disk read request;

deriving a readahead length which is a multiple of the determined data read length; and

performing the readahead operation by reading a block of data having the readahead length.

5,619,724

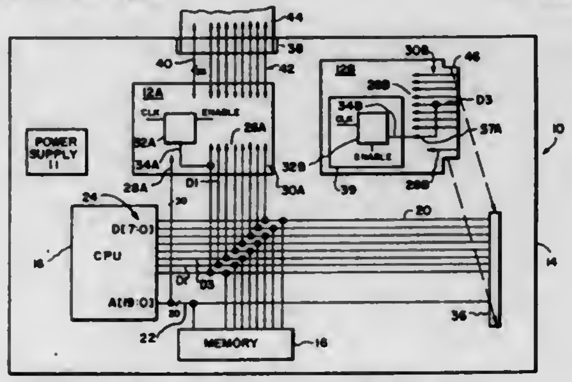
SYSTEM FOR ASSIGNING A UNIQUE IDENTIFIER TO COMPONENTS BY STORING A BIT SEQUENCE FROM A SELECTED BIT LINE AFTER DETECTING A PREDETERMINED SEQUENCE OF DATA

Terrill M. Moore, Trumansburg, N.Y., assignor to Databook Incorporated, Ithaca, N.Y.

Filed Aug. 10, 1994, Ser. No. 288,401

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—829 **13 Claims**



1. A computer system, the system comprising:

a microprocessor;

a memory, said memory coupled to said microprocessor by at least two first data lines;

one or more components, each of said components having: (i) at least two second data lines, said second data lines in each of said components coupled to said first data lines; and (ii) a storage device for holding a sequence of bits to distinguish the component from other components; and

each of said storage devices including an identification input coupled to a selected source, said source comprising one of said second data lines, each of said storage devices storing the sequence of bits from said selected source coupled to said identification input during the transmission of a predetermined sequence of data in said memory on said second data lines.

5,619,725

METHOD FOR AUXILIARY SOFTWARE PROVIDING INSTRUCTION FOR FACSIMILE MODEM TO SIMULATE A TELEPHONE COMMUNICATION WHILE CONNECTING TO STORE AND FORWARD COMPUTER TO RECEIVE COMMUNICATION

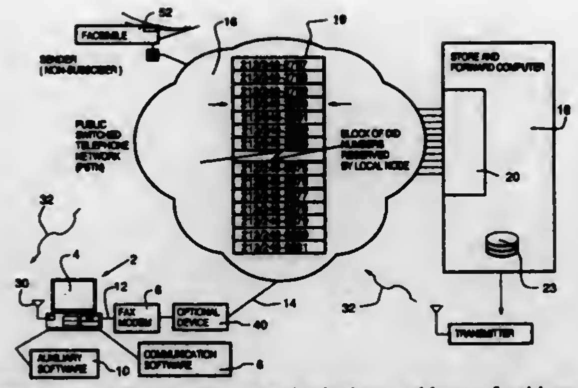
Alastair T. Gordon, Toronto, Canada, assignor to Alphanet Telecom Inc., Toronto, Canada

Filed Jan. 21, 1994, Ser. No. 183,935

Int. Cl.[6] G06F *3/00*

U.S. Cl. 395—839 **13 Claims**

1. In combination a personal computer having an auxiliary software application, conventional communication software used in association with transmission and receiving of facsimile information via a facsimile modem associated therewith, and a store and forward computer accessible by telephone communications; said auxiliary software application, when activated, providing instructions to said facsimile modem to initiate a telephone com-



munication with a predetermined telephone address of said store and forward computer, and after completion thereof, said auxiliary software application creates and transmits an activation signal to said conventional communication software, simulating a telephone communication is being received by the facsimile modem, whereafter said conventional communication software provides the normal signals for controlling the facsimile modem according to the standard protocol, whereby the facsimile modem and said conventional communication software assume a state for receipt of a communication from the store and forward computer connected to the facsimile modem, which connection was initiated by said auxiliary software application.

5,619,726

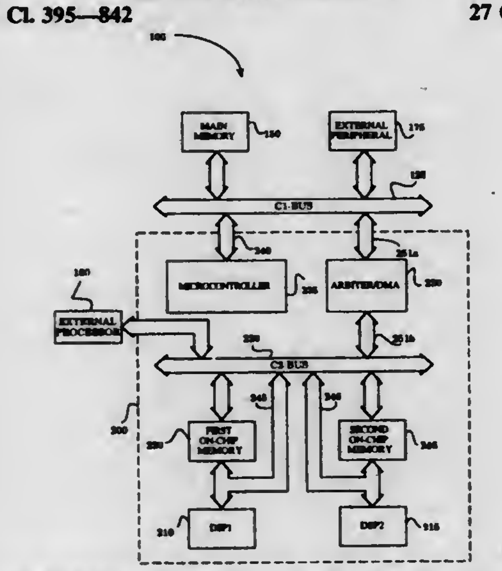
APPARATUS AND METHOD FOR PERFORMING ARBITRATION AND DATA TRANSFER OVER MULTIPLE BUSES

Mark Seconi, Phoenix; Paul Mc Allister, Chandler, both of Ariz.; Andrew Hall, Hillsboro, Oreg., and Marc Jalfon, Haifa, Israel, assignors to Intel Corporation, Santa Clara, Calif.

Filed Oct. 11, 1994, Ser. No. 320,927

Int. Cl.[6] G06F *13/28; 13/36*

U.S. Cl. 395—842 **27 Claims**



1. An apparatus coupled between a first bus and a second bus, said apparatus comprising:

arbitration means for arbitrating ownership of the first bus for a plurality of first bus masters and for arbitrating ownership of the second bus for a plurality of second bus masters, said arbitration means including a first arbitration element, a second arbitration element and at least one programmable storage means for providing programmable access priorities for each of said plurality of second bus masters to said second arbitration element, said second arbitration element awarding ownership of the second bus based on said access priorities; and

DMA transfer means for performing a DMA transfer between a first component coupled to the first bus and a second component coupled to the second bus when the apparatus has simultaneous ownership of both the first and second buses, said DMA transfer means being coupled to said arbitration means.

5,619,727

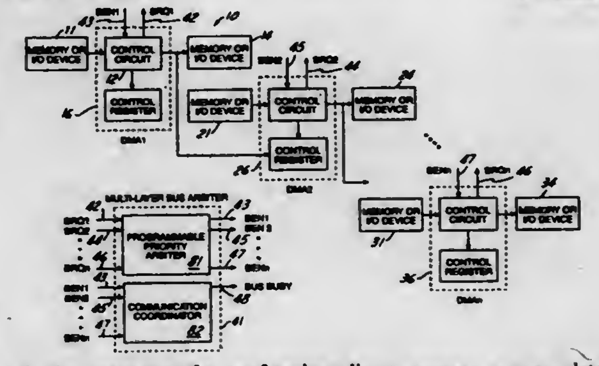
APPARATUS FOR A MULTIPLE CHANNEL DIRECT MEMORY ACCESS UTILIZING A VIRTUAL ARRAY TECHNIQUE

Chang-Shan Chen, Taipei, and Yung-Cha Dung, Hsin-Chu, both of Taiwan, assignors to United Microelectronics Corp., Hsin-Chu, Taiwan

Filed Mar. 8, 1995, Ser. No. 400,915

Int. Cl.[6] G06F *3/04*

U.S. Cl. 395—842 **10 Claims**



1. An apparatus for performing direct memory access data transfers in a system of the type having a system bus, comprising:

a first direct memory access (DMA) means for transferring data from a first data source to a first data destination, said first DMA means generating a first bus request signal in response to a first start condition;

a second DMA means being operatively coupled in series to said first DMA means and having a plurality of m-channels associated therewith, where m is an integer, for transferring data from a second data source to a second data destination, said first DMA means further having means for addressing said second DMA means when said first DMA means is in a series mode, said second DMA means generating a second bus request signal in response to a second start condition; and,

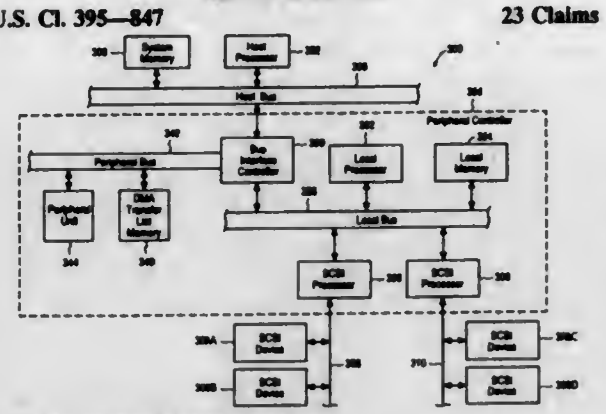
a multi-layer bus arbiter responsive to said first and second bus request signals for generating a bus enable signal corresponding to the highest priority bus request signal, said bus enable signal indicating that a corresponding DMA means is enabled to obtain a system bus control right;

said first DMA means being responsive to a system bus master to place said first DMA means in a series mode and to establish said first starting condition for transferring DMA parameters for each one of said m-channels from said first data source to said second DMA means when said arbiter awards said first DMA means said system bus control right, said transfer of certain DMA parameters placing said second DMA means in a normal mode and establishing said second starting condition; and

said bus arbiter transferring said system bus control right to said second DMA means for completing a direct memory access data transfer in accordance with said transferred DMA parameters.

5,619,728
DECOUPLED DMA TRANSFER LIST STORAGE TECHNIQUE FOR A PERIPHERAL RESOURCE CONTROLLER

Craig S. Jones; Jay Lory, and Victor K. Pecone, all of Austin, Tex., assignors to Dell USA, L.P., Round Rock, Tex.
Filed Oct. 20, 1994, Ser. No. 326,570
Int. Cl.^{6} H01J *3/00*
U.S. Cl. 395—847 **23 Claims**

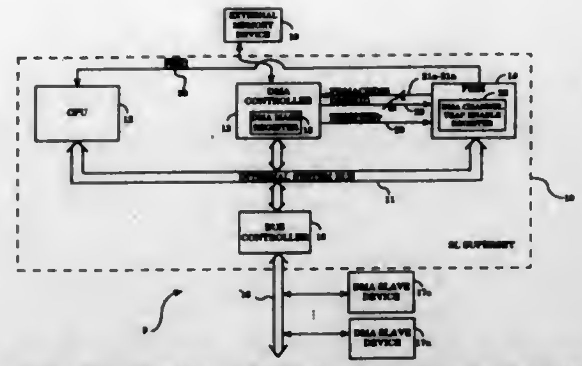


11. A computer system comprising:
a host bus;
a host processor coupled to said host bus;
a system memory coupled to said host bus;
a peripheral resource; and
a peripheral resource controller coupled between said host bus and said peripheral resource for controlling a transfer of data between said peripheral resource and said host bus, said peripheral resource controller including:
a local bus;
a local memory operatively coupled to said local bus;
a peripheral bus;
a DMA transfer list memory unit coupled to said peripheral bus for storing DMA transfer information; and
a bus interface controller coupled to said local bus, wherein said bus interface controller includes:
a host bus interface for providing an interface to said host bus;
a local bus interface coupled to said host bus interface, said local bus interface for providing an interface to said local bus;
a peripheral bus interface coupled to said local bus interface, said peripheral bus interface for providing an interface to said peripheral bus; and
a DMA controller coupled to said local bus interface, to said host bus interface and to said peripheral bus interface, wherein said DMA controller is capable of reading said transfer list information stored within said DMA transfer list memory and of effectuating a transfer of data from said local memory to said system memory.

5,619,729
POWER MANAGEMENT OF DMA SLAVES WITH DMA TRAPS

Patrick M. Bland, Delray Beach; Richard G. Hofmann, Lake Worth; Robert T. Jackson, Boynton Beach; Nader Amini, Boca Raton, all of Fla.; Bechara F. Boury, Milpitas, and Jayesh Joshi, Santa Clara, both of Calif., assignors to Intel Corporation, Santa Clara, Calif., and International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 162,488, Dec. 2, 1993, abandoned. This application Jan. 11, 1996, Ser. No. 584,805
Int. Cl.^{6} G06F *13/00*
U.S. Cl. 395—848 **34 Claims**

1. An apparatus managing power usage of at least one device capable of performing direct memory accesses, the apparatus comprising:

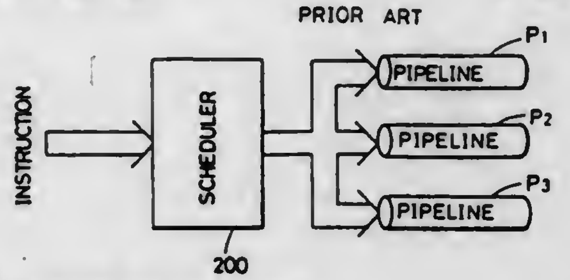


means for controlling a direct memory access by a selected direct memory access device of said at least one device;
means for managing power status of said at least one device; and
means for coupling said controlling means to said power managing means, said coupling means includes a plurality of handshaking signal lines including at least one direct memory access mask identification signal line transferring a signal from said controlling means into said power managing means to indicate that the direct memory access is to be performed by said selected direct memory access device.

5,619,730
PIPELINING DEVICE IN A PARALLEL PROCESSING APPARATUS AND AN INSTRUCTION SUPPLYING METHOD THEREFOR

Hideki Ando, Hyogo-ken, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 779,176, Oct. 17, 1991, abandoned. This application Sep. 6, 1994, Ser. No. 300,235
Claims priority, application Japan, Oct. 17, 1990, 2-279654
Int. Cl.^{6} G06F *12/00*
U.S. Cl. 395—855 **6 Claims**

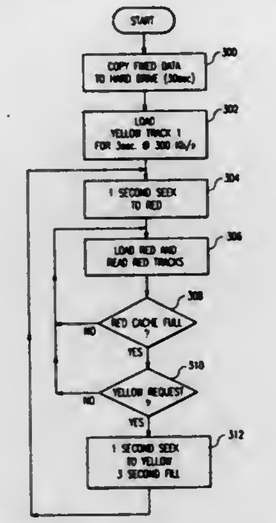
PRIOR ART



1. A storage device comprising:
main output ports;
a plurality of memory units arranged in parallel and each providing an entry storing region;
each of said memory units comprising;
a predetermined number of write selecting gates which are set in a selected state by respectively different write queue addresses;
a predetermined number of read selecting gates which are set in a selected state by respectively different read queue addresses;
input ports coupled to main input ports, output ports coupled to said main output ports; and
a storage element for storing data,
said input ports comprising sub-input ports which are disposed correspondingly to each of said write selecting gates, and are equal in number to said predetermined number,
said input ports further comprising sub-output ports which are disposed correspondingly to each of said read selecting gates, and
said write selecting gates and said read selecting gates couple associated memory elements to corresponding sub-input ports and corresponding sub-output ports when set in the selected state, respectively.

5,619,731
INTERACTIVE MUSIC CD AND DATA

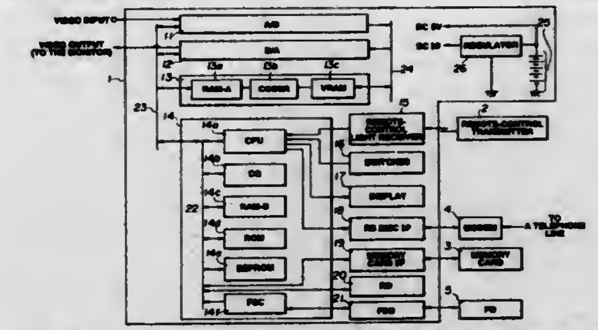
Kimble L. Jenkins, and C. Patrick Scholes, both of Memphis, Tenn., assignors to Ardent Teleproductions, Inc., Memphis, Tenn.
Filed Sep. 23, 1994, Ser. No. 311,744
Int. Cl.^{6} G06F *15/00;12/06;* G11B *17/22*
U.S. Cl. 395—873 **15 Claims**



1. A method of playing information from a storage medium which includes first continuously uninterrupted program information and second interactively-selectable program information that does not interrupt the first program unless such an interruption is selected, comprising the steps of:
first reading a first area of the medium which includes the first program information thereon at a rate which is faster than a reproduction rate at which said first program information must be output to prevent unintended interruption of program information;
first outputting said first program information at said reproduction rate while simultaneously storing parts of said first information in a first cache;
first determining when said first cache reaches a predetermined level of fill;
second determining a desired interactive program to be played;
second reading, subsequent to said first reading and responsive to said first and second determining steps, a second area of the medium which includes said desired interactive program, said reading being carried out at a rate which is faster than a reproduction rate at which said second information is output, and simultaneously filling a second cache with contents of said second information;
second outputting, subsequent to said first outputting, said second information at said reproduction rate while simultaneously storing parts of said second information in a second cache;
second determining, subsequent to said first determining, when said second cache reaches a second predetermined level of fill;
subsequently repeating said first reading step, said first outputting step, said first determining step, said second reading step, and said second determining step,
wherein said predetermined level of fill of said first cache is a level of fill which allows said first information in said first cache to be played for an amount of time at least equal to a time of said first seeking step plus a time of said second seeking step, plus a time required to fill said second cache to said predetermined level of fill of said second cache.

5,619,732
IMAGE MANIPULATING SYSTEM FOR CONTROLLING THE SELECTION OF PERMISSIBLE RECORDING TIME INTERVALS

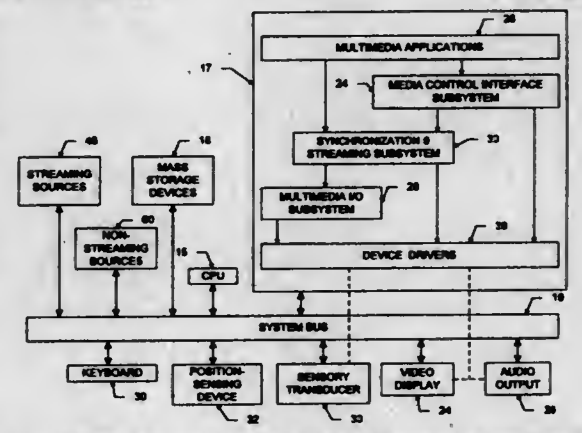
Kaoru Yoneyama, Fussa, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed May 11, 1994, Ser. No. 241,017
Claims priority, application Japan, May 13, 1993, 5-111871
Int. Cl.^{6} G11B *5/02*
U.S. Cl. 395—878 **9 Claims**



1. An image manipulating system having an interval recording means for repeatedly recording supplied image information at predetermined time intervals, comprising:
a ruling means presenting a limit value of recording time intervals selectively designated for repetitive recording depending on a type of information recording medium selected and including means for selecting a recording time interval and means for disabling selection of a recording time interval exceeding said limit value.

5,619,733
METHOD AND APPARATUS FOR SYNCHRONIZING STREAMING AND NON-STREAMING MULTIMEDIA DEVICES BY CONTROLLING THE PLAY SPEED OF THE NON-STREAMING DEVICE IN RESPONSE TO A SYNCHRONIZATION SIGNAL

Bradley D. Noe; William W. Lawton; Michael J. Koval, all of Boca Raton, and David W. Killian, Delray Beach, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Nov. 10, 1994, Ser. No. 337,064
Int. Cl.^{6} G06F *13/00*
U.S. Cl. 395—881 **11 Claims**



1. Apparatus for synchronizing multiple sources of multimedia data for presentation on an output device, the apparatus comprising;
a. a group of sources of data collectively representative of an event having a temporal flow pattern, wherein the data associated with at least one of the sources is streaming data and the data associated with at least one other source is non-streaming data and, wherein the at least one non-streaming data source has a controllable play speed and the control

means associated therewith comprises means for controlling the play speed so as to correct a synchronization mismatch in response to a synchronization signal;

b. at least one output device driver;

c. data-handling means associated with each data source, each data-handling means comprising:

i. means for transferring data to the output device; and

ii. control means associated with each transfer means for controlling the rate at which data is transferred and for reporting, at a characteristic frequency, a current temporal data location;

wherein the data-handling means associated with the at least one streaming-data source comprises:

i. at least one memory buffer;

ii. first transfer means for loading the data from the storage device into the buffer as a first data stream that preserves the temporal flow pattern; and

iii. second transfer means for extracting the event from the buffer as a second data stream in accordance with and at a rate representative of the temporal flow pattern and transferring the data to the output device driver, the first and second transfer means interoperating to ensure a continuous queue of data in the buffer;

d. a synchronizer associated with all said control means for causing data to be transferred from the sources to the at least one output device driver in a temporally aligned manner, the synchronizer comprising:

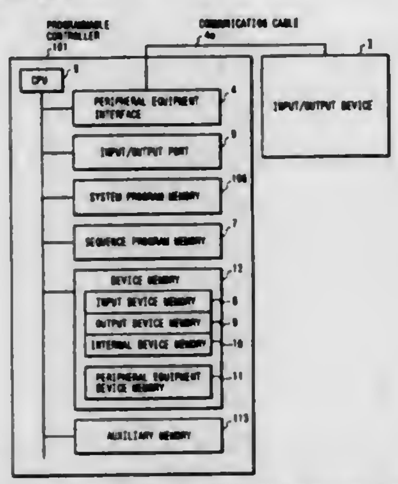
i. means for designating one of the control means as a master;

ii. means for receiving synchronization pulses from the master control means;

iii. means for periodically comparing the current temporal data location of each non-master control means against that of the master to derive a synchronization-mismatch value; and

iv. means for sending a synchronization signal to selected ones of the control means based on the synchronization-mismatch values, the signals being indicative of said values, said synchronization signal causing a selected control means to correct the synchronization mismatch.

5,619,734
PROGRAMMABLE CONTROLLER AND METHOD OF OPERATION THEREOF
Tatsumi Yabusaki, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 1, 1994, Ser. No. 221,759
Claims priority, application Japan, Apr. 1, 1993, 5-075825
Int. Cl.⁶ G06F *13/00*
U.S. Cl. 395—882 30 Claims



10. A programmable controller which operates based on the contents of a first storage means for storing at least one of input signal states, output signal states, and predetermined internal data, said controller comprising:

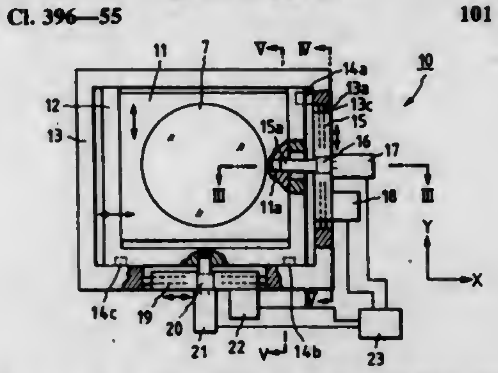
second storage means for sequentially storing a predetermined number of data blocks, each of said data blocks comprising address data corresponding to first addresses in said first storage means, write data to be written to a predetermined number of addresses of said first storage means beginning at said first addresses, write data quantity data, and at least one of cycle designation data and timing data;

a determining means for detecting the presence of a task write signal;

changing means for reading said data blocks from said second storage means one block at a time and changing said contents of said first storage means sequentially with said address data and said write data of said data blocks in accordance with at least one of said cycle designation data and said timing data to perform a program task upon detection of the presence of said write task signal, and for operating said controller with the contents said first storage means to perform said processing cycles with at least one of said input states, output signal states, and predetermined internal data in the absence of said task write signal; and

counting means for counting a number of data changes performed by said changing means, wherein said changing means ceases operation of said program task when said number equals said write data quantity data in the absence of said task write signal.

5,619,735
OPTICAL APPARATUS FOR CORRECTING IMAGE DEVIATION
Tadao Kai, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan
Continuation of Ser. No. 417,473, Apr. 5, 1995, abandoned, which is a continuation of Ser. No. 129,580, Sep. 30, 1993, abandoned, which is a continuation of Ser. No. 853,256, Mar. 18, 1992, abandoned. This application Apr. 5, 1996, Ser. No. 628,192
Claims priority, application Japan, Mar. 22, 1991, 3-083666; Dec. 9, 1991, 3-349505
Int. Cl.⁶ G03B *13/00*
U.S. Cl. 396—55 101 Claims



1. An image deviation correcting optical apparatus, comprising:

an optical system constituted partially by a corrective optical system for correcting an image deviation;

a movable member coupled to said corrective optical system;

driving means for driving said corrective optical system through said movable member;

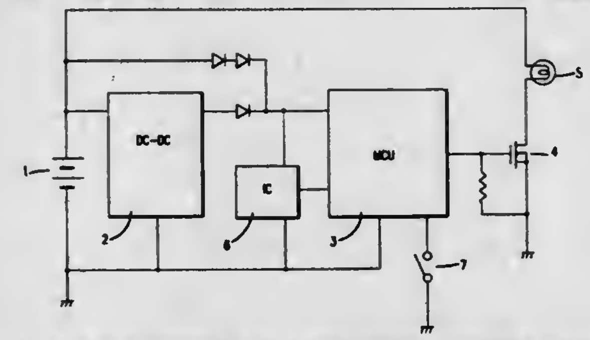
means supporting said movable member to provide a corrective motion accompanying a rotational component when said driving means is driven;

angle variation detecting means fixed to said movable member for detecting rotation relative to a predetermined point of origin of an inertial system; and

control means responsive to said angle variation detecting means for controlling the driving of said driving means such that said movable member is driven by said driving means to correct an image deviation due to angle variation of an optical axis of the apparatus as a result of the detected rotation;

said supporting means cooperating with said movable member for substantially maintaining a constant angular position of said movable member with respect to said predetermined point of origin.

5,619,736
CAMERA EQUIPPED WITH A LAMP LIGHTING CONTROLLING DEVICE
Kouji Satou, Miyagi, Japan, assignor to Nikon Corporation, Tokyo, Japan
Filed Aug. 22, 1995, Ser. No. 517,974
Claims priority, application Japan, Sep. 7, 1994, 6-214092
Int. Cl.⁶ G03B *7/00*
U.S. Cl. 396—164 18 Claims

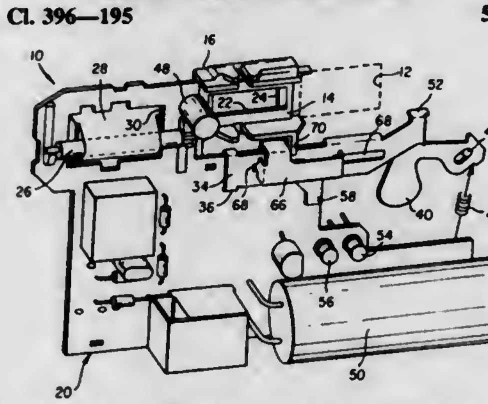


1. A camera equipped with a lamp lighting controlling device that lights a lamp to alleviate red eye before a shutter release operation commences, the camera comprising:

an electrical current controlling device that performs pulse electrical current control to repeatedly connect and disconnect electrical current to the lamp; and

a clocking device that clocks a first time interval before the shutter release operation commences and a second time interval that immediately follows the first time interval, wherein the electrical current controlling device lights the lamp with a stationary duty value during the second time interval, said stationary duty value having a largest duty value, and the electric current controlling device lights the lamp with an initial duty value during the first time interval, the initial duty value being smaller than the stationary duty value.

5,619,737
ENCODEMENT-ON-FILM RECORDING APPARATUS UTILIZES FLASH COMPONENTS IN A CAMERA
Randy E. Horning; Douglas W. Constable, and David C. Smart, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Feb. 7, 1996, Ser. No. 594,881
Int. Cl.⁶ G03B *13/10; 15/03; 17/24*
U.S. Cl. 396—195 5 Claims

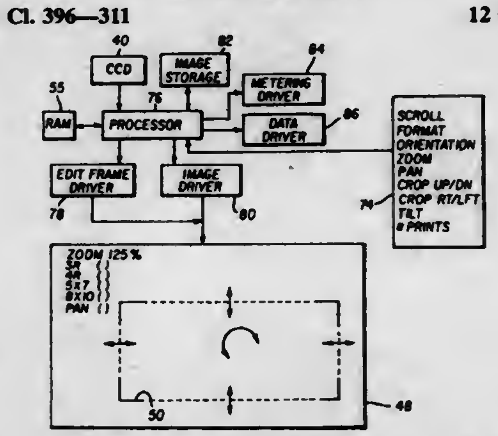


3. A camera assembly comprising a plurality of encodement-on-film recording means adapted to receive electrical energy to provide various film encodements, an encodement-on-film selector movable to various selection positions to select one or more of said recording means to provide the film encodements, a flash charge storage capacitor, and a shutter-flash synch contact connected to said flash capacitor to enable the flash capacitor to supply electrical energy when a shutter blade impacts said synch contact, is characterized in that:

one or more of said recording means are electrically coupled via said synch contact to said flash capacitor to receive electrical energy from the flash capacitor; and

said synch contact supports said selector for movement to its selection positions and is electrically coupled to the selector to permit the selector to select one or more of said recording means to receive electrical energy from said flash capacitor.

5,619,738
PRE-PROCESSING IMAGE EDITING
Dwight J. Petruchik, Honeoye Falls, and Joseph A. Manico, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed May 2, 1995, Ser. No. 434,152
Int. Cl.⁶ G03B *17/24*
U.S. Cl. 396—311 12 Claims



1. A camera for exposing photographic film to a scene image, the camera including an electronic display for rapidly presenting a visible representation of the image exposed on the film; characterized in that:

said camera includes a driver for presenting electronically moveable markers on the display framing said image representation, and a driver control for cropping said image representation with said markers to select a print frame; and,

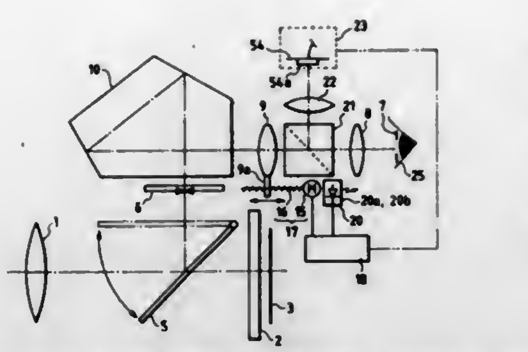
said control records data on the film defining said selected print frame by said marker positions.

5,619,739
DIOPTER CORRECTING APPARATUS
Takashi Kawabata, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed May 30, 1995, Ser. No. 454,086
Claims priority, application Japan, Jun. 2, 1994, 6-145623
Int. Cl.⁶ G03B *13/02*
U.S. Cl. 396—382 9 Claims

1. A diopter correcting apparatus comprising:

optical lens means for performing diopter correction;

detecting means for detecting whether an observer is wearing corrective lenses;



memory means storing therein data regarding a position of said optical lens means in accordance with a result of the detecting performed by said detecting means; and

driving means for driving said optical lens means on the basis of the data stored by said memory means.

5,619,740

APPARATUS FOR PREVENTING FILM PERFORATION DAMAGE DURING LOADING

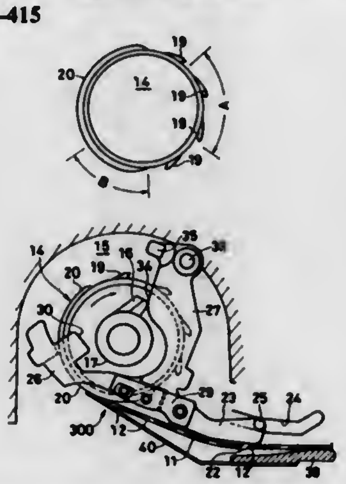
Kazuhiko Onda, and Yasuhiko Tanaka, both of Omiya, Japan, assignors to Fuji Photo Optical Co. Ltd, Omiya, Japan

Filed Mar. 9, 1995, Ser. No. 401,252

Claims priority, application Japan, Mar. 24, 1994, 6-079324

Int. Cl.⁶ G03B *1/00*

U.S. Cl. 396—415 **4 Claims**



1. A film loading apparatus for a camera comprising:

a film feeding member having a claw for feeding film with a perforation engaged with said claw at the time of loading said film;

a spool for taking up said film by engaging a catch with a perforation of said film;

a driving member for reciprocatingly moving said film feeding member in synchronism with the rotation of said spool;

wherein no catch is providing at the portion of said spool which passes a film engaging position when said film feeding member moves backward; and

wherein no catch is provided in a predetermined range of said spool between the portion which passes said film engaging position when said film feeding member moves backward and the portion which passes said film engaging position when said film feeding member moves forward.

5,619,741

SHUTTER DRIVING SYSTEM FOR A CAMERA

Seon-ho Lee, and Jae-kyeong Seo, both of Kyeongsangnam-do, Rep. of Korea, assignors to Samsung Aerospace Industries, Ltd., Kyeongsangnam-do, Rep. of Korea

Continuation of Ser. No. 277,613, Jul. 20, 1994, abandoned.

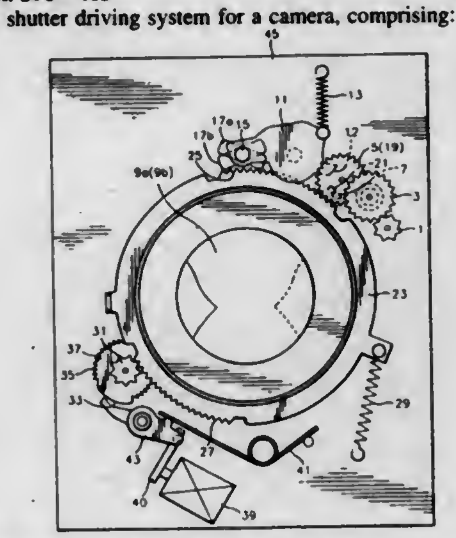
This application Jul. 18, 1996, Ser. No. 683,820

Claims priority, application Rep. of Korea, Jul. 21, 1993, 93-13787; Jun. 11, 1994, 94-13543

Int. Cl.⁶ G03B *9/08*

U.S. Cl. 396—463 **6 Claims**

1. A shutter driving system for a camera, comprising:



a first gear for engaging with a motor gear;

a second gear for engaging the first gear, the second gear having a face with a projection;

a light shield;

a lever for engaging the projection of the second gear and opening the light shield;

a third gear having a face with a projection for contacting and engaging the projection of the second gear;

a ring for engaging the third gear and moving a lens; and means for locking the ring.

5,619,742

PHOTOGRAPHIC PROCESSING CONDITION MANAGING METHOD, AND METHOD AND APPARATUS FOR MANAGING IMAGE FORMING DEVICES

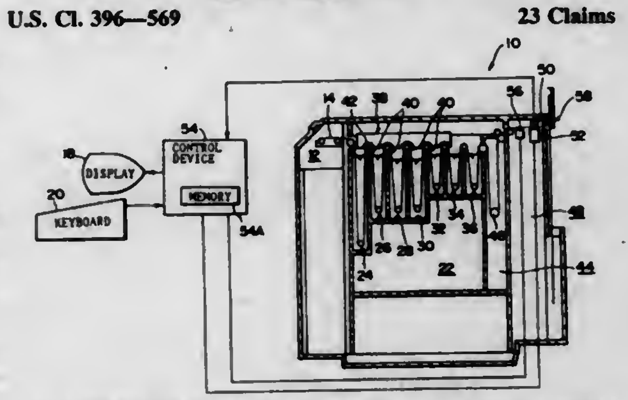
Nobuo Matsumoto; Takaaki Terashita; Fumio Mogi; Noboru Sasaki, and Takatoshi Ishikawa, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 15, 1995, Ser. No. 559,289

Claims priority, application Japan, Nov. 18, 1994, 6-285626

Int. Cl.⁶ G03D *13/00*

U.S. Cl. 396—569 **23 Claims**



1. A method for managing photographic processing conditions of an image forming device equipped with means for immersing a photosensitive material for photographing into a processing solution for photosensitive materials to process the photosensitive material for photographing, said method comprising the steps of:

for a photosensitive material for photographing, which has been used for photographing and on which an original image has been exposed and which has been immersed into and processed by a processing solution for photosensitive materials at said image forming device, dividing at least one of an image developed on the photosensitive material and a portion of the photosensitive material other than a portion comprising said image into a plurality of colors;

measuring a density of each of said colors;

storing a density value of each of said colors;

repeating the steps of dividing, measuring, and storing;

calculating, at predetermined intervals, an average value of density values stored in said storing step; and

determining a state of the processing solution for photosensitive materials of said image forming device on the basis of an average value of said density values at one of said predetermined intervals.

5,619,743

METHOD OF PROCESSING A PHOTOSENSITIVE MATERIAL AND PHOTOGRAPHIC PROCESSING APPARATUS

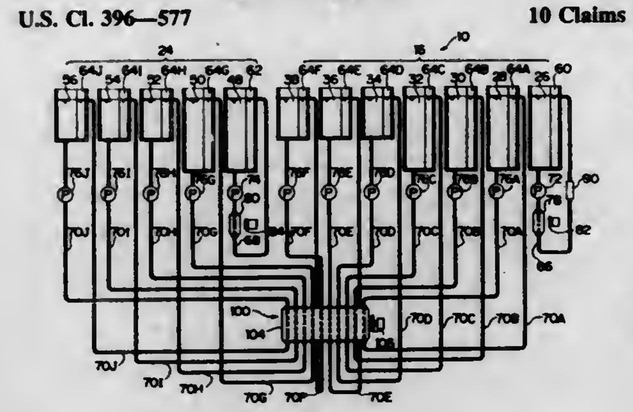
Fumio Mogi, and Takatoshi Ishikawa, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 6, 1995, Ser. No. 466,748

Claims priority, application Japan, Jun. 13, 1994, 6-130053

Int. Cl.⁶ G03D *7/00*

U.S. Cl. 396—577 **10 Claims**



1. A method of developing a photosensitive material, using a plurality of processing solutions including a developing solution, said method comprising the steps of:

placing each of said processing solutions in respective tanks;

heating said processing solutions, except the developing solution, by at most a first heating source and a second heating source; wherein the developing solution is maintained at a predetermined temperature equal to or higher than 40° C., and the remaining processing solutions are maintained at predetermined temperatures in a range from at least 38° C. to at most 50° C. while maintaining the temperature differences between the processing solutions, except the developing solution, to be less than or equal to 2° C.

5,619,744

FILM PROCESSOR

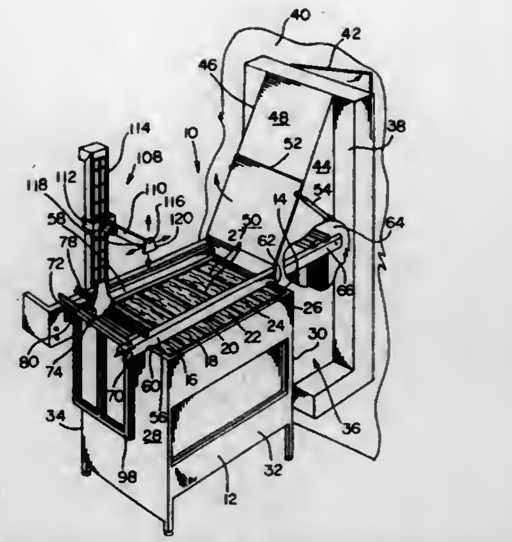
Michael E. Tebo, 18884 Auten Rd., South Bend, Ind. 46637

Filed Sep. 21, 1995, Ser. No. 531,779

Int. Cl.⁶ G03D *3/08;13/10*

U.S. Cl. 396—621 **14 Claims**

1. Film processor comprising a housing, said housing defining a loading station and multiple treatment stations, a carrier member for supporting film, a transport member movably mounted on said housing for moving said carrier member between said stations,



insertion drive means for causing said transport member to move said carrier member into and out of said stations, and transport drive means for moving said transport member and said carrier member between said stations, said transport member including a transport arm for engaging said carrier member when the carrier member is to be transported from one station to another station, said insertion drive means including an upright track carried by the housing slidably supporting said transport arm for movement along said track toward and away from said treatment stations, first power actuating means for moving said transport arm along said upright track, a lateral track for moving said upright track from one of said stations to another of said stations, and second power actuating means for moving said upright track along said lateral track.

5,619,745

PROCESSING APPARATUS FOR A SILVER HALIDE LIGHT-SENSITIVE MATERIAL

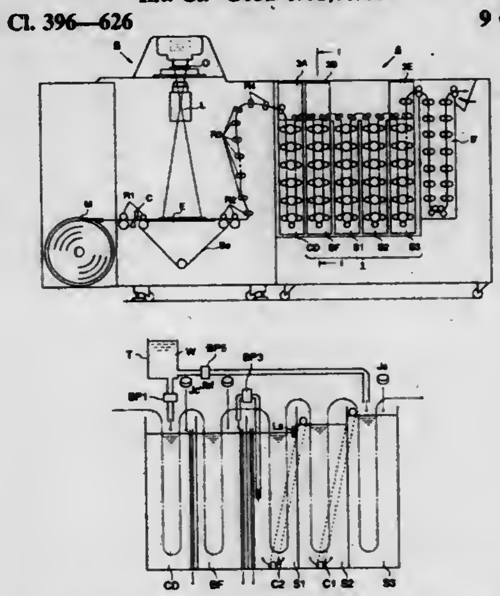
Hiroaki Kobayashi, Hino, Japan, assignor to Konica Corporation, Tokyo, Japan

Filed Apr. 10, 1996, Ser. No. 632,721

Claims priority, application Japan, Apr. 17, 1995, 7-090813

Int. Cl.⁶ G03D *3/02;13/00*

U.S. Cl. 396—626 **9 Claims**



1. An apparatus for processing a light-sensitive material, comprising:

a plurality of processing tanks serially arranged along a conveyance passage on which the light-sensitive material is conveyed in a conveying direction,

means for replenishing compensation water into a most-downstream tank arranged most downstream among the plurality of processing tanks in terms of the conveying direction under the following inequality:

$$0 \leqq (E-C)/(P-R) < 0.3$$

E (ml/day): amount of evaporated water from the plurality of processing tanks per day, wherein the amount of evaporated water is total amount of amount of evaporated water from the series of tanks when the temperature control is conducted for 10 hours under the ambient condition that temperature is 25° C. and relative humidity is 50% and amount of evaporated water when the temperature control is not conducted for 14 hours under the above ambient condition,

C (ml/day): amount of the compensation water to compensate the evaporated water from the plurality of processing tank per day,

P (m^2/day): amount of the light-sensitive material processed per day,

R (ml/m^2): amount of replenishing processing solution per m^2 of light-sensitive material; and

means for shifting a processing solution from the most downstream tank to upstream tanks sequentially in the reverse direction to the conveying direction by the solution-shifting means.

5,619,746

IMAGE FORMING APPARATUS HAVING RECORDING MATERIAL BEARING MEMBER

Takahiro Kubo, Tokyo; Yoshihiro Murasawa, Yokohama; Hisashi Fukushima, Kawasaki; Takeshi Menjo, Tokyo; Takashi Hasegawa, Ageo, and Satoshi Tamura, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

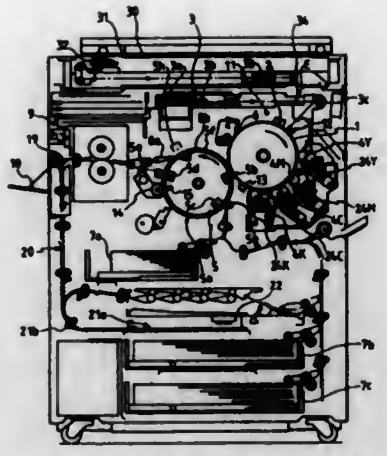
Filed Jul. 28, 1994, Ser. No. 281,617

Claims priority, application Japan, Jul. 30, 1993, 5-208313; Jul. 30, 1993, 5-208314

Int. Cl.^{6} G03G *15/14*

U.S. Cl. 399—297 **33 Claims**

29. An image forming apparatus comprising:



an image bearing member for bearing a plurality of images of different colors;

a rotatable recording material bearing member for bearing a recording material and for conveying the recording material to a transfer station, wherein said plurality of images of different colors borne on said image bearing member are transferred onto the recording material borne on said recording material bearing member at said transfer station;

cleaning means, which contacts with and separates from a surface of said recording material bearing member at a cleaning position, for cleaning a separate-mold agent from said recording material bearing member; and

determining means for determining whether to convey the recording material borne on said recording material bearing member to the transfer station again after completion of image transfer onto the recording material based on a time period from a start of image transfer of a last color image to the recording material to a start of contact of said cleaning means with said recording material bearing member.

DESIGNS

APRIL 8, 1997

378,707

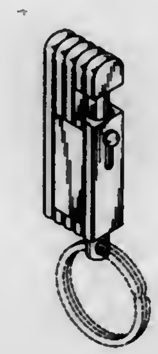
STACKED GROOVE KEY HOLDER

Sumner MacDonald, 44 Ballou Blvd., Bristol, R.I. 02809

Filed Mar. 8, 1996, Ser. No. 51,862

Term of patent 14 years

U.S. Cl. D3—207



378,708

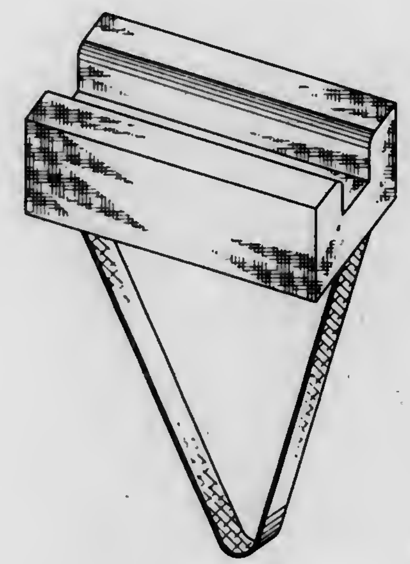
GUN SUPPORT

Jeffrey T. Hughes, and Christopher R. Rogers, both of Winston-Salem, N.C., assignors to Hughes Products Company, Inc., Thomasville, N.C.

Filed May 6, 1996, Ser. No. 54,076

Term of patent 14 years

U.S. Cl. D3—221



378,709

MULTI-COMPARTMENT PURSE

Steven Jacobs, New York, N.Y., and Julie B. Kampf, Tenafly, N.J., assignors to Michael Stevens Ltd., New York, N.Y.

Filed Jun. 19, 1995, Ser. No. 40,459

Term of patent 14 years

U.S. Cl. D3—233

378,710

PURSE

Paul Christou, 2130 Glenora Drive, Oakville, Ontario, Canada

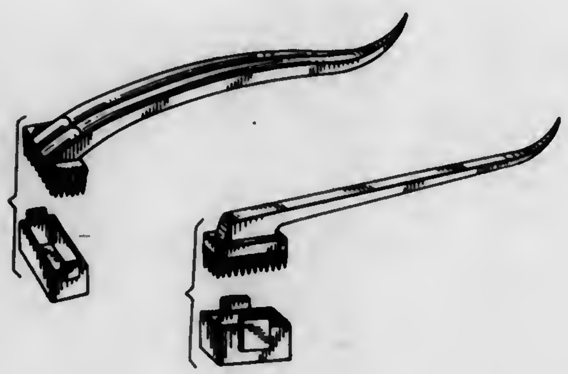
Filed Aug. 26, 1994, Ser. No. 27,561

Claims priority, application Canada, Jul. 4, 1994, 1994-1269

Term of patent 14 years

U.S. Cl. D3—234

378,711
COMBINED TOOTHBRUSH, CAP, AND DENTAL PICK
Pietro Occhetti, Corso Francia No. 2, 10143 Torino, Italy
Filed Jun. 1, 1994, Ser. No. 23,819
Term of patent 14 years
U.S. Cl. D4—108

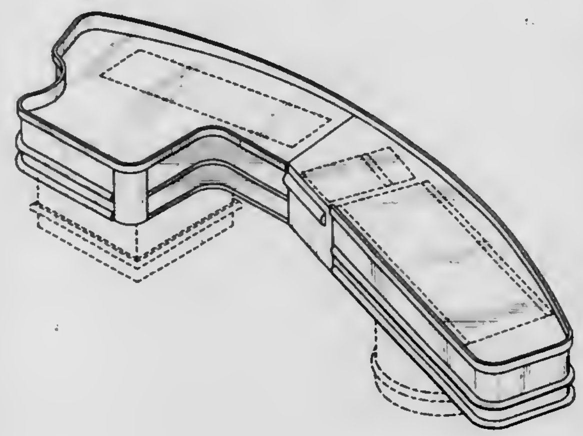


378,712
SPHERICAL HAIRBRUSH
Sabrina S. Denebeim, 260 Avila St., San Francisco, Calif. 94123
Filed Apr. 4, 1994, Ser. No. 20,825
The portion of the term of this patent subsequent to Oct. 22, 2010, has been disclaimed.
Term of patent 14 years
U.S. Cl. D4—128

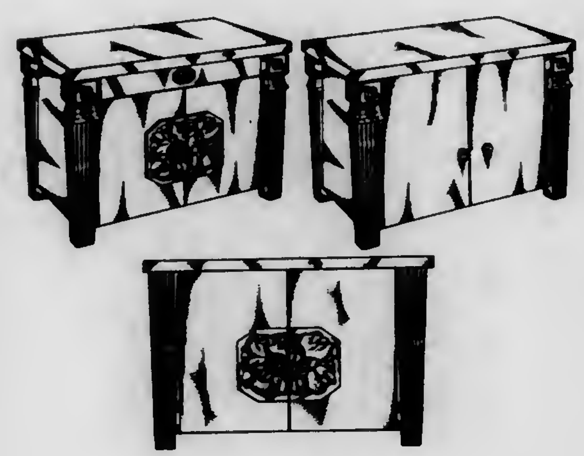
378,713
IMPRINTED PATTERN ON CONSTRUCTION MATERIAL
Craig S. Holt, 60 Casa Del Rey Ct., Chico, Calif. 95926
Filed May 23, 1995, Ser. No. 39,316
Term of patent 14 years
U.S. Cl. D5—43

378,714
CHAIR
Jocelyn Beaulieu, Newmarket, Canada, assignor to Global Upholstery Company, Downsview, Canada
Filed Jun. 27, 1995, Ser. No. 40,785
Claims priority, application Canada, Apr. 18, 1995, 1995-0826
The portion of the term of this patent subsequent to Dec. 31, 2010, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—366

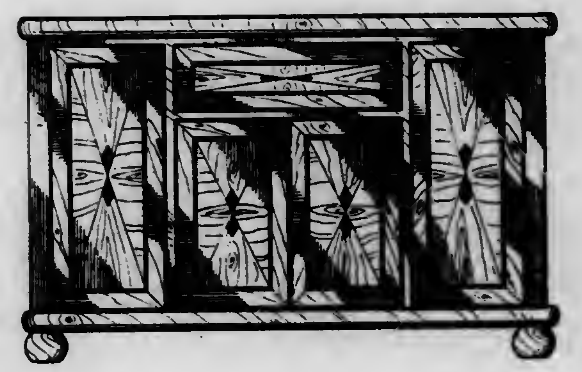
378,715
CHECK STAND COUNTER
Wayne Dewitt, Jacksonville, Fla., assignor to Load King Manufacturing Co., Inc., Jacksonville, Fla.
Filed Feb. 5, 1996, Ser. No. 49,955
Term of patent 14 years
U.S. Cl. D6—402



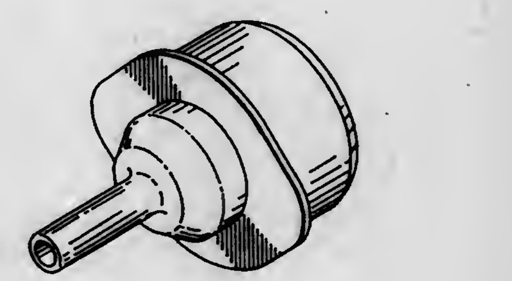
378,716
CHEST
Phyllis Mann, Los Angeles, and Lawrence Platt, Beverly Hills, both of Calif., assignors to Cal-Marble Furniture Mfg. Corp., El Monte, Calif.
Filed Jan. 27, 1995, Ser. No. 34,154
Term of patent 14 years
U.S. Cl. D6—434



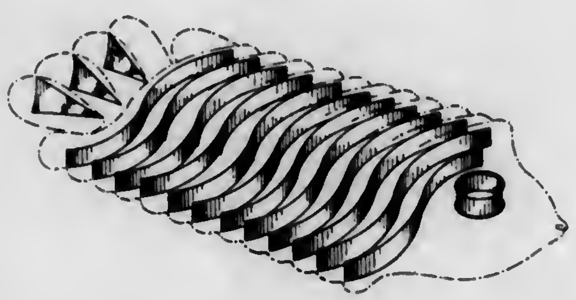
378,717
BUFFET
Sidney A. Lenger, Kernsville, N.C., assignor to Schottenstein Stores Corporation, Columbus, Ohio
Filed Oct. 25, 1995, Ser. No. 45,648
Term of patent 14 years
U.S. Cl. D6—445



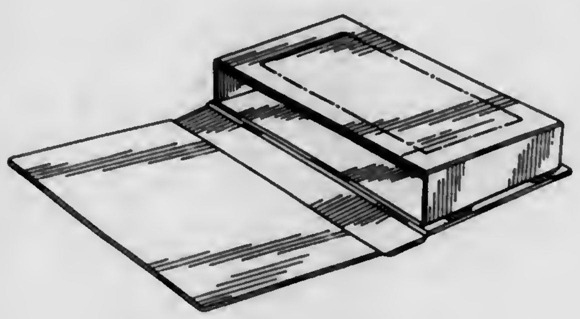
378,718
PUMP TIP FOR A SOAP DISPENSER
Warren S. Daansen, P.O. Box 614, Nashua, N.H. 03061
Filed Nov. 2, 1995, Ser. No. 46,751
Term of patent 14 years
U.S. Cl. D6—542



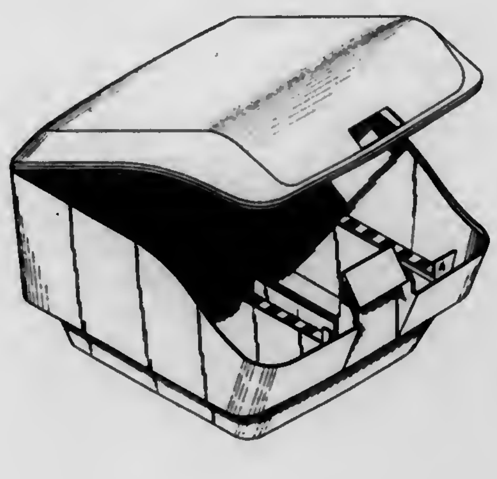
378,719
RECREATIONAL AIR MATTRESS
Andrew F. Fireman, Brighton, Mass., assignor to Aqua-Leisure Industries, Inc., Avon, Mass.
Filed Nov. 2, 1994, Ser. No. 30,583
Term of patent 14 years
U.S. Cl. D6—604



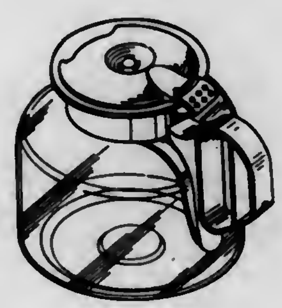
378,720
VIDEO CASSETTE HOLDER
Ralph A. Ebenreth, 48 Clark Rd., Ajax, Ontario, Canada
Filed May 4, 1995, Ser. No. 38,474
Term of patent 14 years
U.S. Cl. D6—632



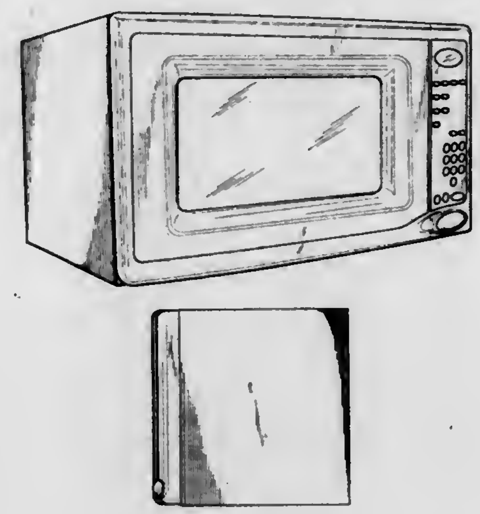
378,721
STORAGE CONTAINER FOR SOFTWARE DISKETTES
Roger H. Ramsey, 871 Merriman Rd., Akron, Ohio 44303; Charles S. Johnson, 174 Hunt Club Dr. #3-D, Copley, Ohio 44321, and Cherry Bochman, 6909 Schoepf Dr., Northfield, Ohio 44067
Filed Dec. 13, 1995, Ser. No. 47,865
Term of patent 14 years
U.S. Cl. D6—634



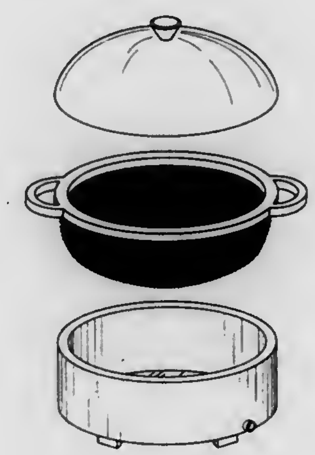
378,722
CARAFE
Martin Brady, Chesterfield, Va., assignor to Hamilton Beach/Proctor-Silex, Inc., Glen Allen, Va.
Filed Aug. 1, 1995, Ser. No. 42,117
Term of patent 14 years
U.S. Cl. D7—319



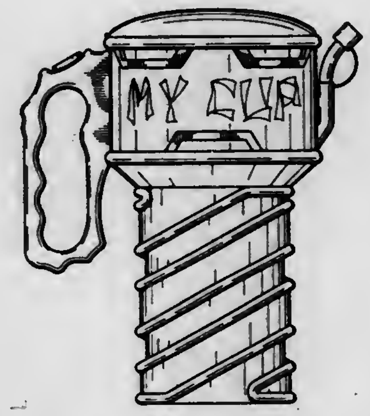
378,723
MICROWAVE OVEN
Richard K. Weiss, Dublin, Ohio, assignor to White Consolidated Industries, Inc., Cleveland, Ohio
Filed Nov. 6, 1996, Ser. No. 46,019
Term of patent 14 years
U.S. Cl. D7—351



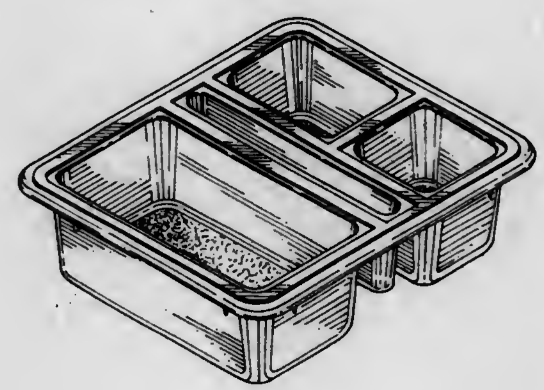
378,724
WATERMELON CONTAINER WITH STRAINER
Michelle D. Young, 1020 SW. 11 Ct., Deerfield Beach, and Betty Mathison, 306 NW. 7th Ct., West Deerfield Beach, both of Fla. 33441
Filed Jan. 17, 1996, Ser. No. 48,960
Term of patent 14 years
U.S. Cl. D7—505



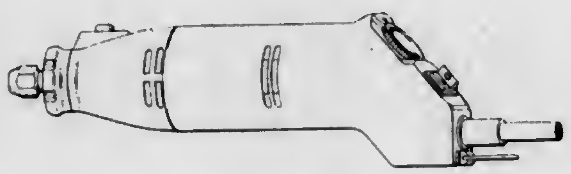
378,725
TRAVEL BEVERAGE CONTAINER
Hugh G. Ventus, 913 Derringer La., Henderson, Nev. 89014
Filed Jan. 16, 1996, Ser. No. 49,085
Term of patent 14 years
U.S. Cl. D7—510



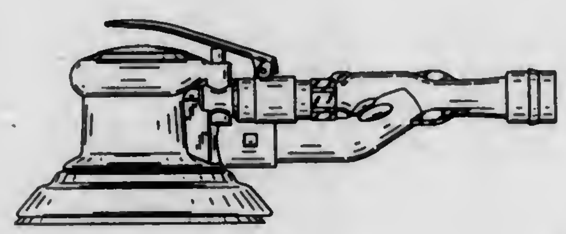
378,726
DISH
John W. Dunn, Durham, Conn., assignor to Design Specialties, Inc., Wallingford, Conn.
Filed Sep. 1, 1995, Ser. No. 43,402
Term of patent 14 years
U.S. Cl. D7—549



378,727
ROTARY TOOL
Naoki Kikuchi, Chandler, Ariz., assignor to Ryobi North America, Easley, S.C.
Filed Jul. 25, 1995, Ser. No. 41,877
Term of patent 14 years
U.S. Cl. D8—61

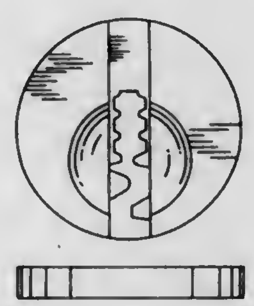


378,728
RANDOM ORBITAL SANDER WITH DUST PICKUP
Warren A. Seith, Wispering Pines, and Troy B. Mutter, Cary, both of N.C., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.
Filed Dec. 18, 1995, Ser. No. 47,990
Term of patent 14 years
U.S. Cl. D8—62

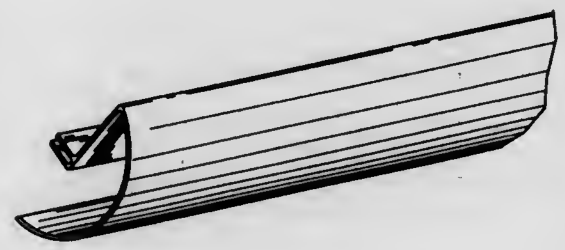


378,729
HANDLE FOR A SCREWDRIVER
Tsung-Chieh Chang, No. 101, Alley 81, Lane 2, Sec. 1, Chung Hsin Road, Ta-Li, Taichung Hsien, Taiwan
Filed Mar. 13, 1995, Ser. No. 36,070
Term of patent 14 years
U.S. Cl. D8—83

378,730
FRONT FACE OF A KEY PLUG
Joanne M. Aston, Wolverhampton, England, assignor to Yale Security, Inc., Monroe, N.C.
Filed Oct. 19, 1995, Ser. No. 49,166
Term of patent 14 years
U.S. Cl. D8—343

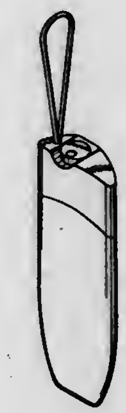


378,731
WIRE MANAGEMENT CHANNEL FOR A FURNITURE SYSTEM
Andrew J. Kopish, Green Bay, Wis., assignor to Krueger International, Inc., Green Bay, Wis.
Filed Jun. 9, 1995, Ser. No. 40,066
Term of patent 14 years
U.S. Cl. D8—356

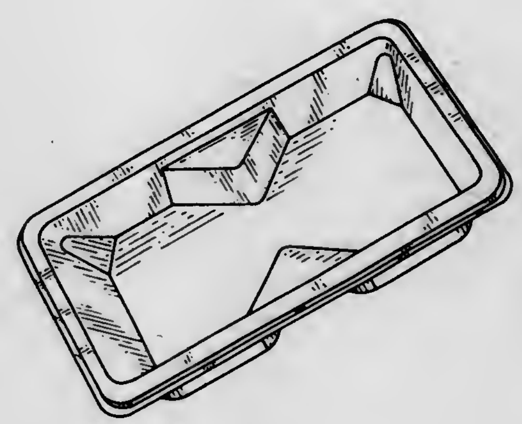


378,732
HAT CONTAINER
Richard L. Lawson, 4279 Clybourn Ave., Toluca Lake, Calif. 91602
Filed Aug. 9, 1995, Ser. No. 42,367
Term of patent 14 years
U.S. Cl. D9—320

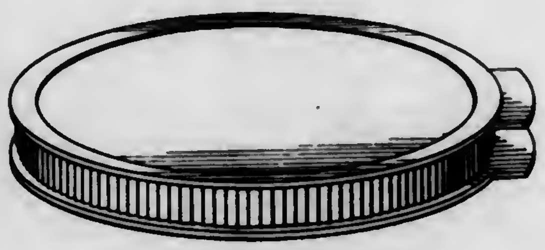
378,733
SUNTAN LOTION BOTTLE
Jimmy W. Asaff, Dallas, and Richard B. Bierman, Plano, both of Tex., assignors to Skin Research Laboratories, Inc., Dallas, Tex.
Filed Aug. 30, 1995, Ser. No. 43,257
Term of patent 14 years
U.S. Cl. D9—337



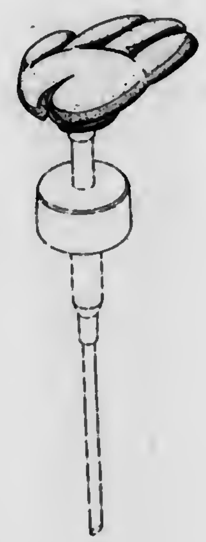
378,734
TRAY
Thomas Hardy, Lebanon; Thomas Hessen, Ephrata, and Robert Papich, Reading, all of Pa., assignors to W.R. Grace & Co.-Conn., Duncan, S.C.
Continuation of Ser. No. 22,101, Apr. 29, 1994, abandoned.
This application Dec. 8, 1995, Ser. No. 49,611
Term of patent 14 years
U.S. Cl. D9—425



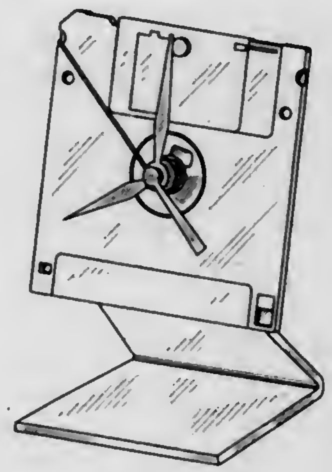
378,735
RIGID CONTAINER FOR CONDOMS AND ASSOCIATED PRODUCTS
William L. Gatewood, Slocomb; George Kaczmarczyk, and Lawrence J. Povlacs, both of Dothan, all of Ala., assignors to Aladan Corporation, Dothan, Ala.
Division of Ser. No. 40,023, Jun. 8, 1995, Pat. No. Des. 372,863. This application Jun. 7, 1996, Ser. No. 54,121
Term of patent 14 years
U.S. Cl. D9—429



378,736
LIQUID DISPENSER TOP
Stephen J. McPhilliamy, and Ingrid C. Hollrah, both of Chicago, Ill., assignors to Kimberly-Clark Corporation, Neenan, Wis.
Filed Aug. 21, 1995, Ser. No. 42,937
Term of patent 14 years
U.S. Cl. D9—497



378,737
FLOPPY DISK CLOCK
Ellie McCue, and Dennis McCue, both of 4136 Redwood Hwy., San Rafael, Calif. 94903
Filed Jun. 13, 1995, Ser. No. 40,236
Term of patent 14 years
U.S. Cl. D10—6



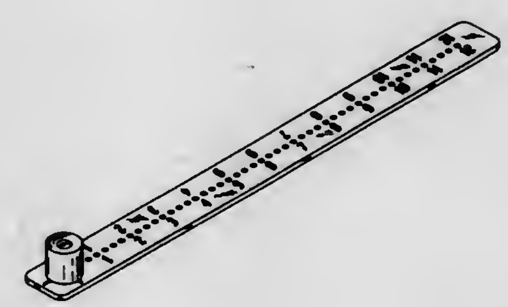
378,738
CASE FOR ANALOG WRISTWATCH
Janet C. Gazzola, Simsbury, Conn., assignor to Timex Corporation, Middlebury, Conn.
Filed Aug. 14, 1995, Ser. No. 43,834
Term of patent 14 years
U.S. Cl. D10—30

378,739
WRISTWATCH
Florian Strasser, Meinisberg, Switzerland, assignor to Movado Watch Company S.A., Grenchen, Switzerland
Filed Apr. 2, 1996, Ser. No. 52,470
Claims priority, application European Pat. Off., Dec. 8, 1995, DMA/003170
Term of patent 14 years
U.S. Cl. D10—32

378,740
WRIST WATCH
Hideyuki Yamamoto, Fussa, Japan; Richard W. Seymour, Surrey, and David H. Powell, West Sussex, both of United Kingdom, assignors to Casio Computer Co., Ltd., Tokyo, Japan
Filed Oct. 13, 1995, Ser. No. 45,241
Claims priority, application Japan, Aug. 30, 1995, 2049955
Term of patent 14 years
U.S. Cl. D10—38

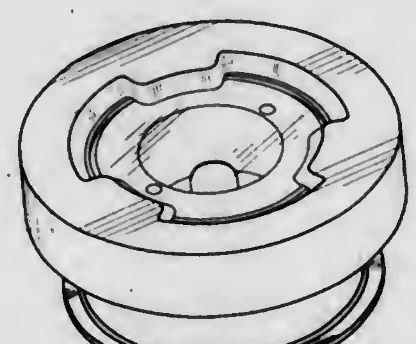
378,741
WATCH
Jacques Fontaine, Saint Cloud, France, assignor to Jacques Benedict S.A., Saint Cloud, France
Filed Apr. 16, 1996, Ser. No. 53,090
Claims priority, application WIPO, Dec. 21, 1995, DM/034987
Term of patent 14 years
U.S. Cl. D10—39

378,742
COMPASS
Paul R. McDonald, 89 Morris Ave., Edison, N.J. 08837, and Gerald R. Pfund, 131 Lakewood Ave., Ho-Ho-Kus, N.J. 07423
Filed Feb. 7, 1996, Ser. No. 50,003
Term of patent 14 years
U.S. Cl. D10—68

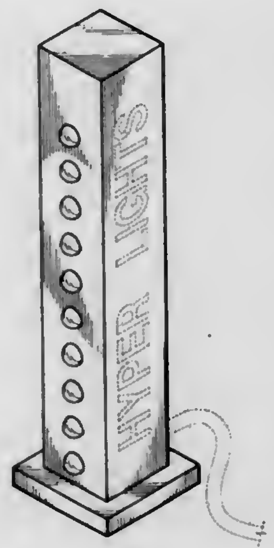


378,743
RULER
Paul R. McDonald, 89 Morris Ave., Edison, N.J. 08837, and Gerald R. Pfund, 131 Lakewood Ave., Ho-Ho-Kus, N.J. 07423
Filed Feb. 7, 1996, Ser. No. 50,004
Term of patent 14 years
U.S. Cl. D10—71

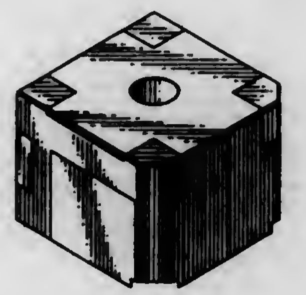
378,744
RESTRICTION INDICATOR
Kathleen A. Abrahamson, Prior Lake; Thomas A. Boeckemann, Lakeville, and James Efstrand, Moundsview, all of Minn., assignors to Donaldson Company, Inc., Minneapolis, Minn.
Filed Jan. 11, 1996, Ser. No. 48,653
Term of patent 14 years
U.S. Cl. D10—96



378,745
STAND ALONE LED DISPLAY
Dale D. Hollis, 5341 Greenbriar Rd., Chattanooga, Tenn. 37412
Filed Nov. 7, 1995, Ser. No. 46,120
Term of patent 14 years
U.S. Cl. D10—109

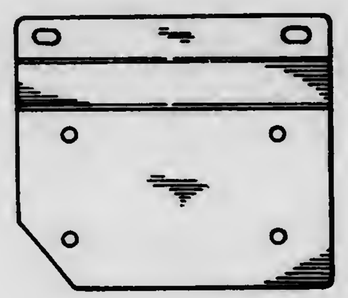


378,746
AUDIBLE SIGNAL FOR ALARM UNITS
Yoshio Imahori, Shizuoka, Japan, assignor to Star Micronics Co., Ltd., Shizuoka-ken, Japan
Filed Mar. 10, 1995, Ser. No. 35,994
Claims priority, application Japan, Sep. 24, 1994, 6-28829
The portion of the term of this patent subsequent to Sep. 10, 2010, has been disclaimed.
Term of patent 14 years
U.S. Cl. D10—116

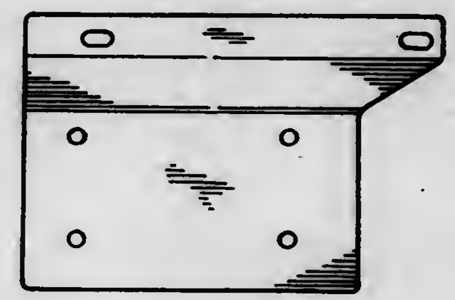


378,747
BRAKE ARCH ADAPTER FOR BICYCLE SUSPENSION FORK
Steven J. Behrens, Canyon Country, Calif., assignor to Answer Products, Inc., Valencia, Calif.
Filed Dec. 11, 1995, Ser. No. 47,685
Term of patent 14 years
U.S. Cl. D12—118

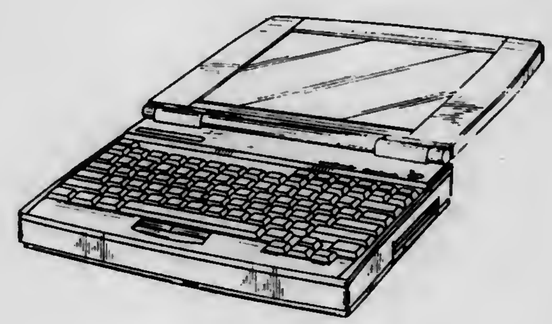
378,748
SADDLE BAG MOUNTING BRACKET FOR A MOTORCYCLE
Larry L. Miller, Rossburg, Ohio, assignor to M.E.W. Custom Cycle Fabrications, Inc., Versailles, Ohio
Filed Nov. 7, 1994, Ser. No. 30,740
Term of patent 14 years
U.S. Cl. D12—223



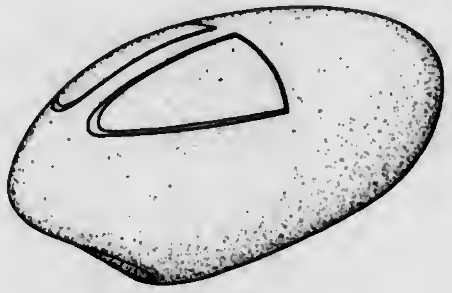
378,749
SADDLE BAG MOUNTING BRACKET FOR A MOTORCYCLE
Larry L. Miller, Versailles, Ohio, assignor to M.E.W. Custom Cycle Fabrications, Inc., Versailles, Ohio
Filed Apr. 25, 1996, Ser. No. 53,576
Term of patent 14 years
U.S. Cl. D12—223



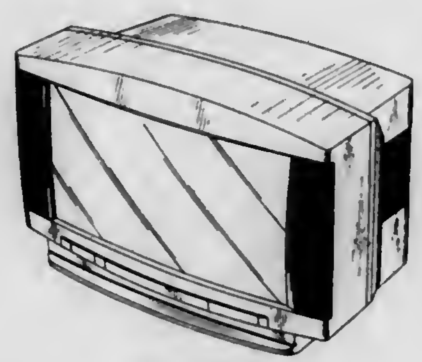
378,750
PORTABLE ELECTRONIC COMPUTER
Yoshinori Inukai, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 3, 1995, Ser. No. 45,999
Claims priority, application Japan, May 10, 1995, 7-12987
Term of patent 14 years
U.S. Cl. D14—106



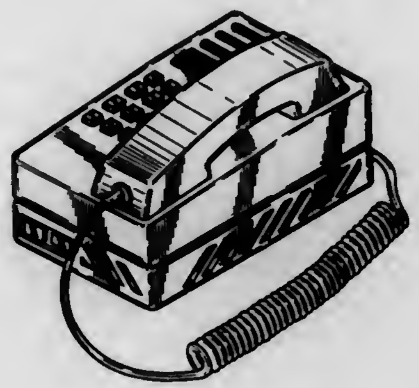
378,751
GRAPHIC DISPLAY CONTROLLER
Gregory C. Smith, La Honda, Calif., assignor to Gyration, Inc., Saratoga, Calif.
Filed Oct. 19, 1995, Ser. No. 45,441
Term of patent 14 years
U.S. Cl. D14—114



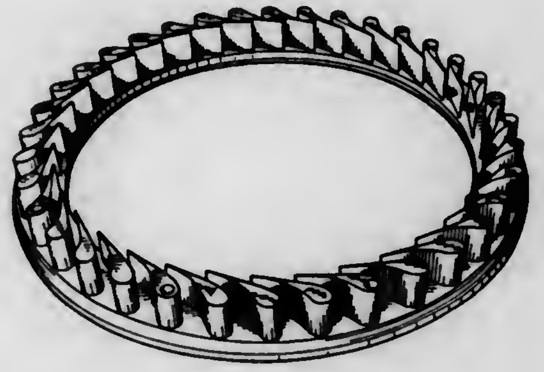
378,752
TELEVISION RECEIVER
Toshikazu Asanuma, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Dec. 19, 1995, Ser. No. 48,084
Claims priority, application Japan, Jun. 21, 1995, 7-17921
Term of patent 14 years
U.S. Cl. D14—126



378,753
FIRE ALERT TELEPHONE
Timothy J. DiBiasi, Rt. 1 Box 165 Old State Rd., Sugar Grove, Pa. 16350; Robert J. Krasinski, 221 Weeks St., Jamestown, N.Y. 14701, and Jeffrey A. Depas, 264 E. Fairmount Ave., Lakewood, N.Y. 14750
Filed Dec. 15, 1994, Ser. No. 32,239
Term of patent 14 years
U.S. Cl. D14—151

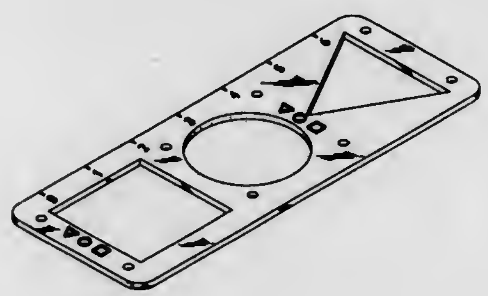


378,754
NOZZLE RING
Salaiyur N. Thirumalaisamy, Newton, and Henry B. Faulkner, Dover, both of Mass., assignors to Gas Research Institute, Chicago, Ill.
Filed Feb. 13, 1995, Ser. No. 34,814
Term of patent 14 years
U.S. Cl. D15—5

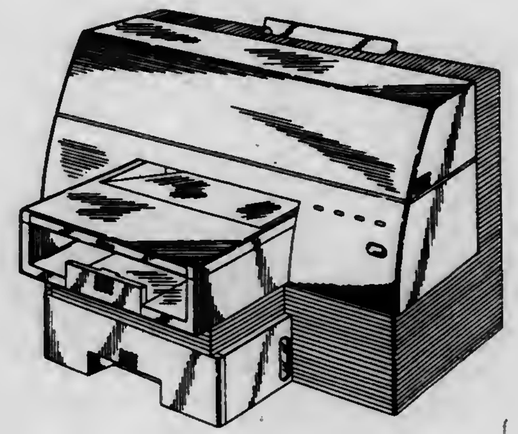


378,755
AGRICULTURAL TRACTOR
Hisato Kato, and Hiroyuki Miki, both of Sakai, Japan, assignors to Kubota Corporation, Japan
Filed Sep. 21, 1994, Ser. No. 28,725
Claims priority, application Japan, Mar. 23, 1994, 6-7730
Term of patent 14 years
U.S. Cl. D15—23

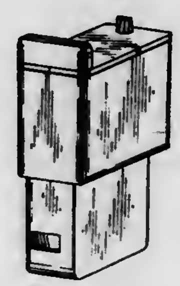
378,756
SHAPE MAKER
Paul R. McDonald, 89 Morris Ave., Edison, N.J. 08837, and Gerald R. Pfund, 131 Lakewood Ave., Ho-Ho-Kus, N.J. 07423
Filed Feb. 7, 1996, Ser. No. 50,002
Term of patent 14 years
U.S. Cl. D15—136



378,757
INK JET PRINTER WITH MULTIPLE MEDIA INPUT TRAYS
Paul T. Dubson, Escondido, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Mar. 3, 1995, Ser. No. 35,658
Term of patent 14 years
U.S. Cl. D18—55

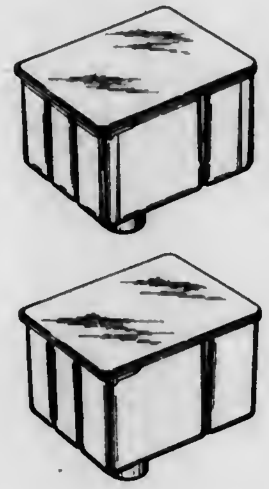


378,758
INK TANK FOR PRINTER
Hiroyuki Tokuda; Masanori Takenouchi, both of Yokohama; Yasuo Kotaki, Machida, and Yuji Hamasaki, Sagamihara, all of Japan, assignors to Canon Kabushi Kaisha, Tokyo, Japan
Filed Feb. 22, 1995, Ser. No. 35,172
Claims priority, application Japan, Aug. 23, 1994, 6-25178
The portion of the term of this patent subsequent to Aug. 27, 2010, has been disclaimed.
Term of patent 14 years
U.S. Cl. D18—56



378,759
TAPE CARTRIDGE FOR TAPE PRINTER
Mitsuharu Hattori, and Takashi Higashi, both of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan
Filed Feb. 22, 1995, Ser. No. 35,208
Claims priority, application Japan, Aug. 31, 1994, 6-26428
Term of patent 14 years
U.S. Cl. D18—56

378,760
INK CARTRIDGE FOR PRINTER
Satoshi Shinada; Takao Kobayashi; Seiji Mochizuki, and Satoshi Fujioka, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan
Filed Apr. 24, 1995, Ser. No. 37,911
Claims priority, application Japan, Oct. 24, 1994, 6-32358
Term of patent 14 years
U.S. Cl. D18—56



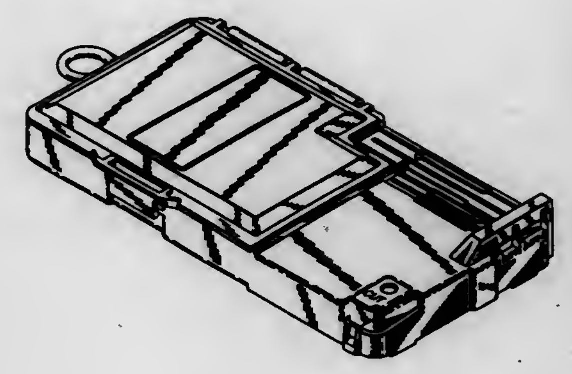
378,761
BALL-POINT PEN
Nobuo Sekine, Aichi, Japan, assignor to The Pilot Ink Co., Ltd., Nagoya, Japan
Filed May 6, 1996, Ser. No. 54,056
Claims priority, application Japan, Nov. 7, 1995, 7-33600
Term of patent 14 years
U.S. Cl. D19—48

378,762
MECHANICAL PENCIL
Takao Kikuchi, and Michiaki Kuramoto, both of Tokyo, Japan, assignors to Kabushiki Kaisha Pilot, Tokyo, Japan
Filed Feb. 12, 1996, Ser. No. 50,256
Term of patent 14 years
U.S. Cl. D19—51

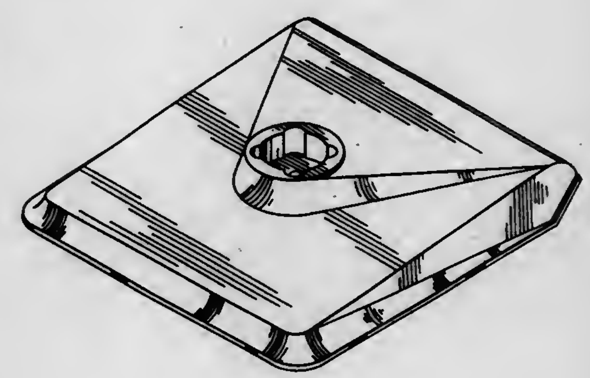
378,763
WRITING INSTRUMENT
Geoffrey A. Hollington, London, England, assignor to Parker Pen Products, Isleworth, England
Division of Ser. No. 31,869, Dec. 8, 1994. This application Feb. 28, 1996, Ser. No. 50,851
Claims priority, application United Kingdom, Jul. 4, 1994, 2040098
Term of patent 14 years
U.S. Cl. D19—51

378,764
INK REFILL FOR A BALL-POINT PEN
Toshio Araki, and Hideyuki Tanaka, both of Aichi, Japan, assignors to The Pilot Ink Co., Ltd., Nagoya, Japan
Filed Nov. 15, 1995, Ser. No. 46,456
Claims priority, application Japan, May 15, 1995, 7-13524
Term of patent 14 years
U.S. Cl. D19—54

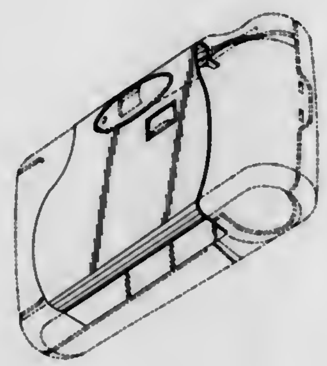
378,765
WIRE MARKER DISPENSER
Gerald W. Johannsen, Round Rock, Tex., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Aug. 18, 1994, Ser. No. 27,319
Term of patent 14 years
U.S. Cl. D19—69



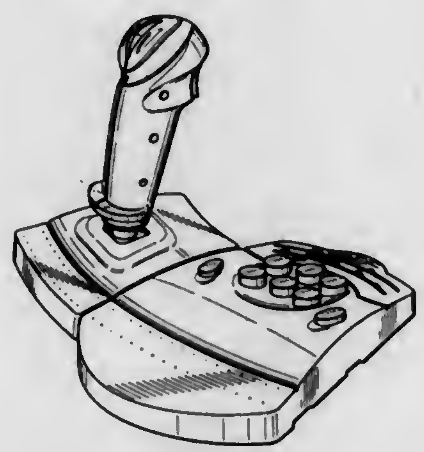
378,766
WHEELED BASE FOR A STAND
Josef W. Schwarzli, Vandorf Road, R.R. #4, Stouffville, Ontario, Canada
Filed Nov. 16, 1994, Ser. No. 31,243
Claims priority, application Canada, Oct. 14, 1994, 1994-2054
Term of patent 14 years
U.S. Cl. D20—8



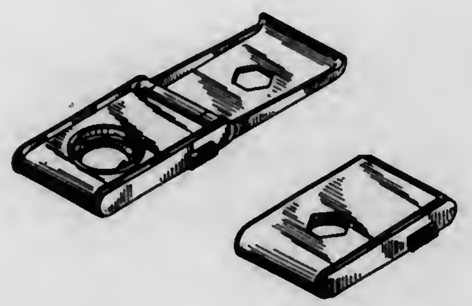
378,767
COVER LABEL FOR CAMERA
Steven S. Chapman, Corfu; Daniel C. Jackson; John K. McBride, both of Rochester; James G. Rydelek, Henrietta, and Joseph E. Yokajty, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Division of Ser. No. 27,933, Sep. 1, 1994. This application Jan. 23, 1996, Ser. No. 49,347
Term of patent 14 years
U.S. Cl. D20—22



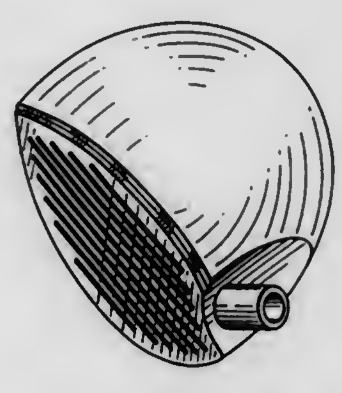
378,768
CONTROL PAD WITH CONTROL STICK
Johnny D. Couch, San Jose; Sarah M. Richmond, Foster City; Ira L. Velinsky, Saratoga, all of Calif.; Stephen K. Guerrera, Milford, Mass.; Gregory H. Hunter, Westwood, Mass., and John D. Gundlach, Rowley, Mass., assignors to Sega Enterprises, Ltd., Japan
Filed Mar. 15, 1995, Ser. No. 36,205
Term of patent 14 years
U.S. Cl. D21—48



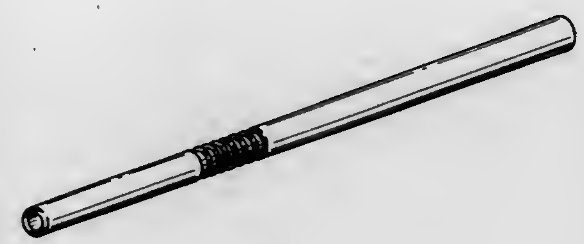
378,769
TOP SPINNER
Tsuyoshi Nonaka, and Minoru Sawada, both of Tokyo, Japan, assignors to Kabushiki Kaisha Bandai, Japan
Filed Aug. 6, 1993, Ser. No. 11,501
Term of patent 14 years
U.S. Cl. D21—96



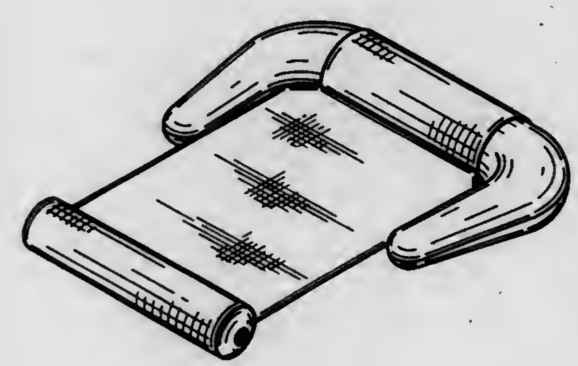
378,770
CLUBHEAD
Edward A. Hlinka, Carol Stream, Ill.; Dwight J. Niswander, Camarillo, Calif.; Carl E. Schele, Libertyville, Ill.; Edward A. Schield, Granada Hills, Calif., and James L. Shenoha, Lockport, Ill., assignors to Wilson Sporting Goods Co., Chicago, Ill.
Filed Mar. 1, 1995, Ser. No. 35,075
Term of patent 14 years
U.S. Cl. D21—214



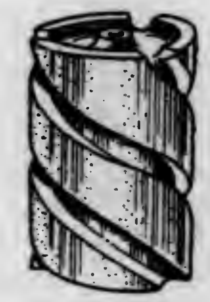
378,771
GOLF CLUB SHAFT
Anthony J. Antonious, 7738 Calle Facil, Sarasota, Fla. 34238
Filed Apr. 11, 1995, Ser. No. 37,340
Term of patent 14 years
U.S. Cl. D21—221



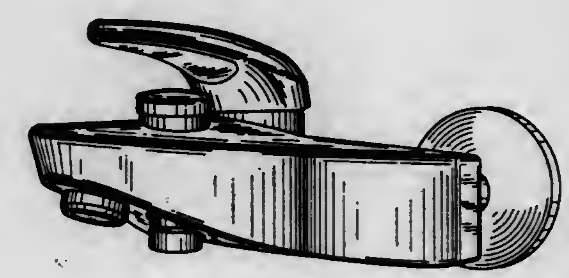
378,772
FLOATING LOUNGE
Charles P. Hall, 335-A O'Hair Ct., Santa Rosa, Calif. 95407
Filed Feb. 28, 1996, Ser. No. 50,871
Term of patent 14 years
U.S. Cl. D21—237



378,773
FOUNTAIN
Colin L. H. Wood, 24 Brook Avenue, New Milton, Hants BH25 5HD, United Kingdom
Filed Mar. 1, 1996, Ser. No. 50,997
Term of patent 14 years
U.S. Cl. D23—201



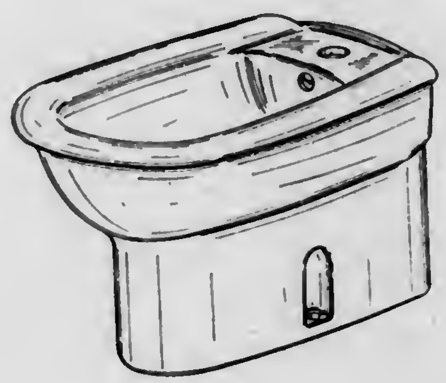
378,774
FAUCET
Francois Kergoet, Malakoff, France, assignor to Jacob Delafon, Paris, France
Filed Nov. 3, 1995, Ser. No. 45,952
Term of patent 14 years
U.S. Cl. D23—238



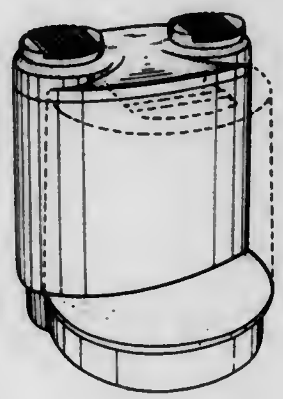
378,775
HANDLE FOR A PLUMBING FITTING
Francois Kergoet, Malakoff, France, assignor to Jacob Delafon, Paris, France
Filed Nov. 3, 1995, Ser. No. 45,955
Term of patent 14 years
U.S. Cl. D23—250

378,776
TUB FOR BATHING
Anna-Pia K. Formgren, Paris, France, assignor to Jacob Delafon, Paris, France
Filed Nov. 3, 1995, Ser. No. 45,975
Term of patent 14 years
U.S. Cl. D23—280.1

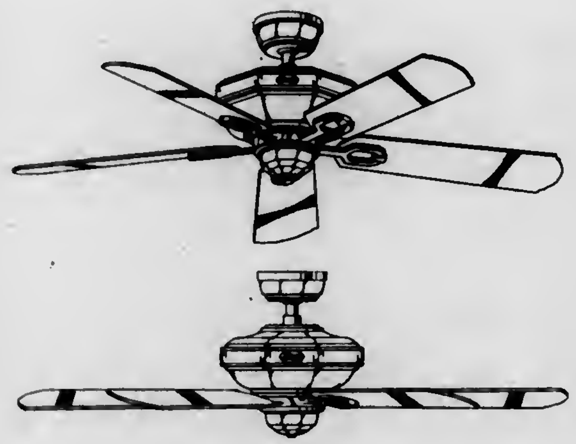
378,777
BIDET
Franz G. Hohenthaner, München, Germany, assignor to American Standard Inc., Piscataway, N.J.
Division of Ser. No. 13,177, Sep. 20, 1993, Pat. No. Des. 360,935. This application May 25, 1995, Ser. No. 39,243
Term of patent 14 years
U.S. Cl. D23—295



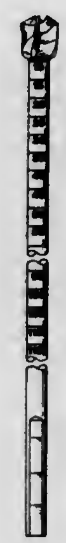
378,778
HUMIDIFIER HOUSING
Rodney Jané, Westboro, Mass.; Jui-Shang Wang, Taipei, Taiwan; Stanley Gresens, Homewood, and Gregory Holderfield, Palatine, both of Ill., assignors to Duracraft Corp., Southborough, Mass.
Filed Oct. 30, 1995, Ser. No. 46,726
Term of patent 14 years
U.S. Cl. D23—356



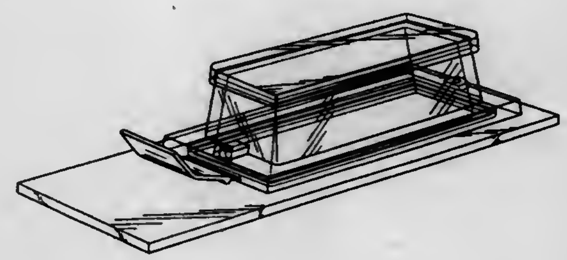
378,779
CEILING FAN
Masao Tsuji, Germantown, Tenn., assignor to Hunter Fan Company, Memphis, Tenn.
Filed Oct. 23, 1995, Ser. No. 45,498
Term of patent 14 years
U.S. Cl. D23—377



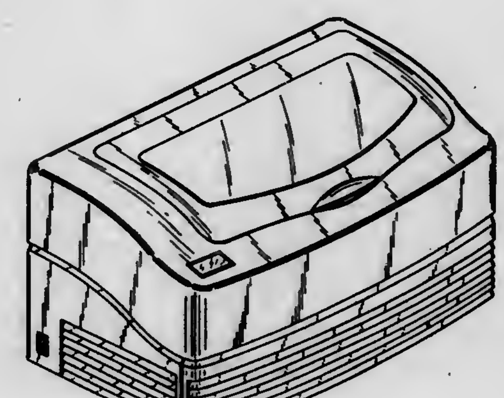
378,780
CANNULATED HEADED REAMER
Donald K. Shuler, Naples, Fla., assignor to Arthrex Inc., Naples, Fla.
Filed Mar. 7, 1994, Ser. No. 19,574
Term of patent 14 years
U.S. Cl. D24—146



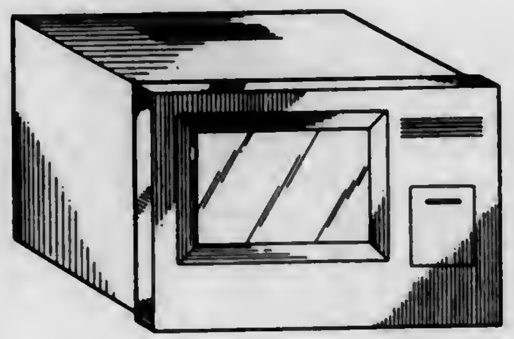
378,781
CULTURE SLIDE
Timothy A. Stevens, Madison, and Tadeusz A. Tyndorf, Manalapan, both of N.J., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.
Filed Jun. 6, 1995, Ser. No. 39,859
Term of patent 14 years
U.S. Cl. D24—224



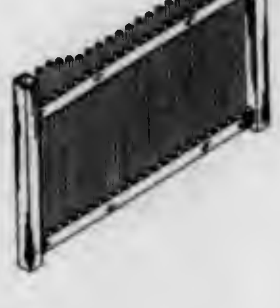
378,782
PROCESSOR FOR NUCLEIC ACID DETECTION
Angelo M. LaBarbera, Honeoye, and Daniel P. Salotto, Rochester, both of N.Y., assignors to Johnson & Johnson Clinical Diagnostics, Inc., Rochester, N.Y.
Filed Mar. 1, 1996, Ser. No. 51,055
Term of patent 14 years
U.S. Cl. D24—232



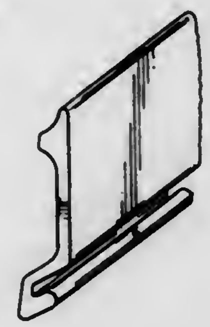
378,783
KIOSK
Thomas Sullivan, 4 Kilglass Ct., Timonium, Md. 21093
Filed Jan. 19, 1995, Ser. No. 33,719
Term of patent 14 years
U.S. Cl. D25—16



378,784
FENCE PANEL
Rex L. German, P.O. Box 45, Cozad, Nebr. 69130
Filed Mar. 25, 1996, Ser. No. 52,168
Term of patent 14 years
U.S. Cl. D25—42



378,785
PICTURE FRAME MEMBER
Robert E. Gearing, Cape Town, South Africa, assignor to Rob Gearing & Associates (Proprietary) Limited, Cape Town, South Africa
Filed Feb. 13, 1995, Ser. No. 34,812
Claims priority, application South Africa, Aug. 12, 1994, 94/0577; Aug. 12, 1994, 94/0578; Aug. 12, 1994, 94/0579
Term of patent 14 years
U.S. Cl. D25—119



378,786
PENGUIN COIN BANK
John M. Chesnut, P.O. Box 795, Grantham, N.H. 03753
Filed Sep. 8, 1994, Ser. No. 28,140
Term of patent 14 years
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LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 8th DAY OF APRIL, 1997

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Beaumont, Steven A.; Brosnan, Daniel; and Josey, Rodney. Vehicle elevator. 5,618,149, Cl. 414-253.000.

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Berch, Mark E.; Smith, Robert S.; Kinzelberg, Harvey; Bain, Charles; Sheng, Frank; and Hanzawa, George, to Sequel Security Systems, Inc. Electronic security system for a motor vehicle. 5,619,074, Cl. 307-10.200.

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Johanson, Jerry R.; Bilodeau, Victor L.; Barrett, Mark D.; and Pietrangelo, John, 5,617,975, Cl. 222-185.100.

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BioChem Pharma, Inc.: *See—*
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  Grace, Jeremy M.; Chen, Janglin; Gerenser, Louis J.; and Glocker, David A., 5,618,659, Cl. 430-523.000.
Chen, Jian: *See—*
  Pan, Jing-Jong; Jiang, Paul S.; Shih, Ming; Chen, Jian; and Wang, Li-Hua, 5,619,609, Cl. 385-136.000.
Chen, Jun W.: *See—*
  Williams, Richard K.; Yilmaz, Hamza; Cornell, Michael E.; and Chen, Jun W., 5,618,743, Cl. 438-276.000.
Chen, Lan B.: *See—*
  Shishido, Tadao; Kawakami, Masayuki; Ikegawa, Akihiko; Ukai, Toshinao; Koya, Keizo; and Chen, Lan B., 5,618,831, Cl. 514-366.000.
Chen, Liang-Yuan. Windshield wiper assembly. 5,617,607, Cl. 15-250.201.
Chen, Liang-Yuan. Universal wiper arm connector. 5,618,124, Cl. 403-3.000.
Chen, Liang-Yuan. Wiper arm connector. 5,618,128, Cl. 403-344.000.
Chen, Timothy S.: *See—*
  Leiser, Daniel B.; Hsu, Ming-Ta; and Chen, Timothy S., 5,618,766, Cl. 501-87.000.
Chen, Wenn-Jei; and Tseng, Huang-Chung, to Actel Corporation. Edgeless, self-aligned, differential oxidation enhanced and difusion-controlled minimum-geometry antifuse and method of fabrication. 5,619,063, Cl. 257-530.000.
Cheng, Brian K-M: *See—*
  Stern, Michael K.; and Cheng, Brian K-M, 5,618,979, Cl. 564-415.000.
Cheng, Peter T. W.; and Poss, Michael A., to Bristol-Myers Squibb Company. Prodrug esters of phosphonosulfonate squalene synthetase inhibitors and method. 5,618,964, Cl. 558-180.000.
Cheng, Ying-Hsiung, to Top Fortune Ltd. Bending joint of a collapsible baby playing bed. 5,617,592, Cl. 5-99.100.
Cheng, Ying-Yu: *See—*
  Yeh, Wen-Fuei; Wang, Long-Huei; Liu, Yao-Tung; and Cheng, Ying-Yu, 5,618,387, Cl. 162-224.000.
Cherksey, Bruce D., to New York University. Method for increasing the viability of cells which are administered to the brain or spinal cord. 5,618,531, Cl. 424-93.700.
Cherpeck, Richard E., to Chevron Chemical Company. Alkylamine polylactone aminocarbamates and fuel compositions containing the same. 5,618,319, Cl. 44-387.000.
Cherpeck, Richard E., to Chevron Chemical Company. Aromatic esters of polyalkylphenoxyalkanols and fuel compositions containing the same. 5,618,320, Cl. 44-399.000.
Chevallier, Christophe J.: *See—*
  Roohparvar, Frankie F.; and Chevallier, Christophe J., 5,619,453, Cl. 365-185.330.
Chevion, Mordechai; and Berenshtein, Edward, to Hebrew University of Jerusalem, Yissum Research Development Company of the. Gallium complexes for the treatment of free radical-induced diseases. 5,618,838, Cl. 514-492.000.
Chevron Chemical Company: *See—*
  Cherpeck, Richard E., 5,618,319, Cl. 44-387.000.
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Chew, Peter; and Jang, Chuck, to Chartered Semiconductor Manufacturing Pte Ltd. Selective WSix deposition. 5,618,756, Cl. 438-586.000.
Chiang, Jung-Li. Connector member assembly for use with sprinkler system. 5,617,999, Cl. 239-268.000.
Chida, Yuichi: *See—*
  Shinohara, Wataro; Takagi, Yasuo; Iino, Yutaka; Hayashi, Shinji; Ohya, Junko; Chida, Yuichi; and Murai, Masahiko, 5,619,619, Cl. 395-24.000.
Chief Resources Limited: *See—*
  Ikari, Yoshikatsu, 5,618,526, Cl. 424-76.100.
Chien, Ching-Wen: *See—*
  Tsai, Peter; and Chien, Ching-Wen, 5,618,039, Cl. 473-423.000.
Chien, Jui-lung, to Jina Manufacturing Thai Co., Ltd. Foldable cradle frame. 5,617,594, Cl. 5-102.000.
Chikano, Koji; and Azuma, Youichiro, to Kel Corporation. Electrical connector. 5,618,191, Cl. 439-108.000.
Childers, Winthrop D.: *See—*
  Keefe, Brian J.; Ho, May F.; Courian, Kenneth J.; Steinfield, Steven W.; Childers, Winthrop D.; Tappon, Ellen R.; Trueba, Kenneth E.; Chapman, Terri I.; Knight, William R.; and Moritz, Jules G., III, 5,619,236, Cl. 347-84.000.
Children's Medical Center Corporation: *See—*

  Berde, Charles B.; and Langer, Robert S., 5,618,563, Cl. 424-501.000.
Chip Express (Israel) Ltd.: *See—*
  Janai, Meir I.; and Orbach, Zvi, 5,619,062, Cl. 257-529.000.
Chiquita Brands, Inc.: *See—*
  Rodriguez, Francisco; Howell, Elmer; Sanabria, Franklin; and Fernandez, Raul, 5,617,711, Cl. 53-475.000.
Chiron BV: *See—*
  MacDonald, Peter L.; Stradi, Riccardo; Rossetto, Pierluigi; and Holthuis, Joost J. M., 5,618,936, Cl. 544-357.000.
Chiron Corporation: *See—*
  Sanchez-Pescador, Ray; Besemer, Diana J.; and Urdea, Michael S., 5,618,674, Cl. 435-6.000.
Chirp Corporation: *See—*
  Altes, Richard A., 5,619,537, Cl. 375-322.000.
Chisso Corporation: *See—*
  Nakajima, Yuji; and Taniguchi, Masahiko, 5,618,623, Cl. 428-364.000.
  Tomi, Yoshitaka; Nakagawa, Etsuo; and Sawada, Shinichi, 5,618,466, Cl. 252-299.630.
  Zenno, Shuhei; Shiraishi, Shinji; Inouye, Satoshi; and Saigo, Kaoru, 5,618,722, Cl. 435-252.300.
Chiyokura, Hiroaki: *See—*
  Konno, Kouichi; and Chiyokura, Hiroaki, 5,619,625, Cl. 395-119.000.
Chlebowicz-Sledziewska, Ewa: *See—*
  Sledziewski, Andrzej; Chlebowicz-Sledziewska, Ewa; Swetly, Peter; Adolf, Gunther; Hauptmann, Rudolf; Castanon, Maria J.; and Spevak, Walter, 5,618,712, Cl. 435-206.000.
Chmielnik, Reinhold, to P.R. Graphics Limited. Apparatus for producing flexographic printing plates. 5,617,790, Cl. 101-389.100.
Cho, Jaeshin, to Motorola, Inc. III-V semiconductor gate structure and method of manufacture. 5,619,064, Cl. 257-637.000.
Choate, Albert G., to Optical Gaging Products, Inc. Variable magnification apparatus for reticle projection system. 5,619,031, Cl. 250-201.200.
Choi, Gyu S.: *See—*
  Hong, Kyung S.; Oh, Dong Y.; Choi, Gyu S.; Lee, Joo H.; Kwon, Oh H.; Lee, Ha I.; and Kim, Kyeong H., 5,617,746, Cl. 68-21.000.
Choi, Jong-Han, to Samsung Electronics Co., Ltd. Electric motor with sealing structure resisting the entry of sand and dust. 5,619,082, Cl. 310-88.000.
Choi, Su B.; Jang, Tae H.; Yoo, Jin N.; and Lee, Chan H., to LG Cehmical Ltd. Process for preparing emulsion polymers having a hollow structure. 5,618,888, Cl. 525-301.000.
Choi, Wai M.: *See—*
  Samii, Abbas; and Choi, Wai M., 5,618,642, Cl. 429-247.000.
Chou, Paul B.; Wu, Frederick Y.; and Wong, Danny C., to International Business Machines Corporation. Grayscale barcode reading apparatus system including translating device for translating a pattern image into a sequence of bar widths and transition directions. 5,619,026, Cl. 235-462.000.
Choudhury, Subrata: *See—*
  Mawick, Peter; and Choudhury, Subrata, 5,617,713, Cl. 57-210.000.
Chow, Marie: *See—*
  Dorval, Brent; Chow, Marie; and Klibanov, Alexander, 5,618,539, Cl. 424-217.100.
Christensen, Niels D.: *See—*
  Bjørn, Soren E.; Norris, Kjeld; Diness, Viggo; Nørskov-Lauritsen, Leif; Christensen, Niels D.; Bregengaard, Claus; Norris, Fanny; and Petersen, Lars C., 5,618,915, Cl. 530-324.000.
Christensen, Richard N.; Cook, F. Bert; and Kang, Yong-Tae, to Ohio State University Research Foundation, The. Capillary fluted tube mass and heat transfer devices and methods of use. 5,617,737, Cl. 62-487.000.
Christensen, Thorkild: *See—*
  Dalbøge, Henrik; Pedersen, John; Christensen, Thorkild; Ringsted, Jørli W.; and Jessen, Torben E., 5,618,697, Cl. 435-69.400.
Christensson, Erik: *See—*
  Björk, Anders; and Christensson, Erik, 5,618,817, Cl. 514-255.000.
Christian, Willard C.: *See—*
  Belser, John W.; and Christian, Willard C., 5,618,593, Cl. 428-31.000.
Christopher, Michael E., to Texas Aluminum Industries, Inc. Insulated skylight panel. 5,617,682, Cl. 52-200.000.
Christopher, Todd J.; and Keen, Ronald T., to Thomson Consumer Electronics, Inc. Adjustable video/raster phasing for horizontal deflection system. 5,619,276, Cl. 348-541.000.
Christy, Paul G., to RDP Company. Process for treatment of sewage sludge. 5,618,442, Cl. 210-742.000.
Chrysler Corporation: *See—*
  DeRees, Delbert D., 5,618,603, Cl. 428-66.600.
  DeRees, Delbert D., 5,618,613, Cl. 442-203.000.
  Kendall, Jeffrey M., 5,619,417, Cl. 364-483.000.
Chu, Daniel T.; Li, Qun; and Raye, Kathleen, to Abbott Laboratories. Benzo[5.6]pyrano[2.3.4-ij]quinolizine and benzo[5.6]thiopyrano[2.3.4-ij]quinolizine derivatives as antibacterial and antineoplastic agents. 5,618,813, Cl. 514-233.200.
Chu, Daniel T.: *See—*
  Ma, Zhenkun; Cooper, Curt S.; Fung, Anthony K. L.; and Chu, Daniel T., 5,618,949, Cl. 548-557.000.
Chuang, King Y. K.: *See—*
  Chuang, William; and Chuang, King Y. K., 5,617,935, Cl. 188-73.100.
Chuang, William; and Chuang, King Y. K. Friction pad for a disk brake. 5,617,935, Cl. 188-73.100.
Chujo, Takao; Nishiyama, Masanori; and Hamano, Hisashi, to Teijin Limited. Biaxially oriented film of polyethylene-2,6-naphthalenedicarboxylate. 5,618,609, Cl. 428-141.000.
Chung, Loan. Jack safety device. 5,618,029, Cl. 254-8.00B.
Chung, M. F., to Min Shin Plastic Ind. Co., Ltd. Book-shaped CD container. 5,617,950, Cl. 206-308.100.
Chung, Woo-Won, to Hyundai Motor Company. System for adjusting the working range of a damper clutch in an automatic transmission. 5,618,244, Cl. 477-169.000.
Chupeau, Bertrand: *See—*
  Salmon, Philippe; and Chupeau, Bertrand, 5,619,272, Cl. 348-452.000.
Chupp, Timothy; Coulter, Kevin P.; Oteiza, Eduardo; and Walsworth, Ronald, to Smithsonian Astrophysical Observatory; and University of Michigan, The Regents of the. Method and system for producing polarized ^{129}Xe gas. 5,617,860, Cl. 128-653.400.
Church & Dwight Co., Inc.: *See—*
  Miskewitz, Regina M., 5,618,517, Cl. 424-48.000.
Ciaramella, Ernesto: *See—*
  Artiglia, Massimo; Ciaramella, Ernesto; and Sordo, Bruno, 5,619,321, Cl. 356-73.100.
CIBA-Geigy Corporation: *See—*
  Chaudhuri, Bhabatosh; Stephan, Christine; Seeboth, Peter; and Riezman, Howard, 5,618,690, Cl. 435-68.100.
  Engert, Thomas; Stephan, Hans; and Wolf, Walter, 5,618,963, Cl. 558-122.000.
  Glock, Jutta; Hudetz, Manfred; and Kerber, Elmar, 5,618,774, Cl. 504-105.000.
  Hendi, Shivakumar B.; and Jaffe, Edward E., 5,618,343, Cl. 106-498.000.
  Kudschus, Martin, 5,618,965, Cl. 558-315.000.
  Nesvadba, Peter, 5,618,871, Cl. 524-326.000.
  Wirth, Hermann O.; and Friedrich, Hans-Helmut, 5,618,778, Cl. 508-274.000.
Cimet, Israel A.: *See—*
  Averbuch, Rod; Urs, Kamala; and Cimet, Israel A., 5,619,550, Cl. 379-5.000.
Cirotteau, Yves: *See—*
  Patat, Jean-Louis; and Cirotteau, Yves, 5,618,549, Cl. 424-422.000.
Cirrus Logic, Inc.: *See—*
  Omid, Reza G.; Pathak, Sanjiv D.; Naji, Jafar; Smith, Stephen A.; Ramamurthy, Sriram; Abudayyeh, Jihad Y.; and Gopalaswamy, Kasturiraman, 5,619,703, Cl. 395-734.000.
Citeo: *See—*
  Pelletier, Pierre; Brochu, Jacques; Beauregard, François; and Morin, Gaston, 5,619,119, Cl. 323-215.000.
Citizen Watch Co., Ltd.: *See—*
  Maeno, Fumio, 5,619,232, Cl. 347-30.000.
City of Hope: *See—*
  Scanlon, Kevin J., 5,618,702, Cl. 435-91.200.
Civin, Curt I.: *See—*
  Gewirtz, Alan M.; Small, Donald; and Civin, Curt I., 5,618,709, Cl. 435-172.300.
Clare, Timothy P.; Kollitz, William R.; and Mikula, Matthew J., to Kimberly-Clark Corporation. Apparatus for spraying adhesive. 5,618,347, Cl. 118-314.000.
Clark, William T.: *See—*
  Scott, James D., II; Stone, William W.; Clark, William T.; and Rice, Chris A., 5,617,606, Cl. 15-246.000.
Clarke, Roger W.: *See—*
  Eason, Stephen W.; Catterall, Clive P. A.; and Clarke, Roger W., 5,617,971, Cl. 221-31.000.
Clarke, Thomas W.: *See—*
  Bloemer, John M.; Kurth, Michael J.; Bengtson, Alan D.; Giese, Robert C.; Potter, Edwin R., Jr.; Bonnell, Thomas A.; and Clarke, Thomas W., 5,617,591, Cl. 4-541.600.
Clasby, John M.: *See—*
  Flood, John E.; Kelley, John W.; Roane, Davis R.; and Clasby, John M., 5,618,870, Cl. 524-269.000.
Claud S. Gordon Company: *See—*
  Culbertson, David P., 5,618,109, Cl. 374-179.000.
Clavenna, Gaetano; and Poletti, Giorgio, to Dompé Farmaceutici SpA. Method of reducing subcutaneous inflammation by the topical application of a hydrophilic pharmaceutical composition containing ketoprofen lysine salt. 5,618,516, Cl. 424-45.000.
Clearwater Fish & Pond Supply, Inc.: *See—*
  Bunch, Gene W., 5,618,574, Cl. 426-641.000.
Clecim: *See—*
  Dumas, Bernard, 5,618,224, Cl. 451-142.000.
Clemente, Emmett: *See—*
  Mendes, Robert W.; Javroongrit, Yuppadee; Anaebonam, Aloysius; and Clemente, Emmett, 5,618,527, Cl. 424-78.010.
Clemenz, Gary E.: *See—*
  Beakes, John M.; Clemenz, Gary E.; Dolgas, Patrick A.; Heaton, Mark T.; and Newman, Lawrence E., 5,618,007, Cl. 242-432.600.
Clemson University: *See—*
  Garrett, J. Thomas, 5,617,672, Cl. 47-58.000.
Clendenning, Charles: *See—*
  Launder, Richard L.; and Clendenning, Charles, 5,617,655, Cl. 37-457.000.
Cleveland Medical Devices Inc.: *See—*
  Schmidt, Robert N.; and Diefes, Richard S., 5,619,186, Cl. 340-573.000.
Clifford, Todd W., to Convenience Technologies, Inc.; and Clifford, Todd W. Cooking grill. 5,617,840, Cl. 126-41.00R.
Cline, Harvey E.: *See—*

Souza, Steven P.; Dumoulin, Charles L.; Darrow, Robert D.; and Cline, Harvey E., 5,617,859, Cl. 128-653.200.
Clip-Lok International Limited: *See—*
Neidhart, Fritz, 5,617,967, Cl. 220-4.330.
Cloud Corporation: *See—*
Hartman, Donn A.; and Pearson, William N., 5,617,706, Cl. 53-435.000.
Cobb, Jeffrey R.: *See—*
Lillich, Alan W.; Cobb, Jeffrey R.; Eidt, Erik L.; and Meretsky, Wayne N., 5,619,698, Cl. 395-710.000.
Cobb, Joshua M.: *See—*
Freedenberg, Candace J.; Long, David C.; Cobb, Joshua M.; LaPlante, Mark J.; Ziemins, Uldis A.; Patterson, Daniel G.; and Balz, James G., 5,618,454, Cl. 219-121.740.
Cochand, Karen S.: *See—*
Izraelevitz, David; and Cochand, Karen S., 5,618,729, Cl. 435-288.700.
Cochran, Michael J. Advanced dive computer that calculates and displays the user's breathing parameter and water salinity. 5,617,848, Cl. 128-205.230.
Coe, Keith E.: *See—*
Porter, Douglas S.; and Coe, Keith E., 5,619,546, Cl. 376-204.000.
Cofone, Mark: *See—*
Harwin, Steven F.; Le, Anh; Bruker, Izi; Luscombe, Brian; Jamiolkowski, Dennis D.; Cofone, Mark; and DiGiovanni, John, 5,618,314, Cl. 606-232.000.
Cogifer- Compagnie Generale d'Installations Ferroviaires (Societe Anonyme a Directoire): *See—*
Mugg, Philippe, 5,618,013, Cl. 246-385.000.
Coker, Jonathan D.; Dolivo, Francois B.; Galbraith, Richard L.; Hermann, Reto J.; Hirt, Walter; and Vannorsdel, Kevin, to International Business Machines Corporation. Data detection methods and apparatus for a direct access storage device. 5,619,539, Cl. 375-341.000.
Col-Ven S.A.: *See—*
Colussi, Rafael A.; and Vénica, Néstor J., 5,618,361, Cl. 152-416.000.
Colaianna, Pasqua; Abusleme, Julio A.; and Del Fanti, Natalino, to Ausimont S.p.A. Process for preparing tetrafluoroethylene copolymers with other perfluorinated monomers. 5,618,897, Cl. 526-206.000.
Colangelo, Carl J.: *See—*
Florio, Steven M.; Burress, Jeffrey P.; Colangelo, Carl J.; Couble, Edward C.; and Kapeckas, Mark J., 5,618,400, Cl. 205-98.000.
Cole, Christopher R.; Gee, Albert; and Newell, Laurence J., to Acuson Corporation. Method and apparatus for beamformer system with variable aperture. 5,617,862, Cl. 128-661.010.
Cole, Elbert L., Jr.; Enstrom, Richard A.; and Olver, Terence E., to Northrop Grumman Corp. Secondary radar digital monopulse receiving apparatus and method. 5,619,206, Cl. 342-37.000.
Colgate Palmolive Co.: *See—*
Durbut, Patrick; Ahmed, Fahim U.; and Drapier, Julien, 5,618,465, Cl. 510-221.000.
Colin Corporation: *See—*
Harada, Chikao; and Matsubara, Yuji, 5,617,868, Cl. 128-672.000.
Collins, Kenneth S.: *See—*
Mintz, Donald M.; Hanawa, Hiroji; Somekh, Sasson; Maydan, Dan; and Collins, Kenneth S., 5,618,382, Cl. 216-64.000.
Collins, William J.: *See—*
Doherty, John A.; Kalbfleisch, Charles A.; Keathley, Donald P.; and Collins, William J., 5,619,193, Cl. 340-905.000.
Colombo, Luigi: *See—*
Stella, Sergio; Montanini, Nicoletta; LeMonnier, Francis J.; Colombo, Luigi; Selva, Enrico; and Denaro, Maurizio, 5,618,724, Cl. 435-253.400.
Coloplast A/S: *See—*
Reimer, Lotte, 5,618,256, Cl. 600-29.000.
Colton, Martin S.: *See—*
Newberth, Frederick F., III; Colton, Martin S.; and Tran, Canh M., 5,618,857, Cl. 523-176.000.
Colussi, Rafael A.; and Vénica, Néstor J., to Col-Ven S.A. Pressure sensor and apparatus controlling and maintaining air-pressure in vehicle tires. 5,618,361, Cl. 152-416.000.
Combustion Engineering, Inc.: *See—*
Porter, Douglas S.; and Coe, Keith E., 5,619,546, Cl. 376-204.000.
Commonwealth Scientific and Industrial Research Organisation: *See—*
Stevens, Thomas J.; and Leicester, Robert H., 5,619,143, Cl. 324-639.000.
Compagnie Generale des Matières Nucléaires: *See—*
Amiet, Pierre; and Brin, Michel, 5,619,547, Cl. 376-261.000.
Compaq Computer Corporation: *See—*
Adams, Gregory K.; and Williamson, Ralph K., 5,619,334, Cl. 358-298.000.
Harrison, Robert C.; and Lau, Steven J., 5,619,398, Cl. 361-686.000.
Rossi, Markku J., 5,619,018, Cl. 174-261.000.
Suboh, Abdel H., 5,619,707, Cl. 395-750.000.
CompuServe Incorporated: *See—*
Kennedy, Rand A., 5,619,559, Cl. 379-91.000.
CONDEA Vista Company: *See—*
Decker, L. Ben; Hellums, Mark W.; and Chavez, Mark M., 5,618,436, Cl. 210-651.000.
Conductus, Inc.: *See—*
Brey, William W.; Johansson, Marie E.; and Withers, Richard S., 5,619,140, Cl. 324-318.000.
Cone Mills Corporation: *See—*
Keating, Michael P., 5,619,434, Cl. 364-578.000.
Cone, Richard A.: *See—*
Moench, Thomas R.; and Cone, Richard A., 5,617,877, Cl. 128-837.000.
Congoleum Corporation: *See—*
Pearson, John D.; and Diodati, Salvatore, 5,618,577, Cl. 427-135.000.
Conneally, Martin C.: *See—*
Zygmun, Leon E.; and Conneally, Martin C., 5,617,931, Cl. 182-145.000.
Connolly, John C.; Abeles, Joseph H.; and Morris, Nancy A., to David Sarnoff Research Center, Inc. Semiconductor distributed feedback laser diode. 5,619,523, Cl. 372-96.000.
Connor, H. J.: *See—*
Johnson, Alan; Woods, H. J.; and Connor, H. J., 5,618,503, Cl. 423-87.000.
Conorich, Theodore A.; and Paul, Lawrence M., to Lucent Technologies Inc. Connector module including condensation protection. 5,618,199, Cl. 439-404.000.
Conrad, Grant P.: *See—*
DiCesare, Vince; Conrad, Grant P.; and Flood, Thomas J., 5,617,580, Cl. 2-22.000.
Conroy, Patrick L.: *See—*
Irvine, Jeffrey D.; Smith, Jeffery S.; and Conroy, Patrick L., 5,618,353, Cl. 134-22.170.
Consorzio per la Ricerca sulla Microelettronica nel Mezzogiorno: *See—*
Mancuso, Massimo; Poluzzi, Rinaldo; and Rizzotto, Gianguido, 5,619,271, Cl. 348-448.000.
Constable, Douglas W.: *See—*
Horning, Randy E.; Constable, Douglas W.; and Smart, David C., 5,619,737, Cl. 396-195.000.
Constantine, Arthur T., to C-Lock, Inc. Molded plastic one-piece loose-leaf binder ring structure. 5,618,122, Cl. 402-22.000.
Contamin, Jean-Claude: *See—*
de Rigal, Jean; Leveque, Jean-Luc; Contamin, Jean-Claude; and Aubert, Lucien, 5,618,521, Cl. 424-59.000.
Conti, Paolo, to Golden Lady S.p.A. Device for the automatic formation of a closed toe in a tubular knitted article. 5,617,744, Cl. 66-148.000.
Convenience Technologies, Inc.: *See—*
Clifford, Todd W., 5,617,840, Cl. 126-41.00R.
Cook, Calvin S.: *See—*
Lantzy, John P.; Cook, Calvin S.; and McNeice, William A., 5,618,000, Cl. 239-276.000.
Cook, Ewell R.: *See—*
Gowravaram, Madhusudhan R.; Johnson, Jeffrey; Cook, Ewell R.; Wahl, Robert C.; Mathiowetz, Alan M.; Tomczuk, Bruce E.; and Saha, Ashis K., 5,618,844, Cl. 514-575.000.
Cook, F. Bert: *See—*
Christensen, Richard N.; Cook, F. Bert; and Kang, Yong-Tae, 5,617,737, Cl. 62-487.000.
Cook, Michael J.: *See—*
Harrison, Kenneth J.; Cook, Michael J.; Thomson, Andrew J.; McKeown, Neil B.; Daniel, Mervyn F.; and Dunn, Adrian J., 5,618,929, Cl. 540-139.000.
Cook, Phillip D.: *See—*
Sanghvi, Yogesh S.; and Cook, Phillip D., 5,618,704, Cl. 435-91.500.
Cooksey, Andrew; Williamson, Jim; Robinson, Clark; Dines, Chris; and Vick, James, to Halliburton Company. Wellbore lock system and method of use. 5,617,918, Cl. 166-115.000.
Cookson, Christopher J.; Ostrover, Lewis S.; and Lieberfarb, Warren N., to Time-Warner Entertainment Co., L.P. Software carrier for storing digital data representative of picture information and including pan scan data. 5,619,424, Cl. 364-514.00A.
Cooley, Clifford R.: *See—*
Roundhill, David N.; Starosta, Mikhail; Rust, David; and Cooley, Clifford R., 5,617,863, Cl. 128-661.010.
Coombs, Peter M.; and Billings, Bradford, to Gradco (Japan) Ltd. Offset stacker. 5,618,035, Cl. 271-213.000.
Coon, Brett; Miyayama, Yoshiyuki; Nguyen, Le Trong; and Wang, Johannes, to Seiko Epson Corporation. System for translating non-native instructions to native instructions and combining them into a final bucket for processing on a host processor. 5,619,666, Cl. 395-384.000.
Coon, Donald B.: *See—*
Marlow, Scott C.; Petruschke, Haans K.; Coon, Donald B.; and Nelson, John T., 5,618,303, Cl. 606-205.000.
Cooney, Charles L.: *See—*
Venkataraman, Ganesh; Sasisekharan, Viswanathan; Sasisekharan, Ram; Bobba, Ratnaleela; Cooney, Charles L.; and Langer, Robert, 5,619,421, Cl. 364-496.000.
Cooper, Alan B.; Saksena, Anil K.; Lovey, Raymond; Girijavallabhan, Viyyoor; and Ganguly, Ashit, to Schering Corporation. Nikkomycin analogs. 5,618,793, Cl. 514-19.000.
Cooper, Curt S.: *See—*
Ma, Zhenkun; Cooper, Curt S.; Fung, Anthony K. L.; and Chu, Daniel T., 5,618,949, Cl. 548-557.000.
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Crouse, Gary D.: *See—*
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Curry, Stephen M.; Bolan, Michael L.; Deierling, Kevin E.; Payne, William L., II; Kurkowski, Hal; Dias, Donald R.; Zanders, Gary V.; Lee, Robert D.; and Lehmann, Guenther H., to Dallas Semiconductor Corporation. Memory for an electronic token. 5,619,066, Cl. 257-679.000.
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Jung, Hae-Mook, 5,619,281, Cl. 348-699.000.
Kim, Chong-Sun; and Jung, Ji-Kwang, 5,617,728, Cl. 62-71.000.
Lee, Dong-Hee, 5,618,094, Cl. 353-101.000.
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Ko, Hyun G., 5,617,724, Cl. 60-422.000.
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Daido Metal Company Ltd.: *See—*
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Daiwa Fine Chemicals Co., Ltd.: *See—*
Okuhama, Yoshiaki; Masaki, Seishi; Takeuchi, Takao; Matsuda, Yoshiharu; and Yoshimoto, Masakazu, 5,618,404, Cl. 205-445.000.
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Dallas Semiconductor Corporation: *See—*
Curry, Stephen M.; Bolan, Michael L.; Deierling, Kevin E.; Payne, William L., II; Kurkowski, Hal; Dias, Donald R.; Zanders, Gary V.; Lee, Robert D.; and Lehmann, Guenther H., 5,619,066, Cl. 257-679.000.
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Donlon, Brian S.; Mueller, Richard L., Jr.; Daniel, S. Christopher; Gifford, Hanson S., III; and Stevens, John H., 5,618,307, Cl. 606-205.000.
Daniele, Joseph T.: *See—*
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Tomat, Ferruccio; Cattelani, Gino; and De Marco, Fausto, 5,617,735, Cl. 62-374.000.
Daniels, Brian K.: *See—*
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Darrow, Robert D.: *See—*
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Dasari, Lakshmi: *See—*
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Data Connections, Inc.: *See—*
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Databook Incorporated: *See—*
Moore, Terrill M., 5,619,724, Cl. 395-829.000.
Dath, Jean-Pierre; and Debras, Guy, to Fina Research, S.A. Process for the production of powder catalysts. 5,618,770, Cl. 502-107.000.
Daute, Peter: *See—*
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Strolle, Christopher H.; and Jaffe, Steven T., 5,619,154, Cl. 327-129.000.
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Davis, Marc R.: *See—*
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Dearaujo, Paul A. Self-contained sweeper and vacuum pick-up. 5,617,610, Cl. 15-328.000.
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E. Khashoggi Industries: *See—*
  Andersen, Per J.; and Hodson, Simon K., 5,618,341, Cl. 106-287.350.
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  Wille, John J.; Kydonieus, Agis; and Castellana, Frank S., 5,618,557, Cl. 424-449.000.
E-Tek Dynamics, Inc.: *See—*
  Pan, Jing-Jong; Jiang, Paul S.; Shih, Ming; Chen, Jian; and Wang, Li-Hua, 5,619,609, Cl. 385-136.000.
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  Law, Clarence G., Jr.; Trainham, James A., III; Newman, John S.; and Eames, Douglas J., 5,618,393, Cl. 204-252.000.
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  Glydon, Jon A., 5,618,215, Cl. 441-65.000.
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  Hawley, Alan M.; and Mattern, Charles C., 5,618,137, Cl. 408-87.000.
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  Bailey, David B.; and Lawrence, Kristine B., 5,618,773, Cl. 503-227.000.
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  Furlani, Edward P.; Taillie, Paul L.; and Stephany, Thomas M., 5,619,296, Cl. 396-463.000.
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  Grace, Jeremy M.; Chen, Janglin; Gerenser, Louis J.; and Glocker, David A., 5,618,659, Cl. 430-523.000.
  Horning, Randy E.; Constable, Douglas W.; and Smart, David C., 5,619,737, Cl. 396-195.000.
  Kessler, David; and Simpson, John M., Jr., 5,619,245, Cl. 347-241.000.
  Merle, Thomas C.; and Tianello, Dennis F., 5,618,093, Cl. 353-26.00R.
  Moore, Leslie G., Jr., 5,619,590, Cl. 382-162.000.
  Petruchik, Dwight J.; and Manico, Joseph A., 5,619,738, Cl. 396-311.000.
  Reele, Samuel; and Korus, Alan L., 5,619,257, Cl. 348-64.000.
  Rieger, John B.; Zengerle, Paul L.; and Boettcher, John W., 5,618,657, Cl. 430-434.000.
  Stiehler, Wayne E., 5,619,298, Cl. 396-388.000.
  Szajewski, Richard P.; and Buchanan, John M., 5,618,656, Cl. 430-393.000.
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  Irons, A. Joseph, Jr.; and Owens, Murphy, Sr., 5,618,154, Cl. 414-622.000.
Eaton, Glenn A.: *See—*
  Fenton, Wayne; Eaton, Glenn A.; McFadden, Joseph A.; Taylor, Stuart A.; Tracy, Edward D.; and Wang, Emil C. W., 5,619,555, Cl. 379-67.000.
Ebara Corporation: *See—*
  Harada, Hideomi; and Takei, Kazuo, 5,618,160, Cl. 415-17.000.
  Hirakawa, Yutaka; Aiyoshizawa, Shun-ichi; and Nakazawa, Toshiharu, 5,618,167, Cl. 417-372.000.
Ebeling, Ralf-Martin; and Schaper, Helmut, to Braunschweigische Maschinenbauanstalt AG. Continuously operating centrifuge for spinning sugar massecuite. 5,618,352, Cl. 127-19.000.
Ebert Composites Corporation: *See—*
  Johnson, David W.; Goldsworthy, W. Brandt; and Korzeniowski, George, 5,617,692, Cl. 52-651.020.
Ebi, Yutaka: *See—*

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Ebihara, Teruo: *See—*
Hoshino, Masafumi; Yamamoto, Shuhei; Fujita, Hiroyuki; Oniwa, Hirotomo; Ebihara, Teruo; and Matsu, Fujio, 5,619,224, Cl. 345-98.000.
Ebright, Alan R.: *See—*
Roop, John H.; Ebright, Alan R.; Kochy, Jeffrey J.; Warden, David P.; Sokolik, Konstantine; and Alegiani, Giambattista A., 5,619,274, Cl. 348-461.000.
Eccles, Nicholas J., to AT&T Global Information Solutions Company. Neural network for banknote recognition and authentication. 5,619,620, Cl. 395-24.000.
Eckhardt, David: *See—*
Kahn, Kevin; and Eckhardt, David, 5,619,502, Cl. 370-397.000.
Eddison, Alan M.; and Kotsonis, Spryo J., to Schlumberger Technology Corporation. Steerable drilling tool and system. 5,617,926, Cl. 175-61.000.
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Pink, Edward N.; and Johnson, Michael F., 5,618,335, Cl. 96-208.000.
Eder, Günter; and Kahr, Rudolf. Assembly and process for purifying exhaust gas, and a process for reclaiming contaminated soil. 5,618,730, Cl. 435-289.100.
Ederyd, Stefan; Åkerman, Jan; Beaufoy, Robert; Carpenter, Michael; Bonneau, Maxime; and Pillot, Jacques, to Sandvik AB; and Eurotungstene Poudres S.A. Method of making cemented carbide articles and the resulting articles. 5,619,000, Cl. 75-240.000.
Edgar, Albert D., to International Business Machines Corporation. System and method for real-time image display palette mapping. 5,619,230, Cl. 345-150.000.
Edmonson, Peter: *See—*
Taylor, Bryan; Lazaridis, Mihal; Edmonson, Peter; Jarmuszewski, Perry; Zhu, Lizhong; Carkner, Steven; and Wandel, Matthias, 5,619,531, Cl. 375-222.000.
Edwards, Earl G.; Flores, Armando V.; Gassett, John W.; Harden, James P.; Huber, Daniel L.; Leemhuix, Michael C.; Olson, Stephen T.; and Wilzbach, Bernard L., to Lexmark International, Inc. Printer with distribution stations having U-shaped sheet guide. 5,618,036, Cl. 271-225.000.
Egert, Dieter: *See—*
Maue, Hanz-Heinrich; Hofmeister, Werner; Egert, Dieter; and Langenhan, Dirk, 5,618,194, Cl. 439-157.000.
Eggert, Richard L. Snowmobile jack. 5,618,030, Cl. 254-131.000.
Eguchi, Hirotoshi: *See—*
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Ehlers, Wayne L., to Honeywell Inc. Proximity sensor which is sensitive to a pulsating magnetic field. 5,619,188, Cl. 340-686.000.
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Bianco, Frank J.; and Ehren, Lance, 5,617,814, Cl. 119-720.000.
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Magid, Hillel; Wilson, David P.; Lavery, Dennis M.; Hollister, Richard M.; Eibeck, Richard E.; and Vanderpuy, Michael, 5,618,781, Cl. 510-177.000.
Eichholz, Heinz-Dieter; Kleinhans, Werner; and Rudrich, Hans-Peter, to Friedrich Grohe Aktiengesellschaft. Plumbing fixture with line-powered control unit. 5,618,023, Cl. 251-129.040.
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Meier, Urs; Deuring, Martin; and Meier, Heinz, 5,617,685, Cl. 52-223.800.
Eidt, Erik L.: *See—*
Lillich, Alan W.; Cobb, Jeffrey R.; Eidt, Erik L.; and Meretsky, Wayne N., 5,619,698, Cl. 395-710.000.
Eisai Chemical: *See—*
Urawa, Yoshio; Furukawa, Ken; Shimizu, Toshikazu; Yamagishi, Yoji; Tsurugi, Tomio; and Ichino, Tomio, 5,618,969, Cl. 560-102.000.
Eisai Co., Ltd.: *See—*
Urawa, Yoshio; Furukawa, Ken; Shimizu, Toshikazu; Yamagishi, Yoji; Tsurugi, Tomio; and Ichino, Tomio, 5,618,969, Cl. 560-102.000.
Eischen, Frederick W.; Uban, Stephen A.; and Maxson, Richard C., to Wheelabrator Water Technologies Inc. Lateral member assembly for underdrain lateral system. 5,618,426, Cl. 210-541.000.
Eiselt, Michael H.; Jopson, Robert M.; and Stolen, Rogers H., to Lucent Technologies Inc. Method and apparatus for measuring dispersion zero along an optical fiber. 5,619,320, Cl. 356-73.100.
Eisen, Lee E.: *See—*
Black, Bryan; Denman, Marvin A.; Eisen, Lee E.; Golla, Robert T.; Loper, Albert J., Jr.; Mallick, Soummya; and Reininger, Russell A., 5,619,408, Cl. 395-567.000.
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Ekström, Bernt, to Metfoils AB. Process for production of printed circuit boards and use thereby. 5,617,629, Cl. 29-846.000.
ElasTek, Inc.: *See—*
DeGregoria, Anthony J.; and Kaminski, Thomas J., 5,617,913, Cl. 165-104.110.
Eldon Specialties, Inc.: *See—*
Foster, Don C.; Norris, Joel D.; Norris, Christopher D.; and Stainback, Ross M., 5,618,009, Cl. 242-615.200.
Electric Power Research Institute: *See—*
Schreiber, Henry; and Stewart, Norman, 5,617,716, Cl. 60-39.050.
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Centis, Giovanni, 5,617,885, Cl. 134-58.00D.
Electronics and Telecommunications Research Institute: *See—*
Kim, Jin U.; Kim, Sun Y.; Lee, Jeom D.; and Lee, Sung K., 5,619,526, Cl. 370-335.000.
Elexis Corporation: *See—*
Bianco, Frank J.; and Ehren, Lance, 5,617,814, Cl. 119-720.000.
Elf Antar France: *See—*
Germanaud, Laurent; Planche, Jean Pascal; and Turello, Patrick, 5,618,862, Cl. 524-68.000.
Elf Aquitaine: *See—*
Basseres, Anne; Eyraud, Patrick; and Ladousse, Alain, 5,618,725, Cl. 435-262.000.
Elf Atochem North America, Inc.: *See—*
Sandler, Stanley R., 5,618,976, Cl. 564-98.000.
Elf Atochem S.A.: *See—*
Drivon, Gilles; Gillet, Jean-Philippe; Ruppin, Christophe; and Wattier, Alain, 5,619,023, Cl. 204-157.600.
Eli Lilly and Company: *See—*
Britton, Thomas C., 5,618,951, Cl. 549-214.000.
Fisher, Matthew J.; Happ, Anne M.; Jakubowski, Joseph A.; Kinnick, Michael D.; Kline, Allen D.; Morin, John M., Jr.; Sall, Daniel J.; Skelton, Marshall A.; and Vasileff, Robert T., 5,618,843, Cl. 514-567.000.
Grinnell, Brian W., 5,618,714, Cl. 435-226.000.
Jamison, James A.; and Rodriguez, Michael J., 5,618,787, Cl. 514-11.000.
Ni, Binhui; and Paul, Steven M., 5,618,677, Cl. 435-7.100.
Ni, Binhui; and Paul, Steven M., 5,618,918, Cl. 530-350.000.
Elia, Francis. Ladder assembly for a tailgate of a truck. 5,617,930, Cl. 182-97.000.
Elliott Family Trust: *See—*
Elliott, Thomas, 5,618,315, Cl. 606-237.000.
Elliott, Thomas, to Elliott Family Trust. Spinal and other osseous joint adjusting instrument. 5,618,315, Cl. 606-237.000.
Ellis, Stephen C.: *See—*
Riddle, Robert G.; Douglass, Jeffrey A.; Voss, John D.; and Ellis, Stephen C., 5,618,205, Cl. 439-581.000.
Ellis, Steven B.; Williams, Mark E.; Harpold, Michael M.; Schwartz, Arnold; Sartor, Jean; and Brenner, Robert, to Sibia Neurosciences, Inc. Cells expressing calcium channel α2 subunit-encoding DNA, optionally with a reporter gene for screening assays. 5,618,720, Cl. 435-325.000.
Ellison, Dayle G.: *See—*
Lee, Shih-Jong J.; Ellison, Dayle G.; Kuan, Chih-Chau L.; Oh, Seho; and Wilhelm, Paul S., 5,619,428, Cl. 364-551.010.
Elonex IP Holdings Ltd.: *See—*
Kikinis, Dan; Seiler, William J.; Dornier, Pascal; and Jocobs, William S., 5,619,659, Cl. 395-281.000.
Elsag International N. V.: *See—*
Oros, Donald L., 5,619,394, Cl. 361-680.000.
ElSohly, Hala N.; Croom, Edward M., Jr.; ElSohly, Mahmoud A.; and McChesney, James D., to University of Mississippi, The. Methods and compositions for isolating taxanes. 5,618,538, Cl. 424-195.100.
ElSohly, Mahmoud A.: *See—*
ElSohly, Hala N.; Croom, Edward M., Jr.; ElSohly, Mahmoud A.; and McChesney, James D., 5,618,538, Cl. 424-195.100.
EMC Corporation: *See—*
Gallagher, Brian; and Sandorfi, Miklos A., 5,619,497, Cl. 370-394.000.
Nielson, Michael E.; Brant, William A.; and Neben, Gary, 5,619,642, Cl. 395-182.040.
Emhart, Inc.: *See—*
Hill, Bobby D.; and Harrell, Daniel M., 5,617,752, Cl. 72-98.000.
Emitec Gesellschaft fuer Emissionstechnologie: *See—*
Swars, Helmut, 5,618,462, Cl. 219-541.000.
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Wieres, Ludwig; and Reck, Alfred, 5,618,501, Cl. 422-180.000.
Emma, Philip G., to Intrnational Business Machines Corporation. Method and apparatus for the transparent emulation of an existing instruction-set architecture by an arbitrary underlying instruction-set architecture. 5,619,665, Cl. 395-384.000.
Emonds-Alt, Xavier; Goulaouic, Pierre; Proietto, Vincenzo; and Van Broeck, Didier, to Sanofi. Process for preparing stereo isomers of neurokinin receptor antagonists. 5,618,938, Cl. 544-360.000.
Emori, Kiyoshi; and Ohtsuki, Noriko, to NEC Corporation. Keyword extraction apparatus for Japanese texts. 5,619,410, Cl. 395-757.000.
Endermann, Rainer: *See—*
Jaetsch, Thomas; Hallenbach, Werner; Himmler, Thomas; Mielke, Burkhard; Bremm, Klaus D.; Endermann, Rainer; Pirro, Franz; Stegemann, Michael; and Wetzstein, Heinz-Georg, 5,618,815, Cl. 514-250.000.
Endo, Nobuhiro, to NEC Corporation. Semiconductor nonvolatile memory cell. 5,619,051, Cl. 257-316.000.
Endodermic Medical Technologies Company: *See—*
Lipkovker, Lev M., 5,617,851, Cl. 128-632.000.

Endomedix Corporation/Box 330: *See—*
Sorensen, John T.; Limonta, Frans; and Dial, Larry A., 5,618,296, Cl. 606-180.000.
Endovascular Systems, Inc.: *See—*
Marin, Michael L.; and Marin, Ralph, 5,618,300, Cl. 606-198.000.
Eng, Kan K.: *See—*
Askin, David; Eng, Kan K.; Reider, Paul; and Volante, Ralph P., 5,618,937, Cl. 544-360.000.
Engdahl, Erik H.: *See—*
Koble, Terry A., Jr.; Dip, Anthony; Engdahl, Erik H.; Oliver, Ian R.; and Ratliff, Christopher T., 5,618,351, Cl. 118-728.000.
Engdahl, Holger; and Tormikoski, Pekka, to Ahlstrom Machinery Oy. Clarification of green liquor by falling film cross-flow filtration. 5,618,443, Cl. 210-767.000.
Engert, Thomas; Stephan, Hans; and Wolf, Walter, to Ciba-Geigy Corporation. Process for the preparation of sterically hindered hydroxybenzylphosphonates. 5,618,963, Cl. 558-122.000.
Engitec S.p.A.: *See—*
Olper, Marco; and Maccagni, Massimo, 5,618,507, Cl. 423-243.080.
English, Jami: *See—*
Hauptmann, Randal; Eschenfeldt, William H.; English, Jami; and Brinkhaus, Friedhelm L., 5,618,988, Cl. 800-205.000.
Engström, Olof; and Richert, Hans, to AB Volvo. Method of manufacturing a measuring device. 5,619,046, Cl. 257-82.000.
Enstrom, Richard A.: *See—*
Cole, Elbert L., Jr.; Enstrom, Richard A.; and Olver, Terence E., 5,619,206, Cl. 342-37.000.
Ensys Enviromental Products, Inc.: *See—*
Friedman, Stephen B.; and Allen, Randy L., 5,618,681, Cl. 435-7.930.
Epworth, Richard E.; and Bricheno, Terry, to Northern Telecom Limited. Method of creating bragg gratings in waveguides. 5,619,603, Cl. 385-37.000.
Eran, Yair: *See—*
Aloni, Meir; Alon, Amir; Eran, Yair; Katz, Itzhak; Katzir, Yigal; and Rosenfeld, Gideon, 5,619,429, Cl. 364-552.000.
Yolles, Joel; Aloni, Meir; Eran, Yair; and Kaplan, Haim, 5,619,588, Cl. 382-149.000.
Erdrich, Albert; Fremdt, Sonja; and Oppawsky, Steffen, to Heraeus Kulzer GmbH. Process for the production of a firmly adhering, moisture-proof coating of plastic on a substrate. 5,618,372, Cl. 156-310.000.
Erich, Richard R. Pivoted roller cutter pipe cleaning tool. 5,617,604, Cl. 15-104.063.
Erico International Corporation: *See—*
Laughlin, Raymond S.; Smigel, Robert; and Lees, Richard, 5,619,263, Cl. 248-343.000.
Ericson, Richard J., to Otis Elevator Company. Bi-directional elevator governor. 5,617,933, Cl. 187-350.000.
Ericsson Inc.: *See—*
Dent, Paul W., 5,619,210, Cl. 342-352.000.
Dent, Paul W., 5,619,503, Cl. 370-330.000.
Dent, Paul W., 5,619,533, Cl. 375-232.000.
Ernst, Thomas: *See—*
Ross, Brian; Ernst, Thomas; and Kreis, Roland, 5,617,861, Cl. 128-653.200.
Erwin Industries, Inc.: *See—*
Erwin, Ronald D., 5,617,697, Cl. 52-737.400.
Erwin, Ronald D., to Erwin Industries, Inc. Composite deck post. 5,617,697, Cl. 52-737.400.
Erwin, Samuel F. Solar oven with orienting apparatus. 5,617,843, Cl. 126-681.000.
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Eschbaumer, Hermann: *See—*
Bansemir, Horst; Bongers, Bernd; and Eschbaumer, Hermann, 5,618,076, Cl. 295-21.000.
Eschenfeldt, William H.: *See—*
Hauptmann, Randal; Eschenfeldt, William H.; English, Jami; and Brinkhaus, Friedhelm L., 5,618,988, Cl. 800-205.000.
Escobosa, Marcus, to Universal Electronics Inc. Single wire keyboard encode and decode circuit. 5,619,196, Cl. 341-22.000.
Eshleman, Edgar S.; and Shuler, David C., to General Motors Corporation. Fuel rail. 5,617,827, Cl. 123-456.000.
Essex Specialty Products Inc.: *See—*
Martin, Brian; and Muehlfeld, Julie A., 5,618,904, Cl. 528-73.000.
Essilor of America, Inc.: *See—*
White, Sidney S., Jr.; Berzon, Julie S.; Dang, Hoa T.; Tatman, Sheila M.; Valeri, Robert A.; and Benjamin, Kelly, 5,619,288, Cl. 351-159.000.
ETA Technologies Corporation: *See—*
Johnson, William C.; and Marx, Donald L., 5,619,574, Cl. 380-25.000.
Ethicon, Inc.: *See—*
Bezwada, Rao S.; and Jamiolkowski, Dennis D., 5,618,552, Cl. 424-426.000.
Eunghwa, Lee, to Samsung Electronics Co., Ltd. Multiplier that multiplies the output voltage from the control circuit with the voltage from the boost circuit. 5,619,104, Cl. 315-159.000.
Eurocopter Deutschland GmbH: *See—*
Bansemir, Horst; Bongers, Bernd; and Eschbaumer, Hermann, 5,618,076, Cl. 295-21.000.
Eurotungstene Poudres S.A.: *See—*
Ederyd, Stefan; Åkerman, Jan; Beaufoy, Robert; Carpenter, Michael; Bonneau, Maxime; and Pillot, Jacques, 5,619,000, Cl. 75-240.000.
Evans, Michael H.: *See—*
McNeil, Brian A.; and Evans, Michael H., 5,617,741, Cl. 62-622.000.
Ewert, Ernest R.: *See—*
Sandstrom, Brent B.; Ewert, Ernest R.; and Reisch, Robert D., 5,619,571, Cl. 380-4.000.
Excel Industries, Inc.: *See—*
Kobrehel, Michael D., 5,617,675, Cl. 49-352.000.
Exedy Corporation: *See—*
Fukushima, Hirotaka; Kajitani, Koji; Tsuruta, Hiroyoshi; and Fukamachi, Masanobu, 5,617,940, Cl. 192-70.170.
Extrusion Dies, Inc.: *See—*
Krupa, Vernon J.; Seckora, Jeffrey M.; and Pitsch, Brian M., 5,618,568, Cl. 425-224.000.
Exxon Chemical Patents, Inc.: *See—*
Allen, Martin A.; and Fetcko, John T., 5,618,566, Cl. 425-7.000.
Exxon Research and Engineering Company: *See—*
Canevari, Gerard P.; Fiocco, Robert J.; Becker, Kenneth W.; and Lessard, Richard R., 5,618,468, Cl. 252-354.000.
Drake, Evelyn N., 5,618,329, Cl. 71-6.000.
Poirier, Marc-Andre; and Falkiner, Robert J., 5,618,408, Cl. 208-370.000.
Eyraud, Patrick: *See—*
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Ezzell, Stephen A.; and Gerbi, Diana J., to Minnesota Mining and Manufacturing Company. Energy polymerizable compositions, homopolymers and copolymers of oxazolines. 5,618,896, Cl. 526-171.000.
F3 Software Corporation: *See—*
Millman, Frank; Bolin, Phillip; Haggar, Frank E.; and Ackerman, H. Richmond, 5,619,635, Cl. 395-768.000.
Fabel, John A. Backpack suspension system. 5,617,984, Cl. 224-641.000.
Facoetti, Hugues: *See—*
Robin, Philippe; Bureau, Jean-Marc; Bernard, François; and Facoetti, Hugues, 5,618,737, Cl. 216-56.000.
FAG Kugelfischer Georg Schafer KGaA: *See—*
Roll, Georg; and Ohm, Heinz-F., 5,618,088, Cl. 303-158.000.
Fagot, Jacques, to Skis Rossignol S.A. Ski comprising a body and at least one cap, a tip and/or a tail manufactured independently, and process for manufacturing such a ski. 5,618,054, Cl. 280-610.000.
Falkiner, Robert J.: *See—*
Poirier, Marc-Andre; and Falkiner, Robert J., 5,618,408, Cl. 208-370.000.
Falsetti, Robert V., to General Electric Company. Calibration method using a Pitch-Catch arrangement for ultrasonic inspection of acoustically noisy materials. 5,618,994, Cl. 73-602.000.
Fang, Jiafu, to Pennzoil Products Company. Tire sealer and inflator compositions. 5,618,912, Cl. 528-397.000.
Fanuc, Ltd.: *See—*
Ishii, Hisao, 5,619,414, Cl. 364-474.170.
Seki, Masaki; Shinozaki, Satoru; and Maeda, Hideaki, 5,619,415, Cl. 364-474.220.
Farley, Gary L., to United States of America, National Aeronautics and Space Administration. Weaving and bonding method to prevent warp and fill distortion. 5,617,902, Cl. 139-1.00R.
Farley, Shal W.; and McCown, William, to Lyon, Leon. Filter circuit for use with real-time image converter. 5,619,438, Cl. 364-724.100.
Farrelly, D. Lyn: *See—*
Porchia, Jose; McBride, Karen E.; Dais, Brian C.; Farrelly, D. Lyn; and Steele, Robert R., 5,618,111, Cl. 383-63.000.
Farwaha, Rajeev; Currie, William D.; Humphreys, Robert W. R.; and Thomaides, John S., to National Starch and Chemical Investment Holding Corporation. Latex binders and coatings containing polymers derived from polymerizable saccharide monomers. 5,618,876, Cl. 524-548.000.
Fashion Towel Imports Corp.: *See—*
Sullivan, William, 5,618,110, Cl. 383-4.000.
Faul, Ivan: *See—*
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Faulkner, Nathan H., to Siemens Energy & Automation, Inc. Busway busbar with plug-in tab. 5,619,014, Cl. 174-68.200.
FCE Flow Control Equipment Ltd.: *See—*
Squires, Andrew, 5,617,917, Cl. 166-85.400.
Feaver, Timothy L.: *See—*
Chader, Martin D.; Faul, Ivan; Feaver, Timothy L.; and Schulz, Waldean A., 5,617,857, Cl. 128-653.100.
FED Corporation: *See—*
Jones, Gary W., 5,619,097, Cl. 313-495.000.
Fedele, Carman J., Sr. Wheel seal removal tool. 5,617,621, Cl. 29-235.000.
Feger, Claudius: *See—*
Angelopoulos, Marie; Afzali-Ardakani, Ali; Feger, Claudius; and Narayan, Chandrasekhar, 5,619,357, Cl. 349-110.000.
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Feldhaus, Reinhard: *See—*
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Feltz, Kristi T.: *See—*
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Fenicle, Gary: *See—*
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Stauber, Hans-Ulrich, 5,617,704, Cl. 53-430.000.
Ferguson, Keith R.: *See—*
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Rodriguez, Francisco; Howell, Elmer; Sanabria, Franklin; and Fernandez, Raul, 5,617,711, Cl. 53-475.000.
Ferrari, Franco; and Migli, Carlo, to Ferrari, Franco. Single -pin furniture hinge. 5,617,612, Cl. 16-278.000.
Ferraro, Joseph C. Flood light lamp removal alarm. 5,619,185, Cl. 340-568.000.
Ferrell, Richard M., to ADAC Plastics, Inc. Plasma discharge lamp. 5,618,102, Cl. 362-303.000.
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Allen, Martin A.; and Fetcko, John T., 5,618,566, Cl. 425-7.000.
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Baima, Antonio; Borio, Giuseppe; Bo, Mario; De Carlo, Leonardo; Berruto, Aurelio; Tolomei, Roberto; and Boscolo, Gianluigi, 5,618,222, Cl. 451-14.000.
Fibres South, Inc.: *See—*
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Fichtel & Sachs AG: *See—*
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Suchenwirth, Hermann; and Fichtel, Roland, 5,618,508, Cl. 423-245.100.
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Della Valle, Francesco; Rastrelli, Alessandro; Calderini, Gabriella; and Romeo, Aurelio, 5,618,561, Cl. 424-488.000.
Fiedrich, Joachim. Hydronic heating with satellite distribution stations for multi-temperature supply water to heating loops. 5,617,994, Cl. 237-8.00R.
Field, Steven V. Modular merchandise signage system. 5,618,141, Cl. 40-606.000.
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Klein, Johann; Bongardt, Frank; Daute, Peter; and Fies, Matthias, 5,618,779, Cl. 508-486.000.
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Sommer, Bruno; Luka, Helmut; Schürg, Thomas; Rapp, Siegfried; and Moser, Nikolaus, 5,618,324, Cl. 55-497.000.
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Finn, Alan M.: *See—*
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Firma Carl Freudenberg: *See—*
Spies, Karl-Heinz; Barth, Thomas; and Krause, Wolfgang, 5,617,815, Cl. 123-41.100.
Firma Fedag: *See—*
Wörwag, Peter, 5,617,611, Cl. 15-331.000.
Fischer, David V., to Ultradent Product, Inc. Syringe apparatus with threaded plunger for delivering tooth composites and other solid yet pliable materials. 5,618,273, Cl. 604-211.000.
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Boeck, Stefan; Herzog, Klaus; Fischer, Rolf; Vogel, Herbert; and Fischer, Martin, 5,618,954, Cl. 549-534.000.
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Fisher, Matthew J.; Happ, Anne M.; Jakubowski, Joseph A.; Kinnick, Michael D.; Kline, Allen D.; Morin, John M., Jr.; Sall, Daniel J.; Skelton, Marshall A.; and Vasileff, Robert T., to Eli Lilly and Company. Glycoprotein IIb/IIIa antagonists. 5,618,843, Cl. 514-567.000.
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Kaleta, James E.; Tanner, Paul R.; Deckner, George E.; Linares, Carlos G.; and Fishter, Steve G., 5,618,522, Cl. 424-60.000.
Fite, David B., Jr.: *See—*
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Fitzgerald, John J.: *See—*
Beierle, Leonard G.; Graff, Leroy; and Fitzgerald, John J., 5,618,321, Cl. 48-76.000.
Flanagan, Elizabeth B.: *See—*
Billock, John K.; Cuttner, Craig D.; Dowdell, Kevin C.; Flanagan, Elizabeth B.; Granger, James E.; Hsu, Henry C.; Martin, Robert I. M.; May, Robert; Peck, Nicolas; Pontecorvo, Michael S.; Probst, Bruce E.; Rosenberg, Marc D.; Smul, Debra R.; Wilkinson, Dennis P.; and Zitter, Robert M., 5,619,249, Cl. 348-7.000.
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Morano, Emanuel P.; and Flecknoe-Brown, Anthony E., 5,617,972, Cl. 221-33.000.
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Brehm, Werner; and Fleischer, Walter, 5,617,890, Cl. 137-82.000.
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Fleming, Gregory K.: *See—*
Ekiner, Okan M.; and Fleming, Gregory K., 5,618,332, Cl. 95-51.000.
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Fletcher, Stephen R.: *See—*
Castro Pineiro, Jose L.; Carling, William R.; Chambers, Mark S.; Fletcher, Stephen R.; Hobbs, Sarah C.; Matassa, Victor G.; Moore, Kevin W.; Showell, Graham A.; and Russell, Michael G., 5,618,812, Cl. 514-221.000.
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Stern, Michael K.; and Cheng, Brian K-M, 5,618,979, Cl. 564-415.000.
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Lindgren, Leif S. E., 5,618,153, Cl. 414-608.000.
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Hicks, Timothy S., 5,618,231, Cl. 452-177.000.
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Holton, Robert A.; Somoza, Carmen; Kim, Hyeong B.; Shindo, Mitsuru; Biediger, Ronald J.; Boatman, P. Douglas; Smith, Chase; Liang, Feng; and Murthi, Krishna, 5,618,952, Cl. 549-300.000.
Florio, Steven M.; Burress, Jeffrey P.; Colangelo, Carl J.; Couble, Edward C.; and Kapeckas, Mark J., to Shipley Company, L.L.C. Electroplating process. 5,618,400, Cl. 205-98.000.
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Kreill, Walter, 5,618,409, Cl. 210-97.000.
Flude, Ian: *See—*
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Flush Quip Inc.: *See—*
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Flynn, Stephen J.: *See—*
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FMC Corp.: *See—*
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Focal, Inc.: *See—*
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Fogel, Eliezer, to Motorola, Inc. Voice activity detector for an echo suppressor and an echo suppressor. 5,619,566, Cl. 379-406.000.
Fogg, Roland; and MacDonald, Jeffrey. Process for resurfacing roads. 5,618,132, Cl. 404-79.000.
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Smith, Peter, 5,617,599, Cl. 14-73.000.
Fons, Roger D.; and Crissman, Raymond H. Rubber soled slipper sock. 5,617,585, Cl. 2-239.000.
Ford Motor Company: *See—*
Bidner, David K.; Zimlich, Glenn A.; and Orzel, Daniel V., 5,617,829, Cl. 123-481.000.
Cullen, Michael J.; Marzonie, Robert M.; Dona, Alan R.; Grant, Eric J.; and Yannone, Ronald A., 5,617,836, Cl. 123-674.000.
Huddleston, Howard M.; Insalaco, Jeffrey L.; and Odom, Fletcher L., 5,617,992, Cl. 228-183.000.
Lohr, John C., 5,617,834, Cl. 123-572.000.
Nulman, Mark; and Ryntz, Rose A., 5,618,599, Cl. 428-36.700.
Otto, Norman C.; Pielemeier, William J.; and Meier, Raymond C., Jr., 5,618,995, Cl. 73-669.000.
Prakash, Rajiva; Davis, Marc R.; and Kambouris, Christos A., 5,619,435, Cl. 364-578.000.
Premiski, Vladimir; Lauscher, Friedel; and Wehren, Wilhelm, 5,619,130, Cl. 324-173.000.
Spoto, Thomas A.; and Newell, Sean M., 5,619,075, Cl. 307-10.200.
Subramanian, Somasundaram; Kudla, Robert J.; and Chattha, Mohinder S., 5,618,505, Cl. 423-213.200.
Sullivan, Brian K.; Britain, Graham J.; and Nelson, Donald F., 5,618,080, Cl. 296-155.000.
Forestier, Serge: *See—*
Hansenne, Isabelle; Forestier, Serge; and Deflandre, Andre, 5,618,520, Cl. 424-59.000.
Forse, Roger J.: *See—*
Hey-Shipton, Gregory L.; Forse, Roger J.; and Skoglund, David L., 5,618,777, Cl. 505-210.000.
Foscante, Raymond E.: *See—*
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Foss, Raymond C.; and Cammack, Andrew S., to Bowthorpe PLC. Optical fibre splice enclosures. 5,619,608, Cl. 385-135.000.
Foster, Don C.; Norris, Joel D.; Norris, Christopher D.; and Stainback, Ross M., to Eldon Specialties, Inc. Adjustable yarn guide roller elbow. 5,618,009, Cl. 242-615.200.
Foster, Donald C.: *See—*
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Foster Electric Co., Ltd.: *See—*
Yoshimura, Takeshi; Morioka, Koichi; and Yamada, Teruho, 5,619,019, Cl. 181-166.000.
Foulon, Loic; Garcia, Georges; Mettefeu, Daniel; Serradeil-Legal, Claudine; and Valette, Gérard, to Sanofi. 1-benzyl-1,3-dihydroindol-2-one derivatives, their preparation and the pharmaceutical compositions in which they are present. 5,618,833, Cl. 514-409.000.
Fournel, Richard P.; and Sourgen, Laurent, to SGS-Thomson Microelectronics, S.A. Voltage threshold detection circuit with very low consumption. 5,619,165, Cl. 327-546.000.
Fowler, Daniel L.; and Hart, Lee A., to Robertshaw Controls Company. Temperature regulating control system for an oven of a cooking apparatus and methods of making and operating the same. 5,618,460, Cl. 219-497.000.
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Amiet, Pierre; and Brin, Michel, 5,619,547, Cl. 376-261.000.
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Francis, Arthur W., Jr.: *See—*
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Byers, Charles H.; Sisson, Warren G.; Snyder, Thomas S.; Beleski, Richard J.; Nayak, Umesh P.; and Francis, Timothy L., 5,618,502, Cl. 423-70.000.
Frank, Martin; Wegner, Susanne; Rheinberger, Volker; and Hoeland, Wolfram, to Ivoclar AG. Alkali-zinc-silicate glass-ceramics and glasses. 5,618,763, Cl. 501-5.000.
Frantz, Gene: *See—*
Page, Steven L.; Hollander, James; and Frantz, Gene, 5,619,583, Cl. 381-172.000.
Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H.: *See—*
Theurer, Josef, 5,617,793, Cl. 104-2.000.
Theurer, Josef; and Lichtberger, Bernhard, 5,617,794, Cl. 104-7.200.
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Frattini, Ercole. Self-propelled underwater electromechanical apparatus for cleaning the bottom and walls of swimming pools. 5,617,600, Cl. 15-1.700.
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Weigel, Peter; Bauer, Albrecht; Frigge, Konrad; Gensrich, Jürgen; and Wagenknecht, Wolfgang, 5,618,483, Cl. 264-187.000.
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French, Paul K.: *See—*
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Freund Industrial Co., Ltd.: *See—*
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Fridman, Solomon: *See—*
Casali, David C.; Opie, John E.; and Fridman, Solomon, 5,619,012, Cl. 174-52.200.
Friedman, Stephen B.; and Allen, Randy L., to Ensys Enviromental Products, Inc. Polyaromatic hydrocarbon (PAH) immunoassay method, its components and a kit for use in performing the same. 5,618,681, Cl. 435-7.930.
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Eichholz, Heinz-Dieter; Kleinhans, Werner; and Rudrich, Hans-Peter, 5,618,023, Cl. 251-129.040.
Friedrich, Hans-Helmut: *See—*
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Fritz, James S.; Dumont, Philip J.; Hagen, Donald F.; Markell, Craig G.; and Schmidt, Luther W., to Minnesota Mining and Manufacturing Company. Method of isolating an analyte using a solid phase extraction medium. 5,618,438, Cl. 210-679.000.
Frymaster Corporation, The: *See—*
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FTU GmbH Technische Entwicklung und Forschung im Umweltschutz: *See—*
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FUBA Hans Kolbe & Co.: *See—*
Lindenmeier, Heinz; Hopf, Jochen; Reiter, Leopold; and Kronberger, Rainer, 5,619,214, Cl. 343-713.000.
Fuchs, Uwe, to Linde Aktiengesellschaft. Process for performing reactions. 5,618,430, Cl. 210-616.000.
Fuerst, Charles O., to Aquaria, Inc. Filter cartridge with back structure defining a weir. 5,618,419, Cl. 210-238.000.
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Fuji Photo Film Co., Ltd.: *See—*
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Idota, Yoshio; Mishima, Masayuki; Miyaki, Yukio; Kubota, Tadahiko; and Miyasaka, Tsutomu, 5,618,640, Cl. 429-194.000.
Kawamura, Yoshinori, 5,617,986, Cl. 226-91.000.
Matsumoto, Nobuo; Terashita, Takaaki; Mogi, Fumio; Sasaki, Noboru; and Ishikawa, Takatoshi, 5,619,742, Cl. 396-569.000.
Mogi, Fumio; and Ishikawa, Takatoshi, 5,619,743, Cl. 396-577.000.
Morita, Satoshi, 5,618,644, Cl. 430-30.000.
Nagata, Takefumi; Tanaka, Hiroshi; and Hishinuma, Kazuhiro, 5,619,598, Cl. 382-305.000.
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Shishido, Tadao; Kawakami, Masayuki; Ikegawa, Akihiko; Ukai, Toshinao; Koya, Keizo; and Chen, Lan B., 5,618,831, Cl. 514-366.000.
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Hachisuga, Masaki, 5,619,363, Cl. 359-216.000.
Hosoi, Kiyoshi; and Matsuda, Tsukasa, 5,619,241, Cl. 347-105.000.
Kusumoto, Yasuhiro; Uehara, Yasuhiro; Kanesawa, Yoshio; Inoue, Tohru; Kato, Hiroshi; and Kikukawa, Hiroyasu, 5,619,315, Cl. 399-324.000.
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Fujii, Masahiro; Ohno, Yasuo; Maeda, Tadashi; Atsumo, Takao; Matsuno, Noriaki; Numata, Keiichi; and Yoshida, Nobuhide, to NEC Corporation. Switching speed fluctuation detecting apparatus for logic circuit arrangement. 5,619,146, Cl. 326-21.000.
Fujii, Michihiro: *See*—
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Fujioka, Shuzo, to Mitsubishi Denki Kabushiki Kaisha. Non-contact IC card and non-contact IC card reader/writer. 5,619,529, Cl. 375-219.000.
Fujita, Akifumi: *See*—
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Fujita, Hiroyuki: *See*—
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Fujitsu Limited: *See*—
Abe, Yoshinari, 5,619,700, Cl. 395-703.000.
Akashi, Tamotsu; Yamamoto, Tsuyoshi; and Nakagami, Takakiyo, 5,619,601, Cl. 385-16.000.
Fujita, Takushi; Fukuda, Mitsuaki; Matsumoto, Chikako; Oota, Masaaki; Matsumoto, Hitoshi; Shindo, Shuro; Ooe, Waku; and Nagai, Yuichi, 5,619,628, Cl. 395-127.000.
Horikoshi, Yuzo; Sawatari, Norio; Ogino, Takeshi; Naito, Hiroaki; Koshi, Makoto; Kido, Kazuhiko; Yamamoto, Takashi; Sakurai, Eiji; Katagiri, Yoshimichi; Maruyama, Masatoshi; Nitta, Hidenori; and Matsuoka, Sonoo, 5,618,648, Cl. 430-109.000.
Ibi, Takashi, 5,619,679, Cl. 395-494.000.
Kida, Shingo, 5,619,390, Cl. 360-104.000.
Maruyama, Akira; and Aihara, Koji, 5,619,509, Cl. 371-5.400.
Nakagawa, Jun, 5,619,696, Cl. 395-670.000.
Nakano, Misao, 5,619,252, Cl. 348-14.000.
Nomura, Hidenori; Nagai, Kenji; Nakashima, Masami; Yamamoto, Hiroshi; and Sobue, Isaya, 5,619,465, Cl. 365-206.000.
Ohuchi, Noriaki; Morimoto, Akio; Yamasaki, Hiroshi; Hosokawa, Takahiro; and Kaneko, Hiroyuki, 5,619,641, Cl. 395-181.000.
Okuyama, Takeshi; Watanabe, Kouji; Yatsu, Nobuo; Sakuraoka, Masahiko; and Akama, Junichi, 5,618,202, Cl. 439-497.000.
Sasaki, Nobuo; and Ishigaki, Toru, 5,619,159, Cl. 327-527.000.
Shouen, Akihisa, 5,619,231, Cl. 345-163.000.
Sugawara, Eiji, 5,619,189, Cl. 340-825.060.
Suzuki, Rieko; Saida, Kiyoshi; Itazu, Kazushige; Fujine, Eiji; Kamiya, Yoshihiro; Uchida, Yoshitaka; Murakami, Takako; Tsuyuki, Teruhisa; Kawazoe, Kazunori; Shimazaki, Takeshi; and Nishiwaki, Yukimi, 5,618,744, Cl. 438-599.000.
Takashimizu, Yoshihiro, 5,618,034, Cl. 271-209.000.
Takeguchi, Tetsuji, 5,619,450, Cl. 365-185.230.
Tani, Shigeo; Yamanaka, Katsuaki; Aono, Hironori; and Kinoshita, Toshiaki, 5,619,532, Cl. 375-224.000.
Tezuka, Koichi; Miyabe, Kyoko; and Hamaguchi, Shingo, 5,619,482, Cl. 369-44.230.
Uno, Hirosi; and Hakamatani, Takao, 5,619,486, Cl. 369-75.100.
Watanabe, Manabu; and Satoh, Kazuaki, 5,618,636, Cl. 428-626.000.
Fujitsu VLSI Limited: *See*—
Nomura, Hidenori; Nagai, Kenji; Nakashima, Masami; Yamamoto, Hiroshi; and Sobue, Isaya, 5,619,465, Cl. 365-206.000.
Suzuki, Rieko; Saida, Kiyoshi; Itazu, Kazushige; Fujine, Eiji; Kamiya, Yoshihiro; Uchida, Yoshitaka; Murakami, Takako; Tsuyuki, Teruhisa; Kawazoe, Kazunori; Shimazaki, Takeshi; and Nishiwaki, Yukimi, 5,618,744, Cl. 438-599.000.
Fujiwara, Akihiro: *See*—
Yoshimura, Katsuji; Toyama, Masamichi; Fujiwara, Akihiro; Yamada, Kunihiko; and Suda, Hirofumi, 5,619,264, Cl. 348-352.000.
Fujiwara, Itsuo; and Ito, Tadashi, to Fuji Photo Film Co., Ltd. Silver halide photographic material and method for processing the same. 5,618,660, Cl. 430-567.000.
Fukahori, Yoshihide: *See*—
Matsushima, Yosuke; Iino, Yasuhiro; Toyosawa, Shinichi; Kimura, Takeshi; Fukahori, Yoshihide; and Noda, Akeshi, 5,618,595, Cl. 428-35.200.
Fukamachi, Masanobu: *See*—
Fukushima, Hirotaka; Kajitani, Koji; Tsuruta, Hiroyoshi; and Fukamachi, Masanobu, 5,617,940, Cl. 192-70.170.
Fukamachi, Mitsuru: *See*—
Kashima, Keiji; Fukamachi, Mitsuru; and Yoshida, Naoki, 5,618,095, Cl. 362-31.000.
Fukuchi, Masakazu: *See*—
Haneda, Satoshi; Fukuchi, Masakazu; and Miwa, Tadashi, 5,619,242, Cl. 347-131.000.
Fukuda, Mitsuaki: *See*—
Fujita, Takushi; Fukuda, Mitsuaki; Matsumoto, Chikako; Oota, Masaaki; Matsumoto, Hitoshi; Shindo, Shuro; Ooe, Waku; and Nagai, Yuichi, 5,619,628, Cl. 395-127.000.
Fukuda, Naoyuki; Yoshida, Yukihiro; Kubo, Noboru; and Kinosita, Kazuo, to Sharp Kabushiki Kaisha. High speed semiconductor memory including a cache-prefetch prediction controller including a register for storing previous cycle requested addresses. 5,619,676, Cl. 395-464.000.
Fukuhara, Hideyuki; and Miyai, Yoichi, to Texas Instruments Incorporated. Method of making fuse with non-corrosive termination of corrosive fuse material. 5,618,750, Cl. 438-601.000.
Fukui, Kiyoyuki: *See*—
Hosoda, Yasushi; Kimoto, Masanari; Hikino, Shinya; Yoshida, Tsutomu; and Fukui, Kiyoyuki, 5,618,634, Cl. 428-610.000.
Fukui, Masayuki: *See*—
Suda, Akihiko; Ukyo, Yoshio; Sobukawa, Hideo; Kandori, Toshio; and Fukui, Masayuki, 5,618,772, Cl. 502-238.000.
Fukumoto, Katsumi, to Sharp Kabushiki Kaisha. Non-volatile dynamic random access memory. 5,619,470, Cl. 365-228.000.
Fukumoto, Satoshi, to Nikon Corporation. Aspherical surface ocular lens. 5,619,379, Cl. 359-644.000.
Fukushima, Hirotaka; Kajitani, Koji; Tsuruta, Hiroyoshi; and Fukamachi, Masanobu, to Exedy Corporation. Power transfer apparatus having a vibration dampening mechanism which provides structural support for the apparatus. 5,617,940, Cl. 192-70.170.
Fukushima, Hisashi: *See*—
Kubo, Takahiro; Murasawa, Yoshihiro; Fukushima, Hisashi; Menjo, Takeshi; Hasegawa, Takashi; and Tamura, Satoshi, 5,619,746, Cl. 399-297.000.
Fukushima, Toshiharu; Muroi, Kunimasa; and Hiyama, Kunio, to Yamaha Corporation. Strong flexible pre-inpregnation of fiber reinforced thermoplastic resin free from a void in matrix. 5,618,598, Cl. 428-36.300.
Fukushima, Tsumoru: *See*—
Yamashita, Haruo; and Fukushima, Tsumoru, 5,619,280, Cl. 348-645.000.
Fukushima, Yasuhiro: *See*—
Tokuda, Shoichi; Ninomiya, Kazuhisa; Fukushima, Yasuhiro; Watanabe, Shigeyuki; Ochiai, Mitsuru; Okumura, Mutsuo; and Hosokawa, Yuko, 5,618,555, Cl. 424-443.000.
Fulghum, Tracy L.: *See*—
Cadd, Jimmy W.; and Fulghum, Tracy L., 5,619,530, Cl. 375-219.000.
Fuller, John M.: *See*—
Matthias, Terry R.; Fuller, John M.; and Griffin, Nigel D., 5,617,928, Cl. 175-432.000.
Funaba, Yuriko: *See*—
Kawabe, Norio; Uchiro, Hiromi; Nakadate, Teruo; Tanahashi, Masahiko; and Funaba, Yuriko, 5,618,804, Cl. 514-103.000.
Funahashi, Yasuhiro; Ikami, Kazunori; and Hasegawa, Yukie, to Brother Kogyo Kabushiki Kaisha; and Xing Inc. Data transmission system. 5,619,425, Cl. 364-514.00R.
Funakubo, Tomoki: *See*—
Matsuzaki, Minoru; Sato, Yuta; Kawai, Sumio; Takizawa, Hiroyuki; Hamada, Masaharu; and Funakubo, Tomoki, 5,619,292, Cl. 396-32.000.
Funamoto, Tatsuaki; Yagasaki, Toru; and Akahane, Fumiaki, to Seiko Epson Corporation. Surface-type illumination device and liquid crystal display. 5,619,351, Cl. 349-61.000.
Fung, Anthony K. L.: *See*—
Ma, Zhenkun; Cooper, Curt S.; Fung, Anthony K. L.; and Chu, Daniel T., 5,618,949, Cl. 548-557.000.
Funk, Gregory A.; Dandekar, Hemant W.; and Hobbs, Simon H., to UOP. Process for continuous reaction and separation using fixed catalyst bed serially connected to simulated moving catalyst and adsorbent bed. 5,618,972, Cl. 560-239.000.
Fürbass, Jürgen, to Heidelberger Druckmaschinen AG. Sheet-guiding drum, in particular a delivery drum, of a sheet-fed rotary printing press. 5,617,791, Cl. 101-420.000.
Furihata, Tomoyoshi; and Yamada, Motoyuki, to Shin-Etsu Chemical Co., Ltd. 2,4-diamino-s-triazinyl group-containing polymer and negative radiation-sensitive resist composition containing the same. 5,618,892, Cl. 525-483.000.
Furlani, Edward P.; Taillie, Paul L.; and Stephany, Thomas M., to Eastman Kodak Company. Electromagnetic mechanism for providing a hard stop for moving blade aperture systems. 5,619,296, Cl. 396-463.000.

Furlani, Edward P.; Barzideh, Bijan; Reznik, Svetlana; Williams, Christopher C.; and Brugger, Charles E., to Eastman Kodak Company. Translational bias-field device for a magneto-optical system. 5,619,479, Cl. 369-13.000.
Furui, Sunao: *See*—
Yamamoto, Iwao; and Furui, Sunao, 5,619,678, Cl. 395-492.000.
Furukawa, Hiroshi: *See*—
Tezuka, Satoru; Miyake, Shigeru; Furukawa, Hiroshi; Kihara, Kenichi; Kitahara, Chiho; Idei, Hideomi; Taguchi, Shihoko; Namba, Hikari; and Suzano, Alberto, 5,619,640, Cl. 395-326.000.
Furukawa, Ken: *See*—
Urawa, Yoshio; Furukawa, Ken; Shimizu, Toshikazu; Yamagishi, Yoji; Tsurugi, Tomio; and Ichino, Tomio, 5,618,969, Cl. 560-102.000.
Furukawa, Masahiro; Nagaya, Masaaki; and Yoshimura, Tatsuhiro, to Okuma Corporation. Method of dressing grindstone for NC grinder. 5,618,221, Cl. 451-8.000.
Furukawa, Tatsuya: *See*—
Furuta, Toshiyuki; Horiguchi, Hiroyuki; Eguchi, Hirotoshi; Ebi, Yutaka; Furukawa, Tatsuya; Watanabe, Yoshio; and Tsukagoshi, Toshihiro, 5,619,617, Cl. 395-23.000.
Furuse, Tōru: *See*—
Tomita, Hiroyuki; Furuse, Tōru; Mizukami, Masakatu; and Masukawa, Akihiro, 5,619,220, Cl. 345-14.000.
Furuta, Toshiyuki; Horiguchi, Hiroyuki; Eguchi, Hirotoshi; Ebi, Yutaka; Furukawa, Tatsuya; Watanabe, Yoshio; and Tsukagoshi, Toshihiro, to Ricoh Company, Ltd. Neuron unit, neural network and signal processing method. 5,619,617, Cl. 395-23.000.
Furuya, Nagakazu, to Tanaka Kikinzoku Kogyo K.K.; and Furuya, Nagakazu. Gas diffusion electrode. 5,618,392, Cl. 204-252.000.
Fuse Co.: *See*—
Bernstein, Philip, Jr., 5,618,591, Cl. 427-544.000.
Fussell, David A. Motorized and lighted decorative ornaments. 5,618,103, Cl. 362-386.000.
Futaba Denshi Kogyo K.K.: *See*—
Toki, Hitoshi; Itoh, Shigeo; and Kataoka, Fumiaki, 5,619,098, Cl. 313-496.000.
Futsuhara, Koichi: *See*—
Sugimoto, Noboru; Suzuki, Masatoshi; Futsuhara, Koichi; Sakai, Masayoshi; and Mihira, Ritsuo, 5,619,110, Cl. 318-450.000.
G.D. Searle & Co.: *See*—
Desai, Subhash; Mancini, Alan M.; and Schumann, Steven C., 5,618,559, Cl. 424-468.000.
G.D Societa' Per Azioni: *See*—
Belvederi, Bruno; Manservigi, Alberto; and Stivani, Eros, 5,617,943, Cl. 198-418.100.
Brizzi, Marco; and Gamberini, Antonio, 5,617,701, Cl. 53-168.000.
Gabriel, Richard: *See*—
Pal, Biman; Ram, Siya; Cai, Bing; Sachdeva, Yesh P.; Shim, Jaechul; Zahr, Salah A.; Al-Farhan, Emile; and Gabriel, Richard, 5,618,966, Cl. 560-16.000.
Gajewski, Gerard H., to Davidson Textron Inc. Method for making an insert for air bag cover assembly. 5,618,485, Cl. 264-255.000.
Galbraith, Richard L.: *See*—
Coker, Jonathan D.; Dolivo, Francois B.; Galbraith, Richard L.; Hermann, Reto J.; Hirt, Walter; and Vannorsdel, Kevin, 5,619,539, Cl. 375-341.000.
Gallagher, Brian; and Sandorfi, Miklos A., to EMC Corporation. Method and apparatus for reordering frames. 5,619,497, Cl. 370-394.000.
Gallagher, Daniel P., Jr. Insulating polymer wall panels. 5,617,686, Cl. 52-309.120.
Galloway, Judy U.: *See*—
Siems, Daniel D.; Galloway, Judy U.; and Lantz, Clayton, 5,618,380, Cl. 438-14.000.
Gamberini, Antonio: *See*—
Brizzi, Marco; and Gamberini, Antonio, 5,617,701, Cl. 53-168.000.
Gandy, Ginger; Vagedes, Doug; and Vagedes, Michael, to Richwood Building Products, Inc. Adjustable shutter with reversible end cap. 5,617,688, Cl. 52-473.000.
Ganguly, Ashit: *See*—
Cooper, Alan B.; Saksena, Anil K.; Lovey, Raymond; Girijavallabhan, Viyyoor; and Ganguly, Ashit, 5,618,793, Cl. 514-19.000.
Ganguly, Ashit K.: *See*—
Girijavallabhan, Viyyoor M.; Ganguly, Ashit K.; and Versace, Richard W., 5,618,849, Cl. 514-721.000.
Garavuso, Gerald M.: *See*—
Kovnat, Larry A.; Rogerson, Diane S.; and Garavuso, Gerald M., 5,619,649, Cl. 395-200.010.
Garcia, Georges: *See*—
Foulon, Loic; Garcia, Georges; Mettefeu, Daniel; Serradeil-Legal, Claudine; and Valette, Gérard, 5,618,833, Cl. 514-409.000.
Garde, Douglas; and Gorius, Aaron H., to Analog Devices, Inc. Digital signal processor having link ports for point-to-point communication. 5,619,720, Cl. 395-800.000.
Garin-Chesa, Pilar: *See*—
Sanz-Moncasi, Maria P.; Garin-Chesa, Pilar; Stockert, Elisabeth; Old, Lloyd J.; and Rettig, Wolfgang J., 5,618,534, Cl. 424-184.100.
Garland, Thomas A.; and Wood, George A., to Garland, Thomas A. Swing linkage. 5,618,016, Cl. 248-133.000.
Garrett, J. Thomas, to Clemson University. Plant growth media and process for using same. 5,617,672, Cl. 47-58.000.
Garrison, Glen E.: *See*—
Bryant, Barbara J.; and Garrison, Glen E., 5,619,671, Cl. 395-412.000.
Garrity, Edward R., Jr.: *See*—
Ehemann, George M., Jr.; Garrity, Edward R., Jr.; Duschl, Robert A.; and Gorog, Istvan, 5,619,330, Cl. 356-382.000.
Gartner, Georg, to U.S. Philips Corporation. Method of plasma-activated reactive deposition of electrically conducting multicomponent material from a gas phase. 5,618,395, Cl. 204-290.00R.
Gassett, John W.: *See*—
Edwards, Earl G.; Flores, Armando V.; Gassett, John W.; Harden, James P.; Huber, Daniel L.; Leemhuis, Michael C.; Olson, Stephen T.; and Wilzbach, Bernard L., 5,618,036, Cl. 271-225.000.
Gastesi, Ignacio. Flush toilet exhaust fixture. 5,617,590, Cl. 4-213.000.
Gatrone, Ralph C.: *See*—
Trochimcznk, Andrzej W.; Gatrone, Ralph C.; Alexandratos, Spiro; and Horwitz, E. Philip, 5,618,851, Cl. 521-34.000.
Gauhl, Helmgard: *See*—
Schmidt, Axel; and Gauhl, Helmgard, 5,618,832, Cl. 514-372.000.
Gaul, Stephen J., to Harris Corporation. Method of fabrication of surface mountable integrated circuits. 5,618,752, Cl. 438-626.000.
Gaultier, Jean-Marie: *See*—
Costabello, Claude; and Gaultier, Jean-Marie, 5,619,451, Cl. 365-185.290.
Gautsch, James W.; and Rehan, Syed F. H. Comb elements rotating in position to place selected slit arrays in the gel of an electrophoresis agarose gel tray, particularly as also serve as spacers between stacked trays. 5,618,399, Cl. 204-620.000.
Gavin, Norman W. Septic tank solids retainer gas baffle. 5,618,445, Cl. 210-800.000.
Gavin, Patrick M.: *See*—
Lin, David C. K.; Houpt, Ronald A.; Gavin, Patrick M.; Lawson, Richard D.; and Hinze, Jay W., 5,618,328, Cl. 65-502.000.
Gee, Albert: *See*—
Cole, Christopher R.; Gee, Albert; and Newell, Laurence J., 5,617,862, Cl. 128-661.010.
Gee, Homer T.; Steere, Daniel C., Jr.; and Matthews, Walter S., to Intel Corporation. Modular PCMCIA card. 5,619,396, Cl. 361-686.000.
Geerardyn, Geert: *See*—
Adriaen, Marc; Geerardyn, Geert; and Vancayzeele, Bernard, 5,617,901, Cl. 139-1.00E.
Geier, Adalberto, to Coster Tecnologie Speciali S.p.A. Apparatus for dispensing a semifluid medium. 5,617,978, Cl. 222-402.130.
Gelfand, David H.; and Myers, Thomas W., to Hoffmann-La Roche Inc. Unconventional nucleotide substitution in temperature selective RT-PCR. 5,618,703, Cl. 435-91.200.
Gelfand, David H.; Lawyer, Frances C.; and Stoffel, Susanne, to Hoffmann-La Roche Inc. Recombinant expression vectors and purification methods for *Thermus thermophilus* DNA polymerase. 5,618,711, Cl. 435-194.000.
GelTex Pharmaceuticals, Inc.: *See*—
Mandeville, W. Harry, III; Holmes-Farley, Stephen R.; and Petersen, John S., 5,618,530, Cl. 424-78.120.
Gemstar Development Corporation: *See*—
Ngai, Hing Y., 5,619,383, Cl. 360-20.000.
Genentech, Inc.: *See*—
Capon, Daniel J.; Lawn, Richard M.; Vehar, Gordon A.; and Wood, William I., 5,618,788, Cl. 514-12.000.
Capon, Daniel J.; Lawn, Richard M.; Vehar, Gordon A.; and Wood, William I., 5,618,789, Cl. 514-12.000.
Hitzeman, Ronald A.; Hagie, Franklin E., IV; Hall, Benjamin D.; and Ammerer, Gustav, 5,618,676, Cl. 435-69.100.
General Electric Company: *See*—
Adamson, Ronald B.; and Potts, Gerald A., 5,618,356, Cl. 148-519.000.
Falsetti, Robert V., 5,618,994, Cl. 73-602.000.
Kaliszewski, Mary S.; and Ishler, William E., 5,619,096, Cl. 313-489.000.
Mahood, James A., 5,618,961, Cl. 558-78.000.
Mahood, James A., 5,618,962, Cl. 558-78.000.
Markovitz, Mark, 5,618,891, Cl. 525-481.000.
Merrifield, James H.; and Riccio, Donna A., 5,618,627, Cl. 428-447.000.
Payne, Thomas R.; Rice, Steven A.; and Wead, William W., 5,619,614, Cl. 395-3.000.
Pla, Frederic G.; and Rajiyah, Harindra, 5,618,010, Cl. 244-1.00N.
Prabhu, Vaikunth S.; and Gray, Carloss L., 5,618,866, Cl. 524-117.000.
Secen, Michael M., 5,619,106, Cl. 315-290.000.
Souza, Steven P.; Dumoulin, Charles L.; Darrow, Robert D.; and Cline, Harvey E., 5,617,859, Cl. 128-653.200.
Wengrovius, Jeffrey H.; Green, Richard W.; and Quinn, Clayton B., 5,618,902, Cl. 528-10.000.
General Motors Corporation: *See*—
Beardmore, John M.; Tucker, Bruce A.; and Leland, David N., 5,617,820, Cl. 123-197.300.
Cymbal, William D., 5,617,763, Cl. 74-552.000.
Eshleman, Edgar S.; and Shuler, David C., 5,617,827, Cl. 123-456.000.
Konchan, Jeffrey L.; Kowalczyk, David; Reelhorn, John F.; and Saxton, Dennis F., 5,618,069, Cl. 292-216.000.
Reuter, David F., 5,618,086, Cl. 303-119.200.
Slawson, Robert L., 5,617,721, Cl. 60-277.000.
General Physics International Engineering Simulation Inc.: *See*—
Wang, Guan-Hwa; Wang, Zen-Yow; and Lein, Horngshyang, 5,619,433, Cl. 364-578.000.
General, Ronald E.: *See*—

Harris, Dennis H.; and General, Ronald E., 5,618,543, Cl. 424-400.000.

General Signal Corporation: *See*—

Geyer, Craig, 5,618,026, Cl. 251-298.000.

General Signal Power Systems, Inc.: *See*—

Layden, David L.; Cane, Michael J.; and Bishop, Robert, 5,619,076, Cl. 307-48.000.

Genetics Institute, Inc.: *See*—

Wang, Elizabeth A.; Wozney, John M.; and Rosen, Vicki, 5,618,924, Cl. 530-399.000.

Gensrich, Jürgen: *See*—

Weigel, Peter; Bauer, Albrecht; Frigge, Konrad; Gensrich, Jürgen; and Wagenknecht, Wolfgang, 5,618,483, Cl. 264-187.000.

Gentile, Frank A.: *See*—

Barrabee, Ellen B.; Horan, Ann C.; Gentile, Frank A.; and Patel, Mahesh G., 5,618,809, Cl. 514-211.000.

Georgetown University: *See*—

Pope, Michael T.; Creaser, Inge I.; and Heckel, Mark C., 5,618,472, Cl. 252-625.000.

Georgia Tech Research Corporation: *See*—

Winnick, Jack, 5,618,405, Cl. 205-763.000.

Ger, Ralph; and Oddsen, Robert, to Progressive Surgical Products, Inc. Tissue, expansion and approximation device. 5,618,310, Cl. 606-216.000.

Gerber, Matthias: *See*—

Misslitz, Ulf; Meyer, Norbert; Kast, Juergen; Ladner, Wolfgang; Walter, Helmut; Westphalen, Karl-Otto; Kardorff, Uwe; and Gerber, Matthias, 5,618,775, Cl. 504-235.000.

Gerber Systems Corporation: *See*—

Straayer, Ronald J.; Davidson, Bruce L.; Menard, Alan W.; Suhr, Thomas J.; Bin-Nun, Uri; and MacDonald, Timothy P., 5,619,246, Cl. 347-262.000.

Gerbi, Diana J.: *See*—

Ezzell, Stephen A.; and Gerbi, Diana J., 5,618,896, Cl. 526-171.000.

Gerd und Bernd Vieler KG: *See*—

Stenemann, Bruno, 5,618,089, Cl. 312-116.000.

Gerenser, Louis J.: *See*—

Grace, Jeremy M.; Chen, Janglin; Gerenser, Louis J.; and Glocker, David A., 5,618,659, Cl. 430-523.000.

Germain, Lucie: *See*—

Auger, François A.; L'Heureux, Nicolas; and Germain, Lucie, 5,618,718, Cl. 435-366.000.

Germanaud, Laurent; Planche, Jean Pascal; and Turello, Patrick, to Elf Antar France. Preparation of bitumen/polymer compositions and use thereof. 5,618,862, Cl. 524-68.000.

Gershen, Bernard J.; Lombardi, Alfred J.; Krajci, Edward J.; and Shafir, Yevgeny, to Leviton Manufacturing Co., Inc. Asymmetrical AC trigger simulation. 5,619,081, Cl. 307-125.000.

Getzoyan, Jacques S.; Kennedy, John G.; and Joslin, Stephen P., to Kao Infosystems Company. Disc cartridge with opposing sets of crossed ribs directly pressing wiping members into contact with both sides of disc. 5,619,391, Cl. 360-133.000.

Gewirtz, Alan M.; Small, Donald; and Civin, Curt I., to University of Pennsylvania; and Johns Hopkins University, The. Antisense oligonucleotides specific for STK-1 and method for inhibiting expression of the STK-1 protein. 5,618,709, Cl. 435-172.300.

Geyer, Craig, to General Signal Corporation. Hybrid rotary control valve assembly. 5,618,026, Cl. 251-298.000.

Ghering, Jan: *See*—

Kinzel, Walter; and Ghering, Jan, 5,617,598, Cl. 14-2.400.

Ghosh, Atish; and Pencis, Jennifer B., to Advanced Micro Devices, Inc. Two-stage memory refresh circuit. 5,619,468, Cl. 365-222.000.

Ghuman, A. S.: *See*—

Sheridan, Todd A.; Ghuman, A. S.; May, Angie R.; Radovanovic, Rod; Janssen, John M.; and Woon, Peter V., 5,617,726, Cl. 60-605.200.

Giallorenzi, Thomas R.: *See*—

Press, Harry B.; Giallorenzi, Thomas R.; and Rafter, Mark T., 5,619,492, Cl. 370-441.000.

Giannini, Umberto: *See*—

Parodi, Sandro; Nocci, Roberto; Giannini, Umberto; Barbé, Pier Camillo; and Scatá, Umberto, 5,618,771, Cl. 502-127.000.

Gibbs, Alden T. Slate mounting assembly. 5,617,690, Cl. 52-518.000.

Gibson, Donald H.: *See*—

Baum, Richard I.; Brent, Glen A.; Gibson, Donald H.; and Lindquist, David B., 5,619,713, Cl. 395-800.000.

Giese, Robert C.: *See*—

Bloemer, John M.; Kurth, Michael J.; Bengtson, Alan D.; Giese, Robert C.; Potter, Edwin R., Jr.; Bonnell, Thomas A.; and Clarke, Thomas W., 5,617,591, Cl. 4-541.600.

Gieseck & Devrient GmbH: *See*—

Werner, Frank; Maul, Herbert; and Stenzel, Gerhard, 5,617,956, Cl. 209-534.000.

Gifford, Hanson S., III: *See*—

Donlon, Brian S.; Mueller, Richard L., Jr.; Daniel, S. Christopher; Gifford, Hanson S., III; and Stevens, John H., 5,618,307, Cl. 606-205.000.

Gilbert, Laurent; and Spagnol, Michel, to Rhone-Poulenc Chimie. Catalytic C-alkylation of ketones. 5,618,982, Cl. 568-346.000.

Gilbert, Raymond D. Sprocket ratio changer. 5,618,240, Cl. 474-50.000.

Gillberg-Laforce, Gunilla E.; Turkevich, Leonid A.; and Kiick-Fischer, Kristi L., to Kimberly-Clark Corporation. Surface-modified fibrous material as a filtration medium. 5,618,622, Cl. 428-357.000.

Gillespie, John D., to Rank Cintel Limited. Image stability in telecines. 5,619,258, Cl. 348-97.000.

Gillet, Jean-Philippe: *See*—

Drivon, Gilles; Gillet, Jean-Philippe; Ruppin, Christophe; and Wattier, Alain, 5,619,023, Cl. 204-157.600.

Gilliam, Gary R., to Micron Technology, Inc. On-chip mobile ion contamination test circuit. 5,619,459, Cl. 365-201.000.

Gilmore, Thomas A.; and Iyer, Balu K., to Honeywell Inc. Dither motor connector for a self contained laser gyro. 5,618,183, Cl. 439-66.000.

Gilmore, Thomas A.; and Iyer, Balu K., to Honeywell Inc. Connector for a self contained laser gyro. 5,618,188, Cl. 439-91.000.

Ginter, J. Lyell. Vapor-air steam engine. 5,617,719, Cl. 60-39.260.

Girijavallabhan, Viyyoor: *See*—

Cooper, Alan B.; Saksena, Anil K.; Lovey, Raymond; Girijavallabhan, Viyyoor; and Ganguly, Ashit, 5,618,793, Cl. 514-19.000.

Girijavallabhan, Viyyoor M.; Ganguly, Ashit K.; and Versace, Richard W., to Schering Corporation. Orally active antiviral compounds. 5,618,849, Cl. 514-721.000.

Girmay, Girmay K.: *See*—

Wilson, James M.; and Girmay, Girmay K., 5,619,599, Cl. 385-12.000.

Giurdanella-Renzi, Christine A.: *See*—

Butterfield, Robert D.; Holdaway, Charles R.; Martin, Stephen A.; Boyer, Stanley J.; and Giurdanella-Renzi, Christine A., 5,617,867, Cl. 128-672.000.

GKN Automotive AG: *See*—

Krude, Werner; and Harz, Peter, 5,618,235, Cl. 464-145.000.

Glackin, George B.; Panning, Cynthia J.; and Van Rijswijck, Laura G., to Procter & Gamble Company, The. Diaper. 5,618,280, Cl. 604-385.100.

Glass, James O.; and Glass, Sam M., to Stab Cat, Inc. Pile threading device for connecting sheet piles. 5,618,135, Cl. 405-279.000.

Glass, Sam M.: *See*—

Glass, James O.; and Glass, Sam M., 5,618,135, Cl. 405-279.000.

Glass, William, to SGS-Thomson Microelectronics S.A. Digital phase-locked loop filter. 5,619,543, Cl. 375-376.000.

Glass, William H.: *See*—

Schoenzeit, Loren; Lodwick, Philip; Keeney, Richard A.; and Glass, William H., 5,619,624, Cl. 395-118.000.

Glaxo Group Limited: *See*—

Oxford, Alexander W., 5,618,827, Cl. 514-326.000.

Glesener, John W.; and Morrish, Arthur A., to United States of America, Navy. Electron field emission. 5,619,093, Cl. 313-309.000.

Glew, Andrew F., to Intel Corporation. Processor with architecture for improved pipelining of arithmetic instructions by forwarding redundant intermediate data forms. 5,619,664, Cl. 395-394.000.

Glisch, Miro: *See*—

Morandin, George A.; Moscovitch, Jerry; and Glisch, Miro, 5,617,678, Cl. 52-11.000.

Glissman, Thomas W.; and Bhandari, Ajay K., to Pines Manufacturing. Low force auto-open tooling for tube bending machine. 5,617,753, Cl. 72-149.000.

Globalstar L.P.: *See*—

Wiedeman, Robert A.; and Sites, Michael J., 5,619,525, Cl. 375-200.000.

Globe Products Inc.: *See*—

Beakes, John M.; Clemenz, Gary E.; Dolgas, Patrick A.; Heaton, Mark T.; and Newman, Lawrence E., 5,618,007, Cl. 242-432.600.

Glock, Jutta; Hudetz, Manfred; and Kerber, Elmar, to Ciba-Geigy Corporation. Selective safened herbicidal composition. 5,618,774, Cl. 504-105.000.

Glocker, David A.: *See*—

Grace, Jeremy M.; Chen, Janglin; Gerenser, Louis J.; and Glocker, David A., 5,618,659, Cl. 430-523.000.

Glomski, Krzysztof E.; Natterstad, Kurt L.; and Hoover, Thomas H., to Harsco Corporation. Tie guide and plate holding apparatus. 5,617,795, Cl. 104-9.000.

Glucksman, Dov Z.; and Deros, John A., to Appliance Development Corp. Electric air heater with cage-shaped heating element comprised of resistance alloy strips and inclined guide vanes. 5,619,612, Cl. 392-360.000.

Glydon, Jon A., to Earth & Ocean Sports, Inc. Aquatic sports board. 5,618,215, Cl. 441-65.000.

Glynn, Kenneth P., to Ideal Ideas, Inc. Solar powered flat lamp night light. 5,618,100, Cl. 362-183.000.

GN Danovox A/S: *See*—

Hansen, Roy S., 5,619,580, Cl. 381-68.200.

Gnade, Bruce E.: *See*—

Summerfelt, Scott R.; Beratan, Howard R.; and Gnade, Bruce E., 5,619,393, Cl. 361-321.100.

Goddard, Philip M.: *See*—

Tarbet, Bryon J.; Bruening, Ronald L.; Di Leo, Anthony J.; Goddard, Philip M.; and Scarmoutzos, Louis M., 5,618,433, Cl. 210-634.000.

Goetz, Gertrud: *See*—

Ozcayir, Yurdagul F.; Goetz, Gertrud; and Bikson, Benjamin, 5,618,334, Cl. 96-14.000.

Gold Standard Medical Corp.: *See*—

Pontzer, Stephen A., 5,617,850, Cl. 128-632.000.

Gold Star Electron Co., Ltd.: *See*—

Kim, Young S., 5,619,065, Cl. 257-673.000.

Golden, Kevin M.; Pan, Pai-Hung; Stewart, Kevin J.; and Thomas, Alan C., to International Business Machines Corporation. Method of making single-step trenches using resist fill and recess. 5,618,751, Cl. 438-392.000.

Golden Lady S.p.A.: *See*—

Conti, Paolo, 5,617,744, Cl. 66-148.000.

Goldman, Avraham C.: *See*—

Willoughby, Louis G., Jr.; Jordan, Donald G.; Adomaitis, Paul R.; Goldman, Avraham C.; Tomasello, Anthony J.; Montellese, Steve; Weed, Edward W.; and Shtrahman, Abraham, 5,619,587, Cl. 382-141.000.

Goldman, Jerome L. Device for securing a collision guard to a vessel. 5,617,806, Cl. 114-74.00A.

Goldsmith, Charles; Kanack, Bradley M.; Lin, Tsen-Hwang; Norvell, Bill R.; Pang, Lily Y.; Powers, Billy, Jr.; Rhoads, Charles; and Seymour, David, to Texas Instruments Incorporated. Micromechanical microwave switching. 5,619,061, Cl. 257-528.000.

Goldstar Co., Ltd.: *See*—

So, Hoe S., 5,619,222, Cl. 345-87.000.

Goldstar Electron Co., Ltd.: *See*—

Kim, Ye T., 5,619,336, Cl. 386-114.000.

Goldstein, Mark K.; Oum, Michelle S.; and Kerns, Kathleen L., to Quantum Group, Inc. Photon absorbing bioderived organometallic carbon monoxide sensors. 5,618,493, Cl. 422-57.000.

Goldsworthy, W. Brandt: *See*—

Johnson, David W.; Goldsworthy, W. Brandt; and Korzeniowski, George, 5,617,692, Cl. 52-651.020.

Goldwell GmbH: *See*—

Bünning, Einhard, 5,618,525, Cl. 424-70.122.

Golla, Robert T.: *See*—

Black, Bryan; Denman, Marvin A.; Eisen, Lee E.; Golla, Robert T.; Loper, Albert J., Jr.; Mallick, Soummya; and Reininger, Russell A., 5,619,408, Cl. 395-567.000.

Golshani, Forouzan; and Howell, Thomas H., to Bull HN Information Systems Inc. Operating system translator incorporating unix piping capability for a proprietary operating system. 5,619,699, Cl. 395-705.000.

Goma, Gérard: *See*—

Arbeloa, Marguerite; de Leseleuc, Joël; Goma, Gérard; and Pommier, Jean-Claude, 5,618,386, Cl. 162-72.000.

Gomi, Shuichi: *See*—

Kondo, Shinichi; Shibahara, Seiji; Usui, Takayuki; Kudo, Toshiaki; Gomi, Shuichi; Tamura, Atsushi; Ikeda, Yoko; Ikeda, Daishiro; and Takeuchi, Tomio, 5,618,795, Cl. 514-41.000.

Gonzalez, Arturo L. Adaptable device for trolling jigs. 5,617,667, Cl. 43-42.360.

Gonzalez, Fernando: *See*—

Lee, Roger; and Gonzalez, Fernando, 5,619,454, Cl. 365-185.300.

Good, Daniel: *See*—

Della Corte, Michael P.; Good, Daniel; Good, David; and Shaffer, David E., 5,617,745, Cl. 66-178.00A.

Good, David: *See*—

Della Corte, Michael P.; Good, Daniel; Good, David; and Shaffer, David E., 5,617,745, Cl. 66-178.00A.

Goodhue, Gregory K.: *See*—

Mizrahi-Shalom, Ori K.; Ostler, Farrell L.; and Goodhue, Gregory K., 5,619,663, Cl. 395-383.000.

Gooding, Elwyn: *See*—

Walker, Andrew S.; and Gooding, Elwyn, 5,617,653, Cl. 36-134.000.

Goodman, Douglas S.: *See*—

Coteus, Paul W.; and Goodman, Douglas S., 5,619,219, Cl. 345-7.000.

Goodwin, Julie F.; Johnson, Debra A. G.; Lewis, James R.; Rasmussen, David J.; Tiller, Byron K.; and Yee, Raymond L., to International Business Machines Corporation. Method and apparatus for consistent user interface in a multiple application personal communications device. 5,619,684, Cl. 395-500.000.

Goodyear Tire & Rubber Company, The: *See*—

Schweitzer, David P.; and Grimes, James A., Sr., 5,618,999, Cl. 73-866.500.

Goossens, Francis; and Petitjean, Francis, to Warner-Lambert Company. Process and apparatus for producing closed sealed capsules. 5,617,710, Cl. 53-471.000.

Gopalaswamy, Kasturiraman: *See*—

Omid, Reza G.; Pathak, Sanjiv D.; Naji, Jafar; Smith, Stephen A.; Ramamurthy, Sriram; Abudayyeh, Jihad Y.; and Gopalaswamy, Kasturiraman, 5,619,703, Cl. 395-734.000.

Gopalkrishnan, Sridhar; Guiney, Kathleen M.; Sherman, John V.; Durocher, David T.; and Welch, Michael C., to BASF Corporation. Hydrophilic copolymers for reducing the viscosity of detergent slurries. 5,618,782, Cl. 510-418.000.

Gora, Ulrich: *See*—

Hubner, Frank; Gora, Ulrich; Huthmacher, Klaus; and Drauz, Karlheinz, 5,618,957, Cl. 556-32.000.

Gordon, Alastair T., to Alphanet Telecom Inc. Method for auxiliary software providing instruction for facsimile modem to simulate a telephone communication while connecting to store and forward computer to receive communication. 5,619,725, Cl. 395-839.000.

Gorius, Aaron H.: *See*—

Garde, Douglas; and Gorius, Aaron H., 5,619,720, Cl. 395-800.000.

Gormley, Robert J.: *See*—

Scheer, David C.; Gormley, Robert J.; Pierce, Michael E.; and Weston, Patrick E., 5,619,660, Cl. 395-282.000.

Gorog, Istvan: *See*—

Ehemann, George M., Jr.; Garrity, Edward R., Jr.; Duschl, Robert A.; and Gorog, Istvan, 5,619,330, Cl. 356-382.000.

Goseki, Yasuhide: *See*—

Kukimoto, Tsutomu; Goseki, Yasuhide; Urawa, Motoo; Shimamura, Masayoshi; Okano, Keiji; Nozawa, Keita; Yoshida, Satoshi; and Ojima, Masaki, 5,618,647, Cl. 430-106.600.

Goszczynski, Stefan: *See*—

Paszczynski, Andrzej; Goszczynski, Stefan; Crawford, Ronald L.; Crawford, Donald L.; and Pasti, Maria B., 5,618,726, Cl. 435-262.500.

Goto, Kazuhiro, to Whitaker Corporation, The. Board mount bus bar contact. 5,618,187, Cl. 439-79.000.

Gotou, Nobuyuki: *See*—

Akioka, Takashi; Iwamura, Masahiro; Hiraishi, Atsushi; Yokoyama, Yuji; Matsuzaki, Nozomu; Yamauchi, Tatsumi; Kobayashi, Yutaka; Gotou, Nobuyuki; ide, Akira; Yamamura, Masahiro; and Uchida, Hideaki, 5,619,151, Cl. 327-78.000.

Gottlieb Weinmann Geräte für Medizin und Arbeitsschutz GmbH & Co.: *See*—

Graetz, Bernd; and Maurer, Jörg, 5,617,846, Cl. 128-204.210.

Goudey, Clifford A.: *See*—

Loverich, Gary F.; Swanson, Kurt T.; and Goudey, Clifford A., 5,617,813, Cl. 119-223.000.

Goulaouic, Pierre: *See*—

Emonds-Alt, Xavier; Goulaouic, Pierre; Proietto, Vincenzo; and Van Broeck, Didier, 5,618,938, Cl. 544-360.000.

Goulter, Victor H. Condom catheter with improved valve and retaining means. 5,618,277, Cl. 604-349.000.

Goupil, Patrick; Pelletier, Martin; Simoneau, Rémy; Talbot, Claude; and Talbot, Pierre, to Premier Tech ltee. Treatment system for treating waste water. 5,618,414, Cl. 210-151.000.

Gourgue, Frédéric, to Alcatel Radiotelephone. Digital superheterodyne receiver and baseband filter method used therein. 5,619,536, Cl. 375-316.000.

Gowravaram, Madhusudhan R.; Johnson, Jeffrey; Cook, Ewell R.; Wahl, Robert C.; Mathiowetz, Alan M.; Tomczuk, Bruce E.; and Saha, Ashis K., to Sanofi S.A. Hydroxamic acid and carboxylic acid derivatives, process for their preparation and use thereof. 5,618,844, Cl. 514-575.000.

Grabowski, Edward J. J.: *See*—

DeCamp, Ann E.; Grabowski, Edward J. J.; Huffman, Mark A.; Xavier, Lyndon C.; Yasuda, Nobuyoshi; Ho, Guo-Jie; and Mathre, David J., 5,618,934, Cl. 544-229.000.

Grace, Jeremy M.; Chen, Janglin; Gerenser, Louis J.; and Glocker, David A., to Eastman Kodak Company. Photographic element containing a nitrogen glow-discharge treated polyester substrate. 5,618,659, Cl. 430-523.000.

Gradco (Japan) Ltd.: *See*—

Coombs, Peter M.; and Billings, Bradford, 5,618,035, Cl. 271-213.000.

Graetz, Bernd; and Maurer, Jörg, to Gottlieb Weinmann Geräte für Medizin und Arbeitsschutz GmbH & Co. Method of controlling a respirator for treatment of sleep apnea and device for carrying out the method. 5,617,846, Cl. 128-204.210.

Graf, Lars O., to OPENService, Inc. System for uninterruptively displaying only relevant and non-redundant alert message of the highest severity for specific condition associated with group of computers being managed. 5,619,656, Cl. 395-200.110.

Graf, Michael C.; and Moradians, Edward, to Ancra International Corporation. Outboard roller restrainer for handling cargo in vehicle. 5,618,139, Cl. 410-69.000.

Graff, Leroy: *See*—

Beierle, Leonard G.; Graff, Leroy; and Fitzgerald, John J., 5,618,321, Cl. 48-76.000.

Grange, John: *See*—

Distefano, Thomas H.; Kovac, Zlata; and Grange, John, 5,619,017, Cl. 174-260.000.

Granger, James E.: *See*—

Billock, John K.; Cuttner, Craig D.; Dowdell, Kevin C.; Flanagan, Elizabeth B.; Granger, James E.; Hsu, Henry C.; Martin, Robert I. M.; May, Robert; Peck, Nicolas; Pontecorvo, Michael S.; Probst, Bruce E.; Rosenberg, Marc D.; Smul, Debra R.; Wilkinson, Dennis P.; and Zitter, Robert M., 5,619,249, Cl. 348-7.000.

Grant, Eric J.: *See*—

Cullen, Michael J.; Marzonie, Robert M.; Dona, Alan R.; Grant, Eric J.; and Yannone, Ronald A., 5,617,836, Cl. 123-674.000.

Grant, George E. Hangless jumper cable handles. 5,618,210, Cl. 439-822.000.

Grant, Peter D.: *See*—

Li, Li; Dobrowolski, Jerzy A.; Grant, Peter D.; and Sullivan, Brian T., 5,619,059, Cl. 257-431.000.

Graphics Communication Laboratories: *See*—

Kobayashi, Takayuki; Wuertele, David; and Okada, Yutaka, 5,619,268, Cl. 348-416.000.

Grass America, Inc.: *See*—

Moreschi, Elmer J.; and Piuk, Reinhart U., 5,617,800, Cl. 110-236.000.

Grasso, Mark A. Means for affixing an ornamental sculpture to a sound emitting device. 5,619,585, Cl. 381-188.000.

Graulus, Hendrik: *See*—

Hammond, Philip J.; Hudson, John M.; and Graulus, Hendrik, 5,618,882, Cl. 525-92.00D.

Gray, Alan S.: *See*—

Copperman, Norman S.; Gray, Alan S.; and Winblad, Wade O., 5,618,179, Cl. 434-69.000.

Gray, Carloss L.: *See*—

Prabhu, Vaikunth S.; and Gray, Carloss L., 5,618,866, Cl. 524-117.000.

Gray, Charles, Jr.; Hellmann, Karl H.; Rogers, Gary W.; and Hilger, Ulrich. Spark-ignited reciprocating piston engine having a subdivided combustion chamber. 5,617,823, Cl. 123-254.000.

Gray, Nancy M.; and Young, James W., to Sepracor, Inc. Methods for treating gastro-esophageal reflux disease and emesis with optically pure (−) cisapride. 5,618,828, Cl. 514-327.000.
Grebow, Peter E.; Corvari, Vincent; and Stong, David, to Cephalon, Inc. Acetamide derivative having defined particle size. 5,618,845, Cl. 514-618.000.
Green, David T.; Bolanos, Henry; Tovey, H. Jonathan; and Smith, Robert C. Cannula assembly having conductive cannula. 5,618,309, Cl. 606-207.000.
Green, John D.; Sheka, Gregory J.; Thompson, Michael L.; Hissong, John B.; and Tan, Ming D., to Holophane Lighting, Inc. System and method for providing alternate AC voltage. 5,619,077, Cl. 307-64.000.
Green, Kevin L.: *See*—
Delling, David R.; Zolotoochin, Vladimir M.; Coustry, Francis M.; and Green, Kevin L., 5,618,504, Cl. 423-206.200.
Green, Richard W.: *See*—
Wengrovius, Jeffrey H.; Green, Richard W.; and Quinn, Clayton B., 5,618,902, Cl. 528-10.000.
Green, Winje: *See*—
London, Eugene J.; Green, Winje; and Dare, Gary, 5,618,571, Cl. 426-512.000.
Greenberg, Richard: *See*—
Ottesen, Hal H.; Cunningham, Earl A.; Greenberg, Richard; and Brown, Dana H., 5,619,387, Cl. 360-77.080.
Greenstone, Heather: *See*—
Lowy, Douglas R.; Schiller, John T.; and Greenstone, Heather, 5,618,536, Cl. 424-192.100.
Gregory, Raymond S.: *See*—
Braatz, Robert E.; Gregory, Raymond S.; Heaton, Robert A.; Whitaker, Keith; and Sampson, David C., 5,617,906, Cl. 141-21.000.
Gregory, Vance P., Jr.: *See*—
Chang, John C. H.; Wendler, Eric B.; and Gregory, Vance P., Jr., 5,618,063, Cl. 283-67.000.
Grieve, Robert B.: *See*—
Tripp, Cynthia A.; Selkirk, Murray E.; and Grieve, Robert B., 5,618,532, Cl. 424-94.400.
Griffin, David M.: *See*—
Sudama, Ram; Griffin, David M.; Johnson, Brad; Sealy, Dexter; Shelhamer, James; and Tallman, Owen H., 5,619,657, Cl. 395-200.060.
Griffin, Nigel D.: *See*—
Matthias, Terry R.; Fuller, John M.; and Griffin, Nigel D., 5,617,928, Cl. 175-432.000.
Griffoul, Christine: *See*—
Wagner, Adalbert; Bhatnagar, Neerja; Buendia, Jean; and Griffoul, Christine, 5,618,975, Cl. 564-88.000.
Grim, Tracy E. Vacuum formed conformable shoe. 5,617,650, Cl. 36-88.000.
Grimes, James A., Sr.: *See*—
Schweitzer, David P.; and Grimes, James A., Sr., 5,618,999, Cl. 73-866.500.
Grinnell, Brian W., to Eli Lilly and Company. Methods for producing protein C. 5,618,714, Cl. 435-226.000.
Grosh, Sharon K.: *See*—
Appelt, Marian R.; and Grosh, Sharon K., 5,618,899, Cl. 526-264.000.
Gross, Eric, to Cypress Semiconductor Corporation. Active filtering method and apparatus. 5,619,166, Cl. 327-552.000.
Gross, George F., Jr.; and Viswanathan, Thayamkulangara R., to Lucent Technologies Inc. Current source driven converter. 5,619,203, Cl. 341-144.000.
Grossenbacher, Erich: *See*—
Trenner, Albrecht; and Grossenbacher, Erich, 5,617,796, Cl. 104-106.000.
Grossenbacher, Roger L.: *See*—
Kruse, Richard A.; Grossenbacher, Roger L.; and Chan, James S., 5,618,238, Cl. 473-70.000.
Grossi, Edward J.: *See*—
Taggett, Peter T.; and Grossi, Edward J., 5,617,636, Cl. 30-276.000.
Grossman, Wolfgang: *See*—
Ballewski, Heinrich; and Grossman, Wolfgang, 5,617,912, Cl. 164-517.000.
Groth, Torsten; Joentgen, Winfried; Heuer, Lutz; and Schmitz, Gerd, to Bayer AG. Process for decolorizing N-containing polymers. 5,618,910, Cl. 528-328.000.
Grothaus, Franz-Josef: *See*—
Koeberer, Günther; Steffen, Egbert; Bomba, Gerhard; Grothaus, Franz-Josef; and Zakel, Gerhard, 5,618,104, Cl. 366-7.000.
Grube, Gary W.; Markison, Timothy W.; Pendleton, Matthew A.; and Rybicki, Mathew A., to Motorola Inc. Method for producing and recovering a data stream for a DMT transceiver. 5,619,505, Cl. 370-476.000.
Grummon, Glenn D.; and Janik, Michael A., to Mallinckrodt Medical, Inc. Process for purification of radioiodides. 5,619,545, Cl. 376-195.000.
Grundon, Steven A.: *See*—
Armacost, Michael D.; Grundon, Steven A.; Harmon, David L.; Nguyen, Son V.; and Rembetski, John F., 5,618,379, Cl. 438-595.000.
Gruppo Lepetit SpA: *See*—
Stella, Sergio; Montanini, Nicoletta; LeMonnier, Francis J.; Colombo, Luigi; Selva, Enrico; and Denaro, Maurizio, 5,618,724, Cl. 435-253.400.
Gryskiewicz, Joseph M. Surgical subcuticular fastener system. 5,618,311, Cl. 606-216.000.
Gstrein, Hippolit, to Huyck Licensco, Inc. Press felt having fine base fabric. 5,618,612, Cl. 442-189.000.
GSW Inc.: *See*—
Morandin, George A.; Moscovitch, Jerry; and Glisch, Miro, 5,617,678, Cl. 52-11.000.
Guard, Kristian J.: *See*—
Mitsui, Akira; Guard, Kristian J.; and Iwakuma, Hideki, 5,618,133, Cl. 404-117.000.
Guerbet S.A.: *See*—
Dugast-Zrihen, Maryse; and Meyer, Dominique, 5,618,977, Cl. 564-153.000.
Gueret, Jean-Louis, to L'Oreal. Dispenser of liquid or pasty product which can be used especially in cosmetics. 5,617,976, Cl. 222-380.000.
Guillaumet, Gérald; Viaud, Marie-Claude; Savelon, Laurence; Pavli, Panayota; Renard, Pierre; Pfeiffer, Bruno; Caignard, Daniel-Henri; Bizot-Espiard, Jean-Guy; and Adam, Gérard, to Adir et Compagnie. 1,3-dihydro-2H-pyrrolo[2,3-b]pyridin-2-one and oxazolo[4,5-b]pyridin-2-(3H)-one compounds. 5,618,819, Cl. 514-264.000.
Guilmette, Bruce T., to Foamseal, Inc. Clamp for holding wall panel against adhesive. 5,617,698, Cl. 52-749.100.
Guiney, Kathleen M.: *See*—
Gopalkrishnan, Sridhar; Guiney, Kathleen M.; Sherman, John V.; Durocher, David T.; and Welch, Michael C., 5,618,782, Cl. 510-418.000.
Guinosso, Patrick J. Optical system for viewing a remote location. 5,619,370, Cl. 359-362.000.
Gulakhmedova, Tamilla: *See*—
Harlev, Eli; Gulakhmedova, Tamilla; and Rubinovich, Ilya M., 5,618,469, Cl. 252-500.000.
Gunning, William J., III: *See*—
Koch, Gene C.; Winker, Bruce K.; and Gunning, William J., III, 5,619,352, Cl. 349-89.000.
Gunsaulus, Richard S.: *See*—
Schultz, Ronald E.; Rischar, Charles M.; Gunsaulus, Richard S.; and Schmidt, Otomar, 5,619,409, Cl. 364-146.000.
Guo, Bin, to Advanced Micro Devices, Inc. Digital variable in-lock range phase comparator. 5,619,148, Cl. 327-3.000.
Guo, Guo M. Electric welding machine. 5,618,455, Cl. 219-130.100.
Gurney, David P.; and Baum, Kevin L., to Motorola, Inc. Device and method for efficient timing estimation in a digital receiver. 5,619,542, Cl. 375-371.000.
Gustin, Tom E. Fabric cover for a seatbelt buckle. 5,617,617, Cl. 24-633.000.
Guzzi, Umberto; Palmieri, Costantino; and Croci, Tiziano, to Sanofi. N-substituted trifluoromethylphenyltetrahydropyridines, process for the preparation thereof, intermediates in said process and pharmaceutical compositions containing them. 5,618,822, Cl. 514-277.000.
Gyorkos, Albert; and Spruce, Lyle W., to Cortech, Inc. Substituted heterocyclic compounds useful as inhibitors of (serine proteases) human neutrophil elastase. 5,618,792, Cl. 514-18.000.
H. F. & PH. F. Reemtsma GmbH Co.: *See*—
Kossmehl, Peter W.; Mentzel, Edgar; Seidel, Henning; Wildenau, Wolfgang; and Noe, Hans, 5,617,881, Cl. 131-328.000.
H&L Tooth Company: *See*—
Launder, Richard L.; and Clendenning, Charles, 5,617,655, Cl. 37-457.000.
Haas, Wilfried: *See*—
Hauschildt, Hans-Georg; Haas, Wilfried; and Hacker, Heinz, 5,618,858, Cl. 523-200.000.
Habib, David J.: *See*—
Bosworth, Adam; Hunter, Ross A.; and Habib, David J., 5,619,688, Cl. 395-604.000.
Habicht, Siegfried: *See*—
Tönsmann, Armin; and Habicht, Siegfried, 5,618,127, Cl. 403-230.000.
Hachisuga, Masaki, to Fuji Xerox Co., Ltd. Laser optical system. 5,619,363, Cl. 359-216.000.
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Hauschildt, Hans-Georg; Haas, Wilfried; and Hacker, Heinz, 5,618,858, Cl. 523-200.000.
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Hitzeman, Ronald A.; Hagie, Franklin E., IV; Hall, Benjamin D.; and Ammerer, Gustav, 5,618,676, Cl. 435-69.100.
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Iimura, Kouichi; and Haijima, Yu, 5,618,233, Cl. 463-67.000.
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Tamer, Gregory G.; Deiss, Michael S.; Chaney, John W.; and Hailey, James E., 5,619,501, Cl. 370-392.000.
Hair, Robert A.: *See*—
Lambropoulos, George; Pitera, Kenneth R.; and Hair, Robert A., 5,619,191, Cl. 340-825.690.
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Uno, Hirosi; and Hakamatani, Takao, 5,619,486, Cl. 369-75.100.
HAL Computer Systems, Inc.: *See*—
Shenoy, Michael A.; Williams, Ted; and Montoye, Robert K., 5,619,153, Cl. 327-112.000.
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Hommeltoft, Sven I., 5,618,769, Cl. 502-26.000.
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Cooksey, Andrew; Williamson, Jim; Robinson, Clark; Dines, Chris; and Vick, James, 5,617,918, Cl. 166-115.000.
Smith, Michael P., 5,619,411, Cl. 364-422.000.
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Hallsten, Jeffrey A., 5,617,677, Cl. 52-3.000.
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Hamada, Masaharu: *See*—
Matsuzaki, Minoru; Sato, Yuta; Kawai, Sumio; Takizawa, Hiroyuki; Hamada, Masaharu; and Funakubo, Tomoki, 5,619,292, Cl. 396-32.000.
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Tezuka, Koichi; Miyabe, Kyoko; and Hamaguchi, Shingo, 5,619,482, Cl. 369-44.230.
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Kawakami, Kouichi; Hamaguchi, Toshihide; Kuge, Satoru; and Maida, Yoshiaki, 5,619,385, Cl. 360-64.000.
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Ikedo, Tomoyuki; Ito, Yoshinobu; and Matui, Ryotaro, 5,619,101, Cl. 313-581.000.
Kyushima, Hiroyuki; Nagura, Koji; Hasegawa, Yutaka; Kawano, Eiichiro; Kuroyanagi, Tomihiko; Atsumi, Akira; and Mizuide, Masuya, 5,619,100, Cl. 313-533.000.
Nakamura, Kimitsugu; Sahara, Masayoshi; Ishikawa, Atushi; Okuyama, Chiyoshi; and Takeuchi, Junichi, 5,619,099, Cl. 313-532.000.
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Baxter, Duane W.; Wanek, Donald J.; and Hamburgen, Arthur, 5,619,306, Cl. 355-97.000.
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Brady, Mark J.; and Hamerly, Michael E., 5,619,616, Cl. 395-22.000.
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Hammond, Peter W., to Robicon Corporation. Autotransformer. 5,619,407, Cl. 363-155.000.
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Tamai, Kiminori; and Handa, Takashi, 5,618,637, Cl. 428-694.00B.
Handelsman, Jo; Milner, Jocelyn L.; Stohl, Elizabeth A.; Stewart, Sandra J.; and Stabb, Eric, to Wisconsin Alumni Research Foundation. Zwittermicin resistance gene and biocontrol bacteria with the gene. 5,618,692, Cl. 435-69.100.
Haneda, Satoshi; Fukuchi, Masakazu; and Miwa, Tadashi, to Konica Corporation. Image forming apparatus with edge point detector based on image density charge. 5,619,242, Cl. 347-131.000.
Hannington, Michael E.: *See*—
Popat, Ghanshyam H.; and Hannington, Michael E., 5,618,370, Cl. 156-234.000.
Hansen, Mogens T.: *See*—
Brange, Jens J. V.; Norris, Kjeld; and Hansen, Mogens T., 5,618,913, Cl. 530-303.000.
Hansen, Roy S., to GN Danovox A/S. Hearing aid compensating for acoustic feedback. 5,619,580, Cl. 381-68.200.
Hansenne, Isabelle; Forestier, Serge; and Deflandre, Andre, to L'Oreal. Photostable filtering cosmetic composition containing a UV-A filter and a filtering polymer of the benzotriazole silcone type. 5,618,520, Cl. 424-59.000.
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Mechoulam, Raphael; Beuer, Aviva; Hanus, Lemir; and Devane, William A., 5,618,955, Cl. 554-66.000.
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Hapka, Roger J., to Cummins Engine Company, Inc. Remote control of engine idling time. 5,619,412, Cl. 364-424.045.
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Yamazaki, Kazumi; Hara, Takeshi; Wakashiro, Teruo; and Hidano, Koichi, 5,617,832, Cl. 123-520.000.
Harada, Chikao; and Matsubara, Yuji, to Colin Corporation. Pulse wave detecting apparatus. 5,617,868, Cl. 128-672.000.
Harada, Hideomi; and Takei, Kazuo, to Ebara Corporation. Turbomachinery with variable angle fluid guiding devices. 5,618,160, Cl. 415-17.000.
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Harden, James P.: *See*—
Edwards, Earl G.; Flores, Armando V.; Gassett, John W.; Harden, James P.; Huber, Daniel L.; Leemhuis, Michael C.; Olson, Stephen T.; and Wilzbach, Bernard L., 5,618,036, Cl. 271-225.000.
Harder, Stanley D.; and Selgas, Thomas D., Jr., to Cyrix Corporation. Integrated circuit extraction tool. 5,617,628, Cl. 29-764.000.
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Bjorck, Paul M.; Raj, Babak R.; Sheehan, Terrence M.; and Soroka, Daniel P., 5,617,769, Cl. 82-127.000.
Harings, Joseph: *See*—
Wyss, Frederick B.; and Harings, Joseph, 5,618,214, Cl. 440-88.000.
Harlev, Eli; Gulakhmedova, Tamilla; and Rubinovich, Ilya M., to Al-Coat Ltd. Polyaniline-containing solution, articles coated therewith, and methods for the preparation of same. 5,618,469, Cl. 252-500.000.
Harman, James L.: *See*—
Chang, Sung S.; Harman, James L.; Jacobson, Gary S.; Kirschner, Wesley A.; Ramadei, Michael J.; and Zuidema, Eric L., 5,618,037, Cl. 271-258.020.
Harmon, David L.: *See*—
Armacost, Michael D.; Grundon, Steven A.; Harmon, David L.; Nguyen, Son V.; and Rembetski, John F., 5,618,379, Cl. 438-595.000.
Harpold, Michael M.: *See*—
Ellis, Steven B.; Williams, Mark E.; Harpold, Michael M.; Schwartz, Arnold; Sartor, Jean; and Brenner, Robert, 5,618,720, Cl. 435-325.000.
Harrell, Daniel M.: *See*—
Hill, Bobby D.; and Harrell, Daniel M., 5,617,752, Cl. 72-98.000.
Harrington, Steven J., to Xerox Corporation. Bidirectional ink jet printing with head signature reduction. 5,619,233, Cl. 347-37.000.
Harris Corporation: *See*—
Gaul, Stephen J., 5,618,752, Cl. 438-626.000.
Weir, Steven, 5,619,496, Cl. 370-363.000.
Harris, Dennis H.; and General, Ronald E. Composition and method for reducing snoring and respiratory problems. 5,618,543, Cl. 424-400.000.
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Harrison, Robert C.; and Lau, Steven J., to COMPAQ Computer Corporation. Manual docking apparatus having latch and drive mechanism for a portable computer. 5,619,398, Cl. 361-686.000.

Harrup, Anthony B.: *See*—
Salyer, Kenneth S.; Tofield, Stanley J.; and Harrup, Anthony B., 5,619,095, Cl. 313-477.00R.

Harsco Corporation: *See*—
Glomski, Krzysztof E.; Natterstad, Kurt L.; and Hoover, Thomas H., 5,617,795, Cl. 104-9.000.

Hart, Charles C.; Tangherlini, Vincent C.; and Hilal, Nabil, to Applied Medical Resources. Obturator with internal tip protector. 5,618,297, Cl. 606-185.000.

Hart, Charles E.; McConnell, Oliver J.; West, Robert R.; and Martinez, Theresa, to ZymoGenetics, Inc. PDGF antagonists III. 5,618,837, Cl. 514-450.000.

Hart, Lee A.: *See*—
Fowler, Daniel L.; and Hart, Lee A., 5,618,460, Cl. 219-497.000.

Hart, Rickey D.; Winters, Richard M.; Rice, John T.; and Nicholson, James E., to Innovasive Devices, Inc. Surgical instrument. 5,618,304, Cl. 606-205.000.

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Harwin, Steven F.; Le, Anh; Bruker, Izi; Luscombe, Brian; Jamiolkowski, Dennis D.; Cofone, Mark; and DiGiovanni, John. Suture anchor device. 5,618,314, Cl. 606-232.000.

Harz, Peter: *See*—
Krude, Werner; and Harz, Peter, 5,618,235, Cl. 464-145.000.

Hasbro, Inc.: *See*—
Meyerhofer, Dietrich; and Burstyn, Herschel C., 5,619,373, Cl. 359-482.000.
Simone, Dean C.; Siegfried, Rand W.; and Rodmaker, Gerald M., 5,618,219, Cl. 446-456.000.

Hasegawa, Atsushi: *See*—
Nishimukai, Tadahiko; Hasegawa, Atsushi; and Matsumura, Masaru, 5,619,677, Cl. 395-465.000.

Hasegawa, Kinji; Asai, Takeo; Ono, Mitsumasa; and Murakami, Yoji, to Teijin Limited. Biaxially oriented laminated polyester film for use as film to be bonded onto metal sheet. 5,618,621, Cl. 428-343.000.

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Funahashi, Yasuhiro; Ikami, Kazunori; and Hasegawa, Yukie, 5,619,425, Cl. 364-514.00R.

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Hashida, Eiji: *See*—
Hamamoto, Hiroshi; Sugiyama, Yoshinori; Nakagawa, Noriaki; Hashida, Eiji; Tsuchimoto, Suguru; Nakanishi, Noriyuki; Matsunaga, Yuji; and Okada, Yoshimi, 5,618,699, Cl. 435-69.700.

Hashimoto, Jun-ichi: *See*—
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Hashimoto, Makoto, to Sony Corporation. CMOS transistor and isolated back gate electrodes on an SOI substrate. 5,619,054, Cl. 257-347.000.

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Hashimoto, Seiji, to Canon Kabushiki Kaisha. Liquid crystal display apparatus and method of driving the same. 5,619,225, Cl. 345-98.000.

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Meguro, Satoshi; Uchibori, Kiyofumi; Suzuki, Norio; Motoyoshi, Makoto; Koike, Atsuyoshi; Yamanaka, Toshiaki; Sakai, Yoshio; Kaga, Toru; Hashimoto, Naotaka; Hashimoto, Takashi; Honjou, Shigeru; and Minato, Osamu, 5,619,055, Cl. 257-369.000.
Ohta, Hiroyuki; Miura, Hideo; Masuda, Hiroo; Tamaki, Yoichi; Ikeda, Takahide; Nishimura, Asao; and Hashimoto, Takashi, 5,619,069, Cl. 257-692.000.

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Sakata, Takashi; Morikawa, Takashi; Uchihashi, Kinya; and Hashimoto, Tomomi, 5,618,733, Cl. 436-17.000.

Haskell, Barin G.; Kollarits, Richard V.; and Puri, Atul, to Lucent Technologies Inc. Digital 3D/stereoscopic video compression technique utilizing disparity and motion compensated predictions. 5,619,256, Cl. 348-43.000.

Hasler, Rudolf, to U.S. Philips Corporation. Transmission system, and a transmitter and a receiver for use in such a system. 5,619,577, Cl. 381-14.000.

Hastings, Roger; and Feld, Paul, to Scimed Life Systems, Inc. Intravascular flow measurement system. 5,617,870, Cl. 128-692.000.

Hasumi, Kazuhisa; Nagano, Kentaro; Kamiyama, Shuuichi; Yanagida, Hiroaki; and Okada, Osamu, to Yanagida, Hiroaki; Mikuni Corporation; and Osaka Gas Co., Ltd. Gas sensors and their manufacturing methods. 5,618,496, Cl. 422-90.000.

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Hauenstein, Hans K.; and Lindenberg, Josef, to Angiomed AG. Reducing stent, device with reducing stent and use of a reducing stent. 5,618,301, Cl. 606-198.000.

Hauptmann, Randal; Eschenfeldt, William H.; English, Jami; and Brinkhaus, Friedhelm L., to Amoco Corporation. Enhanced carotenoid accumulation in storage organs of genetically engineered plants. 5,618,988, Cl. 800-205.000.

Hauptmann, Rudolf: *See*—
Sledziewski, Andrzej; Chlebowicz-Sledziewska, Ewa; Swetly, Peter; Adolf, Gunther; Hauptmann, Rudolf; Castanon, Maria J.; and Spevak, Walter, 5,618,712, Cl. 435-206.000.

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Vermeersch, Joan; Hauquier, Guido; and Kokkelenberg, Dirk, 5,618,649, Cl. 430-168.000.

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Hayakawa, Atsushi: *See*—
Suzuki, Hitomi; Hayakawa, Atsushi; Mimura, Tomio; Shimojo, Shigeru; Shimayoshi, Hidenobu; Iijima, Masaki; Mitsuoka, Shigeaki; and Iwaki, Toru, 5,618,506, Cl. 423-228.000.

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Hayama, Akira, to Pioneer Electronic Corporation. On-vehicle electronic apparatus. 5,619,515, Cl. 371-48.000.

Hayashi, Hiroo: *See*—
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Hayashi, Shinji: *See*—
Shinohara, Wataro; Takagi, Yasuo; Iino, Yutaka; Hayashi, Shinji; Ohya, Junko; Chida, Yuichi; and Murai, Masahiko, 5,619,619, Cl. 395-24.000.

Hayes, Charles D.: *See*—
Allen, Clay D.; and Martwick, Andrew, 5,619,195, Cl. 341-20.000.

Hays, Eric L., to Square D Company. System for coupling external leads to a multitap transformer. 5,619,176, Cl. 336-150.000.

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Hazumi, Hiroshi: *See*—
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Heartport, Inc.: *See*—
Donlon, Brian S.; Mueller, Richard L., Jr.; Daniel, S. Christopher; Gifford, Hanson S., III; and Stevens, John H., 5,618,307, Cl. 606-205.000.
Roth, Alex T.; and Miller, Scott H., 5,618,306, Cl. 606-205.000.

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Morgan, Carlton B., 5,617,853, Cl. 128-640.000.

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Harrison, Gavin B. L.; Dempster, Robert P.; Rickard, Michael D.; Heath, David D.; Lawrence, Stephen B.; Vinton, Jennifer G.; Lightowlers, Marshall W.; O'Hoy, Kim L.; and Johnson, Kevin S., 5,618,542, Cl. 424-266.100.

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Ferguson, Matthew K.; Southward, Steve C.; and Heath, Michael C., 5,619,581, Cl. 381-71.000.

Heaton, Mark T.: *See*—

Beakes, John M.; Clemenz, Gary E.; Dolgas, Patrick A.; Heaton, Mark T.; and Newman, Lawrence E., 5,618,007, Cl. 242-432.600.

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Braatz, Robert E.; Gregory, Raymond S.; Heaton, Robert A.; Whitaker, Keith; and Sampson, David C., 5,617,906, Cl. 141-21.000.

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Agranat, Aharon; and Shafir, Joseph, 5,619,444, Cl. 364-841.000.
Chevion, Mordechai; and Berenshtein, Edward, 5,618,838, Cl. 514-492.000.
Mechoulam, Raphael; Beuer, Aviva; Hanus, Lemir; and Devane, William A., 5,618,955, Cl. 554-66.000.

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Heckel, Mark C.: *See*—
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Hefner, Richard P. Prefabricated wall trusses for super-insulated walls. 5,617,693, Cl. 52-693.000.

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Bland, Patrick M.; Hofmann, Richard G.; Jackson, Robert T.; Amini, Nader; Boury, Bechara F.; and Joshi, Jayesh, 5,619,729, Cl. 395-848.000.

Hofmeister, Werner: *See*—

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Högdahl, Erland, 5,618,170, Cl. 418-106.000.

Hojabr, Sassan, to Du Pont Canada Inc. Compatibilizer composition. 5,618,881, Cl. 525-64.000.

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Preikschat, Ekhard; Hokanson, Jon V.; and Reed, Barry W., 5,619,043, Cl. 250-574.000.

Holbrook, Britt: *See*—

Shapiro, Stephen L.; Mani, Sudhindra; Atlas, Eugene L.; Cords, Dieter H. W.; and Holbrook, Britt, 5,619,040, Cl. 250-370.090.

Holczer, Karoly; Schmalbein, Dieter; and Hoefer, Peter, to Bruker Analytische Messtechnik GmbH. Magnetic resonance method and apparatus for detecting an atomic structure of a sample along a surface thereof. 5,619,139, Cl. 324-318.000.

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Hollander, James: *See*—

Page, Steven L.; Hollander, James; and Frantz, Gene, 5,619,583, Cl. 381-172.000.

Hollenstein, Helmut: *See*—

Huber, Edgar; Hollenstein, Helmut; and Mäser, Reinhard, 5,618,091, Cl. 312-348.100.

Hollister Incorporated: *See*—

Leise, Walter F., Jr.; and Metz, Michael A., 5,618,276, Cl. 604-336.000.

Hollister, Richard M.: *See*—

Magid, Hillel; Wilson, David P.; Lavery, Dennis M.; Hollister, Richard M.; Eibeck, Richard E.; and Vanderpuy, Michael, 5,618,781, Cl. 510-177.000.

Holm, Anders; and Axinger, Jan, to Bofors AB. Method and an apparatus for spreading warheads. 5,619,010, Cl. 102-489.000.

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Holmes, Thomas: *See*—

Lehner, John A.; and Holmes, Thomas, 5,618,012, Cl. 244-168.000.

Holmes-Farley, Stephen R.: *See*—

Mandeville, W. Harry, III; Holmes-Farley, Stephen R.; and Petersen, John S., 5,618,530, Cl. 424-78.120.

Holmquest, John C., to Valmont Industries, Inc. Arc detection and cut-out circuit. 5,619,105, Cl. 315-225.000.

Holophane Lighting, Inc.: *See*—

Green, John D.; Sheka, Gregory J.; Thompson, Michael L.; Hissong, John B.; and Tan, Ming D., 5,619,077, Cl. 307-64.000.

Holt, Dennis A.; and Levy, Mark A., to SmithKline Beecham Corporation. 17α and 17β-substituted estra-1,3,5(10)-triene-3-carbboxlic acid. 5,618,806, Cl. 514-169.000.

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MacDonald, Peter L.; Stradi, Riccardo; Rossetto, Pierluigi; and Holthuis, Joost J. M., 5,618,936, Cl. 544-357.000.

Holton, Robert A.; Somoza, Carmen; Kim, Hyeong B.; Shindo, Mitsuru; Biediger, Ronald J.; Boatman, P. Douglas; Smith, Chase; Liang, Feng; and Murthi, Krishna, to Florida State University. Synthetic process for the preparation of tricyclic and tetracyclic taxanes. 5,618,952, Cl. 549-300.000.

Holtvoeth, Knud; and Wichern, Andreas, to U.S. Philips Corporation. Circuit arrangement for supplying an alternating signal current. 5,619,152, Cl. 327-110.000.

Holve, Donald J.: *See*—

Harvill, Thomas L.; and Holve, Donald J., 5,619,324, Cl. 356-336.000.

Holzer, Paul: *See*—

Pennington, Donald G.; and Holzer, Paul, 5,619,080, Cl. 307-105.000.

Holzheimer, Guenter; Schaeperklaus, Bernd; and Weigl, Hans, to Siemens Aktiengesellschaft. Liquid ring compressor with plural after-cooler elements. 5,618,164, Cl. 417-68.000.

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Hommeltoft, Sven I., to Haldor Topsøe A/S. Process for the recovery of alkylation catalyst. 5,618,769, Cl. 502-26.000.

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Doud, Galen C.; and Steinbeck, Linn A., 5,618,092, Cl. 312-348.100.

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Higuchi, Yoshikatsu; and Miyake, Kazumi, 5,618,768, Cl. 501-92.000.

Komura, Norio; Yoshigasaki, Tsuyoshi; and Takahashi, Hiroshi, 5,617,764, Cl. 74-606.00R.

Murata, Nagatoshi; Ooiwa, Hisaya; and Masaki, Takeshi, 5,619,322, Cl. 356-121.000.

Shinohara, Sadao; and Hosoda, Masaharu, 5,619,107, Cl. 318-139.000.

Tsukada, Yoshiaki; Nakamura, Kazuhiko; Saito, Mitsuru; and Kayama, Hiroaki, 5,617,938, Cl. 192-54.500.

Tsunoda, Masaki; Kuwabara, Shigeaki; and Shidara, Sadafumi, 5,617,821, Cl. 123-195.00P.

Yamazaki, Kazumi; Hara, Takeshi; Wakashiro, Teruo; and Hidano, Koichi, 5,617,832, Cl. 123-520.000.

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Honda, Shoji: *See*—

Hamada, Hiroki; Honda, Shoji; Shono, Masayuki; and Yamaguchi, Takao, 5,619,519, Cl. 372-46.000.

Hone Poulenc Viscosuisse SA: *See*—

Berger, Luzius, 5,618,172, Cl. 418-206.400.
Honeywell Inc.: *See—*
Ehlers, Wayne L., 5,619,188, Cl. 340-686.000.
Gilmore, Thomas A.; and Iyer, Balu K., 5,618,183, Cl. 439-66.000.
Gilmore, Thomas A.; and Iyer, Balu K., 5,618,188, Cl. 439-91.000.
Hong, Kyung S.; Oh, Dong Y.; Choi, Gyu S.; Lee, Joo H.; Kwon, Oh H.; Lee, Ha I.; and Kim, Kyeong H., to LG Electronics Inc. Pressure dehydration low-frequency vibration washing machine. 5,617,746, Cl. 68-21.000.
Honjo, Makoto: *See—*
Ueda, Tomohiko; Matsuura, Ichiro; Honjo, Makoto; Kakii, Toshiaki; Yamanishi, Toru; and Nagasawa, Shinji, 5,619,605, Cl. 385-80.000.
Honjou, Shigeru: *See—*
Meguro, Satoshi; Uchibori, Kiyofumi; Suzuki, Norio; Motoyoshi, Makoto; Koike, Atsuyoshi; Yamanaka, Toshiaki; Sakai, Yoshio; Kaga, Toru; Hashimoto, Naotaka; Hashimoto, Takashi; Honjou, Shigeru; and Minato, Osamu, 5,619,055, Cl. 257-369.000.
Hoover, Thomas H.: *See—*
Glomski, Krzysztof E.; Natterstad, Kurt L.; and Hoover, Thomas H., 5,617,795, Cl. 104-9.000.
Hoover Universal, Inc.: *See—*
Weissmann, Dan, 5,618,489, Cl. 264-530.000.
Hopf, Jochen: *See—*
Lindenmeier, Heinz; Hopf, Jochen; Reiter, Leopold; and Kronberger, Rainer, 5,619,214, Cl. 343-713.000.
Hoppes, Robert B.: *See—*
Bach, Maurice J.; Hoppes, Robert B.; Meltzer, Clifford B.; Parchinski, Kenneth J.; and Whelan, Gary J., 5,619,650, Cl. 395-200.010.
Horan, Ann C.: *See—*
Barrabee, Ellen B.; Horan, Ann C.; Genüle, Frank A.; and Patel, Mahesh G., 5,618,809, Cl. 514-211.000.
Hori, Atsushi: *See—*
Segawa, Mizuki; Kato, Yoshiaki; Nakaoka, Hiroaki; Nakabayashi, Takashi; Hori, Atsushi; Masuda, Hiroshi; Matsuo, Ichiro; Shinohara, Akihira; Uehara, Takashi; and Yasuhira, Mitsuo, 5,618,748, Cl. 438-232.000.
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Horiguchi, Hiroyuki: *See—*
Furuta, Toshiyuki; Horiguchi, Hiroyuki; Eguchi, Hirotoshi; Ebi, Yutaka; Furukawa, Tatsuya; Watanabe, Yoshio; and Tsukagoshi, Toshihiro, 5,619,617, Cl. 395-23.000.
Horiguchi, Takeshi; Sasaki, Satoru; and Miyake, Hideaki, to Toshiba Kikai Kabushiki Kaisha. Switching type continuously operative printing machine. 5,617,788, Cl. 101-181.000.
Horikoshi, Yuzo; Sawatari, Norio; Ogino, Takeshi; Naito, Hiroaki; Koshi, Makoto; Kido, Kazuhiko; Yamamoto, Takashi; Sakurai, Eiji; Katagiri, Yoshimichi; Maruyama, Masatoshi; Nitta, Hidenori; and Matsuoka, Sonoo, to Fujitsu Limited; and Nippon Carbide Industries, Co., Inc. Toner binder, toner, electrophotographic method and apparatus therefor. 5,618,648, Cl. 430-109.000.
Horkin, Philip R.; Ma, Stephen C.; Durboraw, Isaac N., III; and Muncaster, George W., to Motorola, Inc. Position locating and communication system using multiple satellite constellations. 5,619,211, Cl. 342-357.000.
Hörl, Hans-Heinrich: *See—*
Demmer, Wolfgang; Hörl, Hans-Heinrich; Nussbaumer, Dietmar; and Weiss, Abdul R., 5,618,418, Cl. 210-232.000.
Horn, Klaus: *See—*
Köhler, Burkhard; and Horn, Klaus, 5,618,890, Cl. 525-468.000.
Horner Creative Products, Inc.: *See—*
Horner, Jack R., 5,617,757, Cl. 73-290.00V.
Horner, Jack R., to Horner Creative Products, Inc. Liquid level monitoring systems for underground storage tanks and method for its installation. 5,617,757, Cl. 73-290.00V.
Horning, Randy E.; Constable, Douglas W.; and Smart, David C., to Eastman Kodak Company. Encodement-on-film recording apparatus utilizes flash components in a camera. 5,619,737, Cl. 396-195.000.
Horrobin, David F.; and Reynolds, Brenda E., to Scotia Holdings PLC. Fatty acid treatment. 5,618,558, Cl. 424-464.000.
Horstein, Michael; and Ho, Hau H., to TRW Inc. User paging for mobile satellite communications. 5,619,209, Cl. 342-352.000.
Horwitz, Arnold H.: *See—*
Robinson, Randy R.; Liu, Alvin Y.; Horwitz, Arnold H.; Better, Marc; Wall, Randolph; Lei, Shau-Ping; and Wilcox, Gary L., 5,618,920, Cl. 530-387.100.
Horwitz, E. Philip: *See—*
Trochimczuk, Andrzej W.; Gatrone, Ralph C.; Alexandratos, Spiro; and Horwitz, E. Philip, 5,618,851, Cl. 521-34.000.
Hosamani, Laxmappa: *See—*
Swanson, Roger A.; Nelson, Terry M.; Barrett, James R.; and Hosamani, Laxmappa, 5,618,633, Cl. 428-593.000.
Hösel, Fritz, to Trützschler GmbH & Co. KG. Method and apparatus for depositing sliver in a coiler can. 5,617,615, Cl. 19-159.00R.
Hoshino, Masafumi; Yamamoto, Shuhei; Fujita, Hiroyuki; Oniwa, Hirotomo; Ebihara, Teruo; and Matsu, Fujio, to Seiko Instruments Inc. Liquid crystal display panel driving device. 5,619,224, Cl. 345-98.000.
Hosoda, Masaharu: *See—*
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Hosoda, Yasushi; Kimoto, Masanari; Hikino, Shinya; Yoshida, Tsutomu; and Fukui, Kiyoyuki, to Sumitomo Metal Industries, Ltd. Composite zinc- or zinc alloy-electroplated metal sheet and method for the production thereof. 5,618,634, Cl. 428-610.000.
Hosoi, Kiyoshi; and Matsuda, Tsukasa, to Fuji Xerox Co., Ltd. Ink-jet printing paper and ink-jet printing method using the same. 5,619,241, Cl. 347-105.000.
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Hosokawa, Takahiro: *See—*
Ohuchi, Noriaki; Morimoto, Akio; Yamasaki, Hiroshi; Hosokawa, Takahiro; and Kaneko, Hiroyuki, 5,619,641, Cl. 395-181.000.
Hosokawa, Yuko: *See—*
Tokuda, Shoichi; Ninomiya, Kazuhisa; Fukushima, Yasuhiro; Watanabe, Shigeyuki; Ochiai, Mitsuru; Okumura, Mutsuo; and Hosokawa, Yuko, 5,618,555, Cl. 424-443.000.
Hosono, Masayuki; and Ueno, Yoshiteru, to SMC Kabushiki Kaisha. Linear actuator. 5,617,772, Cl. 92-117.00A.
Hosoya, Hideki, to Canon Kabushiki Kaisha. Information recording/reproducing method. 5,619,481, Cl. 369-32.000.
Hosseini, Javad; Schenkel, Nathan T.; and Schimpf, James E., to Caterpillar Inc. Method for controlling an implement of a work machine. 5,617,723, Cl. 60-327.000.
Hotta, Kiyoshi: *See—*
Kimura, Kunio; Ito, Takeshi; Aoyama, Tomohiro; Uno, Keiichi; Hotta, Kiyoshi; and Arichi, Minako, 5,618,911, Cl. 528-361.000.
Hotta, Yasuhiro, to Sharp Kabushiki Kaisha. Semiconductor memory device with dual address memory read amplifiers. 5,619,473, Cl. 365-238.500.
Hotta, Yoshihiko; Suzuki, Akira; Obu, Makoto; and Kitamura, Takashi, to Ricoh Company, Ltd. Image recording and erasing method. 5,619,243, Cl. 347-139.000.
Hotz Corporation, The: *See—*
Hotz, Jimmy C., 5,619,003, Cl. 84-615.000.
Hotz, Jimmy C., to Hotz Corporation, The. Electronic musical instrument dynamically responding to varying chord and scale input information. 5,619,003, Cl. 84-615.000.
Hou, Jinzhao: *See—*
McKnight, Steven L.; Hou, Jinzhao; and Schindler, Ulrike, 5,618,693, Cl. 435-69.100.
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Younessi, Ramin; and Houghton, Brian, 5,619,112, Cl. 318-689.000.
Houman, Leif J.; and Losee, A. Clifford, to Losee, A. Clifford. Compact portable hand-held EDM tool. 5,618,449, Cl. 219-69.110.
Houpt, Ronald A.: *See—*
Lin, David C. K.; Houpt, Ronald A.; Gavin, Patrick M.; Lawson, Richard D.; and Hinze, Jay W., 5,618,328, Cl. 65-502.000.
House Foods Corporation: *See—*
Nakatani, Masayuki; Sengoku, Koji; and Fujita, Akifumi, 5,617,781, Cl. 99-470.000.
Household Innovations International B.V.: *See—*
van der Storm, Leonardus F. M., 5,618,376, Cl. 156-468.000.
Houston Biotechnology Incorporated: *See—*
Kelleher, Peter J., 5,618,553, Cl. 424-428.000.
Howard, James E.; and Merli, Enrico, to Fibres South, Inc. Safety guard for fiber processing unit. 5,617,987, Cl. 226-189.000.
Howe, Stephen L. Assisted breathing apparatus and tubing therefore. 5,617,847, Cl. 128-204.230.
Howell, Elmer: *See—*
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Howell, Thomas A.: *See—*
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Howell, Thomas H.: *See—*
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Howerton, Marta M.: *See—*
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Howmet Corporation: *See—*
Irvine, Jeffrey D.; Smith, Jeffery S.; and Conroy, Patrick L., 5,618,353, Cl. 134-22.170.
Hoxmeier, Ronald J.; DuBois, Donn A.; and Southwick, Jeffrey G., to Shell Oil Company. Anionically polymerized block copolymers of ethylene and cyclic siloxane monomers. 5,618,903, Cl. 528-14.000.
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Kondo, Masao; Hozo, Senichi; and Fujii, Michihiro, 5,618,431, Cl. 210-618.000.
Hsiao, Alaric S., to Lucent Technologies Inc. Mnemonic number dialing plan. 5,619,563, Cl. 379-368.000.
Hsu, Henry C.: *See—*
Billock, John K.; Cuttner, Craig D.; Dowdell, Kevin C.; Flanagan, Elizabeth B.; Granger, James E.; Hsu, Henry C.; Martin, Robert I. M.; May, Robert; Peck, Nicolas; Pontecorvo, Michael S.; Probst, Bruce E.; Rosenberg, Marc D.; Smul, Debra R.; Wilkinson, Dennis P.; and Zitter, Robert M., 5,619,249, Cl. 348-7.000.
Hsu, Ming-Ta: *See—*
Leiser, Daniel B.; Hsu, Ming-Ta; and Chen, Timothy S., 5,618,766, Cl. 501-87.000.

Hsu, Walter W., to Welter's Co., Ltd. File clip with punching function. 5,618,121, Cl. 402-1.000.
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Lee, Sywe N.; Hu, Dyi-Chung; and Tang, Huann-Min, 5,619,223, Cl. 345-93.000.
Huang, Ben. Slip resistant sport grip. 5,618,041, Cl. 473-549.000.
Huang, Chen-tan. Double-acting hydraulic cylinder for use in an exercising apparatus. 5,618,248, Cl. 482-112.000.
Huang, Chin-Yi: *See—*
Chang, Chang Y.; Shone, Fuchia; Huang, Chin-Yi; and Peng, Nai C., 5,619,052, Cl. 257-321.000.
Huang, Po-Chuan, to United Microelectronics Corporation. Code table reduction apparatus for variable length decoder. 5,619,200, Cl. 341-67.000.
Huang, Tiao-Yuan, to VLSI Technology, Inc. Method of making CMOS output buffer with enhanced ESD resistance. 5,618,740, Cl. 438-224.000.
Huang, Yung H.: *See—*
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Hubbell Incorporated: *See—*
Aekins, Robert A., 5,618,185, Cl. 439-76.100.
Jorgensen, Robert W., 5,619,013, Cl. 174-53.000.
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Huber, Edgar; Hollenstein, Helmut; and Mäser, Reinhard, to Julius Blum Gesellschaft m.b.H. Drawer assembly. 5,618,091, Cl. 312-348.100.
Hubner, Frank; Gora, Ulrich; Huthmacher, Klaus; and Drauz, Karlheinz, to Degussa AG. Method of producing salcomine. 5,618,957, Cl. 556-32.000.
Huddleston, Howard M.; Insalaco, Jeffrey L.; and Odom, Fletcher L., to Ford Motor Company; and Hydro Aluminum Puckett, Inc. Soldering strip and method of using. 5,617,992, Cl. 228-183.000.
Huddy, Richard S., to Canon Kabushiki Kaisha. Processing image data. 5,619,626, Cl. 395-121.000.
Hudetz, Manfred: *See—*
Glock, Jutta; Hudetz, Manfred; and Kerber, Elmar, 5,618,774, Cl. 504-105.000.
Hudson, John M.: *See—*
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Hughes Aircraft Company: *See—*
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Hughes Electronics: *See—*
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Kelly, Frank M., 5,619,689, Cl. 395-617.000.
Salvio, Paul; and Walsh, Kevin, 5,619,036, Cl. 250-330.000.
Hughes, John H., to Siemens Medical Systems, Inc. System and method for regulating delivered radiation in a radiation-emitting device. 5,619,042, Cl. 250-492.300.
Hughes Missile Systems Company: *See—*
Park, Pyong K., 5,619,216, Cl. 343-771.000.
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Hull, Andrew J.: *See—*
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Hulse, David J.; and Heinemann, John G., to Isomat, Inc. Carbon fiber spar and method of making. 5,617,807, Cl. 114-90.000.
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Human Genome Sciences, Inc.: *See—*
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Hume, James M.; and Daniele, Joseph T., to CCI Spectrum, Inc. Multi-layer liner for waste water system rehabilitation. 5,618,616, Cl. 428-319.300.
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Hunley, Steven A., to Texas Instruments Incorporated. CMOS buffer with controlled slew rate. 5,619,147, Cl. 326-26.000.
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Bosworth, Adam; Hunter, Ross A.; and Habib, David J., 5,619,688, Cl. 395-604.000.
Huntington Medical Research Institutes: *See—*
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Hyman, Curtis. Central air condition utility system and method of operation thereof. 5,617,729, Cl. 62-117.000.
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Schoos, Aloyse; and Witte, Michel, 5,618,056, Cl. 280-735.000.
Ibach, Adolf; and Powers, Robert L., to Carl Sulberg GmbH & Co. Cutter assembly for mowing apparatus. 5,617,712, Cl. 56-298.000.
Ibi, Takashi, to Fujitsu Limited. Memory control device and method operated in consecutive access mode. 5,619,679, Cl. 395-494.000.
Ichikawa, Yoshiki: *See—*
Hatano, Shintarou; Kawahito, Hiroshi; Ichikawa, Yoshiki; Mizoguti, Fumito; Tsuji, Masahiro; Hiroyasu, Takao; Kawamoto, Hiroshi; Fujita, Syouichi; Nishimura, Hideyuki; Kawabata, Itaru; and Kazaki, Yuichi, 5,619,312, Cl. 399-61.000.
Ichikawa, Yumi: *See—*
Shoshi, Masayuki; Ichikawa, Yumi; Teramura, Kaoru; Koyano, Masayuki; and Kawahara, Megumi, 5,618,935, Cl. 544-344.000.
Ichino, Tomio: *See—*
Urawa, Yoshio; Furukawa, Ken; Shimizu, Toshikazu; Yamagishi, Yoji; Tsurugi, Tomio; and Ichino, Tomio, 5,618,969, Cl. 560-102.000.
Ichiro, Fukuda: *See—*
Kozo, Nakamura; Seiichi, Mitsui; and Ichiro, Fukuda, 5,619,356, Cl. 349-99.000.
Idaho Research Foundation, Inc.: *See—*
Paszczynski, Andrzej; Goszczynski, Stefan; Crawford, Ronald L.; Crawford, Donald L.; and Pasti, Maria B., 5,618,726, Cl. 435-262.500.
ide, Akira: *See—*
Akioka, Takashi; Iwamura, Masahiro; Hiraishi, Atsushi; Yokoyama, Yuji; Matsuzaki, Nozomu; Yamauchi, Tatsumi; Kobayashi, Yutaka; Gotou, Nobuyuki; ide, Akira; Yamamura, Masahiro; and Uchida, Hideaki, 5,619,151, Cl. 327-78.000.
Ideal Ideas, Inc.: *See—*
Glynn, Kenneth P., 5,618,100, Cl. 362-183.000.
Idei, Hideomi: *See—*
Tezuka, Satoru; Miyake, Shigeru; Furukawa, Hiroshi; Kihara, Kenichi; Kitahara, Chiho; Idei, Hideomi; Taguchi, Shihoko; Namba, Hikari; and Suzano, Alberto, 5,619,640, Cl. 395-326.000.
Ido, Kenichi: *See—*
Kimura, Ken; Taniguchi, Yushi; Satoh, Kiichi; Saifuku, Kouji; Kihira, Ken; Ido, Kenichi; Yoshida, Yukio; and Takimoto, Takuya, 5,618,564, Cl. 424-653.000.
Idota, Yoshio; Mishima, Masayuki; Miyaki, Yukio; Kubota, Tadahiko; and Miyasaka, Tsutomu, to Fuji Photo Film Co., Ltd. Nonaqueous secondary battery. 5,618,640, Cl. 429-194.000.
Iguchi, Masayoshi; Omura, Kazuhiko; Yoshiyama, Masatoshi; and Nishikawa, Hiroshi, to Brother Kogyo Kabushiki Kaisha/Xing Inc. Image reproduction device for reproducing image data from video disks. 5,619,339, Cl. 386-113.000.
Ihnat, Nicholas A.: *See—*
Schron, Jack H., Sr.; and Ihnat, Nicholas A., 5,617,623, Cl. 29-283.500.
Iida, Atsushi: *See—*
Tamura, Itsuro; Iida, Atsushi; Takae, Tsutomu; and Wada, Masao, 5,617,856, Cl. 128-653.100.
Iida, Yasunobu: *See—*

Nagashima, Toshikazu; Kuramashi, Haruki; Iida, Yasunobu; and Asai, Sachio, 5,618,626, Cl. 428-429.000.
Iijima, Masaki: *See*—
Suzuki, Hitomi; Hayakawa, Atsushi; Mimura, Tomio; Shimojo, Shigeru; Shimayoshi, Hidenobu; Iijima, Masaki; Mitsuoka, Shigeaki; and Iwaki, Toru, 5,618,506, Cl. 423-228.000.
Iimura, Kouichi; and Haijima, Yu, to Sigma, Incorporated. Running body and racing game apparatus using the same. 5,618,233, Cl. 463-67.000.
Iimuro, Shigeru: *See*—
Kawabata, Tomoyuki; Yuasa, Teruo; and Iimuro, Shigeru, 5,618,984, Cl. 569-720.000.
Iino, Akihiro: *See*—
Suzuki, Kenji; Suzuki, Makoto; Kasuga, Masao; Suzuki, Minako; and Iino, Akihiro, 5,619,089, Cl. 310-323.000.
Iino, Yasuhiro: *See*—
Matsushima, Yosuke; Iino, Yasuhiro; Toyosawa, Shinichi; Kimura, Takeshi; Fukahori, Yoshihide; and Noda, Akeshi, 5,618,595, Cl. 428-35.200.
Iino, Yutaka: *See*—
Shinohara, Wataro; Takagi, Yasuo; Iino, Yutaka; Hayashi, Shinji; Ohya, Junko; Chida, Yuichi; and Murai, Masahiko, 5,619,619, Cl. 395-24.000.
Ikami, Kazunori: *See*—
Funahashi, Yasuhiro; Ikami, Kazunori; and Hasegawa, Yukie, 5,619,425, Cl. 364-514.00R.
Ikari, Yoshikatsu, to Chief Resources Limited. Composition containing divalent manganese ion. 5,618,526, Cl. 424-76.100.
Ikeda, Daishiro: *See*—
Kondo, Shinichi; Shibahara, Seiji; Usui, Takayuki; Kudo, Toshiaki; Gomi, Shuichi; Tamura, Atsushi; Ikeda, Yoko; Ikeda, Daishiro; and Takeuchi, Tomio, 5,618,795, Cl. 514-41.000.
Ikeda, Junji: *See*—
Inoue, Takao; Ikeda, Junji; and Nishiki, Naomi, 5,618,615, Cl. 428-315.500.
Ikeda, Masami: *See*—
Higuma, Masahiko; Ikeda, Masami; Asai, Naohito; Abe, Tsutomu; Kashino, Toshio; and Karita, Seiichiro, 5,619,238, Cl. 347-86.000.
Ikeda, Takahide: *See*—
Ohta, Hiroyuki; Miura, Hideo; Masuda, Hiroo; Tamaki, Yoichi; Ikeda, Takahide; Nishimura, Asao; and Hashimoto, Takashi, 5,619,069, Cl. 257-692.000.
Ikeda, Yoko: *See*—
Kondo, Shinichi; Shibahara, Seiji; Usui, Takayuki; Kudo, Toshiaki; Gomi, Shuichi; Tamura, Atsushi; Ikeda, Yoko; Ikeda, Daishiro; and Takeuchi, Tomio, 5,618,795, Cl. 514-41.000.
Ikeda, Yoshinori, to Canon Kabushiki Kaisha. Color image processing method for processing input image data in accordance with input character data. 5,619,634, Cl. 395-793.000.
Ikedo, Tomoyuki; Ito, Yoshinobu; and Matui, Ryotaro, to Hamamatsu Photonics K.K. Gas discharge tube. 5,619,101, Cl. 313-581.000.
Ikegami, Yasuyuki; and Uehara, Haruo, to Saga University. Energy converter. 5,617,738, Cl. 62-509.000.
Ikegawa, Akihiko: *See*—
Shishido, Tadao; Kawakami, Masayuki; Ikegawa, Akihiko; Ukai, Toshinao; Koya, Keizo; and Chen, Lan B., 5,618,831, Cl. 514-366.000.
Ikegaya, Yuji: *See*—
Ando, Shigeo; Ikegaya, Yuji; and Muramatsu, Shinichi, 5,619,579, Cl. 381-63.000.
Iketaki, Yoshinori: *See*—
Kato, Mikiko; and Iketaki, Yoshinori, 5,619,382, Cl. 359-858.000.
Ikumi, Nobuyuki, to Kabushiki Kaisha Toshiba. Multiport cache memory having read-only parts and read-write parts. 5,619,674, Cl. 395-458.000.
Ilic, Kosta, to National Instruments Corporation. Method and apparatus for programming registers using simplified commands. 5,619,702, Cl. 395-705.000.
Illsley, Rolf F.: *See*—
Seeser, James W.; Allen, Thomas H.; Dickey, Eric R.; Hichwa, Bryant P.; Illsley, Rolf F.; Klinger, Robert F.; LeFebvre, Paul M.; Scobey, Michael A.; Seddon, Richard I.; Soberanis, David L.; Temple, Michael D.; Van Horn, Craig C.; and Wentworth, Patrick R., 5,618,388, Cl. 204-192.120.
Imafuji, Kazuharu; Sato, Shigemasa; Kosaka, Toru; and Ogawa, Hidehiro, to Nikon Corporation. Camera with a visual line position detection device and method. 5,619,294, Cl. 396-51.000.
Image Guided Technologies, Inc.: *See*—
Chader, Martin D.; Faul, Ivan; Feaver, Timothy L.; and Schulz, Waldean A., 5,617,857, Cl. 128-653.100.
Imai, Keitaro: *See*—
Eguchi, Kazuhiro; Kiyotoshi, Masahiro; and Imai, Keitaro, 5,618,761, Cl. 438-785.000.
Imai, Rihoko: *See*—
Misawa, Tsutami; Ogiso, Akira; Imai, Rihoko; and Itoh, Hisato, 5,618,868, Cl. 524-159.000.
Imai, Yasuo: *See*—
Yoshimi, Toru; Imai, Yasuo; and Kogi, Toshinobu, 5,618,486, Cl. 264-321.000.
Imakura, Tatsuya, to Mitsubishi Denki Kabushiki Kaisha. Analog/digital converter. 5,619,201, Cl. 341-141.000.
Imedex: *See*—
Tardy, Michel; Tiollier, Jérôme; and Tayot, Jean-Louis, 5,618,551, Cl. 424-426.000.
Imoto, Masayoshi: *See*—
Kobayashi, Takashi; and Imoto, Masayoshi, 5,617,630, Cl. 29-857.000.
Ina Walzlager Schaeffler KG: *See*—
Zettner, Herbert; and Stark, Johann, 5,617,937, Cl. 192-45.000.
Inagaki, Ryosuke, to ROHM Co., Ltd. Video reproducing apparatus having filter circuit of automatic frequency adjustment type. 5,619,340, Cl. 386-99.000.
Inagi, Toshio; and Suehiro, Saibi, to Kowa Co., Ltd. Powder preparation for healing damaged skin. 5,618,799, Cl. 514-53.000.
Inalfa B.V.: *See*—
Nabuurs, Martinus W. M., 5,618,081, Cl. 296-216.000.
Indiana University Foundation: *See*—
Stookey, George K., 5,618,518, Cl. 424-57.000.
Industrial Technology Research Institute: *See*—
Lou, Chine-Gie, 5,618,747, Cl. 438-398.000.
Infilco Degremont Inc.: *See*—
Sorosinski, Jerome C., 5,618,421, Cl. 210-264.000.
Innovasive Devices, Inc.: *See*—
Hart, Rickey D.; Winters, Richard M.; Rice, John T.; and Nicholson, James E., 5,618,304, Cl. 606-205.000.
Inoteb: *See*—
Delmas, Olivier, 5,618,663, Cl. 435-2.000.
Patat, Jean-Louis; and Cirotteau, Yves, 5,618,549, Cl. 424-422.000.
Inoue, Akihisa: *See*—
Kimura, Youichi; Makino, Akihiro; Masumoto, Tsuyoshi; and Inoue, Akihisa, 5,619,174, Cl. 333-181.000.
Inoue, Hiroyuki; Sugama, Sadayuki; Hiramatsu, Soichi; Yamaguchi, Hideki; Ujita, Toshihiko; Yamanaka, Akihiro; Nojima, Takashi; Kotaki, Yasuo; Tsukuda, Keiichiro; Nakamura, Hitoshi; Kida, Akira; Kawakami, Hideaki; and Iwasaki, Takeshi, to Canon Kabushiki Kaisha. Replaceable ink tank. 5,619,237, Cl. 347-86.000.
Inoue, Nori: *See*—
Saka, Yuuji; Onizuka, Takahiro; Oka, Yoshito; Kobayashi, Makoto; and Inoue, Nori, 5,618,186, Cl. 439-76.200.
Inoue, Seiji: *See*—
Kinugasa, Takashi; Nishishita, Kunihiko; and Inoue, Seiji, 5,617,914, Cl. 165-153.000.
Kinugasa, Takashi; Nishishita, Kunihiko; and Inoue, Seiji, 5,617,915, Cl. 165-153.000.
Inoue, Takao; Ikeda, Junji; and Nishiki, Naomi, to Matsushita Electric Industrial Co., Ltd. Graphite layer material. 5,618,615, Cl. 428-315.500.
Inoue, Takashi: *See*—
Yasuda, Masanori; Onimaru, Sadahisa; Inoue, Takashi; Okada, Hiroshi; Kojima, Akikazu; and Takaki, Niro, 5,617,995, Cl. 237-12.30C.
Inoue, Tohru: *See*—
Kusumoto, Yasuhiro; Uehara, Yasuhiro; Kanesawa, Yoshio; Inoue, Tohru; Kato, Hiroshi; and Kikukawa, Hiroyasu, 5,619,315, Cl. 399-324.000.
Inoue, Yasuhide: *See*—
Tsutsumi, Kazuhiko; Inoue, Yasuhide; Yoshida, Chieko; and Tsuda, Yoshihiko, 5,618,801, Cl. 514-75.000.
Inoue, Yasuo: *See*—
Iwamatsu, Toshiaki; Inoue, Yasuo; and Nishimura, Tadashi, 5,619,053, Cl. 257-347.000.
Inoue, Yuichi: *See*—
Horie, Hideyoshi; Inoue, Yuichi; Shimoyama, Kenji; Hosoi, Nobuyuki; and Hideki, Goto, 5,619,518, Cl. 372-46.000.
Inouye, Satoshi: *See*—
Zenno, Shuhei; Shiraishi, Shinji; Inouye, Satoshi; and Saigo, Kaoru, 5,618,722, Cl. 435-252.300.
Inrad: *See*—
Fehlner, James R.; and Zhang, Zhenyu, 5,618,435, Cl. 210-651.000.
Insalaco, Jeffrey L.: *See*—
Huddleston, Howard M.; Insalaco, Jeffrey L.; and Odom, Fletcher L., 5,617,992, Cl. 228-183.000.
Insitec Measurement Systems: *See*—
Harvill, Thomas L.; and Holve, Donald J., 5,619,324, Cl. 356-336.000.
Institut de Medecine de la Reproduction de Montreal: *See*—
Miron, Pierre; Roy, Denis-Claude; and Lachapelle, Marie-Hélène, 5,618,680, Cl. 435-7.210.
Institut Francais Du Petrole: *See*—
Argillier, Jean-François; Audibert, Annie; Marchand, Pierre; Demoulin, André; and Janssen, Michel, 5,618,780, Cl. 508-503.000.
Institut National de la Sante et de la Recherche Medicale: *See*—
Popoff, Michel Y.; and Dion, Michel, 5,618,666, Cl. 435-6.000.
Institut Pasteur: *See*—
Popoff, Michel Y.; and Dion, Michel, 5,618,666, Cl. 435-6.000.
Integrated Device Technology, Inc.: *See*—
Henry, Glenn; and Parks, Terry, 5,619,667, Cl. 395-384.000.
Intel Corporation: *See*—
Bland, Patrick M.; Hofmann, Richard G.; Jackson, Robert T.; Amini, Nader; Boury, Bechara F.; and Joshi, Jayesh, 5,619,729, Cl. 395-848.000.
Cahill, Benjamin M., III, 5,619,226, Cl. 345-132.000.
Dao, Giang T.; and Liu, Gang, 5,618,643, Cl. 430-5.000.
Gee, Homer T.; Steere, Daniel C., Jr.; and Matthews, Walter S., 5,619,396, Cl. 361-686.000.
Glew, Andrew F., 5,619,664, Cl. 395-394.000.
Kahn, Kevin; and Eckhardt, David, 5,619,502, Cl. 370-397.000.
Karnik, Milind; and Batz, Joseph, 5,619,705, Cl. 395-739.000.

Myers, Alan M.; Charvat, Peter K.; Letson, Thomas A.; Yang, Shi-ning; and Bai, Peng, 5,619,071, Cl. 257-753.000.
Scheer, David C.; Gormley, Robert J.; Pierce, Michael E.; and Weston, Patrick E., 5,619,660, Cl. 395-282.000.
Seconi, Mark; Mc Allister, Paul; Hall, Andrew; and Jalfon, Marc, 5,619,726, Cl. 395-842.000.
Sugisawa, Junji; and Lalwani, Dilip, 5,619,511, Cl. 371-22.300.
Wang, Wen-Hann, 5,619,673, Cl. 395-417.000.
Young, Bruce, 5,619,706, Cl. 395-741.000.
Zaidi, Syed A. A., 5,619,668, Cl. 395-376.000.
Intercat, Inc.: *See*—
Demmel, Edward J., 5,618,406, Cl. 208-48.00R.
Intermec Corporation: *See*—
Ackley, H. Sprague, 5,619,027, Cl. 235-462.000.
International Business Machines Corporation: *See*—
Angelopoulos, Marie; Afzali-Ardakani, Ali; Feger, Claudius; and Narayan, Chandrasekhar, 5,619,357, Cl. 349-110.000.
Armacost, Michael D.; Grundon, Steven A.; Harmon, David L.; Nguyen, Son V.; and Rembetski, John F., 5,618,379, Cl. 438-595.000.
Bach, Maurice J.; Hoppes, Robert B.; Meltzer, Clifford B.; Parchinski, Kenneth J.; and Whelan, Gary J., 5,619,650, Cl. 395-200.010.
Bartling, Steven C., 5,619,441, Cl. 364-770.000.
Baum, Richard I.; Brent, Glen A.; Gibson, Donald H.; and Lindquist, David B., 5,619,713, Cl. 395-800.000.
Bigus, Joseph P., 5,619,618, Cl. 395-23.000.
Black, Bryan; Denman, Marvin A.; Eisen, Lee E.; Golla, Robert T.; Loper, Albert J., Jr.; Mallick, Soummya; and Reininger, Russell A., 5,619,408, Cl. 395-567.000.
Bland, Patrick M.; Hofmann, Richard G.; Jackson, Robert T.; Amini, Nader; Boury, Bechara F.; and Joshi, Jayesh, 5,619,729, Cl. 395-848.000.
Bryant, Barbara J.; and Garrison, Glen E., 5,619,671, Cl. 395-412.000.
Casal, Humberto F.; Davidson, Joel R.; Li, Hehching H.; Lo, Yuan C.; Nguyen, Trong D.; Snyder, Campbell H.; and Thoma, Nandor G., 5,619,158, Cl. 327-292.000.
Cesaro, Claude; and Richter, Gerard, 5,619,565, Cl. 379-386.000.
Chou, Paul B.; Wu, Frederick Y.; and Wong, Danny C., 5,619,026, Cl. 235-462.000.
Coker, Jonathan D.; Dolivo, Francois B.; Galbraith, Richard L.; Hermann, Reto J.; Hirt, Walter; and Vannorsdel, Kevin, 5,619,539, Cl. 375-341.000.
Coteus, Paul W.; and Goodman, Douglas S., 5,619,219, Cl. 345-7.000.
Crockett, Robert N.; Kern, Ronald M.; and Micka, William F., 5,619,644, Cl. 395-183.210.
Dinkjian, Robert M.; Heller, Lisa C.; Kordus, Steven R.; Lauricella, Kenneth A.; Seigendall, Thomas W.; Skaggs, Robert A.; and Xu, Nelson S., 5,619,715, Cl. 395-800.000.
Edgar, Albert D., 5,619,230, Cl. 345-150.000.
Freedenberg, Candace J.; Long, David C.; Cobb, Joshua M.; LaPlante, Mark J.; Ziemins, Uldis A.; Patterson, Daniel G.; and Balz, James G., 5,618,454, Cl. 219-121.740.
Golden, Kevin M.; Pan, Pai-Hung; Stewart, Kevin J.; and Thomas, Alan C., 5,618,751, Cl. 438-392.000.
Goodwin, Julie F.; Johnson, Debra A. G.; Lewis, James R.; Rasmussen, David J.; Tiller, Byron K.; and Yee, Raymond L., 5,619,684, Cl. 395-500.000.
Henshaw, Susan F.; and Redpath, Sarah D., 5,619,637, Cl. 395-159.000.
Hoch, Gary B.; Lee, Timothy V.; McCrary, Rex E.; Payne, Stephanie P.; Petkevich, Daniel; and Pham, Hai V., 5,619,646, Cl. 395-200.010.
Kirihata, Toshiaki; and Wong, Hing, 5,619,460, Cl. 365-201.000.
Lofaro, Michael F., 5,618,354, Cl. 134-25.400.
Malkemus, Timothy R.; Shekita, Eugene J.; and Simmen, David E., 5,619,692, Cl. 395-602.000.
Neti, Chalapathy, 5,619,701, Cl. 395-674.000.
Noe, Bradley D.; Lawton, William W.; Koval, Michael J.; and Killian, David W., 5,619,733, Cl. 395-881.000.
Novof, Ilya I.; and Strayer, Donald E., 5,619,161, Cl. 327-535.000.
Ottesen, Hal H.; Cunningham, Earl A.; Greenberg, Richard; and Brown, Dana H., 5,619,387, Cl. 360-77.080.
Pohl, Wolfgang D., 5,619,600, Cl. 385-15.000.
Schwarz, Eric M.; and Bunce, Robert M., 5,619,443, Cl. 364-788.000.
Watts, Steven J.; and Iyer, Balakrishna R., 5,619,199, Cl. 341-51.000.
International Paper Company: *See*—
Volpe, Raymond A., 5,618,628, Cl. 428-450.000.
International Remote Imaging Systems, Inc.: *See*—
Kasdan, Harvey L., 5,619,032, Cl. 250-201.300.
Intrnational Business Machines Corporation: *See*—
Emma, Philip G., 5,619,665, Cl. 395-384.000.
Irons, A. Joseph, Jr.; and Owens, Murphy, Sr., to Easy Lift Equipment Co., Inc. Drum transporter. 5,618,154, Cl. 414-622.000.
Irvine, Jeffrey D.; Smith, Jeffery S.; and Conroy, Patrick L., to Howmet Corporation. Cleaning, method for cleaning internal airfoil cooling passages. 5,618,353, Cl. 134-22.170.
Irvine, Michael P.: *See*—
Markle, David R.; Crane, Barry C.; Irvine, Michael P.; Hendry, Stuart P.; and Paterson, William, 5,618,587, Cl. 427-430.100.
Ishida, Hideaki: *See*—
Nonaka, Naomichi; Nakane, Keiichi; Itoh, Hiromichi; and Ishida, Hideaki, 5,619,716, Cl. 395-800.000.
Ishida, Masahiro: *See*—
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Ishida, Mio: *See*—
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Ishida, Tomotoshi: *See*—
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Ishigaki, Toru: *See*—
Sasaki, Nobuo; and Ishigaki, Toru, 5,619,159, Cl. 327-527.000.
Ishigaki, Yoshiyuki: *See*—
Kuriyama, Hirotada; Ishida, Masahiro; and Ishigaki, Yoshiyuki, 5,619,056, Cl. 257-369.000.
Ishihara, Hiroshi: *See*—
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Ishii, Hisao, to Fanuc, Ltd. Thermal displacement correcting method of machine tool. 5,619,414, Cl. 364-474.170.
Ishii, Katsumi: *See*—
Yokota, Hiroshi; Naito, Ryuichi; Hirano, Hiroyuki; Ishii, Katsumi; Naohara, Shinichi; Tsukada, Yoshifumi; and Matsumoto, Kanya, 5,619,484, Cl. 369-50.000.
Ishii, Yoshiko: *See*—
Shoji, Hisashi; Yano, Hidetoshi; Kai, Tsukuru; Ishii, Yoshiko; Yokokawa, Nobuto; Suzuki, Masako; and Iwasaki, Yukiko, 5,619,316, Cl. 399-359.000.
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Ishikawa, Eiji, to Canon Kabushiki Kaisha. Recording apparatus having means for detecting the positions of a recording medium. 5,618,120, Cl. 400-708.000.
Ishikawa, Kenji; and Arami, Junichi, to Tokyo Electron Limited. Processing apparatus. 5,618,350, Cl. 118-725.000.
Ishikawa, Shuichi, to NSK Ltd. Sealed thrust bearing. 5,618,116, Cl. 384-607.000.
Ishikawa, Tadashi; and Asayama, Atsushi, to Canon Kabushiki Kaisha. Multi-output power supply apparatus. 5,619,403, Cl. 363-21.000.
Ishikawa, Takatoshi: *See*—
Matsumoto, Nobuo; Terashita, Takaaki; Mogi, Fumio; Sasaki, Noboru; and Ishikawa, Takatoshi, 5,619,742, Cl. 396-569.000.
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Ishimaru, Seiji: *See*—
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Ishiwata, Hiroshi; Yokota, Tohru; Kobayashi, Mitsuaki; Katori, Tsutomu; and Ohsawa, Teruo, to Zexel Corporation. Prestroke controller for engine fuel injection pump. 5,617,830, Cl. 123-500.000.
Ishler, William E.: *See*—
Kaliszewski, Mary S.; and Ishler, William E., 5,619,096, Cl. 313-489.000.
ISIS Pharmacueticals, Inc.: *See*—
Sanghvi, Yogesh S.; and Cook, Phillip D., 5,618,704, Cl. 435-91.500.
Island Delite, Ltd.: *See*—
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Isokeit, Wolfgang: *See*—
Ricker, Erhard; Kroll, Bruno; Isokeit, Wolfgang; Scheibe, Volker; and Heim, Gunther, 5,617,981, Cl. 224-309.000.
Isomat, Inc.: *See*—
Hulse, David J.; and Heinemann, John G., 5,617,807, Cl. 114-90.000.
Isono, Soichi: *See*—
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Itazu, Kazushige: *See*—
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Kabi Pharmacia AB: *See—*
Björk, Anders; and Christensson, Erik, 5,618,817, Cl. 514-255.000.
Kabra, Bhagwati P.; and Lang, John C., to Alcon Laboratories, Inc. Thermally-gelling drug delivery vehicles containing cellulose ethers. 5,618,800, Cl. 514-57.000.
Kabushiki Kaisha Ace Denken: *See—*
Takemoto, Takatoshi; Yoneda, Yoichi; and Muramatsu, Meiji, 5,618,042, Cl. 273-143.00R.
Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo: *See—*
Nakada, Tetsuya; and Kubota, Michio, 5,618,794, Cl. 514-25.000.
Kabushiki Kaisha Inoac Corporation: *See—*
Suzuki, Hiroshi, 5,618,477, Cl. 264-46.500.
Kabushiki Kaisha Kenchiku Shiryo Kenkyusha: *See—*
Baba, Eihachiro, 5,617,694, Cl. 52-712.000.
Kabushiki Kaisha Kobe Seiko Sho: *See—*
Takamatsu, Hiroyuki; Morimoto, Tsutomu; Sumie, Shingo; and Yoshida, Naoyuki, 5,619,326, Cl. 356-357.000.
Kabushiki-Kalsha Median: *See—*
Nomura, Shoemon, 5,618,272, Cl. 604-166.000.
Kabushiki Kaisha Ouyo Keisoku Kenkyusho: *See—*
Otsu, Nobuyuki; Kurita, Takio; and Kuwashima, Shigesumi, 5,619,589, Cl. 382-160.000.
Kabushiki Kaisha Sankyo Seiki Seisakusho: *See—*
Katagiri, Takashi; and Momose, Tetsuo, 5,619,111, Cl. 318-625.000.
Kabushiki Kaisha TOPCON: *See—*
Oishi, Masahiro; and Ohtomo, Fumio, 5,619,317, Cl. 356-5.050.
Kabushiki Kaisha Toshiba: *See—*
Eguchi, Kazuhiro; Kiyotoshi, Masahiro; and Imai, Keitaro, 5,618,761, Cl. 438-785.000.
Hirai, Hoko; and Kondo, Susumu, 5,619,221, Cl. 345-58.000.
Honda, Masami; and Miura, Yosuke, 5,619,397, Cl. 361-686.000.
Ikumi, Nobuyuki, 5,619,674, Cl. 395-458.000.
Kozono, Hiroyuki, 5,619,070, Cl. 257-692.000.
Kuroiwa, Wataru; Miyazaki, Isao; Ooi, Shinichi; Odagiri, Yasushi; and Takahashi, Masahiro, 5,619,251, Cl. 348-12.000.
Maruko, Kinya, 5,619,721, Cl. 395-805.000.
Nagato, Hitoshi; Saito, Tsutomu; Hirahara, Shuzo; Okuyama, Tetuo; Takayama, Satoshi; Tamura, Sakae; Hattori, Shunsuke; and Nukada, Hideki, 5,619,234, Cl. 347-55.000.
Nakai, Masatoshi; and Kuwabara, Mitsutaka, 5,619,338, Cl. 386-70.000.
Nakamura, Shin-ichi, 5,619,197, Cl. 341-50.000.
Ogihara, Masaki, 5,619,162, Cl. 327-537.000.
Okamura, Junichi, 5,619,472, Cl. 365-230.030.
Sai, Yukio; Kaneko, Hiroyuki; and Miyane, Yuji, 5,618,108, Cl. 374-161.000.
Sakai, Kazuto, 5,619,087, Cl. 310-268.000.
Shinohara, Wataro; Takagi, Yasuo; Iino, Yutaka; Hayashi, Shinji; Ohya, Junko; Chida, Yuichi; and Murai, Masahiko, 5,619,619, Cl. 395-24.000.
Todome, Tuyoshi, 5,619,310, Cl. 399-381.000.
Tsinberg, Mikhail; and Ogawa, Shigeo, 5,619,335, Cl. 386-125.000.
Yagi, Takayuki; and Takeuchi, Yoichiro, 5,619,704, Cl. 395-735.000.
Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
Suda, Akihiko; Ukyo, Yoshio; Sobukawa, Hideo; Kandori, Toshio; and Fukui, Masayuki, 5,618,772, Cl. 502-238.000.
Kabushiki Kaisha Yakult Honsha: *See—*
Iwao, Kenji; and Mochizuki, Hiroshi, 5,618,990, Cl. 73-40.000.
Kabushikigaisha Sekogiken: *See—*
Bahn, Itsuki, 5,619,113, Cl. 318-701.000.
Kaczorowski, Paul. Marking material-spraying anti-theft system. 5,617,799, Cl. 109-29.000.
Kadomaru, Kazuo; and Mizuno, Yoichi, to Sumitomo Rubber Industries, Ltd. Rubber composition for treads of studless tires. 5,618,869, Cl. 524-261.000.
Kaessmair, Georg: *See—*
Rau, Gunnar; Heller, Albert; Scholz, Michael; and Kaessmair, Georg, 5,617,792, Cl. 101-477.000.
Kaga, Toru: *See—*
Meguro, Satoshi; Uchibori, Kiyofumi; Suzuki, Norio; Motoyoshi, Makoto; Koike, Atsuyoshi; Yamanaka, Toshiaki; Sakai, Yoshio; Kaga, Toru; Hashimoto, Naotaka; Hashimoto, Takashi; Honjou, Shigeru; and Minato, Osamu, 5,619,055, Cl. 257-369.000.
Kagan, Michael; and Solomon, Ian. Interactive multiple player game system and method of playing a game between at least two players. 5,618,045, Cl. 463-40.000.
Kahn, Jon B. Multi-color liquid display system. 5,617,657, Cl. 40-406.000.
Kahn, Kevin; and Eckhardt, David, to Intel Corporation. Static and dynamic scheduling in an asynchronous transfer mode communication network. 5,619,502, Cl. 370-397.000.
Kahn, Michael, to Molecumetics, Ltd. Conformationally restricted mimetics of beta turns and beta bulges and peptides containing the same. 5,618,914, Cl. 530-317.000.
Kahr, Rudolf: *See—*
Eder, Günter; and Kahr, Rudolf, 5,618,730, Cl. 435-289.100.
Kai, Tadao, to Nikon Corporation. Optical apparatus for correcting image deviation. 5,619,735, Cl. 396-55.000.
Kai, Tsukuru: *See—*
Shoji, Hisashi; Yano, Hidetoshi; Kai, Tsukuru; Ishii, Yoshiko; Yokokawa, Nobuto; Suzuki, Masako; and Iwasaki, Yukiko, 5,619,316, Cl. 399-359.000.
Kajita, Yuji, to Nippondenso Co., Ltd. Charging and discharging integration circuit for alternately charging and discharging a capacitor. 5,619,115, Cl. 320-1.000.
Kajitani, Koji: *See—*
Fukushima, Hirotaka; Kajitani, Koji; Tsuruta, Hiroyoshi; and Fukamachi, Masanobu, 5,617,940, Cl. 192-70.170.
Kaken Pharmaceutical Co., Ltd.: *See—*
Kimura, Ken; Taniguchi, Yushi; Satoh, Kiichi; Saifuku, Kouji; Kihira, Ken; Ido, Kenichi; Yoshida, Yukio; and Takimoto, Takuya, 5,618,564, Cl. 424-653.000.
Kakii, Toshiaki: *See—*
Ueda, Tomohiko; Matsuura, Ichiro; Honjo, Makoto; Kakii, Toshiaki; Yamanishi, Toru; and Nagasawa, Shinji, 5,619,605, Cl. 385-80.000.
Kalbe, Gerald: *See—*
von Behr, Diedrich; and Kalbe, Gerald, 5,618,171, Cl. 418-152.000.
Kalbfleisch, Charles A.: *See—*
Doherty, John A.; Kalbfleisch, Charles A.; Keathley, Donald P.; and Collins, William J., 5,619,193, Cl. 340-905.000.
Kaleta, James E.; Tanner, Paul R.; Deckner, George E.; Linares, Carlos G.; and Fishter, Steve G., to Procter & Gamble Company, The. Emulsion compositions. 5,618,522, Cl. 424-60.000.
Kälin, Albin, to Rohner Textil AG. Textile substrate for seat covers. 5,617,904, Cl. 139-420.00R.
Kaliszewski, Mary S.; and Ishler, William E., to General Electric Company. Precoated fluorescent lamp for defect elimination. 5,619,096, Cl. 313-489.000.
Kalivas, Zissis L.: *See—*
Kammiller, Neil A.; and Kalivas, Zissis L., 5,619,405, Cl. 363-80.000.
Kallenbach, Lyle R.; Senn, Dwayne R.; and Johnson, Marvin M., to Phillips Petroleum Company. Catalytic cracking process utilizing a catalyst comprising aluminum borate and zirconium borate. 5,618,407, Cl. 208-114.000.
Kamada, Cyrus M.: *See—*
Sweat, Mark E.; Van Valkenberg, Philip G.; Melville, Cheri D.; McDonnell, Philip N.; Kamada, Cyrus M.; Wirt, James R.; and Chang, James C., 5,619,636, Cl. 395-806.000.
Kambouris, Christos A.: *See—*
Prakash, Rajiva; Davis, Marc R.; and Kambouris, Christos A., 5,619,435, Cl. 364-578.000.
Kami, Masayuki: *See—*
Katada, Hisashi; Arai, Toshiaki; Yoshizawa, Yasufumi; Ohfusa, Yoshitaka; and Kami, Masayuki, 5,619,691, Cl. 395-620.000.
Kaminski, Michele A.: *See—*
King, Chi-Hsin R.; and Kaminski, Michele A., 5,618,940, Cl. 546-240.000.
Kaminski, Thomas J.: *See—*
DeGregoria, Anthony J.; and Kaminski, Thomas J., 5,617,913, Cl. 165-104.110.
Kamiya, Hiroshi, to NEC Corporation. High-speed bus apparatus with cooling means. 5,618,459, Cl. 219-497.000.
Kamiya, Manabu, to Seiko Epson Corporation. Multimeter having an erroneous input prevention mechanism. 5,619,129, Cl. 324-115.000.
Kamiya, Yoshihiro: *See—*

Suzuki, Rieko; Saida, Kiyoshi; Itazu, Kazushige; Fujine, Eiji; Kamiya, Yoshihiro; Uchida, Yoshitaka; Murakami, Takako; Tsuyuki, Teruhisa; Kawazoe, Kazunori; Shimazaki, Takeshi; and Nishiwaki, Yukimi, 5,618,744, Cl. 438-599.000.
Kamiyama, Satoshi: *See—*
Sasai, Yoichi; Uemura, Nobuyuki; Kamiyama, Satoshi; Kubo, Minoru; and Nishikawa, Takashi, 5,619,520, Cl. 372-46.000.
Kamiyama, Shuuichi: *See—*
Hasumi, Kazuhisa; Nagano, Kentaro; Kamiyama, Shuuichi; Yanagida, Hiroaki; and Okada, Osamu, 5,618,496, Cl. 422-90.000.
Kammiller, Neil A.; and Kalivas, Zissis L., to Reltec Corporation. Variable bandwith control for power factor correction. 5,619,405, Cl. 363-80.000.
Kanack, Bradley M.: *See—*
Goldsmith, Charles; Kanack, Bradley M.; Lin, Tsen-Hwang; Norvell, Bill R.; Pang, Lily Y.; Powers, Billy, Jr.; Rhoads, Charles; and Seymour, David, 5,619,061, Cl. 257-528.000.
Kanamori, Katsuhiro: *See—*
Taniguchi, Kouji; and Kanamori, Katsuhiro, 5,619,347, Cl. 358-516.000.
Kanaoka, Masaru: *See—*
Matubara, Setuo; and Kanaoka, Masaru, 5,618,452, Cl. 219-121.630.
Kanatzidis, Mercouri G.; Liao, Ju H.; and Marking, Gregory A., to Board of Trustees operating Michigan State University. Alkali metal quaternary chalcogenides and process for the preparation thereof. 5,618,471, Cl. 252-582.000.
Kanazawa, Naoki: *See—*
Yoneda, Masato; Sasama, Hiroshi; and Kanazawa, Naoki, 5,619,446, Cl. 365-49.000.
Kanda, Masahiro: *See—*
Okazaki, Kiyotaka; and Kanda, Masahiro, 5,618,880, Cl. 524-731.000.
Kandori, Toshio: *See—*
Suda, Akihiko; Ukyo, Yoshio; Sobukawa, Hideo; Kandori, Toshio; and Fukui, Masayuki, 5,618,772, Cl. 502-238.000.
Kanebo Limited: *See—*
Hamamoto, Hiroshi; Sugiyama, Yoshinori; Nakagawa, Noriaki; Hashida, Eiji; Tsuchimoto, Suguru; Nakanishi, Noriyuki; Matsunaga, Yuji; and Okada, Yoshimi, 5,618,699, Cl. 435-69.700.
Kaneko, Hiroyuki: *See—*
Ohuchi, Noriaki; Morimoto, Akio; Yamasaki, Hiroshi; Hosokawa, Takahiro; and Kaneko, Hiroyuki, 5,619,641, Cl. 395-181.000.
Sai, Yukio; Kaneko, Hiroyuki; and Miyane, Yuji, 5,618,108, Cl. 374-161.000.
Kaneko, Yutaka; and Satoyoshi, Junichi, to Tetra Laval Holdings & Finance, S.A. Film splicer. 5,618,377, Cl. 156-504.000.
Kanesawa, Yoshio: *See—*
Kusumoto, Yasuhiro; Uehara, Yasuhiro; Kanesawa, Yoshio; Inoue, Tohru; Kato, Hiroshi; and Kikukawa, Hiroyasu, 5,619,315, Cl. 399-324.000.
Kang, Yong-Tae: *See—*
Christensen, Richard N.; Cook, F. Bert; and Kang, Yong-Tae, 5,617,737, Cl. 62-487.000.
Kano, Osamu; Yamakoshi, Yasuhiro; Anan, Junichi; and Yasui, Koichi, to Japan Energy Corporation. Silicide targets for sputtering. 5,618,397, Cl. 204-298.130.
Kanosue, Masakazu: *See—*
Uenoyama, Hirofumi; Ao, Kenichi; Kanosue, Masakazu; Suzuki, Yasutoshi; and Takeuchi, Yukihiro, 5,619,050, Cl. 257-254.000.
Kansai Electric Power Co., Inc., The: *See—*
Suzuki, Hitomi; Hayakawa, Atsushi; Mimura, Tomio; Shimojo, Shigeru; Shimayoshi, Hidenobu; Iijima, Masaki; Mitsuoka, Shigeaki; and Iwaki, Toru, 5,618,506, Cl. 423-228.000.
Kanzaki Kokyukoki Mfg. Co., Ltd.: *See—*
Nemoto, Shusuke, 5,617,936, Cl. 192-4.00A.
Kao Corporation: *See—*
Iwasaki, Tetsuji, 5,618,802, Cl. 514-78.000.
Oshima, Kentaro; Numata, Toshiharu; Nishimura, Toru; Kokubo, Sachiko; and Tsuto, Keiichi, 5,618,580, Cl. 427-212.000.
Sakaguchi, Mikio; Sakamoto, Ichiro; Akagi, Ryuichi; Yamaguchi, Shu; and Tsumadori, Masaki, 5,618,783, Cl. 510-507.000.
Sugimoto, Noboru; Suzuki, Masatoshi; Futsuhara, Koichi; Sakai, Masayoshi; and Mihira, Ritsuo, 5,619,110, Cl. 318-450.000.
Kao Infosystems Company: *See—*
Getzoyan, Jacques S.; Kennedy, John G.; and Joslin, Stephen P., 5,619,391, Cl. 360-133.000.
Kapeckas, Mark J.: *See—*
Florio, Steven M.; Burress, Jeffrey P.; Colangelo, Carl J.; Couble, Edward C.; and Kapeckas, Mark J., 5,618,400, Cl. 205-98.000.
Kaplan, Donald S.: *See—*
Roby, Mark S.; Kaplan, Donald S.; Liu, Cheng-Kung; and Bennett, Steven L., 5,618,313, Cl. 606-230.000.
Kaplan, Haim: *See—*
Yolles, Joel; Aloni, Meir; Eran, Yair; and Kaplan, Haim, 5,619,588, Cl. 382-149.000.
Karakama, Toshiyuki: *See—*
Yashiro, Masahiko; Karakama, Toshiyuki; and Numagami, Atsushi, 5,619,309, Cl. 399-111.000.
Karaoglanov, Sergei A.: *See—*
Bushuev, Jury G.; Polovnikov, Stanislav P.; Fekhretdinov, Foat A.-K.; Karaoglanov, Sergei A.; and Ivanenko, Zhanna S., 5,617,882, Cl. 131-331.000.
Karasawa, Shinji: *See—*
Naganawa, Masahito; and Karasawa, Shinji, 5,618,098, Cl. 362-61.000.
Kardorff, Uwe: *See—*
Misslitz, Ulf; Meyer, Norbert; Kast, Juergen; Ladner, Wolfgang; Walter, Helmut; Westphalen, Karl-Otto; Kardorff, Uwe; and Gerber, Matthias, 5,618,775, Cl. 504-235.000.
Karges, Hermann E.: *See—*
Zettlmeissl, Gerd; Karges, Hermann E.; and Becker, Achim, 5,618,713, Cl. 435-226.000.
Karita, Seiichiro: *See—*
Higuma, Masahiko; Ikeda, Masami; Asai, Naohito; Abe, Tsutomu; Kashino, Toshio; and Karita, Seiichiro, 5,619,238, Cl. 347-86.000.
Karl Eugen Fischer Gmbh Maschinenfabrik: *See—*
Baer, Manfred, 5,617,985, Cl. 226-4.000.
Karlsson, Bror M.; and Wald, Roland J. E., to Telefonaktiebolaget LM Ericsson. Circuit arrangement. 5,619,401, Cl. 363-17.000.
Kamik, Milind; and Batz, Joseph, to Intel Corporation. System and method for cascading multiple programmable interrupt controllers utilizing separate bus for broadcasting interrupt request data packet in a multi-processor system. 5,619,705, Cl. 395-739.000.
Karppanen, Arto; Talarmo, Reino; and Tuohino, Markku, to Nokia Telecommunications OY. Arrangement and method for location registration. 5,619,552, Cl. 379-60.000.
Kasahara, Tomokazu, to NEC Corporation. Method of fabricating a semiconductor device having an Au electrode. 5,618,754, Cl. 438-653.000.
Kasama, Nobuyuki: *See—*
Iwaki, Tadao; Kasama, Nobuyuki; Yamamoto, Shuhei; Takesue, Toshiharu; and Takemura, Yasuhiro, 5,619,596, Cl. 382-278.000.
Kasdan, Harvey L., to International Remote Imaging Systems, Inc. Method and apparatus for automatically selecting the best focal position from a plurality of focal positions for a focusing apparatus. 5,619,032, Cl. 250-201.300.
Kashima, Keiji; Fukamachi, Mitsuru; and Yoshida, Naoki, to Tosoh Corporation. Backlighting device. 5,618,095, Cl. 362-31.000.
Kashino, Toshio: *See—*
Higuma, Masahiko; Ikeda, Masami; Asai, Naohito; Abe, Tsutomu; Kashino, Toshio; and Karita, Seiichiro, 5,619,238, Cl. 347-86.000.
Kasowski, Robert V.: *See—*
Martens, Marvin M.; and Kasowski, Robert V., 5,618,865, Cl. 524-100.000.
Kast, Juergen: *See—*
Misslitz, Ulf; Meyer, Norbert; Kast, Juergen; Ladner, Wolfgang; Walter, Helmut; Westphalen, Karl-Otto; Kardorff, Uwe; and Gerber, Matthias, 5,618,775, Cl. 504-235.000.
Kasuga, Masao: *See—*
Suzuki, Kenji; Suzuki, Makoto; Kasuga, Masao; Suzuki, Minako; and Iino, Akihiro, 5,619,089, Cl. 310-323.000.
Katada, Hisashi; Arai, Toshiaki; Yoshizawa, Yasufumi; Ohfusa, Yoshitaka; and Kami, Masayuki, to Hitachi, Ltd.; and Hitachi Software Engineering Co., Ltd. File sharing method and system for multiprocessor system. 5,619,691, Cl. 395-620.000.
Katagiri, Takashi; and Momose, Tetsuo, to Kabushiki Kaisha Sankyo Seiki Seisakusho. Motor control system for controlling the operations of a plurality of servo motors. 5,619,111, Cl. 318-625.000.
Katagiri, Yoshimichi: *See—*
Horikoshi, Yuzo; Sawatari, Norio; Ogino, Takeshi; Naito, Hiroaki; Koshi, Makoto; Kido, Kazuhiko; Yamamoto, Takashi; Sakurai, Eiji; Katagiri, Yoshimichi; Maruyama, Masatoshi; Nitta, Hidenori; and Matsuoka, Sonoo, 5,618,648, Cl. 430-109.000.
Katahira, Masayuki, to NSK. Ltd. Hardened guide rail for linear guide apparatus. 5,618,114, Cl. 384-45.000.
Kataoka, Fumiaki: *See—*
Toki, Hitoshi; Itoh, Shigeo; and Kataoka, Fumiaki, 5,619,098, Cl. 313-496.000.
Katayama, Katsuhiro: *See—*
Kojima, Ryo; Sato, Yoshiro; Takekawa, Akiko; and Katayama, Katsuhiro, 5,618,686, Cl. 435-26.000.
Kato, Hiroshi: *See—*
Kusumoto, Yasuhiro; Uehara, Yasuhiro; Kanesawa, Yoshio; Inoue, Tohru; Kato, Hiroshi; and Kikukawa, Hiroyasu, 5,619,315, Cl. 399-324.000.
Kato, Hitoshi: *See—*
Okada, Kaoru; Nakajima, Keihachiro; and Kato, Hitoshi, 5,618,510, Cl. 423-346.000.
Kato, Masashi; and Kuse, Satoru, to Konica Corporation. Container of solid processing agent used for silver halide photosensitive material. 5,617,954, Cl. 206-539.000.
Kato, Mikiko; and Iketaki, Yoshinori, to Olympus Optical Co., Ltd. Reflection type imaging optical system. 5,619,382, Cl. 359-858.000.
Kato, Yoshiaki: *See—*
Segawa, Mizuki; Kato, Yoshiaki; Nakaoka, Hiroaki; Nakabayashi, Takashi; Hori, Atsushi; Masuda, Hiroshi; Matsuo, Ichiro; Shinohara, Akihira; Uehara, Takashi; and Yasuhira, Mitsuo, 5,618,748, Cl. 438-232.000.
Kato, Yoshinobu; Oonishi, Mitsuharu; and Kobayashi, Hideaki, to Sumitomo Metal Mining Company, Limited. Electrolysis electrode plate flatness measuring apparatus. 5,617,643, Cl. 33-533.000.
Katoh, Kikuji: *See—*
Tanabe, Takaya; Yamamoto, Manabu; Katoh, Kikuji; and Dobashi, Hisanobu, 5,619,487, Cl. 369-100.000.
Katori, Tsutomu: *See—*

Ishiwata, Hiroshi; Yokota, Tohru; Kobayashi, Mitsuaki; Katori, Tsutomu; and Ohsawa, Teruo, 5,617,830, Cl. 123-500.000.

Katsuta, Hiroshi, to NEC Corporation. Memory wait cycle control system for microcomputer. 5,619,669, Cl. 395-405.000.

Katsuyama, Tsukuru: *See—*

Yoshida, Ichiro; Katsuyama, Tsukuru; and Hashimoto, Jun-ichi, 5,617,957, Cl. 209-571.000.

Katz, Itzhak: *See—*

Aloni, Meir; Alon, Amir; Eran, Yair; Katz, Itzhak; Katzir, Yigal; and Rosenfeld, Gideon, 5,619,429, Cl. 364-552.000.

Katzir, Yigal: *See—*

Aloni, Meir; Alon, Amir; Eran, Yair; Katz, Itzhak; Katzir, Yigal; and Rosenfeld, Gideon, 5,619,429, Cl. 364-552.000.

Kauffman, Kenneth A.: *See—*

Senft, Frank; and McCorkel, Joel D., 5,617,754, Cl. 72-165.000.

Kautz, Henry A.: *See—*

Canale, Leonard M.; Kautz, Henry A.; Milewski, Allen E.; and Selman, Bart, 5,619,648, Cl. 395-200.010.

Kawabata, Itaru: *See—*

Hatano, Shintarou; Kawahito, Hiroshi; Ichikawa, Yoshiki; Mizoguti, Fumito; Tsuji, Masahiro; Hiroyasu, Takao; Kawamoto, Hiroshi; Fujita, Syouichi; Nishimura, Hideyuki; Kawabata, Itaru; and Kazaki, Yuichi, 5,619,312, Cl. 399-61.000.

Kawabata, Takashi, to Canon Kabushiki Kaisha. Diopter correcting apparatus. 5,619,739, Cl. 396-382.000.

Kawabata, Tomoyuki; Yuasa, Teruo; and Iimuro, Shigeru, to Mitsui Toatsu Chemicals, Inc. Phenol aralkyl resins, preparation process thereof and epoxy resin compositions. 5,618,984, Cl. 569-720.000.

Kawabe, Norio; Uchiro, Hiromi; Nakadate, Teruo; Tanahashi, Masahiko; and Funaba, Yuriko, to Toray Industries, Inc. Methanediphosphonic acid derivative, process for production thereof and use for pharmaceuticals. 5,618,804, Cl. 514-103.000.

Kawahara, Megumi: *See—*

Shoshi, Masayuki; Ichikawa, Yumi; Teramura, Kaoru; Koyano, Masayuki; and Kawahara, Megumi, 5,618,935, Cl. 544-344.000.

Kawahara, Yukito: *See—*

Machida, Satoshi; Kawahara, Yukito; Mukainakano, Hiroshi; and Yokomichi, Masahiro, 5,619,345, Cl. 358-482.000.

Kawahito, Hiroshi: *See—*

Hatano, Shintarou; Kawahito, Hiroshi; Ichikawa, Yoshiki; Mizoguti, Fumito; Tsuji, Masahiro; Hiroyasu, Takao; Kawamoto, Hiroshi; Fujita, Syouichi; Nishimura, Hideyuki; Kawabata, Itaru; and Kazaki, Yuichi, 5,619,312, Cl. 399-61.000.

Kawai, Chihiro: *See—*

Takeuchi, Hisao; Nakahata, Seiji; Matsuura, Takahiro; and Kawai, Chihiro, 5,618,765, Cl. 501-80.000.

Kawai, Sumio: *See—*

Matsuzaki, Minoru; Sato, Yuta; Kawai, Sumio; Takizawa, Hiroyuki; Hamada, Masaharu; and Funakubo, Tomoki, 5,619,292, Cl. 396-32.000.

Kawai, Toshiaki, to Mitsubishi Denki Kabushiki Kaisha. Tape loading device. 5,619,388, Cl. 360-85.000.

Kawakami, Hideaki: *See—*

Inoue, Hiroyuki; Sugama, Sadayuki; Hiramatsu, Soichi; Yamaguchi, Hideki; Ujita, Toshihiko; Yamanaka, Akihiro; Nojima, Takashi; Kotaki, Yasuo; Tsukuda, Keiichiro; Nakamura, Hitoshi; Kida, Akira; Kawakami, Hideaki; and Iwasaki, Takeshi, 5,619,237, Cl. 347-86.000.

Kawakami, Kouichi; Hamaguchi, Toshihide; Kuge, Satoru; and Maida, Yoshiaki, to Sanyo Electric Co., Ltd. Video tape recorder carrying out field extraction recording and/or reproduction of a video signal. 5,619,385, Cl. 360-64.000.

Kawakami, Masayuki: *See—*

Shishido, Tadao; Kawakami, Masayuki; Ikegawa, Akihiko; Ukai, Toshinao; Koya, Keizo; and Chen, Lan B., 5,618,831, Cl. 514-366.000.

Kawakami, Takeshi: *See—*

Nagasawa, Mitsuru; Kuwano, Kazuyuki; Kawakami, Takeshi; Sugiura, Mamoru; Hibino, Hiroshi; Kojima, Shiro; and Azuma, Kishiro, 5,618,898, Cl. 526-245.000.

Kawakami, Tatuya, to Shimano, Inc. Shifting apparatus for a bicycle. 5,617,761, Cl. 74-475.000.

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Keen, Ronald T.: *See—*

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Schmidt, Christopher J.; Kehne, John H.; and Padich, Robert A., 5,618,824, Cl. 514-317.000.

Keim, Jan-Erik: *See—*

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Kim, Ji-Ho, to Hyundai Motor Company, Ltd. Seat belt buckle device for a vehicle. 5,618,059, Cl. 280-805.000.

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Kobayashi, Makoto: *See—*
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Main, George W., 5,618,064, Cl. 283-80.000.
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Kennedy, Ann R.; Koch, Cameron J.; Lord, Edith M.; and Wan, Xingsheng, 5,618,679, Cl. 435-7.210.
Koch, Gene C.; Winker, Bruce K.; and Gunning, William J., III, to Rockwell International Corporation. LCD splay/twist compensator having varying tilt and /or azimuthal angles for improved gray scale performance. 5,619,352, Cl. 349-89.000.
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Roop, John H.; Ebright, Alan R.; Kochy, Jeffrey J.; Warden, David P.; Sokolik, Konstantine; and Alegiani, Giambattista A., 5,619,274, Cl. 348-461.000.
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Kinoshita, Naoyoshi; Kinoshita, Takeru; and Kodama, Hideaki, 5,619,308, Cl. 399-48.000.
Kodama, Isao: *See—*
Sagesaka, Yasuhiro; Kawamura, Yoshifumi; Tatezaki, Junichi; Wada, Hideo; Kodama, Isao; and Ogane, Atsushi, 5,619,361, Cl. 359-172.000.
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Koelle, Peter: *See—*
Kerth, Juergen; Koelle, Peter; Zolk, Ralf; and Schwager, Harald, 5,618,895, Cl. 526-128.000.
Koenck, Steven E., to Norand Corporation. Battery pack having memory. 5,619,117, Cl. 320-21.000.
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Schaede, Johannes G., 5,618,584, Cl. 427-336.000.
Koga, Hiroyasu: *See—*
Orita, Yasutaka; Koga, Hiroyasu; and Kose, Sumitaka, 5,618,545, Cl. 424-401.000.
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Yoshimi, Toru; Imai, Yasuo; and Kogi, Toshinobu, 5,618,486, Cl. 264-321.000.
Koglin, Bernd, to Bayer Aktiengesellschaft. Method for separating a dispersion of particles in liquids into a particle-enriched and a particle-depleted partial stream. 5,618,444, Cl. 210-767.000.
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Kearney, Mark B.; and Koglin, Dennis M., 5,619,122, Cl. 323-312.000.
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Koike, Atsuyoshi: *See—*
Meguro, Satoshi; Uchibori, Kiyofumi; Suzuki, Norio; Motoyoshi, Makoto; Koike, Atsuyoshi; Yamanaka, Toshiaki; Sakai, Yoshio; Kaga, Toru; Hashimoto, Naotaka; Hashimoto, Takashi; Honjou, Shigeru; and Minato, Osamu, 5,619,055, Cl. 257-369.000.
Koito Manufacturing Co., Ltd.: *See—*
Naganawa, Masahito; and Karasawa, Shinji, 5,618,098, Cl. 362-61.000.
Kojima, Akikazu: *See—*
Yasuda, Masanori; Onimaru, Sadahisa; Inoue, Takashi; Okada, Hiroshi; Kojima, Akikazu; and Takaki, Niro, 5,617,995, Cl. 237-12.30C.
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Kojima, Yoshikazu: *See—*
Takahashi, Kunihiro; Kojima, Yoshikazu; Takasu, Hiroaki; Matsuyama, Nobuyoshi; Niwa, Hitoshi; Yoshino, Tomoyuki; and Yamazaki, Tsuneo, 5,618,739, Cl. 438-158.000.
Kokkelenberg, Dirk: *See—*
Vermeersch, Joan; Hauquier, Guido; and Kokkelenberg, Dirk, 5,618,649, Cl. 430-168.000.
Kokubo, Sachiko: *See—*
Oshima, Kentaro; Numata, Toshiharu; Nishimura, Toru; Kokubo, Sachiko; and Tsuto, Keiichi, 5,618,580, Cl. 427-212.000.
Kollarits, Richard V.: *See—*
Haskell, Barin G.; Kollarits, Richard V.; and Puri, Atul, 5,619,256, Cl. 348-43.000.
Kollitz, William R.: *See—*
Clare, Timothy P.; Kollitz, William R.; and Mikula, Matthew J., 5,618,347, Cl. 118-314.000.
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Komatsu, Hiroshi, to Sony Corporation. Complex film overlying a substrate with defined work function. 5,619,057, Cl. 257-382.000.
Komiya, Ryohei: *See—*
Ueda, Masashi; and Komiya, Ryohei, 5,619,349, Cl. 358-521.000.
Komoda, Michio, to Mitsubishi Denki Kabushiki Kaisha. Multiplier circuit with rounding-off function. 5,619,440, Cl. 364-754.000.
Komura, Norio; Yoshigasaki, Tsuyoshi; and Takahashi, Hiroshi, to Honda Giken Kogyo Kabushiki Kaisha. Drive device for power working vehicle. 5,617,764, Cl. 74-606.00R.
Komurasaki, Keiichi; and Kurusu, Kyoko, to Mitsubishi Denki Kabushiki Kaisha. Vehicle alternating-current generator control device and vehicle alternating-current generator. 5,619,108, Cl. 318-140.000.
Komuro, Ryoichi: *See—*
Ohsuga, Minoru; Yamaguchi, Jun'ichi; Komuro, Ryoichi; and Momono, Masakichi, 5,617,824, Cl. 123-308.000.
Konchan, Jeffrey L.; Kowalczyk, David; Reelhorn, John F.; and Saxton, Dennis F., to General Motors Corporation. Hood and decklid latch assemblies. 5,618,069, Cl. 292-216.000.
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Kondo, Masao; Hozo, Senichi; and Fujii, Michihiro, to Best Industries, Inc. Method of cleaning floating filter medium for biological filtering apparatus. 5,618,431, Cl. 210-618.000.
Kondo, Shinichi; Shibahara, Seiji; Usui, Takayuki; Kudo, Toshiaki; Gomi, Shuichi; Tamura, Atsushi; Ikeda, Yoko; Ikeda, Daishiro; and Takeuchi, Tomio, to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai. Dibekacin derivatives and arbekacin derivatives active against resistant bacteria, and the production thereof. 5,618,795, Cl. 514-41.000.
Kondo, Susumu: *See—*
Hirai, Hoko; and Kondo, Susumu, 5,619,221, Cl. 345-58.000.
Kondoh, Kazuo: *See—*
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Konica Corporation: *See—*
Haneda, Satoshi; Fukuchi, Masakazu; and Miwa, Tadashi, 5,619,242, Cl. 347-131.000.
Kato, Masashi; and Kuse, Satoru, 5,617,954, Cl. 206-539.000.
Kobayashi, Hiroaki, 5,619,745, Cl. 396-626.000.
Sampei, Takeshi, 5,618,661, Cl. 430-398.000.
Konno, Kouichi; and Chiyokura, Hiroaki, to Ricoh Company, Ltd. Method for interpolating smooth free-form surfaces into curve mesh including composite curves. 5,619,625, Cl. 395-119.000.
Konstant, Anthony N.; and Pater, John F., to Konstant Products, Inc. Load transfer and return system. 5,617,961, Cl. 211-151.000.
Konstant Products, Inc.: *See—*
Konstant, Anthony N.; and Pater, John F., 5,617,961, Cl. 211-151.000.
Konuma, Toshimitsu; Sugawara, Akira; and Tsuji, Takahiro, to Semiconductor Energy Laboratory Co., Ltd. Thin film transistor. 5,619,045, Cl. 257-72.000.
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Shimizu, Michio; Moriya, Kouji; Nishi, Takeshi; and Konuma, Toshimitsu, 5,619,354, Cl. 349-89.000.
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Konya, Shogo; Okamoto, Akira; and Yoshizaki, Kouji, to Nippon Steel Corporation; and Toyota Jidosha Kabushiki Kaisha. Method for brazing heat resisting alloy having on its surface insulating oxide film and preheat type metallic carrier for purification of exhaust gas and process for producing the same. 5,618,498, Cl. 422-174.000.
Koo, Ronald B., to Maxim Integrated Products, Inc. Bandgap voltage reference and method for providing same. 5,619,163, Cl. 327-539.000.
Koopman, Philip J., Jr.; Finn, Alan M.; and LaBarre, Robert E., to United Technologies Automotive, Inc. Pseudorandom composition-based cryptographic authentication process. 5,619,575, Cl. 380-28.000.
Koppel, Louis N., to Oryx Instruments and Materials Corp. X-ray thickness gauge. 5,619,548, Cl. 378-70.000.
Kordus, Steven R.: *See—*
Dinkjian, Robert M.; Heller, Lisa C.; Kordus, Steven R.; Lauricella, Kenneth A.; Seigendall, Thomas W.; Skaggs, Robert A.; and Xu, Nelson S., 5,619,715, Cl. 395-800.000.
Korea Institute of Machinery & Metals: *See—*
Kim, Chang-Joo, 5,618,456, Cl. 219-137.610.
Korteam International, Inc.: *See—*
Ho, Janet C., 5,619,708, Cl. 395-767.000.
Korus, Alan L.: *See—*
Reele, Samuel; and Korus, Alan L., 5,619,257, Cl. 348-64.000.
Korzeniowski, George: *See—*
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Kosaka, Toru: *See—*
Imafuji, Kazuharu; Sato, Shigemasa; Kosaka, Toru; and Ogawa, Hidehiro, 5,619,294, Cl. 396-51.000.
Kosarew, W. Tony, to NCR Corporation. Labeling system and method for an electronic price label. 5,619,416, Cl. 364-478.130.
Kose, Sumitaka: *See—*
Orita, Yasutaka; Koga, Hiroyasu; and Kose, Sumitaka, 5,618,545, Cl. 424-401.000.
Koshi, Makoto: *See—*
Horikoshi, Yuzo; Sawatari, Norio; Ogino, Takeshi; Naito, Hiroaki; Koshi, Makoto; Kido, Kazuhiko; Yamamoto, Takashi; Sakurai, Eiji; Katagiri, Yoshimichi; Maruyama, Masatoshi; Nitta, Hidenori; and Matsuoka, Sonoo, 5,618,648, Cl. 430-109.000.
Kossmehl, Peter W.; Mentzel, Edgar; Seidel, Henning; Wildenau, Wolfgang; and Noe, Hans, to H. F. & PH. F. Reemtsma GmbH Co. Rod formed smoking product. 5,617,881, Cl. 131-328.000.

Koster, Robert A.: *See—*
Drumright, Ray E.; Terbrueggen, Robert H.; Priddy, Duane B.; and Koster, Robert A., 5,618,900, Cl. 526-329.700.
Kosugi, Naoki: *See—*
Torikoshi, Yasuo; and Kosugi, Naoki, 5,619,184, Cl. 340-506.000.
Kotaki, Yasuo; Takenouchi, Masanori; Saikawa, Hideo; Nozawa, Minoru; Sato, Osamu; Ujita, Toshihiko; Miyagawa, Masashi; Yamamoto, Hisashi; Hamasaki, Yuji; and Hinami, Jun, to Canon Kabushiki Kaisha. Replaceable ink tank. 5,619,239, Cl. 347-86.000.
Kotaki, Yasuo: *See—*
Inoue, Hiroyuki; Sugama, Sadayuki; Hiramatsu, Soichi; Yamaguchi, Hideki; Ujita, Toshihiko; Yamanaka, Akihiro; Nojima, Takashi; Kotaki, Yasuo; Tsukuda, Keiichiro; Nakamura, Hitoshi; Kida, Akira; Kawakami, Hideaki; and Iwasaki, Takeshi, 5,619,237, Cl. 347-86.000.
Kotek, Richard; and Matthies, Hans-Georg, to BASF Corporation. Fiber-forming modified polyamide blends. 5,618,885, Cl. 525-179.000.
Kotsonis, Spryo J.: *See—*
Eddison, Alan M.; and Kotsonis, Spryo J., 5,617,926, Cl. 175-61.000.
Koumatsu, Seiji; and Abe, Kimihiro, to Yazaki Corporation. Connector with rear holder. 5,618,203, Cl. 439-546.000.
Kovac, Tim: *See—*
Thompson, Todd A.; and Kovac, Tim, 5,618,291, Cl. 606-142.000.
Kovac, Zlata: *See—*
Distefano, Thomas H.; Kovac, Zlata; and Grange, John, 5,619,017, Cl. 174-260.000.
Koval, Michael J.: *See—*
Noe, Bradley D.; Lawton, William W.; Koval, Michael J.; and Killian, David W., 5,619,733, Cl. 395-881.000.
Kovnat, Larry A.; Rogerson, Diane S.; and Garavuso, Gerald M., to Xerox Corporation. Network printing system for programming a print job by selecting a job ticket identifier associated with remotely stored predefined document processing control instructions. 5,619,649, Cl. 395-200.010.
Kowa Co., Ltd.: *See—*
Inagi, Toshio; and Suehiro, Saibi, 5,618,799, Cl. 514-53.000.
Kowalczyk, David: *See—*
Konchan, Jeffrey L.; Kowalczyk, David; Reelhorn, John F.; and Saxton, Dennis F., 5,618,069, Cl. 292-216.000.
Koya, Keizo: *See—*
Shishido, Tadao; Kawakami, Masayuki; Ikegawa, Akihiko; Ukai, Toshinao; Koya, Keizo; and Chen, Lan B., 5,618,831, Cl. 514-366.000.
Koyama, Kazuo; Usuda, Matsuo; Takahashi, Manabu; Sakuma, Yasuharu; Hiwatashi, Shunji; and Kawasaki, Kaoru, to Nippon Steel Corporation. High-strength steel sheet suitable for deep drawing and process for producing the same. 5,618,355, Cl. 148-320.000.
Koyama, Toshiki: *See—*
Kimura, Mutsumi; Shirai, Hirofusa; Koyama, Toshiki; Hanabusa, Kenji; and Kubota, Yuichi, 5,618,930, Cl. 540-143.000.
Koyano, Masayuki: *See—*
Shoshi, Masayuki; Ichikawa, Yumi; Teramura, Kaoru; Koyano, Masayuki; and Kawahara, Megumi, 5,618,935, Cl. 544-344.000.
Koyuhara, Norikazu: *See—*
Nakagawa, Emi; Ueda, Hitoshi; Uchikawa, Akio; and Koyuhara, Norikazu, 5,618,464, Cl. 252-62.600.
Kozo, Nakamura; Seiichi, Mitsui; and Ichiro, Fukuda, to Sharp Kabushiki Kaisha. Reflective liquid crystal display device having a compensator with a retardation value between 0.15 μm and 0.38 μm and a single polarizer. 5,619,356, Cl. 349-99.000.
Kozono, Hiroyuki, to Kabushiki Kaisha Toshiba. Semiconductor device which radiates heat and applies substrate potential from rear surface of semiconductor chip. 5,619,070, Cl. 257-692.000.
Krach, Mary S.: *See—*
D'Errico, John J.; and Krach, Mary S., 5,618,863, Cl. 524-91.000.
Krajci, Edward J.: *See—*
Gershen, Bernard J.; Lombardi, Alfred J.; Krajci, Edward J.; and Shafir, Yevgeny, 5,619,081, Cl. 307-125.000.
Kranendonk, Donald H. Suture needle protector. 5,617,952, Cl. 206-380.000.
Krause, Wolfgang: *See—*
Spies, Karl-Heinz; Barth, Thomas; and Krause, Wolfgang, 5,617,815, Cl. 123-41.100.
Kreft, Hans-Diedrich, to Angewandte Digital Electronik. Reference international card harmonization coupler. 5,619,683, Cl. 395-500.000.
Kreider, Kenneth G., to United States of America, Commerce. Process for producing transparent carbon nitride films. 5,618,389, Cl. 204-192.150.
Kreill, Walter, to FLottweg GmbH. Centrifuge for the continuous separation of substances of different densities. 5,618,409, Cl. 210-97.000.
Kreis, Roland: *See—*
Ross, Brian; Ernst, Thomas; and Kreis, Roland, 5,617,861, Cl. 128-653.200.
Krogh, James A.; and Sipe, Michael R., to Tomah Products, Inc. Asphalt-based coating composition with ether amine-acid-complex surfactant. 5,618,340, Cl. 106-284.060.
Kroll, Bruno: *See—*
Ricker, Erhard; Kroll, Bruno; Isokeit, Wolfgang; Scheibe, Volker; and Heim, Gunther, 5,617,981, Cl. 224-309.000.
Kronberger, Rainer: *See—*
Lindenmeier, Heinz; Hopf, Jochen; Reiter, Leopold; and Kronberger, Rainer, 5,619,214, Cl. 343-713.000.
Kross, Robert. Composition of iodophor teat dip for the prevention of mastitis and a process for using the same. 5,618,841, Cl. 514-557.000.
Krude, Werner; and Harz, Peter, to GKN Automotive AG. Constant velocity universal joint. 5,618,235, Cl. 464-145.000.
Krüger, Bertolt: *See—*
Brinkmeyer, Horst; Daiss, Michael; Schwegler, Günter; and Krüger, Bertolt, 5,619,573, Cl. 380-23.000.
Krupa, Vernon J.; Seckora, Jeffrey M.; and Pitsch, Brian M., to Extrusion Dies, Inc. Dual-chamber vacuum box. 5,618,568, Cl. 425-224.000.
Krupp Fördertechnik GmbH: *See—*
Koeberer, Günther; Steffen, Egbert; Bomba, Gerhard; Grothaus, Franz-Josef; and Zakel, Gerhard, 5,618,104, Cl. 366-7.000.
Lücking, Manfred; and Mende, Burkhard, 5,617,964, Cl. 212-327.000.
Kruse, Richard A.; Grossenbacher, Roger L.; and Chan, James S., to Brunswick Bowling & Billards Corp. User input selection device and automated bowling coaching system in an automatic bowling scoring system. 5,618,238, Cl. 473-70.000.
Kruszynski, Marian: *See—*
Heavner, George A.; Kruszynski, Marian; and Mervic, Miljenko, 5,618,785, Cl. 514-2.000.
Kuan, Chih-Chau L.: *See—*
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Kubala, Zbigniew, to Deublin Company. Sealing arrangement for a coolant union having a floating seal assembly. 5,617,879, Cl. 285-95.000.
Kubo, Minoru: *See—*
Sasai, Yoichi; Uemura, Nobuyuki; Kamiyama, Satoshi; Kubo, Minoru; and Nishikawa, Takashi, 5,619,520, Cl. 372-46.000.
Kubo, Noboru: *See—*
Fukuda, Naoyuki; Yoshida, Yukihiro; Kubo, Noboru; and Kinosita, Kazuo, 5,619,676, Cl. 395-464.000.
Kubo, Sanae: *See—*
Savaides, Andrew; Schultz, Thomas M.; Kubo, Sanae; and Borish, Edward, 5,617,883, Cl. 132-205.000.
Kubo, Takahiro, to Canon Kabushiki Kaisha. Image forming apparatus. 5,619,314, Cl. 399-296.000.
Kubo, Takahiro; Murasawa, Yoshihiro; Fukushima, Hisashi; Menjo, Takeshi; Hasegawa, Takashi; and Tamura, Satoshi, to Canon Kabushiki Kaisha. Image forming apparatus having recording material bearing member. 5,619,746, Cl. 399-297.000.
Kuboshima, Hidehiko: *See—*
Masuda, Satoki; Matsumoto, Mitsuhiro; and Kuboshima, Hidehiko, 5,618,190, Cl. 439-98.000.
Kubota, Masayuki: *See—*
Esaki, Toshiro; and Kubota, Masayuki, 5,617,625, Cl. 29-430.000.
Kubota, Michio: *See—*
Nakada, Tetsuya; and Kubota, Michio, 5,618,794, Cl. 514-25.000.
Kubota, Tadahiko: *See—*
Idota, Yoshio; Mishima, Masayuki; Miyaki, Yukio; Kubota, Tadahiko; and Miyasaka, Tsutomu, 5,618,640, Cl. 429-194.000.
Kubota, Yuichi: *See—*
Kimura, Mutsumi; Shirai, Hirofusa; Koyama, Toshiki; Hanabusa, Kenji; and Kubota, Yuichi, 5,618,930, Cl. 540-143.000.
Kuche, Hans-Walter, to Petroleum Geo-Services A/S. Depth control apparatus. 5,619,474, Cl. 367-17.000.
Kudla, Robert J.: *See—*
Subramanian, Somasundaram; Kudla, Robert J.; and Chattha, Mohinder S., 5,618,505, Cl. 423-213.200.
Kudo, Toshiaki: *See—*
Kondo, Shinichi; Shibahara, Seiji; Usui, Takayuki; Kudo, Toshiaki; Gomi, Shuichi; Tamura, Atsushi; Ikeda, Yoko; Ikeda, Daishiro; and Takeuchi, Tomio, 5,618,795, Cl. 514-41.000.
Kudo, Yuji, to Nikon Corporation. Illuminating optical apparatus for uniformly illuminating a reticle. 5,619,376, Cl. 359-619.000.
Kudschus, Martin, to CIBA-GEIGY Corporation. Process for preparing aromatic nitriles. 5,618,965, Cl. 558-315.000.
Kuegel, Peter; Demir, Tolunay; and Kugler, Thomas, to Robert Bosch GmbH. Fuel injection valve for internal combusiton engines. 5,617,828, Cl. 123-468.000.
Kuge, Satoru: *See—*
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Smith, David L., 5,619,514, Cl. 371-43.000.
Walck, Jeffrey A., 5,619,002, Cl. 84-603.000.
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Farley, Shal W.; and McCown, William, 5,619,438, Cl. 364-724.100.
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Lytell, April J. All-purpose adjustable reusable cake support. 5,617,798, Cl. 108-144.000.
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Nohr, Ronald S.; and MacDonald, John G., 5,618,614, Cl. 442-118.000.
MacDonald, Peter L.; Stradi, Riccardo; Rossetto, Pierluigi; and Holthuls, Joost J. M., to Sicor SpA; and Chiron BV. Process for preparing (S) (+)-4,4'-(1-methyl-1,2-ethanediyl)-bis (2,6-piperazinedione). 5,618,936, Cl. 544-357.000.
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Straayer, Ronald J.; Davidson, Bruce L.; Menard, Alan W.; Suhr, Thomas J.; Bin-Nun, Uri; and MacDonald, Timothy P., 5,619,246, Cl. 347-262.000.
MacGregor, Alastair R. Method and apparatus for non-invasively determining blood analytes. 5,617,852, Cl. 128-633.000.
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Machida, Satoshi; Kawahara, Yukito; Mukainakano, Hiroshi; and Yokomichi, Masahiro, to Seiko Instruments Inc. Linear image sensor of the contact type. 5,619,345, Cl. 358-482.000.
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Machino, Hitoshi; Ohtaka, Koichi; Takahashi, Masako; Takahashi, Atsuya; and Kinoshita, Nobuyuki, to Cannon Kabushiki Kaisha. Method of printing test pattern and apparatus for outputting test pattern. 5,619,307, Cl. 399-11.000.
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Shone, Fuchia; Yiu, Tom D.-H.; and Lin, Tien-Ler, 5,618,742, Cl. 438-263.000.
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Chang, Chang Y.; Shone, Fuchia; Huang, Chin-Yi; and Peng, Nai C., 5,619,052, Cl. 257-321.000.
Macy, Ralph L., Jr.: *See*—
Davis, John R.; Macy, Ralph L., Jr.; Kinch, John M.; and Stark, Lynn L., 5,617,777, Cl. 99-408.000.
Madera, John T. Beverage mixing and dispensing container. 5,618,106, Cl. 366-130.000.
Mae, Masataka: *See*—
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Maeda, Hideaki: *See*—
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Maejima, Toshiro, to Yazaki Corporation. Retaining method and double-retaining connector therefor. 5,618,207, Cl. 439-595.000.
Maeno, Fumio, to Citizen Watch Co., Ltd. Maintenance station of ink jet printer and cap and pump included therein. 5,619,232, Cl. 347-30.000.
Maeyama, Yoshihiro; Nakagawa, Shinobu; and Serizawa, Hiroshi, to Nippon Carbide Kogyo Kabushiki Kaisha. Aqueous resin dispersion. 5,618,859, Cl. 523-201.000.
Magid, Hillel; Wilson, David P.; Lavery, Dennis M.; Hollister, Richard M.; Eibeck, Richard E.; and Vanderpuy, Michael, to AlliedSignal Inc. Azeotrope-like compositions of dichloropentafluoropropane and methylpentane. 5,618,781, Cl. 510-177.000.
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Mahood, James A., to General Electric Company. Diphosphites. 5,618,961, Cl. 558-78.000.
Mahood, James A., to General Electric Company. Diphosphites. 5,618,962, Cl. 558-78.000.
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Mailandt, Peter; and Vazquez, Ricardo, to Allen Telecom Group, Inc. Cellular and PCS antenna mounting assembly. 5,619,217, Cl. 343-872.000.
Main, George W., to KoBel International. Packing slip and shipping label combination. 5,618,064, Cl. 283-80.000.
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Scaringe, Robert P., 5,617,731, Cl. 62-149.000.
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Majestic Products Company, The: *See*—
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Malhi, Vijay, to SGS-Thomson Microelectronics Limited. Integrated circuit device and test method therefor. 5,619,463, Cl. 365-201.000.
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Malkemus, Timothy R.; Shekita, Eugene J.; and Simmen, David E., to International Business Machines Corporation. Semantic optimization of query order requirements using order detection by normalization in a query compiler system. 5,619,692, Cl. 395-602.000.
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MAN Gutehoffnungshütte Aktiengesellschaft: *See*—
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MAN Roland Druckmaschinen AG: *See*—
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Management Graphics, Inc.: *See*—
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Manchester Plastics: *See*—
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Mancuso, Massimo; Poluzzi, Rinaldo; and Rizzotto, Gianguido, to SGS-Thomson Microelectronics S.r.l.; and Consorzio per la Ricerca sulla Microelettronica nel Mezzogiorno. Fuzzy logic based scanning rate converter. 5,619,271, Cl. 348-448.000.
Mandeville, W. Harry, III; Holmes-Farley, Stephen R.; and Petersen, John S., to GelTex Pharmaceuticals, Inc. Hydrophobic amine polymer sequestrant and method of cholesterol depletion. 5,618,530, Cl. 424-78.120.
Mangrum, Ronald W.: *See*—
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Mann, Roger H.: *See*—
Plamthottam, Sebastian S.; Roman, Ramon; Landers, John; Mann, Roger H.; Josephy, Karl; and Ugolick, Ronald, 5,618,883, Cl. 525-98.000.
Manna, Robert E., to Pitney Bowes Inc. Thermal ink cassette for a thermal printing device. 5,619,244, Cl. 347-214.000.
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Mansuri, Muzammil M.: *See*—
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Maple Automotive Innovations, Inc.: *See*—
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Marchand, Pierre: *See*—
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Marchbanks, J. Ralph. Attachable garment pocket system. 5,617,587, Cl. 2-247.000.
Marchello, Joseph M.: *See*—
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Marcolongo, Gabriele: *See*—
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Marek, Jiri, to Robert Bosch GmbH. Acceleration sensor and measurement method. 5,618,989, Cl. 73-1.380.
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Marian, Vaughn R., Jr., to Acuson Corporation. Modular transducer system. 5,617,866, Cl. 128-662.300.

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Marin, Ralph: *See*—
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Markle, David R.; Crane, Barry C.; Irvine, Michael P.; Hendry, Stuart P.; and Paterson, William, to Biomedical Sensors, Ltd. Vacuum rig apparatus. 5,618,587, Cl. 427-430.100.
Markovitz, Mark, to General Electric Co. Solventless resin composition having minimal reactivity at room temperature. 5,618,891, Cl. 525-481.000.
Marlow, Scott C.; Petruschke, Haans K.; Coon, Donald B.; and Nelson, John T., to Marlow Surgical Technologies, Inc. Endoscopic instrument system and method. 5,618,303, Cl. 606-205.000.
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Marsella, John A.; Starner, William E.; and Myers, Richard S., to Air Products and Chemicals, Inc. Partially methylated polyamines as epoxy curing agents. 5,618,905, Cl. 528-123.000.
Marshall, David R. Unidirectionally adjustably resistant recoilers and portable exercise devices. 5,618,249, Cl. 482-127.000.
Marshall, Ian W.; and Tweddle, Mark B., to British Telecommunications PLC. Optical processing in asynchronous transfer mode network. 5,619,360, Cl. 359-140.000.
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Martens, Marvin M.; and Kasowski, Robert V., to Du Pont de Nemours, E. I., and Company. Fire resistant resin compositions. 5,618,865, Cl. 524-100.000.
Martin, Brian; and Muehlfeld, Julie A., to Essex Specialty Products Inc. Polyurethane hot melt adhesive. 5,618,904, Cl. 528-73.000.
Martin, Hans, to BEHR GmbH & Co. Fan drive with a fluid-friction clutch. 5,617,817, Cl. 123-41.120.
Martin, John R. Dual mode gaming device methods and systems. 5,618,232, Cl. 463-25.000.
Martin, Robert I. M.: *See*—
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Martin, Wallace K. Male urethral closure pad. 5,618,302, Cl. 606-201.000.
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Marujun Seiki Ind. Co., Ltd.: *See*—
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Marumoto, Takahiro: *See*—
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Mason, James A., to Williamson, George L. Method and apparatus for treating and disinfecting water and/or wastewater. 5,618,440, Cl. 210-716.000.
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Liau, Zong-Long; and Williamson, Richard C., 5,618,474, Cl. 264-1.100.
Venkataraman, Ganesh; Sasisekharan, Viswanathan; Sasisekharan, Ram; Bobba, Ratnaleela; Cooney, Charles L.; and Langer, Robert, 5,619,421, Cl. 364-496.000.
Massimino, Michael J.; Sheridan, Thomas B.; and Patrick, Nicholas J. M. Apparatus for providing vibrotactile sensory substitution of force feedback. 5,619,180, Cl. 340-407.100.
Mast, Michael B. Method and apparatus for associating an image display area with an application display area. 5,619,639, Cl. 395-326.000.
Master Locksmiths Assoc. of Australasia Limited: *See*—
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Masuda, Satoki; Matsumoto, Mitsuhiro; and Kuboshima, Hidehiko, to Yazaki Corporation. Insulating structure for a shielded connector. 5,618,190, Cl. 439-98.000.
Masuda, Tatsuyuki, to Yamaha Hatsudoki kabushiki Kaisha. Lubricating system for engine. 5,617,822, Cl. 123-196.00R.
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Matsumoto, Hitoshi: *See—*
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Matsunaga, Yuji: *See—*
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Matsuo, Ichiro: *See—*
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Naimpally, Saiprasad V., 5,619,337, Cl. 386-83.000.
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Inoue, Takao; Ikeda, Junji; and Nishiki, Naomi, 5,618,615, Cl. 428-315.500.
Mukai, Masaki; Ohtsu, Takashi; and Yasutake, Kouichi, 5,619,654, Cl. 395-200.090.
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Yamashita, Haruo; and Fukushima, Tsumoru, 5,619,280, Cl. 348-645.000.
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Matubara, Setuo; and Kanaoka, Masaru, to Mitsubishi Denki Kabushiki Kaisha. Method and apparatus for laser welding with an assist gas including dried air and the assist gas composition. 5,618,452, Cl. 219-121.630.
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Maume, Katherine A.: *See—*
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Maurer, Kevin; Castan, Maria; Cousin, Thomas; Spagnola, Gilbert; Daley, Kathleen M.; Keegan, Margaret; and Smith, Thomas, to Bell Atlantic Network Services, Inc. Method and system for remotely activating/changing subscriber services in a public switched telephone network. 5,619,562, Cl. 379-201.000.
Maus, Brian W., to FMC Corp. Artillery tube ram depth and or bore clear sensor method and apparatus. 5,619,006, Cl. 89-1.100.
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Mawick, Peter; and Choudhury, Subrata, to NSP Sicherheits-Produkte GmbH; and TG Techno-Game GmbH. Yarn having metallic fibers and an electromagnetic shield fabric made therefrom. 5,617,713, Cl. 57-210.000.
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Maxson, Richard C.: *See—*
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May, Angie R.: *See—*
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May, Hans J.; and Schnettler, Roland. Device for electrolytically coating one side of metal strips. 5,618,391, Cl. 204-212.000.
May, Robert: *See—*
Billock, John K.; Cuttner, Craig D.; Dowdell, Kevin C.; Flanagan, Elizabeth B.; Granger, James E.; Hsu, Henry C.; Martin, Robert I. M.; May, Robert; Peck, Nicolas; Pontecorvo, Michael S.; Probst, Bruce E.; Rosenberg, Marc D.; Smul, Debra R.; Wilkinson, Dennis P.; and Zitter, Robert M., 5,619,249, Cl. 348-7.000.
May, Timothy J., to Reynolds Consumer Products Inc. Closure arrangement for reclosable bag. 5,617,770, Cl. 83-37.000.
Maycock, Kenneth R.: *See—*
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Mayer, Bruce D.; Berkowitz, Martin; and Sharma, Sudershan K., to Bull HN Informatioo Systems Inc. Executing network layered communications of a first system on a second system using a communication bridge transparent to the different communication layers. 5,619,682, Cl. 395-500.000.
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Mc Allister, Paul: *See—*
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McBride, Jon. Device for attaching a wireless telephone to a portable computer. 5,619,395, Cl. 361-683.000.
McBride, Karen E.: *See—*
Porchia, Jose; McBride, Karen E.; Dais, Brian C.; Farrelly, D. Lyn; and Steele, Robert R., 5,618,111, Cl. 383-63.000.
McCarthy, James G.; and Vadehra, Dharam V., to Nestec S.A. Enhanced procedures for preparing food hydrolysates. 5,618,689, Cl. 435-68.100.
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McClellan, Stephen R.; and Miller, Eric B., to Microware Systems Corporation. Operating system for interactive television system set top box utilizing dynamic system upgrades. 5,619,250, Cl. 348-10.000.
McClure, David C., to SGS-Thomson Microelectronics, Inc. Synchronous output circuit. 5,619,456, Cl. 365-189.050.
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McConnell, Oliver J.: *See—*
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McCorkel, Joel D.: *See—*
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McCown, William: *See—*
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McCrary, Rex E.: *See—*
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McDougall, Gregory J. Brushes for personal hygiene purposes. 5,617,601, Cl. 15-22.100.
MCEL p.l.c.: *See—*
Hobden, Mervyn K.; Spencer, David G.; Rhodes, John G. L., deceased; and Turner, Ronald, executor, 5,619,248, Cl. 348-6.000.
McFadden, Joseph A.: *See—*
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McFarland, Roger A., to Owens Corning Fiberglas Technology, Inc. Method and apparatus for coating elongate members. 5,618,589, Cl. 427-482.000.
McGehee, Patrick: *See—*
Rühl, Andreas; Rentzel, Gert; McGehee, Patrick; Charamko, Serguei; and Anderson, Kim, 5,618,173, Cl. 431-183.000.
McGlew, John J. Game based on data base of characters of different geographic regions. 5,618,043, Cl. 273-308.000.
McIntyre, David H., to SGS-Thomson Microelectronics Limited. Bit line sensing in a memory array. 5,619,449, Cl. 365-185.210.
McKechnie UK Limited: *See—*
Cope, Andrew C., 5,617,953, Cl. 206-501.000.
McKeown, Neil B.: *See—*
Harrison, Kenneth J.; Cook, Michael J.; Thomson, Andrew J.; McKeown, Neil B.; Daniel, Mervyn F.; and Dunn, Adrian J., 5,618,929, Cl. 540-139.000.
McKnight, Steven L.; Hou, Jinzhao; and Schindler, Ulrike, to Tularik, Inc. Interleukin-2 signal transducers and binding assays. 5,618,693, Cl. 435-69.100.
McNeice, William A.: *See—*
Lantzy, John P.; Cook, Calvin S.; and McNeice, William A., 5,618,000, Cl. 239-276.000.
McNeil, Brian A.; and Evans, Michael H., to Air Products and Chemicals, Inc. Dual column process to remove nitrogen from natural gas. 5,617,741, Cl. 62-622.000.
McNelis, Niall B.: *See—*
Hamilton, Stephen B.; Jaklitsch, James J.; Reed, Christopher J.; Schulz, Charles E.; Debelius, Leslie H., Jr.; McNelis, Niall B.; and Baker, Edward B., 5,619,323, Cl. 356-139.030.
McNelley, Steve H. Compact teleconferencing eye contact terminal. 5,619,254, Cl. 348-20.000.
McPhee, Mike; and Boxall, Russell, to Permaban North America, Inc. Dowell alignment apparatus. 5,618,125, Cl. 403-12.000.
McTaggart, Michael D., to Valiant Machine & Tool, Inc. Shuttle transfer assembly. 5,617,944, Cl. 198-468.600.
McVay, Clifford R. Coil cord snarl preventing device and method. 5,619,569, Cl. 379-438.000.
Mead Corporation, The: *See—*
Watkins, R. Kenneth; Wright, James W.; and Culhane, William J., 5,618,632, Cl. 428-537.500.
Mechoulam, Raphael; Beuer, Aviva; Hanus, Lemir; and Devane, William A., to Hebrew University of Jerusalem, Yissum Research Development Company of the. Fatty acid derivatives and pharmaceutical compositions containing same. 5,618,955, Cl. 554-66.000.
Medaes, Inc.: *See—*
Montague, Edgar G.; Yonge, Christopher F.; and Smith, Robin E., 5,618,090, Cl. 312-209.000.
Meerman, Johannes J.: *See—*
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Meguriya, Noriyuki; and Yoshida, Takeo, to Shin-Etsu Chemical Co., Ltd. Silicone rubber/epoxy resin integral composite and method for making. 5,618,631, Cl. 428-513.000.
Meguro, Satoshi; Uchibori, Kiyofumi; Suzuki, Norio; Motoyoshi, Makoto; Koike, Atsuyoshi; Yamanaka, Toshiaki; Sakai, Yoshio; Kaga, Toru; Hashimoto, Naotaka; Hashimoto, Takashi; Honjou, Shigeru; and Minato, Osamu, to Hitachi, Ltd. Semiconductor integrated circuit device. 5,619,055, Cl. 257-369.000.
Mehta, Sunil, to Advanced Micro Devices, Inc. High density multi-level metallization and interconnection structure. 5,619,072, Cl. 257-774.000.
Mei, Tzeng J. N. Brush head assembly of an electric toothbrush. 5,617,603, Cl. 15-22.100.
Meier, Heinz: *See—*
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Meier, Raymond C., Jr.: *See—*
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Jeanne, Olivier; Ulmer, Georges; and Montresor, Daniel, 5,618,050, Cl. 277-235.00B.
Meissner, David C.; and Tennies, Winston L., to Midrex International B.V. Rotterdam, Zurich Branch. Shaft furnace for production of iron carbide. 5,618,032, Cl. 266-80.000.
Melen, Roger D., to Canon Kabushiki Kaisha. Image processing system with on-the-fly JPEG compression. 5,619,594, Cl. 382-233.000.
Meltzer, Clifford B.: *See—*
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Melville, Cheri D.: *See—*

Sweat, Mark E.; Van Valkenberg, Philip G.; Melville, Cheri D.; McDonnell, Philip N.; Kamada, Cyrus M.; Wirt, James R.; and Chang, James C., 5,619,636, Cl. 395-806.000.
Melville, Richard A., to Machinery Developments Limited. Packaging apparatus. 5,618,252, Cl. 493-22.000.
Memmel, Klaus; Kleifges, Jürgen; Feldhaus, Reinhard; and Jeppe, Harald, to Fichtel & Sachs AG. Friction clutch assembly for a motor vehicle, the friction clutch assembly having a clutch plate with divided hub disc. 5,617,939, Cl. 192-70.160.
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Sanz-Moncasi, Maria P.; Garin-Chesa, Pilar; Stockert, Elisabeth; Old, Lloyd J.; and Rettig, Wolfgang J., 5,618,534, Cl. 424-184.100.
Mena, Daniel; and Martinez, George. Bicycle mounted bulletproof armor shield system. 5,619,007, Cl. 89-36.090.
Menard, Alan W.: *See*—
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Mende, Burkhard: *See*—
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Mendes, Robert W.; Javroongrit, Yuppadee; Anaebonam, Aloysius; and Clemente, Emmett, to Ascent Pediatrics Inc. Calcium polycarbophil sprinkle. 5,618,527, Cl. 424-78.010.
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Mentzel, Edgar: *See*—
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Selnick, Harold G.; Baldwin, John J.; Ponticello, Gerald S.; and Tomassini, Joanne E., 5,618,830, Cl. 514-358.000.
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Hechler, Wolfgang; Dietz, Johann; Weigand, Manfred; and Osterried, Karl, 5,618,585, Cl. 427-376.100.
Herget, Gerhard; Stahlecker, Otto; and Kieser, Manfred, 5,618,342, Cl. 106-416.000.
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Castro Pineiro, Jose L.; Carling, William R.; Chambers, Mark S.; Fletcher, Stephen R.; Hobbs, Sarah C.; Matassa, Victor G.; Moore, Kevin W.; Showell, Graham A.; and Russell, Michael G., 5,618,812, Cl. 514-221.000.
Meretsky, Wayne N.: *See*—
Lillich, Alan W.; Cobb, Jeffrey R.; Eidt, Erik L.; and Meretsky, Wayne N., 5,619,698, Cl. 395-710.000.
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Howard, James E.; and Merli, Enrico, 5,617,987, Cl. 226-189.000.
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King, Chi-Hsin R.; and Kaminski, Michele A., 5,618,940, Cl. 546-240.000.
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Heavner, George A.; Kruszynski, Marian; and Mervic, Miljenko, 5,618,785, Cl. 514-2.000.
Merwald, Edward J.: *See*—
Barron, Kimball R.; and Merwald, Edward J., 5,618,025, Cl. 251-210.000.
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Johns, Owen L.; and Metcalfe, Peter J., 5,618,556, Cl. 424-448.000.
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Ekström, Bernt, 5,617,629, Cl. 29-846.000.
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Leise, Walter F., Jr.; and Metz, Michael A., 5,618,276, Cl. 604-336.000.
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Dugast-Zrihen, Maryse; and Meyer, Dominique, 5,618,977, Cl. 564-153.000.
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Vita, Giandomenico; Ajroldi, Giuseppe; and Miani, Mario, 5,618,481, Cl. 264-103.000.
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Turk, Richard S.; and Dulebohn, Joel I., 5,618,467, Cl. 252-301.160.
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Crockett, Robert N.; Kern, Ronald M.; and Micka, William F., 5,619,644, Cl. 395-183.210.
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Augustinus, Per K., 5,617,977, Cl. 222-400.700.
Micro Pneumatic Logic, Inc.: *See*—
Long, Eric, 5,619,022, Cl. 200-83.00P.
Microchip Technology Inc.: *See*—
Nolan, James B.; Cooper, Russell E.; and Dellacroce, Brian, 5,619,430, Cl. 364-557.000.
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Mok, Sammy L., 5,619,399, Cl. 361-707.000.
Micron Electronics, Inc.: *See*—
Thompson, Curtis C., Sr., 5,617,990, Cl. 228-180.100.
Micron Quantum Devices, Inc.: *See*—
Briner, Michael S., 5,619,150, Cl. 327-55.000.
Roohparvar, Frankie F.; and Chevallier, Christophe J., 5,619,453, Cl. 365-185.330.
Roohparvar, Frankie F., 5,619,461, Cl. 365-201.000.
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Burke, Robert J.; Zahorik, Russell C.; Paduano, Paul A.; and Thakur, Randhir P. S., 5,618,461, Cl. 219-502.000.
Doan, Trung T.; and Yu, Chris C., 5,618,381, Cl. 438-633.000.
Gilliam, Gary R., 5,619,459, Cl. 365-201.000.
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Sandhu, Gurtej S., 5,618,447, Cl. 438-14.000.
Microsoft Corporation: *See*—
Bosworth, Adam; Hunter, Ross A.; and Habib, David J., 5,619,688, Cl. 395-604.000.
Microware Systems Corporation: *See*—
McClellan, Stephen R.; and Miller, Eric B., 5,619,250, Cl. 348-10.000.
Middeljans, Hendrik: *See*—
Van Den Heuvel, Christiaan J. M.; De Weijer, Anton P.; Middeljans, Hendrik; and Heuvel, Herman M., 5,618,480, Cl. 264-103.000.
Midrex International B.V. Rotterdam, Zurich Branch: *See*—
Meissner, David C.; and Tennies, Winston L., 5,618,032, Cl. 266-80.000.
Mielke, Burkhard: *See*—
Jaetsch, Thomas; Hallenbach, Werner; Himmler, Thomas; Mielke, Burkhard; Bremm, Klaus D.; Endermann, Rainer; Pirro, Franz; Stegemann, Michael; and Wetzstein, Heinz-Georg, 5,618,815, Cl. 514-250.000.
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Kulisz, Andre A.; and Migachyov, Valery, 5,618,257, Cl. 600-29.000.
Migli, Carlo: *See*—
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Mihara, Takashi: *See*—
Yamamoto, Eiji; Mihara, Takashi; and Ito, Masataka, 5,619,318, Cl. 356-32.000.
Mihira, Ritsuo: *See*—
Sugimoto, Noboru; Suzuki, Masatoshi; Futsuhara, Koichi; Sakai, Masayoshi; and Mihira, Ritsuo, 5,619,110, Cl. 318-450.000.
Mikami, Toshio: *See*—
Saito, Hiroshi; Mikami, Toshio; and Myo, Nagayoshi, 5,618,562, Cl. 424-489.000.
Miki, Harukazu: *See*—
Miki, Yoshiharu; and Miki, Harukazu, 5,617,663, Cl. 40-738.000.
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Miki, Yoshiharu; and Miki, Harukazu, 5,617,663, Cl. 40-738.000.
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Clare, Timothy P.; Kollitz, William R.; and Mikula, Matthew J., 5,618,347, Cl. 118-314.000.
Mikuni Corporation: *See*—
Hasumi, Kazuhisa; Nagano, Kentaro; Kamiyama, Shuuichi; Yanagida, Hiroaki; and Okada, Osamu, 5,618,496, Cl. 422-90.000.
Milewski, Allen E.: *See*—
Canale, Leonard M.; Kautz, Henry A.; Milewski, Allen E.; and Selman, Bart, 5,619,648, Cl. 395-200.010.

Milillo, Michael S.: *See*—
De Martine, Patrick A. L.; and Milillo, Michael S., 5,619,675, Cl. 395-460.000.
Miller Brewing Company: *See*—
Tripp, Matthew L.; Rader, Sydney R.; Rao, Subba C.; and Ryder, David S., 5,618,572, Cl. 426-592.000.
Miller, Dale D.: *See*—
Soderberg, Brian T.; Miller, Dale D.; Lind, Henrik; Jarvis, Richard; and Kenworthy, Mark, 5,619,627, Cl. 395-121.000.
Miller, Eric B.: *See*—
McClellan, Stephen R.; and Miller, Eric B., 5,619,250, Cl. 348-10.000.
Miller, Jerry A., to Sony Corporation; and Sony Electronics Inc. Cordless phone with time-out controlled ringer. 5,619,568, Cl. 379-413.000.
Miller, Jorge; and Kling, Miguel, to Kemicraft Overseas Limited. Vapor phase fluidized bed sulfation of titaniferous materials. 5,618,331, Cl. 75-743.000.
Miller, Mark D.: *See*—
Parker, Jeffery R.; Miller, Mark D.; and Kelsch, Daniel N., 5,618,096, Cl. 362-31.000.
Miller, Scott H.: *See*—
Roth, Alex T.; and Miller, Scott H., 5,618,306, Cl. 606-205.000.
Milligan, Charles A.: *See*—
Leonhardt, Michael L.; and Milligan, Charles A., 5,619,384, Cl. 360-48.000.
Millipore Corporation: *See*—
Tarbet, Bryon J.; Bruening, Ronald L.; Di Leo, Anthony J.; Goddard, Philip M.; and Scarmoutzos, Louis M., 5,618,433, Cl. 210-634.000.
Millman, Frank; Bolin, Phillip; Haggar, Frank E.; and Ackerman, H. Richmond, to F3 Software Corporation. Program controlled system for forms engineering. 5,619,635, Cl. 395-768.000.
Mills, Jerry. Leafcutter bee management system including a laminate bee board. 5,618,220, Cl. 449-4.000.
Milner, Jocelyn L.: *See*—
Handelsman, Jo; Milner, Jocelyn L.; Stohl, Elizabeth A.; Stewart, Sandra J.; and Stabb, Eric, 5,618,692, Cl. 435-69.100.
Mimura, Tetsuo: *See*—
Shigenaka, Toshinori; Mimura, Tetsuo; Machida, Yukitaka; Kohtaka, Ikuo; and Marumoto, Takahiro, 5,617,916, Cl. 165-184.000.
Mimura, Tomio: *See*—
Suzuki, Hitomi; Hayakawa, Atsushi; Mimura, Tomio; Shimojo, Shigeru; Shimayoshi, Hidenobu; Iijima, Masaki; Mitsuoka, Shigeaki; and Iwaki, Toru, 5,618,506, Cl. 423-228.000.
Min, Jin K., to Samsung Electro-Mechanics Co., Ltd. Apparatus for preparing skin in advance. 5,618,295, Cl. 606-171.000.
Min Shin Plastic Ind. Co., Ltd.: *See*—
Chung, M. F., 5,617,950, Cl. 206-308.100.
Minami, Shunsuke; Ishida, Tomotoshi; Shinotsuka, Yoshiaki; and Kumamoto, Kunio, to Hitachi, Ltd. Apparatus for producing exploded view and animation of assembling and method thereof. 5,619,630, Cl. 395-133.000.
Minamino, Koichiro: *See*—
Suzuki, Masahiro; and Minamino, Koichiro, 5,619,265, Cl. 348-362.000.
Minato, Osamu: *See*—
Meguro, Satoshi; Uchibori, Kiyofumi; Suzuki, Norio; Motoyoshi, Makoto; Koike, Atsuyoshi; Yamanaka, Toshiaki; Sakai, Yoshio; Kaga, Toru; Hashimoto, Naotaka; Hashimoto, Takashi; Honjou, Shigeru; and Minato, Osamu, 5,619,055, Cl. 257-369.000.
Minerd, Timothy M.: *See*—
Rall, David W.; and Minerd, Timothy M., 5,618,184, Cl. 439-71.000.
Ministry of Agriculture & Fisheries: *See*—
Harrison, Gavin B. L.; Dempster, Robert P.; Rickard, Michael D.; Heath, David D.; Lawrence, Stephen B.; Vinton, Jennifer G.; Lightowlers, Marshall W.; O'Hoy, Kim L.; and Johnson, Kevin S., 5,618,542, Cl. 424-266.100.
Minne, Stephen C.: *See*—
Soh, Hyongsok; Minne, Stephen C.; and Quate, Calvin F., 5,618,760, Cl. 438-703.000.
Minnesota Mining and Manufacturing Company: *See*—
Brady, Mark J.; and Hamerly, Michael E., 5,619,616, Cl. 395-22.000.
Ezzell, Stephen A.; and Gerbi, Diana J., 5,618,896, Cl. 526-171.000.
Fritz, James S.; Dumont, Philip J.; Hagen, Donald F.; Markell, Craig G.; and Schmidt, Luther W., 5,618,438, Cl. 210-679.000.
Jantschek, Robert J.; Rouser, Forrest J.; Sterner, Mark L.; and Testen, Theodore J., 5,618,225, Cl. 451-173.000.
Mertens, Timothy A.; and Vogel, Mark S., 5,618,062, Cl. 283-67.000.
Rothrum, Robert J., 5,618,278, Cl. 604-356.000.
Springett, James E.; and Barrett, Leonard W., 5,617,849, Cl. 128-206.240.
Minolta Camera Kabushiki Kaisha: *See*—
Kinoshita, Naoyoshi; Kinoshita, Takeru; and Kodama, Hideaki, 5,619,308, Cl. 399-48.000.
Minowa, Ryouhei: *See*—
Tomita, Syuji; and Minowa, Ryouhei, 5,617,733, Cl. 62-324.200.
Mintz, Donald M.; Hanawa, Hiroji; Somekh, Sasson; Maydan, Dan; and Collins, Kenneth S., to Applied Materials, Inc. High-frequency semiconductor wafer processing apparatus and method. 5,618,382, Cl. 216-64.000.
Miranda, Henry A., Jr.; and Palmieri, Joseph. Video display of indicia. 5,619,253, Cl. 348-15.000.
Miron, Pierre; Roy, Denis-Claude; and Lachapelle, Marie-Hélène, to Institut de Medecine de la Reproduction de Montreal. Use of ligands specific to major histocompatibility complex-class I antigens for diagnosing endometriosis. 5,618,680, Cl. 435-7.210.
Misawa, Tsutami; Ogiso, Akira; Imai, Rihoko; and Itoh, Hisato, to Mitsui Toatsu Chemicals, Inc. Polarizing film of a hydrophilic polymer film containing a novel azo compound. 5,618,868, Cl. 524-159.000.
Mishima, Junichi: *See*—
Shibukawa, Takeo; and Mishima, Junichi, 5,619,005, Cl. 84-658.000.
Mishima, Masayuki: *See*—
Idota, Yoshio; Mishima, Masayuki; Miyaki, Yukio; Kubota, Tadahiko; and Miyasaka, Tsutomu, 5,618,640, Cl. 429-194.000.
Miskewitz, Regina M., to Church & Dwight Co., Inc. Chewing gum product with dental care benefits. 5,618,517, Cl. 424-48.000.
Misra, Susanta: *See*—
Blaauw, David T.; Norton, Joseph W.; Jones, Larry G.; Misra, Susanta; and Bahar, R. Iris, 5,619,418, Cl. 364-489.000.
Misslitz, Ulf; Meyer, Norbert; Kast, Juergen; Ladner, Wolfgang; Walter, Helmut; Westphalen, Karl-Otto; Kardorff, Uwe; and Gerber, Matthias, to BASF Aktiengesellschaft. Mixtures of optically active cyclohexenone oxime ethers, their preparation, intermediates for this purpose and their use as herbicides. 5,618,775, Cl. 504-235.000.
Misu, Susumu; and Higashi, Takashi, to Brother Kogyo Kabushiki Kaisha. Cassette for printed tape and method of printing. 5,618,119, Cl. 400-208.000.
Mitamura, Makoto; and Nakayama, Hidetaka, to Terumo Kabushiki Kaisha. Filtering apparatus with a pleated filtering element embedded in a filling material. 5,618,425, Cl. 210-493.500.
Mitsubishi Cable Industries, Ltd.: *See*—
Nishikawa, Toshiyuki; and Ishihara, Hiroshi, 5,619,494, Cl. 370-357.000.
Mitsubishi Chemical Corporation: *See*—
Horie, Hideyoshi; Inoue, Yuichi; Shimoyama, Kenji; Hosoi, Nobuyuki; and Hideki, Goto, 5,619,518, Cl. 372-46.000.
Seo, Yuzo; and Maeda, Shuichi, 5,619,480, Cl. 369-14.000.
Shinozaki, Kenji; Hirano, Hideki; Murata, Yukichi; and Ishida, Mio, 5,618,337, Cl. 106-22.00H.
Takayanagi, Hisao; Kitano, Yasunori; Yano, Tamaki; Umeki, Hiroe; and Hara, Hiroto, 5,618,829, Cl. 514-332.000.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Ando, Hideki, 5,619,730, Cl. 395-855.000.
Fujioka, Shuzo, 5,619,529, Cl. 375-219.000.
Hayakawa, Goro; and Tsukikawa, Yasuhiko, 5,619,457, Cl. 365-189.050.
Imakura, Tatsuya, 5,619,201, Cl. 341-141.000.
Iwamatsu, Toshiaki; Inoue, Yasuo; and Nishimura, Tadashi, 5,619,053, Cl. 257-347.000.
Kawai, Toshiaki, 5,619,388, Cl. 360-85.000.
Kobayashi, Masaki, 5,619,285, Cl. 348-806.000.
Komoda, Michio, 5,619,440, Cl. 364-754.000.
Komurasaki, Keiichi; and Kurusu, Kyoko, 5,619,108, Cl. 318-140.000.
Kondo, Kaoru; Fujita, Kenjiro; and Watanabe, Shinji, 5,618,243, Cl. 477-118.000.
Kuriyama, Hirotada; Ishida, Masahiro; and Ishigaki, Yoshiyuki, 5,619,056, Cl. 257-369.000.
Matubara, Setuo; and Kanaoka, Masaru, 5,618,452, Cl. 219-121.630.
Miyauchi, Shigenori, 5,619,452, Cl. 365-185.290.
Nakabayashi, Takeo, 5,619,499, Cl. 370-469.000.
Takebe, Hideharu, 5,619,227, Cl. 345-147.000.
Tomishima, Shigeki, 5,619,164, Cl. 327-541.000.
Yabusaki, Tatsumi, 5,619,734, Cl. 395-882.000.
Yamanaka, Hideaki; Saito, Hirotaka; Tsuzuki, Munenori; Sasaki, Yasuhito; Yamada, Hirotoshi; and Oshima, Kazuyoshi, 5,619,495, Cl. 370-413.000.
Yokota, Miho; and Okabe, Masatomi, 5,619,048, Cl. 257-207.000.
Yoshimura, Takeshi; Morioka, Koichi; and Yamada, Teruho, 5,619,019, Cl. 181-166.000.
Mitsubishi Gas Chemical Co., Inc.: *See*—
Abe, Takafumi; Tanaka, Fumio; Nitobe, Hiroyuki; and Takemoto, Masaki, 5,618,953, Cl. 549-508.000.
Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
Suzuki, Hitomi; Hayakawa, Atsushi; Mimura, Tomio; Shimojo, Shigeru; Shimayoshi, Hidenobu; Iijima, Masaki; Mitsuoka, Shigeaki; and Iwaki, Toru, 5,618,506, Cl. 423-228.000.
Mitsubishi Kasei Corporation: *See*—
Kuroe, Toru; Yokoyama, Fumiaki; and Mouri, Daisuke, 5,618,448, Cl. 216-97.000.
Mitsubishi Materials Corporation: *See*—
Okamura, Toshihiko, 5,618,625, Cl. 428-408.000.
Mitsubisi Jidosha Kogyo Kabushiki Kaisha: *See*—
Kondo, Kaoru; Fujita, Kenjiro; and Watanabe, Shinji, 5,618,243, Cl. 477-118.000.
Mitsubushi Materials Corporation: *See*—
Tsutsumi, Yukio; Kumabe, Shigeo; and Takahashi, Keisuke, 5,618,227, Cl. 451-288.000.
Mitsubushi Materials Silicon Corporations: *See*—
Tsutsumi, Yukio; Kumabe, Shigeo; and Takahashi, Keisuke, 5,618,227, Cl. 451-288.000.
Mitsui, Akira; Guard, Kristian J.; and Iwakuma, Hideki, to Sakai Heavy Industries, Ltd. Vibrating mechanism and apparatus for generating vibrations for a vibration compacting roller with variable amplitude. 5,618,133, Cl. 404-117.000.
Mitsui, Jiro; Watanabe, Hirofumi; and Fujihara, Yoshihiko, to Mitsui Kinzoku Kogyo Kabushiki Kaisha. Door lock apparatus with automatic door closing mechanism. 5,618,068, Cl. 292-201.000.

Mitsui Kinzoku Kogyo Kabushiki Kaisha: *See—*
Mitsui, Jiro; Watanabe, Hirofumi; and Fujihara, Yoshihiko, 5,618,068, Cl. 292-201.000.
Mitsui Petrochemical Industries, Ltd.: *See—*
Shinozaki, Tetsunori; and Kioka, Mamoru, 5,618,886, Cl. 525-270.000.
Mitsui Toatsu Chemicals, Inc.: *See—*
Kawabata, Tomoyuki; Yuasa, Teruo; and Iimuro, Shigeru, 5,618,984, Cl. 569-720.000.
Misawa, Tsutami; Ogiso, Akira; Imai, Rihoko; and Itoh, Hisato, 5,618,868, Cl. 524-159.000.
Nagata, Teruyuki; Kusuda, Chiyuki; Wada, Masaru; Satou, Kenichi; and Uchida, Masae, 5,618,980, Cl. 564-415.000.
Mitsuoka, Shigeaki: *See—*
Suzuki, Hitomi; Hayakawa, Atsushi; Mimura, Tomio; Shimojo, Shigeru; Shimayoshi, Hidenobu; Iijima, Masaki; Mitsuoka, Shigeaki; and Iwaki, Toru, 5,618,506, Cl. 423-228.000.
Miura, Hideo: *See—*
Ohta, Hiroyuki; Miura, Hideo; Masuda, Hiroo; Tamaki, Yoichi; Ikeda, Takahide; Nishimura, Asao; and Hashimoto, Takashi, 5,619,069, Cl. 257-692.000.
Miura, Yosuke: *See—*
Honda, Masami; and Miura, Yosuke, 5,619,397, Cl. 361-686.000.
Miwa, Tadashi: *See—*
Haneda, Satoshi; Fukuchi, Masakazu; and Miwa, Tadashi, 5,619,242, Cl. 347-131.000.
Miwa, Tetsuya: *See—*
Nakajima, Keiichi; Fujita, Tadashi; and Miwa, Tetsuya, 5,618,193, Cl. 439-125.000.
Miyabe, Kyoko: *See—*
Tezuka, Koichi; Miyabe, Kyoko; and Hamaguchi, Shingo, 5,619,482, Cl. 369-44.230.
Miyadera, Shunichi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Still video camera performing white-balance and auto-focus adjustment concurrently. 5,619,260, Cl. 348-223.000.
Miyagawa, Masashi: *See—*
Kotaki, Yasuo; Takenouchi, Masanori; Saikawa, Hideo; Nozawa, Minoru; Sato, Osamu; Ujita, Toshihiko; Miyagawa, Masashi; Yamamoto, Hisashi; Hamasaki, Yuji; and Hinami, Jun, 5,619,239, Cl. 347-86.000.
Miyagawa, Soji: *See—*
Saitoh, Kazuo; Niwa, Hiroaki; Nakao, Setsuo; and Miyagawa, Soji, 5,618,345, Cl. 216-2.000.
Miyai, Yoichi: *See—*
Fukuhara, Hideyuki; and Miyai, Yoichi, 5,618,750, Cl. 438-601.000.
Miyake, Hideaki: *See—*
Horiguchi, Takeshi; Sasaki, Satoru; and Miyake, Hideaki, 5,617,788, Cl. 101-181.000.
Miyake, Kazumi: *See—*
Higuchi, Yoshikatsu; and Miyake, Kazumi, 5,618,768, Cl. 501-92.000.
Miyake, Shigeru: *See—*
Tezuka, Satoru; Miyake, Shigeru; Furukawa, Hiroshi; Kihara, Kenichi; Kitahara, Chiho; Idei, Hideomi; Taguchi, Shihoko; Namba, Hikari; and Suzano, Alberto, 5,619,640, Cl. 395-326.000.
Miyaki, Yukio: *See—*
Idota, Yoshio; Mishima, Masayuki; Miyaki, Yukio; Kubota, Tadahiko; and Miyasaka, Tsutomu, 5,618,640, Cl. 429-194.000.
Miyane, Yuji: *See—*
Sai, Yukio; Kaneko, Hiroyuki; and Miyane, Yuji, 5,618,108, Cl. 374-161.000.
Miyasaka, Tsutomu: *See—*
Idota, Yoshio; Mishima, Masayuki; Miyaki, Yukio; Kubota, Tadahiko; and Miyasaka, Tsutomu, 5,618,640, Cl. 429-194.000.
Miyatake, Norio: *See—*
Uchida, Kiyoshi; Miyatake, Norio; and Omoya, Kazunori, 5,618,617, Cl. 428-323.000.
Miyauchi, Shigenori, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor disk device with a constant data-writing time period. 5,619,452, Cl. 365-185.290.
Miyayama, Yoshiyuki: *See—*
Coon, Brett; Miyayama, Yoshiyuki; Nguyen, Le Trong; and Wang, Johannes, 5,619,666, Cl. 395-384.000.
Miyazaki, Isao: *See—*
Kuroiwa, Wataru; Miyazaki, Isao; Ooi, Shinichi; Odagiri, Yasushi; and Takahashi, Masahiro, 5,619,251, Cl. 348-12.000.
Miyazaki, Satomichi: *See—*
Naruse, Yoshio; and Miyazaki, Satomichi, 5,618,590, Cl. 427-528.000.
Mizoguti, Fumito: *See—*
Hatano, Shintarou; Kawahito, Hiroshi; Ichikawa, Yoshiki; Mizoguti, Fumito; Tsuji, Masahiro; Hiroyasu, Takao; Kawamoto, Hiroshi; Fujita, Syouichi; Nishimura, Hideyuki; Kawabata, Itaru; and Kazaki, Yuichi, 5,619,312, Cl. 399-61.000.
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Tomita, Hiroyuki; Furuse, Tōru; Mizukami, Masakatu; and Masukawa, Akihiro, 5,619,220, Cl. 345-14.000.
Mizuno, Yoichi: *See—*
Kadomaru, Kazuo; and Mizuno, Yoichi, 5,618,869, Cl. 524-261.000.
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Johnson, A. David; Block, Barry; and Mauger, Philip, 5,619,177, Cl. 337-140.000.
MMR Technologies, Inc.: *See—*
Little, William A., 5,617,739, Cl. 62-619.000.
Mobil Oil Corporation: *See—*
Benoit, Gordon L.; and VanderVelden, Rudolph, 5,618,630, Cl. 428-500.000.
Simmons, Kathryn, 5,617,707, Cl. 53-441.000.
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Iwao, Kenji; and Mochizuki, Hiroshi, 5,618,990, Cl. 73-40.000.
Moelg, Harald; and Wagner, Wolfgang, to Kneissl Dachstein Sportartikel AG. Short ski-like sports device. 5,618,053, Cl. 280-609.000.
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Mogensen, Vagn; and Johansen, Jan B., to Dansk Industri Syndikat A/S. Method and apparatus for manufacturing moulds or mould parts by compacting particulate material. 5,618,484, Cl. 264-220.000.
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Ulan, Judith G.; Maycock, Kenneth R.; Drackett, Thomas S.; and Mok, Felix M. F., 5,618,437, Cl. 210-679.000.
Mok, Sammy L., to Micromodule Systems, Inc. Multiple chip module mounting assembly and computer using same. 5,619,399, Cl. 361-707.000.
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Kahn, Michael, 5,618,914, Cl. 530-317.000.
Molins PLC: *See—*
Cahill, Michal J., 5,618,378, Cl. 156-552.000.
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Moltech Invent S.A.: *See—*
de Nora, Vittorio; and Duruz, Jean-Jacques, 5,618,403, Cl. 205-372.000.
Momirov, Franz, to Crosman Corporation. Air gun with pressure relief valve. 5,617,837, Cl. 124-73.000.
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Momose, Tetsuo: *See—*
Katagiri, Takashi; and Momose, Tetsuo, 5,619,111, Cl. 318-625.000.
Monc Co., Ltd.: *See—*
Okubo, Shiroshi, 5,617,659, Cl. 40-545.000.
Monsanto Company: *See—*
D'Errico, John J.; and Krach, Mary S., 5,618,863, Cl. 524-91.000.
Petrmichl, Rudolph H.; Knapp, Bradley J.; Kimock, Fred M.; and Daniels, Brian K., 5,618,619, Cl. 428-334.000.
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Montech AG: *See—*
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Montell Technology Company B.V.: *See—*
Parodi, Sandro; Nocci, Roberto; Giannini, Umberto; Barbé , Pier Camillo; and Scatá , Umberto, 5,618,771, Cl. 502-127.000.
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Montenegro, Gabriel E.; Drach, Steven J.; and Wong, Ho Y., to Sun Microsystems, Inc. System isolation and fast-fail. 5,619,645, Cl. 395-185.010.
Montner, Paul, to University of New Mexico. Beta-agonists as an aid to maintain or enhance strength and endurance. 5,618,848, Cl. 514-653.000.
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Shenoy, Michael A.; Williams, Ted; and Montoye, Robert K., 5,619,153, Cl. 327-112.000.
Montresor, Daniel: *See—*
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Moon, Sung-Dai, to Daewoo Electronics Co., Ltd. Circulating pump. 5,618,168, Cl. 417-423.110.
Moore, Kevin W.: *See—*
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Moore, Prentice, to Brunswick Corporation. Trolling motor foot pedal assembly. 5,618,212, Cl. 440-7.000.
Moore, Terrill M., to Databook Incorporated. System for assigning a unique identifier to components by storing a bit sequence from a selected bit line after detecting a predetermined sequence of data. 5,619,724, Cl. 395-829.000.
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Graf, Michael C.; and Moradians, Edward, 5,618,139, Cl. 410-69.000.
Morandin, George A.; Moscovitch, Jerry; and Glisch, Miro, to GSW Inc. Eavestrough system. 5,617,678, Cl. 52-11.000.
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Morant, Daniel: *See—*
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Morel, William: *See—*
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Moreschi, Elmer J.; and Piuk, Reinhart U., to Grass America, Inc. System for cleaning fixtures utilized in spray painting. 5,617,800, Cl. 110-236.000.
Moreton, Henry P., to Silicon Graphics, Inc. Method for sampling a uniform spatially-distributed sequence of pixels in a block. 5,619,597, Cl. 382-296.000.
Moretto, Hans-Heinrich: *See—*
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Morgan, Carlton B., to Heartstream, Inc. Defibrillator electrode system using a flexible substrate and having electrode test features. 5,617,853, Cl. 128-640.000.
Mori, Takao: *See—*
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Moriarty, Maurice J.; and Whitesell, Joseph E. Piston ring seal having angled ends. 5,618,048, Cl. 277-193.000.
Moridi, Said; and Martinez, Georges, to U.S. Philips Corporation. Transmission system using block-coded or trellis-coded modulations, receiver and decoder for such a system. 5,619,540, Cl. 375-341.000.
Morikawa, Takashi: *See—*
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Morimoto, Akio: *See—*
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Morin, Gaston: *See—*
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Morini, Marco, to Lys Fusion, S.p.A. Clip for fastening pipes and similar articles. 5,618,015, Cl. 248-74.200.
Morioka, Koichi: *See—*
Yoshimura, Takeshi; Morioka, Koichi; and Yamada, Teruho, 5,619,019, Cl. 181-166.000.
Morishita, Akira: *See—*
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Morita, Satoshi, to Fuji Photo Film Co., Ltd. Method of monitoring washing water for a developing process of a photosensitive material. 5,618,644, Cl. 430-30.000.
Moritz, Jules G., III: *See—*
Keefe, Brian J.; Ho, May F.; Courian, Kenneth J.; Steinfield, Steven W.; Childers, Winthrop D.; Tappon, Ellen R.; Trueba, Kenneth E.; Chapman, Terri I.; Knight, William R.; and Moritz, Jules G., III, 5,619,236, Cl. 347-84.000.
Moriya, Kouji: *See—*
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Moroni, Angelo; Scarra, Flavio; and Taddeo, Alberto, to SGS-Thomson Microelectronics, S.R.L. Circuit for detecting a fault state in a clock signal for microprocessor electronic devices. 5,619,643, Cl. 395-182.210.
Morris, Glenn. Locking mailbox. 5,617,993, Cl. 232-27.000.
Morris, Nancy A.: *See—*
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Morrish, Arthur A.: *See—*
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Mors, Wayne A. Orthodontic bracket and system. 5,618,174, Cl. 433-8.000.
Morton International, Inc.: *See—*
Johnson, Kelly B.; and Hussey, Brett, 5,618,057, Cl. 280-736.000.
Mory, Yves: *See—*
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Moscovitch, Jerry: *See—*
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Moser, Nikolaus: *See—*
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Anderson, William C., 5,619,711, Cl. 395-800.000.
Auyeung, Cheung; Lindsley, Brett L.; and Levine, Stephen N., 5,619,341, Cl. 358-404.000.
Averbuch, Rod; Urs, Kamala; and Cimet, Israel A., 5,619,550, Cl. 379-5.000.
Blaauw, David T.; Norton, Joseph W.; Jones, Larry G.; Misra, Susanta; and Bahar, R. Iris, 5,619,418, Cl. 364-489.000.
Cadd, Jimmy W.; and Fulghum, Tracy L., 5,619,530, Cl. 375-219.000.
Cho, Jaeshin, 5,619,064, Cl. 257-637.000.
Fogel, Eliezer, 5,619,566, Cl. 379-406.000.
Grube, Gary W.; Markison, Timothy W.; Pendleton, Matthew A.; and Rybicki, Mathew A., 5,619,505, Cl. 370-476.000.
Gurney, David P.; and Baum, Kevin L., 5,619,542, Cl. 375-371.000.
Horkin, Philip R.; Ma, Stephen C.; Durboraw, Isaac N., III; and Muncaster, George W., 5,619,211, Cl. 342-357.000.
Jandu, Jaswinder S., 5,619,156, Cl. 327-198.000.
Langan, John A.; Winter, Marlan L.; and Sibigtroth, James M., 5,619,687, Cl. 395-557.000.
Li, Shiping; and Pasco-Anderson, James A., 5,619,516, Cl. 371-53.000.
Ling, Fuyun; Sexton, Thomas A.; and Bruckert, Gene, 5,619,524, Cl. 375-200.000.
Murray, Bradley A., 5,619,181, Cl. 340-407.100.
Reuss, Robert H.; and Shapiro, Frederic B., 5,618,688, Cl. 438-189.000.
Sowa, Hans C., 5,619,572, Cl. 380-21.000.
Tai, Jy-Der D., 5,619,447, Cl. 365-145.000.
Motoyoshi, Makoto: *See—*
Meguro, Satoshi; Uchibori, Kiyofumi; Suzuki, Norio; Motoyoshi, Makoto; Koike, Atsuyoshi; Yamanaka, Toshiaki; Sakai, Yoshio; Kaga, Toru; Hashimoto, Naotaka; Hashimoto, Takashi; Honjou, Shigeru; and Minato, Osamu, 5,619,055, Cl. 257-369.000.
Mount, Andrew S.; Paul, Douglas; and Wheeler, Alfred P. Colorimetric titration method and apparatus. 5,618,495, Cl. 422-82.050.
Mouri, Daisuke: *See—*
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Mowrer, Norman R.; Foscante, Raymond E.; and Rojas, J. Luis, to Ameron International Corporation. Epoxy polysiloxane coating and flooring compositions. 5,618,860, Cl. 523-421.000.
Moy, Paul Y.: *See—*
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Mrocek, Richard: *See—*
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Mrocek, Sharon: *See—*
Baker, Denny D., 5,618,105, Cl. 366-130.000.
MTU Motoren- und Turbinen-Union Muenchen GmbH: *See—*
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Muehlfeld, Julie A.: *See—*
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Mueller, Richard H.: *See—*
Poss, Michael A.; Pansegrau, Paul D.; Wang, Shaopeng; Thottathil, John K.; Singh, Janak; and Mueller, Richard H., 5,618,946, Cl. 548-431.000.
Mueller, Richard L., Jr.: *See—*

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Mugg, Philippe, to Cogifer- Compagnie Generale d'Installations Ferroviaires (Societe Anonyme a Directoire). Movable point for a crossing frog for railway apparatus of very great length, incorporated in long welded rails. 5,618,013, Cl. 246-385.000.

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Mukainakano, Hiroshi: *See—*
Machida, Satoshi; Kawahara, Yukito; Mukainakano, Hiroshi; and Yokomichi, Masahiro, 5,619,345, Cl. 358-482.000.

Mukhopadhyay, Sudarsan: *See—*
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Mulholland Designs, Inc.: *See—*
Mulholland, Lawrence K., 5,618,055, Cl. 280-641.000.

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Müller, Rudolf R. M., to Multifastener Corporation. Fastener installation and method. 5,617,652, Cl. 36-134.000.

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Muncaster, George W.: *See—*
Horkin, Philip R.; Ma, Stephen C.; Durboraw, Isaac N., III; and Muncaster, George W., 5,619,211, Cl. 342-357.000.

Munsif, Anand. Shaped catheter device and method. 5,617,854, Cl. 128-642.000.

Muntendam, Hendrik-Jan: *See—*
Vonken, Hub A. G.; Muntendam, Hendrik-Jan; van der Hoeven, Jos; and Pique, Udo, 5,618,853, Cl. 521-60.000.

Murai, Masahiko: *See—*
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Muramatsu, Kiyoji: *See—*
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Muramatsu, Shinichi: *See—*
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Muraoka, Tetsuya, to Sanmei Electronic Co., Ltd. Apparatus for acquiring data used to evaluate and reproduce the color of a sample on the basis of the chroma and glossiness of the sample. 5,619,319, Cl. 356-73.000.

Murasawa, Yoshihiro: *See—*
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Murata Manufacturing Co., Ltd.: *See—*
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Murata, Minoru: *See—*
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Murata, Yukichi: *See—*
Shinozaki, Kenji; Hirano, Hideki; Murata, Yukichi; and Ishida, Mio, 5,618,337, Cl. 106-22.00H.

Murayama, Tsutomu: *See—*
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Muroi, Kunimasa: *See—*
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Murray, Bradley A., to Motorola, Inc. Vibratory alerting device with audible sound generator. 5,619,181, Cl. 340-407.100.

Murray, Mark J.: *See—*
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Mutoh, Atsushi, to Seiko Instruments Inc. Analog timepiece having means for signaling an alarm time and a change of mode. 5,619,478, Cl. 368-72.000.

Muz, Edwin: *See—*
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Myer, Robert E., to Lucent Technologies Inc. Distortion creation and reduction circuit. 5,619,168, Cl. 330-149.000.

Myers, Alan M.; Charvat, Peter K.; Letson, Thomas A.; Yang, Shi-ning; and Bai, Peng, to Intel Corporation. Anchored via connection. 5,619,071, Cl. 257-753.000.

Myers, Jan W. M., to Schawk, Inc. Nonreturn valve for medical fluid technologies. 5,617,897, Cl. 137-859.000.

Myers, Richard S.: *See—*
Marsella, John A.; Starner, William E.; and Myers, Richard S., 5,618,905, Cl. 528-123.000.

Myers, Robert M.; and Landrau, Felix A., to ALZA Corporation. Iontophoretic delivery device with single lamina electrode. 5,618,265, Cl. 604-20.000.

Myers, Thomas W.: *See—*
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Myo, Nagayoshi: *See—*
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Nabuurs, Martinus W. M., to Inalfa B.V. Mechanism for moving a panel with respect to a roof of a vehicle. 5,618,081, Cl. 296-216.000.

Nadkarni, Sadashiv: *See—*
Davisson, Thomas; Nadkarni, Sadashiv; and Reesor, Douglas, 5,618,358, Cl. 148-549.000.

Nagae, Nobukazu; Yamahara, Motohiro; and Yamada, Nobuaki, to Sharp Kabushiki. Liquid crystal display device. 5,618,592, Cl. 428-1.000.

Nagafuchi, Hitoshi, to NEC Corporation. Line set-up system. 5,619,490, Cl. 370-241.000.

Nagai, Hiroshi, to Ando Electric Co., Ltd. Parallel data counter circuit. 5,619,437, Cl. 364-715.090.

Nagai, Kenji: *See—*
Nomura, Hidenori; Nagai, Kenji; Nakashima, Masami; Yamamoto, Hiroshi; and Sobue, Isaya, 5,619,465, Cl. 365-206.000.

Nagai, Shigekazu; Saitoh, Akio; and Suzuki, Masahiko, to SMC Kabushiki Kaisha. Fluid pressure apparatus. 5,617,898, Cl. 137-884.000.

Nagai, Yuichi: *See—*
Fujita, Takushi; Fukuda, Mitsuaki; Matsumoto, Chikako; Oota, Masaaki; Matsumoto, Hitoshi; Shindo, Shuro; Ooe, Waku; and Nagai, Yuichi, 5,619,628, Cl. 395-127.000.

Nagaishi, Tatsuoki, to Sumitomo Electric Industries, Ltd. Method for forming a step on a deposition surface of a substrate for a superconducting device utilizing an oxide superconductor. 5,618,446, Cl. 216-65.000.

Nagamura, Takashi; and Tomita, Shinji, to L'air Liquide, Societe Anonyme Pour L'Etude Et L'Exploitation Des Procedes Georges Claude. Method of producing ultra high purity monosilane and apparatus therefor. 5,617,740, Cl. 62-620.000.

Naganawa, Masahito; and Karasawa, Shinji, to Koito Manufacturing Co., Ltd. Headlamp for vehicle. 5,618,098, Cl. 362-61.000.

Nagano, Kentaro: *See—*
Hasumi, Kazuhisa; Nagano, Kentaro; Kamiyama, Shuuichi; Yanagida, Hiroaki; and Okada, Osamu, 5,618,496, Cl. 422-90.000.

Nagaoka International Corp.: *See—*
Nagaoka, Tadayoshi, 5,618,424, Cl. 210-402.000.

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Nagasawa, Mitsuru; Kuwano, Kazuyuki; Kawakami, Takeshi; Sugiura, Mamoru; Hibino, Hiroshi; Kojima, Shiro; and Azuma, Kishiro, to Toagosei Chemical Industry Co., Ltd.; Toyota Jidosha Kabushiki Kaisha; and Toyota Technological Institute. Weather-resistant solvent-based coating obtained by polymerization with thioether bond converted to sulfone bond. 5,618,898, Cl. 526-245.000.

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Ueda, Tomohiko; Matsuura, Ichiro; Honjo, Makoto; Kakii, Toshiaki; Yamanishi, Toru; and Nagasawa, Shinji, 5,619,605, Cl. 385-80.000.

Nagashima, Toshikazu; Kuramashi, Haruki; Iida, Yasunobu; and Asai, Sachio, to Central Glass Company, Limited. Glass plate with ultraviolet absorbing multilayer coating. 5,618,626, Cl. 428-429.000.

Nagata, Makoto: *See—*
Togawa, Yoshiaki; Matsumoto, Masahito; Nagata, Makoto; and Yabe, Tohru, 5,618,607, Cl. 428-119.000.

Nagata, Takefumi; Tanaka, Hiroshi; and Hishinuma, Kazuhiro, to Fuji Photo Film Co., Ltd. Image filing apparatus using both reversible and irreversible compression. 5,619,598, Cl. 382-305.000.

Nagata, Teruyuki; Kusuda, Chiyuki; Wada, Masaru; Satou, Kenichi; and Uchida, Masae, to Mitsui Toatsu Chemicals, Inc. Method for preparing aromatic secondary amino compound. 5,618,980, Cl. 564-415.000.

Nagato, Hitoshi; Saito, Tsutomu; Hirahara, Shuzo; Okuyama, Tetuo; Takayama, Satoshi; Tamura, Sakae; Hattori, Shunsuke; and Nukada, Hideki, to Kabushiki Kaisha Toshiba. Ink-jet recording apparatus which allows shifting or changing of ink position or direction. 5,619,234, Cl. 347-55.000.

Nagaya, Masaaki: *See—*
Furukawa, Masahiro; Nagaya, Masaaki; and Yoshimura, Tatsuhiro, 5,618,221, Cl. 451-8.000.

Nagel, Arthur A., to Pfizer, Inc. Benzothiazepine and benzoxazepine derivatives as cholecystokinin receptor antagonists. 5,618,808, Cl. 514-211.000.

Nagelberg, Alan S.: *See—*
Newkirk, Marc S.; White, Danny R.; Kennedy, Christopher R.; Nagelberg, Alan S.; Aghajanian, Michael K.; and Wiener, Robert J., 5,618,635, Cl. 428-614.000.

Nagura, Koji: *See—*
Kyushima, Hiroyuki; Nagura, Koji; Hasegawa, Yutaka; Kawano, Eiichiro; Kuroyanagi, Tomihiko; Atsumi, Akira; and Mizuide, Masuya, 5,619,100, Cl. 313-533.000.

Naimpally, Saiprasad V., to Matsushita Electric Corporation of America. MPEG transport encoding/decoding system for recording transport streams. 5,619,337, Cl. 386-83.000.

Naito, Hiroaki: *See—*
Horikoshi, Yuzo; Sawatari, Norio; Ogino, Takeshi; Naito, Hiroaki; Koshi, Makoto; Kido, Kazuhiko; Yamamoto, Takashi; Sakurai, Eiji; Katagiri, Yoshimichi; Maruyama, Masatoshi; Nitta, Hidenori; and Matsuoka, Sonoo, 5,618,648, Cl. 430-109.000.

Naito, Joji, to Victor Company of Japan, Ltd. Apparatus for detecting motion vector included in image information. 5,619,595, Cl. 382-236.000.

Naito, Ryuichi: *See—*
Yokota, Hiroshi; Naito, Ryuichi; Hirano, Hiroyuki; Ishii, Katsumi; Naohara, Shinichi; Tsukada, Yoshifumi; and Matsumoto, Kanya, 5,619,484, Cl. 369-50.000.

Naito, Toshikatsu: *See—*
Kuroyanagi, Noriyoshi; Suehiro, Naoki; and Naito, Toshikatsu, 5,619,527, Cl. 375-206.000.

Naji, Jafar: *See—*
Omid, Reza G.; Pathak, Sanjiv D.; Naji, Jafar; Smith, Stephen A.; Ramamurthy, Sriram; Abudayyeh, Jihad Y.; and Gopalaswamy, Kasturiraman, 5,619,703, Cl. 395-734.000.

Nakabayashi, Takashi: *See—*
Segawa, Mizuki; Kato, Yoshiaki; Nakaoka, Hiroaki; Nakabayashi, Takashi; Hori, Atsushi; Masuda, Hiroshi; Matsuo, Ichiro; Shinohara, Akihira; Uehara, Takashi; and Yasuhira, Mitsuo, 5,618,748, Cl. 438-232.000.

Nakabayashi, Takeo, to Mitsubishi Denki Kabushiki Kaisha. Protocol processor in communication network transferring data in asynchronous transfer mode. 5,619,499, Cl. 370-469.000.

Nakada, Tetsuya; and Kubota, Michio, to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo. α-glycosyl derivative of catecholamine or its salt, and its preparation and uses. 5,618,794, Cl. 514-25.000.

Nakadate, Teruo: *See—*
Kawabe, Norio; Uchiro, Hiromi; Nakadate, Teruo; Tanahashi, Masahiko; and Funaba, Yuriko, 5,618,804, Cl. 514-103.000.

Nakagami, Takakiyo: *See—*
Akashi, Tamotsu; Yamamoto, Tsuyoshi; and Nakagami, Takakiyo, 5,619,601, Cl. 385-16.000.

Nakagawa, Emi; Ueda, Hitoshi; Uchikawa, Akio; and Koyuhara, Norikazu, to Hitachi Ferrite, Ltd. Ni ferrite and core made of Ni ferrite for power supplies. 5,618,464, Cl. 252-62.600.

Nakagawa, Etsuo: *See—*
Tomi, Yoshitaka; Nakagawa, Etsuo; and Sawada, Shinichi, 5,618,466, Cl. 252-299.630.

Nakagawa, Jun, to Fujitsu Limited. Program cache apparatus which associates the physical address of a physical page with both the logical address in a program cache space and the logical address in a process space. 5,619,696, Cl. 395-670.000.

Nakagawa, Noriaki: *See—*
Hamamoto, Hiroshi; Sugiyama, Yoshinori; Nakagawa, Noriaki; Hashida, Eiji; Tsuchimoto, Suguru; Nakanishi, Noriyuki; Matsunaga, Yuji; and Okada, Yoshimi, 5,618,699, Cl. 435-69.700.

Nakagawa, Shinobu: *See—*
Maeyama, Yoshihiro; Nakagawa, Shinobu; and Serizawa, Hiroshi, 5,618,859, Cl. 523-201.000.

Nakagawa, Tokuzo: *See—*
Yui, Tooru; Nakagawa, Tokuzo; and Kondoh, Kazuo, 5,618,312, Cl. 606-229.000.

Nakahara, Shingo: *See—*
Matsumoto, Yoshikane; Hiki, Toshio; Nakahara, Shingo; Yageta, Kohichi; Kurosawa, Hiroyuki; and Kushima, Kohki, 5,618,118, Cl. 400-208.000.

Nakahara, Toshio: *See—*
Kurokawa, Junji; Nakahara, Toshio; and Soumiya, Norimasa, 5,619,311, Cl. 399-176.000.

Nakahata, Seiji: *See—*
Takeuchi, Hisao; Nakahata, Seiji; Matsuura, Takahiro; and Kawai, Chihiro, 5,618,765, Cl. 501-80.000.

Nakai, Masatoshi; and Kuwabara, Mitsutaka, to Kabushiki Kaisha Toshiba. Reproduction apparatus with a search function. 5,619,338, Cl. 386-70.000.

Nakajima, Keihachiro: *See—*
Okada, Kaoru; Nakajima, Keihachiro; and Kato, Hitoshi, 5,618,510, Cl. 423-346.000.

Nakajima, Keiichi; Fujita, Tadashi; and Miwa, Tetsuya, to Sumitomo Wiring Systems, Ltd.; and Nippondenso Company, Ltd. Structure for connecting spark plug and ignition coil for internal combustion. 5,618,193, Cl. 439-125.000.

Nakajima, Yuji; and Taniguchi, Masahiko, to Chisso Corporation. Flame-retardant fiber and nonwoven fabric. 5,618,623, Cl. 428-364.000.

Nakamura, Hitoshi: *See—*
Inoue, Hiroyuki; Sugama, Sadayuki; Hiramatsu, Soichi; Yamaguchi, Hideki; Ujita, Toshihiko; Yamanaka, Akihiro; Nojima, Takashi; Kotaki, Yasuo; Tsukuda, Keiichiro; Nakamura, Hitoshi; Kida, Akira; Kawakami, Hideaki; and Iwasaki, Takeshi, 5,619,237, Cl. 347-86.000.

Nakamura, Kazuhiko: *See—*
Tsukada, Yoshiaki; Nakamura, Kazuhiko; Saito, Mitsuru; and Kayama, Hiroaki, 5,617,938, Cl. 192-54.500.

Nakamura, Kazuyuki, to NEC Corporation. PLL timing generator with voltage controlled oscillator. 5,619,170, Cl. 331-1.00A.

Nakamura, Kimitsugu; Sahara, Masayoshi; Ishikawa, Atushi; Okuyama, Chiyoshi; and Takeuchi, Junichi, to Hamamatsu Photonics K.K. Electron tubes using insulation material containing little alkali metal. 5,619,099, Cl. 313-532.000.

Nakamura, Shin-ichi, to Kabushiki Kaisha Toshiba. Signal encoding and decoding system allowing adding of signals in a form of frequency sample sequence upon decoding. 5,619,197, Cl. 341-50.000.

Nakane, Keiichi: *See—*
Nonaka, Naomichi; Nakane, Keiichi; Itoh, Hiromichi; and Ishida, Hideaki, 5,619,716, Cl. 395-800.000.

Nakanishi Dental Mfg. Co., Ltd.: *See—*
Nakanishi, Eiichi, 5,617,759, Cl. 74-44.000.

Nakanishi, Eiichi, to Nakanishi Dental Mfg. Co., Ltd. Mechanism for machining and grinding tool for converting rotational movement into reciprocating movement. 5,617,759, Cl. 74-44.000.

Nakanishi, Noriyuki: *See—*
Hamamoto, Hiroshi; Sugiyama, Yoshinori; Nakagawa, Noriaki; Hashida, Eiji; Tsuchimoto, Suguru; Nakanishi, Noriyuki; Matsunaga, Yuji; and Okada, Yoshimi, 5,618,699, Cl. 435-69.700.

Nakano, Hidefumi: *See—*
Shioi, Kousuke; and Nakano, Hidefumi, 5,618,509, Cl. 423-290.000.

Nakano, Junji; Suganuma, Nobuo; and Tachikawa, Hiromichi, to Fuji Photo Film Co., Ltd. Electrophotographic printing plate precursor. 5,618,645, Cl. 430-56.000.

Nakano, Misao, to Fujitsu Limited. Video telephone system and method for transmitting and receiving signals when there is a failure in the system. 5,619,252, Cl. 348-14.000.

Nakao, Setsuo: *See—*
Saitoh, Kazuo; Niwa, Hiroaki; Nakao, Setsuo; and Miyagawa, Soji, 5,618,345, Cl. 216-2.000.

Nakaoka, Hiroaki: *See—*
Segawa, Mizuki; Kato, Yosbiaki; Nakaoka, Hiroaki; Nakabayashi, Takashi; Hori, Atsushi; Masuda, Hiroshi; Matsuo, Ichiro; Shinohara, Akihira; Uehara, Takashi; and Yasuhira, Mitsuo, 5,618,748, Cl. 438-232.000.

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Nomura, Hidenori; Nagai, Kenji; Nakashima, Masami; Yamamoto, Hiroshi; and Sobue, Isaya, 5,619,465, Cl. 365-206.000.

Nakata, Naohisa: *See—*
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Nakatani, Hiroto: *See—*
Tamatsu, Yukimasa; Hazumi, Hiroshi; and Nakatani, Hiroto, 5,619,208, Cl. 342-70.000.

Nakatani, Masayuki; Sengoku, Koji; and Fujita, Akifumi, to House Foods Corporation. Food sterilizing apparatus. 5,617,781, Cl. 99-470.000.

Nakayama, Hidetaka: *See—*
Mitamura, Makoto; and Nakayama, Hidetaka, 5,618,425, Cl. 210-493.500.

Nakayama, Shigekatsu; and Ishimaru, Seiji, to Tagawa Denki Kenkyusyo Company. Phase-contrast haploscope and rotary disc for use therewith. 5,619,290, Cl. 351-217.000.

Nakayama, Toru: *See—*
Yoshida, Takehiro; and Nakayama, Toru, 5,619,344, Cl. 358-468.000.

Nakazawa, Makoto: *See—*
Iwatsuka, Shinji; Narumiya, Yoshikazu; and Nakazawa, Makoto, 5,619,367, Cl. 359-283.000.

Nakazawa, Takashi; Azuma, Shinji; and Sagawa, Norihisa, to Hitachi Koki Company Limited. Rotor temperature control system. 5,619,422, Cl. 364-505.000.

Nakazawa, Toshiharu: *See—*
Hirakawa, Yutaka; Aiyoshizawa, Shun-ichi; and Nakazawa, Toshiharu, 5,618,167, Cl. 417-372.000.

Namba, Hikari: *See—*
Tezuka, Satoru; Miyake, Shigeru; Furukawa, Hiroshi; Kihara, Kenichi; Kitahara, Chiho; Idei, Hideomi; Taguchi, Shihoko; Namba, Hikari; and Suzano, Alberto, 5,619,640, Cl. 395-326.000.

Nanami, Masayoshi, to Sanshin Kogyo Kabushiki Kaisha. Twin impeller drive for jet pump. 5,618,213, Cl. 440-38.000.

Naohara, Shinichi: *See—*
Yokota, Hiroshi; Naito, Ryuichi; Hirano, Hiroyuki; Ishii, Katsumi; Naohara, Shinichi; Tsukada, Yoshifumi; and Matsumoto, Kanya, 5,619,484, Cl. 369-50.000.
Narang, Harash K., to British Technology Group Limited. Oligonucleotides and their use in an assay for encephalopathies. 5,618,673, Cl. 435-6.000.
Narayan, Chandrasekhar: *See—*
Angelopoulos, Marie; Afzali-Ardakani, Ali; Feger, Claudius; and Narayan, Chandrasekhar, 5,619,357, Cl. 349-110.000.
Narayan, Thirumurti; and Voloppi, Valeri L., to BASF Corporation. Isocyanate composition. 5,618,967, Cl. 560-26.000.
Nartron Corporation: *See—*
Shank, David; and Cooper, Stephen R. W., 5,619,133, Cl. 324-207.240.
Narumiya, Yoshikazu: *See—*
Iwatsuka, Shinji; Narumiya, Yoshikazu; and Nakazawa, Makoto, 5,619,367, Cl. 359-283.000.
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Nathanson, Tedd. Method of teaching using a computer. 5,618,180, Cl. 434-156.000.
National Instruments Corporation: *See—*
Ilic, Kosta, 5,619,702, Cl. 395-705.000.
National Research Council of Canada: *See—*
Li, Li; Dobrowolski, Jerzy A.; Grant, Peter D.; and Sullivan, Brian T., 5,619,059, Cl. 257-431.000.
Rourke, David E., 5,619,138, Cl. 324-309.000.
National Semiconductor Corporation: *See—*
Lin, Allan; and Deng, Jay, 5,619,686, Cl. 395-552.000.
Opris, Ion E., 5,619,442, Cl. 364-787.000.
Travaglio, Mark A.; and Young, Desmond W., 5,619,652, Cl. 395-200.200.
Young, Desmond W., 5,619,651, Cl. 395-200.200.
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Farwaha, Rajeev; Currie, William D.; Humphreys, Robert W. R.; and Thomaides, John S., 5,618,876, Cl. 524-548.000.
Natterstad, Kurt L.: *See—*
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Bushuev, Jury G.; Polovnikov, Stanislav P.; Fekhretdinov, Foat A.-K.; Karaoglanov, Sergei A.; and Ivanenko, Zhanna S., 5,617,882, Cl. 131-331.000.
Navarra, Alberto: *See—*
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Navia, Manuel A.; and St. Clair, Nancy L., to Vertex Pharmaceuticals, Inc. Crosslinked enzyme crystals. 5,618,710, Cl. 435-174.000.
Nayak, Deepak: *See—*
Pramanick, Shekhar; and Nayak, Deepak, 5,617,991, Cl. 228-180.220.
Nayak, Umesh P.: *See—*
Byers, Charles H.; Sisson, Warren G.; Snyder, Thomas S.; Beleski, Richard J.; Nayak, Umesh P.; and Francis, Timothy L., 5,618,502, Cl. 423-70.000.
Naylor, Thomas K.: *See—*
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NCR Corporation: *See—*
Jheeta, Elizabeth A., 5,619,558, Cl. 379-90.000.
Kosarew, W. Tony, 5,619,416, Cl. 364-478.130.
NDR Corporation: *See—*
Mason, Joseph, 5,617,661, Cl. 40-642.010.
Neben, Gary: *See—*
Nielson, Michael E.; Brant, William A.; and Neben, Gary, 5,619,642, Cl. 395-182.040.
NEC Corporation: *See—*
Emori, Kiyoshi; and Ohtsuki, Noriko, 5,619,410, Cl. 395-757.000.
Endo, Nobuhiro, 5,619,051, Cl. 257-316.000.
Fujii, Masahiro; Ohno, Yasuo; Maeda, Tadashi; Atsumo, Takao; Matsuno, Noriaki; Numata, Keiichi; and Yoshida, Nobuhide, 5,619,146, Cl. 326-21.000.
Kamiya, Hiroshi, 5,618,459, Cl. 219-497.000.
Kasahara, Tomokazu, 5,618,754, Cl. 438-653.000.
Katsuta, Hiroshi, 5,619,669, Cl. 395-405.000.
Kawauchi, Yoshikazu, 5,619,653, Cl. 395-200.080.
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Nakamura, Kazuyuki, 5,619,170, Cl. 331-1.00A.
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Shimazu, Hideo, 5,619,694, Cl. 395-615.000.
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Warizaya, Kanji, 5,619,127, Cl. 323-275.000.
Yahagi, Masahiko, 5,619,551, Cl. 379-60.000.
Yasuzato, Tadao, 5,619,304, Cl. 355-71.000.
NEC Research Institute, Inc.: *See—*
Redmond, Ian R.; and Schenfeld, Eugen, 5,619,359, Cl. 359-117.000.
Negishi, Hideo, to Riso Kagaku Corporation. Improved stencil printing drum which prevents ink leakage. 5,617,786, Cl. 101-116.000.
Neidhart, Fritz, to Clip-Lok International Limited. Collapsible stackable pallet container. 5,617,967, Cl. 220-4.330.
Neles-Jamesbury Oy: *See—*
Tornberg, Jouko; Huovila, Jyrki; Kivipelto, Pekka; and Pyötsiä, Jouni, 5,617,896, Cl. 137-813.000.
Nelson, Donald F.: *See—*
Sullivan, Brian K.; Britain, Graham J.; and Nelson, Donald F., 5,618,080, Cl. 296-155.000.
Nelson, John T.: *See—*
Marlow, Scott C.; Petruschke, Haans K.; Coon, Donald B.; and Nelson, John T., 5,618,303, Cl. 606-205.000.
Nelson, Terry M.: *See—*
Swanson, Roger A.; Nelson, Terry M.; Barrett, James R.; and Hosamani, Laxmappa, 5,618,633, Cl. 428-593.000.
Nelson, Thomas J. Articles with tongue and groove joint and method of making such a joint. 5,618,602, Cl. 428-60.000.
Nemoto, Shusuke, to Kanzaki Kokyukoki Mfg. Co., Ltd. Synchromesh change transmission having a neutral brake. 5,617,936, Cl. 192-4.00A.
NeoPath, Inc.: *See—*
Lee, Shih-Jong J.; Ellison, Dayle G.; Kuan, Chih-Chau L.; Oh, Seho; and Wilhelm, Paul S., 5,619,428, Cl. 364-551.010.
Nerger, Dittmar K.: *See—*
Kumpf, Robert J.; Wicks, Douglas A.; Nerger, Dittmar K.; Pielartzik, Harald; and Wehrmann, Rolf, 5,618,889, Cl. 525-437.000.
Neste Oy: *See—*
Kulmala, Kari; Ankner, Kjell; and Rintala, Lea, 5,618,985, Cl. 568-853.000.
Nestec S.A.: *See—*
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Nestler, Gerhard: *See—*
Dockner, Toni; Lermer, Helmut; Rauh, Ulrich; and Nestler, Gerhard, 5,618,971, Cl. 560-218.000.
Nesvadba, Peter, to Ciba-Geigy Corporation. Phenyl phosphites for use as stabilizers for organic materials. 5,618,871, Cl. 524-326.000.
Neti, Chalapathy, to International Business Machines Corporation. Method and system for adapter configuration in a data processing system. 5,619,701, Cl. 395-674.000.
Network Security Technologies: *See—*
Hickman, Joel; Phillips, Scott; and Brady, Colin, 5,619,025, Cl. 235-454.000.
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Woeste, Norbert; and Neuner, Josef, 5,617,760, Cl. 74-475.000.
Nevrekar, Venkatesh R. Gate valve. 5,618,027, Cl. 251-302.000.
Nevyas, Herbert J. Eye proptosing speculum and method. 5,618,261, Cl. 600-236.000.
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New York University: *See—*
Cherksey, Bruce D., 5,618,531, Cl. 424-93.700.
Schlessinger, Joseph; Skolnik, Edward Y.; and Margolis, Benjamin L., 5,618,691, Cl. 435-69.100.
Newberth, Frederick F., III; Colton, Martin S.; and Tran, Canh M., to Loctite Corporation. Impregnation sealant composition of superior high temperature resistance, and method of making same. 5,618,857, Cl. 523-176.000.
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Newell, Sean M.: *See—*
Spoto, Thomas A.; and Newell, Sean M., 5,619,075, Cl. 307-10.200.
Newkirk, Marc S.; White, Danny R.; Kennedy, Christopher R.; Nagelberg, Alan S.; Aghajanian, Michael K.; and Wiener, Robert J., to Lanxide Technology Company, LP. Macrocomposite bodies. 5,618,635, Cl. 428-614.000.
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Law, Clarence G., Jr.; Trainham, James A., III; Newman, John S.; and Eames, Douglas J., 5,618,393, Cl. 204-252.000.
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Newman, Steven K.: *See—*
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Newmoyer, Kerry, to Alcatel NA Cable Systems, Inc. Communication cable for use in a plenum. 5,619,016, Cl. 174-113.00R.
Ney, Theodore K. Shutter panel. 5,617,683, Cl. 52-202.000.
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NGK Adrec Co. Ltd.: *See—*
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Le Paih, Jacques, 5,618,229, Cl. 452-47.000.
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Ueyama, Hisashi, 5,618,226, Cl. 451-234.000.
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Tokuda, Shoichi; Ninomiya, Kazuhisa; Fukushima, Yasuhiro; Watanabe, Shigeyuki; Ochiai, Mitsuru; Okumura, Mutsuo; and Hosokawa, Yuko, 5,618,555, Cl. 424-443.000.
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Kai, Tadao, 5,619,735, Cl. 396-55.000.
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Satou, Kouji, 5,619,736, Cl. 396-164.000.
Suzuki, Masahiro; and Minamino, Koichiro, 5,619,265, Cl. 348-362.000.
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Horikoshi, Yuzo; Sawatari, Norio; Ogino, Takeshi; Naito, Hiroaki; Koshi, Makoto; Kido, Kazuhiko; Yamamoto, Takashi; Sakurai, Eiji; Katagiri, Yoshimichi; Maruyama, Masatoshi; Nitta, Hidenori; and Matsuoka, Sonoo, 5,618,648, Cl. 430-109.000.
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Maeyama, Yoshihiro; Nakagawa, Shinobu; and Serizawa, Hiroshi, 5,618,859, Cl. 523-201.000.
Nippon Shokubai Co., Ltd.: *See—*
Kurimoto, Ikuo; Onodera, Hideo; and Aoki, Yukio, 5,618,974, Cl. 562-532.000.
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Sugimoto, Noboru; Suzuki, Masatoshi; Futsuhara, Koichi; Sakai, Masayoshi; and Mihira, Ritsuo, 5,619,110, Cl. 318-450.000.
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Konya, Shogo; Okamoto, Akira; and Yoshizaki, Kouji, 5,618,498, Cl. 422-174.000.
Koyama, Kazuo; Usuda, Matsuo; Takahashi, Manabu; Sakuma, Yasuharu; Hiwatashi, Shunji; and Kawasaki, Kaoru, 5,618,355, Cl. 148-320.000.
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Tanabe, Takaya; Yamamoto, Manabu; Katoh, Kikuji; and Dobashi, Hisanobu, 5,619,487, Cl. 369-100.000.
Ueda, Tomohiko; Matsuura, Ichiro; Honjo, Makoto; Kakii, Toshiaki; Yamanishi, Toru; and Nagasawa, Shinji, 5,619,605, Cl. 385-80.000.
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Ao, Kenichi; Murata, Minoru; Noguchi, Hiroki; Yoshino, Yoshimi; and Uenoyama, Hirofumi, 5,618,738, Cl. 438-3.000.
Kajita, Yuji, 5,619,115, Cl. 320-1.000.
Kawashima, Takeshi; and Tanaka, Hiroaki, 5,619,512, Cl. 371-22.500.
Nakajima, Keiichi; Fujita, Tadashi; and Miwa, Tetsuya, 5,618,193, Cl. 439-125.000.
Otani, Atsushi, 5,619,329, Cl. 356-382.000.
Suzuki, Hideki, 5,617,730, Cl. 62-133.000.
Tamatsu, Yukimasa; Hazumi, Hiroshi; and Nakatani, Hiroto, 5,619,208, Cl. 342-70.000.
Uenoyama, Hirofumi; Ao, Kenichi; Kanosue, Masakazu; Suzuki, Yasutoshi; and Takeuchi, Yukihiro, 5,619,050, Cl. 257-254.000.
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Nishi, Takeshi: *See—*
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Yamazaki, Shunpei; Konuma, Toshimitsu; Nishi, Takeshi; and Shimizu, Michio, 5,619,353, Cl. 349-89.000.
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Teishi, Minoru, 5,618,608, Cl. 428-122.000.
Nishikawa, Takashi: *See—*
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Nishikawa, Toshiyuki; and Ishihara, Hiroshi, to Mitsubishi Cable Industries, Ltd. Access unit for local area network and concentrator system thereof. 5,619,494, Cl. 370-357.000.
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Nishikubo, John S.; and Potter, Michael J., 5,617,923, Cl. 169-51.000.
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Ohta, Hiroyuki; Miura, Hideo; Masuda, Hiroo; Tamaki, Yoichi; Ikeda, Takahide; Nishimura, Asao; and Hashimoto, Takashi, 5,619,069, Cl. 257-692.000.
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Hatano, Shintarou; Kawahito, Hiroshi; Ichikawa, Yoshiki; Mizoguti, Fumito; Tsuji, Masahiro; Hiroyasu, Takao; Kawamoto, Hiroshi; Fujita, Syouichi; Nishimura, Hideyuki; Kawabata, Itaru; and Kazaki, Yuichi, 5,619,312, Cl. 399-61.000.
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Iwamatsu, Toshiaki; Inoue, Yasuo; and Nishimura, Tadashi, 5,619,053, Cl. 257-347.000.
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Boys, John T.; and Nishino, Shuzo, 5,619,078, Cl. 307-85.000.
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Suzuki, Rieko; Saida, Kiyoshi; Itazu, Kazushige; Fujine, Eiji; Kamiya, Yoshihiro; Uchida, Yoshitaka; Murakami, Takako; Tsuyuki, Teruhisa; Kawazoe, Kazunori; Shimazaki, Takeshi; and Nishiwaki, Yukimi, 5,618,744, Cl. 438-599.000.
Nishiyama, Masanori: *See—*
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Nissan Motor Co., Ltd.: *See—*
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Yagi, Sakai; Tsuji, Masanori; Jinno, Keishi; and Yoneda, Takahiro, 5,618,201, Cl. 439-489.000.
Nissin Shokuhin Kabushiki Kaisha: *See—*
Ohno, Tsuneya; Terada, Masaki; and Yoneda, Yukio, 5,618,922, Cl. 530-388.350.
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Abe, Takafumi; Tanaka, Fumio; Nitobe, Hiroyuki; and Takemoto, Masaki, 5,618,953, Cl. 549-508.000.
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Nitto Boseki Co., Ltd.: *See—*
Kojima, Ryo; Sato, Yoshiro; Takekawa, Akiko; and Katayama, Katsuhiro, 5,618,686, Cl. 435-26.000.
Nitz, Theodore J.: *See—*
Aldous, David J.; Bailey, Thomas R.; Diana, Guy D.; Kuo, Gee-Hong; and Nitz, Theodore J., 5,618,821, Cl. 514-277.000.
Niwa, Hiroaki: *See—*
Saitoh, Kazuo; Niwa, Hiroaki; Nakao, Setsuo; and Miyagawa, Soji, 5,618,345, Cl. 216-2.000.
Niwa, Hitoshi: *See—*
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Benhamida, Boubekeur; Richards, Grant; Chan, Stephen H.; Yearsley, Gyle; and Nobugaki, Jim, 5,619,681, Cl. 395-500.000.
Nocci, Roberto: *See—*
Parodi, Sandro; Nocci, Roberto; Giannini, Umberto; Barbé , Pier Camillo; and Scatá , Umberto, 5,618,771, Cl. 502-127.000.
Noda, Akeshi: *See—*
Matsushima, Yosuke; Iino, Yasuhiro; Toyosawa, Shinichi; Kimura, Takeshi; Fukahori, Yoshihide; and Noda, Akeshi, 5,618,595, Cl. 428-35.200.
Noda, Isao, to Procter & Gamble Company, The. Biodegradable copolymers and plastic articles comprising biodegradable copolymers. 5,618,855, Cl. 521-189.000.
Noe, Bradley D.; Lawton, William W.; Koval, Michael J.; and Killian, David W., to International Business Machines Corporation. Method and apparatus for synchronizing streaming and non-streaming multimedia devices by controlling the play speed of the non-streaming device in response to a synchronization signal. 5,619,733, Cl. 395-881.000.
Noe, Hans: *See—*
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Nogami, Sumitaka; Kitazawa, Michihiro; Sato, Katsuhiro; and Tomiuchi, Yoshimasa, to Fuji Electric Co., Ltd. Electrophotographic photoreceptors with anti-oxidizing agents. 5,618,646, Cl. 430-59.000.
Noguchi, Hiroki: *See—*
Ao, Kenichi; Murata, Minoru; Noguchi, Hiroki; Yoshino, Yoshimi; and Uenoyama, Hirofumi, 5,618,738, Cl. 438-3.000.
Noguchi, Yukio, to Fuji Photo Optical Ltd. Camera. 5,619,297, Cl. 396-201.000.
Nohr, Ronald S.; and MacDonald, John G., to Kimberly-Clark Corporation. Mixed surfactant system as a durable fabric coating. 5,618,614, Cl. 442-118.000.
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Jones, Owen; and Trinder, Michael C. J., 5,619,020, Cl. 181-206.000.
Nojima, Takashi: *See—*
Inoue, Hiroyuki; Sugama, Sadayuki; Hiramatsu, Soichi; Yamaguchi, Hideki; Ujita, Toshihiko; Yamanaka, Akihiro; Nojima, Takashi; Kotaki, Yasuo; Tsukuda, Keiichiro; Nakamura, Hitoshi; Kida, Akira; Kawakami, Hideaki; and Iwasaki, Takeshi, 5,619,237, Cl. 347-86.000.
Nokia Telecommunications OY: *See—*
Karppanen, Arto; Talarmo, Reino; and Tuohino, Markku, 5,619,552, Cl. 379-60.000.
Nolan, James B.; Cooper, Russell E.; and Dellacroce, Brian, to Microchip Technology Inc. Microcontroller with on-chip linear temperature sensor. 5,619,430, Cl. 364-557.000.
Nold, Erich: *See—*
Baron, Wolfgang; and Nold, Erich, 5,617,924, Cl. 173-181.000.
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Nomura, Giichiro; and Yubuta, Osamu, to Toyo Kohan Co., Ltd. Inner-shield material to be attached inside a color cathode ray tube and manufacturing method thereof. 5,618,401, Cl. 205-130.000.
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Nomura, Shoemon, to Kabushiki-Kaisha Median. Intravenous catheter set. 5,618,272, Cl. 604-166.000.
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Norand Corporation: *See—*
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Bargelé , Norbert; Brandt, Manfred; Landt, Andreas; and Szymanski, Marek, 5,618,230, Cl. 452-169.000.
Norgaard, Thomas W. Electrical connector. 5,618,200, Cl. 439-427.000.
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Noriyoshi Kuroyanagi: *See—*
Kuroyanagi, Noriyoshi; Suehiro, Naoki; and Naito, Toshikatsu, 5,619,527, Cl. 375-206.000.
Norris, Christopher D.: *See—*
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Norris, Fanny; Norris, Kjeld; Bjørn, Søren E.; Petersen, Lars C.; Olsen, Ole H.; Foster, Donald C.; and Sprecher, Cindy A., to Novo Nordisk A/S. Human kunitz-type protease inhibitor and variants thereof. 5,618,696, Cl. 435-69.200.
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Norris, Joel D.: *See—*
Foster, Don C.; Norris, Joel D.; Norris, Christopher D.; and Stainback, Ross M., 5,618,009, Cl. 242-615.200.
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Brange, Jens J. V.; Norris, Kjeld; and Hansen, Mogens T., 5,618,913, Cl. 530-303.000.
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Nørskov-Lauritsen, Leif: *See—*
Bjørn, Soren E.; Norris, Kjeld; Diness, Viggo; Nørskov-Lauritsen, Leif; Christensen, Niels D.; Bregengaard, Claus; Norris, Fanny; and Petersen, Lars C., 5,618,915, Cl. 530-324.000.
North Carolina State University: *See—*
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Northern Telecom Limited: *See—*
Epworth, Richard E.; and Bricheno, Terry, 5,619,603, Cl. 385-37.000.
Northrop Grumman Corp.: *See—*
Cole, Elbert L., Jr.; Enstrom, Richard A.; and Olver, Terence E., 5,619,206, Cl. 342-37.000.
NorthStar Marine, Inc.: *See—*
Frigard, Charles R., 5,617,805, Cl. 114-39.100.
Northwestern University: *See—*
Johnson, D. Lynn; and Dravid, Vinayak P., 5,618,475, Cl. 264-10.000.
Norton Chemical Process Products Corporation: *See—*
Sauter, John R.; Hauser, Richard P.; and Harris, John, 5,618,473, Cl. 261-114.100.
Norton, Joseph W.: *See—*
Blaauw, David T.; Norton, Joseph W.; Jones, Larry G.; Misra, Susanta; and Bahar, R. Iris, 5,619,418, Cl. 364-489.000.
Norvell, Bill R.: *See—*
Goldsmith, Charles; Kanack, Bradley M.; Lin, Tsen-Hwang; Norvell, Bill R.; Pang, Lily Y.; Powers, Billy, Jr.; Rhoads, Charles; and Seymour, David, 5,619,061, Cl. 257-528.000.
Novavax, Inc.: *See—*
Wright, D. Craig, 5,618,840, Cl. 514-549.000.
Novick, Daniela; Revel, Michel; Mory, Yves; Rubinstein, Menachem; and Hadas, Eran, to Yeda Research & Development Co. Ltd. IL-6 specific monoclonal antibodies, hybridomas therefor and methods of making and using same. 5,618,700, Cl. 435-70.210.
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Bjørn, Soren E.; Norris, Kjeld; Diness, Viggo; Nørskov-Lauritsen, Leif; Christensen, Niels D.; Bregengaard, Claus; Norris, Fanny; and Petersen, Lars C., 5,618,915, Cl. 530-324.000.
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Dalbøge, Henrik; Pedersen, John; Christensen, Thorkild; Ringsted, Jørli W.; and Jessen, Torben E., 5,618,697, Cl. 435-69.400.

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Olesen, Tine; Pedersen, Lars S.; and Andersen, Lars H. D., 5,618,482, Cl. 264-109.000.
Novof, Ilya I.; and Strayer, Donald E., to International Business Machines Corporation. Diffrential charge pump with integrated common mode control. 5,619,161, Cl. 327-535.000.
Nozawa, Keita: *See—*
Kukimoto, Tsutomu; Goseki, Yasuhide; Urawa, Motoo; Shimamura, Masayoshi; Okano, Keiji; Nozawa, Keita; Yoshida, Satoshi; and Ojima, Masaki, 5,618,647, Cl. 430-106.600.
Nozawa, Minoru: *See—*
Kotaki, Yasuo; Takenouchi, Masanori; Saikawa, Hideo; Nozawa, Minoru; Sato, Osamu; Ujita, Toshihiko; Miyagawa, Masashi; Yamamoto, Hisashi; Hamasaki, Yuji; and Hinami, Jun, 5,619,239, Cl. 347-86.000.
NSK Ltd.: *See—*
Ishikawa, Shuichi, 5,618,116, Cl. 384-607.000.
Katahira, Masayuki, 5,618,114, Cl. 384-45.000.
NSP Sicherheits-Produkte GmbH: *See—*
Mawick, Peter; and Choudhury, Subrata, 5,617,713, Cl. 57-210.000.
NTT Mobile Communications Network, Inc.: *See—*
Adachi, Fumiyuki, 5,619,167, Cl. 329-304.000.
Nukada, Hideki: *See—*
Nagato, Hitoshi; Saito, Tsutomu; Hirahara, Shuzo; Okuyama, Tetuo; Takayama, Satoshi; Tamura, Sakae; Hattori, Shunsuke; and Nukada, Hideki, 5,619,234, Cl. 347-55.000.
Nulman, Mark; and Ryntz, Rose A., to Ford Motor Company. Multi-layer molded polymer compositions. 5,618,599, Cl. 428-36.700.
Numagami, Atsushi: *See—*
Yashiro, Masahiko; Karakama, Toshiyuki; and Numagami, Atsushi, 5,619,309, Cl. 399-111.000.
Numata, Keiichi: *See—*
Fujii, Masahiro; Ohno, Yasuo; Maeda, Tadashi; Atsumo, Takao; Matsuno, Noriaki; Numata, Keiichi; and Yoshida, Nobuhide, 5,619,146, Cl. 326-21.000.
Numata, Toshiharu: *See—*
Oshima, Kentaro; Numata, Toshiharu; Nishimura, Toru; Kokubo, Sachiko; and Tsuto, Keiichi, 5,618,580, Cl. 427-212.000.
Nunziata, Ann B., to Apple Computer, Inc. Memory controller for both interleaved and non-interleaved memory. 5,619,471, Cl. 365-230.030.
Nusbaum, Perry L.: *See—*
Oltman, Randy; and Nusbaum, Perry L., 5,619,582, Cl. 381-82.000.
Nussbaumer, Dietmar: *See—*
Demmer, Wolfgang; Hörl, Hans-Heinrich; Nussbaumer, Dietmar; and Weiss, Abdul R., 5,618,418, Cl. 210-232.000.
Nvidia Corporation: *See—*
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Nycomed Imaging AS: *See—*
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O_2 Micro, Inc.: *See—*
Liu, Kwang H., 5,619,402, Cl. 363-20.000.
Oakley, Robin N., to Lotus Cars Limited. Vehicle suspension comprising an actuator connected between a vehicle body and wheel in which control of the actuator is dependent on hydraulic fluid pressure. 5,619,413, Cl. 364-424.046.
Oaks, David K.: *See—*
Redwine, Stephen J.; and Oaks, David K., 5,618,373, Cl. 156-361.000.
Obertelli, Sandro D.: *See—*
Tallon, Jeffery L.; Cooper, John R.; and Obertelli, Sandro D., 5,619,141, Cl. 324-537.000.
O'Brien, Edwin W., to British Aerospace Public Limited Company. Testing a metal component for cold compression of the metal. 5,619,327, Cl. 356-359.000.
O'Brien, Nada A.: *See—*
Yu, Phillip C.; Backfisch, David L.; O'Brien, Nada A.; and Hichwa, Bryant P., 5,618,390, Cl. 204-192.260.
Obu, Makoto: *See—*
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Ocean Arks International, Inc.: *See—*
Todd, John H.; and Shaw, James M., 5,618,413, Cl. 210-151.000.
Ocean Spar Technologies, LLC: *See—*
Loverich, Gary F.; Swanson, Kurt T.; and Goudey, Clifford A., 5,617,813, Cl. 119-223.000.
Ochiai, Mitsuru: *See—*
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Oda, Yasuo, to Wacom Co., Ltd. Position detecting device and corresponding method with compensation for the effects of offset voltage and/or gain variation. 5,619,431, Cl. 364-559.000.
Odagiri, Yasushi: *See—*
Kuroiwa, Wataru; Miyazaki, Isao; Ooi, Shinichi; Odagiri, Yasushi; and Takahashi, Masahiro, 5,619,251, Cl. 348-12.000.
Oddsen, Robert: *See—*
Ger, Ralph; and Oddsen, Robert, 5,618,310, Cl. 606-216.000.
Odom, Fletcher L.: *See—*
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OEC Medical Systems, Inc.: *See—*
Anderton, R. Larry, 5,619,261, Cl. 348-246.000.
Oelmez, Tarik: *See—*
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Office Data Europe (ODE) B.V.: *See—*
de Koning, Willem; and Ros, Johannes F., 5,617,949, Cl. 206-307.100.
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Ogasawara, Syuichiro; Mori, Takao; and Yokota, Akira, to Olympus Optical Co. Ltd. Objective optical system for endoscopes. 5,619,380, Cl. 359-661.000.
Ogawa, Hidehiro: *See—*
Imafuji, Kazuharu; Sato, Shigemasa; Kosaka, Toru; and Ogawa, Hidehiro, 5,619,294, Cl. 396-51.000.
Ogawa, Shigeo: *See—*
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Ogihara, Masaki, to Kabushiki Kaisha Toshiba. Dram using word line potential circuit control. 5,619,162, Cl. 327-537.000.
Ogino, Takeshi: *See—*
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Ogiso, Akira: *See—*
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Ogura, Mitsuo: *See—*
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Oh, Dong Y.: *See—*
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Oh, Sebo: *See—*
Lee, Shih-Jong J.; Ellison, Dayle G.; Kuan, Chih-Chau L.; Oh, Sebo; and Wilhelm, Paul S., 5,619,428, Cl. 364-551.010.
Ohara, Minoru: *See—*
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Oharu, Kazuya; Seki, Ryuji; and Kumai, Seisaku, to Asahi Glass Company Ltd. Method for producing a hydrofluorocarbon. 5,618,986, Cl. 570-176.000.
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Ohhashi, Tatsuo: *See—*
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Ohio State University Research Foundation, The: *See—*
Christensen, Richard N.; Cook, F. Bert; and Kang, Yong-Tae, 5,617,737, Cl. 62-487.000.
Ohkubo, Akito, to Fuji Photo Film Co., Ltd. Color conversion method and color conversion table generating apparatus. 5,619,427, Cl. 364-526.000.
Ohlmeyer, Michael H. J.: *See—*
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Ohm, Heinz-F.: *See—*
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Ohmann, David A.: *See—*
Blackham, Raymond C.; Ohmann, David A.; and Walker, Jeffrey J., 5,619,198, Cl. 341-50.000.
Ohno, Tomoyuki; Shiroishi, Yoshihiro; Yahisa, Yotsuo; Osaki, Akira; and Ootani, Yuichi, to Hitachi, Ltd. Magnetic recording medium and magnetic recording apparatus. 5,618,639, Cl. 428-694.00T.
Ohno, Tsuneya; Terada, Masaki; and Yoneda, Yukio, to Nissin Shokuhin Kabushiki Kaisha. NM03 antibody materials and methods. 5,618,922, Cl. 530-388.350.
Ohno, Yasuo: *See—*
Fujii, Masahiro; Ohno, Yasuo; Maeda, Tadashi; Atsumo, Takao; Matsuno, Noriaki; Numata, Keiichi; and Yoshida, Nobuhide, 5,619,146, Cl. 326-21.000.
Ohnuma, Tadahiro: *See—*
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O'Hoy, Kim L.: *See—*
Harrison, Gavin B. L.; Dempster, Robert P.; Rickard, Michael D.; Heath, David D.; Lawrence, Stephen B.; Vinton, Jennifer G.; Lightowlers, Marshall W.; O'Hoy, Kim L.; and Johnson, Kevin S., 5,618,542, Cl. 424-266.100.
Ohsawa, Teruo: *See—*
Ishiwata, Hiroshi; Yokota, Tohru; Kobayashi, Mitsuaki; Katori, Tsutomu; and Ohsawa, Teruo, 5,617,830, Cl. 123-500.000.
Ohsuga, Minoru; Yamaguchi, Jun'ichi; Komuro, Ryoichi; and Momono, Masakichi, to Hitachi, Ltd. Air intake equipment for internal combustion engine. 5,617,824, Cl. 123-308.000.
Ohta, Hiroyuki; Miura, Hideo; Masuda, Hiroo; Tamaki, Yoichi; Ikeda, Takahide; Nishimura, Asao; and Hashimoto, Takashi, to Hitachi, Ltd. Bipolar device and production thereof. 5,619,069, Cl. 257-692.000.
Ohta, Tatsuyuki: *See—*

Akiyama, Noboru; Yokoyama, Yuji; Ohta, Tatsuyuki; Suzuki, Kunihiko; and Kobayashi, Yutaka, 5,619,455, Cl. 365-189.050.
Ohtaka, Koichi: *See*—
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Ohtomo, Fumio: *See*—
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Mukai, Masaki; Ohtsu, Takashi; and Yasutake, Kouichi, 5,619,654, Cl. 395-200.090.
Ohtsuki, Noriko: *See*—
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Ohuchi, Noriaki; Morimoto, Akio; Yamasaki, Hiroshi; Hosokawa, Takahiro; and Kaneko, Hiroyuki, to Fujitsu Limited. Signal processing apparatus including redundant first and second system with a duplex package configuration. 5,619,641, Cl. 395-181.000.
Ohya, Junko: *See*—
Shinohara, Wataro; Takagi, Yasuo; Iino, Yutaka; Hayashi, Shinji; Ohya, Junko; Chida, Yuichi; and Murai, Masahiko, 5,619,619, Cl. 395-24.000.
Oing, Pu: *See*—
Caid, William R.; and Oing, Pu, 5,619,709, Cl. 395-794.000.
Oishi, Masahiro; and Ohtomo, Fumio, to Kabushiki Kaisha TOPCON. Light-wave distance meter based on light pulses. 5,619,317, Cl. 356-5.050.
Ojima, Masaki: *See*—
Kukimoto, Tsutomu; Goseki, Yasuhide; Urawa, Motoo; Shimamura, Masayoshi; Okano, Keiji; Nozawa, Keita; Yoshida, Satoshi; and Ojima, Masaki, 5,618,647, Cl. 430-106.600.
Ojo, Babatunde; and Dunbar, Philip G., to University of Toledo, The. Muscarinic agonist compounds. 5,618,818, Cl. 514-256.000.
Oka, Yoshito: *See*—
Saka, Yuuji; Onizuka, Takahiro; Oka, Yoshito; Kobayashi, Makoto; and Inoue, Nori, 5,618,186, Cl. 439-76.200.
Okabe, Masatomi: *See*—
Yokota, Miho; and Okabe, Masatomi, 5,619,048, Cl. 257-207.000.
Okada, Eiji. Motor-driven toothbrush. 5,617,602, Cl. 15-22.100.
Okada, Hiroshi: *See*—
Yasuda, Masanori; Onimaru, Sadahisa; Inoue, Takashi; Okada, Hiroshi; Kojima, Akikazu; and Takaki, Niro, 5,617,995, Cl. 237-12.30C.
Okada, Hisashi: *See*—
Ueda, Shinji; Okada, Hisashi; and Nii, Kazumi, 5,618,652, Cl. 430-250.000.
Okada, Kaoru; Nakajima, Keihachiro; and Kato, Hitoshi, to New Oji Paper Co., Ltd. Process for producing silicon carbide material. 5,618,510, Cl. 423-346.000.
Okada, Osamu: *See*—
Hasumi, Kazuhisa; Nagano, Kentaro; Kamiyama, Shuuichi; Yanagida, Hiroaki; and Okada, Osamu, 5,618,496, Cl. 422-90.000.
Okada, Yoshimi: *See*—
Hamamoto, Hiroshi; Sugiyama, Yoshinori; Nakagawa, Noriaki; Hashida, Eiji; Tsuchimoto, Suguru; Nakanishi, Noriyuki; Matsunaga, Yuji; and Okada, Yoshimi, 5,618,699, Cl. 435-69.700.
Okada, Yutaka: *See*—
Kobayashi, Takayuki; Wuertele, David; and Okada, Yutaka, 5,619,268, Cl. 348-416.000.
Okamoto, Akira: *See*—
Konya, Shogo; Okamoto, Akira; and Yoshizaki, Kouji, 5,618,498, Cl. 422-174.000.
Okamura, Hitoshi, to NEC Corporation. Power supply circuit for non-threshold logic circuit. 5,619,123, Cl. 323-312.000.
Okamura, Junichi, to Kabushiki Kaisha Toshiba. Semiconductor memory device with a plurality of bonding pads arranged in an array. 5,619,472, Cl. 365-230.030.
Okamura, Toshihiko, to Mitsubishi Materials Corporation. CVD diamond coated cutting tools and method of manufacture. 5,618,625, Cl. 428-408.000.
Okane, Masaaki; and Mae, Masataka, to Murata Manufacturing Co., Ltd. Component drier. 5,617,647, Cl. 34-218.000.
Okano, Keiji: *See*—
Kukimoto, Tsutomu; Goseki, Yasuhide; Urawa, Motoo; Shimamura, Masayoshi; Okano, Keiji; Nozawa, Keita; Yoshida, Satoshi; and Ojima, Masaki, 5,618,647, Cl. 430-106.600.
Okayasu, Yoshiji: *See*—
Tsuji, Hiroshi; and Okayasu, Yoshiji, 5,617,766, Cl. 81-480.000.
Okazaki, Kiyotaka; and Kanda, Masahiro, to Yazaki Corporation; and Shin-Etsu Chemical Co., Ltd. Sealing component for connector waterproofing. 5,618,880, Cl. 524-731.000.
Oki Electric Industry Co., Ltd.: *See*—
Kita, Akio, 5,618,745, Cl. 438-164.000.
Okland, Merlyn C., to Putco, Inc. Tie down device. 5,618,140, Cl. 410-106.000.
Okpanyi, Samuel N., to Steigerwald Arzneimittelwerk GmbH. Plant-based medicaments for increasing the tone and modulating the tone of the smooth muscular organ. 5,618,537, Cl. 424-195.100.
Okubo, Shiroshi, to Monc Co., Ltd. Construction member. 5,617,659, Cl. 40-545.000.
Okuhama, Yoshiaki; Masaki, Seishi; Takeuchi, Takao; Matsuda, Yoshiharu; and Yoshimoto, Masakazu, to Daiwa Fine Chemicals Co., Ltd. Electrolytic process for producing lead sulfonate and tin sulfonate for solder plating use. 5,618,404, Cl. 205-445.000.
Okuma Corporation: *See*—
Furukawa, Masahiro; Nagaya, Masaaki; and Yoshimura, Tatsuhiro, 5,618,221, Cl. 451-8.000.
Okumura, Mutsuo: *See*—
Tokuda, Shoichi; Ninomiya, Kazuhisa; Fukushima, Yasuhiro; Watanabe, Shigeyuki; Ochiai, Mitsuru; Okumura, Mutsuo; and Hosokawa, Yuko, 5,618,555, Cl. 424-443.000.
Okushita, Masataka, to Dai Nippon Printing Co., Ltd. Heat-sealing method for a paper container and apparatus of the same. 5,618,253, Cl. 493-134.000.
Okuyama, Chiyoshi: *See*—
Nakamura, Kimitsugu; Sahara, Masayoshi; Ishikawa, Atushi; Okuyama, Chiyoshi; and Takeuchi, Junichi, 5,619,099, Cl. 313-532.000.
Okuyama, Takeshi; Watanabe, Kouji; Yatsu, Nobuo; Sakuraoka, Masahiko; and Akama, Junichi, to Fujitsu Ltd. Connector having strip line structure. 5,618,202, Cl. 439-497.000.
Okuyama, Tetuo: *See*—
Nagato, Hitoshi; Saito, Tsutomu; Hirahara, Sbuzo; Okuyama, Tetuo; Takayama, Satoshi; Tamura, Sakae; Hattori, Shunsuke; and Nukada, Hideki, 5,619,234, Cl. 347-55.000.
Old, Lloyd J.: *See*—
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Olesen, Tine; Pedersen, Lars S.; and Andersen, Lars H. D., to Novo Nordisk A/S. Method of producing fibreboard. 5,618,482, Cl. 264-109.000.
Olin Corporation: *See*—
Davidson, James M., 5,618,655, Cl. 430-347.000.
Oliver, Ian R.: *See*—
Koble, Terry A., Jr.; Dip, Anthony; Engdahl, Erik H.; Oliver, Ian R.; and Ratliff, Christopher T., 5,618,351, Cl. 118-728.000.
Olper, Marco; and Maccagni, Massimo, to Engitec S.p.A. Process for removing SO_2 from gases which contain it, with direct production of elemental sulfur. 5,618,507, Cl. 423-243.080.
Olsen, Ole H.: *See*—
Norris, Fanny; Norris, Kjeld; Bjørn, Søren E.; Petersen, Lars C.; Olsen, Ole H.; Foster, Donald C.; and Sprecher, Cindy A., 5,618,696, Cl. 435-69.200.
Olson, Stephen T.: *See*—
Edwards, Earl G.; Flores, Armando V.; Gassett, John W.; Harden, James P.; Huber, Daniel L.; Leemhuis, Michael C.; Olson, Stephen T.; and Wilzbach, Bernard L., 5,618,036, Cl. 271-225.000.
Oltman, Randy; and Nusbaum, Perry L. Enhanced concert audio process utilizing a synchronized headgear system. 5,619,582, Cl. 381-82.000.
Olver, Terence E.: *See*—
Cole, Elbert L., Jr.; Enstrom, Richard A.; and Olver, Terence E., 5,619,206, Cl. 342-37.000.
Olympus Optical Co., Ltd.: *See*—
Kato, Mikiko; and Iketaki, Yoshinori, 5,619,382, Cl. 359-858.000.
Matsuzaki, Minoru; Sato, Yuta; Kawai, Sumio; Takizawa, Hiroyuki; Hamada, Masaharu; and Funakubo, Tomoki, 5,619,292, Cl. 396-32.000.
Ogasawara, Syuichiro; Mori, Takao; and Yokota, Akira, 5,619,380, Cl. 359-661.000.
Uno, Masayuki, 5,619,262, Cl. 348-297.000.
Yamamoto, Eiji; Mihara, Takashi; and Ito, Masataka, 5,619,318, Cl. 356-32.000.
Yoneyama, Kaoru, 5,619,732, Cl. 395-878.000.
Olympus Winter & Ibe GmbH: *See*—
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Omid, Reza G.; Pathak, Sanjiv D.; Naji, Jafar; Smith, Stephen A.; Ramamurthy, Sriram; Abudayyeh, Jihad Y.; and Gopalaswamy, Kasturiraman, to Cirrus Logic, Inc. Apparatus and method for supporting multiple interrupt protocols with unequal number of interrupt request signals. 5,619,703, Cl. 395-734.000.
Omoya, Kazunori: *See*—
Uchida, Kiyoshi; Miyatake, Norio; and Omoya, Kazunori, 5,618,617, Cl. 428-323.000.
Omura, Kazuhiko: *See*—
Iguchi, Masayoshi; Omura, Kazuhiko; Yoshiyama, Masatoshi; and Nishikawa, Hiroshi, 5,619,339, Cl. 386-113.000.
Oncogen Limited Partnership: *See*—
Shoyab, Mohammed; Zarling, Joyce M.; Marquardt, Hans; Hanson, Marcia B.; Malik, Najma; Linsley, Peter S.; Rose, Timothy M.; and Purchio, Anthony F., 5,618,715, Cl. 435-325.000.
Onda, Kazuhiko; and Tanaka, Yasuhiko, to Fuji Photo Optical Co. Ltd. Apparatus for preventing film perforation damage during loading. 5,619,740, Cl. 396-415.000.
Onimaru, Sadahisa: *See*—
Yasuda, Masanori; Onimaru, Sadahisa; Inoue, Takashi; Okada, Hiroshi; Kojima, Akikazu; and Takaki, Niro, 5,617,995, Cl. 237-12.30C.
Oniwa, Hirotomo: *See*—
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Onizuka, Takahiro: *See*—
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Ono, Masahiko: *See*—
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Ono, Mitsumasa: *See*—
Hasegawa, Kinji; Asai, Takeo; Ono, Mitsumasa; and Murakami, Yoji, 5,618,621, Cl. 428-343.000.

Onn, Shuji, to Fuji Photo Film Co., Ltd. Method for extracting object images and method for detecting movements thereof. 5,619,593, Cl. 382-199.000.
Onoda, Hitoshi: *See*—
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Onodera, Hideo: *See*—
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Onodera, Takeshi: *See*—
Kumata, Ichiro; Onodera, Takeshi; and Sugawara, Takenori, 5,619,157, Cl. 327-203.000.
Ooe, Waku: *See*—
Fujita, Takushi; Fukuda, Mitsuaki; Matsumoto, Chikako; Oota, Masaaki; Matsumoto, Hitoshi; Shindo, Shuro; Ooe, Waku; and Nagai, Yuichi, 5,619,628, Cl. 395-127.000.
Ooi, Shinichi: *See*—
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Ooiwa, Hisaya: *See*—
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Oonishi, Mitsuharu: *See*—
Kato, Yoshinobu; Oonishi, Mitsuharu; and Kobayashi, Hideaki, 5,617,643, Cl. 33-533.000.
Oota, Masaaki: *See*—
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Ootani, Yuichi: *See*—
Ohno, Tomoyuki; Shiroishi, Yoshihiro; Yahisa, Yotsuo; Osaki, Akira; and Ootani, Yuichi, 5,618,639, Cl. 428-694.00T.
OPENService, Inc.: *See*—
Graf, Lars O., 5,619,656, Cl. 395-200.110.
Opie, John E.: *See*—
Casali, David C.; Opie, John E.; and Fridman, Solomon, 5,619,012, Cl. 174-52.200.
Oppawsky, Steffen: *See*—
Erdrich, Albert; Fremdt, Sonja; and Oppawsky, Steffen, 5,618,372, Cl. 156-310.000.
Oprescu, Florin: *See*—
Van Brunt, Roger; and Oprescu, Florin, 5,619,541, Cl. 375-360.000.
Opris, Ion E., to National Semiconductor Corporation. Alternating polarity carry look ahead adder circuit. 5,619,442, Cl. 364-787.000.
Optical Coating Laboratory, Inc.: *See*—
Seeser, James W.; Allen, Thomas H.; Dickey, Eric R.; Hichwa, Bryant P.; Illsley, Rolf F.; Klinger, Robert F.; LeFebvre, Paul M.; Scobey, Michael A.; Seddon, Richard I.; Soberanis, David L.; Temple, Michael D.; Van Horn, Craig C.; and Wentworth, Patrick R., 5,618,388, Cl. 204-192.120.
Optical Gaging Products, Inc.: *See*—
Choate, Albert G., 5,619,031, Cl. 250-201.200.
Orbach, Zvi: *See*—
Janai, Meir I.; and Orbach, Zvi, 5,619,062, Cl. 257-529.000.
Orbot Instruments Ltd.: *See*—
Aloni, Meir; Alon, Amir; Eran, Yair; Katz, Itzhak; Katzir, Yigal; and Rosenfeld, Gideon, 5,619,429, Cl. 364-552.000.
Yolles, Joel; Aloni, Meir; Eran, Yair; and Kaplan, Haim, 5,619,588, Cl. 382-149.000.
Orejola, Wilmo C. Transthoracic aortic sleeve. 5,618,270, Cl. 604-164.000.
Oriental Yeast Co., Ltd.: *See*—
Nonobe, Masatsugu; Nishida, Hozumi; and Fujita, Tsuyoshi, 5,618,684, Cl. 435-16.000.
Origin Medsystems, Inc.: *See*—
Thompson, Todd A.; and Kovac, Tim, 5,618,291, Cl. 606-142.000.
Orita, Yasutaka; Koga, Hiroyasu; and Kose, Sumitaka, to Nihon Nohyaku Co., Ltd. Skin-cosmetic composition. 5,618,545, Cl. 424-401.000.
Orlow, Seth J.: *See*—
Pawelek, John M.; and Orlow, Seth J., 5,618,519, Cl. 424-59.000.
Ormco Corporation: *See*—
Andreiko, Craig A.; and Payne, Mark A., 5,618,176, Cl. 433-11.000.
Reher, James F.; Andreiko, Craig A.; and Ludwig, David L., 5,618,175, Cl. 433-8.000.
Oros, Donald L., to Elsag International N. V. Limited movement computer keyboard retaining assembly. 5,619,394, Cl. 361-680.000.
Oryx Instruments and Materials Corp.: *See*—
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Hasumi, Kazuhisa; Nagano, Kentaro; Kamiyama, Shuuichi; Yanagida, Hiroaki; and Okada, Osamu, 5,618,496, Cl. 422-90.000.
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Oslund, Arthur D. Filtration system for aquariums. 5,618,428, Cl. 210-602.000.
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Coushaine, Charles M., 5,618,097, Cl. 362-61.000.
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Hechler, Wolfgang; Dietz, Johann; Weigand, Manfred; and Osterried, Karl, 5,618,585, Cl. 427-376.100.
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Mizrahi-Shalom, Ori K.; Ostler, Farrell L.; and Goodhue, Gregory K., 5,619,663, Cl. 395-383.000.
Ostrover, Lewis S.: *See*—
Cookson, Christopher J.; Ostrover, Lewis S.; and Lieberfarb, Warren N., 5,619,424, Cl. 364-514.00A.
Ota, Akira, to Fuji Xerox Co., Ltd. Scanning lens and optical scanner using the same. 5,619,362, Cl. 359-205.000.
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Otaki, Chizuko. Heating chamber with insulative shield panel and electric heating panels mounted on guard frames. 5,619,613, Cl. 392-437.000.
Otani, Atsushi, to Nippondenso Co., Ltd. Contactless thickness measuring apparatus and measuring method for the same. 5,619,329, Cl. 356-382.000.
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Tsutsumi, Kazuhiko; Inoue, Yasuhide; Yoshida, Chieko; and Tsuda, Yoshihiko, 5,618,801, Cl. 514-75.000.
Ott, Harald: *See*—
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Lin, David C. K.; Houpt, Ronald A.; Gavin, Patrick M.; Lawson, Richard D.; and Hinze, Jay W., 5,618,328, Cl. 65-502.000.
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Chmielnik, Reinhold, 5,617,790, Cl. 101-389.100.
PACCAR Inc: *See*—
Richardson, Donald A.; and Benz, Walter E., 5,617,929, Cl. 180-326.000.
Shearn, Kenneth M.; and Angelo, Gerald J., 5,618,323, Cl. 55-385.300.
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Padich, Robert A.: *See*—
Schmidt, Christopher J.; Kehne, John H.; and Padich, Robert A., 5,618,824, Cl. 514-317.000.

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Pai, Chung-Jeng. Cutting tool for cutting slices of a predetermined thickness. 5,617,637, Cl. 30-283.000.
Pal, Biman; Ram, Siya; Cai, Bing; Sachdeva, Yesh P.; Shim, Jaechul; Zahr, Salah A.; Al-Farhan, Emile; and Gabriel, Richard, to Pharm-Eco Laboratories, Incorporated. Method forming protease inhibitor synthetic intermediates. 5,618,966, Cl. 560-16.000.
Palazzolo, Robert J., to M.C. Molds Inc. Trimmer for removing scraping from tops of plastic bottles. 5,617,768, Cl. 82-47.000.
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Palmieri, Costantino: *See—*
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Pan, Jing-Jong; Jiang, Paul S.; Shih, Ming; Chen, Jian; and Wang, Li-Hua, to E-Tek Dynamics, Inc. Fiberoptic support clip. 5,619,609, Cl. 385-136.000.
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Pandya, Ashish: *See—*
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Pang, Lily Y.: *See—*
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Panning, Cynthia J.: *See—*
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Panzer, Herbert, to U.S. Philips Corporation. CDMA transmission system. 5,619,491, Cl. 370-342.000.
Papa, Anthony J.; and Keen, Brian T., to Union Carbide Chemicals & Plastics Technology Corporation. Esterification process. 5,618,973, Cl. 560-263.000.
Papageorgiou, Theodore; Hultgren, Kent G.; and Covelli, Rocco J., to Westinghouse Electric Corporation. Apparatus for restraining motion of a turbo-machine stationary vane. 5,618,161, Cl. 415-190.000.
Pappas, Peter J. Irrigation system shut-off valve. 5,617,892, Cl. 137-360.000.
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Parchinski, Kenneth J.: *See—*
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Park, Pyong K., to Hughes Missile Systems Company. Dual polarization common aperture array formed by waveguide-fed, planar slot array and linear short backfire array. 5,619,216, Cl. 343-771.000.
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Pater, John F.: *See—*
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Paterson, William: *See—*
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Patil, Damodar R.: *See—*
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Patrick, Nicholas J. M.: *See—*
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Norris, Fanny; Norris, Kjeld; Bjørn, Søren E.; Petersen, Lars C.; Olsen, Ole H.; Foster, Donald C.; and Sprecher, Cindy A., 5,618,696, Cl. 435-69.200.
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Hulyalkar, Samir N., 5,619,534, Cl. 375-263.000.
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Kallenbach, Lyle R.; Senn, Dwayne R.; and Johnson, Marvin M., 5,618,407, Cl. 208-114.000.
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Hickman, Joel; Phillips, Scott; and Brady, Colin, 5,619,025, Cl. 235-454.000.
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Schweer, G. Carl; and Pilkey, Ross M., 5,619,142, Cl. 324-601.000.
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Rindler, Joe; and Pintavalli, Nanci, 5,618,463, Cl. 249-92.000.
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Pitchford, Paul P. Remote controlled door brace. 5,618,072, Cl. 292-339.000.
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Manna, Robert E., 5,619,244, Cl. 347-214.000.
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Redwine, Stephen J.; and Oaks, David K., 5,618,373, Cl. 156-361.000.
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Pohl, Ludwig; Marquard, Kurt; Waitl, Günter; Reeh, Ulrike; and Wipfelder, Ernst, to Merck Patent Gesellschaft mit beschrankter Haftung; and Siemens AG. Inorganic fillers and organic matrix materials with refractive index adaptation. 5,618,872, Cl. 524-430.000.
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Ward, Seth, II; Speas, Gary W.; and Brown, R. Todd, 5,617,942, Cl. 194-217.000.
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Poss, Gerhard; Wittekind, Jurgen; and Kuhnel, Andreas, to Boehringer Ingelheim KG. Inhalation device free from propellent gas. 5,617,845, Cl. 128-203.150.
Poss, Michael A.; Pansegrau, Paul D.; Wang, Shaopeng; Thottathil, John K.; Singh, Janak; and Mueller, Richard H., to Bristol-Myers Squibb Company. 7-oxabicycloheptane carboxylic acid prostaglandin analog intermediates useful in the preparation of anti-thrombotic and anti-vasospastic compounds and method for preparing same. 5,618,946, Cl. 548-431.000.
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Cheng, Peter T. W.; and Poss, Michael A., 5,618,964, Cl. 558-180.000.
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Nix, Lothar H. W.; and Post, Lothar A., 5,618,204, Cl. 439-559.000.
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Potter, Edwin R., Jr.: *See—*
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Adamson, Ronald B.; and Potts, Gerald A., 5,618,356, Cl. 148-519.000.
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Power Conversion, Inc.: *See—*
Reddy, Thomas B.; and Rodriquez, Pedro, 5,618,318, Cl. 29-623.100.
Power Team Div. of SPX Corp.: *See—*
Landrum, Michael T., 5,617,771, Cl. 91-1.000.
Powers, Billy, Jr.: *See—*
Goldsmith, Charles; Kanack, Bradley M.; Lin, Tsen-Hwang; Norvell, Bill R.; Pang, Lily Y.; Powers, Billy, Jr.; Rhoads, Charles; and Seymour, David, 5,619,061, Cl. 257-528.000.
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Ibach, Adolf; and Powers, Robert L., 5,617,712, Cl. 56-298.000.
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Swarup, Shanti; and Mayo, Michael A., 5,618,586, Cl. 427-407.100.
Thompson, Albert E., Jr., 5,617,699, Cl. 52-786.130.
Yu, Phillip C.; Backfisch, David L.; O'Brien, Nada A.; and Hichwa, Bryant P., 5,618,390, Cl. 204-192.260.
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Ozcayir, Yurdagul F.; Goetz, Gertrud; and Bikson, Benjamin, 5,618,334, Cl. 96-14.000.
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Swanson, Roger A.; Nelson, Terry M.; Barrett, James R.; and Hosamani, Laxmappa, 5,618,633, Cl. 428-593.000.
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Jennings, Ralph E.; and Tiberio, Philip, Jr., 5,617,839, Cl. 126-20.000.
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Premiski, Vladimir; Lauscher, Friedel; and Wehren, Wilhelm, to Ford Motor Company. Fastening a ring member on a hub member. 5,619,130, Cl. 324-173.000.
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Homann, Michael J.; and Previte, Edward, 5,618,707, Cl. 435-146.000.
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Lee, Sywe N.; Hu, Dyi-Chung; and Tang, Huann-Min, 5,619,223, Cl. 345-93.000.
Primlani, Indru J. Windshield protection and cleaning system. 5,617,608, Cl. 15-313.000.
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Le Grouyellec, Andre, 5,619,009, Cl. 102-334.000.
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Bolich, Raymond E., Jr.; and Torgerson, Peter M., 5,618,524, Cl. 424-70.120.
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Glackin, George B.; Panning, Cynthia J.; and Van Rijswijck, Laura G., 5,618,280, Cl. 604-385.100.
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Noda, Isao, 5,618,855, Cl. 521-189.000.
Wu, Laurence I.; and Janusz, John M., 5,618,835, Cl. 514-422.000.
Young, Terrill A.; Dobrin, George C.; and Thomas, Dennis A., 5,618,583, Cl. 427-277.000.
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Ger, Ralph; and Oddsen, Robert, 5,618,310, Cl. 606-216.000.
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Posey, B. Kelley; Hurley, David M.; Seybert, R. David; and Phinney, M. Russel, 5,619,073, Cl. 264-3.300.
Puckett, Timothy L., to Storage Technology Corporation. Diagnostic expert system for hierarchically decomposed knowledge domains. 5,619,621, Cl. 395-51.000.
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Pulse, Robert, to Pettibone Corporation. Coupling device for sewer and drain cleaning cable. 5,618,123, Cl. 403-2.000.
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Ladisch, Michael; Hamaker, Kent; Hendrickson, Richard; and Brewer, Mark, 5,618,434, Cl. 210-635.000.
Puri, Atul: *See—*
Haskell, Barin G.; Kollarits, Richard V.; and Puri, Atul, 5,619,256, Cl. 348-43.000.
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Putnam, Mark D. Patient-user interactive psychotherapy apparatus and method. 5,619,291, Cl. 351-240.000.
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Goldstein, Mark K.; Oum, Michelle S.; and Kerns, Kathleen L., 5,618,493, Cl. 422-57.000.
Quate, Calvin F.: *See—*
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Casey, John; Maume, Katherine A.; Peters, Alfons L. J.; and Veloo, Rudolf M., 5,618,706, Cl. 435-128.000.
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Quinton Instrument Company: *See—*
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Herding, Walter; Vogel, Peter; and Rabenstein, Klaus, 5,618,412, Cl. 210-150.000.
Rader, Sydney R.: *See—*
Tripp, Matthew L.; Rader, Sydney R.; Rao, Subba C.; and Ryder, David S., 5,618,572, Cl. 426-592.000.
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Ritz, Mordechai; Livneh, Noam; and Silbershatz, Giora, 5,619,493, Cl. 370-330.000.
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Raines, Kenneth C.; and Fenicle, Gary, to B. Braun Medical Inc. Medical infusion devices and medicine delivery systems employing the same. 5,618,268, Cl. 604-82.000.
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Chang, Sung S.; Harman, James L.; Jacobson, Gary S.; Kirschner, Wesley A.; Ramadei, Michael J.; and Zuidema, Eric L., 5,618,037, Cl. 271-258.020.
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Voorman, Johannes O.; and Ramalho, Joao N. V. L., 5,619,386, Cl. 360-67.000.
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Omid, Reza G.; Pathak, Sanjiv D.; Naji, Jafar; Smith, Stephen A.; Ramamurthy, Sriram; Abudayyeh, Jihad Y.; and Gopalaswamy, Kasturiraman, 5,619,703, Cl. 395-734.000.
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Gillespie, John D., 5,619,258, Cl. 348-97.000.
Rao, Ramana B.: *See—*
Lamping, John O.; and Rao, Ramana B., 5,619,632, Cl. 395-141.000.
Rao, Subba C.: *See—*
Tripp, Matthew L.; Rader, Sydney R.; Rao, Subba C.; and Ryder, David S., 5,618,572, Cl. 426-592.000.
Rapp, Siegfried: *See—*
Sommer, Bruno; Luka, Helmut; Schürg, Thomas; Rapp, Siegfried; and Moser, Nikolaus, 5,618,324, Cl. 55-497.000.
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Rauh, Ulrich: *See—*
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Rausch, Carl W.; and Feola, Mario, to Biopure Corportion. Ultra pure hemoglobin solutions and blood-substitutes. 5,618,919, Cl. 530-385.000.
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Hammond, Philip J.; Hudson, John M.; and Graulus, Hendrik, 5,618,882, Cl. 525-92.00D.
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Chu, Daniel T.; Li, Qun; and Raye, Kathleen, 5,618,813, Cl. 514-233.200.
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Reck, Alfred: *See—*
Wieres, Ludwig; and Reck, Alfred, 5,618,501, Cl. 422-180.000.
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Starrett, John E., Jr.; Yu, Kuo-Long; Mansuri, Muzammil M.; Tortolani, David R.; and Reczek, Peter R., 5,618,839, Cl. 514-513.000.
Reddy, Thomas B.; and Rodriquez, Pedro, to Power Conversion, Inc. Method for forming a folded electrode configuration for galvanic cells. 5,618,318, Cl. 29-623.100.
Redmond, Ian R.; and Schenfeld, Eugen, to NEC Research Institute, Inc. Optoelectronic apparatus. 5,619,359, Cl. 359-117.000.
Rednour, Raymond J. Apparatus for knitting about a traveling strand. 5,617,743, Cl. 66-9.00A.
Redpath, Sarah D.: *See—*
Henshaw, Susan F.; and Redpath, Sarah D., 5,619,637, Cl. 395-159.000.
Redwine, Stephen J.; and Oaks, David K., to Plastic Floor Mats Inc. Apparatus for forming extruded filament mat material. 5,618,373, Cl. 156-361.000.
Reed, Barry W.: *See—*
Preikschat, Ekhard; Hokanson, Jon V.; and Reed, Barry W., 5,619,043, Cl. 250-574.000.
Reed, Christopher J.: *See—*
Hamilton, Stephen B.; Jaklitsch, James J.; Reed, Christopher J.; Schulz, Charles E.; Debelius, Leslie H., Jr.; McNelis, Niall B.; and Baker, Edward B., 5,619,323, Cl. 356-139.030.
Reed, David A.; and Palmberg, Paul W. Differentiating mass spectrometer. 5,619,034, Cl. 250-287.000.
Reeh, Ulrike: *See—*
Pohl, Ludwig; Marquard, Kurt; Waitl, Günter; Reeh, Ulrike; and Wipfelder, Ernst, 5,618,872, Cl. 524-430.000.
Reele, Samuel; and Korus, Alan L., to Eastman Kodak Company. Combined film and electronic camera with storage density selection, segment image stacking, instant view and high resolution film mode. 5,619,257, Cl. 348-64.000.
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Konchan, Jeffrey L.; Kowalczyk, David; Reelhorn, John F.; and Saxton, Dennis F., 5,618,069, Cl. 292-216.000.
Reese, James W.: *See—*
Chawla, Manmohan S.; and Reese, James W., 5,619,008, Cl. 102-310.000.
Reese, Morris. Call-waiting and caller identification with three-way conversations arrangements. 5,619,561, Cl. 379-142.000.
Reesor, Douglas: *See—*
Davisson, Thomas; Nadkarni, Sadashiv; and Reesor, Douglas, 5,618,358, Cl. 148-549.000.
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Reher, James F.; Andreiko, Craig A.; and Ludwig, David L., to Ormco Corporation. Plastic orthodontic bracket having rotation wings. 5,618,175, Cl. 433-8.000.
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Reid, Gordon M.: *See—*
Buckley, Paul; and Reid, Gordon M., 5,617,998, Cl. 239-95.000.
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Askin, David; Eng, Kan K.; Reider, Paul; and Volante, Ralph P., 5,618,937, Cl. 544-360.000.
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Reiff, Helmut: *See—*
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Reimer, Lotte, to Coloplast A/S. Device for arrangement in vagina for prevention of involuntary urination with females and an applicator for use in insertion of the device. 5,618,256, Cl. 600-29.000.
Reiner, Michael, to Mercedes-Benz AG. Motor vehicle retarder brake control method. 5,618,084, Cl. 303-3.000.
Reininger, Russell A.: *See—*
Black, Bryan; Denman, Marvin A.; Eisen, Lee E.; Golla, Robert T.; Loper, Albert J., Jr.; Mallick, Soummya; and Reininger, Russell A., 5,619,408, Cl. 395-567.000.
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Donner, Christoph; Sokolowsky, Stephan; and Reinke, Lothar, 5,618,411, Cl. 210-150.000.
Reipur, John; and Juul-Hansen, Ebbe, to Chartec Laboratories A/S. Method and an apparatus for charging a rechargeable battery. 5,619,118, Cl. 320-31.000.
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Reisch, Robert D.: *See—*

Sandstrom, Brent B.; Ewert, Ernest R.; and Reisch, Robert D., 5,619,571, Cl. 380-4.000.
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Reitz, David. Multipurpose kitchen tool. 5,617,597, Cl. 7-113.000.
Reltec Corporation: *See—*
Kammiller, Neil A.; and Kalivas, Zissis L., 5,619,405, Cl. 363-80.000.
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Guillaumet, Gérald; Viaud, Marie-Claude; Savelon, Laurence; Pavli, Panayota; Renard, Pierre; Pfeiffer, Bruno; Caignard, Daniel-Henri; Bizot-Espiard, Jean-Guy; and Adam, Gérard, 5,618,819, Cl. 514-264.000.
Rendall, Barry A. Bicycle attachment. 5,618,052, Cl. 280-288.400.
Rene, Pierre, to Ultrassage Inc. Undulating massager unit. 5,618,262, Cl. 601-116.000.
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Renzullo, Michael J.: *See—*
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Taylor, Bryan; Lazaridis, Mihal; Edmonson, Peter; Jarmuszewski, Perry; Zhu, Lizhong; Carkner, Steven; and Wandel, Matthias, 5,619,531, Cl. 375-222.000.
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Saaski, Elric W.; and Lawrence, Dale M., 5,617,632, Cl. 29-890.122.
Rethwisch, David G.: *See—*
Dordick, Jonathan S.; Rethwisch, David G.; and Patil, Damodar R., 5,618,933, Cl. 536-115.000.
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Sanz-Moncasi, Maria P.; Garin-Chesa, Pilar; Stockert, Elisabeth; Old, Lloyd J.; and Rettig, Wolfgang J., 5,618,534, Cl. 424-184.100.
Reuss, Robert H.; and Shapiro, Frederic B., to Motorola, Inc. Method of forming a monolithic semiconductor integrated circuit having an N-channel JFET. 5,618,688, Cl. 438-189.000.
Reuter, David F., to General Motors Corporation. Brake system modulator with two-stage valve. 5,618,086, Cl. 303-119.200.
Revel, Michel: *See—*
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Rewitzer, Siegfried; and Roth, Peter M., to Hoechst Agteingesellschaft. Process for solvent recovery. 5,618,432, Cl. 210-634.000.
Reynolds, Brenda E.: *See—*
Horrobin, David F.; and Reynolds, Brenda E., 5,618,558, Cl. 424-464.000.
Reynolds Consumer Products Inc.: *See—*
May, Timothy J., 5,617,770, Cl. 83-37.000.
Reynolds, Robert L., to Vari-L Company, Inc. High impedance ratio wideband transformer circuit. 5,619,172, Cl. 333-25.000.
Reznik, Svetlana: *See—*
Furlani, Edward P.; Barzideh, Bijan; Reznik, Svetlana; Williams, Christopher C.; and Brugger, Charles E., 5,619,479, Cl. 369-13.000.
Rhein Chemie Rheinau GmbH: *See—*
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Rheinberger, Volker: *See—*
Frank, Martin; Wegner, Susanne; Rheinberger, Volker; and Hoeland, Wolfram, 5,618,763, Cl. 501-5.000.
Rhoads, Charles: *See—*
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Rhoads, Charles M.; Frazier, Gary; Hoffman, Richard G., II; Kesler, Oren B.; and Ryan, Daniel J., to Texas Instruments Incorporated. Elecronically tunable optical periodic surface filters with an alterable resonant frequency. 5,619,365, Cl. 359-248.000.
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Rhodes, John G. L., deceased: *See—*
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Rhodes, Roy A.: *See—*
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Rhone-Poulenc Agrochimie: *See—*
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Gilbert, Laurent; and Spagnol, Michel, 5,618,982, Cl. 568-346.000.
Jourbert, Daniel; and Malassis, Marc, 5,618,874, Cl. 524-450.000.
Ribi, Hans: *See—*
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Riccio, Donna A.: *See—*
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Rice, Chris A.: *See—*
Scott, James D., II; Stone, William W.; Clark, William T.; and Rice, Chris A., 5,617,606, Cl. 15-246.000.
Rice, John T.: *See—*
Hart, Rickey D.; Winters, Richard M.; Rice, John T.; and Nicholson, James E., 5,618,304, Cl. 606-205.000.
Rice, Steven A.: *See—*
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Richard, Joel: *See—*
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Richard R. Zito R & D Corp.: *See—*
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Richards, Grant: *See—*
Benhamida, Boubekeur; Richards, Grant; Chan, Stephen H.; Yearsley, Gyle; and Nobugaki, Jim, 5,619,681, Cl. 395-500.000.
Richardson, Charles T., Jr.; Austin, Kevin L.; and Billingsley, Samuel F., III, to United States Advanced Network, Inc. Automated telecommunication peripheral system. 5,619,556, Cl. 379-88.000.
Richardson, Donald A.; and Benz, Walter E., to PACCAR Inc. Movable shift console. 5,617,929, Cl. 180-326.000.
Richardson, Lann E.: *See—*
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Richardson, Nicholas J.: *See—*
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Richert, Hans: *See—*
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Richter, Gerard: *See—*
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Richter, Lester W.: *See—*
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Richwood Building Products, Inc.: *See—*
Gandy, Ginger; Vagedes, Doug; and Vagedes, Michael, 5,617,688, Cl. 52-473.000.
Rickard, Michael D.: *See—*
Harrison, Gavin B. L.; Dempster, Robert P.; Rickard, Michael D.; Heath, David D.; Lawrence, Stephen B.; Vinton, Jennifer G.; Lightowlers, Marshall W.; O'Hoy, Kim L.; and Johnson, Kevin S., 5,618,542, Cl. 424-266.100.
Ricker, Erhard; Kroll, Bruno; Isokeit, Wolfgang; Scheibe, Volker; and Heim, Gunther, to YMOS Aktiengesellschaft Industrieprodukte. Railing roof rack for a vehicle. 5,617,981, Cl. 224-309.000.
Ricoh Company, Ltd.: *See—*
Furuta, Toshiyuki; Horiguchi, Hiroyuki; Eguchi, Hirotoshi; Ebi, Yutaka; Furukawa, Tatsuya; Watanabe, Yoshio; and Tsukagoshi, Toshihiro, 5,619,617, Cl. 395-23.000.
Hotta, Yoshihiko; Suzuki, Akira; Obu, Makoto; and Kitamura, Takashi, 5,619,243, Cl. 347-139.000.
Konno, Kouichi; and Chiyokura, Hiroaki, 5,619,625, Cl. 395-119.000.
Kurokawa, Junji; Nakahara, Toshio; and Soumiya, Norimasa, 5,619,311, Cl. 399-176.000.
Shoji, Hisashi; Yano, Hidetoshi; Kai, Tsukuru; Ishii, Yoshiko; Yokokawa, Nobuto; Suzuki, Masako; and Iwasaki, Yukiko, 5,619,316, Cl. 399-359.000.
Shoshi, Masayuki; Ichikawa, Yumi; Teramura, Kaoru; Koyano, Masayuki; and Kawahara, Megumi, 5,618,935, Cl. 544-344.000.
Suzuki, Akira; and Saito, Takao, 5,619,301, Cl. 396-114.000.
Riddle, Robert G.; Douglass, Jeffrey A.; Voss, John D.; and Ellis, Stephen C., to TRW Inc. Wideband solderless right-angle RF interconnect. 5,618,205, Cl. 439-581.000.
Riegel, Maximilian; and Stenzel, Ulrich, to U.S. Philips Corporation. Video decoder including a control unit. 5,619,267, Cl. 348-400.000.
Rieger, John B.; Zengerle, Paul L.; and Boettcher, John W., to Eastman Kodak Company. Photographic silver halide element having polyester support and exhibiting improved wet adhesion. 5,618,657, Cl. 430-434.000.
Rieke, Paul E.: *See—*
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Riezman, Howard: *See—*
Chaudhuri, Bhabatosh; Stephan, Christine; Seeboth, Peter; and Riezman, Howard, 5,618,690, Cl. 435-68.100.
Rife, Guerin D. Groove configuration for a golf club. 5,618,239, Cl. 473-330.000.
Rijckaert, Albert M. A.; and Van Vlerken, Johannes J. L. M., to U.S. Philips Corporation. Phase-locked loop, phase comparator for use in the phase-locked loop, and reproducing device including the phase-locked loop. 5,619,171, Cl. 331-1.00A.
Rinderer, Eric R., to B-Line Systems, Inc. Support system for data transmission lines. 5,618,014, Cl. 248-58.000.
Rindler, Joe; and Pintavalli, Nanci. Ice ball molding apparatus. 5,618,463, Cl. 249-92.000.
Ring Screw Works: *See—*
Avgoustis, Gus G., 5,618,236, Cl. 470-12.000.
Ringsted, Jørli W.: *See—*

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Ringuet, Michel: *See—*
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Rinkes, Hans: *See—*
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Ripley, William G. System for producing a bleached cotton, nonwoven web. 5,617,613, Cl. 19-66.0CC.
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Rise, James D.: *See—*
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Riso Kagaku Corporation: *See—*
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Takita, Nagon; and Yamamoto, Yasuo, 5,617,787, Cl. 101-129.000.
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Schmidt, Hartmut; and Ritter, Günter, 5,618,847, Cl. 514-649.000.
Ritterling, Douglas, to American Trading and Production Corporation. Folder with slide-stiffener assembly. 5,618,061, Cl. 281-15.100.
Ritz, Mordechai; Livneh, Noam; and Silbershatz, Giora, to Rafael Armament Development Authority. Spread-spectrum, frequency-hopping radio telephone system with voice activation. 5,619,493, Cl. 370-330.000.
Rizzotto, Gianguido: *See—*
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Roane, Davis R.: *See—*
Flood, John E.; Kelley, John W.; Roane, Davis R.; and Clasby, John M., 5,618,870, Cl. 524-269.000.
Robb, Charles L. R. Configurable color selection circuit for choosing colors of multi-colored leds in toys and secondary automotive flasher/brake indicators. 5,619,182, Cl. 340-479.000.
Robbins, Cameron J. Insulating undergarment. 5,617,581, Cl. 2-69.000.
Robbs, Steven E. Daylight reducer for food crop storage building. 5,617,780, Cl. 99-467.000.
Robert Bosch GmbH: *See—*
Awarzamani, Assadollah; and Wilfert, Thomas, 5,617,835, Cl. 123-585.000.
Baron, Wolfgang; and Nold, Erich, 5,617,924, Cl. 173-181.000.
Brehm, Werner; and Fleischer, Walter, 5,617,890, Cl. 137-82.000.
Kuegel, Peter; Demir, Tolunay; and Kugler, Thomas, 5,617,828, Cl. 123-468.000.
Marek, Jiri, 5,618,989, Cl. 73-1.380.
Maue, Hans-Heinrich; Hofmeister, Werner; Egert, Dieter; and Langenhan, Dirk, 5,618,194, Cl. 439-157.000.
Pfuhl, Berthold; Zehner, Friedhelm; and Zumbraegel, Joachim, 5,617,895, Cl. 137-625.690.
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Wolff, Guenter, 5,617,894, Cl. 137-625.500.
Roberts, John K., to K. W. Muth Company, Inc. Mirror coating. 5,619,374, Cl. 359-584.000.
Roberts, John K., to K. W. Muth Company, Inc. Mirror coating. 5,619,375, Cl. 359-584.000.
Robertshaw Controls Company: *See—*
Fowler, Daniel L.; and Hart, Lee A., 5,618,460, Cl. 219-497.000.
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Robicon Corporation: *See—*
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Robin, Philippe; Bureau, Jean-Marc; Bernard, François; and Facoetti, Hugues, to Thomson-CSF. Thermal detector comprising a thermal insulator made of expanded polymer. 5,618,737, Cl. 216-56.000.
Robinson, Clark: *See—*
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  Reichmann, Hans-Helmut, 5,617,969, Cl. 220-295.000.
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  Hellmuth, Thomas; Seidel, Peter; and Schäffer, Peter, 5,619,372, Cl. 359-389.000.
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  Tunis, Robert H.; and Schanley, Randal R., 5,618,070, Cl. 292-228.000.
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  Ebeling, Ralf-Martin; and Schaper, Helmut, 5,618,352, Cl. 127-19.000.
Schawk, Inc: *See—*
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  Knepper, Peter; and Scheffler, Olaf, 5,618,357, Cl. 148-528.000.
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  Syktich, Cecelia M.; Vincent, Gary A.; and Scheibert, Kristen A., 5,618,878, Cl. 524-588.000.
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  Redmond, Ian R.; and Schenfeld, Eugen, 5,619,359, Cl. 359-117.000.
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  Donner, Christoph; Sokolowsky, Stephan; and Reinke, Lothar, 5,618,411, Cl. 210-150.000.
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  Cooper, Alan B.; Saksena, Anil K.; Lovey, Raymond; Girijavallabhan, Viyyoor; and Ganguly, Ashit, 5,618,793, Cl. 514-19.000.
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Homann, Michael J.; and Previte, Edward, 5,618,707, Cl. 435-146.000.

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Eddison, Alan M.; and Kotsonis, Spryo J., 5,617,926, Cl. 175-61.000.

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Winkler, Kenneth W., 5,619,475, Cl. 367-27.000.

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May, Hans J.; and Schnettler, Roland, 5,618,391, Cl. 204-212.000.

Schnoes, Heinrich K.: *See—*

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Hamilton, Stephen B.; Jaklitsch, James J.; Reed, Christopher J.; Schulz, Charles E.; Debelius, Leslie H., Jr.; McNelis, Niall B.; and Baker, Edward B., 5,619,323, Cl. 356-139.030.

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Schwager, Michael, to Schneider (Europe) A.G. Interlocking guidewire connector. 5,617,875, Cl. 128-772.000.

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Horrobin, David F.; and Reynolds, Brenda E., 5,618,558, Cl. 424-464.000.

Scott, Dewey L. Firearm rest. 5,617,666, Cl. 42-94.000.

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McClure, David C., 5,619,456, Cl. 365-189.050.
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Trainor, John J., 5,619,121, Cl. 323-256.000.
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Takamatsu, Hiroyuki; Morimoto, Tsutomu; Sumie, Shingo; and Yoshida, Naoyuki, 5,619,326, Cl. 356-357.000.
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Iwaki, Tadao; Kasama, Nobuyuki; Yamamoto, Shuhei; Takesue, Toshiharu; and Takemura, Yasuhiro, 5,619,596, Cl. 382-278.000.
Sumitomo Chemical Co., Ltd.: *See—*
Hara, Takahisa; and Matsumoto, Masahito, 5,618,567, Cl. 425-111.000.
Togawa, Yoshiaki; Matsumoto, Masahito; Nagata, Makoto; and Yabe, Tohru, 5,618,607, Cl. 428-119.000.
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Nagaishi, Tatsuoki, 5,618,446, Cl. 216-65.000.
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Hosoda, Yasushi; Kimoto, Masanari; Hikino, Shinya; Yoshida, Tsutomu; and Fukui, Kiyoyuki, 5,618,634, Cl. 428-610.000.
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Kato, Yoshinobu; Oonishi, Mitsuharu; and Kobayashi, Hideaki, 5,617,643, Cl. 33-533.000.
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Kadomaru, Kazuo; and Mizuno, Yoichi, 5,618,869, Cl. 524-261.000.
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Sumitomo Wiring Systems, Ltd.: *See—*
Kobayashi, Takashi; and Imoto, Masayoshi, 5,617,630, Cl. 29-857.000.
Nakajima, Keiichi; Fujita, Tadashi; and Miwa, Tetsuya, 5,618,193, Cl. 439-125.000.
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Yamamoto, Tetsuo; and Taniguchi, Yoshikazu, 5,619,021, Cl. 200-6.00A.
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Lev, Lavi A.; and Allen, Michael, 5,619,149, Cl. 327-51.000.
Montenegro, Gabriel E.; Drach, Steven J.; and Wong, Ho Y., 5,619,645, Cl. 395-185.010.
Yu, Robert K.; and Zyner, Grzegorz B., 5,619,439, Cl. 364-748.000.
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Sand, Bruce J., 5,618,284, Cl. 606-5.000.
Sunrise Telecom, Inc.: *See—*
Chang, Paul K.; Marshall, Paul A.; and Pfeiffer, Robert C., 5,619,489, Cl. 370-241.000.
Super Sack Mfg. Corp.: *See—*
Derby, Norman C., 5,618,254, Cl. 493-197.000.
Derby, Norwin C., 5,618,113, Cl. 383-121.000.
Nickell, Craig A.; Durden, Vincent E.; and Derby, Norman C., 5,618,255, Cl. 493-210.000.
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Hey-Shipton, Gregory L.; Forse, Roger J.; and Skoglund, David L., 5,618,777, Cl. 505-210.000.
Supracor Systems Corporation: *See—*
Landi, Curtis L.; Wilson, Susan L.; and Cazalet, Peter M., 5,617,595, Cl. 5-653.000.
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Sherrick, George O.; and Susnik, Robert A., 5,618,606, Cl. 428-113.000.
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Suzano, Alberto: *See—*
Tezuka, Satoru; Miyake, Shigeru; Furukawa, Hiroshi; Kihara, Kenichi; Kitahara, Chiho; Idei, Hideomi; Taguchi, Shihoko; Namba, Hikari; and Suzano, Alberto, 5,619,640, Cl. 395-326.000.
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Suzuki, Hideki, to Nippondenso Co., Ltd. Compressor control device for car air conditioner. 5,617,730, Cl. 62-133.000.
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Suzuki, Kunihiko: *See—*
Akiyama, Noboru; Yokoyama, Yuji; Ohta, Tatsuyuki; Suzuki, Kunihiko; and Kobayashi, Yutaka, 5,619,455, Cl. 365-189.050.
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Suzuki, Masahiko, to Brother Kogyo Kabushiki Kaisha. Energy efficient ink jet print head. 5,619,235, Cl. 347-69.000.
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Swarup, Shanti; and Mayo, Michael A., to PPG Industries, Inc. N-alkoxymethyl (meth)acrylamide functional polymers and their use in self-crosslinkable coating compositions. 5,618,586, Cl. 427-407.100.
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Sledziewski, Andrzej; Chlebowicz-Sledziewska, Ewa; Swetly, Peter; Adolf, Gunther; Hauptmann, Rudolf; Castanon, Maria J.; and Spevak, Walter, 5,618,712, Cl. 435-206.000.
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Barkan, Edward, 5,619,028, Cl. 235-462.000.
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Tacke, John B., Jr.: *See—*
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Taddeo, Alberto: *See—*
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Nakayama, Shigekatsu; and Ishimaru, Seiji, 5,619,290, Cl. 351-217.000.
Taggett, Peter T.; and Grossi, Edward J. Trail blazing stumpcutter. 5,617,636, Cl. 30-276.000.
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Taillie, Paul L.: *See—*
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Takae, Tsutomu: *See—*
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Takagi, Sae: *See—*
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Takagi, Yasuo: *See—*
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Takahashi, Atsuya: *See—*
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Takahashi, Hiroshi: *See—*
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Takahashi, Hiroyuki; and Suzuki, Kenpei, to Advantest Corporation. Device transfer mechanism for IC test handler. 5,617,945, Cl. 198-471.100.
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Takahashi, Keisuke: *See—*
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Takahashi, Kunihiro; Kojima, Yoshikazu; Takasu, Hiroaki; Matsuyama, Nobuyoshi; Niwa, Hitoshi; Yoshino, Tomoyuki; and Yamazaki, Tsuneo, to Seiko Instruments Inc. Method of making light valve device using semiconductive composite substrate. 5,618,739, Cl. 438-158.000.
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Koyama, Kazuo; Usuda, Matsuo; Takahashi, Manabu; Sakuma, Yasuharu; Hiwatashi, Shunji; and Kawasaki, Kaoru, 5,618,355, Cl. 148-320.000.
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Takahashi, Shigeo; Soga, Yoshitaka; Ohhashi, Tatsuo; and Ito, Hirotaka, to Aisin Seiki Kabushiki Kaisha; and Marujun Seiki Ind. Co., Ltd. Force-receiving plate for friction device. 5,617,941, Cl. 192-107.00R.
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Yasuda, Masanori; Onimaru, Sadahisa; Inoue, Takashi; Okada, Hiroshi; Kojima, Akikazu; and Takaki, Niro, 5,617,995, Cl. 237-12.30C.
Takaku, Yutaka, to Hitachi, Ltd. Exhaust control device of internal combustion engine. 5,617,722, Cl. 60-277.000.
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Takano, Nobuhiro; Shinohara, Shigeru; and Ogura, Mitsuo, to Hitachi Koki Co., Ltd. Universal battery charger chargeable with relevant current dependent on cell number. 5,619,116, Cl. 320-17.000.
Takashima, Yasukazu. Gravity independent photosynthetic growing system. 5,617,673, Cl. 47-60.000.
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Takasu, Hiroaki: *See—*
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Takayanagi, Hisao; Kitano, Yasunori; Yano, Tamaki; Umeki, Hiroe; and Hara, Hiroto, to Mitsubishi Chemical Corporation. Tyrosine kinase inhibitors and benzoylacrylamide derivatives. 5,618,829, Cl. 514-332.000.
Takayanagi, Toshihiro; Yanase, Kenji; and Muramatsu, Kiyoji, to Brother Kogyo Kabushiki Kaisha. Method and device for transmitting and processing print data used for printer. 5,619,623, Cl. 395-114.000.
Takebe, Hideharu, to Mitsubishi Denki Kabushiki Kaisha. Picture data processing device with preferential selection among a plurality of sources. 5,619,227, Cl. 345-147.000.
Takegawa, Masaharu; Matsuda, Akihisa, deceased (by Yoshitaka Matsuda, heir), to Daicel Chemical Industries, Ltd. Filter rod for filtering the smoke of a cigarette. 5,618,620, Cl. 428-339.000.
Takeguchi, Tetsuji, to Fujitsu Limited. Drive circuit for flash memory with improved erasability. 5,619,450, Cl. 365-185.230.
Takei, Hiroyuki; and Shimizu, Norio, to Hitachi, Ltd. Photo-controlled spatial light modulator. 5,618,654, Cl. 430-347.000.
Takei, Kazuo: *See—*
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Takemoto, Takatoshi; Yoneda, Yoichi; and Muramatsu, Meiji, to Kabushiki Kaisha Ace Denken. Medal distribution system in a slot machine island. 5,618,042, Cl. 273-143.00R.
Takemura, Yasuhiro: *See—*
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Takenouchi, Masanori: *See—*
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Taki, Kazunari, to Brother Kogyo Kabushiki Kaisha. Optical magnetic recording medium. 5,618,638, Cl. 428-694.0ML.
Taki, Kazunari, to Brother Kogyo Kabushiki Kaisha. Optical scanning device. 5,619,350, Cl. 359-18.000.
Takimoto, Takuya: *See—*
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Takita, Nagon; and Yamamoto, Yasuo, to Riso Kagaku Corporation. Process for perforating stencil printing sheet. 5,617,787, Cl. 101-129.000.
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Talbot, Pierre: *See—*
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Pong, William Y.; Chambers, Richard G.; and Rise, James D., 5,619,240, Cl. 347-103.000.
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Texas Instruments Incorporated: *See—*
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Thomas, Leslie P., to Diamond Automations, Inc. Method and apparatus for breaking, separating, and inspecting eggs. 5,617,782, Cl. 99-500.000.
Thomas, Matthew M.: *See—*
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Thomas, Michael H. Composition for exterminating fire ants. 5,618,565, Cl. 424-717.000.
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Ehemann, George M., Jr.; Garrity, Edward R., Jr.; Duschl, Robert A.; and Gorog, Istvan, 5,619,330, Cl. 356-382.000.
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Krogh, James A.; and Sipe, Michael R., 5,618,340, Cl. 106-284.060.
Tomasello, Anthony J.: *See*—
Willoughby, Louis O., Jr.; Jordan, Donald G.; Adomaitis, Paul R.; Goldman, Avraham C.; Tomasello, Anthony J.; Montellese, Steve; Weed, Edward W.; and Shtrahman, Abraham, 5,619,587, Cl. 382-141.000.
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Selnick, Harold G.; Baldwin, John J.; Ponticello, Gerald S.; and Tomassini, Joanne E., 5,618,830, Cl. 514-358.000.
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Tomita, Hiroyuki; Furuse, Tōru; Mizukami, Masakatu; and Masukawa, Akihiro, to Leader Electronics Corporation. Sound image display method and apparatus. 5,619,220, Cl. 345-14.000.
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Nagamura, Takashi; and Tomita, Shinji, 5,617,740, Cl. 62-620.000.
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Tomita, Takashi; Nomoto, Katsuhiko; Yamamoto, Yoshihiro; Sannomiya, Hitoshi; and Takagi, Sae, to Sharp Kabushiki Kaisha. Method for forming a thin semiconductor film and a plasma CVD apparatus to be used in the method. 5,618,758, Cl. 438-485.000.
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Tsuji, Hiroshi; and Okayasu, Yoshiji, 5,617,766, Cl. 81-480.000.
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Lewis, Edward C.; Tonn, Donald P.; and Varner, Michael G., 5,618,499, Cl. 422-177.000.
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Toogood, William C., to Key Knife, Inc. Chipping cutter head including end cutting knives. 5,617,908, Cl. 144-218.000.
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Cheng, Ying-Hsiung, 5,617,592, Cl. 5-99.100.
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Beér, János M.; and Toqan, Majed A., 5,617,715, Cl. 60-39.020.
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Kawabe, Norio; Uchiro, Hiromi; Nakadate, Teruo; Tanahashi, Masahiko; and Funaba, Yuriko, 5,618,804, Cl. 514-103.000.
Shirai, Makoto; and Yonehara, Tetsu, 5,618,708, Cl. 435-155.000.
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Bolich, Raymond E., Jr.; and Torgerson, Peter M., 5,618,524, Cl. 424-70.120.
Torikoshi, Yasuo; and Kosugi, Naoki, to Hochiki Corporation. System for monitoring disaster prevention. 5,619,184, Cl. 340-506.000.
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Starrett, John E., Jr.; Yu, Kuo-Long; Mansuri, Muzammil M.; Tortolani, David R.; and Reczek, Peter R., 5,618,839, Cl. 514-513.000.
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Horiguchi, Takeshi; Sasaki, Satoru; and Miyake, Hideaki, 5,617,788, Cl. 101-181.000.
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Ito, Sukehide; Kurokawa, Eiichi; and Morishita, Akira, 5,617,736, Cl. 62-393.000.
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Kashima, Keiji; Fukamachi, Mitsuru; and Yoshida, Naoki, 5,618,095, Cl. 362-31.000.
Toussant, John W.: *See*—
Dearwester, Donald D.; and Toussant, John W., 5,618,008, Cl. 242-594.500.
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Green, David T.; Bolanos, Henry; Tovey, H. Jonathan; and Smith, Robert C., 5,618,309, Cl. 606-207.000.

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Yoshimura, Katsuji; Toyama, Masamichi; Fujiwara, Akihiro; Yamada, Kunihiko; and Suda, Hirofumi, 5,619,264, Cl. 348-352.000.
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Kimura, Kunio; Ito, Takeshi; Aoyama, Tomohiro; Uno, Keiichi; Hotta, Kiyoshi; and Arichi, Minako, 5,618,911, Cl. 528-361.000.
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Kuroyanagi, Noriyoshi; Suehiro, Naoki; and Naito, Toshikatsu, 5,619,527, Cl. 375-206.000.
Toyo Kohan Co., Ltd.: *See*—
Nomura, Giichiro; and Yubuta, Osamu, 5,618,401, Cl. 205-130.000.
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Konya, Shogo; Okamoto, Akira; and Yoshizaki, Kouji, 5,618,498, Cl. 422-174.000.
Nagasawa, Mitsuru; Kuwano, Kazuyuki; Kawakami, Takeshi; Sugiura, Mamoru; Hibino, Hiroshi; Kojima, Shiro; and Azuma, Kishiro, 5,618,898, Cl. 526-245.000.
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Tracor, Inc.: *See*—
Nicholson, James E., 5,619,332, Cl. 356-419.000.
Tracy, Edward D.: *See*—
Fenton, Wayne; Eaton, Glenn A.; McFadden, Joseph A.; Taylor, Stuart A.; Tracy, Edward D.; and Wang, Emil C. W., 5,619,555, Cl. 379-67.000.
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Wirobski, Reinhard; and Traeger, Michael, 5,618,478, Cl. 264-50.000.
Trainham, James A., III: *See*—
Law, Clarence G., Jr.; Trainham, James A., III; Newman, John S.; and Eames, Douglas J., 5,618,393, Cl. 204-252.000.
Trainor, John J., to Siemens Energy & Automation, Inc. Load voltage based tap changer monitoring system. 5,619,121, Cl. 323-256.000.
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Tran, Canh M.: *See*—
Newberth, Frederick F., III; Colton, Martin S.; and Tran, Canh M., 5,618,857, Cl. 523-176.000.
Tran, Chuong R., to Dainippon Screen Mfg. Co., Ltd. Air elimination system. 5,618,348, Cl. 118-693.000.
Tran, Thang M., to Advanced Micro Devices, Inc. High performance RAM array circuit employing self-time clock generator for enabling array accessess. 5,619,464, Cl. 365-203.000.
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Rebec, Mohammed S.; and Rebec, Mihailo V., 5,619,528, Cl. 375-219.000.
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Webster, Earl D., 5,617,893, Cl. 137-526.000.
Träubel, Harro; and Reiff, Helmut, to Bayer Aktiengesellschaft. Bisulfite-blocked polyisocyanates as tanning agents. 5,618,317, Cl. 8-94.19C.
Travaglio, Mark A.; and Young, Desmond W., to National Semiconductor Corporation. Automatic preemption recovery and frame repeat option in a media access control/host system interface unit. 5,619,652, Cl. 395-200.200.
Travis, Robert L., Jr.; Wilson, Andrew P.; Jacobson, Neal F.; and Renzullo, Michael J., to Digital Equipment Corporation. Method and apparatus for object-oriented invocation of a server application by a client application. 5,619,710, Cl. 395-800.000.
Trenner, Albrecht; and Grossenbacher, Erich, to Montech AG. Longitudinal transfer system. 5,617,796, Cl. 104-106.000.
Trinder, Michael C. J.: *See*—
Jones, Owen; and Trinder, Michael C. J., 5,619,020, Cl. 181-206.000.
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Tripp, Matthew L.; Rader, Sydney R.; Rao, Subba C.; and Ryder, David S., to Miller Brewing Company. Flavored malt beverages prepared by using ultrafiltration methods. 5,618,572, Cl. 426-592.000.
Trochimcznk, Andrzej W.; Gatrone, Ralph C.; Alexandratos, Spiro; and Horwitz, E. Philip, to Arch Development Corp.; and University of Tennessee Research Corp., The. Grafted methylenediphosphonate ion exchange resins. 5,618,851, Cl. 521-34.000.
Troisi, James H., to Tandem Computers Incorporated. Method for sorting and storing data employing dynamic sort tree reconfiguration in volatile memory. 5,619,693, Cl. 395-607.000.
Troncoso, Vincent F. Recoil absorbing stabilizer for a weapon. 5,617,664, Cl. 42-1.060.
True, Donovan B. Siphon apparatus. 5,617,891, Cl. 137-145.000.
True Fitness Technology, Inc.: *See*—
Trulaske, Frank R.; and Singer, Phillip M., 5,618,245, Cl. 482-7.000.
Trueba, Kenneth E.: *See*—
Keefe, Brian J.; Ho, May F.; Courian, Kenneth J.; Steinfield, Steven W.; Childers, Winthrop D.; Tappon, Ellen R.; Trueba, Kenneth E.; Chapman, Terri I.; Knight, William R.; and Moritz, Jules G., III, 5,619,236, Cl. 347-84.000.
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Hösel, Fritz, 5,617,615, Cl. 19-159.00R.
TRW Inc.: *See*—
Horstein, Michael; and Ho, Hau H., 5,619,209, Cl. 342-352.000.
Kurup, Mohan; and Champney, Clark, 5,618,491, Cl. 420-77.000.
Lambropoulos, George; Pitera, Kenneth R.; and Hair, Robert A., 5,619,191, Cl. 340-825.690.
Riddle, Robert G.; Douglass, Jeffrey A.; Voss, John D.; and Ellis, Stephen C., 5,618,205, Cl. 439-581.000.
TRW Vehicle Safety Systems Inc.: *See*—
Sayles, Robert D., 5,618,006, Cl. 242-379.100.
Tsai, Peter; and Chien, Ching-Wen. Batting exercising device for baseball. 5,618,039, Cl. 473-423.000.
Tsang, Wai M.; and Chan, Ching K., to Vtech Electronics, Ltd. Encoding and decoding color image data based on mean luminance and an upper and a lower color value. 5,619,591, Cl. 382-166.000.
Tseng, Huang-Chung: *See*—
Chen, Wenn-Jei; and Tseng, Huang-Chung, 5,619,063, Cl. 257-530.000.
Tseng, Liang-Chin. Eyeglasses with a replaceable sunshade. 5,619,287, Cl. 351-44.000.
Tsinberg, Mikhail; and Ogawa, Shigeo, to Kabushiki Kaisha Toshiba. Digital video recording and playback system and method having multiple playback devices outputting video program data on multiple channels. 5,619,335, Cl. 386-125.000.
Tsuchimoto, Suguru: *See*—
Hamamoto, Hiroshi; Sugiyama, Yoshinori; Nakagawa, Noriaki; Hashida, Eiji; Tsuchimoto, Suguru; Nakanishi, Noriyuki; Matsunaga, Yuji; and Okada, Yoshimi, 5,618,699, Cl. 435-69.700.
Tsuda, Hiroki, to NEC Corporation. Method and apparatus for establishing and maintaining frame synchronization in a satellite communication system. 5,619,507, Cl. 370-350.000.
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Tsuji, Hiroshi; and Okayasu, Yoshiji, to Tonichi Manufacturing Co., Ltd. Torque wrench device. 5,617,766, Cl. 81-480.000.
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Hatano, Shintarou; Kawahito, Hiroshi; Ichikawa, Yoshiki; Mizoguti, Fumito; Tsuji, Masahiro; Hiroyasu, Takao; Kawamoto, Hiroshi; Fujita, Syouichi; Nishimura, Hideyuki; Kawabata, Itaru; and Kazaki, Yuichi, 5,619,312, Cl. 399-61.000.
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Yagi, Sakai; Tsuji, Masanori; Jinno, Keishi; and Yoneda, Takahiro, 5,618,201, Cl. 439-489.000.
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Konuma, Toshimitsu; Sugawara, Akira; and Tsuji, Takahiro, 5,619,045, Cl. 257-72.000.
Tsukada, Yoshiaki; Nakamura, Kazuhiko; Saito, Mitsuru; and Kayama, Hiroaki, to Honda Giken Kogyo Kabushiki Kaisha. Friction clutch. 5,617,938, Cl. 192-54.500.
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Yokota, Hiroshi; Naito, Ryuichi; Hirano, Hiroyuki; Ishii, Katsumi; Naohara, Shinichi; Tsukada, Yoshifumi; and Matsumoto, Kanya, 5,619,484, Cl. 369-50.000.
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Furuta, Toshiyuki; Horiguchi, Hiroyuki; Eguchi, Hirotoshi; Ebi, Yutaka; Furukawa, Tatsuya; Watanabe, Yoshio; and Tsukagoshi, Toshihiro, 5,619,617, Cl. 395-23.000.
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Tsukuda, Keiichiro: *See*—
Inoue, Hiroyuki; Sugama, Sadayuki; Hiramatsu, Soichi; Yamaguchi, Hideki; Ujita, Toshihiko; Yamanaka, Akihiro; Nojima, Takashi; Kotaki, Yasuo; Tsukuda, Keiichiro; Nakamura, Hitoshi; Kida, Akira; Kawakami, Hideaki; and Iwasaki, Takeshi, 5,619,237, Cl. 347-86.000.
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Sakaguchi, Mikio; Sakamoto, Ichiro; Akagi, Ryuichi; Yamaguchi, Shu; and Tsumadori, Masaki, 5,618,783, Cl. 510-507.000.
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Urawa, Yoshio; Furukawa, Ken; Shimizu, Toshikazu; Yamagishi, Yoji; Tsurugi, Tomio; and Ichino, Tomio, 5,618,969, Cl. 560-102.000.
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Fukushima, Hirotaka; Kajitani, Koji; Tsuruta, Hiroyoshi; and Fukamachi, Masanobu, 5,617,940, Cl. 192-70.170.
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Oshima, Kentaro; Numata, Toshiharu; Nishimura, Toru; Kokubo, Sachiko; and Tsuto, Keiichi, 5,618,580, Cl. 427-212.000.
Tsutsui, Kyoya, to Sony Corporation. Information furnishing and collection system. 5,619,570, Cl. 380-4.000.

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Suzuki, Rieko; Saida, Kiyoshi; Itazu, Kazushige; Fujine, Eiji; Kamiya, Yoshihiro; Uchida, Yoshitaka; Murakami, Takako; Tsuyuki, Teruhisa; Kawazoe, Kazunori; Shimazaki, Takeshi; and Nishiwaki, Yukimi, 5,618,744, Cl. 438-599.000.

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Yamanaka, Hideaki; Saito, Hirotaka; Tsuzuki, Munenori; Sasaki, Yasuhito; Yamada, Hirotoshi; and Oshima, Kazuyoshi, 5,619,495, Cl. 370-413.000.

TTS Drøbak A/S: *See—*

Iversen, Øyvind T.; and Keim, Jan-Erik, 5,618,148, Cl. 414-139.900.

Tu, Teri: *See—*

Vig, Ravi; Tu, Teri; and Latham, Paul W., II, 5,619,137, Cl. 324-251.000.

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Löschen, Carsten; and Thiel, Alexander, 5,619,611, Cl. 392-324.000.

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Tucker, Charles E.; and Davenport, Kenneth G., to Hoechst Celanese Corporation. Chiralrhenium catalysts and processes for preparing the same. 5,618,958, Cl. 556-45.000.

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Meyers, Theodore W., 5,617,679, Cl. 52-20.000.

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McKnight, Steven L.; Hou, Jinzhao; and Schindler, Ulrike, 5,618,693, Cl. 435-69.100.

Tulloch, Kenneth F.; Burns, Lee E.; Desai, Hemandt D.; and Taylor, Raymond L., to CVD, Incorporated. Composite thermocouple protection tubes. 5,618,594, Cl. 428-34.100.

Tults, Juri, to Thomson Consumer Electronics, Inc. TV line and field detection apparatus with good noise immunity. 5,619,275, Cl. 348-526.000.

Tunis, Robert H.; and Schanley, Randal R. Push button quake latch. 5,618,070, Cl. 292-228.000.

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Karppanen, Arto; Talarmo, Reino; and Tuohino, Markku, 5,619,552, Cl. 379-60.000.

Turello, Patrick: *See—*

Germanaud, Laurent; Planche, Jean Pascal; and Turello, Patrick, 5,618,862, Cl. 524-68.000.

Turk, Richard S.; and Dulebohn, Joel I., to Michigan Biotechnology Institute. Luminescent materials, phosphors and compositions containing such phosphors. 5,618,467, Cl. 252-301.160.

Turkevich, Leonid A.: *See—*

Gillberg-Laforce, Gunilla E.; Turkevich, Leonid A.; and Kiick-Fischer, Kristi L., 5,618,622, Cl. 428-357.000.

Turner Intellectual Property Limited: *See—*

Hepworth, Paul S., 5,618,028, Cl. 451-375.000.

Turner, John B., to Apple Computer, Inc. Computer generated scribble fill of a vector graphic. 5,619,633, Cl. 395-141.000.

Turner, Michael D.: *See—*

Burch, Richard A.; Schneider, Kevin W.; and Turner, Michael D., 5,619,506, Cl. 370-506.000.

Turner, Ronald, executor: *See—*

Hobden, Mervyn K.; Spencer, David G.; Rhodes, John G. L., deceased; and Turner, Ronald, executor, 5,619,248, Cl. 348-6.000.

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Marshall, Ian W.; and Tweddle, Mark B., 5,619,360, Cl. 359-140.000.

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Stevens, Timothy A.; and Tyndorf, Tadeusz A., 5,618,731, Cl. 435-304.300.

Tyre Consult Venlo B. V.: *See—*

Janus, Jonny; and Markewitz, Wolfgang, 5,618,362, Cl. 152-530.000.

Uarco Incorporated: *See—*

Denklau, Michael D., 5,618,600, Cl. 428-41.800.

Uban, Stephen A.: *See—*

Eischen, Frederick W.; Uban, Stephen A.; and Maxson, Richard C., 5,618,426, Cl. 210-541.000.

UCC Corporation of Engadinstrasse: *See—*

Staff, Paul E.; Button, David; Pratt, John D.; and Barnard, Dominic P. E., 5,619,333, Cl. 356-436.000.

Uchibori, Kiyofumi: *See—*

Meguro, Satoshi; Uchibori, Kiyofumi; Suzuki, Norio; Motoyoshi, Makoto; Koike, Atsuyoshi; Yamanaka, Toshiaki; Sakai, Yoshio; Kaga, Toru; Hashimoto, Naotaka; Hashimoto, Takashi; Honjou, Shigeru; and Minato, Osamu, 5,619,055, Cl. 257-369.000.

Uchida, Hideaki: *See—*

Akioka, Takashi; Iwamura, Masahiro; Hiraishi, Atsushi; Yokoyama, Yuji; Matsuzaki, Nozomu; Yamauchi, Tatsumi; Kobayashi, Yutaka; Gotou, Nobuyuki; ide, Akira; Yamamura, Masahiro; and Uchida, Hideaki, 5,619,151, Cl. 327-78.000.

Uchida, Kiyoshi; Miyatake, Norio; and Omoya, Kazunori, to Matsushita Electric Industrial Co., Ltd. Magneto-optic disk. 5,618,617, Cl. 428-323.000.

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Nagata, Teruyuki; Kusuda, Chiyuki; Wada, Masaru; Satou, Kenichi; and Uchida, Masae, 5,618,980, Cl. 564-415.000.

Uchida, Yoshitaka: *See—*

Suzuki, Rieko; Saida, Kiyoshi; Itazu, Kazushige; Fujine, Eiji; Kamiya, Yoshihiro; Uchida, Yoshitaka; Murakami, Takako; Tsuyuki, Teruhisa; Kawazoe, Kazunori; Shimazaki, Takeshi; and Nishiwaki, Yukimi, 5,618,744, Cl. 438-599.000.

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Uchikawa, Akio: *See—*

Nakagawa, Emi; Ueda, Hitoshi; Uchikawa, Akio; and Koyuhara, Norikazu, 5,618,464, Cl. 252-62.600.

Uchiro, Hiromi: *See—*

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Wang, Hwa-Chi; and Udischas, Richard J., 5,618,996, Cl. 73-863.610.

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Ueda, Takuya; Shirota, Yoshihiro; Hirai, Yoshihiko; Maruyama, Toshiaki; and Amano, Tadashi, to Shin-Etsu Chemical Co., Ltd. Polymerization apparatus effective in preventing polymer scale deposition. 5,618,497, Cl. 422-138.000.

Ueda, Tomohiko; Matsuura, Ichiro; Honjo, Makoto; Kakii, Toshiaki; Yamanishi, Toru; and Nagasawa, Shinji, to Sumitomo Electric Industries, Ltd; and Nippon Telegraph & Telephone Corporation. Optical connector. 5,619,605, Cl. 385-80.000.

Uehara, Haruo: *See—*

Ikegami, Yasuyuki; and Uehara, Haruo, 5,617,738, Cl. 62-509.000.

Uehara, Takashi: *See—*

Segawa, Mizuki; Kato, Yoshiaki; Nakaoka, Hiroaki; Nakabayashi, Takashi; Hori, Atsushi; Masuda, Hiroshi; Matsuo, Ichiro; Shinohara, Akihira; Uehara, Takashi; and Yasuhira, Mitsuo, 5,618,748, Cl. 438-232.000.

Uehara, Yasuhiro: *See—*

Kusumoto, Yasuhiro; Uehara, Yasuhiro; Kanesawa, Yoshio; Inoue, Tohru; Kato, Hiroshi; and Kikukawa, Hiroyasu, 5,619,315, Cl. 399-324.000.

Uemura, Nobuyuki: *See—*

Sasai, Yoichi; Uemura, Nobuyuki; Kamiyama, Satoshi; Kubo, Minoru; and Nishikawa, Takashl, 5,619,520, Cl. 372-46.000.

Ueno, Haruhiko: *See—*

Matsumoto, Kazuo; Ueno, Haruhiko; and Shimada, Kenji, 5,618,993, Cl. 73-587.000.

Ueno, Yoshiteru: *See—*

Hosono, Masayuki; and Ueno, Yoshiteru, 5,617,772, Cl. 92-117.00A.

Uenoyama, Hirofumi; Ao, Kenichi; Kanosue, Masakazu; Suzuki, Yasutoshi; and Takeuchi, Yukihiro, to Nippondenso Co., Ltd. Semiconductor acceleration sensor with beam structure. 5,619,050, Cl. 257-254.000.

Uenoyama, Hirofumi: *See—*

Ao, Kenichi; Murata, Minoru; Noguchi, Hiroki; Yoshino, Yoshimi; and Uenoyama, Hirofumi, 5,618,738, Cl. 438-3.000.

Ueta, Koki: *See—*

Nishida, Tatsumi; Ueta, Koki; and Maruhashi, Yasuhiko, 5,617,758, Cl. 74-7.00B.

Ueta, Kosaku, to Japan Metal Gasket Co., Ltd. Metallic gasket. 5,618,049, Cl. 277-235.00B.

Ueyama, Hisashi, to Nikkari Co., Ltd. Apparatus for grinding a reciprocal trimming blade. 5,618,226, Cl. 451-234.000.

Ugolick, Ronald: *See—*

Plamthottam, Sebastian S.; Roman, Ramon; Landers, John; Mann, Roger H.; Josephy, Karl; and Ugolick, Ronald, 5,618,883, Cl. 525-98.000.

Ujita, Toshihiko: *See—*

Inoue, Hiroyuki; Sugama, Sadayuki; Hiramatsu, Soichi; Yamaguchi, Hideki; Ujita, Toshihiko; Yamanaka, Akihiro; Nojima, Takashi; Kotaki, Yasuo; Tsukuda, Keiichiro; Nakamura, Hitoshi; Kida, Akira; Kawakami, Hideaki; and Iwasaki, Takeshi, 5,619,237, Cl. 347-86.000.

Kotaki, Yasuo; Takenouchi, Masanori; Saikawa, Hideo; Nozawa, Minoru; Sato, Osamu; Ujita, Toshihiko; Miyagawa, Masashi; Yamamoto, Hisashi; Hamasaki, Yuji; and Hinami, Jun, 5,619,239, Cl. 347-86.000.

Ukai, Toshinao: *See—*

Shishido, Tadao; Kawakami, Masayuki; Ikegawa, Akihiko; Ukai, Toshinao; Koya, Keizo; and Chen, Lan B., 5,618,831, Cl. 514-366.000.

Ukyo, Yoshio: *See—*

Suda, Akihiko; Ukyo, Yoshio; Sobukawa, Hideo; Kandori, Toshio; and Fukui, Masayuki, 5,618,772, Cl. 502-238.000.

Ulan, Judith G.; Maycock, Kenneth R.; Drackett, Thomas S.; and Mok, Felix M. F., to Chemetics International Company Ltd. Process for removing sulphate from aqueous solution. 5,618,437, Cl. 210-679.000.

Ullman, Edwin F.: *See—*

Pease, John S.; Kirakossian, Hrair; Wagner, Daniel B.; and Ullman, Edwin F., 5,618,732, Cl. 436-8.000.

Ulmer, Georges: *See—*

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Ulrich, Gerhard H.: *See—*

Lelle, Josef; and Ulrich, Gerhard H., 5,619,131, Cl. 324-174.000.

Ultradent Product, Inc.: *See—*

Fischer, David V., 5,618,273, Cl. 604-211.000.

Ultrassage Inc.: *See—*

Rene, Pierre, 5,618,262, Cl. 601-116.000.

Umeki, Hiroe: *See—*

Takayanagi, Hisao; Kitano, Yasunori; Yano, Tamaki; Umeki, Hiroe; and Hara, Hiroto, 5,618,829, Cl. 514-332.000.

Uni-Charm Corporation: *See—*

Suekane, Makoto, 5,618,366, Cl. 156-73.100.

Tomita, Katsushi; Shikatani, Masahiko; Hayashi, Hiroo; and Wada, Mitsuhiro, 5,618,610, Cl. 428-152.000.

Yamamoto, Masamitsu, 5,618,283, Cl. 604-390.000.

Unifi, Inc.: *See—*

Wise, Gordon A.; Saunders, Roger N.; Thomas, Matthew M.; Maynard, Raymond W.; and Mangrum, Ronald W., 5,617,748, Cl. 68-198.000.

Union Carbide Chemicals & Plastics Technology Corporation: *See—*

Papa, Anthony J.; and Keen, Brian T., 5,618,973, Cl. 560-263.000.

Union Oil Company of California: *See—*

Dovan, Hoai T.; Sandiford, Burton B.; and Hutchins, Richard D., 5,617,920, Cl. 166-295.000.

Unique Concepts Inc.: *See—*

Baziuk, Morris; and Vetesnik, Jan, 5,617,963, Cl. 212-179.000.

Unisia Jecs Corporation: *See—*

Tomisawa, Naoki; and Machida, Kenichi, 5,617,833, Cl. 123-571.000.

UNISYS Corporation: *See—*

Hutson, Sammy C., 5,618,038, Cl. 271-297.000.

Press, Harry B.; Giallorenzi, Thomas R.; and Rafter, Mark T., 5,619,492, Cl. 370-441.000.

United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Brittanic Majesty's Government of the: *See—*

Harrison, Kenneth J.; Cook, Michael J.; Thomson, Andrew J.; McKeown, Neil B.; Daniel, Mervyn F.; and Dunn, Adrian J., 5,618,929, Cl. 540-139.000.

United Microelectronics Corp.: *See—*

Chen, Chang-Shan; and Dung, Yung-Cha, 5,619,727, Cl. 395-842.000.

Huang, Po-Chuan, 5,619,200, Cl. 341-67.000.

Wang, Song-Tine, 5,619,155, Cl. 327-142.000.

United States Advanced Network, Inc.: *See—*

Richardson, Charles T., Jr.; Austin, Kevin L.; and Billingsley, Samuel F., III, 5,619,556, Cl. 379-88.000.

United States of America

Army: *See—*

Johnson, Richard N., 5,619,205, Cl. 342-12.000.

Sadeck, James E.; Vincens, Gary F.; and Billoni, Donald, 5,618,011, Cl. 244-151.00B.

Commerce: *See—*

Kreider, Kenneth G., 5,618,389, Cl. 204-192.150.

Health and Human Services: *See—*

Lowy, Douglas R.; Schiller, John T.; and Greenstone, Heather, 5,618,536, Cl. 424-192.100.

Rapp, Ulf R.; and Storm, Stephen M., 5,618,670, Cl. 435-6.000.

Roosdorp, Nicolaas J.; and Crystal, Ronald G., 5,618,786, Cl. 514-8.000.

National Aeronautics and Space Administration: *See—*

Farley, Gary L., 5,617,902, Cl. 139-1.00R.

Leiser, Daniel B.; Hsu, Ming-Ta; and Chen, Timothy S., 5,618,766, Cl. 501-87.000.

Wilkinson, Steven P.; Johnston, Norman J.; and Marchello, Joseph M., 5,618,367, Cl. 156-181.000.

Yost, William T.; and Cantrell, John H., Jr., 5,617,873, Cl. 128-748.000.

Navy: *See—*

Austin, Stephen A.; Hull, Andrew J.; Owsley, Norman L.; and Peloquin, Mark S., 5,617,869, Cl. 128-691.000.

Burns, William K.; and Howerton, Marta M., 5,619,364, Cl. 359-246.000.

Chandler, Larry S., 5,619,432, Cl. 364-573.000.

Glesener, John W.; and Morrish, Arthur A., 5,619,093, Cl. 313-309.000.

Wiggins, Charles L.; and Stewart, David W., 5,619,079, Cl. 307-89.000.

U.S. Philips Corporation: *See—*

Gartner, Georg, 5,618,395, Cl. 204-290.00R.

Hasler, Rudolf, 5,619,577, Cl. 381-14.000.

Hill, Rae L., 5,619,278, Cl. 348-614.000.

Holtvoeth, Knud; and Wichern, Andreas, 5,619,152, Cl. 327-110.000.

Moridi, Said; and Martinez, Georges, 5,619,540, Cl. 375-341.000.

Panzer, Herbert, 5,619,491, Cl. 370-342.000.

Riegel, Maximilian; and Stenzel, Ulrich, 5,619,267, Cl. 348-400.000.

Rijckaert, Albert M. A.; and Van Vlerken, Johannes J. L. M., 5,619,171, Cl. 331-1.00A.

Scholler, Klaus, 5,619,102, Cl. 313-635.000.

Sempel, Adrianus; and Van Nieuwenhurg, Johannes, 5,619,538, Cl. 375-328.000.

Vacher, Pierre; and Vilard, Phillippe, 5,619,279, Cl. 348-626.000.

Van Grinsven, Petrus A. M.; and Snijders, Wilfred A. M., 5,619,504, Cl. 370-347.000.

Vervecken, Karel R., 5,619,090, Cl. 313-25.000.

Vetter, Axel; and Bathe, Christoph, 5,619,549, Cl. 378-133.000.

Voorman, Johannes O.; and Ramalho, Joao N. V. L., 5,619,386, Cl. 360-67.000.

Vriens, Leendert, 5,619,094, Cl. 313-402.000.

Young, Nigel D.; and Ayres, John R., 5,618,741, Cl. 438-151.000.

United States Surgical Corporation: *See—*

Roby, Mark S.; Kaplan, Donald S.; Liu, Cheng-Kung; and Bennett, Steven L., 5,618,313, Cl. 606-230.000.

United Technologies Automotive, Inc.: *See—*

Koopman, Philip J., Jr.; Finn, Alan M.; and LaBarre, Robert E., 5,619,575, Cl. 380-28.000.

Universal Electronics Inc.: *See—*

Escobosa, Marcus, 5,619,196, Cl. 341-22.000.

Université Laval: *See—*

Auger, François A.; L'Heureux, Nicolas; and Germain, Lucie, 5,618,718, Cl. 435-366.000.

Universities Research Association, Inc.: *See—*

Anderson, David F.; and Kwan, Simon W., 5,619,091, Cl. 313-103.00R.

University of Arizona, The Arizona Board of Regents on behalf of the: *See—*

Randolph, Alan D.; Mukhopadhyay, Sudarsan; and Kwon, Taeg M., 5,618,511, Cl. 423-545.000.

University of Central Florida, Research Foundation of the: *See—*

Dixon, George J., 5,619,517, Cl. 372-21.000.

University of Colorado, The Regents of the: *See—*

Sharp, Gary D.; and Johnson, Kristina M., 5,619,355, Cl. 349-78.000.

University of Florida: *See—*

Bodor, Nicholas S., 5,618,803, Cl. 514-81.000.

Hammer, Richard H.; and Bodor, Nicholas S., 5,618,826, Cl. 514-318.000.

University of Iowa Research Foundation: *See—*

Dordick, Jonathan S.; Rethwisch, David G.; and Patil, Damodar R., 5,618,933, Cl. 536-115.000.

University of Liverpool, The: *See—*

Bamford, Clement H.; and Al-Lamee, Kadem G., 5,618,887, Cl. 525-279.000.

University of Manitoba: *See—*

Brandes, Lorne J., 5,618,846, Cl. 514-641.000.

University of Melbourne: *See—*

Harrison, Gavin B. L.; Dempster, Robert P.; Rickard, Michael D.; Heath, David D.; Lawrence, Stephen B.; Vinton, Jennifer G.; Lightowlers, Marshall W.; O'Hoy, Kim L.; and Johnson, Kevin S., 5,618,542, Cl. 424-266.100.

University of Michigan, The Regents of the: *See—*

Chupp, Timothy; Coulter, Kevin P.; Oteiza, Eduardo; and Walsworth, Ronald, 5,617,860, Cl. 128-653.400.

Leiden, Jeffrey M.; and Barr, Eliay, 5,618,797, Cl. 514-44.000.

University of Minnesota, Regents of the: *See—*

Lurie, Keith G.; Wiegn, Phi; and Sugiyama, Atsushi, 5,618,665, Cl. 435-4.000.

University of Mississippi, The: *See—*

ElSohly, Hala N.; Croom, Edward M., Jr.; ElSohly, Mahmoud A.; and McChesney, James D., 5,618,538, Cl. 424-195.100.

University of Nebraska, The Board of Regents of the: *See—*

Iversen, Patrick L., 5,618,796, Cl. 514-44.000.

University of New Mexico: *See—*

Montner, Paul, 5,618,848, Cl. 514-653.000.

University of North Carolina, The: *See—*

DeSimone, Joseph M.; and Romack, Timothy, 5,618,894, Cl. 526-89.000.

University of Pennsylvania: *See—*

Gewirtz, Alan M.; Small, Donald; and Civin, Curt I., 5,618,709, Cl. 435-172.300.

University of Pennsylvania, Trustees of the: *See—*

Kennedy, Ann R.; Koch, Cameron J.; Lord, Edith M.; and Wan, Xingsheng, 5,618,679, Cl. 435-7.210.

University of Rochester: *See—*

Kennedy, Ann R.; Koch, Cameron J.; Lord, Edith M.; and Wan, Xingsheng, 5,618,679, Cl. 435-7.210.

University of Tennessee Research Corporation: *See—*

Lajoie, Curtis A.; Layton, Alice C.; and Sayler, Gary S., 5,618,727, Cl. 435-262.500.

Trochimcznk, Andrzej W.; Gatrone, Ralph C.; Alexandratos, Spiro; and Horwitz, E. Philip, 5,618,851, Cl. 521-34.000.

University of Toledo, The: *See—*

Ojo, Babatunde; and Dunbar, Philip G., 5,618,818, Cl. 514-256.000.

Uno, Hirosi; and Hakamatani, Takao, to Fujitsu Limited. Storage disk module and storage disk device having a plurality of storage disk modules. 5,619,486, Cl. 369-75.100.

Uno, Keiichi: *See—*

Kimura, Kunio; Ito, Takeshi; Aoyama, Tomohiro; Uno, Keiichi; Hotta, Kiyoshi; and Arichi, Minako, 5,618,911, Cl. 528-361.000.

Uno, Masayuki, to Olympus Optical Co., Ltd. Solid-state image pickup apparatus including a unit cell array. 5,619,262, Cl. 348-297.000.

UOP: *See—*

Funk, Gregory A.; Dandekar, Hemant W.; and Hobbs, Simon H., 5,618,972, Cl. 560-239.000.

Urawa, Motoo: *See—*

Kukimoto, Tsutomu; Goseki, Yasuhide; Urawa, Motoo; Shimamura, Masayoshi; Okano, Keiji; Nozawa, Keita; Yoshida, Satoshi; and Ojima, Masaki, 5,618,647, Cl. 430-106.600.
Urawa, Yoshio; Furukawa, Ken; Shimizu, Toshikazu; Yamagishi, Yoji; Tsurugi, Tomio; and Ichino, Tomio, to Eisai Co., Ltd.; and Eisai Chemical. Intermediates for imidazopyridines. 5,618,969, Cl. 560-102.000.
Urdea, Michael S.: *See*—
Sanchez-Pescador, Ray; Besemer, Diana J.; and Urdea, Michael S., 5,618,674, Cl. 435-6.000.
Urs, Kamala: *See*—
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US Designs: *See*—
Lantzy, John P.; Cook, Calvin S.; and McNeice, William A., 5,618,000, Cl. 239-276.000.
USA Technologies, Inc.: *See*—
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Usuda, Matsuo: *See*—
Koyama, Kazuo; Usuda, Matsuo; Takahashi, Manabu; Sakuma, Yasuharu; Hiwatashi, Shunji; and Kawasaki, Kaoru, 5,618,355, Cl. 148-320.000.
Usui, Hiroshi; Onoda, Hitoshi; and Manabe, Tsuneo, to Asahi Glass Company Ltd. Colored ceramic composition and method for producing curved glass plate using the same. 5,618,764, Cl. 501-17.000.
Usui, Kazutoshi, to Nikon Corporation. Image blur suppression device of a camera which aligns an image blur suppression lens and actuator based on anticipated sag of supporting members. 5,619,293, Cl. 396-55.000.
Usui, Takayuki: *See*—
Kondo, Shinichi; Shibahara, Seiji; Usui, Takayuki; Kudo, Toshiaki; Gomi, Shuichi; Tamura, Atsushi; Ikeda, Yoko; Ikeda, Daishiro; and Takeuchi, Tomio, 5,618,795, Cl. 514-41.000.
Uvex Safety, Inc.: *See*—
Canavan, Richard W.; and Mathews, John G., 5,617,588, Cl. 2-428.000.
Vacher, Pierre; and Vilard, Phillippe, to U.S. Philips Corporation. Video circuit using scan velocity modulation. 5,619,279, Cl. 348-626.000.
Vadehra, Dharam V.: *See*—
McCarthy, James G.; and Vadehra, Dharam V., 5,618,689, Cl. 435-68.100.
Vaes, Jos; and Ceulemans, Renaat, to Agfa-Gevaert N.V. Kit for preparing a processing liquid for use in the preparation of a lithographic printing plate according to the silver salt diffusion transfer process. 5,618,653, Cl. 430-250.000.
Vaes, Jos: *See*—
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Stevens, Marc; Van Hunsel, Johan; and Vaes, Jos, 5,618,651, Cl. 430-204.000.
Vagedes, Doug: *See*—
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Vagedes, Michael: *See*—
Gandy, Ginger; Vagedes, Doug; and Vagedes, Michael, 5,617,688, Cl. 52-473.000.
Vail, Lisa: *See*—
Singh, Mohinder; Vail, Lisa; and Niedbala, Raymond S., 5,618,515, Cl. 424-45.000.
Vaisala Oy: *See*—
Stormbom, Lars, 5,619,144, Cl. 324-694.000.
Valeri, Robert A.: *See*—
White, Sidney S., Jr.; Berzon, Julie S.; Dang, Hoa T.; Tatman, Sheila M.; Valeri, Robert A.; and Benjamin, Kelly, 5,619,288, Cl. 351-159.000.
Valette, Gérard: *See*—
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Valiant Machine & Tool, Inc.: *See*—
McTaggart, Michael D., 5,617,944, Cl. 198-468.600.
Valmont Industries, Inc.: *See*—
Holmquest, John C., 5,619,105, Cl. 315-225.000.
Van Berkum, Paul E., to Rockwell International Corporation. Telephone switching system and method for controlling incoming telephone calls to remote agents and for collecting and providing call data. 5,619,557, Cl. 379-88.000.
Van Broeck, Didier: *See*—
Emonds-Alt, Xavier; Goulaouic, Pierre; Proietto, Vincenzo; and Van Broeck, Didier, 5,618,938, Cl. 544-360.000.
Van Brunt, Roger; and Oprescu, Florin, to Apple Computer, Inc. Delay line separator for data bus. 5,619,541, Cl. 375-360.000.
Vancayzeele, Bernard: *See*—
Adriaen, Marc; Geerardyn, Geert; and Vancayzeele, Bernard, 5,617,901, Cl. 139-1.00E.
Van Den Heuvel, Christiaan J. M.; De Weijer, Anton P.; Middeljans, Hendrik; and Heuvel, Herman M., to Akzo Nobel N.V. Process of making multifilament yarn, monofilament or film of polyethylene naphthalate. 5,618,480, Cl. 264-103.000.
van der Hoeven, Jos: *See*—
Vonken, Hub A. G.; Muntendam, Hendrik-Jan; van der Hoeven, Jos; and Pique, Udo, 5,618,853, Cl. 521-60.000.
Vanderpuy, Michael: *See*—
Magid, Hillel; Wilson, David P.; Lavery, Dennis M.; Hollister, Richard M.; Eibeck, Richard E.; and Vanderpuy, Michael, 5,618,781, Cl. 510-177.000.
van der Storm, Leonardus F. M., to Household Innovations International B.V. Girding device. 5,618,376, Cl. 156-468.000.
VanderVelden, Rudolph: *See*—
Benoit, Gordon L.; and VanderVelden, Rudolph, 5,618,630, Cl. 428-500.000.
van Duyl, Wilhelmus A., to LES Enterprises Laborie, Inc. Apparatus for examining the functioning of body structures comprising smooth muscle walls. 5,617,876, Cl. 128-780.000.
Van Grinsven, Petrus A. M.; and Snijders, Wilfred A. M., to U.S. Philips Corporation. Telecommunication system and a main station for use in such a system. 5,619,504, Cl. 370-347.000.
Van Horn, Craig C.: *See*—
Seeser, James W.; Allen, Thomas H.; Dickey, Eric R.; Hichwa, Bryant P.; Illsley, Rolf F.; Klinger, Robert F.; LeFebvre, Paul M.; Scobey, Michael A.; Seddon, Richard I.; Soberanis, David L.; Temple, Michael D.; Van Horn, Craig C.; and Wentworth, Patrick R., 5,618,388, Cl. 204-192.120.
Van Hunsel, Johan: *See*—
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Vanlerberghe, Guy: *See*—
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Van Nieuwenburg, Johannes: *See*—
Sempel, Adrianus; and Van Nieuwenburg, Johannes, 5,619,538, Cl. 375-328.000.
Vannorsdel, Kevin: *See*—
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Van Rijswijck, Laura G.: *See*—
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Van Valkenberg, Philip O.: *See*—
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Van Vlerken, Johannes J. L. M.: *See*—
Rijckaert, Albert M. A.; and Van Vlerken, Johannes J. L. M., 5,619,171, Cl. 331-1.00A.
VanWinckel, Walter. Coating composition and methods of use. 5,618,582, Cl. 427-259.000.
Vari-L Company, Inc.: *See*—
Reynolds, Robert L., 5,619,172, Cl. 333-25.000.
Varner, Michael G.: *See*—
Lewis, Edward C.; Tonn, Donald P.; and Varner, Michael G., 5,618,499, Cl. 422-177.000.
Varsolona, Richard J.: *See*—
Askin, David; Reider, Paul; Rossen, Kai; Varsolona, Richard J.; Volante, Ralph P.; and Wells, Kenneth M., 5,618,939, Cl. 544-368.000.
Vasileff, Robert T.: *See*—
Fisher, Matthew J.; Happ, Anne M.; Jakubowski, Joseph A.; Kinnick, Michael D.; Kline, Allen D.; Morin, John M., Jr.; Sall, Daniel J.; Skelton, Marshall A.; and Vasileff, Robert T., 5,618,843, Cl. 514-567.000.
Vásquez, Nectar D. Abduction mechanical device for treatment of displasia or congenital luxation of the hip. 5,618,264, Cl. 602-24.000.
Vazquez, Ricardo: *See*—
Mailandt, Peter; and Vazquez, Ricardo, 5,619,217, Cl. 343-872.000.
Vehar, Gordon A.: *See*—
Capon, Daniel J.; Lawn, Richard M.; Vehar, Gordon A.; and Wood, William I., 5,618,788, Cl. 514-12.000.
Capon, Daniel J.; Lawn, Richard M.; Vehar, Gordon A.; and Wood, William I., 5,618,789, Cl. 514-12.000.
Veloo, Rudolf M.: *See*—
Casey, John; Maume, Katherine A.; Peters, Alfons L. J.; and Veloo, Rudolf M., 5,618,706, Cl. 435-128.000.
Vénica, Néstor J.: *See*—
Colussi, Rafael A.; and Vénica, Néstor J., 5,618,361, Cl. 152-416.000.
Venkataraman, Ganesh; Sasisekharan, Viswanathan; Sasisekharan, Ram; Bobba, Ratnaleela; Cooney, Charles L.; and Langer, Robert, to Massachusetts Institute of Technology. Computer-implemented process and computer system for estimating the three-dimensional shape of a ring-shaped molecule and of a portion of a molecule containing a ring-shaped structure. 5,619,421, Cl. 364-496.000.
Vercande, David J.: *See*—
Hogan, Steven J.; Feltz, Kristi T.; Murdock, Douglas R.; Vercande, David J.; and Rhodes, Roy A., 5,619,554, Cl. 379-67.000.
Vermeersch, Joan; Hauquier, Guido; and Kokkelenberg, Dirk, to AGFA-Gevaert, N.V. Storage stability of a diazo-based imaging element for making a printing plate. 5,618,649, Cl. 430-168.000.
Versace, Richard W.: *See*—
Girijavallabhan, Viyyoor M.; Ganguly, Ashit K.; and Versace, Richard W., 5,618,849, Cl. 514-721.000.
Vertex Pharmaceuticals, Inc.: *See*—
Navia, Manuel A.; and St. Clair, Nancy L., 5,618,710, Cl. 435-174.000.
Vervecken, Karel R., to U.S. Philips Corporation. Low-pressure sodium discharge lamp. 5,619,090, Cl. 313-25.000.
Vetesnik, Jan: *See*—
Baziuk, Morris; and Vetesnik, Jan, 5,617,963, Cl. 212-179.000.

Vetter, Axel; and Bathe, Christoph, to U.S. Philips Corporation. Rotary-anode X-ray tube comprising a sleeve bearing. 5,619,549, Cl. 378-133.000.
Vianova Kunstharz, AG: *See*—
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Chawla, Manmohan S.; and Reese, James W., 5,619,008, Cl. 102-310.000.
Counselman, Charles C., III, 5,619,212, Cl. 342-357.000.
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Byers, Charles H.; Sisson, Warren G.; Snyder, Thomas S.; Beleski, Richard J.; Nayak, Umesh P.; and Francis, Timothy L., 5,618,502, Cl. 423-70.000.
Papageorgiou, Theodore; Hultgren, Kent G.; and Covelli, Rocco J., 5,618,161, Cl. 415-190.000.

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Westphal, Dennis: *See—*
Carlson, Dennis; Hersh, Jeffrey B.; and Westphal, Dennis, 5,618,067, Cl. 292-175.000.

Westphalen, Karl-Otto: *See—*
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Eischen, Frederick W.; Uban, Stephen A.; and Maxson, Richard C., 5,618,426, Cl. 210-541.000.

Wheeler, Alfred P.: *See—*
Mount, Andrew S.; Paul, Douglas; and Wheeler, Alfred P., 5,618,495, Cl. 422-82.050.

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Nix, Lothar H. W.; and Post, Lothar A., 5,618,204, Cl. 439-559.000.

Whitaker, Keith: *See—*
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Robinson, Randy R.; Liu, Alvin Y.; Horwitz, Arnold H.; Better, Marc; Wall, Randolph; Lei, Shau-Ping; and Wilcox, Gary L., 5,618,920, Cl. 530-387.100.

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Wilfert, Thomas: *See—*
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Stodola, Robert K.; Tobin, Frank L.; and Williams, Arthur L., Jr., 5,618,672, Cl. 435-6.000.
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Williams, Michael S.: *See—*
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Wilson, David P.: *See—*
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Wilson, Paul A. Coupon holder and dispensing apparatus. 5,617,982, Cl. 224-411.000.
Wilson, Robert E. Lift truck fork guard. 5,618,159, Cl. 414-785.000.
Wilson, Susan L.: *See—*
Landi, Curtis L.; Wilson, Susan L.; and Cazalet, Peter M., 5,617,595, Cl. 5-653.000.
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Winker, Bruce K.: *See—*
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Wren, Clifford T. Bumper installation for sensor gate. 5,618,019, Cl. 248-345.100.
Wright, D. Craig, to Novavax, Inc. Antibacterial oil-in-water emulsions. 5,618,840, Cl. 514-549.000.
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Wu, Laurence I.; and Janusz, John M., to Procter & Gamble Company, The. Dihydrobenzofuran and related compounds useful as anti-inflammatory agents. 5,618,835, Cl. 514-422.000.
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Wu, Nick. Garden umbrella with specially drilled pulley cord guide and retainer means in wood pole for maintaining pulley cord. 5,617,888, Cl. 135-20.300.
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Wu, Woh-Wen. Multiple-fold automatic umbrella with reinforced ribs and simplified mechanism. 5,617,889, Cl. 135-22.000.
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Flavell, Richard A.; Fikrig, Erol; and Berland, Robert, 5,618,533, Cl. 424-184.100.
Pawelek, John M.; and Orlow, Seth J., 5,618,519, Cl. 424-59.000.
Yamada, Hirotoshi: *See—*
Yamanaka, Hideaki; Saito, Hirotaka; Tsuzuki, Munenori; Sasaki, Yasuhito; Yamada, Hirotoshi; and Oshima, Kazuyoshi, 5,619,495, Cl. 370-413.000.
Yamada, Kunihiko: *See—*
Yoshimura, Katsuji; Toyama, Masamichi; Fujiwara, Akihiro; Yamada, Kunihiko; and Suda, Hirofumi, 5,619,264, Cl. 348-352.000.
Yamada, Motoyuki: *See—*
Furihata, Tomoyoshi; and Yamada, Motoyuki, 5,618,892, Cl. 525-483.000.
Yamada, Nobuaki: *See—*
Nagae, Nobukazu; Yamahara, Motohiro; and Yamada, Nobuaki, 5,618,592, Cl. 428-1.000.
Yamada, Teruho: *See—*
Yoshimura, Takeshi; Morioka, Koichi; and Yamada, Teruho, 5,619,019, Cl. 181-166.000.
Yamagishi, Yoji: *See—*
Urawa, Yoshio; Furukawa, Ken; Shimizu, Toshikazu; Yamagishi, Yoji; Tsurugi, Tomio; and Ichino, Tomio, 5,618,969, Cl. 560-102.000.
Yamaguchi, Hideki: *See—*
Inoue, Hiroyuki; Sugama, Sadayuki; Hiramatsu, Soichi; Yamaguchi, Hideki; Ujita, Toshihiko; Yamanaka, Akihiro; Nojima, Takashi; Kotaki, Yasuo; Tsukuda, Keiichiro; Nakamura, Hitoshi; Kida, Akira; Kawakami, Hideaki; and Iwasaki, Takeshi, 5,619,237, Cl. 347-86.000.
Yamaguchi, Jun'ichi: *See—*
Ohsuga, Minoru; Yamaguchi, Jun'ichi; Komuro, Ryoichi; and Momono, Masakichi, 5,617,824, Cl. 123-308.000.
Yamaguchi, Shu: *See—*
Sakaguchi, Mikio; Sakamoto, Ichiro; Akagi, Ryuichi; Yamaguchi, Shu; and Tsumadori, Masaki, 5,618,783, Cl. 510-507.000.
Yamaguchi, Takao: *See—*
Hamada, Hiroki; Honda, Shoji; Shono, Masayuki; and Yamaguchi, Takao, 5,619,519, Cl. 372-46.000.
Yamaha Corporation: *See—*
Ando, Shigeo; Ikegaya, Yuji; and Muramatsu, Shinichi, 5,619,579, Cl. 381-63.000.
Fukushima, Toshiharu; Muroi, Kunimasa; and Hiyama, Kunio, 5,618,598, Cl. 428-36.300.
Shibukawa, Takeo; and Mishima, Junichi, 5,619,005, Cl. 84-658.000.
Takahashi, Toshiyuki; Suga, Shigeru; and Makino, Touhachi, 5,618,749, Cl. 438-384.000.
Yuuki, Tomohiro, 5,618,349, Cl. 118-715.000.

Yamaha Hatsudoki kabushiki Kaisha: *See—*
Masuda, Tatsuyuki, 5,617,822, Cl. 123-196.00R.
Mizuno, Yutaka; Hanajima, Toshiharu; and Matsubara, Hisayoshi, 5,618,322, Cl. 48-197.00R.
Sakurai, Hiroshi, 5,619,328, Cl. 356-375.000.
Yamahara, Motohiro: *See—*
Nagae, Nobukazu; Yamahara, Motohiro; and Yamada, Nobuaki, 5,618,592, Cl. 428-1.000.
Yamakawa, Osamu: *See—*
Shirakawa, Hiroshi; Yamakawa, Osamu; Nihonmatsu, Hiroaki; and Atsumi, Kiminori, 5,618,762, Cl. 501-1.000.
Yamakoshi, Yasuhiro: *See—*
Kano, Osamu; Yamakoshi, Yasuhiro; Anan, Junichi; and Yasui, Koichi, 5,618,397, Cl. 204-298.130.
Yamamoto, Akihito; and Itojima, Mitsuhiko, to Noritsu Koki Co., Ltd. Negative film masking apparatus for photographic printer. 5,619,305, Cl. 355-75.000.
Yamamoto, Eiji; Mihara, Takashi; and Ito, Masataka, to Olympus Optical Co., Ltd. Optical displacement sensor. 5,619,318, Cl. 356-32.000.
Yamamoto, Hiroshi: *See—*
Nomura, Hidenori; Nagai, Kenji; Nakashima, Masami; Yamamoto, Hiroshi; and Sobue, Isaya, 5,619,465, Cl. 365-206.000.
Yamamoto, Hisashi: *See—*
Kotaki, Yasuo; Takenouchi, Masanori; Saikawa, Hideo; Nozawa, Minoru; Sato, Osamu; Ujita, Toshihiko; Miyagawa, Masashi; Yamamoto, Hisashi; Hamasaki, Yuji; and Hinami, Jun, 5,619,239, Cl. 347-86.000.
Yamamoto, Iwao; and Furui, Sunao, to Sony Corporation. Electronic device for correction of ROM data with a parameter for calculation of position of correction data. 5,619,678, Cl. 395-492.000.
Yamamoto, Kazuhisa; and Mizuuchi, Kiminori, to Matsushita Electric Industrial Co., Ltd. Diffracting device having distributed bragg reflector and wavelength changing device having optical waveguide with periodically inverted-polarization layers. 5,619,369, Cl. 359-332.000.
Yamamoto, Ken, to Doryokuro Kakunenryo Kaihatsu Jigyodan. Fitting structure of rectangular parallelopipedal blocks. 5,617,691, Cl. 52-604.000.
Yamamoto, Manabu: *See—*
Tanabe, Takaya; Yamamoto, Manabu; Katoh, Kikuji; and Dobashi, Hisanobu, 5,619,487, Cl. 369-100.000.
Yamamoto, Masamitsu, to Uni-Charm Corporation. Sanitary napkin. 5,618,283, Cl. 604-390.000.
Yamamoto, Shuhei: *See—*
Hoshino, Masafumi; Yamamoto, Shuhei; Fujita, Hiroyuki; Oniwa, Hirotomo; Ebihara, Teruo; and Matsu, Fujio, 5,619,224, Cl. 345-98.000.
Iwaki, Tadao; Kasama, Nobuyuki; Yamamoto, Shuhei; Takesue, Toshiharu; and Takemura, Yasuhiro, 5,619,596, Cl. 382-278.000.
Yamamoto, Takashi: *See—*
Horikoshi, Yuzo; Sawatari, Norio; Ogino, Takeshi; Naito, Hiroaki; Koshi, Makoto; Kido, Kazuhiko; Yamamoto, Takashi; Sakurai, Eiji; Katagiri, Yoshimichi; Maruyama, Masatoshi; Nitta, Hidenori; and Matsuoka, Sonoo, 5,618,648, Cl. 430-109.000.
Yamamoto, Tetsuo; and Taniguchi, Yoshikazu, to Sumitomo Wiring Systems, Ltd. Lever switch device, method for activating switches in a lever switch device, and method for outputting data signals. 5,619,021, Cl. 200-6.00A.
Yamamoto, Tsuyoshi: *See—*
Akashi, Tamotsu; Yamamoto, Tsuyoshi; and Nakagami, Takakiyo, 5,619,601, Cl. 385-16.000.
Yamamoto, Yasuo: *See—*
Takita, Nagon; and Yamamoto, Yasuo, 5,617,787, Cl. 101-129.000.
Yamamoto, Yoshihiro: *See—*
Tomita, Takashi; Nomoto, Katsuhiko; Yamamoto, Yoshihiro; Sannomiya, Hitoshi; and Takagi, Sae, 5,618,758, Cl. 438-485.000.
Yamamoto, Yoshitaka: *See—*
Makita, Naoki; and Yamamoto, Yoshitaka, 5,619,044, Cl. 257-64.000.
Yamamura, Masahiro: *See—*
Akioka, Takashi; Iwamura, Masahiro; Hiraishi, Atsushi; Yokoyama, Yuji; Matsuzaki, Nozomu; Yamauchi, Tatsumi; Kobayashi, Yutaka; Gotou, Nobuyuki; ide, Akira; Yamamura, Masahiro; and Uchida, Hideaki, 5,619,151, Cl. 327-78.000.
Yamana, Tsuyoshi, to Murata Manufacturing Co., Ltd. Electrically conductive paste. 5,618,470, Cl. 252-512.000.
Yamanaka, Akihiro: *See—*
Inoue, Hiroyuki; Sugama, Sadayuki; Hiramatsu, Soichi; Yamaguchi, Hideki; Ujita, Toshihiko; Yamanaka, Akihiro; Nojima, Takashi; Kotaki, Yasuo; Tsukuda, Keiichiro; Nakamura, Hitoshi; Kida, Akira; Kawakami, Hideaki; and Iwasaki, Takeshi, 5,619,237, Cl. 347-86.000.
Yamanaka, Hideaki; Saito, Hirotaka; Tsuzuki, Munenori; Sasaki, Yasuhito; Yamada, Hirotoshi; and Oshima, Kazuyoshi, to Mitsubishi Denki Kabushiki Kaisha. Cell switching apparatus and a cell switching system. 5,619,495, Cl. 370-413.000.
Yamanaka, Katsuaki: *See—*
Tani, Shigeo; Yamanaka, Katsuaki; Aono, Hironori; and Kinoshita, Toshiaki, 5,619,532, Cl. 375-224.000.
Yamanaka, Toshiaki: *See—*
Meguro, Satoshi; Uchibori, Kiyofumi; Suzuki, Norio; Motoyoshi, Makoto; Koike, Atsuyoshi; Yamanaka, Toshiaki; Sakai, Yoshio; Kaga, Toru; Hashimoto, Naotaka; Hashimoto, Takashi; Honjou, Shigeru; and Minato, Osamu, 5,619,055, Cl. 257-369.000.
Yamanishi, Toru: *See—*
Ueda, Tomohiko; Matsuura, Ichiro; Honjo, Makoto; Kakii, Toshiaki; Yamanishi, Toru; and Nagasawa, Shinji, 5,619,605, Cl. 385-80.000.
Yamasaki, Hiroshi: *See—*
Ohuchi, Noriaki; Morimoto, Akio; Yamasaki, Hiroshi; Hosokawa, Takahiro; and Kaneko, Hiroyuki, 5,619,641, Cl. 395-181.000.
Yamashita, Haruo; and Fukushima, Tsumoru, to Matsushita Electric Industrial Co., Ltd. Color conversion apparatus that restricts the color reproduction range of primary color signals. 5,619,280, Cl. 348-645.000.
Yamatake & Co., Ltd.: *See—*
Sugimoto, Noboru; Suzuki, Masatoshi; Futsuhara, Koichi; Sakai, Masayoshi; and Mihira, Ritsuo, 5,619,110, Cl. 318-450.000.
Yamauchi, Tatsumi: *See—*
Akioka, Takashi; Iwamura, Masahiro; Hiraishi, Atsushi; Yokoyama, Yuji; Matsuzaki, Nozomu; Yamauchi, Tatsumi; Kobayashi, Yutaka; Gotou, Nobuyuki; ide, Akira; Yamamura, Masahiro; and Uchida, Hideaki, 5,619,151, Cl. 327-78.000.
Yamazaki, Kazumi; Hara, Takeshi; Wakashiro, Teruo; and Hidano, Koichi, to Honda Giken Kogyo Kabushiki Kaisha. Evaporative fuel-processing system for internal combustion engines. 5,617,832, Cl. 123-520.000.
Yamazaki, Shunpei; Konuma, Toshimitsu; Nishi, Takeshi; and Shimizu, Michio, to Semiconductor Energy Laboratory Co., Ltd. Electro-optical device. 5,619,353, Cl. 349-89.000.
Yamazaki, Tsuneo: *See—*
Takahashi, Kunihiro; Kojima, Yoshikazu; Takasu, Hiroaki; Matsuyama, Nobuyoshi; Niwa, Hitoshi; Yoshino, Tomoyuki; and Yamazaki, Tsuneo, 5,618,739, Cl. 438-158.000.
Yanagida, Hiroaki: *See—*
Hasumi, Kazuhisa; Nagano, Kentaro; Kamiyama, Shuuichi; Yanagida, Hiroaki; and Okada, Osamu, 5,618,496, Cl. 422-90.000.
Yanase, Kenji: *See—*
Takayanagi, Toshihiro; Yanase, Kenji; and Muramatsu, Kiyoji, 5,619,623, Cl. 395-114.000.
Yang, Shi-ning: *See—*
Myers, Alan M.; Charvat, Peter K.; Letson, Thomas A.; Yang, Shi-ning; and Bai, Peng, 5,619,071, Cl. 257-753.000.
Yang, Sung-Wang. Brake mechanism of castor. 5,617,934, Cl. 188-1.120.
Yannone, Ronald A.: *See—*
Cullen, Michael J.; Marzonie, Robert M.; Dona, Alan R.; Grant, Eric J.; and Yannone, Ronald A., 5,617,836, Cl. 123-674.000.
Yano, Hidetoshi: *See—*
Shoji, Hisashi; Yano, Hidetoshi; Kai, Tsukuru; Ishii, Yoshiko; Yokokawa, Nobuto; Suzuki, Masako; and Iwasaki, Yukiko, 5,619,316, Cl. 399-359.000.
Yano, Tamaki: *See—*
Takayanagi, Hisao; Kitano, Yasunori; Yano, Tamaki; Umeki, Hiroe; and Hara, Hiroto, 5,618,829, Cl. 514-332.000.
Yashiro, Masahiko; Karakama, Toshiyuki; and Numagami, Atsushi, to Canon Kabushiki Kaisha. Process cartridge, method for assembling process cartridge and image forming apparatus. 5,619,309, Cl. 399-111.000.
Yasuda, Atsushi, to Aisin Seiki Kabushiki Kaisha. Piston for a master cylinder. 5,617,725, Cl. 60-562.000.
Yasuda, Masanori; Onimaru, Sadahisa; Inoue, Takashi; Okada, Hiroshi; Kojima, Akikazu; and Takaki, Niro, to Nippon Soken Inc. Combustion heater. 5,617,995, Cl. 237-12.30C.
Yasuda, Nobuyoshi: *See—*
DeCamp, Ann E.; Grabowski, Edward J. J.; Huffman, Mark A.; Xavier, Lyndon C.; Yasuda, Nobuyoshi; Ho, Guo-Jie; and Mathre, David J., 5,618,934, Cl. 544-229.000.
Yasuhira, Mitsuo: *See—*
Segawa, Mizuki; Kato, Yoshiaki; Nakaoka, Hiroaki; Nakabayashi, Takashi; Hori, Atsushi; Masuda, Hiroshi; Matsuo, Ichiro; Shinohara, Akihira; Uehara, Takashi; and Yasuhira, Mitsuo, 5,618,748, Cl. 438-232.000.
Yasui, Koichi: *See—*
Kano, Osamu; Yamakoshi, Yasuhiro; Anan, Junichi; and Yasui, Koichi, 5,618,397, Cl. 204-298.130.
Yasukawa, Seiichi: *See—*
Watanabe, Toshimi; and Yasukawa, Seiichi, 5,619,300, Cl. 396-95.000.
Yasutake, Kouichi: *See—*
Mukai, Masaki; Ohtsu, Takashi; and Yasutake, Kouichi, 5,619,654, Cl. 395-200.090.
Yasuzato, Tadao, to NEC Corporation. Reduction exposure apparatus with improved resolution characteristic and raised light intensity. 5,619,304, Cl. 355-71.000.
Yates, David E., to Rolls-Royce Power Engineering plc. Method of operating a rotating assembly. 5,618,115, Cl. 384-110.000.
Yates, James W.; and Yates, Ronnie L. Thermal glove with heater pocket. 5,617,583, Cl. 2-160.000.
Yates, Ronnie L.: *See—*
Yates, James W.; and Yates, Ronnie L., 5,617,583, Cl. 2-160.000.
Yatsu, Nobuo: *See—*
Okuyama, Takeshi; Watanabe, Kouji; Yatsu, Nobuo; Sakuraoka, Masahiko; and Akama, Junichi, 5,618,202, Cl. 439-497.000.
Yazaki Corporation: *See—*
Koumatsu, Seiji; and Abe, Kimihiro, 5,618,203, Cl. 439-546.000.
Maejima, Toshiro, 5,618,207, Cl. 439-595.000.
Masuda, Satoki; Matsumoto, Mitsuhiro; and Kuboshima, Hidehiko, 5,618,190, Cl. 439-98.000.
Okazaki, Kiyotaka; and Kanda, Masahiro, 5,618,880, Cl. 524-731.000.
Sawada, Yoshitsugu; and Masuda, Toshihiko, 5,618,206, Cl. 439-587.000.
Yagi, Sakai; Tsuji, Masanori; Jinno, Keishi; and Yoneda, Takahiro, 5,618,201, Cl. 439-489.000.

Yazdani, Mahmoud M.: *See—*
Lewis, Clarence D.; Yazdani, Mahmoud M.; Nie, Dinghui; Deng, Brian T.; and DiMarco, Matthew J., 5,619,544, Cl. 375-377.000.
Yearsley, Gyle: *See—*
Benhamida, Boubekeur; Richards, Grant; Chan, Stephen H.; Yearsley, Gyle; and Nobugaki, Jim, 5,619,681, Cl. 395-500.000.
Yeda Research & Development Co. Ltd.: *See—*
Novick, Daniela; Revel, Michel; Mory, Yves; Rubinstein, Menachem; and Hadas, Eran, 5,618,700, Cl. 435-70.210.
Yee, Raymond L.: *See—*
Goodwin, Julie F.; Johnson, Debra A. G.; Lewis, James R.; Rasmussen, David J.; Tiller, Byron K.; and Yee, Raymond L., 5,619,684, Cl. 395-500.000.
Yeh, John. Combination floor lamp and compact-disc storage rack. 5,618,101, Cl. 362-253.000.
Yeh, Wen-Fuei; Wang, Long-Huei; Liu, Yao-Tung; and Cheng, Ying-Yu, to Taiwan Sugar Corp. Method of preparing biodegradable, water-resistant paper utensils. 5,618,387, Cl. 162-224.000.
Yevich, Joseph P.: *See—*
Crenshaw, Ronnie R.; Ruediger, Edward H.; Smith, David W.; Solomon, Carola; and Yevich, Joseph P., 5,618,816, Cl. 514-253.000.
Yilmaz, Hamza: *See—*
Williams, Richard K.; Yilmaz, Hamza; Cornell, Michael E.; and Chen, Jun W., 5,618,743, Cl. 438-276.000.
Yiu, Tom D.-H.: *See—*
Shone, Fuchia; Yiu, Tom D.-H.; and Lin, Tien-Ler, 5,618,742, Cl. 438-263.000.
YMOS Aktiengesellschaft Industrieprodukte: *See—*
Ricker, Erhard; Kroll, Bruno; Isokeit, Wolfgang; Scheibe, Volker; and Heim, Gunther, 5,617,981, Cl. 224-309.000.
Yoichi, Hirai: *See—*
Yukihiko, Yada; and Yoichi, Hirai, 5,618,079, Cl. 296-93.000.
Yokokawa, Nobuto: *See—*
Shoji, Hisashi; Yano, Hidetoshi; Kai, Tsukuru; Ishii, Yoshiko; Yokokawa, Nobuto; Suzuki, Masako; and Iwasaki, Yukiko, 5,619,316, Cl. 399-359.000.
Yokomichi, Masahiro: *See—*
Machida, Satoshi; Kawahara, Yukito; Mukainakano, Hiroshi; and Yokomichi, Masahiro, 5,619,345, Cl. 358-482.000.
Yokota, Akira: *See—*
Ogasawara, Syuichiro; Mori, Takao; and Yokota, Akira, 5,619,380, Cl. 359-661.000.
Yokota, Hiroshi; Naito, Ryuichi; Hirano, Hiroyuki; Ishii, Katsumi; Naohara, Shinichi; Tsukada, Yoshifumi; and Matsumoto, Kanya, to Pioneer Electronic Corporation. Pulling-in circuit for PLL circuit, pulling-in method for PLL circuit, PLL circuit device and apparatus for reproducing optical disc. 5,619,484, Cl. 369-50.000.
Yokota, Miho; and Okabe, Masatomi, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor integrated circuit device. 5,619,048, Cl. 257-207.000.
Yokota, Teppei; Aramaki, Junichi; and Kihara, Nobuyuki, to Sony Corporation. Method of recording on a recording medium employing an automatic termination of recording by monitoring the signal being recorded. 5,619,483, Cl. 369-47.000.
Yokota, Tohru: *See—*
Ishiwata, Hiroshi; Yokota, Tohru; Kobayashi, Mitsuaki; Katori, Tsutomu; and Ohsawa, Teruo, 5,617,830, Cl. 123-500.000.
Yokoyama, Fumiaki: *See—*
Kuroe, Toru; Yokoyama, Fumiaki; and Mouri, Daisuke, 5,618,448, Cl. 216-97.000.
Yokoyama, Thomas W.: *See—*
Cai, Rubing; and Yokoyama, Thomas W., 5,618,884, Cl. 525-117.000.
Yokoyama, Yuji: *See—*
Akioka, Takashi; Iwamura, Masahiro; Hiraishi, Atsushi; Yokoyama, Yuji; Matsuzaki, Nozomu; Yamauchi, Tatsumi; Kobayashi, Yutaka; Gotou, Nobuyuki; ide, Akira; Yamamura, Masahiro; and Uchida, Hideaki, 5,619,151, Cl. 327-78.000.
Akiyama, Noboru; Yokoyama, Yuji; Ohta, Tatsuyuki; Suzuki, Kunihiko; and Kobayashi, Yutaka, 5,619,455, Cl. 365-189.050.
Yolles, Joel; Aloni, Meir; Eran, Yair; and Kaplan, Haim, to Orbot Instruments Ltd. Apparatus and method for comparing and aligning two digital representations of an image. 5,619,588, Cl. 382-149.000.
Yoneda, Masato; Sasama, Hiroshi; and Kanazawa, Naoki, to Kawasaki Steel Corporation. Hierarchical encoder including timing and data detection devices for a content addressable memory. 5,619,446, Cl. 365-49.000.
Yoneda, Takahiro: *See—*
Yagi, Sakai; Tsuji, Masanori; Jinno, Keishi; and Yoneda, Takahiro, 5,618,201, Cl. 439-489.000.
Yoneda, Yoichi: *See—*
Takemoto, Takatoshi; Yoneda, Yoichi; and Muramatsu, Meiji, 5,618,042, Cl. 273-143.00R.
Yoneda, Yukio: *See—*
Ohno, Tsuneya; Terada, Masaki; and Yoneda, Yukio, 5,618,922, Cl. 530-388.350.
Yonehara, Tetsu: *See—*
Shirai, Makoto; and Yonehara, Tetsu, 5,618,708, Cl. 435-155.000.
Yoneyama, Kaoru, to Olympus Optical Co., Ltd. Image manipulating system for controlling the selection of permissible recording time intervals. 5,619,732, Cl. 395-878.000.
Yonge, Christopher F.: *See—*
Montague, Edgar G.; Yonge, Christopher F.; and Smith, Robin E., 5,618,090, Cl. 312-209.000.
Yoo, Jin N.: *See—*
Choi, Su B.; Jang, Tae H.; Yoo, Jin N.; and Lee, Chan H., 5,618,888, Cl. 525-301.000.
Yoon, Euosun: *See—*
Laine, Roger A.; and Yoon, Eunsun, 5,618,705, Cl. 435-97.000.
Yoon, InBae. Retractable safety penetrating instrument for portal sleeve introduction. 5,618,271, Cl. 604-165.000.
Yoshida, Chieko: *See—*
Tsutsumi, Kazuhiko; Inoue, Yasuhide; Yoshida, Chieko; and Tsuda, Yoshihiko, 5,618,801, Cl. 514-75.000.
Yoshida, Haruo, to Advantest Corporation. Optical system for ellipsometry utilizing a circularly polarized probe beam. 5,619,325, Cl. 356-351.000.
Yoshida, Ichiro; Katsuyama, Tsukuru; and Hashimoto, Jun-ichi, to Sumitomo Electric Industries, Ltd. Method of sorting semiconductor lasers. 5,617,957, Cl. 209-571.000.
Yoshida, Minoru: *See—*
Matsumani, Naoto; Isono, Soichi; Matsumoto, Jun; and Yoshida, Minoru, 5,619,690, Cl. 395-616.000.
Yoshida, Naoki; and Tamura, Toshiharu, to Altech Company Limited. Roll paper type recording unit. 5,618,117, Cl. 400-120.040.
Yoshida, Naoki: *See—*
Kashima, Keiji; Fukamachi, Mitsuru; and Yoshida, Naoki, 5,618,095, Cl. 362-31.000.
Yoshida, Naoyuki: *See—*
Takamatsu, Hiroyuki; Morimoto, Tsutomu; Sumie, Shingo; and Yoshida, Naoyuki, 5,619,326, Cl. 356-357.000.
Yoshida, Nobuhide: *See—*
Fujii, Masahiro; Ohno, Yasuo; Maeda, Tadashi; Atsumo, Takao; Matsuno, Noriaki; Numata, Keiichi; and Yoshida, Nobuhide, 5,619,146, Cl. 326-21.000.
Yoshida, Satoshi: *See—*
Kukimoto, Tsutomu; Goseki, Yasuhide; Urawa, Motoo; Shimamura, Masayoshi; Okano, Keiji; Nozawa, Keita; Yoshida, Satoshi; and Ojima, Masaki, 5,618,647, Cl. 430-106.600.
Yoshida, Takehiro; and Nakayama, Toru, to Canon Kabushiki Kaisha. Image processing apparatus for recording a plurality of sets of image data. 5,619,344, Cl. 358-468.000.
Yoshida, Takeo: *See—*
Meguriya, Noriyuki; and Yoshida, Takeo, 5,618,631, Cl. 428-513.000.
Yoshida, Tsutomu: *See—*
Hosoda, Yasushi; Kimoto, Masanari; Hikino, Shinya; Yoshida, Tsutomu; and Fukui, Kiyoyuki, 5,618,634, Cl. 428-610.000.
Yoshida, Yukihiro: *See—*
Fukuda, Naoyuki; Yoshida, Yukihiro; Kubo, Noboru; and Kinosita, Kazuo, 5,619,676, Cl. 395-464.000.
Yoshida, Yukio: *See—*
Kimura, Ken; Taniguchi, Yushi; Satoh, Kiichi; Saifuku, Kouji; Kihira, Ken; Ido, Kenichi; Yoshida, Yukio; and Takimoto, Takuya, 5,618,564, Cl. 424-653.000.
Yoshigasaki, Tsuyoshi: *See—*
Komura, Norio; Yoshigasaki, Tsuyoshi; and Takahashi, Hiroshi, 5,617,764, Cl. 74-606.00R.
Yoshimi, Toru; Imai, Yasuo; and Kogi, Toshinobu, to Sekisui Plastics Co., Ltd. Process for manufacturing a heat-resistant molded foam product. 5,618,486, Cl. 264-321.000.
Yoshimoto, Masakazu: *See—*
Okuhama, Yoshiaki; Masaki, Seishi; Takeuchi, Takao; Matsuda, Yoshiharu; and Yoshimoto, Masakazu, 5,618,404, Cl. 205-445.000.
Yoshimura, Katsuji; Toyama, Masamichi; Fujiwara, Akihiro; Yamada, Kunihiko; and Suda, Hirofumi, to Canon Kabushiki Kaisha. Automatic focusing device. 5,619,264, Cl. 348-352.000.
Yoshimura, Kazuya: *See—*
Tanaka, Shozo; and Yoshimura, Kazuya, 5,619,358, Cl. 349-143.000.
Yoshimura, Takeshi; Morioka, Koichi; and Yamada, Teruho, to Mitsubishi Denki Kabushiki Kaisha; and Foster Electric Co., Ltd. Damper for loudspeaker. 5,619,019, Cl. 181-166.000.
Yoshimura, Tatsuhiro: *See—*
Furukawa, Masahiro; Nagaya, Masaaki; and Yoshimura, Tatsuhiro, 5,618,221, Cl. 451-8.000.
Yoshinaga, Yoko; Taniguchi, Naosato; and Kobayashi, Shin, to Canon Kabushiki Kaisha. Visible light sensitizer for photopolymerizing initiator and/or photocrosslinking agent, photosensitive composition, and hologram recording medium. 5,618,856, Cl. 522-16.000.
Yoshino, Tomoyuki: *See—*
Takahashi, Kunihiro; Kojima, Yoshikazu; Takasu, Hiroaki; Matsuyama, Nobuyoshi; Niwa, Hitoshi; Yoshino, Tomoyuki; and Yamazaki, Tsuneo, 5,618,739, Cl. 438-158.000.
Yoshino, Yoshimi: *See—*
Ao, Kenichi; Murata, Minoru; Noguchi, Hiroki; Yoshino, Yoshimi; and Uenoyama, Hirofumi, 5,618,738, Cl. 438-3.000.
Yoshiyama, Masatoshi: *See—*
Iguchi, Masayoshi; Omura, Kazuhiko; Yoshiyama, Masatoshi; and Nishikawa, Hiroshi, 5,619,339, Cl. 386-113.000.
Yoshizaki, Kouji: *See—*
Konya, Shogo; Okamoto, Akira; and Yoshizaki, Kouji, 5,618,498, Cl. 422-174.000.
Yoshizawa, Yasufumi: *See—*
Katada, Hisashi; Arai, Toshiaki; Yoshizawa, Yasufumi; Ohfusa, Yoshitaka; and Kami, Masayuki, 5,619,691, Cl. 395-620.000.

Yost, William T.; and Cantrell, John H., Jr., to United States of America, National Aeronautics and Space Administration. Non-invasive method and apparatus for monitoring intracranial pressure and pressure volume index in humans. 5,617,873, Cl. 128-748.000.

You, Jang-Yeol, to Daewoo Electronics Co., Ltd. 2-position 3-way solenoid valve, modulator and anti-lock brake system with the valve. 5,618,087, Cl. 303-119.200.

Younessi, Ramin; and Houghton, Brian, to Woodward Governor Company. Bi-directional electric torque motor and driver. 5,619,112, Cl. 318-689.000.

Young, Bruce, to Intel Corporation. Method and apparatus for switching between interrupt delivery mechanisms within a multi-processor system. 5,619,706, Cl. 395-741.000.

Young, Desmond W., to National Semiconductor Corporation. I/O data unit symmetry in a media access control/host system interface unit. 5,619,651, Cl. 395-200.200.

Young, Desmond W.: *See—*
Travaglio, Mark A.; and Young, Desmond W., 5,619,652, Cl. 395-200.200.

Young, James W.: *See—*
Gray, Nancy M.; and Young, James W., 5,618,828, Cl. 514-327.000.

Young, Moshe: *See—*
Levinrad, Maxim D., 5,618,991, Cl. 73-40.700.

Young, Nigel D.; and Ayres, John R., to U.S. Philips Corporation. Manufacture of electronic devices having thin-film transistors. 5,618,741, Cl. 438-151.000.

Young, Philip A.; and Beatty, Michael, to Vtech Communications, Ltd Method of conducting an intercom communication between two cordless telephone handsets. 5,619,553, Cl. 379-61.000.

Young, Ralph H.: *See—*
Detty, Michael R.; Sinicropi, John A.; Cowdery-Corvan, J. Robin; and Young, Ralph H., 5,618,950, Cl. 549-28.000.

Young, Richard E., to American LaFrance Corporation. Modular compartments for utility vehicle. 5,617,696, Cl. 52-730.100.

Young, Rodney C.: *See—*
Borrett, Gary T.; Kitteringham, John; Porter, Roderick A.; Shipton, Mark R.; Vimal, Mythily; and Young, Rodney C., 5,618,947, Cl. 548-448.000.
Borrett, Gary T.; Kitteringham, John; Porter, Roderick A.; Shipton, Mark R.; Vimal, Mythily; and Young, Rodney C., 5,618,948, Cl. 548-448.000.

Young, Terrill A.; Dobrin, George C.; and Thomas, Dennis A., to Procter & Gamble Company, The. Sheet material having a fibrous surface and method of making the same. 5,618,583, Cl. 427-277.000.

Yu, Chan M.: *See—*
Sua, Goh J.; and Yu, Chan M., 5,619,067, Cl. 257-686.000.

Yu, Chris C.: *See—*
Doan, Trung T.; and Yu, Chris C., 5,618,381, Cl. 438-633.000.

Yu, I-Ping: *See—*
Salvail, Gary; and Yu, I-Ping, 5,619,218, Cl. 343-895.000.

Yu, Kuo-Long: *See—*
Starrett, John E., Jr.; Yu, Kuo-Long; Mansuri, Muzammil M.; Tortolani, David R.; and Reczek, Peter R., 5,618,839, Cl. 514-513.000.

Yu, Lisha: *See—*
Betrabet, Chinmay S.; Huang, Yung H.; Lachapell, Ruth A.; and Yu, Lisha, 5,618,281, Cl. 604-387.000.

Yu, Phillip C.; Backfisch, David L.; O'Brien, Nada A.; and Hichwa, Bryant P., to PPG Industries, Inc. Iridium oxide film for electrochromic device. 5,618,390, Cl. 204-192.260.

Yu, Robert K.; and Zyner, Grzegorz B., to Sun Microsystems, Inc. Shared hardware for multiply, divide, and square root exponent calculation. 5,619,439, Cl. 364-748.000.

Yuasa, Teruo: *See—*
Kawabata, Tomoyuki; Yuasa, Teruo; and Iimuro, Shigeru, 5,618,984, Cl. 569-720.000.

Yubuta, Osamu: *See—*
Nomura, Giichiro; and Yubuta, Osamu, 5,618,401, Cl. 205-130.000.

Yugenkaisha Shinjo Seisakusho: *See—*
Shinjo, Hiroshi, 5,618,237, Cl. 470-91.000.

Yui, Tooru; Nakagawa, Tokuzo; and Kondoh, Kazuo, to Bio-Engineering Laboratories, Ltd. Medical materials and manufacturing methods thereof. 5,618,312, Cl. 606-229.000.

Yukihiko, Yada; and Yoichi, Hirai, to Tokai Kogyo Kabushiki Kaisha. Windshield molding for vehicles and the production method thereof. 5,618,079, Cl. 296-93.000.

Yumiyama, Shigeru; and Mori, Yoshimi, to Hitachi, Ltd. Revolving armature for rotary electric machinery. 5,619,088, Cl. 310-270.000.

Yutaka, Teiji, to Sony Corporation. Drawing data producing apparatus and drawing data producing method. 5,619,629, Cl. 395-133.000.

Yuuki, Tomohiro, to Yamaha Corporation. Thermal treatment with enhanced intra-wafer, intra-and inter-batch uniformity. 5,618,349, Cl. 118-715.000.

Zahorik, Russell C.: *See—*
Burke, Robert J.; Zahorik, Russell C.; Paduano, Paul A.; and Thakur, Randhir P. S., 5,618,461, Cl. 219-502.000.

Zahr, Salah A.: *See—*
Pal, Biman; Ram, Siya; Cai, Bing; Sachdeva, Yesh P.; Shim, Jaechul; Zahr, Salah A.; Al-Farhan, Emile; and Gabriel, Richard, 5,618,966, Cl. 560-16.000.

Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai: *See—*
Kondo, Shinichi; Shibahara, Seiji; Usui, Takayuki; Kudo, Toshiaki; Gomi, Shuichi; Tamura, Atsushi; Ikeda, Yoko; Ikeda, Daishiro; and Takeuchi, Tomio, 5,618,795, Cl. 514-41.000.

Zaidi, Syed A. A., to Intel Corporation. Apparatus for register bypassing in a microprocessor. 5,619,668, Cl. 395-376.000.

Zair, Eliezer, to Laser Industries, Limited. System for causing ablation of irradiated material of living tissue while not causing damage below a predetermined depth. 5,618,285, Cl. 606-10.000.

Zajacek, John G.: *See—*
Saxton, Robert J.; and Zajacek, John G., 5,618,512, Cl. 423-705.000.

Zak, Alexander. Multi-channel single stage high power factor AC to DC converter. 5,619,404, Cl. 363-21.000.

Zak, Bohumil: *See—*
Trampota, Miroslav; and Zak, Bohumil, 5,618,959, Cl. 556-437.000.

Zakel, Gerhard: *See—*
Koeberer, Günther; Steffen, Egbert; Bomba, Gerhard; Grothaus, Franz-Josef; and Zakel, Gerhard, 5,618,104, Cl. 366-7.000.

Zaleski, Henryk: *See—*
Izmailov, Alexandre M.; Waterhouse, Paul; and Zaleski, Henryk, 5,618,398, Cl. 204-470.000.

Zampini, Anthony; and Pandya, Ashish, to Shipley Company, L.L.C. Photoactive compounds and compositions. 5,618,932, Cl. 534-557.000.

Zanders, Gary V.: *See—*
Curry, Stephen M.; Bolan, Michael L.; Deierling, Kevin E.; Payne, William L., II; Kurkowski, Hal; Dias, Donald R.; Zanders, Gary V.; Lee, Robert D.; and Lehmann, Guenther H., 5,619,066, Cl. 257-679.000.

Zarling, Joyce M.: *See—*
Shoyab, Mohammed; Zarling, Joyce M.; Marquardt, Hans; Hanson, Marcia B.; Malik, Najma; Linsley, Peter S.; Rose, Timothy M.; and Purchio, Anthony F., 5,618,715, Cl. 435-325.000.

Zehner, Friedhelm: *See—*
Pfuhl, Berthold; Zehner, Friedhelm; and Zumbraegel, Joachim, 5,617,895, Cl. 137-625.690.

Zeinstra, Mark L.: *See—*
Duckworth, Paul C.; Dykema, Kurt A.; and Zeinstra, Mark L., 5,619,190, Cl. 340-825.220.

Zengerle, Paul L.: *See—*
Rieger, John B.; Zengerle, Paul L.; and Boettcher, John W., 5,618,657, Cl. 430-434.000.

Zenith Electronics Corporation: *See—*
Lee, Ronald B.; and Nielsen, Larry E., 5,619,269, Cl. 348-432.000.

Zenno, Shuhei; Shiraishi, Shinji; Inouye, Satoshi; and Saigo, Kaoru, to Chisso Corporation. Photuris firefly luciferase gene. 5,618,722, Cl. 435-252.300.

Zettlmeissl, Gerd; Karges, Hermann E.; and Becker, Achim, to Behringwerke Aktiengesellschaft. Mutants of human antithrombin III. 5,618,713, Cl. 435-226.000.

Zettner, Herbert; and Stark, Johann, to Ina Walzlager Schaeffler KG. Rotation preventing device for a plastic cage of an overrunning clutch. 5,617,937, Cl. 192-45.000.

Zexel Corporation: *See—*
Ishiwata, Hiroshi; Yokota, Tohru; Kobayashi, Mitsuaki; Katori, Tsutomu; and Ohsawa, Teruo, 5,617,830, Cl. 123-500.000.
Kinugasa, Takashi; Nishishita, Kunihiko; and Inoue, Seiji, 5,617,914, Cl. 165-153.000.
Kinugasa, Takashi; Nishishita, Kunihiko; and Inoue, Seiji, 5,617,915, Cl. 165-153.000.
Matsumoto, Kazuo; Ueno, Haruhiko; and Shimada, Kenji, 5,618,993, Cl. 73-587.000.

Zhang, Lin-Hua; and Auerbach, Joseph, to DuPont Merck Pharmaceutical Company, The. Method for the synthesis of anthrapyrazolones. 5,618,944, Cl. 548-358.500.

Zhang, Zhenyu: *See—*
Fehlner, James R.; and Zhang, Zhenyu, 5,618,435, Cl. 210-651.000.

Zheng, Yu. Collapsible play tunnel structures. 5,618,246, Cl. 482-35.000.

Zhou, Met S.: *See—*
Chan, Lap; and Zhou, Met S., 5,618,384, Cl. 438-669.000.

Zhu, Lizhong: *See—*
Taylor, Bryan; Lazaridis, Mihal; Edmonson, Peter; Jarmuszewski, Perry; Zhu, Lizhong; Carkner, Steven; and Wandel, Matthias, 5,619,531, Cl. 375-222.000.

Ziegler, Josef, to RMB. Circular-weaving machine with vertically moving heddles. 5,617,905, Cl. 139-459.000.

Ziegra, Richard C.; and Hurtado, Steven C., to Ziegra, Richard C. Video audio data remote system. 5,619,183, Cl. 340-505.000.

Ziemins, Uldis A.: *See—*
Freedenberg, Candace J.; Long, David C.; Cobb, Joshua M.; LaPlante, Mark J.; Ziemins, Uldis A.; Patterson, Daniel G.; and Balz, James G., 5,618,454, Cl. 219-121.740.

Zilog, Inc.: *See—*
Benhamida, Boubekeur; Richards, Grant; Chan, Stephen H.; Yearsley, Gyle; and Nobugaki, Jim, 5,619,681, Cl. 395-500.000.

Zimlich, Glenn A.: *See—*
Bidner, David K.; Zimlich, Glenn A.; and Orzel, Daniel V., 5,617,829, Cl. 123-481.000.

Zircon Corporation: *See—*
Heger, Charles E., 5,619,128, Cl. 324-67.000.

Zito, Richard R., to Richard R. Zito R & D Corp. Controlled multiple storage vessel gas trap. 5,617,727, Cl. 62-55.500.

Zitter, Robert M.: *See—*

Billock, John K.; Cuttner, Craig D.; Dowdell, Kevin C.; Flanagan, Elizabeth B.; Granger, James E.; Hsu, Henry C.; Martin, Robert I. M.; May, Robert; Peck, Nicolas; Pontecorvo, Michael S.; Probst, Bruce E.; Rosenberg, Marc D.; Smul, Debra R.; Wilkinson, Dennis P.; and Zitter, Robert M., 5,619,249, Cl. 348-7.000.

Zolk, Ralf: *See—*
Kerth, Juergen; Koelle, Peter; Zolk, Ralf; and Schwager, Harald, 5,618,895, Cl. 526-128.000.

Zolotoochin, Vladimir M.: *See—*
Delling, David R.; Zolotoochin, Vladimir M.; Coustry, Francis M.; and Green, Kevin L., 5,618,504, Cl. 423-206.200.

Zuidema, Eric L.: *See—*
Chang, Sung S.; Harman, James L.; Jacobson, Gary S.; Kirschner, Wesley A.; Ramadei, Michael J.; and Zuidema, Eric L., 5,618,037, Cl. 271-258.020.

Zumbraegel, Joachim: *See—*
Pfuhl, Berthold; Zehner, Friedhelm; and Zumbraegel, Joachim, 5,617,895, Cl. 137-625.690.

zur Hausen, Harald: *See—*
de Villiers, Ethel-Michele; Hirsch-Behnam, Anja; and zur Hausen, Harald, 5,618,694, Cl. 435-69.100.

Zygmun, Leon E.; and Conneally, Martin C., to L. E. Zygmun and Company, Inc. Modular scaffolding system. 5,617,931, Cl. 182-145.000.

ZymoGenetics, Inc.: *See—*
Hart, Charles E.; McConnell, Oliver J.; West, Robert R.; and Martinez, Theresa, 5,618,837, Cl. 514-450.000.
Kelly, James D.; and Murray, Mark J., 5,618,678, Cl. 435-7.210.

Zyner, Grzegorz B.: *See—*
Yu, Robert K.; and Zyner, Grzegorz B., 5,619,439, Cl. 364-748.000.

Zysman, Alexandre; Vanlerberghe, Guy; and Semeria, Didier, to L'Oreal. Ceramides, process for their preparation and their applications in the cosmetic and dermopharmaceutical fields. 5,618,523, Cl. 424-70.100.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 8th DAY OF APRIL, 1997

NOTE— Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Berkowitz, Barry; and Jacob, Leonard S., to Magainin Pharmaceuticals, Inc. Wound treatment employing biologically active ion channel forming peptides and proteins. Re. 35,492, Cl. 514-13.000.
Cline, Martin J.; and Slamon, Dennis J., to University of California, The Regents of the. Methods and compositions for detecting human tumors. Re. 35,491, Cl. 435-6.000.
Hitachi, Ltd.: *See—*
Ohura, Masaki; and Saito, Makoto, Re. 35,490, Cl. 360-126.000.
Jacob, Leonard S.: *See—*
Berkowitz, Barry; and Jacob, Leonard S., Re. 35,492, Cl. 514-13.000.
Magainin Pharmaceuticals, Inc.: *See—*
Berkowitz, Barry; and Jacob, Leonard S., Re. 35,492, Cl. 514-13.000.
Ohura, Masaki; and Saito, Makoto, to Hitachi, Ltd. Thin film magnetic head having magnetic layers of different thickness and manufacturing method therefor. Re. 35,490, Cl. 360-126.000.
Saito, Makoto: *See—*
Ohura, Masaki; and Saito, Makoto, Re. 35,490, Cl. 360-126.000.
Slamon, Dennis J.: *See—*
Cline, Martin J.; and Slamon, Dennis J., Re. 35,491, Cl. 435-6.000.
University of California, The Regents of the: *See—*
Cline, Martin J.; and Slamon, Dennis J., Re. 35,491, Cl. 435-6.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Bhattacharyya, Bidyut K.: *See—*
Ogawa, Masahiro; Yamasaki, Kozo; Hirano, Mitsuru; Schmitt, Michael A.; and Bhattacharyya, Bidyut K., B1 5,099,388, Cl. 361-321.200.
Caldwell Manufacturing Company: *See—*
Westfall, Norman R., B1 5,353,458, Cl. 49-446.000.
Exxon Chemical Patents Inc.: *See—*
McAlpin, James J.; Kuo, Jeffrey W. C.; and Hylton, Donald C., B1 5,468,440, Cl. 264-291.000.
Fick, Gerhardt N., to SIGCO Research Inc. Novel sunflower products and methods for their production. B1 4,743,402, Cl. 554-223.000.
Hegler, Ralph-Peter; and Hegler, Wilhelm, to Hegler, Wilhelm. Method and apparatus for the continuous manufacture of a compound pipe with a pipe socket. B1 5,320,797, Cl. 264-511.000.
Hegler, Wilhelm: *See—*
Hegler, Ralph-Peter; and Hegler, Wilhelm, B1 5,320,797, Cl. 264-511.000.
Hirano, Mitsuru: *See—*
Ogawa, Masahiro; Yamasaki, Kozo; Hirano, Mitsuru; Schmitt, Michael A.; and Bhattacharyya, Bidyut K., B1 5,099,388, Cl. 361-321.200.
Hylton, Donald C.: *See—*
McAlpin, James J.; Kuo, Jeffrey W. C.; and Hylton, Donald C., B1 5,468,440, Cl. 264-291.000.
Intel Corporation: *See—*
Ogawa, Masahiro; Yamasaki, Kozo; Hirano, Mitsuru; Schmitt, Michael A.; and Bhattacharyya, Bidyut K., B1 5,099,388, Cl. 361-321.200.
Keller, Lee W.: *See—*
Lovin, Joseph; and Keller, Lee W., B1 5,407,708, Cl. 427-493.000.
Kuo, Jeffrey W. C.: *See—*
McAlpin, James J.; Kuo, Jeffrey W. C.; and Hylton, Donald C., B1 5,468,440, Cl. 264-291.000.
Lovin, Joseph; and Keller, Lee W., to W. R. Grace & Co.-Conn. Method and apparatus for applying radiation curable inks in a flexographic printing system. B1 5,407,708, Cl. 427-493.000.
McAlpin, James J.; Kuo, Jeffrey W. C.; and Hylton, Donald C., to Exxon Chemical Patents Inc. Process of making oriented film or structure. B1 5,468,440, Cl. 264-291.000.
NGK Spark Plug Co., Ltd.: *See—*
Ogawa, Masahiro; Yamasaki, Kozo; Hirano, Mitsuru; Schmitt, Michael A.; and Bhattacharyya, Bidyut K., B1 5,099,388, Cl. 361-321.200.
NGK Spark Plugs (U.S.A.), Inc.: *See—*
Ogawa, Masahiro; Yamasaki, Kozo; Hirano, Mitsuru; Schmitt, Michael A.; and Bhattacharyya, Bidyut K., B1 5,099,388, Cl. 361-321.200.
Ogawa, Masahiro; Yamasaki, Kozo; Hirano, Mitsuru; Schmitt, Michael A.; and Bhattacharyya, Bidyut K., to NGK Spark Plug Co., Ltd.; NGK Spark Plugs (U.S.A.), Inc.; and Intel Corporation. Alumina multilayer wiring substrate provided with high dielectric material layer. B1 5,099,388, Cl. 361-321.200.
Pentel of America, Ltd.: *See—*
Petterson, Tor, B1 5,015,111, Cl. 401-52.000.
Petterson, Tor, to Pentel of America, Ltd. Eraser dispenser and writing instrument equipped with eraser dispenser. B1 5,015,111, Cl. 401-52.000.
Schmitt, Michael A.: *See—*
Ogawa, Masahiro; Yamasaki, Kozo; Hirano, Mitsuru; Schmitt, Michael A.; and Bhattacharyya, Bidyut K., B1 5,099,388, Cl. 361-321.200.
SIGCO Research Inc.: *See—*
Fick, Gerhardt N., B1 4,743,402, Cl. 554-223.000.
W. R. Grace & Co.-Conn.: *See—*
Lovin, Joseph; and Keller, Lee W., B1 5,407,708, Cl. 427-493.000.
Westfall, Norman R., to Caldwell Manufacturing Company. Curl spring shoe based window balance system. B1 5,353,458, Cl. 49-446.000.
Yamasaki, Kozo: *See—*
Ogawa, Masahiro; Yamasaki, Kozo; Hirano, Mitsuru; Schmitt, Michael A.; and Bhattacharyya, Bidyut K., B1 5,099,388, Cl. 361-321.200.

LIST OF DESIGN PATENTEES

Abrahamson, Kathleen A.; Boeckemann, Thomas A.; and Efstrand, James, to Donaldson Company, Inc. Restriction indicator. 378,744, Cl. D10-96.000.
Aladan Corporation: *See—*
Gatewood, William L.; Kaczmarczyk, George; and Povlacs, Lawrence J., 378,735, Cl. D9-429.000.
American Standard Inc.: *See—*
Hohenthaner, Franz G., 378,777, Cl. D23-295.000.
Answer Products, Inc.: *See—*
Behrens, Steven J., 378,747, Cl. D12-118.000.
Antonious, Anthony J. Golf club shaft. 378,771, Cl. D21-221.000.
Aqua-Leisure Industries, Inc.: *See—*
Fireman, Andrew F., 378,719, Cl. D6-604.000.
Araki, Toshio; and Tanaka, Hideyuki, to Pilot Ink Co., Ltd., The. Ink refill for a ball-point pen. 378,764, Cl. D19-54.000.
Arthrex Inc.: *See—*
Shuler, Donald K., 378,780, Cl. D24-146.000.
Asaff, Jimmy W.; and Bierman, Richard B., to Skin Research Laboratories, Inc. Suntan lotion bottle. 378,733, Cl. D9-337.000.
Asanuma, Toshikazu, to Matsushita Electric Industrial Co., Ltd. Television receiver. 378,752, Cl. D14-126.000.
Aston, Joanne M., to Yale Security, Inc. Front face of a key plug. 378,730, Cl. D8-343.000.
Beaulieu, Jocelyn, to Global Upholstery Company. Chair. 378,714, Cl. D6-366.000.
Becton, Dickinson and Company: *See—*
Stevens, Timothy A.; and Tyndorf, Tadeusz A., 378,781, Cl. D24-224.000.
Behrens, Steven J., to Answer Products, Inc. Brake arch adapter for bicycle suspension fork. 378,747, Cl. D12-118.000.
Bierman, Richard B.: *See—*
Asaff, Jimmy W.; and Bierman, Richard B., 378,733, Cl. D9-337.000.
Bochman, Cherry: *See—*

Ramsey, Roger H.; Johnson, Charles S.; and Bochman, Cherry, 378,721, Cl. D6-634.000.
Boeckemann, Thomas A.: *See—*
Abrahamson, Kathleen A.; Boeckemann, Thomas A.; and Efstrand, James, 378,744, Cl. D10-96.000.
Brady, Martin, to Hamilton Beach/Proctor-Silex, Inc. Carafe. 378,722, Cl. D7-319.000.
Brother Kogyo Kabushiki Kaisha: *See—*
Hattori, Mitsuharu; and Higashi, Takashi, 378,759, Cl. D18-56.000.
Cal-Marble Furniture Mfg. Corp.: *See—*
Mann, Phylliss; and Platt, Lawrence, 378,716, Cl. D6-434.000.
Canon Kabushi Kaisha: *See—*
Tokuda, Hiroyuki; Takenouchi, Masanori; Kotaki, Yasuo; and Hamasaki, Yuji, 378,758, Cl. D18-56.000.
Canon Kabushiki Kaisha: *See—*
Inukai, Yoshinori, 378,750, Cl. D14-106.000.
Casio Computer Co., Ltd.: *See—*
Yamamoto, Hideyuki; Seymour, Richard W.; and Powell, David H., 378,740, Cl. D10-38.000.
Chang, Tsung-Chieh. Handle for a screwdriver. 378,729, Cl. D8-83.000.
Chapman, Steven S.; Jackson, Daniel C.; McBride, John K.; Rydelek, James G.; and Yokajty, Joseph E., to Eastman Kodak Company. Cover label for camera. 378,767, Cl. D20-22.000.
Chesnut, John M. Penguin coin bank. 378,786, Cl. D99-38.000.
Christou, Paul. Purse. 378,710, Cl. D3-234.000.
Couch, Johnny D.; Richmond, Sarah M.; Velinsky, Ira L.; Guerrera, Stephen K.; Hunter, Gregory H.; and Gundlach, John D., to Sega Enterprises, Ltd. Control pad with control stick. 378,768, Cl. D21-48.000.
Daansen, Warren S. Pump tip for a soap dispenser. 378,718, Cl. D6-542.000.
Delafon, Jacob: *See—*
Kergoet, Francois, 378,774, Cl. D23-238.000.
Kergoet, Francois, 378,775, Cl. D23-250.000.
Denebeim, Sabrina S. Spherical hairbrush. 378,712, Cl. D4-128.000.
Depas, Jeffrey A.: *See—*
DiBlasi, Timothy J.; Krasinski, Robert J.; and Depas, Jeffrey A., 378,753, Cl. D14-151.000.
Design Specialties, Inc.: *See—*
Dunn, John W., 378,726, Cl. D7-549.000.
Dewitt, Wayne, to Load King Manufacturing Co., Inc. Check stand counter. 378,715, Cl. D6-402.000.
DiBlasi, Timothy J.; Krasinski, Robert J.; and Depas, Jeffrey A. Fire alert telephone. 378,753, Cl. D14-151.000.
Donaldson Company, Inc.: *See—*
Abrahamson, Kathleen A.; Boeckemann, Thomas A.; and Efstrand, James, 378,744, Cl. D10-96.000.
Dubson, Paul T., to Hewlett-Packard Company. Ink jet printer with multiple media input trays. 378,757, Cl. D18-55.000.
Dunn, John W., to Design Specialties, Inc. Dish. 378,726, Cl. D7-549.000.
Duracraft Corp.: *See—*
Jané, Rodney; Wang, Jui-Shang; Gresens, Stanley; and Holderfield, Gregory, 378,778, Cl. D23-356.000.
Eastman Kodak Company: *See—*
Chapman, Steven S.; Jackson, Daniel C.; McBride, John K.; Rydelek, James G.; and Yokajty, Joseph E., 378,767, Cl. D20-22.000.
Ebenreth, Ralph A. Video cassette holder. 378,720, Cl. D6-632.000.
Efstrand, James: *See—*
Abrahamson, Kathleen A.; Boeckemann, Thomas A.; and Efstrand, James, 378,744, Cl. D10-96.000.
Faulkner, Henry B.: *See—*
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Fireman, Andrew F., to Aqua-Leisure Industries, Inc. Recreational air mattress. 378,719, Cl. D6-604.000.
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471	5,617,710
475	5,617,711
CLASS 55	
385.3	5,618,323
497	5,618,324
CLASS 56	
298	5,617,712
CLASS 57	
210	5,617,713
315	5,617,714
CLASS 60	
39.02	5,617,715
39.05	5,617,716
39.06	5,617,717
39.17	5,617,718
39.26	5,617,719
274	5,617,720
277	5,617,721
	5,617,722
327	5,617,723
422	5,617,724
562	5,617,725
605.2	5,617,726
CLASS 62	
55.5	5,617,727
71	5,617,728
117	5,617,729
133	5,617,730
149	5,617,731
228.5	5,617,732
324.2	5,617,733
343	5,617,734
374	5,617,735
393	5,617,736
487	5,617,737
509	5,617,738
619	5,617,739
620	5,617,740
622	5,617,741
643	5,617,742
CLASS 65	
380	5,618,325
388	5,618,326
438	5,618,327
502	5,618,328
CLASS 66	
9 A	5,617,743
148	5,617,744
178 A	5,617,745
CLASS 68	
21	5,617,746
53	5,617,747
198	5,617,748
CLASS 70	
224	5,617,749
419	5,617,750
456 R	5,617,751
CLASS 71	
6	5,618,329
32	5,618,330
CLASS 72	
98	5,617,752
149	5,617,753
165	5,617,754
349	5,617,755
405.16	5,617,756
CLASS 73	
1.38	5,618,989
40	5,618,990
40.7	5,618,991
86	5,618,992
290 V	5,617,757
587	5,618,993
602	5,618,994
669	5,618,995
863.61	5,618,996
864.55	5,618,997
866.3	5,618,998
866.5	5,618,999
CLASS 74	
7 B	5,617,758
44	5,617,759
475	5,617,760
	5,617,761
490.06	5,617,762
552	5,617,763
606 R	5,617,764
CLASS 75	
240	5,619,000
743	5,618,331
CLASS 81	
3.2	5,617,765
480	5,617,766
488	5,617,767
CLASS 82	
47	5,617,768
127	5,617,769
CLASS 83	
37	5,617,770
CLASS 84	
379	5,619,001
603	5,619,002
615	5,619,003
658	5,619,005
CLASS 89	
1.1	5,619,006
36.09	5,619,007
CLASS 91	
1	5,617,771
CLASS 92	
117 A	5,617,772
171.1	5,617,773
CLASS 95	
51	5,618,332
237	5,618,333
CLASS 96	
14	5,618,334
208	5,618,335
CLASS 99	
348	5,617,774
408	5,617,776
	5,617,777
446	5,617,778
450	5,617,779
467	5,617,780
470	5,617,781
500	5,617,782
631	5,617,783
CLASS 100	
3	5,617,784
CLASS 101	
3.1	5,617,785
116	5,617,786
129	5,617,787
181	5,617,788
216	5,617,789
389.1	5,617,790
420	5,617,791
477	5,617,792
CLASS 102	
310	5,619,008
334	5,619,009
489	5,619,010
CLASS 104	
2	5,617,793
7.2	5,617,794
9	5,617,795
106	5,617,796
CLASS 106	
2	5,618,336
22 H	5,618,337
26 R	5,618,338
124.3	5,618,339
284.06	5,618,340
287.35	5,618,341
416	5,618,342
498	5,618,343
823	5,618,344
CLASS 108	
42	5,617,797
144	5,617,798
CLASS 109	
29	5,617,799
CLASS 110	
236	5,617,800
282	5,617,801
CLASS 112	
117	5,617,802
230	5,617,803
304	5,617,804
CLASS 114	
39.1	5,617,805
74 A	5,617,806
90	5,617,807
123	5,617,808
315	5,617,809
353	5,617,810
363	5,617,811
CLASS 116	
206	5,617,812
CLASS 118	
314	5,618,347
693	5,618,348
715	5,618,349
725	5,618,350
728	5,618,351
CLASS 119	
223	5,617,813
720	5,617,814
CLASS 123	
41.08	5,617,816
41.1	5,617,815
41.12	5,617,817
90.27	5,617,818
179.2	5,617,819
195 P	5,617,821
196 R	5,617,822
197.3	5,617,820
254	5,617,823
308	5,617,824
337	5,617,825
450	5,617,826
456	5,617,827
468	5,617,828
481	5,617,829
500	5,617,830
502	5,617,831
520	5,617,832
571	5,617,833
572	5,617,834
585	5,617,835
674	5,617,836
CLASS 124	
73	5,617,837
88	5,617,838
CLASS 126	
20	5,617,839
41 R	5,617,840
152 B	5,617,841
528	5,617,842
681	5,617,843
CLASS 127	
19	5,618,352
CLASS 128	
200.18	5,617,844
203.15	5,617,845
204.21	5,617,846
204.23	5,617,847
205.23	5,617,848
206.24	5,617,849
632	5,617,850
	5,617,851
633	5,617,852
640	5,617,853
642	5,617,854
653.1	5,617,855
	5,617,856
	5,617,857
	5,617,858
653.2	5,617,859
	5,617,861
653.4	5,617,860
661.01	5,617,862
	5,617,863
662.03	5,617,864
	5,617,865
662.3	5,617,866
672	5,617,867
	5,617,868
691	5,617,869
692	5,617,870
696	5,617,871
745	5,617,872
748	5,617,873
753	5,617,874
772	5,617,875
780	5,617,876
837	5,617,877
898	5,617,878
CLASS 131	
237	5,617,880
328	5,617,881
331	5,617,882
CLASS 132	
205	5,617,883
310	5,617,884
CLASS 134	
22.17	5,618,353
25.4	5,618,354
58 D	5,617,885
172	5,617,886
184	5,617,887
CLASS 135	
20.3	5,617,888
22	5,617,889
CLASS 137	
82	5,617,890
145	5,617,891
360	5,617,892
526	5,617,893
625.5	5,617,894
625.69	5,617,895
813	5,617,896
859	5,617,897
884	5,617,898
CLASS 138	
44	5,617,899
127	5,617,900
CLASS 139	
1 E	5,617,901
1 R	5,617,902
383 A	5,617,903
420 R	5,617,904
459	5,617,905
CLASS 141	
21	5,617,906
340	5,617,907
CLASS 144	
218	5,617,908
253.1	5,617,909
356	5,617,910
CLASS 148	
320	5,618,355
519	5,618,356
528	5,618,357
549	5,618,358
561	5,618,359
CLASS 149	
19.4	5,619,011
CLASS 152	
209 R	5,618,360
416	5,618,361
530	5,618,362

CLASS 156

62.2	5,618,363
62.8	5,618,364
73.1	5,618,365
	5,618,366
181	5,618,367
233	5,618,369
234	5,618,370
264	5,618,371
310	5,618,372
361	5,618,373
418	5,618,374
442.3	5,618,375
468	5,618,376
504	5,618,377
552	5,618,378

CLASS 162

6	5,618,385
72	5,618,386
224	5,618,387

CLASS 164

457	5,617,911
517	5,617,912

CLASS 165

104.11	5,617,913
153	5,617,914
	5,617,915
184	5,617,916

CLASS 166

85.4	5,617,917
115	5,617,918
278	5,617,919
295	5,617,920
308	5,617,921

CLASS 169

16	5,617,922
51	5,617,923

CLASS 173

181	5,617,924
211	5,617,925

CLASS 174

52.2	5,619,012
53	5,619,013
68.2	5,619,014
84 R	5,619,015
113 R	5,619,016
260	5,619,017
261	5,619,018

CLASS 175

61	5,617,926
78	5,617,927
432	5,617,928

CLASS 180

326	5,617,929

CLASS 181

166	5,619,019
206	5,619,020

CLASS 182

97	5,617,930
145	5,617,931
187	5,617,932

CLASS 187

350	5,617,933

CLASS 188

1.12	5,617,934
73.1	5,617,935

CLASS 192

4 A	5,617,936
45	5,617,937
54.5	5,617,938
70.16	5,617,939
70.17	5,617,940
107 R	5,617,941

CLASS 194

217	5,617,942

CLASS 198

418.1	5,617,943
468.6	5,617,944
471.1	5,617,945

CLASS 200

6 A	5,619,021
83 P	5,619,022
407	5,617,946

CLASS 204

157.6	5,619,023
192.12	5,618,388
192.15	5,618,389
192.26	5,618,390
212	5,618,391
252	5,618,392
	5,618,393
275	5,618,394
290 R	5,618,395
297 M	5,618,396
298.13	5,618,397
470	5,618,398
620	5,618,399

CLASS 205

98	5,618,400
130	5,618,401
244	5,618,402
372	5,618,403
445	5,618,404
763	5,618,405

CLASS 206

6.1	5,617,947
	5,617,948
307.1	5,617,949
308.1	5,617,950
315.6	5,617,951
380	5,617,952
501	5,617,953
539	5,617,954

CLASS 208

48 R	5,618,406
114	5,618,407
370	5,618,408

CLASS 209

458	5,617,955
534	5,617,956
571	5,617,957

CLASS 210

97	5,618,409
123	5,618,410
150	5,618,411
	5,618,412
151	5,618,413
	5,618,414
158	5,618,415
163	5,618,416
170	5,618,417
232	5,618,418
238	5,618,419
242.3	5,618,420
264	5,618,421
323.1	5,618,422
360.2	5,618,423
402	5,618,424
493.5	5,618,425
541	5,618,426
602	5,618,427
	5,618,428
610	5,618,429
616	5,618,430
618	5,618,431
634	5,618,432
	5,618,433
635	5,618,434
651	5,618,435
	5,618,436
679	5,618,437
	5,618,438
713	5,618,439
716	5,618,440
739	5,618,441
742	5,618,442
767	5,618,443
	5,618,444
800	5,618,445

CLASS 211

13	5,617,958
37	5,617,959
60.1	5,617,960
151	5,617,961
206	5,617,962

CLASS 212

179	5,617,963
327	5,617,964

CLASS 213

75 R	5,617,965

CLASS 215

11.4	5,617,966

CLASS 216

2	5,618,345
56	5,618,737
64	5,618,382
65	5,618,446
97	5,618,448

CLASS 219

69.11	5,618,449
69.15	5,618,450
121.53	5,618,451
121.63	5,618,452
	5,618,453
121.74	5,618,454
130.1	5,618,455
137.61	5,618,456
222	5,618,457
394	5,618,458
497	5,618,459
	5,618,460
502	5,618,461
541	5,618,462

CLASS 220

4.33	5,617,967
276	5,617,968
295	5,617,969
730	5,617,970

CLASS 221

31	5,617,971
33	5,617,972
56	5,617,973

CLASS 222

107	5,617,974
185.1	5,617,975
380	5,617,976
400.7	5,617,977
402.13	5,617,978

CLASS 223

46	5,617,979

CLASS 224

251	5,617,980
309	5,617,981
411	5,617,982
433	5,617,983
641	5,617,984

CLASS 226

4	5,617,985
91	5,617,986
189	5,617,987

CLASS 228

37	5,617,988
125	5,617,989
180.1	5,617,990
180.22	5,617,991
183	5,617,992

CLASS 232

27	5,617,993

CLASS 235

381	5,619,024
454	5,619,025
462	5,619,026
	5,619,027
	5,619,028
472	5,619,029

CLASS 237

8 R	5,617,994
12.3 C	5,617,995

CLASS 238

10 R	5,617,996

CLASS 239

8	5,617,997
95	5,617,998
268	5,617,999
276	5,618,000
346	5,618,001
657	5,618,002

CLASS 241

19	5,618,003
21	5,618,004

CLASS 242

345.1	5,618,005
379.1	5,618,006
432.6	5,618,007
594.5	5,618,008
615.2	5,618,009

CLASS 244

1 N	5,618,010
151 B	5,618,011
168	5,618,012

CLASS 246

385	5,618,013

CLASS 248

58	5,618,014
74.2	5,618,015
133	5,618,016
201	5,618,017
311.2	5,618,018
343	5,619,263
345.1	5,618,019
442.2	5,618,020
550	5,618,021

CLASS 249

92	5,618,463

CLASS 250

201.1	5,619,030
201.2	5,619,031
201.3	5,619,032
208.1	5,619,033
287	5,619,034
306	5,619,035
330	5,619,036
339.12	5,619,038
352	5,619,039
370.09	5,619,040
373	5,619,041
492.3	5,619,042
574	5,619,043

CLASS 251

62	5,618,022
129.04	5,618,023
159	5,618,024
210	5,618,025
298	5,618,026
302	5,618,027

CLASS 252

62.6	5,618,464
299.63	5,618,466
301.16	5,618,467
354	5,618,468
500	5,618,469
512	5,618,470
582	5,618,471
625	5,618,472

CLASS 254

8 B	5,618,029
131	5,618,030
134.3 PA	5,618,031

CLASS 257

64	5,619,044
72	5,619,045
82	5,619,046
135	5,619,047
207	5,619,048
223	5,619,049
254	5,619,050
316	5,619,051
321	5,619,052
347	5,619,053
	5,619,054
369	5,619,055
	5,619,056
382	5,619,057
431	5,619,058
	5,619,059
467	5,619,060
528	5,619,061
529	5,619,062
530	5,619,063
637	5,619,064
673	5,619,065
679	5,619,066
686	5,619,067
690	5,619,068
692	5,619,069
	5,619,070
753	5,619,071
774	5,619,072

CLASS 261

114.1	5,618,473

CLASS 264

1.1	5,618,474
3.3	5,619,073
10	5,618,475
40.1	5,618,476
46.5	5,618,477
50	5,618,478
103	5,618,479
	5,618,480
	5,618,481
109	5,618,482
187	5,618,483
220	5,618,484
255	5,618,485
291	B1 5,468,440
321	5,618,486
328.1	5,618,487
478	5,618,488
511	B1 5,320,797
530	5,618,489

CLASS 266

80	5,618,032
208	5,618,490

CLASS 271

1	5,618,033
209	5,618,034
213	5,618,035
225	5,618,036
258.02	5,618,037
297	5,618,038

CLASS 273

143 R	5,618,042
308	5,618,043
410	5,618,044

CLASS 277

163	5,618,046
192	5,618,047
193	5,618,048
235 B	5,618,049
	5,618,050

CLASS 280

14.2	5,618,051
288.4	5,618,052
609	5,618,053
610	5,618,054
641	5,618,055
735	5,618,056
736	5,618,057
777	5,618,058
805	5,618,059
848	5,618,060

CLASS 281

15.1	5,618,061

CLASS 283

67	5,618,062
	5,618,063
80	5,618,064
103	5,618,112

CLASS 285

21.2	5,618,065
95	5,617,879

CLASS 292

62	5,618,066
175	5,618,067
201	5,618,068
216	5,618,069
228	5,618,070
251.5	5,618,071
339	5,618,072

CLASS 293

142	5,618,073
155	5,618,074

CLASS 294

19.1	5,618,075

CLASS 295

21	5,618,076

CLASS 296

37.16	5,618,077
43	5,618,078
93	5,618,079
155	5,618,080
216	5,618,081

CLASS 297

229	5,618,082
375	5,618,083

CLASS 303

3	5,618,084
113.1	5,618,085
119.2	5,618,086
	5,618,087
158	5,618,088

CLASS 307

10.2	5,619,074
	5,619,075
48	5,619,076
64	5,619,077
85	5,619,078
89	5,619,079
105	5,619,080
125	5,619,081

CLASS 310

88	5,619,082
90.5	5,619,083
154	5,619,084
184	5,619,085
259	5,619,086
268	5,619,087
270	5,619,088
323	5,619,089

CLASS 312

116	5,618,089
209	5,618,090
348.1	5,618,091
	5,618,092

CLASS 313

25	5,619,090
103 R	5,619,091
309	5,619,092
	5,619,093
402	5,619,094
477 R	5,619,095
489	5,619,096
495	5,619,097
496	5,619,098
532	5,619,099
533	5,619,100
581	5,619,101
635	5,619,102

CLASS 315

111.21	5,619,103
159	5,619,104
225	5,619,105
290	5,619,106

CLASS 318

139	5,619,107
140	5,619,108
375	5,619,109
450	5,619,110
625	5,619,111
689	5,619,112
701	5,619,113
812	5,619,114

CLASS 320

1	5,619,115
17	5,619,116
21	5,619,117
31	5,619,118

CLASS 323

215	5,619,119
237	5,619,120
256	5,619,121
273	5,619,126
275	5,619,127
312	5,619,122
	5,619,123
313	5,619,124
315	5,619,125

CLASS 324

67	5,619,128
115	5,619,129
173	5,619,130
174	5,619,131
207.21	5,619,132
207.24	5,619,133
225	5,619,134
239	5,619,135
242	5,619,136
251	5,619,137
309	5,619,138
318	5,619,139
	5,619,140
537	5,619,141
601	5,619,142
639	5,619,143
694	5,619,144
754	5,619,145

CLASS 326

21	5,619,146
26	5,619,147

CLASS 327

3	5,619,148
51	5,619,149
55	5,619,150
78	5,619,151
110	5,619,152
112	5,619,153
129	5,619,154
142	5,619,155
198	5,619,156
203	5,619,157
292	5,619,158
527	5,619,159
530	5,619,160
535	5,619,161
537	5,619,162
539	5,619,163
541	5,619,164
546	5,619,165
552	5,619,166

CLASS 329

304	5,619,167

CLASS 330

149	5,619,168
254	5,619,169

CLASS 331

1 A	5,619,170
	5,619,171

CLASS 333

25	5,619,172
125	5,619,173
181	5,619,174
195	5,619,175

CLASS 336

150	5,619,176

CLASS 337

140	5,619,177

CLASS 340

384.72	5,619,179
407.1	5,619,180
	5,619,181
479	5,619,182
505	5,619,183
506	5,619,184
568	5,619,185
573	5,619,186
	5,619,187
686	5,619,188
825.06	5,619,189
825.22	5,619,190
825.69	5,619,191
870.02	5,619,192
905	5,619,193
907	5,619,194

CLASS 341

20	5,619,195
22	5,619,196
50	5,619,197
	5,619,198
51	5,619,199
67	5,619,200
141	5,619,201
143	5,619,202
144	5,619,203
155	5,619,204

CLASS 342

12	5,619,205
37	5,619,206
42	5,619,207
70	5,619,208
352	5,619,209
	5,619,210
357	5,619,211
	5,619,212

CLASS 343

703	5,619,213
713	5,619,214
766	5,619,215
771	5,619,216
872	5,619,217
895	5,619,218

CLASS 345

7	5,619,219
14	5,619,220
58	5,619,221
87	5,619,222
93	5,619,223
98	5,619,224
	5,619,225
132	5,619,226
147	5,619,227
148	5,619,228
150	5,619,229
	5,619,230
163	5,619,231

CLASS 347

30	5,619,232
37	5,619,233
55	5,619,234
69	5,619,235
84	5,619,236
86	5,619,237
	5,619,238
	5,619,239
103	5,619,240
105	5,619,241
131	5,619,242
139	5,619,243
214	5,619,244
241	5,619,245
262	5,619,246

CLASS 348

3	5,619,247
6	5,619,248
7	5,619,249
10	5,619,250
12	5,619,251
14	5,619,252
15	5,619,253
20	5,619,254
36	5,619,255
43	5,619,256
64	5,619,257
97	5,619,258
181	5,619,259
223	5,619,260
246	5,619,261
297	5,619,262
352	5,619,264
362	5,619,265
363	5,619,266
400	5,619,267
416	5,619,268
432	5,619,269
441	5,619,270
448	5,619,271
452	5,619,272
	5,619,273
461	5,619,274
526	5,619,275
541	5,619,276
579	5,619,277
614	5,619,278
626	5,619,279
645	5,619,280
699	5,619,281
716	5,619,282
731	5,619,283
757	5,619,284
806	5,619,285
835	5,619,286

CLASS 349

61	5,619,351
78	5,619,355
89	5,619,352
	5,619,353
	5,619,354
99	5,619,356
110	5,619,357
143	5,619,358

CLASS 351

44	5,619,287
159	5,619,288
161	5,619,289
217	5,619,290
240	5,619,291

CLASS 353

26 R	5,618,093
101	5,618,094

CLASS 355

25	5,619,302
54	5,619,303
71	5,619,304
75	5,619,305
97	5,619,306

CLASS 356

5.05	5,619,317
32	5,619,318
73	5,619,319
73.1	5,619,320
	5,619,321
121	5,619,322
139.03	5,619,323
336	5,619,324
351	5,619,325
357	5,619,326
359	5,619,327
375	5,619,328
382	5,619,329
	5,619,330
394	5,619,331
419	5,619,332
436	5,619,333

CLASS 358

298	5,619,334
404	5,619,341
405	5,619,342
408	5,619,343
468	5,619,344
482	5,619,345
505	5,619,346
516	5,619,347
518	5,619,348
521	5,619,349

CLASS 359

18	5,619,350
117	5,619,359
140	5,619,360
172	5,619,361
205	5,619,362
216	5,619,363
246	5,619,364
248	5,619,365
	5,619,366
283	5,619,367
326	5,619,368
332	5,619,369
362	5,619,370
368	5,619,371
389	5,619,372
482	5,619,373
584	5,619,374
	5,619,375
619	5,619,376
631	5,619,377
638	5,619,378
644	5,619,379
661	5,619,380
677	5,619,381
858	5,619,382

CLASS 360

20	5,619,383
48	5,619,384
64	5,619,385
67	5,619,386
77.08	5,619,387
85	5,619,388
98.07	5,619,389
104	5,619,390
126	Re.35,490
133	5,619,391

CLASS 361

65	5,619,392
321.1	5,619,393
321.2	B1 5,099,388
680	5,619,394
683	5,619,395
686	5,619,396
	5,619,397
	5,619,398
707	5,619,399

CLASS 362

31	5,618,095
	5,618,096
61	5,618,097
	5,618,098
111	5,618,099
183	5,618,100
253	5,618,101
303	5,618,102
386	5,618,103

CLASS 363

15	5,619,400
17	5,619,401
20	5,619,402
21	5,619,403
	5,619,404
80	5,619,405
98	5,619,406
155	5,619,407

CLASS 364

146	5,619,409
422	5,619,411
424.045	5,619,412
424.046	5,619,413
474.17	5,619,414
474.22	5,619,415
478.13	5,619,416
483	5,619,417
489	5,619,418
490	5,619,419
491	5,619,420
496	5,619,421
505	5,619,422
507	5,619,423
514 A	5,619,424
514 R	5,619,425
516	5,619,426
526	5,619,427
551.01	5,619,428
552	5,619,429
557	5,619,430
559	5,619,431
573	5,619,432
578	5,619,433
	5,619,434
	5,619,435
715.09	5,619,437
724.1	5,619,438
748	5,619,439
754	5,619,440
770	5,619,441
787	5,619,442
788	5,619,443
841	5,619,444

CLASS 365

45	5,619,445
49	5,619,446
145	5,619,447
185.03	5,619,448
185.21	5,619,449
185.23	5,619,450
185.29	5,619,451
	5,619,452
185.3	5,619,454
185.33	5,619,453
189.05	5,619,455
	5,619,456
	5,619,457
201	5,619,459
	5,619,460
	5,619,461
	5,619,462
	5,619,463
203	5,619,464
206	5,619,465
207	5,619,466
208	5,619,467
222	5,619,468
225.7	5,619,469
228	5,619,470
230.03	5,619,471
	5,619,472
238.5	5,619,473

CLASS 366

7	5,618,104
130	5,618,105
	5,618,106
279	5,618,107

CLASS 367

17	5,619,474
27	5,619,475
181	5,619,476

CLASS 368

10	5,619,477
72	5,619,478

CLASS 369

13	5,619,479
14	5,619,480
32	5,619,481
44.23	5,619,482
47	5,619,483
50	5,619,484
75.1	5,619,486
100	5,619,487
112	5,619,488

CLASS 370

241	5,619,489
	5,619,490
330	5,619,493
	5,619,503
335	5,619,526
342	5,619,491
347	5,619,504
350	5,619,507
357	5,619,494
363	5,619,496
392	5,619,501
394	5,619,497
396	5,619,498
397	5,619,502
413	5,619,495
414	5,619,500
441	5,619,492
469	5,619,499
476	5,619,505
495	5,619,508
506	5,619,506

CLASS 371

5.4	5,619,509
20.1	5,619,510
22.3	5,619,511
22.5	5,619,512
25.1	5,619,513
43	5,619,514
48	5,619,515
53	5,619,516

CLASS 372

21	5,619,517
46	5,619,518
	5,619,519
	5,619,520
50	5,619,521
72	5,619,522
96	5,619,523

CLASS 374

161	5,618,108
179	5,618,109

CLASS 375

200	5,619,524
	5,619,525
206	5,619,527
219	5,619,528
	5,619,529
	5,619,530
222	5,619,531
224	5,619,532
232	5,619,533
263	5,619,534
308	5,619,535
316	5,619,536
322	5,619,537
328	5,619,538
341	5,619,539
	5,619,540
360	5,619,541
371	5,619,542
376	5,619,543
377	5,619,544

CLASS 376

195	5,619,545
204	5,619,546
261	5,619,547

CLASS 378

70	5,619,548
133	5,619,549

CLASS 379

5	5,619,550
60	5,619,551
	5,619,552
61	5,619,553
67	5,619,554
	5,619,555
88	5,619,556
	5,619,557
90	5,619,558
91	5,619,559
106	5,619,560
142	5,619,561
201	5,619,562
368	5,619,563
386	5,619,564
	5,619,565
406	5,619,566
413	5,619,567
	5,619,568
438	5,619,569

CLASS 380

4	5,619,570
	5,619,571
21	5,619,572
23	5,619,573
25	5,619,574
28	5,619,575
44	5,619,576

CLASS 381

14	5,619,577
61	5,619,578
63	5,619,579
68.2	5,619,580
71	5,619,581
82	5,619,582
172	5,619,583
183	5,619,584
188	5,619,585

CLASS 382

127	5,619,586
141	5,619,587
149	5,619,588
160	5,619,589
162	5,619,590
166	5,619,591
175	5,619,592
199	5,619,593
233	5,619,594
236	5,619,595
278	5,619,596
296	5,619,597
305	5,619,598

CLASS 383

4	5,618,110
63	5,618,111
121	5,618,113

CLASS 384

45	5,618,114
110	5,618,115
607	5,618,116

CLASS 385

12	5,619,599
15	5,619,600
16	5,619,601
31	5,619,602
37	5,619,603
59	5,619,604
80	5,619,605
102	5,619,606
129	5,619,607
135	5,619,608
136	5,619,609
139	5,619,610

CLASS 386

70	5,619,338
83	5,619,337
99	5,619,340
113	5,619,339
114	5,619,336
125	5,619,335

CLASS 392

324	5,619,611
360	5,619,612
437	5,619,613

CLASS 395

3	5,619,614
11	5,619,615
22	5,619,616
23	5,619,617
	5,619,618
24	5,619,619
	5,619,620
51	5,619,621
108	5,619,622
114	5,619,623
118	5,619,624
119	5,619,625
121	5,619,626
	5,619,627
127	5,619,628
133	5,619,629
	5,619,630
140	5,619,631
141	5,619,632
	5,619,633
159	5,619,637
181	5,619,641
182.04	5,619,642
182.21	5,619,643
183.21	5,619,644
185.01	5,619,645
200.01	5,619,646
	5,619,647
	5,619,648
	5,619,649
	5,619,650
200.06	5,619,657
200.08	5,619,653
200.09	5,619,654
200.11	5,619,655
	5,619,656
200.2	5,619,651
	5,619,652
280	5,619,658
281	5,619,659
282	5,619,660
299	5,619,661
326	5,619,639
	5,619,640
376	5,619,668
383	5,619,663
384	5,619,665
	5,619,666
	5,619,667
385	5,619,714
392	5,619,662
394	5,619,664
405	5,619,669
412	5,619,670
	5,619,671
417	5,619,672
	5,619,673
458	5,619,674
460	5,619,675
464	5,619,676
465	5,619,677
492	5,619,678
494	5,619,679
497.04	5,619,680
500	5,619,681
	5,619,682
	5,619,683
	5,619,684
	5,619,685
552	5,619,686
557	5,619,687
567	5,619,408
602	5,619,692
604	5,619,688
607	5,619,693
615	5,619,694
616	5,619,690
617	5,619,689
620	5,619,691
670	5,619,695

5,619,696
674 5,619,701
680 5,619,697
703 5,619,638
5,619,700
705 5,619,699
5,619,702
710 5,619,698
734 5,619,703
735 5,619,704
739 5,619,705
741 5,619,706
750 5,619,707
757 5,619,410
767 5,619,708
768 5,619,635
793 5,619,634
794 5,619,709
800 5,619,710
5,619,711
5,619,713
5,619,715
5,619,716
5,619,717
5,619,718
5,619,719
5,619,720
805 5,619,721
806 5,619,636
822 5,619,722
823 5,619,723
829 5,619,724
839 5,619,725
842 5,619,726
5,619,727
847 5,619,728
848 5,619,729
855 5,619,730
873 5,619,731
878 5,619,732
881 5,619,733
882 5,619,734

CLASS 396
3 5,619,299
32 5,619,292
51 5,619,294
55 5,619,293
5,619,735
95 5,619,300
114 5,619,301
164 5,619,736
195 5,619,737
201 5,619,297
311 5,619,738
376 5,619,295
382 5,619,739
388 5,619,298
415 5,619,740
463 5,619,296
5,619,741
569 5,619,742
577 5,619,743
621 5,619,744
626 5,619,745

CLASS 399
11 5,619,307
48 5,619,308
61 5,619,312
111 5,619,309
176 5,619,311
233 5,619,313
296 5,619,314
297 5,619,746
324 5,619,315
359 5,619,316
381 5,619,310

CLASS 400
120.04 5,618,117
208 5,618,118
5,618,119
708 5,618,120

CLASS 401
52 B1 5,015,111

CLASS 402
1 5,618,121
22 5,618,122

CLASS 403
2 5,618,123
3 5,618,124
12 5,618,125
24 5,618,126
230 5,618,127
344 5,618,128
389 5,618,129

CLASS 404
12 5,618,130
32 5,618,131
79 5,618,132
117 5,618,133

CLASS 405
130 5,618,134
279 5,618,135

CLASS 406
93 5,618,136

CLASS 408
87 5,618,137

CLASS 410
69 5,618,138
5,618,139
106 5,618,140

CLASS 411
29 5,618,142
220 5,618,143
427 5,618,144
432 5,618,145

CLASS 414
24.5 5,618,146
27 5,618,147
139.9 5,618,148
253 5,618,149
477 5,618,150
495 5,618,151
546 5,618,152
608 5,618,153
622 5,618,154
680 5,618,155
694 5,618,156
723 5,618,157
785 5,618,159

CLASS 415
17 5,618,160
190 5,618,161
206 5,618,162

CLASS 417
63 5,618,163
68 5,618,164
220 5,618,165
313 5,618,166
372 5,618,167
423.11 5,618,168
554 5,618,169

CLASS 418
106 5,618,170
152 5,618,171
206.4 5,618,172

CLASS 420
77 5,618,491

CLASS 422
22 5,618,492
57 5,618,493
58 5,618,494
82.05 5,618,495
90 5,618,496
138 5,618,497
174 5,618,498
177 5,618,499
5,618,500
180 5,618,501

CLASS 423
70 5,618,502
87 5,618,503
206.2 5,618,504
213.2 5,618,505
228 5,618,506
243.08 5,618,507
245.1 5,618,508
290 5,618,509
346 5,618,510
345 5,618,511
705 5,618,512

CLASS 424
1.69 5,618,513
9.5 5,618,514
45 5,618,515
5,618,516
48 5,618,517
57 5,618,518
59 5,618,519
5,618,520
5,618,521
60 5,618,522
70.1 5,618,523
70.12 5,618,524
70.122 5,618,525
76.1 5,618,526
78.01 5,618,527
78.06 5,618,529
78.12 5,618,530
78.3 5,618,528
93.7 5,618,531
94.4 5,618,532
184.1 5,618,533
5,618,534
192.1 5,618,536
195.1 5,618,537
5,618,538
217.1 5,618,539
250.1 5,618,540
5,618,541
266.1 5,618,542
400 5,618,543
401 5,618,544
5,618,545
402 5,618,546
405 5,618,547
5,618,548
422 5,618,549
5,618,550
426 5,618,551
5,618,552
428 5,618,553
431 5,618,554
443 5,618,555
448 5,618,556
449 5,618,557
464 5,618,558
468 5,618,559
486 5,618,560
488 5,618,561
489 5,618,562
501 5,618,563
653 5,618,564
717 5,618,565

CLASS 425
7 5,618,566
111 5,618,567
224 5,618,568

CLASS 426
435 5,618,570
512 5,618,571
592 5,618,572
5,618,573
641 5,618,574

CLASS 427
8 5,618,575
96 5,618,576
135 5,618,577
134 5,618,578
166 5,618,579
212 5,618,580
257 5,618,581
259 5,618,582
277 5,618,583
336 5,618,584
376.1 5,618,585
407.1 5,618,586
430.1 5,618,587
462 5,618,588
482 5,618,589
493 B1 5,407,708
528 5,618,590
544 5,618,591

CLASS 428
1 5,618,592
31 5,618,593
34.1 5,618,594
35.2 5,618,595
35.7 5,618,596
36.3 5,618,598
36.7 5,618,599
41.8 5,618,600
56 5,618,601
60 5,618,602
66.6 5,618,603
72 5,618,604
92 5,618,605
113 5,618,606
119 5,618,607
122 5,618,608
141 5,618,609
152 5,618,610
209 5,618,611
315.5 5,618,615
319.3 5,618,616
323 5,618,617
331 5,618,618
334 5,618,619
339 5,618,620
343 5,618,621
357 5,618,622
364 5,618,623
368 5,618,624
408 5,618,625
429 5,618,626
447 5,618,627
450 5,618,628
475.5 5,618,629
500 5,618,630
513 5,618,631
537.5 5,618,632
593 5,618,633
610 5,618,634
614 5,618,635
626 5,618,636
694 B 5,618,637
694 ML 5,618,638
694 T 5,618,639

CLASS 429
194 5,618,640
210 5,618,641
247 5,618,642

CLASS 430
5 5,618,643
30 5,618,644
56 5,618,645
59 5,618,646
106.6 5,618,647
109 5,618,648
168 5,618,649
204 5,618,650
5,618,651
250 5,618,652
5,618,653
314 5,618,383
347 5,618,654
5,618,655
393 5,618,656
398 5,618,661
434 5,618,657
455 5,618,658
523 5,618,659
567 5,618,660

CLASS 431
183 5,618,173

CLASS 433
8 5,618,174
5,618,175
11 5,618,176
88 5,618,177

CLASS 434
62 5,618,178
69 5,618,179
156 5,618,180
323 5,618,182

CLASS 435
2 5,618,662
5,618,663
5,618,664
4 5,618,665
6 Re.35,491
5,618,666
5,618,670
5,618,671
5,618,672
5,618,673
5,618,674
7.1 5,618,675
5,618,677
7.21 5,618,678
5,618,679
5,618,680
7.93 5,618,681
8 5,618,682
11 5,618,683
16 5,618,684
23 5,618,685
26 5,618,686
47 5,618,687
68.1 5,618,689
5,618,690
69.1 5,618,676
5,618,691
5,618,692
5,618,693
5,618,694
5,618,695
69.2 5,618,696
69.4 5,618,697
5,618,698
69.7 5,618,699
70.21 5,618,700
91.1 5,618,701
91.2 5,618,702
5,618,703
91.5 5,618,704
97 5,618,705
106 5,618,716
128 5,618,706
146 5,618,707
155 5,618,708
172.3 5,618,709
174 5,618,710
194 5,618,711
206 5,618,712
226 5,618,713
5,618,714
252.3 5,618,722
5,618,723
253.4 5,618,724
262 5,618,725
262.5 5,618,726
5,618,727
280 5,618,728
288.7 5,618,729
289.1 5,618,730
304.3 5,618,731
325 5,618,715
5,618,717
5,618,720
366 5,618,718

CLASS 436
8 5,618,732
17 5,618,733
173 5,618,734
518 5,618,735
527 5,618,736

CLASS 438
3 5,618,738
5,618,746
14 5,618,380
5,618,447
151 5,618,741
158 5,618,739
164 5,618,745
189 5,618,688
224 5,618,740
232 5,618,748
263 5,618,742
276 5,618,743
384 5,618,749
392 5,618,751
398 5,618,747
464 5,618,759
485 5,618,758
586 5,618,756
592 5,618,755
595 5,618,379
599 5,618,744
601 5,618,750
626 5,618,752
633 5,618,381
653 5,618,754
666 5,618,753
669 5,618,384
699 5,618,757
703 5,618,760
785 5,618,761

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66 5,618,183
71 5,618,184
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76.2 5,618,186
79 5,618,187
91 5,618,188
5,618,189
98 5,618,190
108 5,618,191
110 5,618,192
125 5,618,193
157 5,618,194
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260 5,618,197
274 5,618,198
404 5,618,199
427 5,618,200
489 5,618,201
497 5,618,202
546 5,618,203
559 5,618,204
581 5,618,205
587 5,618,206
595 5,618,207
609 5,618,208
621 5,618,209
822 5,618,210

CLASS 440
4 5,618,211
7 5,618,212
38 5,618,213
88 5,618,214

CLASS 441
65 5,618,215

CLASS 442
118 5,618,614
189 5,618,612
203 5,618,613

CLASS 445
24 5,618,216
35 5,618,217

CLASS 446
220 5,618,218
456 5,618,219

CLASS 449
4 5,618,220

CLASS 451
8 5,618,221
14 5,618,222
103 5,618,223
142 5,618,224
173 5,618,225
234 5,618,226
288 5,618,227
375 5,618,028
403 5,618,228

CLASS 452
47 5,618,229
169 5,618,230
177 5,618,231

CLASS 463
25 5,618,232
40 5,618,045
67 5,618,233

CLASS 464
109 5,618,234
145 5,618,235

CLASS 470
12 5,618,236
91 5,618,237

CLASS 473
70 5,618,238
330 5,618,239
423 5,618,039
461 5,618,040
549 5,618,041

CLASS 474
50 5,618,240
80 5,618,241

CLASS 475
72 5,618,242

CLASS 477
118 5,618,243
169 5,618,244

CLASS 482
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35 5,618,246
60 5,618,247
112 5,618,248
127 5,618,249
137 5,618,250
146 5,618,251

CLASS 493
22 5,618,252
134 5,618,253
197 5,618,254
210 5,618,255

CLASS 501
1 5,618,762
5 5,618,763
17 5,618,764
80 5,618,765
87 5,618,766
90 5,618,767
92 5,618,768

CLASS 502
26 5,618,769
107 5,618,770
127 5,618,771
238 5,618,772

CLASS 503
227 5,618,773

CLASS 504
105 5,618,774
235 5,618,775

CLASS 505
120 5,618,776
210 5,618,777

CLASS 508
274 5,618,778
486 5,618,779
503 5,618,780

CLASS 510
177 5,618,781
221 5,618,465
418 5,618,782
507 5,618,783

CLASS 512
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12 5,618,788
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103 5,618,804
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169 5,618,806
176 5,618,807
211 5,618,808
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233.2 5,618,813
234.2 5,618,814
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618 5,618,845
641 5,618,846
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653 5,618,848
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772.2 5,618,850

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31 5,618,851
43.5 5,618,852
60 5,618,853
164 5,618,854
189 5,618,855

CLASS 522
16 5,618,856

CLASS 523
176 5,618,857
200 5,618,858
201 5,618,859
421 5,618,860

CLASS 524
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68 5,618,862
91 5,618,863
100 5,618,864
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127 5,618,867
159 5,618,868
261 5,618,869
269 5,618,870
326 5,618,871
430 5,618,872
5,618,873
450 5,618,874
495 5,618,875
548 5,618,876
558 5,618,877
588 5,618,878
5,618,879
731 5,618,880

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92 D 5,618,882
98 5,618,883
117 5,618,884
179 5,618,885
270 5,618,886
279 5,618,887
301 5,618,888
437 5,618,889
468 5,618,890
481 5,618,891
483 5,618,892
526 5,618,893

CLASS 526
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128 5,618,895
171 5,618,896
206 5,618,897
245 5,618,898
264 5,618,899
329.7 5,618,900
342 5,618,901

CLASS 528
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14 5,618,903
73 5,618,904
123 5,618,905
196 5,618,906
282 5,618,907
288 5,618,908
310 5,618,909
328 5,618,910
361 5,618,911
397 5,618,912

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317 5,618,914
324 5,618,915
350 5,618,916
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5,618,918
385 5,618,919
387.1 5,618,920
387.7 5,618,921
388.35 5,618,922
399 5,618,924
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403 5,618,926
412 5,618,927

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CLASS 540
139 5,618,929
143 5,618,930

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224 5,618,931
229 5,618,934
344 5,618,935
357 5,618,936
360 5,618,937
5,618,938
368 5,618,939

CLASS 546
240 5,618,940
249 5,618,941
250 5,618,942
342 5,618,943

CLASS 548
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367.4 5,618,945
431 5,618,946
448 5,618,947
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557 5,618,949

CLASS 549
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214 5,618,951
300 5,618,952
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66 5,618,955
223 B1 4,743,402

CLASS 556
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32 5,618,957
45 5,618,958
437 5,618,959
473 5,618,960

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78 5,618,961
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122 5,618,963
180 5,618,964
315 5,618,965

CLASS 560
16 5,618,966
26 5,618,967
27 5,618,968
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121 5,618,970
218 5,618,971
239 5,618,972
263 5,618,973

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532 5,618,974

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153 5,618,977
293 5,618,978
415 5,618,979
5,618,980

CLASS 568
44 5,618,981
346 5,618,982
454 5,618,983
853 5,618,985

CLASS 569
720 5,618,984

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176 5,618,986

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29 5,618,256
5,618,257
104 5,618,258
210 5,618,260
236 5,618,261

CLASS 601
116 5,618,262

CLASS 602
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24 5,618,264

CLASS 604
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21 5,618,266
53 5,618,267
82 5,618,268
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336 5,618,276
349 5,618,277
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387 5,618,281
5,618,282
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139 5,618,290
142 5,618,291
166 5,618,292
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185 5,618,297
194 5,618,298
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205 5,618,303
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207 5,618,309
216 5,618,310
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230 5,618,313
232 5,618,314
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234 378,710
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128 378,712
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D6— 366 378,714
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434 378,716
445 378,717
542 378,718
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634 378,721
D7— 319 378,722
351 378,723
505 378,724
510 378,725
549 378,726
D8— 61 378,727
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343 378,730
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D9— 320 378,732
337 378,733
425 378,734
429 378,735
497 378,736
D10— 6 378,737
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32 378,739
38 378,740
39 378,741
68 378,742
71 378,743
96 378,744
109 378,745
116 378,746
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223 378,748
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D14— 106 378,750
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D15— 5 378,754
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D19— 48 378,761
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D20— 8 378,766
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D21— 48 378,768
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221 378,771
237 378,772
D23— 201 378,773
238 378,774
250 378,775
280.1 378,776
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D24— 146 378,780
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55	5,617,674
352	5,617,675
446	B1 5,353,458
502	5,617,676

CLASS 52

3	5,617,677
11	5,617,678
20	5,617,679
27	5,617,680
82	5,617,681
200	5,617,682
202	5,617,683
204.57	5,617,684
223.8	5,617,685
309.12	5,617,686
404.2	5,617,687
473	5,617,688
489.1	5,617,689
518	5,617,690
604	5,617,691
651.02	5,617,692
693	5,617,693
712	5,617,694
717.02	5,617,695
730.1	5,617,696
737.4	5,617,697
749.1	5,617,698
786.13	5,617,699
793.1	5,617,700

CLASS 53

168	5,617,701
399	5,617,702
413	5,617,703
430	5,617,704
432	5,617,705
435	5,617,706
441	5,617,707
465	5,617,708
	5,617,709
471	5,617,710
475	5,617,711

CLASS 55

355.3	5,618,323
497	5,618,324

CLASS 56

298	5,617,712

CLASS 57

210	5,617,713
315	5,617,714

CLASS 60

39.02	5,617,715
39.05	5,617,716
39.06	5,617,717
39.17	5,617,718
39.26	5,617,719
274	5,617,720
277	5,617,721
	5,617,722
327	5,617,723
422	5,617,724
562	5,617,725
605.2	5,617,726

CLASS 62

55.6	5,617,727
71	5,617,728
117	5,617,729
133	5,617,730
149	5,617,731
228.5	5,617,732
324.2	5,617,733
343	5,617,734
374	5,617,735
393	5,617,736
487	5,617,737
509	5,617,738
619	5,617,739
620	5,617,740
622	5,617,741
643	5,617,742

CLASS 65

380	5,618,325
388	5,618,326
438	5,618,327
502	5,618,328

CLASS 66

9 A	5,617,743
148	5,617,744
178 A	5,617,745

CLASS 68

21	5,617,746
53	5,617,747
198	5,617,748

CLASS 70

224	5,617,749
419	5,617,750
456 R	5,617,751

CLASS 71

6	5,618,329
32	5,618,330

CLASS 72

98	5,617,752
149	5,617,753
165	5,617,754
349	5,617,755
405.16	5,617,756

CLASS 73

1.38	5,618,989
40	5,618,990
40.7	5,618,991
86	5,618,992
290 V	5,617,757
587	5,618,993
602	5,618,994
669	5,618,995
863.61	5,618,996
864.55	5,618,997
866.3	5,618,998
866.5	5,618,999

CLASS 74

7 B	5,617,758
44	5,617,759
475	5,617,760
	5,617,761
490.06	5,617,762
552	5,617,763
606 R	5,617,764

CLASS 75

240	5,619,000
743	5,618,331

CLASS 81

3.2	5,617,765
480	5,617,766
488	5,617,767

CLASS 82

47	5,617,768
127	5,617,769

CLASS 83

37	5,617,770

CLASS 84

379	5,619,001
603	5,619,002
615	5,619,003
658	5,619,005

CLASS 89

1.1	5,619,006
36.09	5,619,007

CLASS 91

1	5,617,771

CLASS 92

117 A	5,617,772
171.1	5,617,773

CLASS 95

51	5,618,332
237	5,618,333

CLASS 96

14	5,618,334
208	5,618,335

CLASS 99

348	5,617,774
408	5,617,776
	5,617,777
446	5,617,778
450	5,617,779
467	5,617,780
470	5,617,781
500	5,617,782
631	5,617,783

CLASS 100

3	5,617,784

CLASS 101

3.1	5,617,785
116	5,617,786
129	5,617,787
181	5,617,788
216	5,617,789
389.1	5,617,790
420	5,617,791
477	5,617,792

CLASS 102

310	5,619,008
334	5,619,009
489	5,619,010

CLASS 104

2	5,617,793
7.2	5,617,794
9	5,617,795
106	5,617,796

CLASS 106

2	5,618,336
22 H	5,618,337
26 R	5,618,338
124.3	5,618,339
284.06	5,618,340
287.35	5,618,341
416	5,618,342
498	5,618,343
823	5,618,344

CLASS 108

42	5,617,797
144	5,617,798

CLASS 109

29	5,617,799

CLASS 110

236	5,617,800
282	5,617,801

CLASS 112

117	5,617,802
230	5,617,803
304	5,617,804

CLASS 114

39.1	5,617,805
74 A	5,617,806
90	5,617,807
123	5,617,808
315	5,617,809
353	5,617,810
363	5,617,811

CLASS 116

206	5,617,812

CLASS 118

314	5,618,347
693	5,618,348
715	5,618,349
725	5,618,350
728	5,618,351

CLASS 119

223	5,617,813
720	5,617,814

CLASS 123

41.08	5,617,816
41.1	5,617,815
41.12	5,617,817
90.27	5,617,818
179.2	5,617,819
195 P	5,617,821
196 R	5,617,822
197.3	5,617,820
254	5,617,823
308	5,617,824
337	5,617,825
450	5,617,826
456	5,617,827
468	5,617,828
481	5,617,829
500	5,617,830
502	5,617,831
520	5,617,832
571	5,617,833
572	5,617,834
585	5,617,835
674	5,617,836

CLASS 124

73	5,617,837
88	5,617,838

CLASS 126

20	5,617,839
41 R	5,617,840
152 B	5,617,841
528	5,617,842
681	5,617,843

CLASS 127

19	5,618,352

CLASS 128

200.18	5,617,844
203.15	5,617,845
204.21	5,617,846
204.23	5,617,847
205.23	5,617,848
206.24	5,617,849
632	5,617,850
	5,617,851
633	5,617,852
640	5,617,853
642	5,617,854
653.1	5,617,855
	5,617,856
	5,617,857
	5,617,858
653.2	5,617,859
	5,617,861
653.4	5,617,860
661.01	5,617,862
	5,617,863
662.03	5,617,864
	5,617,865
662.3	5,617,866
672	5,617,867
	5,617,868
691	5,617,869
692	5,617,870
696	5,617,871
745	5,617,872
748	5,617,873
753	5,617,874
772	5,617,875
780	5,617,876
837	5,617,877
898	5,617,878

CLASS 131

237	5,617,880
328	5,617,881
331	5,617,882

CLASS 132

205	5,617,883
310	5,617,884

CLASS 134

22.17	5,618,353
25.4	5,618,354
58 D	5,617,885
172	5,617,886
184	5,617,887

CLASS 135

20.3	5,617,888
22	5,617,889

CLASS 137

82	5,617,890
145	5,617,891
360	5,617,892
526	5,617,893
625.5	5,617,894
625.69	5,617,895
813	5,617,896
859	5,617,897
884	5,617,898

CLASS 138

44	5,617,899
127	5,617,900

CLASS 139

1 E	5,617,901
1 R	5,617,902
383 A	5,617,903
420 R	5,617,904
459	5,617,905

CLASS 141

21	5,617,906
340	5,617,907

CLASS 144

218	5,617,908
253.1	5,617,909
356	5,617,910

CLASS 148

320	5,618,355
519	5,618,356
528	5,618,357
549	5,618,358
561	5,618,359

CLASS 149

19.4	5,619,011

CLASS 152

209 R	5,618,360
416	5,618,361
530	5,618,362

CLASS 156

62.2	5,618,363
62.8	5,618,364
73.1	5,618,365
	5,618,366
181	5,618,367
233	5,618,369
234	5,618,370
264	5,618,371
310	5,618,372
361	5,618,373
418	5,618,374
442.3	5,618,375
468	5,618,376
504	5,618,377
552	5,618,378

CLASS 162

6	5,618,385
72	5,618,386
224	5,618,387

CLASS 164

457	5,617,911
517	5,617,912

CLASS 165

104.11	5,617,913
153	5,617,914
	5,617,915
184	5,617,916

CLASS 166

85.4	5,617,917
115	5,617,918
278	5,617,919
295	5,617,920
308	5,617,921

CLASS 169

16	5,617,922
51	5,617,923

CLASS 173

181	5,617,924
211	5,617,925

CLASS 174

52.2	5,619,012
53	5,619,013
68.2	5,619,014
84 R	5,619,015
113 R	5,619,016
260	5,619,017
261	5,619,018

CLASS 175

61	5,617,926
78	5,617,927
432	5,617,928

CLASS 180

326	5,617,929

CLASS 181

166	5,619,019
206	5,619,020

CLASS 182

97	5,617,930
145	5,617,931
187	5,617,932

CLASS 187

350	5,617,933

CLASS 188

1.12	5,617,934
73.1	5,617,935

CLASS 192

4 A	5,617,936
45	5,617,937
54.5	5,617,938
70.16	5,617,939
70.17	5,617,940
107 R	5,617,941

CLASS 194

217	5,617,942

CLASS 198

418.1	5,617,943
468.6	5,617,944
471.1	5,617,945

CLASS 200

6 A	5,619,021
83 P	5,619,022
407	5,617,946

CLASS 204

157.6	5,619,023
192.12	5,618,388
192.15	5,618,389
192.26	5,618,390
212	5,618,391
252	5,618,392
	5,618,393
275	5,618,394
290 R	5,618,395
297 M	5,618,396
298.13	5,618,397
470	5,618,398
620	5,618,399

CLASS 205

98	5,618,400
150	5,618,401
244	5,618,402
372	5,618,403
445	5,618,404
763	5,618,405

CLASS 206

6.1	5,617,947
	5,617,948
307.1	5,617,949
308.1	5,617,950
315.6	5,617,951
380	5,617,952
501	5,617,953
539	5,617,954

CLASS 208

48 R	5,618,406
114	5,618,407
370	5,618,408

CLASS 209

458	5,617,955
534	5,617,956
571	5,617,957

CLASS 210

97	5,618,409
123	5,618,410
150	5,618,411
	5,618,412
151	5,618,413
	5,618,414
158	5,618,415
163	5,618,416
170	5,618,417
232	5,618,418
238	5,618,419
242.3	5,618,420
264	5,618,421
323.1	5,618,422
360.2	5,618,423
402	5,618,424
493.5	5,618,425
541	5,618,426
602	5,618,427
	5,618,428
610	5,618,429
616	5,618,430
618	5,618,431
634	5,618,432
	5,618,433
635	5,618,434
651	5,618,435
	5,618,436
679	5,618,437
	5,618,438
713	5,618,439
716	5,618,440
739	5,618,441
742	5,618,442
767	5,618,443
	5,618,444
800	5,618,445

CLASS 211

13	5,617,958
37	5,617,959
60.1	5,617,960
151	5,617,961
206	5,617,962

CLASS 212

179	5,617,963
327	5,617,964

CLASS 213

75 R	5,617,965

CLASS 215

11.4	5,617,966

CLASS 216

2	5,618,345
36	5,618,737
64	5,618,382
65	5,618,446
97	5,618,448

CLASS 219

69.11	5,618,449
69.15	5,618,450
121.53	5,618,451
121.63	5,618,452
	5,618,453
121.74	5,618,454
130.1	5,618,455
137.61	5,618,456
222	5,618,457
394	5,618,458
497	5,618,459
	5,618,460
502	5,618,461
541	5,618,462

CLASS 220

4.33	5,617,967
276	5,617,968
295	5,617,969
730	5,617,970

CLASS 221

31	5,617,971
33	5,617,972
56	5,617,973

CLASS 222

107	5,617,974
185.1	5,617,975
380	5,617,976
400.7	5,617,977
402.13	5,617,978

CLASS 223

46	5,617,979

CLASS 224

251	5,617,980
309	5,617,981
411	5,617,982
433	5,617,983
641	5,617,984

CLASS 226

4	5,617,985
91	5,617,986
189	5,617,987

CLASS 228

37	5,617,988
125	5,617,989
180.1	5,617,990
180.22	5,617,991
183	5,617,992

CLASS 232

27	5,617,993

CLASS 235

381	5,619,024
454	5,619,025
462	5,619,026
	5,619,027
	5,619,028
472	5,619,029

CLASS 237

8 R	5,617,994
12.3 C	5,617,995

CLASS 238

10 R	5,617,996

CLASS 239

8	5,617,997
95	5,617,998
268	5,617,999
276	5,618,000
346	5,618,001
657	5,618,002

CLASS 241

19	5,618,003
21	5,618,004

CLASS 242

345.1	5,618,005
379.1	5,618,006
432.6	5,618,007
594.5	5,618,008
615.2	5,618,009

CLASS 244

1 N	5,618,010
151 B	5,618,011
168	5,618,012

CLASS 246

385	5,618,013

CLASS 248

58	5,618,014
74.2	5,618,015
133	5,618,016
201	5,618,017
311.2	5,618,018
343	5,619,263
345.1	5,618,019
442.2	5,618,020
550	5,618,021

CLASS 249

92	5,618,463

CLASS 250

201.1	5,619,030
201.2	5,619,031
201.3	5,619,032
208.1	5,619,033
287	5,619,034
306	5,619,035
330	5,619,036
339.12	5,619,038
352	5,619,039
370.09	5,619,040
373	5,619,041
492.3	5,619,042
574	5,619,043

CLASS 251

62	5,618,022
129.04	5,618,023
159	5,618,024
210	5,618,025
298	5,618,026
302	5,618,027

CLASS 252

62.6	5,618,464
299.63	5,618,466
301.16	5,618,467
334	5,618,468
500	5,618,469
512	5,618,470
582	5,618,471
625	5,618,472

CLASS 254

8 B	5,618,029
131	5,618,030
134.3 PA	5,618,031

CLASS 257

64	5,619,044
72	5,619,045
82	5,619,046
135	5,619,047
207	5,619,048
223	5,619,049
254	5,619,050
316	5,619,051
321	5,619,052
347	5,619,053
	5,619,054
369	5,619,055
	5,619,056
382	5,619,057
431	5,619,058
	5,619,059
467	5,619,060
528	5,619,061
529	5,619,062
530	5,619,063
637	5,619,064
673	5,619,065
679	5,619,066
686	5,619,067
690	5,619,068
692	5,619,069
	5,619,070
753	5,619,071
774	5,619,072

CLASS 261

114.1	5,618,473

CLASS 264

1.1	5,618,474
3.3	5,619,073
10	5,618,475
40.1	5,618,476
46.5	5,618,477
50	5,618,478
103	5,618,479
	5,618,480
	5,618,481
109	5,618,482
187	5,618,483
220	5,618,484
255	5,618,485
291	B1 5,468,440
321	5,618,486
328.1	5,618,487
478	5,618,488
511	B1 5,320,797
530	5,618,489

CLASS 266

80	5,618,032
208	5,618,490

CLASS 271

1	5,618,033
209	5,618,034
213	5,618,035
225	5,618,036
258.02	5,618,037
297	5,618,038

CLASS 273

143 R	5,618,042
308	5,618,043
410	5,618,044

CLASS 277

163	5,618,046
192	5,618,047
193	5,618,048
235 B	5,618,049
	5,618,050

CLASS 280

14.2	5,618,051
288.4	5,618,052
609	5,618,053
610	5,618,054
641	5,618,055
735	5,618,056
736	5,618,057
777	5,618,058
805	5,618,059
848	5,618,060

CLASS 281

15.1	5,618,061

CLASS 283

67	5,618,062
	5,618,063
80	5,618,064
103	5,618,112

CLASS 285

21.2	5,618,065
95	5,617,879

CLASS 292

62	5,618,066
175	5,618,067
201	5,618,068
216	5,618,069
228	5,618,070
251.5	5,618,071
339	5,618,072

CLASS 293

142	5,618,073
155	5,618,074

CLASS 294

19.1	5,618,075

CLASS 295

21	5,618,076

CLASS 296

37.16	5,618,077
43	5,618,078
93	5,618,079
155	5,618,080
216	5,618,081

CLASS 297

229	5,618,082
375	5,618,083

CLASS 303

3	5,618,084
113.1	5,618,085
119.2	5,618,086
	5,618,087
158	5,618,088

CLASS 307

10.2	5,619,074
	5,619,075
48	5,619,076
64	5,619,077
85	5,619,078
89	5,619,079
105	5,619,080
125	5,619,081

CLASS 310

88	5,619,082
90.5	5,619,083
154	5,619,084
184	5,619,085
259	5,619,086
268	5,619,087
270	5,619,088
323	5,619,089

CLASS 312

116	5,618,089
209	5,618,090
348.1	5,618,091
	5,618,092

CLASS 313

25	5,619,090
103 R	5,619,091
309	5,619,092
	5,619,093
402	5,619,094
477 R	5,619,095
489	5,619,096
495	5,619,097
496	5,619,098
532	5,619,099
533	5,619,100
581	5,619,101
635	5,619,102

CLASS 315

111.21	5,619,103
159	5,619,104
225	5,619,105
290	5,619,106

CLASS 318

139	5,619,107
140	5,619,108
375	5,619,109
450	5,619,110
625	5,619,111
689	5,619,112
701	5,619,113
812	5,619,114

CLASS 320

1	5,619,115
17	5,619,116
21	5,619,117
31	5,619,118

CLASS 323

215	5,619,119
237	5,619,120
256	5,619,121
273	5,619,126
275	5,619,127
312	5,619,122
	5,619,123
313	5,619,124
315	5,619,125

CLASS 324

67	5,619,128
115	5,619,129
173	5,619,130
174	5,619,131
207.21	5,619,132
207.24	5,619,133
225	5,619,134
239	5,619,135
242	5,619,136
251	5,619,137
309	5,619,138
318	5,619,139
	5,619,140
537	5,619,141
601	5,619,142
639	5,619,143
694	5,619,144
754	5,619,145

CLASS 326

21	5,619,146
26	5,619,147

CLASS 327

3	5,619,148
51	5,619,149
55	5,619,150
78	5,619,151
110	5,619,152
112	5,619,153
129	5,619,154
142	5,619,155
198	5,619,156
203	5,619,157
292	5,619,158
527	5,619,159
530	5,619,160
535	5,619,161
537	5,619,162
539	5,619,163
541	5,619,164
546	5,619,165
552	5,619,166

CLASS 329

304	5,619,167

CLASS 330

149	5,619,168
254	5,619,169

CLASS 331

1 A	5,619,170
	5,619,171

CLASS 333

25	5,619,172
123	5,619,173
181	5,619,174
195	5,619,175

CLASS 336

150	5,619,176

CLASS 337

140	5,619,177

CLASS 340

384.72	5,619,179
407.1	5,619,180
	5,619,181
479	5,619,182
505	5,619,183
506	5,619,184
568	5,619,185
573	5,619,186
	5,619,187
686	5,619,188
825.06	5,619,189
825.22	5,619,190
825.69	5,619,191
870.02	5,619,192
905	5,619,193
907	5,619,194

CLASS 341

20	5,619,195
22	5,619,196
50	5,619,197
	5,619,198
51	5,619,199
67	5,619,200
141	5,619,201
143	5,619,202
144	5,619,203
155	5,619,204

CLASS 342

12	5,619,205
37	5,619,206
42	5,619,207
70	5,619,208
352	5,619,209
	5,619,210
357	5,619,211
	5,619,212

CLASS 343

703	5,619,213
713	5,619,214
766	5,619,215
771	5,619,216
872	5,619,217
895	5,619,218

CLASS 345

7	5,619,219
14	5,619,220
58	5,619,221
87	5,619,222
93	5,619,223
98	5,619,224
	5,619,225
132	5,619,226
147	5,619,227
148	5,619,228
150	5,619,229
	5,619,230
163	5,619,231

CLASS 347

30	5,619,232
37	5,619,233
55	5,619,234
69	5,619,235
84	5,619,236
86	5,619,237
	5,619,238
	5,619,239
103	5,619,240
105	5,619,241
131	5,619,242
139	5,619,243
214	5,619,244
241	5,619,245
262	5,619,246

CLASS 348

3	5,619,247
6	5,619,248
7	5,619,249
10	5,619,250
12	5,619,251
14	5,619,252
15	5,619,253
20	5,619,254
36	5,619,255
43	5,619,256
64	5,619,257
97	5,619,258
181	5,619,259
223	5,619,260
246	5,619,261
297	5,619,262
352	5,619,264
362	5,619,265
363	5,619,266
400	5,619,267
416	5,619,268
432	5,619,269
441	5,619,270
448	5,619,271
452	5,619,272
	5,619,273
461	5,619,274
526	5,619,275
541	5,619,276
579	5,619,277
614	5,619,278
626	5,619,279
645	5,619,280
699	5,619,281
716	5,619,282
731	5,619,283
757	5,619,284
806	5,619,285
835	5,619,286

CLASS 349

61	5,619,351
78	5,619,355
89	5,619,352
	5,619,353
	5,619,354
99	5,619,356
110	5,619,357
143	5,619,358

CLASS 351

44	5,619,287
159	5,619,288
161	5,619,289
217	5,619,290
240	5,619,291

CLASS 353

26 R	5,618,093
101	5,618,094

CLASS 355

25	5,619,302
54	5,619,303
71	5,619,304
75	5,619,305
97	5,619,306

CLASS 356

5.05	5,619,317
32	5,619,318
73	5,619,319
73.1	5,619,320
	5,619,321
121	5,619,322
139.03	5,619,323
336	5,619,324
351	5,619,325
357	5,619,326
359	5,619,327
375	5,619,328
382	5,619,329
	5,619,330
394	5,619,331
419	5,619,332
436	5,619,333

CLASS 358

298	5,619,334
404	5,619,341
405	5,619,342
408	5,619,343
468	5,619,344
482	5,619,345
505	5,619,346
516	5,619,347
518	5,619,348
521	5,619,349

CLASS 359

18	5,619,350
117	5,619,359
140	5,619,360
172	5,619,361
205	5,619,362
216	5,619,363
246	5,619,364
248	5,619,365
	5,619,366
283	5,619,367
326	5,619,368
332	5,619,369
362	5,619,370
368	5,619,371
389	5,619,372
482	5,619,373
584	5,619,374
	5,619,375
619	5,619,376
631	5,619,377
638	5,619,378
644	5,619,379
661	5,619,380
677	5,619,381
858	5,619,382

CLASS 360

20	5,619,383
48	5,619,384
64	5,619,385
67	5,619,386
77.08	5,619,387
85	5,619,388
98.07	5,619,389
104	5,619,390
126	Re.35,490
133	5,619,391

CLASS 361

65	5,619,392
321.1	5,619,393
321.2	B1 5,099,388
680	5,619,394
683	5,619,395
686	5,619,396
	5,619,397
	5,619,398
707	5,619,399

CLASS 362

31	5,618,095
	5,618,096
61	5,618,097
	5,618,098
111	5,618,099
183	5,618,100
233	5,618,101
303	5,618,102
386	5,618,103

CLASS 363

15	5,619,400
17	5,619,401
20	5,619,402
21	5,619,403
	5,619,404
80	5,619,405
98	5,619,406
155	5,619,407

CLASS 364

146	5,619,409
422	5,619,411
424.045	5,619,412
424.046	5,619,413
474.17	5,619,414
474.22	5,619,415
478.13	5,619,416
483	5,619,417
489	5,619,418
490	5,619,419
491	5,619,420
496	5,619,421
505	5,619,422
507	5,619,423
514 A	5,619,424
514 R	5,619,425
516	5,619,426
526	5,619,427
551.01	5,619,428
552	5,619,429
557	5,619,430
559	5,619,431
573	5,619,432
578	5,619,433
	5,619,434
	5,619,435
715.09	5,619,437
724.1	5,619,438
748	5,619,439
754	5,619,440
770	5,619,441
787	5,619,442
788	5,619,443
841	5,619,444

CLASS 365

45	5,619,445
49	5,619,446
145	5,619,447
185.03	5,619,448
185.21	5,619,449
185.23	5,619,450
185.29	5,619,451
	5,619,452
185.3	5,619,454
185.33	5,619,453
189.05	5,619,455
	5,619,456
	5,619,457
201	5,619,459
	5,619,460
	5,619,461
	5,619,462
	5,619,463
203	5,619,464
206	5,619,465
207	5,619,466
208	5,619,467
222	5,619,468
225.7	5,619,469
228	5,619,470
230.03	5,619,471
	5,619,472
238.5	5,619,473

CLASS 366

7	5,618,104
130	5,618,105
	5,618,106
279	5,618,107

CLASS 367

17	5,619,474
27	5,619,475
181	5,619,476

CLASS 368

10	5,619,477
72	5,619,478

CLASS 369

13	5,619,479
14	5,619,480
32	5,619,481
44.23	5,619,482
47	5,619,483
50	5,619,484
75.1	5,619,486
100	5,619,487
112	5,619,488

CLASS 370

241	5,619,489
	5,619,490
330	5,619,493
	5,619,503
335	5,619,526
342	5,619,491
347	5,619,504
350	5,619,507
357	5,619,494
363	5,619,496
392	5,619,501
394	5,619,497
396	5,619,498
397	5,619,502
413	5,619,495
414	5,619,500
441	5,619,492
469	5,619,499
476	5,619,505
495	5,619,508
506	5,619,506

CLASS 371

5.4	5,619,509
20.1	5,619,510
22.3	5,619,511
22.5	5,619,512
23.1	5,619,513
43	5,619,514
48	5,619,515
53	5,619,516

CLASS 372

21	5,619,517
46	5,619,518
	5,619,519
	5,619,520
50	5,619,521
72	5,619,522
96	5,619,523

CLASS 374

161	5,618,108
179	5,618,109

CLASS 375

200	5,619,524
	5,619,525
206	5,619,527
219	5,619,528
	5,619,529
	5,619,530
222	5,619,531
224	5,619,532
232	5,619,533
263	5,619,534
308	5,619,535
316	5,619,536
322	5,619,537
328	5,619,538
341	5,619,539
	5,619,540
360	5,619,541
371	5,619,542
376	5,619,543
377	5,619,544

CLASS 376

195	5,619,545
204	5,619,546
261	5,619,547

CLASS 378

70	5,619,548
133	5,619,549

CLASS 379

5	5,619,550
60	5,619,551
	5,619,552
61	5,619,553
67	5,619,554
	5,619,555
88	5,619,556
	5,619,557
90	5,619,558
91	5,619,559
106	5,619,560
142	5,619,561
201	5,619,562
368	5,619,563
386	5,619,564
	5,619,565
406	5,619,566
413	5,619,567
	5,619,568
438	5,619,569

CLASS 380

4	5,619,570
	5,619,571
21	5,619,572
23	5,619,573
25	5,619,574
28	5,619,575
44	5,619,576

CLASS 381

14	5,619,577
61	5,619,578
63	5,619,579
68.2	5,619,580
71	5,619,581
82	5,619,582
172	5,619,583
183	5,619,584
188	5,619,585

CLASS 382

127	5,619,586
141	5,619,587
149	5,619,588
160	5,619,589
162	5,619,590
166	5,619,591
175	5,619,592
199	5,619,593
233	5,619,594
236	5,619,595
278	5,619,596
296	5,619,597
305	5,619,598

CLASS 383

4	5,618,110
63	5,618,111
121	5,618,113

CLASS 384

45	5,618,114
110	5,618,115
607	5,618,116

CLASS 385

12	5,619,599
15	5,619,600
16	5,619,601
31	5,619,602
37	5,619,603
59	5,619,604
80	5,619,605
102	5,619,606
129	5,619,607
135	5,619,608
136	5,619,609
139	5,619,610

CLASS 386

70	5,619,338
83	5,619,337
99	5,619,340
113	5,619,339
114	5,619,336
125	5,619,335

CLASS 392

324	5,619,611
360	5,619,612
437	5,619,613

CLASS 395

3	5,619,614
11	5,619,615
22	5,619,616
23	5,619,617
	5,619,618
24	5,619,619
	5,619,620
51	5,619,621
108	5,619,622
114	5,619,623
118	5,619,624
119	5,619,625
121	5,619,626
	5,619,627
127	5,619,628
133	5,619,629
	5,619,630
140	5,619,631
141	5,619,632
	5,619,633
159	5,619,637
181	5,619,641
182.04	5,619,642
182.21	5,619,643
183.21	5,619,644
185.01	5,619,645
200.01	5,619,646
	5,619,647
	5,619,648
	5,619,649
	5,619,650
200.06	5,619,657
200.08	5,619,653
200.09	5,619,634
200.11	5,619,655
	5,619,656
200.2	5,619,651
	5,619,652
280	5,619,658
281	5,619,659
282	5,619,660
299	5,619,661
326	5,619,639
	5,619,640
376	5,619,668
383	5,619,663
384	5,619,665
	5,619,666
	5,619,667
385	5,619,714
392	5,619,662
394	5,619,664
405	5,619,669
412	5,619,670
	5,619,671
417	5,619,672
	5,619,673
458	5,619,674
460	5,619,675
464	5,619,676
465	5,619,677
492	5,619,678
494	5,619,679
497.04	5,619,680
500	5,619,681
	5,619,682
	5,619,683
	5,619,684
	5,619,685
552	5,619,686
557	5,619,687
367	5,619,408
602	5,619,692
604	5,619,688
607	5,619,693
615	5,619,694
616	5,619,690
617	5,619,689
620	5,619,691
670	5,619,695

5,619,696
674 5,619,701
680 5,619,697
703 5,619,638
5,619,700
705 5,619,699
5,619,702
710 5,619,698
734 5,619,703
735 5,619,704
739 5,619,705
741 5,619,706
750 5,619,707
757 5,619,410
767 5,619,708
768 5,619,635
793 5,619,634
794 5,619,709
800 5,619,710
5,619,711
5,619,713
5,619,715
5,619,716
5,619,717
5,619,718
5,619,719
5,619,720
805 5,619,721
806 5,619,636
822 5,619,722
823 5,619,723
829 5,619,724
839 5,619,725
842 5,619,726
5,619,727
847 5,619,728
848 5,619,729
855 5,619,730
873 5,619,731
878 5,619,732
881 5,619,733
882 5,619,734

CLASS 396
3 5,619,299
32 5,619,292
51 5,619,294
55 5,619,293
5,619,735
95 5,619,300
114 5,619,301
164 5,619,736
195 5,619,737
201 5,619,297
311 5,619,738
376 5,619,295
382 5,619,739
388 5,619,298
415 5,619,740
463 5,619,296
5,619,741
569 5,619,742
577 5,619,743
621 5,619,744
626 5,619,745

CLASS 399
11 5,619,307
48 5,619,308
61 5,619,312
111 5,619,309
176 5,619,311
233 5,619,313
296 5,619,314
297 5,619,746
324 5,619,315
359 5,619,316
381 5,619,310

CLASS 400
120.04 5,618,117
208 5,618,118
5,618,119
708 5,618,120

CLASS 401
52 B1 5,015,111

CLASS 402
1 5,618,121
22 5,618,122

CLASS 403
2 5,618,123
3 5,618,124
12 5,618,125
24 5,618,126
230 5,618,127
344 5,618,128
389 5,618,129

CLASS 404
12 5,618,130
32 5,618,131
79 5,618,132
117 5,618,133

CLASS 405
130 5,618,134
279 5,618,135

CLASS 406
93 5,618,136

CLASS 408
87 5,618,137

CLASS 410
69 5,618,138
5,618,139
106 5,618,140

CLASS 411
29 5,618,142
220 5,618,143
427 5,618,144
432 5,618,145

CLASS 414
24.5 5,618,146
27 5,618,147
139.9 5,618,148
253 5,618,149
477 5,618,150
495 5,618,151
546 5,618,152
608 5,618,153
622 5,618,154
680 5,618,155
694 5,618,156
723 5,618,157
785 5,618,159

CLASS 415
17 5,618,160
190 5,618,161
206 5,618,162

CLASS 417
63 5,618,163
68 5,618,164
220 5,618,165
313 5,618,166
372 5,618,167
423.11 5,618,168
554 5,618,169

CLASS 418
106 5,618,170
152 5,618,171
206.4 5,618,172

CLASS 420
77 5,618,491

CLASS 422
22 5,618,492
57 5,618,493
58 5,618,494
82.05 5,618,495
90 5,618,496
138 5,618,497
174 5,618,498
177 5,618,499
5,618,500
180 5,618,501

CLASS 423
70 5,618,502
87 5,618,503
206.2 5,618,504
213.2 5,618,505
228 5,618,506
243.08 5,618,507
245.1 5,618,508
290 5,618,509
346 5,618,510
545 5,618,511
705 5,618,512

CLASS 424
1.69 5,618,513
9.5 5,618,514
45 5,618,515
5,618,516
48 5,618,517
57 5,618,518
59 5,618,519
5,618,520
5,618,521
60 5,618,522
70.1 5,618,523
70.12 5,618,524
70.122 5,618,525
76.1 5,618,526
78.01 5,618,527
78.06 5,618,529
78.12 5,618,530
78.3 5,618,528
93.7 5,618,531
94.4 5,618,532
184.1 5,618,533
5,618,534
192.1 5,618,536
195.1 5,618,537
5,618,538
217.1 5,618,539
250.1 5,618,540
5,618,541
266.1 5,618,542
400 5,618,543
401 5,618,544
5,618,545
402 5,618,546
405 5,618,547
5,618,548
422 5,618,549
5,618,550
426 5,618,551
5,618,552
428 5,618,553
431 5,618,554
443 5,618,555
448 5,618,556
449 5,618,557
464 5,618,558
468 5,618,559
486 5,618,560
488 5,618,561
489 5,618,562
501 5,618,563
653 5,618,564
717 5,618,565

CLASS 425
7 5,618,566
111 5,618,567
224 5,618,568

CLASS 426
435 5,618,570
512 5,618,571
592 5,618,572
5,618,573
641 5,618,574

CLASS 427
8 5,618,575
96 5,618,576
135 5,618,577
154 5,618,578
166 5,618,579
212 5,618,580
257 5,618,581
259 5,618,582
277 5,618,583
336 5,618,584
376.1 5,618,585
407.1 5,618,586
430.1 5,618,587
462 5,618,588
482 5,618,589
493 B1 5,407,708
528 5,618,590
544 5,618,591

CLASS 428
1 5,618,592
31 5,618,593
34.1 5,618,594
35.2 5,618,595
35.7 5,618,596
36.3 5,618,598
36.7 5,618,599
41.8 5,618,600
56 5,618,601
60 5,618,602
66.6 5,618,603
72 5,618,604
92 5,618,605
113 5,618,606
119 5,618,607
122 5,618,608
141 5,618,609
152 5,618,610
209 5,618,611
315.5 5,618,615
319.3 5,618,616
323 5,618,617
331 5,618,618
334 5,618,619
339 5,618,620
343 5,618,621
357 5,618,622
364 5,618,623
368 5,618,624
408 5,618,625
429 5,618,626
447 5,618,627
450 5,618,628
475.5 5,618,629
500 5,618,630
513 5,618,631
537.5 5,618,632
593 5,618,633
610 5,618,634
614 5,618,635
626 5,618,636
694 B 5,618,637
694 ML 5,618,638
694 T 5,618,639

CLASS 429
194 5,618,640
210 5,618,641
247 5,618,642

CLASS 430
5 5,618,643
30 5,618,644
56 5,618,645
59 5,618,646
106.6 5,618,647
109 5,618,648
168 5,618,649
204 5,618,650
5,618,651
250 5,618,652
5,618,653
314 5,618,383
347 5,618,654
5,618,655
393 5,618,656
398 5,618,661
434 5,618,657
455 5,618,658
523 5,618,659
567 5,618,660

CLASS 431
183 5,618,173

CLASS 433
8 5,618,174
5,618,175
11 5,618,176
88 5,618,177

CLASS 434
62 5,618,178
69 5,618,179
156 5,618,180
323 5,618,182

CLASS 435
2 5,618,662
5,618,663
5,618,664
4 5,618,665
6 Re.35,491
5,618,666
5,618,670
5,618,671
5,618,672
5,618,673
5,618,674
7.1 5,618,675
5,618,677
7.21 5,618,678
5,618,679
5,618,680
7.93 5,618,681
8 5,618,682
11 5,618,683
16 5,618,684
23 5,618,685
26 5,618,686
47 5,618,687
68.1 5,618,689
5,618,690
69.1 5,618,676
5,618,691
5,618,692
5,618,693
5,618,694
5,618,695
69.2 5,618,696
69.4 5,618,697
5,618,698
69.7 5,618,699
70.21 5,618,700
91.1 5,618,701
91.2 5,618,702
5,618,703
91.5 5,618,704
97 5,618,705
106 5,618,716
128 5,618,706
146 5,618,707
155 5,618,708
172.3 5,618,709
174 5,618,710
194 5,618,711
206 5,618,712
226 5,618,713
5,618,714
252.3 5,618,722
5,618,723
253.4 5,618,724
262 5,618,725
262.5 5,618,726
5,618,727
280 5,618,728
288.7 5,618,729
289.1 5,618,730
304.3 5,618,731
325 5,618,715
5,618,717
5,618,720
366 5,618,718

CLASS 436
8 5,618,732
17 5,618,733
173 5,618,734
518 5,618,735
527 5,618,736

CLASS 438
3 5,618,738
5,618,746
14 5,618,380
5,618,447
151 5,618,741
158 5,618,739
164 5,618,745
189 5,618,688
224 5,618,740
232 5,618,748
263 5,618,742
276 5,618,743
384 5,618,749
392 5,618,751
398 5,618,747
464 5,618,759
485 5,618,758
586 5,618,756
592 5,618,755
595 5,618,379
599 5,618,744
601 5,618,750
626 5,618,752
633 5,618,381
653 5,618,754
666 5,618,753
669 5,618,384
699 5,618,757
703 5,618,760
785 5,618,761

CLASS 439
18.1 5,618,196
66 5,618,183
71 5,618,184
76.1 5,618,185
76.2 5,618,186
79 5,618,187
91 5,618,188
5,618,189
98 5,618,190
108 5,618,191
110 5,618,192
125 5,618,193
157 5,618,194
5,618,195
260 5,618,197
274 5,618,198
404 5,618,199
427 5,618,200
489 5,618,201
497 5,618,202
546 5,618,203
559 5,618,204
581 5,618,205
587 5,618,206
595 5,618,207
609 5,618,208
621 5,618,209
822 5,618,210

CLASS 440
4 5,618,211
7 5,618,212
38 5,618,213
88 5,618,214

CLASS 441
65 5,618,215

CLASS 442
118 5,618,614
189 5,618,612
203 5,618,613

CLASS 445
24 5,618,216
35 5,618,217

CLASS 446
220 5,618,218
456 5,618,219

CLASS 449
4 5,618,220

CLASS 451
8 5,618,221
14 5,618,222
103 5,618,223
142 5,618,224
173 5,618,225
234 5,618,226
288 5,618,227
375 5,618,028
403 5,618,228

CLASS 452
47 5,618,229
169 5,618,230
177 5,618,231

CLASS 463
25 5,618,232
40 5,618,045
67 5,618,233

CLASS 464
109 5,618,234
145 5,618,235

CLASS 470
12 5,618,236
91 5,618,237

CLASS 473
70 5,618,238
330 5,618,239
423 5,618,039
461 5,618,040
549 5,618,041

CLASS 474
50 5,618,240
80 5,618,241

CLASS 475
72 5,618,242

CLASS 477
118 5,618,243
169 5,618,244

CLASS 482
7 5,618,245
35 5,618,246
60 5,618,247
112 5,618,248
127 5,618,249
137 5,618,250
146 5,618,251

CLASS 493
22 5,618,252
134 5,618,253
197 5,618,254
210 5,618,255

CLASS 501
1 5,618,762
5 5,618,763
17 5,618,764
80 5,618,765
87 5,618,766
90 5,618,767
92 5,618,768

CLASS 502
26 5,618,769
107 5,618,770
127 5,618,771
238 5,618,772

CLASS 503
227 5,618,773

CLASS 504
105 5,618,774
235 5,618,775

CLASS 505
120 5,618,776
210 5,618,777

CLASS 508
274 5,618,778
486 5,618,779
503 5,618,780

CLASS 510
177 5,618,781
221 5,618,465
418 5,618,782
507 5,618,783

CLASS 512
6 5,618,784

CLASS 514
2 5,618,785
8 5,618,786
11 5,618,787
12 5,618,788
5,618,789
5,618,790
13 Re.35,492
17 5,618,791
18 5,618,792
19 5,618,793
25 5,618,794
41 5,618,795
44 5,618,796
5,618,797
53 5,618,798
5,618,799
57 5,618,800
75 5,618,801
78 5,618,802
81 5,618,803
103 5,618,804
167 5,618,805
169 5,618,806
176 5,618,807
211 5,618,808
5,618,809
218 5,618,811
221 5,618,812
233.2 5,618,813
234.2 5,618,814
250 5,618,815
253 5,618,816
255 5,618,817
256 5,618,818
264 5,618,819
274 5,618,820
277 5,618,821
5,618,822
283 5,618,823
317 5,618,824
5,618,825
318 5,618,826
326 5,618,827
327 5,618,828
332 5,618,829
358 5,618,830
366 5,618,831
372 5,618,832
409 5,618,833
415 5,618,834
422 5,618,835
444 5,618,836
450 5,618,837
492 5,618,838
513 5,618,839
549 5,618,840
557 5,618,841
566 5,618,842
567 5,618,843
575 5,618,844
618 5,618,845
641 5,618,846
649 5,618,847
653 5,618,848
721 5,618,849
772.2 5,618,850

CLASS 521
34 5,618,851
43.5 5,618,852
60 5,618,853
164 5,618,854
189 5,618,855

CLASS 522
16 5,618,856

CLASS 523
176 5,618,857
200 5,618,858
201 5,618,859
421 5,618,860

CLASS 524
55 5,618,861
68 5,618,862
91 5,618,863
100 5,618,864
5,618,865
117 5,618,866
127 5,618,867
159 5,618,868
261 5,618,869
269 5,618,870
326 5,618,871
430 5,618,872
5,618,873
450 5,618,874
495 5,618,875
548 5,618,876
558 5,618,877
588 5,618,878
5,618,879
731 5,618,880

CLASS 525
64 5,618,881
92 D 5,618,882
98 5,618,883
117 5,618,884
179 5,618,885
270 5,618,886
279 5,618,887
301 5,618,888
437 5,618,889
468 5,618,890
481 5,618,891
483 5,618,892
526 5,618,893

CLASS 526
89 5,618,894
128 5,618,895
171 5,618,896
206 5,618,897
245 5,618,898
264 5,618,899
329.7 5,618,900
342 5,618,901

CLASS 528
10 5,618,902
14 5,618,903
73 5,618,904
123 5,618,905
196 5,618,906
282 5,618,907
288 5,618,908
310 5,618,909
328 5,618,910
361 5,618,911
397 5,618,912

CLASS 530
303 5,618,913
317 5,618,914
324 5,618,915
330 5,618,916
5,618,917
5,618,918
385 5,618,919
387.1 5,618,920
387.7 5,618,921
388.35 5,618,922
399 5,618,924
400 5,618,925
403 5,618,926
412 5,618,927

CLASS 534
551 5,618,928
557 5,618,932

CLASS 536
115 5,618,933

CLASS 540
139 5,618,929
143 5,618,930

CLASS 544
224 5,618,931
229 5,618,934
344 5,618,935
357 5,618,936
360 5,618,937
5,618,938
368 5,618,939

CLASS 546
240 5,618,940
249 5,618,941
250 5,618,942
342 5,618,943

CLASS 548
358.5 5,618,944
367.4 5,618,945
431 5,618,946
448 5,618,947
5,618,948
557 5,618,949

CLASS 549
28 5,618,950
214 5,618,951
300 5,618,952
508 5,618,953
534 5,618,954

CLASS 554
66 5,618,955
223 B1 4,743,402

CLASS 556
12 5,618,956
32 5,618,957
45 5,618,958
437 5,618,959
473 5,618,960

CLASS 558
78 5,618,961
5,618,962
122 5,618,963
180 5,618,964
315 5,618,965

CLASS 560
16 5,618,966
26 5,618,967
27 5,618,968
102 5,618,969
121 5,618,970
218 5,618,971
239 5,618,972
263 5,618,973

CLASS 562
532 5,618,974

CLASS 564
88 5,618,975
98 5,618,976
153 5,618,977
293 5,618,978
415 5,618,979
5,618,980

CLASS 568
44 5,618,981
346 5,618,982
454 5,618,983
853 5,618,985

CLASS 569
720 5,618,984

CLASS 570
176 5,618,986

CLASS 600
29 5,618,256
5,618,257
104 5,618,258
210 5,618,260
236 5,618,261

CLASS 601
116 5,618,262

CLASS 602
6 5,618,263
24 5,618,264

CLASS 604
20 5,618,265
21 5,618,266
53 5,618,267
82 5,618,268
118 5,618,269
164 5,618,270
165 5,618,271
166 5,618,272
211 5,618,273
290 5,618,274
5,618,275
336 5,618,276
349 5,618,277
356 5,618,278
385.1 5,618,279
5,618,280
387 5,618,281
5,618,282
390 5,618,283

CLASS 606
5 5,618,284
10 5,618,285
60 5,618,286
129 5,618,287
130 5,618,288
131 5,618,289
139 5,618,290
142 5,618,291
166 5,618,292
170 5,618,293
5,618,294
171 5,618,295
180 5,618,296
185 5,618,297
194 5,618,298
198 5,618,299
5,618,300
5,618,301
201 5,618,302
205 5,618,303
5,618,304
5,618,305
5,618,306
5,618,307
5,618,308
207 5,618,309
216 5,618,310
5,618,311
229 5,618,312
230 5,618,313
232 5,618,314
237 5,618,315

CLASS 623
6 5,618,316

CLASS 800
200 5,618,987
205 5,618,988

CLASS 811
616 5,619,004

CLASSIFICATION OF DESIGNS

D3—	207	378,707
	221	378,708
	233	378,709
	234	378,710
D4—	108	378,711
	128	378,712
D5—	43	378,713
D6—	366	378,714
	402	378,715
	434	378,716
	445	378,717
	542	378,718
	604	378,719
	632	378,720
	634	378,721
D7—	319	378,722
	351	378,723
	505	378,724
	510	378,725
	549	378,726
D8—	61	378,727
	62	378,728
	83	378,729
	343	378,730
	356	378,731
D9—	320	378,732
	337	378,733
	425	378,734
	429	378,735
	497	378,736
D10—	6	378,737
	30	378,738
	32	378,739
	38	378,740
	39	378,741
	68	378,742
	71	378,743
	96	378,744
	109	378,745
	116	378,746
D12—	118	378,747
	223	378,748
		378,749
D14—	106	378,750
	114	378,751
	126	378,752
	151	378,753
D15—	5	378,754
	23	378,755
	136	378,756
D18—	55	378,757
	56	378,758
		378,759
		378,760
D19—	48	378,761
	51	378,762
		378,763
	54	378,764
	69	378,765
D20—	8	378,766
	22	378,767
D21—	48	378,768
	96	378,769
	214	378,770
	221	378,771
	237	378,772
D23—	201	378,773
	238	378,774
	250	378,775
	280.1	378,776
	295	378,777
	356	378,778
	377	378,779
D24—	146	378,780
	224	378,781
	232	378,782
D25—	16	378,783
	42	378,784
	119	378,785
D99—	38	378,786

CLASSIFICATION OF PLANTS

P.—	22	9,849
	43.1	9,850
	67.8	9,851
		9,852
	78	9,853
	86.4	9,854
	88.1	9,855
	88.9	9,856

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PATENTS

01 :	5,617,987	5,617,805	5,618,335	5,618,943	5,619,424		5,619,717
	5,618,294	5,617,844	5,618,341	5,618,988	5,619,426		5,015,111
	5,618,440	5,617,861	5,618,348	5,618,991	5,619,438		5,099,388
	5,619,011	5,617,862	5,618,351	5,619,003	5,619,439	08 :	5,617,619
	5,619,029	5,617,866	5,618,356	5,619,007	5,619,442		5,617,664
	5,619,371	5,617,867	5,618,359	5,619,017	5,619,453		5,617,686
	5,619,506	5,617,888	5,618,370	5,619,025	5,619,461		5,617,767
02 :	5,617,921	5,617,920	5,618,382	5,619,032	5,619,471		5,617,803
	5,618,134	5,617,923	5,618,388	5,619,033	5,619,476		5,617,857
04 :	5,617,641	5,617,935	5,618,399	5,619,034	5,619,489		5,617,958
	5,617,727	5,617,966	5,618,406	5,619,036	5,619,496		5,617,983
	5,617,798	5,617,968	5,618,419	5,619,040	5,619,500		5,618,005
	5,617,847	5,617,975	5,618,476	5,619,042	5,619,511		5,618,036
	5,618,099	5,617,982	5,618,493	5,619,062	5,619,513		5,618,078
	5,618,162	5,617,991	5,618,546	5,619,063	5,619,525		5,618,441
	5,618,267	5,617,999	5,618,570	5,619,072	5,619,537		5,618,532
	5,618,511	5,618,012	5,618,641	5,619,083	5,619,541		5,618,792
	5,618,543	5,618,022	5,618,643	5,619,109	5,619,548		5,619,166
	5,618,550	5,618,033	5,618,662	5,619,128	5,619,555		5,619,172
	5,619,064	5,618,035	5,618,674	5,619,139	5,619,561		5,619,193
	5,619,092	5,618,041	5,618,675	5,619,140	5,619,574		5,619,355
	5,619,211	5,618,055	5,618,676	5,619,148	5,619,576		5,619,384
	5,619,218	5,618,070	5,618,693	5,619,149	5,619,585		5,619,621
	5,619,430	5,618,101	5,618,698	5,619,150	5,619,592		5,619,642
	5,619,447	5,618,139	5,618,702	5,619,153	5,619,594		5,619,675
	5,619,571	5,618,141	5,618,703	5,619,163	5,619,597	09 :	5,617,588
	5,619,644	5,618,175	5,618,704	5,619,177	5,619,599		5,617,589
	5,619,661	5,618,176	5,618,711	5,619,183	5,619,609		5,617,869
	5,619,699	5,618,177	5,618,720	5,619,192	5,619,615		5,617,883
	5,619,726	5,618,178	5,618,732	5,619,195	5,619,632		5,617,933
05 :	5,617,942	5,618,179	5,618,735	5,619,196	5,619,633		5,617,946
06 :	Re.35,491	5,618,182	5,618,740	5,619,198	5,619,636		5,618,037
	5,617,586	5,618,205	5,618,742	5,619,199	5,619,639		5,618,051
	5,617,592	5,618,218	5,618,743	5,619,209	5,619,645		5,618,122
	5,617,595	5,618,219	5,618,757	5,619,216	5,619,647		5,618,185
	5,617,604	5,618,246	5,618,760	5,619,236	5,619,651		5,618,309
	5,617,622	5,618,251	5,618,766	5,619,254	5,619,658		5,618,313
	5,617,624	5,618,265	5,618,777	5,619,274	5,619,659		5,618,420
	5,617,655	5,618,277	5,618,786	5,619,291	5,619,660		5,618,445
	5,617,673	5,618,284	5,618,788	5,619,302	5,619,663		5,618,519
	5,617,677	5,618,287	5,618,789	5,619,324	5,619,666		5,618,533
	5,617,680	5,618,291	5,618,813	5,619,331	5,619,668		5,618,689
	5,617,692	5,618,296	5,618,836	5,619,372	5,619,672		5,618,808
	5,617,716	5,618,297	5,618,860	5,619,383	5,619,686		5,618,811
	5,617,717	5,618,299	5,618,882	5,619,389	5,619,693		5,618,839
	5,617,719	5,618,306	5,618,883	5,619,396	5,619,698		5,618,857
	5,617,739	5,618,307	5,618,907	5,619,399	5,619,703		5,618,863
	5,617,783	5,618,319	5,618,920	5,619,402	5,619,708		5,619,012
	5,617,784	5,618,320	5,618,931	5,619,419	5,619,709		5,619,244

	5,619,246
	5,619,249
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	5,619,546
	5,619,575
	5,619,665
10 :	5,618,154
	5,618,290
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11 :	5,617,855
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12 :	5,617,606
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	5,618,161
	5,618,210
	5,618,239
	5,618,302
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	5,618,394
	5,618,556
	5,618,616
	5,618,752
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	5,619,646
	5,619,684
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	5,619,729
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13 :	5,617,670
	5,617,697
	5,617,989
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	5,618,238
	5,618,308
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	5,618,492
	5,618,566
	5,618,614
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	5,618,632
	5,619,556
	5,619,610
16 :	5,617,665
	5,617,780
	5,617,951
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	5,619,459
	5,619,681
17 :	5,617,605
	5,617,633
	5,617,679
	5,617,702
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	5,617,779
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	5,617,961
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	5,618,047
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	5,618,358
	5,618,475
	5,618,500
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